2.7

**Response Action Contract**
**Contract No. 68-W-98-228**

EPA United States Environmental Protection Agency

REGION 10

**Final** (Revision 2)

# REMEDIAL INVESTIGATION REPORT

**Coeur d'Alene Basin**
**Remedial Investigation/Feasibility Study**

## VOLUME 8

**Appendix C**

**September 2001**


**URS Greiner**
in association with
**CH2M HILL**
White Shield, Inc.



155305
USEPA SF
1131603

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **CC2** | **Date:** | **27-Jun-00** |
| **Chemical:** | **dZn** | **Analyst:** | **J.Johnston** |
| Notes: | Template and Example Lognormal Analysis | | |
| Input Discharge and Concentration Data below (in red) | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,518 | 21 | 27 | 2 | 0.00 | 0.00 | 0.00 |
| **SD:** | 330 | 27 | 9 | 2 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.30 | 0.34 | 0.97 | | | |
| **Min:** | 33,376 | 4 | 12 | 0.4 | -0.64 | -1.64 | -0.82 |
| **Max:** | 34,955 | 102 | 52 | 9 | 3.06 | 2.80 | 2.90 |
| **Median:** | 34,524 | 7 | 26 | 1 | -0.52 | -0.08 | -0.43 |

| dZn CC2 | | | : Concentration v. Discharge, Q | | | Q = mTime +b | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.148)** | | update r2 | 0.15 | 0.148 | | r2: 0.027 | 0.00003 |
| r2 Q,[COC]: | 0.15 | [dZn] | Q | | | m: -0.0132 | 0.00002 |
| slope, m: | -0.1 | 29 | 3.6 | | | b: 477 | 1.83 |
| intercept, b: | 29.5 | 26 | 20.6 | | | | |
| N: 34 | | 15 | 102 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.125)** | | update r2 | | 0.12 | 0.125 | | |
| r2 lnQ,ln[COC]: | 0.12 | ln[dZn] | ln Q | [dZn] | Q | | |
| slope, m: | -0.13 | 3.38 | 1.27 | 29 | 4 | | |
| intercept, b: | 3.55 | 3.15 | 3.02 | 23 | 21 | | |
| N: 34 | | 2.94 | 4.63 | 19 | 102 | | |

**N= 36**

| | Sampling Date | Q Discharge | dZn Concentration | dZn Load | Ln Q | Ln dZn Conc. | Ln dZn Load | for graph dZn CC2 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| *MFG* | *18-May-91* | *99.3* | | | 4.60 | | | 2.95 | | |
| *MFG* | *5-Oct-91* | *3.56* | | | 1.27 | | | -0.64 | | |
| IDEQ | 27-Oct-93 | 5.77 | 21.7 | 0.7 | 1.75 | 3.08 | -0.40 | -0.55 | -0.56 | -0.72 |
| IDEQ | 30-Nov-93 | 5.07 | 25.1 | 0.7 | 1.62 | 3.22 | -0.38 | -0.58 | -0.18 | -0.72 |
| IDEQ | 17-Dec-93 | 5.07 | 21.7 | 0.6 | 1.62 | 3.08 | -0.52 | -0.58 | -0.56 | -0.76 |
| IDEQ | 17-Dec-93 | 4.53 | 21.7 | 0.5 | 1.51 | 3.08 | -0.64 | -0.60 | -0.56 | -0.79 |
| IDEQ | 20-Jan-94 | 5.48 | 22.8 | 0.7 | 1.70 | 3.13 | -0.40 | -0.57 | -0.44 | -0.72 |
| IDEQ | 20-Jan-94 | 4.47 | 22.8 | 0.5 | 1.50 | 3.13 | -0.60 | -0.60 | -0.44 | -0.78 |
| IDEQ | 18-Feb-94 | 5.07 | 36 | 1.0 | 1.62 | 3.58 | -0.02 | -0.58 | 1.03 | -0.58 |
| IDEQ | 18-Feb-94 | 4.06 | 36 | 0.8 | 1.40 | 3.58 | -0.24 | -0.62 | 1.03 | -0.67 |
| IDEQ | 8-Mar-94 | 9.82 | 36 | 1.9 | 2.28 | 3.58 | 0.64 | -0.40 | 1.03 | -0.16 |
| IDEQ | 23-Mar-94 | 9.55 | 17 | 0.9 | 2.26 | 2.83 | -0.14 | -0.41 | -1.08 | -0.63 |
| IDEQ | 7-Apr-94 | 21.77 | 26 | 3.0 | 3.08 | 3.26 | 1.11 | 0.04 | -0.08 | 0.36 |
| IDEQ | 7-Apr-94 | 27.41 | 26 | 3.8 | 3.31 | 3.26 | 1.34 | 0.26 | -0.08 | 0.71 |
| IDEQ | 4-May-94 | 61.38 | 22 | 7.3 | 4.12 | 3.09 | 1.98 | 1.53 | -0.53 | 2.27 |
| IDEQ | 19-May-94 | 82.71 | 13 | 5.8 | 4.42 | 2.56 | 1.76 | 2.33 | -1.53 | 1.60 |
| IDEQ | 8-Jun-94 | 59.6 | 27 | 8.7 | 4.09 | 3.30 | 2.16 | 1.46 | 0.03 | 2.90 |
| IDEQ | 23-Jun-94 | 15.59 | 35 | 2.9 | 2.75 | 3.56 | 1.08 | -0.19 | 0.92 | 0.31 |
| IDEQ | 25-Jul-94 | 6.76 | 28 | 1.0 | 1.91 | 3.33 | 0.02 | -0.52 | 0.14 | -0.56 |
| IDEQ | 16-Aug-94 | 5.77 | 37 | 1.1 | 1.75 | 3.61 | 0.14 | -0.55 | 1.14 | -0.50 |
| IDEQ | 16-Aug-94 | 6.4 | 37 | 1.3 | 1.86 | 3.61 | 0.24 | -0.53 | 1.14 | -0.45 |
| IDEQ | 13-Sep-94 | 5.48 | 29 | 0.9 | 1.70 | 3.37 | -0.16 | -0.57 | 0.25 | -0.64 |
| IDEQ | 6-Oct-94 | 5.2 | 16 | 0.4 | 1.65 | 2.77 | -0.80 | -0.58 | -1.20 | -0.82 |
| IDEQ | 16-Nov-94 | 6.08 | 17 | 0.6 | 1.81 | 2.83 | -0.59 | -0.54 | -1.08 | -0.77 |
| IDEQ | 13-Dec-94 | 6.25 | 40 | 1.3 | 1.83 | 3.69 | 0.30 | -0.54 | 1.47 | -0.42 |
| IDEQ | 10-Jan-95 | 9.3 | 28 | 1.4 | 2.23 | 3.33 | 0.34 | -0.42 | 0.14 | -0.39 |
| IDEQ | 9-Feb-95 | 18.41 | 52 | 5.2 | 2.91 | 3.95 | 1.64 | -0.08 | 2.80 | 1.31 |
| IDEQ | 22-Mar-95 | 48.52 | 21 | 5.5 | 3.88 | 3.04 | 1.70 | 1.05 | -0.64 | 1.46 |
| IDEQ | 12-Apr-95 | 16.94 | 21 | 1.9 | 2.83 | 3.04 | 0.65 | -0.14 | -0.64 | -0.16 |
| IDEQ | 25-Apr-95 | 21 | 12 | 1.4 | 3.04 | 2.48 | 0.30 | 0.02 | -1.64 | -0.41 |
| IDEQ | 13-Jun-95 | 102.19 | 12 | 6.6 | 4.63 | 2.48 | 1.89 | 3.06 | -1.64 | 1.97 |
| IDEQ | 27-Jun-95 | 24.36 | 31 | 4.1 | 3.19 | 3.43 | 1.40 | 0.14 | 0.47 | 0.82 |
| IDEQ | 11-Jul-95 | 10.93 | 26 | 1.5 | 2.39 | 3.26 | 0.42 | -0.36 | -0.08 | -0.33 |
| IDEQ | 25-Jul-95 | 6.76 | 42 | 1.5 | 1.91 | 3.74 | 0.42 | -0.52 | 1.69 | -0.33 |
| IDEQ | 14-Aug-95 | 5.77 | 28 | 0.9 | 1.75 | 3.33 | -0.14 | -0.55 | 0.14 | -0.63 |
| IDEQ | 13-Sep-95 | 4.57 | 23 | 0.6 | 1.52 | 3.14 | -0.57 | -0.60 | -0.42 | -0.77 |

**dZn**

**Concentration over time analysis**

| | dZn | CC2 | |
|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | |
| | **Time** | **Ln[COC]** | **[COC]** |
| first | 18-May-91 | 3.25 | 26 |
| mid | 9-Jul-94 | 3.23 | 25 |
| last | 13-Sep-95 | 3.22 | 25 |
| | **LnConc.=mTime+b >'96 r2, m:** | | |
| | 0-Jan-00 | 0.00 | 1 |
| | 13-Sep-95 | 0.00 | 1 |

| r2 | Slope, m |
|---|---|
| **Concentration over time** | |
| **0.0001** | **-0.00002** |
| **0.000** | **0.00000** |

**Load over time analysis**

| | dZn | CC2 | |
|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | |
| | **Time** | **LnLoad** | **Load** |
| first | 18-May-91 | -0.74 | 0 |
| mid | 9-Jul-94 | 0.36 | 1 |
| last | 13-Sep-95 | 0.77 | 2 |
| | **LnLoad=mTime+b >'96 r2, m:** | | |
| | 0-Jan-00 | 0.00 | 1 |
| | 13-Sep-95 | 0.00 | 1 |

| | |
|---|---|
| **Load over time** | |
| **0.052** | **0.00096** |
| **0.000** | **0.00000** |

max r2: 0.376

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.000 | -0.00002 | 3.87 |
| 0.000 | -0.00002 | 3.87 |
| 0.000 | -0.00002 | 3.87 |
| 0.001 | -0.00006 | 5.15 |
| 0.001 | -0.00006 | 5.36 |
| 0.003 | -0.00010 | 6.81 |
| 0.007 | -0.00015 | 8.59 |
| 0.010 | -0.00020 | 10.03 |
| 0.015 | -0.00025 | 11.82 |
| 0.007 | -0.00017 | 9.07 |
| 0.001 | -0.00007 | 5.62 |
| 0.001 | 0.00005 | 1.48 |
| 0.002 | -0.00009 | 6.30 |
| 0.001 | -0.00009 | 6.19 |
| 0.001 | -0.00008 | 6.04 |
| 0.004 | -0.00016 | 8.76 |
| 0.046 | -0.00056 | 22.77 |
| 0.050 | -0.00062 | 24.95 |
| 0.030 | -0.00051 | 21.14 |
| 0.027 | -0.00053 | 21.75 |
| 0.008 | -0.00030 | 13.73 |
| 0.000 | 0.00008 | 0.46 |
| 0.007 | 0.00034 | -8.68 |
| 0.003 | -0.00027 | 12.59 |
| 0.049 | -0.00113 | 42.47 |
| 0.005 | -0.00041 | 17.37 |
| 0.001 | -0.00015 | 8.52 |
| 0.220 | 0.00327 | -110.90 |
| 0.279 | 0.00443 | -151.29 |
| 0.376 | 0.00641 | -220.54 |
| 0.103 | 0.00401 | -136.80 |
| 0.218 | -0.00348 | 125.01 |

max r2: 0.911

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.052 | 0.00096 | -32.72 |
| 0.052 | 0.00096 | -32.72 |
| 0.052 | 0.00096 | -32.72 |
| 0.038 | 0.00084 | -28.58 |
| 0.026 | 0.00071 | -23.98 |
| 0.014 | 0.00052 | -17.40 |
| 0.003 | 0.00025 | -8.28 |
| 0.000 | 0.00003 | -0.43 |
| 0.005 | -0.00031 | 11.35 |
| 0.012 | -0.00052 | 18.50 |
| 0.032 | -0.00085 | 30.07 |
| 0.035 | -0.00093 | 32.92 |
| 0.067 | -0.00132 | 46.45 |
| 0.058 | -0.00128 | 45.09 |
| 0.040 | -0.00112 | 39.40 |
| 0.011 | -0.00057 | 20.48 |
| 0.000 | 0.00002 | -0.14 |
| 0.038 | 0.00106 | -36.33 |
| 0.089 | 0.00170 | -58.78 |
| 0.075 | 0.00168 | -58.01 |
| 0.068 | 0.00172 | -59.50 |
| 0.068 | 0.00191 | -66.15 |
| 0.038 | 0.00159 | -54.83 |
| 0.000 | -0.00019 | 7.08 |
| 0.090 | -0.00265 | 92.94 |
| 0.209 | -0.00469 | 164.02 |
| 0.448 | -0.00815 | 284.74 |
| 0.366 | -0.00851 | 297.29 |
| 0.222 | -0.00708 | 247.52 |
| 0.304 | -0.01032 | 360.67 |
| 0.911 | -0.02633 | 919.57 |
| 0.887 | -0.02286 | 798.49 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dZn** | | **CC2** | | |
| **LN Analysis** | | **dZn** | | |
| **Load** | | **Load Data, EV=2.26 lbs/day CV=0.975** | | |
| **Avg:** | **2** | **Load Data-based LN** | | |
| **SD:** | **2** | u | ln dZn Load | dZn Load |
| **CV:** | **0.97** | 3 | 2.9 | 19 |
| **Min:** | **0.4** | 0 | 0.48 | 2 |
| **Max:** | **9** | -3 | -1.97 | 0.1 |
| **Median:** | **1** | | | |
| | | 2 | 2.26 | |
| | | 0.97 | 0.975 | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **r2=0.948, EV=2.38lbs/day CV=1.29; max r2=0.99**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.948 | u | lnLoad | Load | | |
| slope, m | 1.012 | 3 | 3.34 | 28 | | |
| intercept, b | -0.383 | 0 | 0.38 | 1 | | |
| N: 34 | | -3 | -2.59 | 0.1 | | |
| E[Load]: | 2.4 | Parameter Estimates | | | 0.948 | 0.948 |
| SD[Load]: | 3 | from LN regression | | | 2.4 | 2.38 |
| CV[Load]: | 1.29 | update graph label | | | 1.3 | 1.29 |
| | | | | | max r2 | |
| | N: 36 | | | | 0.989 | |

| Date | dZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *5-Oct-91* | | 1 | 0.0172 | -2.114 | | |
| 6-Oct-94 | **0.4** | 2 | 0.0448 | -1.697 | -0.804 | 0.948 |
| 17-Dec-93 | **0.5** | 3 | 0.0724 | -1.458 | -0.637 | 0.952 |
| 20-Jan-94 | **0.5** | 4 | 0.1000 | -1.282 | -0.601 | 0.958 |
| 16-Nov-94 | **0.6** | 5 | 0.1276 | -1.138 | -0.587 | 0.961 |
| 13-Sep-95 | **0.6** | 6 | 0.1552 | -1.014 | -0.570 | 0.962 |
| 17-Dec-93 | **0.6** | 7 | 0.1828 | -0.905 | -0.524 | 0.961 |
| 20-Jan-94 | **0.7** | 8 | 0.2103 | -0.805 | -0.397 | 0.959 |
| 27-Oct-93 | **0.7** | 9 | 0.2379 | -0.713 | -0.395 | 0.958 |
| 30-Nov-93 | **0.7** | 10 | 0.2655 | -0.626 | -0.379 | 0.955 |
| 18-Feb-94 | **0.8** | 11 | 0.2931 | -0.544 | -0.240 | 0.951 |
| 13-Sep-94 | **0.9** | 12 | 0.3207 | -0.466 | -0.157 | 0.947 |
| 14-Aug-95 | **0.9** | 13 | 0.3483 | -0.390 | -0.140 | 0.944 |
| 23-Mar-94 | **0.9** | 14 | 0.3759 | -0.316 | -0.135 | 0.939 |
| 18-Feb-94 | **1.0** | 15 | 0.4034 | -0.244 | -0.018 | 0.933 |
| 25-Jul-94 | **1.0** | 16 | 0.4310 | -0.174 | 0.018 | 0.927 |
| 16-Aug-94 | **1.1** | 17 | 0.4586 | -0.104 | 0.139 | 0.919 |
| 16-Aug-94 | **1.3** | 18 | 0.4862 | -0.035 | 0.242 | 0.911 |
| 13-Dec-94 | **1.3** | 19 | 0.5138 | 0.035 | 0.296 | 0.902 |
| 25-Apr-95 | **1.4** | 20 | 0.5414 | 0.104 | 0.304 | 0.891 |
| 10-Jan-95 | **1.4** | 21 | 0.5690 | 0.174 | 0.337 | 0.879 |
| 25-Jul-95 | **1.5** | 22 | 0.5966 | 0.244 | 0.424 | 0.867 |
| 11-Jul-95 | **1.5** | 23 | 0.6241 | 0.316 | 0.425 | 0.854 |
| 8-Mar-94 | **1.9** | 24 | 0.6517 | 0.390 | 0.643 | 0.856 |
| 12-Apr-95 | **1.9** | 25 | 0.6793 | 0.466 | 0.649 | 0.851 |
| 23-Jun-94 | **2.9** | 26 | 0.7069 | 0.544 | 1.077 | 0.914 |
| 7-Apr-94 | **3.0** | 27 | 0.7345 | 0.626 | 1.114 | 0.910 |
| 7-Apr-94 | **3.8** | 28 | 0.7621 | 0.713 | 1.344 | 0.945 |
| 27-Jun-95 | **4.1** | 29 | 0.7897 | 0.805 | 1.402 | 0.944 |
| 9-Feb-95 | **5.2** | 30 | 0.8172 | 0.905 | 1.639 | 0.987 |
| *18-May-91* | | 31 | 0.8448 | 1.014 | | |
| 22-Mar-95 | **5.5** | 32 | 0.8724 | 1.138 | 1.701 | 0.989 |
| 19-May-94 | **5.8** | 33 | 0.9000 | 1.282 | 1.755 | |
| 13-Jun-95 | **6.6** | 34 | 0.9276 | 1.458 | 1.887 | |
| 4-May-94 | **7.3** | 35 | 0.9552 | 1.697 | 1.983 | |
| 8-Jun-94 | **8.7** | 36 | 0.9828 | 2.114 | 2.158 | |

| | | | | | |
|---|---|---|---|---|---|
| | | update for EV, CV | | | |
| dZn | | CC2 | | 27 | 26.8 |
| LN Analysis | | dZn | | 0.34 | 0.336 |
| **Concentration** | | Conc. Data, EV=26.8 ug/L CV=0.336 | | | |
| Avg: | 27 | Data-based LN | | | |
| SD: | 9 | u | ln[dZn] | [dZn] | |
| CV: | 0.34 | 3 | 4.2 | 68 | |
| Min: | 12 | 0 | 3.23 | 25 | |
| Max: | 52 | -3 | 2.25 | 10 | |
| Median: | 26 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.953 | 0.953 |
| u=mLn[Conc.]+b: | | | | | 26.2 | 26.2 |
| update for r2, EV, CV: | r2=0.953, EV=26.2 ug/L CV=0.429; max r2=0.98 | | | | 0.429 | 0.429 upd |
| | r2 u,lnConc. | 0.953 | u | lnConc. | Conc. | |
| | slope, m: | 2.432 | 3 | 4.42 | 83 | |
| | intercept, b. | -7.738 | 0 | 3.18 | 24 | |
| | N. 34 | | -3 | 1.95 | 7 | |
| | E[Conc]: | 26.2 | Parameter Estimates | | | |
| | SD[Conc]: | 11 | from LN regression | | | |
| | CV[Conc]: | 0.43 | update graph label | | | |

| Date | dZn Concentration ug/L Ranked | N. 36 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.975 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *5-Oct-91* | | 1 | 0.0172 | -2.114 | | |
| *18-May-91* | | 2 | 0.0448 | -1.697 | | |
| 25-Apr-95 | 12 | 3 | 0.0724 | -1.458 | 2.485 | 0.953 |
| 13-Jun-95 | 12 | 4 | 0.1000 | -1.282 | 2.485 | 0.951 |
| 19-May-94 | 13 | 5 | 0.1276 | -1.138 | 2.565 | 0.958 |
| 6-Oct-94 | 16 | 6 | 0.1552 | -1.014 | 2.773 | 0.971 |
| 23-Mar-94 | 17 | 7 | 0.1828 | -0.905 | 2.833 | 0.971 |
| 16-Nov-94 | 17 | 8 | 0.2103 | -0.805 | 2.833 | 0.970 |
| 22-Mar-95 | 21 | 9 | 0.2379 | -0.713 | 3.045 | 0.974 |
| 12-Apr-95 | 21 | 10 | 0.2655 | -0.626 | 3.045 | 0.975 |
| 27-Oct-93 | 21.7 | 11 | 0.2931 | -0.544 | 3.077 | 0.973 |
| 17-Dec-93 | 21.7 | 12 | 0.3207 | -0.466 | 3.077 | 0.973 |
| 17-Dec-93 | 21.7 | 13 | 0.3483 | -0.390 | 3.077 | 0.971 |
| 4-May-94 | 22 | 14 | 0.3759 | -0.316 | 3.091 | 0.969 |
| 20-Jan-94 | 22.8 | 15 | 0.4034 | -0.244 | 3.127 | 0.966 |
| 20-Jan-94 | 22.8 | 16 | 0.4310 | -0.174 | 3.127 | 0.962 |
| 13-Sep-95 | 23 | 17 | 0.4586 | -0.104 | 3.135 | 0.959 |
| 30-Nov-93 | 25.1 | 18 | 0.4862 | -0.035 | 3.223 | 0.957 |
| 7-Apr-94 | 26 | 19 | 0.5138 | 0.035 | 3.258 | 0.953 |
| 7-Apr-94 | 26 | 20 | 0.5414 | 0.104 | 3.258 | 0.949 |
| 11-Jul-95 | 26 | 21 | 0.5690 | 0.174 | 3.258 | 0.943 |
| 8-Jun-94 | 27 | 22 | 0.5966 | 0.244 | 3.296 | 0.937 |
| 25-Jul-94 | 28 | 23 | 0.6241 | 0.316 | 3.332 | 0.928 |
| 10-Jan-95 | 28 | 24 | 0.6517 | 0.390 | 3.332 | 0.918 |
| 14-Aug-95 | 28 | 25 | 0.6793 | 0.466 | 3.332 | 0.907 |
| 13-Sep-94 | 29 | 26 | 0.7069 | 0.544 | 3.367 | 0.902 |
| 27-Jun-95 | 31 | 27 | 0.7345 | 0.626 | 3.434 | 0.903 |
| 23-Jun-94 | 35 | 28 | 0.7621 | 0.713 | 3.555 | 0.893 |
| 18-Feb-94 | 36 | 29 | 0.7897 | 0.805 | 3.584 | 0.897 |
| 18-Feb-94 | 36 | 30 | 0.8172 | 0.905 | 3.584 | 0.924 |
| 8-Mar-94 | 36 | 31 | 0.8448 | 1.014 | 3.584 | 0.945 |
| 16-Aug-94 | 37 | 32 | 0.8724 | 1.138 | 3.611 | 0.954 |
| 16-Aug-94 | 37 | 33 | 0.9000 | 1.282 | 3.611 | |
| 13-Dec-94 | 40 | 34 | 0.9276 | 1.458 | 3.689 | |
| 25-Jul-95 | 42 | 35 | 0.9552 | 1.697 | 3.738 | |
| 9-Feb-95 | 52 | 36 | 0.9828 | 2.114 | 3.951 | |

update for EV, CV:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **dZn** | | **CC2** | | | 21 | 20.6 | **Secondary Scale For LN graphs** | | |
| **LN Analysis** | | **dZn** | | | 1.30 | 1.3 | **u** | **Cumulative** | |
| **Discharge, Q** | | **Q Data, EV=20.6 cfs CV=1.3** | | | | | | **Frequecny** | **Candidate x-axis positions** |
| **Avg:** | **21** | **Q Data-based LN** | | | | | | secondary y-axi | x-axis position |
| **SD:** | **27** | u | lnQ | Q | | | **-4.00** | **0.00003** | 10000 1000 |
| **CV:** | **1.30** | 3 | 5.5 | 247 | | | **-3.00** | **0.00135** | 10000 1000 |
| **Min:** | **4** | 0 | 2.53 | 13 | | | **-2.00** | **0.02275** | 10000 1000 |
| **Max:** | **102** | -3 | -0.45 | 1 | | | **-1.00** | **0.15866** | 10000 1000 |
| **Median:** | **7** | | | | | | **0.00** | **0.50000** | 10000 1000 |
| | | | | | | | **1.00** | **0.84134** | 10000 1000 |
| | | | | | 0.863 | 0.863 | **2.00** | **0.97725** | 10000 1000 |
| | | | | | 21.2 | 21.2 | **3.00** | **0.99865** | 10000 1000 |
| | | **u=mLn(Q)+b:** | | | 1.56 | 1.56 | **4.00** | **0.99997** | 10000 1000 |

date for r2, EV, CV: **r2=0.863, EV=21.2 cfs CV=1.56; max r2=0.96**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.863 | u | lnQ | Q |
| slope, m: | 0.901 | 3 | 5.77 | 319 |
| intercept, b | -2.195 | 0 | 2.44 | 11 |
| N: 36 | | -3 | -0.89 | 0.4 |
| E[Q]: | 21.2 | Parameter Estimates | | |
| SD[Q]: | 33 | from LN regression | | |
| CV[Q]: | 1.56 | update graph label | | |

| | Q | N: 36 | | | | max r2 0.963 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| *5-Oct-91* | *3.56* | 1 | 0.0172 | -2.114 | 1.270 | 0.863 |
| 18-Feb-94 | 4.06 | 2 | 0.0448 | -1.697 | 1.401 | 0.884 |
| 20-Jan-94 | 4.47 | 3 | 0.0724 | -1.458 | 1.497 | 0.898 |
| 17-Dec-93 | 4.53 | 4 | 0.1000 | -1.282 | 1.511 | 0.912 |
| 13-Sep-95 | 4.57 | 5 | 0.1276 | -1.138 | 1.520 | 0.922 |
| 30-Nov-93 | 5.07 | 6 | 0.1552 | -1.014 | 1.623 | 0.929 |
| 17-Dec-93 | 5.07 | 7 | 0.1828 | -0.905 | 1.623 | 0.939 |
| 18-Feb-94 | 5.07 | 8 | 0.2103 | -0.805 | 1.623 | 0.946 |
| 6-Oct-94 | 5.2 | 9 | 0.2379 | -0.713 | 1.649 | 0.951 |
| 20-Jan-94 | 5.48 | 10 | 0.2655 | -0.626 | 1.701 | 0.955 |
| 13-Sep-94 | 5.48 | 11 | 0.2931 | -0.544 | 1.701 | 0.959 |
| 27-Oct-93 | 5.77 | 12 | 0.3207 | -0.466 | 1.753 | 0.961 |
| 16-Aug-94 | 5.77 | 13 | 0.3483 | -0.390 | 1.753 | 0.963 |
| 14-Aug-95 | 5.77 | 14 | 0.3759 | -0.316 | 1.753 | 0.963 |
| 16-Nov-94 | 6.08 | 15 | 0.4034 | -0.244 | 1.805 | 0.961 |
| 13-Dec-94 | 6.25 | 16 | 0.4310 | -0.174 | 1.833 | 0.959 |
| 16-Aug-94 | 6.4 | 17 | 0.4586 | -0.104 | 1.856 | 0.955 |
| 25-Jul-94 | 6.76 | 18 | 0.4862 | -0.035 | 1.911 | 0.950 |
| 25-Jul-95 | 6.76 | 19 | 0.5138 | 0.035 | 1.911 | 0.945 |
| 10-Jan-95 | 9.3 | 20 | 0.5414 | 0.104 | 2.230 | 0.941 |
| 23-Mar-94 | 9.55 | 21 | 0.5690 | 0.174 | 2.257 | 0.934 |
| 8-Mar-94 | 9.82 | 22 | 0.5966 | 0.244 | 2.284 | 0.926 |
| 11-Jul-95 | 10.93 | 23 | 0.6241 | 0.316 | 2.392 | 0.919 |
| 23-Jun-94 | 15.59 | 24 | 0.6517 | 0.390 | 2.747 | 0.913 |
| 12-Apr-95 | 16.94 | 25 | 0.6793 | 0.466 | 2.830 | 0.900 |
| 9-Feb-95 | 18.41 | 26 | 0.7069 | 0.544 | 2.913 | 0.883 |
| 25-Apr-95 | 21 | 27 | 0.7345 | 0.626 | 3.045 | 0.862 |
| 7-Apr-94 | 21.77 | 28 | 0.7621 | 0.713 | 3.081 | 0.835 |
| 27-Jun-95 | 24.36 | 29 | 0.7897 | 0.805 | 3.193 | 0.801 |
| 7-Apr-94 | 27.41 | 30 | 0.8172 | 0.905 | 3.311 | 0.769 |
| 22-Mar-95 | 48.52 | 31 | 0.8448 | 1.014 | 3.882 | 0.864 |
| 8-Jun-94 | 59.6 | 32 | 0.8724 | 1.138 | 4.088 | 0.826 |
| 4-May-94 | 61.38 | 33 | 0.9000 | 1.282 | 4.117 | |
| 19-May-94 | 82.71 | 34 | 0.9276 | 1.458 | 4.415 | |
| *18-May-91* | *99.3* | 35 | 0.9552 | 1.697 | 4.598 | |
| 13-Jun-95 | 102.19 | 36 | 0.9828 | 2.114 | 4.627 | |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **CC2** | **Date:** | **27-Jun-00** |
| **Chemical:** | **tZn** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,518 | 21 | 30 | 5 | 0.00 | 0.00 | 0.00 |
| **SD:** | 330 | 27 | 29 | 17 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.30 | 0.97 | 3.39 | | | |
| **Min:** | 33,376 | 4 | 14 | 0.4 | -0.64 | -0.56 | -0.27 |
| **Max:** | 34,955 | 102 | 200 | 107 | 3.06 | 5.77 | 5.86 |
| **Median:** | 34,524 | 7 | 26 | 1 | -0.52 | -0.16 | -0.23 |

| tZn | CC2 | | : Concentration v. Discharge, Q | | | Q = mTime +b | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.173)** | | update r2 | **0.17** | 0.173 | | r2: 0.027 | 0.00003 |
| r2 Q,[COC]: | 0.17 | [tZn] | Q | | | m: -0.0132 | 0.00002 |
| slope, m: | 0.5 | 23 | 3.6 | | | b 477 | 1.83 |
| intercept, b: | 20.9 | 30 | 20.6 | | | | |
| N: 36 | | 68 | 102 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.0128)** | | update r2 | | 0.01 | 0.0128 | | |
| r2 lnQ,ln[COC]: | 0.01 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m: | 0.05 | 3.21 | 1.27 | 25 | 4 | | |
| intercept, b: | 3.14 | 3.29 | 3.02 | 27 | 21 | | |
| N: 36 | | 3.37 | 4.63 | 29 | 102 | | |

N= 36

| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | tZn CC2 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 18-May-91 | 99.3 | 200 | 106.8 | 4.60 | 5.30 | 4.67 | 2.95 | 5.77 | 5.86 |
| MFG | 5-Oct-91 | 3.56 | 22 | 0.4 | 1.27 | 3.09 | -0.86 | -0.64 | -0.28 | -0.27 |
| IDEQ | 27-Oct-93 | 5.77 | 20.5 | 0.6 | 1.75 | 3.02 | -0.45 | -0.55 | -0.33 | -0.26 |
| IDEQ | 30-Nov-93 | 5.07 | 22.8 | 0.6 | 1.62 | 3.13 | -0.47 | -0.58 | -0.26 | -0.26 |
| IDEQ | 17-Dec-93 | 5.07 | 27.4 | 0.7 | 1.62 | 3.31 | -0.29 | -0.58 | -0.10 | -0.25 |
| IDEQ | 17-Dec-93 | 4.53 | 27.4 | 0.7 | 1.51 | 3.31 | -0.40 | -0.60 | -0.10 | -0.26 |
| IDEQ | 20-Jan-94 | 5.48 | 34.2 | 1.0 | 1.70 | 3.53 | 0.01 | -0.57 | 0.13 | -0.24 |
| IDEQ | 20-Jan-94 | 4.47 | 34.2 | 0.8 | 1.50 | 3.53 | -0.20 | -0.60 | 0.13 | -0.25 |
| IDEQ | 18-Feb-94 | 5.07 | 28 | 0.8 | 1.62 | 3.33 | -0.27 | -0.58 | -0.08 | -0.25 |
| IDEQ | 18-Feb-94 | 4.06 | 28 | 0.6 | 1.40 | 3.33 | -0.49 | -0.62 | -0.08 | -0.26 |
| IDEQ | 8-Mar-94 | 9.82 | 28 | 1.5 | 2.28 | 3.33 | 0.39 | -0.40 | -0.08 | -0.21 |
| IDEQ | 23-Mar-94 | 9.55 | 14 | 0.7 | 2.26 | 2.64 | -0.33 | -0.41 | -0.56 | -0.25 |
| IDEQ | 7-Apr-94 | 21.77 | 22 | 2.6 | 3.08 | 3.09 | 0.95 | 0.04 | -0.28 | -0.15 |
| IDEQ | 7-Apr-94 | 27.41 | 22 | 3.2 | 3.31 | 3.09 | 1.18 | 0.26 | -0.28 | -0.11 |
| IDEQ | 4-May-94 | 61.38 | 19 | 6.3 | 4.12 | 2.94 | 1.84 | 1.53 | -0.39 | 0.07 |
| IDEQ | 19-May-94 | 82.71 | 16 | 7.1 | 4.42 | 2.77 | 1.96 | 2.33 | -0.49 | 0.12 |
| IDEQ | 8-Jun-94 | 59.6 | 17 | 5.5 | 4.09 | 2.83 | 1.70 | 1.46 | -0.45 | 0.02 |
| IDEQ | 23-Jun-94 | 15.59 | 35 | 2.9 | 2.75 | 3.56 | 1.08 | -0.19 | 0.16 | -0.13 |
| IDEQ | 25-Jul-94 | 6.76 | 16 | 0.6 | 1.91 | 2.77 | -0.54 | -0.52 | -0.49 | -0.26 |
| IDEQ | 16-Aug-94 | 5.77 | 29 | 0.9 | 1.75 | 3.37 | -0.11 | -0.55 | -0.05 | -0.24 |
| IDEQ | 16-Aug-94 | 6.4 | 29 | 1.0 | 1.86 | 3.37 | 0.00 | -0.53 | -0.05 | -0.24 |
| IDEQ | 13-Sep-94 | 5.48 | 23 | 0.7 | 1.70 | 3.14 | -0.39 | -0.57 | -0.25 | -0.26 |
| IDEQ | 6-Oct-94 | 5.2 | 24 | 0.7 | 1.65 | 3.18 | -0.40 | -0.58 | -0.22 | -0.26 |
| IDEQ | 16-Nov-94 | 6.08 | 18 | 0.6 | 1.81 | 2.89 | -0.53 | -0.54 | -0.42 | -0.26 |
| IDEQ | 13-Dec-94 | 6.25 | 36 | 1.2 | 1.83 | 3.58 | 0.19 | -0.54 | 0.19 | -0.23 |
| IDEQ | 10-Jan-95 | 9.3 | 29 | 1.5 | 2.23 | 3.37 | 0.37 | -0.42 | -0.05 | -0.21 |
| IDEQ | 9-Feb-95 | 18.41 | 31 | 3.1 | 2.91 | 3.43 | 1.12 | -0.08 | 0.02 | -0.12 |
| IDEQ | 22-Mar-95 | 48.52 | 26 | 6.8 | 3.88 | 3.26 | 1.92 | 1.05 | -0.15 | 0.10 |
| IDEQ | 12-Apr-95 | 16.94 | 31 | 2.8 | 2.83 | 3.43 | 1.04 | -0.14 | 0.02 | -0.13 |
| IDEQ | 25-Apr-95 | 21 | 20 | 2.3 | 3.04 | 3.00 | 0.82 | 0.02 | -0.35 | -0.16 |
| IDEQ | 13-Jun-95 | 102.19 | 20 | 11.0 | 4.63 | 3.00 | 2.40 | 3.06 | -0.35 | 0.34 |
| IDEQ | 27-Jun-95 | 24.36 | 31 | 4.1 | 3.19 | 3.43 | 1.40 | 0.14 | 0.02 | -0.06 |
| IDEQ | 11-Jul-95 | 10.93 | 23 | 1.4 | 2.39 | 3.14 | 0.30 | -0.36 | -0.25 | -0.22 |
| IDEQ | 25-Jul-95 | 6.76 | 45 | 1.6 | 1.91 | 3.81 | 0.49 | -0.52 | 0.50 | -0.20 |
| IDEQ | 14-Aug-95 | 5.77 | 19 | 0.6 | 1.75 | 2.94 | -0.53 | -0.55 | -0.39 | -0.26 |
| IDEQ | 13-Sep-95 | 4.57 | 25 | 0.6 | 1.52 | 3.22 | -0.49 | -0.60 | -0.18 | -0.26 |

for graph 0

tZn

**Concentration over time analysis** r2 Slope, m

tZn CC2 **Concentration over time**

**LnConc.=mTime+b All data r2, m:** **0.163** **-0.00053**

| | Time | Ln[COC] | [COC] |
|---|---|---|---|
| first | 18-May-91 | 3.87 | 48 |
| mid | 9-Jul-94 | 3.26 | 26 |
| last | 13-Sep-95 | 3.03 | 21 |

**LnConc.=mTime+b >'96 r2, m:** **0.000** **0.00000**

| | | | |
|---|---|---|---|
| | 0-Jan-00 | 0.00 | 1 |
| | 13-Sep-95 | 0.00 | 1 |

**Load over time analysis**

tZn CC2 **Load over time**

**LnLoad=mTime+b All data r2, m:** **0.022** **-0.00051**

| | Time | LnLoad | Load |
|---|---|---|---|
| first | 18-May-91 | 1.06 | 3 |
| mid | 9-Jul-94 | 0.47 | 2 |
| last | 13-Sep-95 | 0.25 | 1 |

**LnLoad=mTime+b >'96 r2, m:** **0.000** **0.00000**

| | | | |
|---|---|---|---|
| | 0-Jan-00 | 0.00 | 1 |
| | 13-Sep-95 | 0.00 | 1 |

max r2 0.163 max r2 0.808

| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
|---|---|---|---|---|---|
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points: delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| 0.163 | -0.00053 | 21.47 | 0.022 | -0.00051 | 18.08 |
| 0.018 | 0.00013 | -1.22 | 0.122 | 0.00114 | -39.16 |
| 0.012 | 0.00014 | -1.69 | 0.071 | 0.00112 | -38.28 |
| 0.007 | 0.00011 | -0.52 | 0.054 | 0.00100 | -34.25 |
| 0.005 | 0.00009 | -0.07 | 0.039 | 0.00086 | -29.41 |
| 0.008 | 0.00012 | -1.08 | 0.028 | 0.00074 | -25.29 |
| 0.012 | 0.00016 | -2.31 | 0.016 | 0.00057 | -19.18 |
| 0.031 | 0.00026 | -5.64 | 0.010 | 0.00048 | -16.10 |
| 0.064 | 0.00037 | -9.75 | 0.004 | 0.00031 | -10.21 |
| 0.085 | 0.00044 | -12.20 | 0.000 | 0.00010 | -2.77 |
| 0.114 | 0.00053 | -15.28 | 0.002 | -0.00025 | 9.16 |
| 0.151 | 0.00064 | -18.85 | 0.004 | -0.00035 | 12.59 |
| 0.098 | 0.00049 | -13.97 | 0.019 | -0.00074 | 26.18 |
| 0.092 | 0.00050 | -14.27 | 0.015 | -0.00069 | 24.63 |
| 0.087 | 0.00052 | -14.67 | 0.008 | -0.00052 | 18.70 |
| 0.061 | 0.00045 | -12.33 | 0.000 | 0.00003 | -0.61 |
| 0.020 | 0.00026 | -5.69 | 0.020 | 0.00084 | -28.61 |
| 0.000 | 0.00004 | 1.87 | 0.081 | 0.00172 | -59.41 |
| 0.020 | 0.00026 | -5.97 | 0.149 | 0.00248 | -85.88 |
| 0.001 | -0.00006 | 5.23 | 0.104 | 0.00216 | -74.53 |
| 0.000 | 0.00002 | 2.53 | 0.082 | 0.00205 | -70.70 |
| 0.005 | 0.00015 | -1.94 | 0.063 | 0.00199 | -68.56 |
| 0.000 | 0.00003 | 2.37 | 0.022 | 0.00127 | -43.79 |
| 0.002 | -0.00012 | 7.29 | 0.000 | -0.00003 | 1.78 |
| 0.098 | -0.00092 | 35.38 | 0.060 | -0.00244 | 85.85 |
| 0.028 | -0.00054 | 22.13 | 0.175 | -0.00482 | 168.78 |
| 0.015 | -0.00047 | 19.70 | 0.382 | -0.00847 | 295.92 |
| 0.000 | 0.00005 | 1.44 | 0.482 | -0.01172 | 409.62 |
| 0.001 | 0.00013 | -1.37 | 0.377 | -0.01138 | 397.43 |
| 0.053 | 0.00156 | -51.35 | 0.439 | -0.01517 | 529.86 |
| 0.000 | -0.00008 | 6.08 | 0.808 | -0.03042 | 1062.45 |
| 0.102 | -0.00345 | 123.67 | 0.765 | -0.02283 | 797.15 |

update for EV, CV

**tZn** **CC2**

**LN Analysis** **tZn**

**Load** **Load Data, EV=5.12 lbs/day CV=3.39**

**Load Data-based LN**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **5** | u | ln tZn Load | tZn Load |
| **SD:** | **17** | 3 | 5.1 | 170 |
| **CV:** | **3.39** | 0 | 0.37 | 1 |
| **Min:** | **0.4** | -3 | -4.40 | 0.01 |
| **Max:** | **107** | | | |
| **Median:** | **1** | | | |

| | |
|---|---|
| 5 | 5.12 |
| 3.39 | 3.39 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.835, EV=3.64lbs/day CV=2.03; max r2=0.93**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.835 | u | lnLoad | Load | | |
| slope, m | 0.782 | 3 | 4.31 | 75 | | |
| intercept, b. | -0.370 | 0 | 0.47 | 2 | | |
| N: 36 | | -3 | -3.36 | 0.03 | | |
| E[Load]: | 3.6 | Parameter Estimates | | | 0.835 | 0.835 |
| SD[Load] | ? | from LN regression | | | 3.6 | 3.64 |
| CV[Load] | 2.03 | update graph label | | | 2.0 | 2.03 |
| | | | | | max r2 | |
| | N: 36 | | | | 0.928 | |

| Date | tZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 5-Oct-91 | 0.4 | 1 | 0.0172 | -2.114 | -0.864 | 0.835 |
| 25-Jul-94 | 0.6 | 2 | 0.0448 | -1.697 | -0.541 | 0.851 |
| 16-Nov-94 | 0.6 | 3 | 0.0724 | -1.458 | -0.530 | 0.872 |
| 14-Aug-95 | 0.6 | 4 | 0.1000 | -1.282 | -0.528 | 0.887 |
| 18-Feb-94 | 0.6 | 5 | 0.1276 | -1.138 | -0.492 | 0.898 |
| 13-Sep-95 | 0.6 | 6 | 0.1552 | -1.014 | -0.487 | 0.907 |
| 30-Nov-93 | 0.6 | 7 | 0.1828 | -0.905 | -0.475 | 0.914 |
| 27-Oct-93 | 0.6 | 8 | 0.2103 | -0.805 | -0.452 | 0.920 |
| 17-Dec-93 | 0.7 | 9 | 0.2379 | -0.713 | -0.404 | 0.923 |
| 6-Oct-94 | 0.7 | 10 | 0.2655 | -0.626 | -0.398 | 0.927 |
| 13-Sep-94 | 0.7 | 11 | 0.2931 | -0.544 | -0.388 | 0.928 |
| 23-Mar-94 | 0.7 | 12 | 0.3207 | -0 466 | -0.329 | 0.928 |
| 17-Dec-93 | 0.7 | 13 | 0.3483 | -0.390 | -0.291 | 0.927 |
| 18-Feb-94 | 0.8 | 14 | 0.3759 | -0.316 | -0.270 | 0.925 |
| 20-Jan-94 | 0.8 | 15 | 0.4034 | -0.244 | -0.195 | 0.921 |
| 16-Aug-94 | 0.9 | 16 | 0.4310 | -0.174 | -0.105 | 0.917 |
| 16-Aug-94 | 1.0 | 17 | 0.4586 | -0.104 | -0.001 | 0.912 |
| 20-Jan-94 | 1.0 | 18 | 0.4862 | -0.035 | 0.008 | 0.907 |
| 13-Dec-94 | 1.2 | 19 | 0.5138 | 0.035 | 0.191 | 0.899 |
| 11-Jul-95 | 1.4 | 20 | 0.5414 | 0.104 | 0.302 | 0.893 |
| 10-Jan-95 | 1.5 | 21 | 0.5690 | 0.174 | 0.372 | 0.887 |
| 8-Mar-94 | 1.5 | 22 | 0.5966 | 0.244 | 0.392 | 0.879 |
| 25-Jul-95 | 1.6 | 23 | 0.6241 | 0.316 | 0.493 | 0.867 |
| 25-Apr-95 | 2.3 | 24 | 0.6517 | 0.390 | 0.815 | 0.853 |
| 7-Apr-94 | 2.6 | 25 | 0.6793 | 0.466 | 0.947 | 0.849 |
| 12-Apr-95 | 2.8 | 26 | 0.7069 | 0.544 | 1.039 | 0.849 |
| 23-Jun-94 | 2.9 | 27 | 0.7345 | 0.626 | 1.077 | 0.852 |
| 9-Feb-95 | 3.1 | 28 | 0.7621 | 0.713 | 1.122 | 0.851 |
| 7-Apr-94 | 3.2 | 29 | 0.7897 | 0.805 | 1.177 | 0.844 |
| 27-Jun-95 | 4.1 | 30 | 0.8172 | 0.905 | 1 402 | 0.828 |
| 8-Jun-94 | 5.5 | 31 | 0.8448 | 1.014 | 1.696 | 0.818 |
| 4-May-94 | 6.3 | 32 | 0.8724 | 1.138 | 1.836 | 0.841 |
| 22-Mar-95 | 6.8 | 33 | 0.9000 | 1.282 | 1.915 | |
| 19-May-94 | 7.1 | 34 | 0.9276 | 1.458 | 1.963 | |
| 13-Jun-95 | 11.0 | 35 | 0.9552 | 1.697 | 2.397 | |
| 18-May-91 | 106.8 | 36 | 0.9828 | 2.114 | 4.671 | |

update for EV, CV.

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | **CC2** | | 30 | 30.3 |
| **LN Analysis** | | **tZn** | | 0.9[illegible] | 0.969 |

**Concentration**

**Conc. Data, EV=30.3 ug/L CV=0.969**

| | | Data-based LN | | |
|---|---|---|---|---|
| **Avg:** | **30** | u | ln[tZn] | [tZn] |
| **SD:** | **29** | 3 | 5.5 | 250 |
| **CV:** | **0.97** | 0 | 3.08 | 22 |
| **Min:** | **14** | -3 | 0.64 | 2 |
| **Max:** | **200** | | | |
| **Median:** | **26** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV, **r2=0.723, EV=30 ug/L CV=0.564; max r2=0.82**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.723 | u | lnConc | Conc |
| slope, m | 1.903 | 3 | 4.84 | 126 |
| intercept, b | -6.209 | 0 | 3.26 | 26 |
| N | 36 | -3 | 1.69 | 5 |
| E[Conc] | 30.0 | Parameter Estimates | | |
| SD[Conc] | 17 | from LN regression | | |
| CV[Conc] | 0.56 | update graph label | | |

| | | | | | | 0.723 | 0.723 |
|---|---|---|---|---|---|---|---|
| | | | | | | 30.0 | 30 |
| | | | | | | 0.564 | 0.564 |
| | **tZn** | N: 36 | | | | | max r2 0.815 |
| **Date** | **Concentration ug/L Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | | **r2 forward** |
| updats and rank for new data | | | | | | | |
| 23-Mar-94 | 14 | 1 | 0.0172 | -2.114 | 2.639 | | 0.723 |
| 19-May-94 | 16 | 2 | 0.0448 | -1.697 | 2.773 | | 0.711 |
| 25-Jul-94 | 16 | 3 | 0.0724 | -1.458 | 2.773 | | 0.705 |
| 8-Jun-94 | 17 | 4 | 0.1000 | -1.282 | 2.833 | | 0.693 |
| 16-Nov-94 | 18 | 5 | 0.1276 | -1.138 | 2.890 | | 0.683 |
| 4-May-94 | 19 | 6 | 0.1552 | -1.014 | 2.944 | | 0.674 |
| 14-Aug-95 | 19 | 7 | 0.1828 | -0.905 | 2.944 | | 0.669 |
| 25-Apr-95 | 20 | 8 | 0.2103 | -0.805 | 2.996 | | 0.661 |
| 13-Jun-95 | 20 | 9 | 0.2379 | -0.713 | 2.996 | | 0.656 |
| 27-Oct-93 | 20.5 | 10 | 0.2655 | -0.626 | 3.020 | | 0.648 |
| 5-Oct-91 | 22 | 11 | 0.2931 | -0.544 | 3.091 | | 0.640 |
| 7-Apr-94 | 22 | 12 | 0.3207 | -0.466 | 3.091 | | 0.638 |
| 7-Apr-94 | 22 | 13 | 0.3483 | -0.390 | 3.091 | | 0.634 |
| 30-Nov-93 | 22.8 | 14 | 0.3759 | -0.316 | 3.127 | | 0.628 |
| 13-Sep-94 | 23 | 15 | 0.4034 | -0.244 | 3.135 | | 0.623 |
| 11-Jul-95 | 23 | 16 | 0.4310 | -0.174 | 3.135 | | 0.618 |
| 6-Oct-94 | 24 | 17 | 0.4586 | -0.104 | 3.178 | | 0.609 |
| 13-Sep-95 | 25 | 18 | 0.4862 | -0.035 | 3.219 | | 0.604 |
| 22-Mar-95 | 26 | 19 | 0.5138 | 0.035 | 3.258 | | 0.602 |
| 17-Dec-93 | 27.4 | 20 | 0.5414 | 0.104 | 3.311 | | 0.604 |
| 17-Dec-93 | 27.4 | 21 | 0.5690 | 0.174 | 3.311 | | 0.614 |
| 18-Feb-94 | 28 | 22 | 0.5966 | 0.244 | 3.332 | | 0.623 |
| 18-Feb-94 | 28 | 23 | 0.6241 | 0.316 | 3.332 | | 0.635 |
| 8-Mar-94 | 28 | 24 | 0.6517 | 0.390 | 3.332 | | 0.646 |
| 16-Aug-94 | 29 | 25 | 0.6793 | 0.466 | 3.367 | | 0.655 |
| 16-Aug-94 | 29 | 26 | 0.7069 | 0.544 | 3.367 | | 0.670 |
| 10-Jan-95 | 29 | 27 | 0.7345 | 0.626 | 3.367 | | 0.684 |
| 9-Feb-95 | 31 | 28 | 0.7621 | 0.713 | 3.434 | | 0.694 |
| 12-Apr-95 | 31 | 29 | 0.7897 | 0.805 | 3.434 | | 0.719 |
| 27-Jun-95 | 31 | 30 | 0.8172 | 0.905 | 3.434 | | 0.743 |
| 20-Jan-94 | 34.2 | 31 | 0.8448 | 1.014 | 3.532 | | 0.762 |
| 20-Jan-94 | 34.2 | 32 | 0.8724 | 1.138 | 3.532 | | 0.815 |
| 23-Jun-94 | 35 | 33 | 0.9000 | 1.282 | 3.555 | | |
| 13-Dec-94 | 36 | 34 | 0.9276 | 1.458 | 3.584 | | |
| 25-Jul-95 | 45 | 35 | 0.9552 | 1.697 | 3.807 | | |
| 18-May-91 | 200 | 36 | 0.9828 | 2.114 | 5.298 | | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **CC2** | | | 21 | 20.6 |
| **LN Analysis** | | **tZn** | | | 1.30 | 1.3 |
| **Discharge, Q** | | **Q Data, EV=20.6 cfs CV=1.3** | | | | |
| **Avg:** | **21** | **Q Data-based LN** | | | | |
| **SD:** | **27** | u | lnQ | Q | | |
| **CV:** | **1.30** | 3 | 5.5 | 247 | | |
| **Min:** | **4** | 0 | 2.53 | 13 | | |
| **Max:** | **102** | -3 | -0.45 | 1 | | |
| **Median:** | **7** | | | | | |

| | | | | | 0.863 | 0.863 |
|---|---|---|---|---|---|---|
| | | | | | 21.2 | 21.2 |
| **u=mLn(Q)+b:** | | | | | 1.56 | 1.56 |
| update for r2, EV, CV: | **r2=0.863, EV=21.2 cfs CV=1.56; max r2=0.96** | | | | | |
| | r2 u,lnQ | 0.863 | u | lnQ | Q | |
| | slope, m. | 0.901 | 3 | 5.77 | 319 | |
| | intercept, b | -2.195 | 0 | 2.44 | 11 | |
| | N: 36 | | -3 | -0.89 | 0.4 | |
| | E[Q] | 21.2 | Parameter Estimates | | | |
| | SD[Q] | 33 | from LN regression | | | |
| | CV[Q] | 1.56 | update graph label | | | |

| | Q | N: 36 | | | | max r2 0.963 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 5-Oct-91 | 3.56 | 1 | 0.0172 | -2.114 | 1.270 | 0.863 |
| 18-Feb-94 | 4.06 | 2 | 0.0448 | -1.697 | 1.401 | 0.884 |
| 20-Jan-94 | 4.47 | 3 | 0.0724 | -1.458 | 1.497 | 0.898 |
| 17-Dec-93 | 4.53 | 4 | 0.1000 | -1.282 | 1.511 | 0.912 |
| 13-Sep-95 | 4.57 | 5 | 0.1276 | -1.138 | 1.520 | 0.922 |
| 30-Nov-93 | 5.07 | 6 | 0.1552 | -1.014 | 1.623 | 0.929 |
| 17-Dec-93 | 5.07 | 7 | 0.1828 | -0.905 | 1.623 | 0.939 |
| 18-Feb-94 | 5.07 | 8 | 0.2103 | -0.805 | 1.623 | 0.946 |
| 6-Oct-94 | 5.2 | 9 | 0.2379 | -0.713 | 1.649 | 0.951 |
| 20-Jan-94 | 5.48 | 10 | 0.2655 | -0.626 | 1.701 | 0.955 |
| 13-Sep-94 | 5.48 | 11 | 0.2931 | -0.544 | 1.701 | 0.959 |
| 27-Oct-93 | 5.77 | 12 | 0.3207 | -0.466 | 1.753 | 0.961 |
| 16-Aug-94 | 5.77 | 13 | 0.3483 | -0.390 | 1.753 | 0.963 |
| 14-Aug-95 | 5.77 | 14 | 0.3759 | -0.316 | 1.753 | 0.963 |
| 16-Nov-94 | 6.08 | 15 | 0.4034 | -0.244 | 1.805 | 0.961 |
| 13-Dec-94 | 6.25 | 16 | 0.4310 | -0.174 | 1.833 | 0.959 |
| 16-Aug-94 | 6.4 | 17 | 0.4586 | -0.104 | 1.856 | 0.955 |
| 25-Jul-94 | 6.76 | 18 | 0.4862 | -0.035 | 1.911 | 0.950 |
| 25-Jul-95 | 6.76 | 19 | 0.5138 | 0.035 | 1.911 | 0.945 |
| 10-Jan-95 | 9.3 | 20 | 0.5414 | 0.104 | 2.230 | 0.941 |
| 23-Mar-94 | 9.55 | 21 | 0.5690 | 0.174 | 2.257 | 0.934 |
| 8-Mar-94 | 9.82 | 22 | 0.5966 | 0.244 | 2.284 | 0.926 |
| 11-Jul-95 | 10.93 | 23 | 0.6241 | 0.316 | 2.392 | 0.919 |
| 23-Jun-94 | 15.59 | 24 | 0.6517 | 0.390 | 2.747 | 0.913 |
| 12-Apr-95 | 16.94 | 25 | 0.6793 | 0.466 | 2.830 | 0.900 |
| 9-Feb-95 | 18.41 | 26 | 0.7069 | 0.544 | 2.913 | 0.883 |
| 25-Apr-95 | 21 | 27 | 0.7345 | 0.626 | 3.045 | 0.862 |
| 7-Apr-94 | 21.77 | 28 | 0.7621 | 0.713 | 3.081 | 0.835 |
| 27-Jun-95 | 24.36 | 29 | 0.7897 | 0.805 | 3.193 | 0.801 |
| 7-Apr-94 | 27.41 | 30 | 0.8172 | 0.905 | 3.311 | 0.769 |
| 22-Mar-95 | 48.52 | 31 | 0.8448 | 1.014 | 3.882 | 0.864 |
| 8-Jun-94 | 59.6 | 32 | 0.8724 | 1.138 | 4.088 | 0.826 |
| 4-May-94 | 61.38 | 33 | 0.9000 | 1.282 | 4.117 | |
| 19-May-94 | 82.71 | 34 | 0.9276 | 1.458 | 4.415 | |
| 18-May-91 | 99.3 | 35 | 0.9552 | 1.697 | 4.598 | |
| 13-Jun-95 | 102.19 | 36 | 0.9828 | 2.114 | 4.627 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny | Candidate x-axis positions | |
|---|---|---|---|
| | secondary y-axis | x-axis position | |
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| Station: | CC2 | Date: 27-Jun-00 |
| Chemical: | tPb | Analyst: J.Johnston |
| Notes: | Template and Example Lognormal Analysis | |
| Input Discharge and Concentration Data below (in red) | | |

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| Avg: | 34,518 | 21 | 7 | 1 | | 0.00 | 0.00 | 0.00 |
| SD: | 330 | 27 | 3 | 1 | | 1.00 | 1.00 | 1.00 |
| CV: | 0.01 | 1.30 | 0.39 | 1.40 | | | | |
| Min: | 33,376 | 4 | 2 | 0.04 | | -0.64 | -1.79 | -0.69 |
| Max: | 34,955 | 102 | 11 | 4 | | 3.06 | 1.76 | 2.43 |
| Median: | 34,524 | 7 | 6 | 0.3 | | -0.52 | -0.22 | -0.49 |

| tPb | CC2 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| Conc. = mQ+b (r2=0.000 | update r2 | | 0.00 | 0.000326 | r2 | 0.027 | 0.000 |
| r2 Q,[COC]: | 0.0003 | [tPb] | Q | | m: | -0.0132 | 0.00002 |
| slope, m: | 0.001 | 7 | 3.6 | | b: | 477 | 1.83 |
| intercept, b: | 6.5 | 7 | 20.6 | | | | |
| N: | 11 | 7 | 102 | | | | |
| LnConc. = mLn{Q}+b (r2=0.00952) | update r2 | | 0.01 | 0.00952 | | | |
| nQ,ln[COC]: | 0.01 | ln[tPb] | ln Q | [tPb] | Q | | |
| slope, m: | 0.04 | 1.75 | 1.27 | 6 | 4 | | |
| intercept, b: | 1.70 | 1.81 | 3.02 | 6 | 21 | | |
| N: | 11 | 1.87 | 4.63 | 6 | 102 | | |

N= 36

| | Sampling Date | Q Discharge | tPb Concentration | tPb Load | Ln Q | Ln tPb Conc. | Ln tPb Load | for graph tPb 0 CC2 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| DATA: | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 18-May-91 | 99.3 | 8 | 4.27 | 4.60 | 2.08 | 1.45 | 2.95 | 0.57 | 2.43 |
| MFG | 5-Oct-91 | 3.56 | 2 | 0.04 | 1.27 | 0.69 | -3.26 | -0.64 | -1.79 | -0.69 |
| *IDEQ* | *27-Oct-93* | *5.77* | | | 1.75 | | | -0.55 | | |
| IDEQ | 30-Nov-93 | 5.07 | 7 | 0.19 | 1.62 | 1.95 | -1.66 | -0.58 | 0.18 | -0.58 |
| IDEQ | 17-Dec-93 | 5.07 | 11 | 0.30 | 1.62 | 2.40 | -1.20 | -0.58 | 1.76 | -0.49 |
| IDEQ | 17-Dec-93 | 4.53 | 11 | 0.27 | 1.51 | 2.40 | -1.32 | -0.60 | 1.76 | -0.52 |
| *IDEQ* | *20-Jan-94* | *5.48* | | | 1.70 | | | -0.57 | | |
| *IDEQ* | *20-Jan-94* | *4.47* | | | 1.50 | | | -0.60 | | |
| *IDEQ* | *18-Feb-94* | *5.07* | | | 1.62 | | | -0.58 | | |
| *IDEQ* | *18-Feb-94* | *4.06* | | | 1.40 | | | -0.62 | | |
| *IDEQ* | *8-Mar-94* | *9.82* | | | 2.28 | | | -0.40 | | |
| *IDEQ* | *23-Mar-94* | *9.55* | | | 2.26 | | | -0.41 | | |
| IDEQ | 7-Apr-94 | 21.77 | 5 | 0.59 | 3.08 | 1.61 | -0.54 | 0.04 | -0.61 | -0.28 |
| IDEQ | 7-Apr-94 | 27.41 | 5 | 0.74 | 3.31 | 1.61 | -0.30 | 0.26 | -0.61 | -0.17 |
| *IDEQ* | *4-May-94* | *61.38* | | | 4.12 | | | 1.53 | | |
| *IDEQ* | *19-May-94* | *82.71* | | | 4.42 | | | 2.33 | | |
| *IDEQ* | *8-Jun-94* | *59.6* | | | 4.09 | | | 1.46 | | |
| *IDEQ* | *23-Jun-94* | *15.59* | | | 2.75 | | | -0.19 | | |
| *IDEQ* | *25-Jul-94* | *6.76* | | | 1.91 | | | -0.52 | | |
| *IDEQ* | *16-Aug-94* | *5.77* | | | 1.75 | | | -0.55 | | |
| *IDEQ* | *16-Aug-94* | *6.4* | | | 1.86 | | | -0.53 | | |
| *IDEQ* | *13-Sep-94* | *5.48* | | | 1.70 | | | -0.57 | | |
| IDEQ | 6-Oct-94 | 5.2 | 6 | 0.17 | 1.65 | 1.79 | -1.78 | -0.58 | -0.22 | -0.59 |
| IDEQ | 16-Nov-94 | 6.08 | 5 | 0.16 | 1.81 | 1.61 | -1.81 | -0.54 | -0.61 | -0.60 |
| *IDEQ* | *13-Dec-94* | *6.25* | | | 1.83 | | | -0.54 | | |
| *IDEQ* | *10-Jan-95* | *9.3* | | | 2.23 | | | -0.42 | | |
| *IDEQ* | *9-Feb-95* | *18.41* | | | 2.91 | | | -0.08 | | |
| *IDEQ* | *22-Mar-95* | *48.52* | | | 3.88 | | | 1.05 | | |
| *IDEQ* | *12-Apr-95* | *16.94* | | | 2.83 | | | -0.14 | | |
| IDEQ | 25-Apr-95 | 21 | 6 | 0.68 | 3.04 | 1.79 | -0.39 | 0.02 | -0.22 | -0.22 |
| IDEQ | 13-Jun-95 | 102.19 | 6 | 3.30 | 4.63 | 1.79 | 1.19 | 3.06 | -0.22 | 1.71 |
| *IDEQ* | *27-Jun-95* | *24.36* | | | 3.19 | | | 0.14 | | |
| *IDEQ* | *11-Jul-95* | *10.93* | | | 2.39 | | | -0.36 | | |
| *IDEQ* | *25-Jul-95* | *6.76* | | | 1.91 | | | -0.52 | | |
| *IDEQ* | *14-Aug-95* | *5.77* | | | 1.75 | | | -0.55 | | |
| *IDEQ* | *13-Sep-95* | *4.57* | | | 1.52 | | | -0.60 | | |

tPb

Concentration over time analysis

| | tPb | CC2 | | r2 | Slope, m | Concentration over time |
|---|---|---|---|---|---|---|
| | LnConc.=mTime+b All data r2, m: | | | 0.052 | 0.00022 | |
| | Time | Ln[COC] | [COC] | | | |
| first | 18-May-91 | 1.58 | 5 | | | |
| mid | 9-Jul-94 | 1.84 | 6 | | | |
| last | 13-Sep-95 | 1.93 | 7 | | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 | |
| | 0-Jan-00 | 0.00 | 1 | | | |
| | 13-Sep-95 | 0.00 | 1 | | | |

Load over time analysis

| | tPb | CC2 | | Load over time | | |
|---|---|---|---|---|---|---|
| | LnLoad=mTime+b All data r2, m: | | | 0.009 | 0.00027 | update fo |
| | Time | LnLoad | Load | | | |
| first | 18-May-91 | -1.13 | 0.3 | | | |
| mid | 9-Jul-94 | -0.82 | 0 4 | | | |
| last | 13-Sep-95 | -0.71 | 0 5 | | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 | |
| | 0-Jan-00 | 0.00 | 1 | | | |
| | 13-Sep-95 | 0.00 | 1 | | | |

| | max r2 | 0.950 | | max r2 | 0.896 | |
|---|---|---|---|---|---|---|
| | Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | | |
| | r2 | slope | intercept | r2 | slope | intercept |
| | only on >4 data points | delete last 4 rows | | only on >4 data points: | delete last 4 rows | |
| | 0.052 | 0.00022 | -5.79 | 0.009 | 0.00027 | -10.15 |
| | 0.246 | 0.00063 | -19.76 | 0.570 | 0.00237 | -82.63 |
| | 0.257 | -0.00073 | 27.26 | 0.277 | 0.00237 | -82.72 |
| | 0.257 | -0.00073 | 27.26 | 0.277 | 0.00237 | -82.72 |
| | 0.271 | -0.00082 | 30.08 | 0.216 | 0.00217 | -75.62 |
| | 0.117 | -0.00046 | 17 85 | 0.192 | 0.00225 | -78 42 |
| | 0.594 | 0.00042 | -12 84 | 0.135 | 0.00224 | -78.13 |
| | 0.594 | 0 00042 | -12.84 | 0.135 | 0.00224 | -78 13 |
| | 0.594 | 0.00042 | -12.84 | 0.135 | 0.00224 | -78.13 |
| | 0.594 | 0.00042 | -12.84 | 0.135 | 0.00224 | -78.13 |
| | 0.594 | 0.00042 | -12.84 | 0 135 | 0.00224 | -78.13 |
| | 0.594 | 0.00042 | -12.84 | 0.135 | 0.00224 | -78.13 |
| | 0.594 | 0.00042 | -12.84 | 0.135 | 0.00224 | -78.13 |
| | 0.494 | 0.00041 | -12.42 | 0.210 | 0.00332 | -115.74 |
| | 0.203 | 0.00034 | -10.04 | 0.892 | 0.01110 | -386.35 |
| | 0.203 | 0.00034 | -10.04 | 0.892 | 0 01110 | -386.35 |
| | 0 203 | 0.00034 | -10.04 | 0.892 | 0.01110 | -386.35 |
| | 0.203 | 0 00034 | -10 04 | 0.892 | 0.01110 | -386.35 |
| | 0.203 | 0 00034 | -10 04 | 0 892 | 0 01110 | -386.35 |
| | 0 203 | 0 00034 | -10.04 | 0.892 | 0.01110 | -386.35 |
| | 0.203 | 0.00034 | -10 04 | 0.892 | 0.01110 | -386.35 |
| | 0.203 | 0 00034 | -10 04 | 0.892 | 0 01110 | -386.35 |
| | 0.203 | 0.00034 | -10 04 | 0.892 | 0 01110 | -386.35 |
| | 0 950 | 0.00094 | -30.91 | 0.896 | 0.01301 | -452.94 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tPb** | | **CC2** | | |
| **LN Analysis** | | **tPb** | | |
| **Load** | | **Load Data, EV=0.973 lbs/day CV=1.4** | | |
| **Avg:** | **1.0** | **Load Data-based LN** | | |
| **SD:** | **1.4** | u | ln tPb Load | tPb Load |
| **CV:** | **1.40** | 3 | 2.6 | 13 |
| **Min:** | **0.0** | 0 | -0.57 | 1 |
| **Max:** | **4** | -3 | -3.69 | 0.02 |
| **Median:** | **0.3** | | | |
| | | 1 | 0.973 | |
| | | 1.40 | 1.4 | |

**u=mLn{Load}+ b:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| or r2, EV, CV | **r2=0.944, EV=0.434lbs/day CV=4.08; max r2=0.94** | | | | | | upda |
| r2 u,lnLoad: | 0.944 | u | lnLoad | Load | | | |
| slope, m: | 0.590 | 3 | 2.81 | 17 | | | |
| intercept, b | 1.339 | 0 | -2.27 | 0.1 | | | |
| N: | 11 | -3 | -7.35 | 0.001 | | | |
| E[Load]: | 0.4 | Parameter Estimates | | | | 0.944 | 0.944 |
| SD[Load] | 2 | from LN regression | | | | 0.4 | 0.434 |
| CV[Load]: | 4.08 | update graph label | | | | 4.1 | 4.08 |
| | | | | | | max r2 | |
| | **tPb** | N: 36 | | | | 0.944 | |
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** | |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward | |
| | **Ranked** | | | | | | |
| update and rank for new data | | | | | | | |
| *18-Feb-94* | | 1 | 0.0172 | -2.114 | | | |
| *20-Jan-94* | | 2 | 0.0448 | -1.697 | | | |
| *13-Sep-95* | | 3 | 0.0724 | -1.458 | | | |
| *18-Feb-94* | | 4 | 0.1000 | -1.282 | | | |
| *20-Jan-94* | | 5 | 0.1276 | -1.138 | | | |
| *13-Sep-94* | | 6 | 0.1552 | -1.014 | | | |
| 5-Oct-91 | **0.04** | 7 | 0.1828 | -0.905 | -3.262 | 0.944 | |
| *27-Oct-93* | | 8 | 0.2103 | -0.805 | | | |
| *16-Aug-94* | | 9 | 0.2379 | -0.713 | | | |
| *14-Aug-95* | | 10 | 0.2655 | -0.626 | | | |
| *13-Dec-94* | | 11 | 0.2931 | -0.544 | | | |
| *16-Aug-94* | | 12 | 0.3207 | -0.466 | | | |
| *25-Jul-94* | | 13 | 0.3483 | -0.390 | | | |
| *25-Jul-95* | | 14 | 0.3759 | -0.316 | | | |
| *10-Jan-95* | | 15 | 0.4034 | -0.244 | | | |
| *23-Mar-94* | | 16 | 0.4310 | -0.174 | | | |
| *8-Mar-94* | | 17 | 0.4586 | -0.104 | | | |
| *11-Jul-95* | | 18 | 0.4862 | -0.035 | | | |
| *23-Jun-94* | | 19 | 0.5138 | 0.035 | | | |
| *12-Apr-95* | | 20 | 0.5414 | 0.104 | | | |
| *9-Feb-95* | | 21 | 0.5690 | 0.174 | | | |
| 16-Nov-94 | **0.16** | 22 | 0.5966 | 0.244 | -1.811 | 0.940 | |
| *27-Jun-95* | | 23 | 0.6241 | 0.316 | | | |
| 6-Oct-94 | **0.17** | 24 | 0.6517 | 0.390 | -1.785 | 0.936 | |
| 30-Nov-93 | **0.19** | 25 | 0.6793 | 0.466 | -1.656 | 0.923 | |
| 17-Dec-93 | **0.27** | 26 | 0.7069 | 0.544 | -1.316 | 0.901 | |
| 17-Dec-93 | **0.30** | 27 | 0.7345 | 0.626 | -1.204 | 0.882 | |
| *22-Mar-95* | | 28 | 0.7621 | 0.713 | | | |
| *8-Jun-94* | | 29 | 0.7897 | 0.805 | | | |
| *4-May-94* | | 30 | 0.8172 | 0.905 | | | |
| *19-May-94* | | 31 | 0.8448 | 1.014 | | | |
| 7-Apr-94 | **0.59** | 32 | 0.8724 | 1.138 | -0.535 | 0.863 | |
| 25-Apr-95 | **0.68** | 33 | 0.9000 | 1.282 | -0.389 | | |
| 7-Apr-94 | **0.74** | 34 | 0.9276 | 1.458 | -0.305 | | |
| 13-Jun-95 | **3.30** | 35 | 0.9552 | 1.697 | 1.194 | | |
| 18-May-91 | **4.27** | 36 | 0.9828 | 2.114 | 1.453 | | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| tPb | | CC2 | | 7 | 6.55 | |
| LN Analysis | | tPb | | 0.39 | 0.387 | |
| Concentration | | Conc. Data, EV=6.55 ug/L CV=0.387 | | | | |
| Avg: | 7 | Data-based LN | | | | |
| SD: | 3 | u | ln[tPb] | [tPb] | | |
| CV: | 0.39 | 3 | 2.9 | 19 | | |
| Min: | 2 | 0 | 1.81 | 6 | | |
| Max: | 11 | -3 | 0.69 | 2 | | |
| Median: | 6 | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | 0.734 | 0.734 | |
| | u=mLn(Conc.)+b: | | | | 3.2 | 3.21 | |
| ate for r2, EV, CV | r2=0.734, EV=3.21 ug/L CV=1.57; max r2=0.93 | | | | 1.567 | 1.57 | update f |
| | r2 u,lnConc | 0.734 | u | lnConc | Conc | | |
| | slope, m | 0.898 | 3 | 3.89 | 49 | | |
| | intercept, b | -0.492 | 0 | 0.55 | 2 | | |
| | N | 11 | -3 | -2.79 | 0.1 | | |
| | E[Conc] | 3.2 | Parameter Estimates | | | | |
| | SD[Conc] | 5 | from LN regression | | | | |
| | CV[Conc] | 1.57 | update graph label | | | | |

| | tPb | | N: 36 | | | max r2 0.933 | |
|---|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 | |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward | |
| update and rank for new data | | | | | | | |
| *27-Oct-93* | | 1 | 0.0172 | -2.114 | | | |
| *20-Jan-94* | | 2 | 0.0448 | -1.697 | | | |
| *20-Jan-94* | | 3 | 0.0724 | -1.458 | | | |
| *18-Feb-94* | | 4 | 0.1000 | -1.282 | | | |
| *18-Feb-94* | | 5 | 0.1276 | -1.138 | | | |
| *8-Mar-94* | | 6 | 0.1552 | -1.014 | | | |
| *23-Mar-94* | | 7 | 0.1828 | -0.905 | | | |
| *4-May-94* | | 8 | 0.2103 | -0.805 | | | |
| *19-May-94* | | 9 | 0.2379 | -0.713 | | | |
| *8-Jun-94* | | 10 | 0.2655 | -0.626 | | | |
| *23-Jun-94* | | 11 | 0.2931 | -0.544 | | | |
| *25-Jul-94* | | 12 | 0.3207 | -0.466 | | | |
| *16-Aug-94* | | 13 | 0.3483 | -0.390 | | | |
| *16-Aug-94* | | 14 | 0.3759 | -0.316 | | | |
| *13-Sep-94* | | 15 | 0.4034 | -0.244 | | | |
| *13-Dec-94* | | 16 | 0.4310 | -0.174 | | | |
| *10-Jan-95* | | 17 | 0.4586 | -0.104 | | | |
| *9-Feb-95* | | 18 | 0.4862 | -0.035 | | | |
| *22-Mar-95* | | 19 | 0.5138 | 0.035 | | | |
| *12-Apr-95* | | 20 | 0.5414 | 0.104 | | | |
| *27-Jun-95* | | 21 | 0.5690 | 0.174 | | | |
| *11-Jul-95* | | 22 | 0.5966 | 0.244 | | | |
| *25-Jul-95* | | 23 | 0.6241 | 0.316 | | | |
| *14-Aug-95* | | 24 | 0.6517 | 0.390 | | | |
| *13-Sep-95* | | 25 | 0.6793 | 0.466 | | | |
| 5-Oct-91 | 2 | 26 | 0.7069 | 0.544 | 0.693 | 0.734 | |
| 7-Apr-94 | 5 | 27 | 0.7345 | 0.626 | 1.609 | 0.933 | |
| 7-Apr-94 | 5 | 28 | 0.7621 | 0.713 | 1.609 | 0.928 | |
| 16-Nov-94 | 5 | 29 | 0.7897 | 0.805 | 1.609 | 0.914 | |
| 6-Oct-94 | 6 | 30 | 0.8172 | 0.905 | 1.792 | 0.892 | |
| 25-Apr-95 | 6 | 31 | 0.8448 | 1.014 | 1.792 | 0.884 | |
| 13-Jun-95 | 6 | 32 | 0.8724 | 1.138 | 1.792 | 0.848 | |
| 30-Nov-93 | 7 | 33 | 0.9000 | 1.282 | 1.946 | | |
| 18-May-91 | 8 | 34 | 0.9276 | 1.458 | 2.079 | | |
| 17-Dec-93 | 11 | 35 | 0.9552 | 1.697 | 2.398 | | |
| 17-Dec-93 | 11 | 36 | 0.9828 | 2.114 | 2.398 | | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **CC2** | | | 21 | 20.6 |
| **LN Analysis** | | **tPb** | | | 1.30 | 1.3 |
| **Discharge, Q** | | **Q Data, EV=20.6 cfs CV=1.3** | | | | |
| **Avg:** | **21** | **Q Data-based LN** | | | | |
| **SD:** | **27** | u | lnQ | Q | | |
| **CV:** | **1.30** | 3 | 5.5 | 247 | | |
| **Min:** | **4** | 0 | 2.53 | 13 | | |
| **Max:** | **102** | -3 | -0.45 | 1 | | |
| **Median:** | **7** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.863 | 0.863 |
| | | | | | 21.2 | 21.2 |
| **u=mLn{Q}+b:** | | | | | 1.56 | 1.56 |
| for r2, EV, CV: | **r2=0.863, EV=21.2 cfs CV=1.56; max r2=0.96** | | | | | |
| | r2 u,lnQ | 0.863 | u | lnQ | Q | |
| | slope, m: | 0.901 | 3 | 5 77 | 319 | |
| | intercept, b. | -2.195 | 0 | 2.44 | 11 | |
| | N. | 36 | -3 | -0.89 | 0.4 | |
| | E[Q]: | 21.2 | Parameter Estimates | | | |
| | SD[Q]: | 33 | from LN regression | | | |
| | CV[Q]. | 1.56 | update graph label | | | |

| | **Q** | N. 36 | | | | max r2 0.963 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 5-Oct-91 | 3.56 | 1 | 0.0172 | -2.114 | 1.270 | 0.863 |
| *18-Feb-94* | *4.06* | 2 | 0.0448 | -1.697 | 1 401 | 0.884 |
| *20-Jan-94* | *4.47* | 3 | 0.0724 | -1.458 | 1 497 | 0.898 |
| 17-Dec-93 | 4.53 | 4 | 0.1000 | -1.282 | 1.511 | 0.912 |
| *13-Sep-95* | *4.57* | 5 | 0.1276 | -1.138 | 1.520 | 0.922 |
| 30-Nov-93 | 5.07 | 6 | 0.1552 | -1.014 | 1.623 | 0.929 |
| 17-Dec-93 | 5.07 | 7 | 0.1828 | -0.905 | 1.623 | 0.939 |
| *18-Feb-94* | *5.07* | 8 | 0.2103 | -0.805 | 1.623 | 0.946 |
| 6-Oct-94 | 5.2 | 9 | 0.2379 | -0.713 | 1.649 | 0.951 |
| *20-Jan-94* | *5.48* | 10 | 0.2655 | -0.626 | 1.701 | 0.955 |
| *13-Sep-94* | *5.48* | 11 | 0.2931 | -0.544 | 1.701 | 0.959 |
| *27-Oct-93* | *5.77* | 12 | 0.3207 | -0.466 | 1.753 | 0 961 |
| *16-Aug-94* | *5.77* | 13 | 0.3483 | -0.390 | 1.753 | 0.963 |
| *14-Aug-95* | *5.77* | 14 | 0.3759 | -0.316 | 1.753 | 0.963 |
| 16-Nov-94 | 6.08 | 15 | 0.4034 | -0.244 | 1.805 | 0.961 |
| *13-Dec-94* | *6.25* | 16 | 0.4310 | -0.174 | 1.833 | 0.959 |
| *16-Aug-94* | *6.4* | 17 | 0 4586 | -0.104 | 1.856 | 0.955 |
| *25-Jul-94* | *6.76* | 18 | 0.4862 | -0.035 | 1.911 | 0.950 |
| *25-Jul-95* | *6.76* | 19 | 0.5138 | 0.035 | 1.911 | 0.945 |
| *10-Jan-95* | *9.3* | 20 | 0.5414 | 0.104 | 2.230 | 0.941 |
| *23-Mar-94* | *9.55* | 21 | 0.5690 | 0.174 | 2.257 | 0.934 |
| *8-Mar-94* | *9.82* | 22 | 0.5966 | 0.244 | 2.284 | 0.926 |
| *11-Jul-95* | *10.93* | 23 | 0.6241 | 0.316 | 2.392 | 0.919 |
| *23-Jun-94* | *15.59* | 24 | 0.6517 | 0.390 | 2.747 | 0.913 |
| *12-Apr-95* | *16.94* | 25 | 0.6793 | 0.466 | 2.830 | 0.900 |
| *9-Feb-95* | *18.41* | 26 | 0 7069 | 0.544 | 2.913 | 0.883 |
| 25-Apr-95 | 21 | 27 | 0.7345 | 0.626 | 3.045 | 0.862 |
| 7-Apr-94 | 21 77 | 28 | 0.7621 | 0.713 | 3.081 | 0 835 |
| *27-Jun-95* | *24.36* | 29 | 0.7897 | 0.805 | 3.193 | 0.801 |
| 7-Apr-94 | 27 41 | 30 | 0 8172 | 0.905 | 3.311 | 0.769 |
| *22-Mar-95* | *48.52* | 31 | 0.8448 | 1.014 | 3.882 | 0.864 |
| *8-Jun-94* | *59.6* | 32 | 0.8724 | 1.138 | 4.088 | 0.826 |
| *4-May-94* | *61.38* | 33 | 0.9000 | 1.282 | 4.117 | |
| *19-May-94* | *82.71* | 34 | 0.9276 | 1.458 | 4.415 | |
| 18-May-91 | 99.3 | 35 | 0.9552 | 1.697 | 4.598 | |
| 13-Jun-95 | 102.19 | 36 | 0.9828 | 2.114 | 4.627 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC276 **Date:** 25-May-00

**Chemical:** dCd **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,720 | 20 | 1 | 0.1 | 0.00 | 0.00 | 0.00 |
| **SD:** | 636 | 21 | 0.1 | 0.04 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.06 | 0.21 | 0.67 | | | |
| **Min:** | 33,376 | 6 | 0.4 | 0.0 | -0.65 | -2.09 | -0.91 |
| **Max:** | 36,402 | 103 | 1.0 | 0.2 | 3.95 | 2.13 | 3.85 |
| **Median:** | 34,562 | 12 | 0.7 | 0.0 | -0.37 | 0.06 | -0.46 |

**dCd CC276 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.24)** update r2

| | | | |
|---|---|---|---|
| r2 Q,[COC]: | 0.24 | [dCd] | Q |
| slope, m: | -0.004 | 1 | 6.3 |
| intercept, b: | 0.8 | 1 | 19.9 |
| N: 37 | | 0 | 103 |

**LnConc. = mLn(Q)+b (r2=0.26)** update r2

| | | | | | |
|---|---|---|---|---|---|
| nQ,ln[COC]: | 0.26 | ln[dCd] | ln Q | [dCd] | Q |
| slope, m: | -0.18 | -0.25 | 1.84 | 1 | 6 |
| intercept, b: | 0.08 | -0.45 | 2.99 | 1 | 20 |
| N: 37 | | -0.75 | 4.63 | 0.5 | 103 |

| **Q = mTime +b** | | **LnQ = mTime +b** |
|---|---|---|
| r2: | 0.006 | 0.016 |
| m: | 0.0027 | 0.00014 |
| b: | -73 | -2.10 |

for graph: dCd = 0

**N= 41**

| update for new data | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | CC276 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 18-May-91 | 101 | 0.4 | 0.22 | 4.62 | -0.92 | -1.53 | 3.85 | -2.02 | 3.85 |
| MFG | 5-Oct-91 | 6.48 | 0.9 | 0.03 | 1.87 | -0.11 | -3.46 | -0.64 | 1.44 | -0.72 |
| IDEQ | 27-Oct-93 | 9.12 | 0.8 | 0.04 | 2.21 | -0.22 | -3.24 | -0.51 | 0.75 | -0.53 |
| IDEQ | 30-Nov-93 | 8.15 | 0.7 | 0.03 | 2.10 | -0.36 | -3.48 | -0.56 | 0.06 | -0.74 |
| IDEQ | 17-Dec-93 | 8.15 | 0.7 | 0.03 | 2.10 | -0.36 | -3.48 | -0.56 | 0.06 | -0.74 |
| IDEQ | 17-Dec-93 | 8.06 | 0.7 | 0.03 | 2.09 | -0.36 | -3.49 | -0.56 | 0.06 | -0.75 |
| IDEQ | 20-Jan-94 | 9.12 | 0.8 | 0.04 | 2.21 | -0.22 | -3.24 | -0.51 | 0.75 | -0.53 |
| IDEQ | 20-Jan-94 | 8.8 | 0.8 | 0.04 | 2.17 | -0.22 | -3.27 | -0.53 | 0.75 | -0.56 |
| IDEQ | 18-Feb-94 | 8.46 | 0.8 | 0.04 | 2.14 | -0.22 | -3.31 | -0.54 | 0.75 | -0.60 |
| IDEQ | 18-Feb-94 | 7.9 | 0.8 | 0.03 | 2.07 | -0.22 | -3.38 | -0.57 | 0.75 | -0.66 |
| IDEQ | 8-Mar-94 | 12.85 | 0.8 | 0.06 | 2.55 | -0.22 | -2.89 | -0.33 | 0.75 | -0.14 |
| IDEQ | 24-Mar-94 | 14 43 | 1 | 0.08 | 2.67 | 0.00 | -2.56 | -0.26 | 2.13 | 0.41 |
| IDEQ | 7-Apr-94 | 18.22 | 0.6 | 0.06 | 2.90 | -0.51 | -2.83 | -0.08 | -0.63 | -0.05 |
| IDEQ | 7-Apr-94 | 21.84 | 0.6 | 0.07 | 3.08 | -0.51 | -2.65 | 0.09 | -0.63 | 0.24 |
| IDEQ | 4-May-94 | 38.88 | 0.5 | 0.10 | 3.66 | -0.69 | -2.26 | 0.90 | -1.33 | 1.08 |
| IDEQ | 19-May-94 | 47.69 | 0.5 | 0.13 | 3.86 | -0.69 | -2.05 | 1.32 | -1.33 | 1.66 |
| IDEQ | 7-Jun-94 | 33.06 | 0.6 | 0.11 | 3.50 | -0.51 | -2.24 | 0.63 | -0.63 | 1.13 |
| IDEQ | 23-Jun-94 | 17.53 | 0.6 | 0.06 | 2.86 | -0.51 | -2.87 | -0.11 | -0.63 | -0.10 |
| IDEQ | 25-Jul-94 | 11.9 | 0.8 | 0.05 | 2.48 | -0.22 | -2.97 | -0.38 | 0.75 | -0.24 |
| IDEQ | 16-Aug-94 | 11.9 | 0.7 | 0.04 | 2.48 | -0.36 | -3.11 | -0.38 | 0.06 | -0.39 |
| IDEQ | 16-Aug-94 | 10.39 | 0.7 | 0.04 | 2.34 | -0.36 | -3.24 | -0.45 | 0.06 | -0.53 |
| IDEQ | 13-Sep-94 | 9.84 | 0.7 | 0.04 | 2.29 | -0.36 | -3.30 | -0.48 | 0.06 | -0.58 |
| IDEQ | 6-Oct-94 | 8.78 | 0.8 | 0.04 | 2.17 | -0.22 | -3.28 | -0.53 | 0.75 | -0.57 |
| IDEQ | 16-Nov-94 | 9.12 | 0.5 | 0.02 | 2.21 | -0.69 | -3.71 | -0.51 | -1.33 | -0.89 |
| IDEQ | 13-Dec-94 | 9.12 | 0.7 | 0.03 | 2.21 | -0.36 | -3.37 | -0.51 | 0.06 | -0.65 |
| IDEQ | 10-Jan-95 | 12.37 | 1 | 0.07 | 2.52 | 0.00 | -2.71 | -0.36 | 2.13 | 0.14 |
| IDEQ | 9-Feb-95 | 18.95 | 0.7 | 0.07 | 2.94 | -0.36 | -2.64 | -0.04 | 0.06 | 0.26 |
| IDEQ | 8-Mar-95 | 18.22 | 0.6 | 0.06 | 2.90 | -0.51 | -2.83 | -0.08 | -0.63 | -0.05 |
| IDEQ | 22-Mar-95 | 26 | 0.9 | 0.13 | 3.26 | -0.11 | -2.07 | 0.29 | 1 44 | 1.60 |
| IDEQ | 12-Apr-95 | 20.5 | 0.8 | 0.09 | 3.02 | -0.22 | -2.43 | 0.03 | 0.75 | 0.67 |
| IDEQ | 25-Apr-95 | 24.01 | 0.7 | 0.09 | 3.18 | -0.36 | -2.40 | 0.20 | 0.06 | 0.73 |
| IDEQ | 13-Jun-95 | 43.93 | 0.6 | 0.14 | 3.78 | -0.51 | -1.95 | 1.14 | -0.63 | 1.99 |
| IDEQ | 11-Jul-95 | 12.85 | 0.5 | 0.03 | 2.55 | -0.69 | -3.36 | -0.33 | -1.33 | -0.64 |
| IDEQ | 25-Jul-95 | 8.46 | 0.6 | 0.03 | 2.14 | -0.51 | -3.60 | -0.54 | -0.63 | -0.82 |
| IDEQ | 14-Aug-95 | 7.56 | 0.6 | 0.02 | 2.02 | -0.51 | -3.71 | -0.58 | -0.63 | -0.89 |
| IDEQ | 13-Sep-95 | 6.27 | 0.7 | 0.02 | 1.84 | -0.36 | -3.75 | -0.65 | 0.06 | -0.91 |
| URS | 10-Nov-97 | 20.1 | 0.39 | 0.04 | 3.00 | -0.94 | -3.17 | 0.01 | -2.09 | -0.46 |
| *URS* | *12-Nov-98* | *8.09* | | | 2.09 | | | -0.56 | | |
| *USGS* | *8-Jul-99* | *103* | | | 4.63 | | | 3.95 | | |
| *USGS* | *5-Aug-99* | *22* | | | 3.09 | | | 0.10 | | |
| *USGS* | *30-Aug-99* | *12* | | | 2.48 | | | -0.37 | | |

dCd

**Concentration over time analysis**

| dCd CC276 | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| **LnConc.=mTime+b All data r2, m:** | | | | **0.036** | **-0.00011** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 18-May-91 | -0.26 | 0.8 | | |
| mid | 16-Aug-94 | -0.39 | 0.7 | | |
| last | 30-Aug-99 | -0.60 | 0.6 | | |
| **LnConc.=mTime+b >'96 r2, m:** | | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

**Load over time analysis**

| dCd CC276 | | | | Load over time | |
|---|---|---|---|---|---|
| **LnLoad=mTime+b All data r2, m:** | | | | **0.025** | **-0.00023** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 18-May-91 | -2.70 | 0.07 | | |
| mid | 16-Aug-94 | -2.97 | 0.05 | | |
| last | 30-Aug-99 | -3.39 | 0.03 | | |
| **LnLoad=mTime+b >'96 r2, m:** | | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

| max r2 1.000 | | | max r2 1.000 | | |
|---|---|---|---|---|---|
| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.036 | -0.00011 | 3.41 | 0.025 | -0.00023 | 4.96 |
| 0.251 | -0.00031 | 10.42 | 0.008 | 0.00013 | -7.61 |
| 0.215 | -0.00034 | 11.25 | 0.000 | 0.00001 | -3.29 |
| 0.202 | -0.00033 | 11.03 | 0.000 | -0.00002 | -2.17 |
| 0.205 | -0.00034 | 11.36 | 0.002 | -0.00009 | 0.12 |
| 0.208 | -0.00035 | 11.69 | 0.008 | -0.00016 | 2.61 |
| 0.212 | -0.00036 | 12.07 | 0.017 | -0.00025 | 5.56 |
| 0.198 | -0.00035 | 11.77 | 0.025 | -0.00030 | 7.36 |
| 0.183 | -0.00034 | 11.41 | 0.036 | -0.00036 | 9.63 |
| 0.167 | -0.00033 | 10.98 | 0.050 | -0.00044 | 12.19 |
| 0.150 | -0.00031 | 10.48 | 0.074 | -0.00053 | 15.58 |
| 0.132 | -0.00030 | 9.88 | 0.078 | -0.00056 | 16.52 |
| 0.097 | -0.00024 | 7.87 | 0.068 | -0.00053 | 15.51 |
| 0.112 | -0.00026 | 8.71 | 0.068 | -0.00055 | 16.03 |
| 0.131 | -0.00029 | 9.72 | 0.061 | -0.00053 | 15.42 |
| 0.201 | -0.00036 | 12.05 | 0.041 | -0.00043 | 11.93 |
| 0.302 | -0.00044 | 14.71 | 0.017 | -0.00027 | 6.36 |
| 0.354 | -0.00048 | 16.35 | 0.004 | -0.00012 | 1.28 |
| 0.416 | -0.00053 | 18.21 | 0.002 | -0.00010 | 0.35 |
| 0.395 | -0.00053 | 17.87 | 0.002 | -0.00009 | 0.07 |
| 0.400 | -0.00054 | 18.47 | 0.003 | -0.00011 | 0.82 |
| 0.407 | -0.00056 | 19.23 | 0.006 | -0.00017 | 3.02 |
| 0.412 | -0.00059 | 19.97 | 0.013 | -0.00026 | 6.04 |
| 0.385 | -0.00057 | 19.40 | 0.023 | -0.00035 | 9.39 |
| 0.556 | -0.00067 | 23.01 | 0.063 | -0.00057 | 17.04 |
| 0.564 | -0.00069 | 23.77 | 0.102 | -0.00073 | 22.51 |
| 0.581 | -0.00061 | 20.99 | 0.095 | -0.00072 | 22.20 |
| 0.571 | -0.00062 | 21.09 | 0.083 | -0.00068 | 20.96 |
| 0.621 | -0.00066 | 22.56 | 0.081 | -0.00069 | 21.23 |
| 0.659 | -0.00058 | 19.93 | 0.043 | -0.00046 | 13.19 |
| 0.687 | -0.00052 | 17.78 | 0.018 | -0.00029 | 6.85 |
| 0.671 | -0.00049 | 16.47 | 0.000 | -0.00002 | -2.65 |
| 0.660 | -0.00049 | 16.66 | 0.579 | 0.00051 | -21.35 |
| 0.889 | -0.00058 | 19.85 | 0.923 | 0.00063 | -25.67 |
| 0.919 | -0.00063 | 21.42 | 0.993 | 0.00070 | -28.15 |
| 1.000 | -0.00074 | 25.56 | 1.000 | 0.00074 | -29.44 |

update for EV, CV:

**dCd**
**LN Analysis**
**CC276**
**dCd**

**Load**

**Load Data, EV=0.06 lbs/day CV=.67**

| | |
|---|---|
| **Avg:** | **0.06** |
| **SD:** | **0.04** |
| **CV:** | **0.67** |
| **Min:** | **0.02** |
| **Max:** | **0.22** |
| **Median:** | **0.04** |

**Load Data-based LN**

| u | ln dCd Load | dCd Load |
|---|---|---|
| -1.2 | -2.99 | 0.05 |
| 0 | -2.99 | 0.05 |
| -3 | -4.81 | 0.01 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.943, EV=0.1 lbs/day CV=0.73; max r2=0.987**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.943 | u | lnLoad | Load |
| slope, m | 1.538 | 3 | -1.02 | 0 |
| intercept, b | 4.573 | 0 | -2.97 | 0.051 |
| N: | 37 | -3 | -4.92 | 0.007 |
| E[Load]: | 0.06 | Parameter Estimates | | |
| SD[Load]: | 0.05 | from LN regression | | |
| CV[Load] | 0.73 | update graph label | | |

N: 41

max r2 0.987

| Date | dCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *12-Nov-98* | | 1 | 0.0152 | -2.166 | | |
| 13-Sep-95 | 0.02 | 2 | 0.0394 | -1.758 | -3.746 | 0.943 |
| 14-Aug-95 | **0.02** | 3 | 0.0636 | -1.525 | -3.713 | 0.949 |
| 16-Nov-94 | 0.02 | 4 | 0.0879 | -1.354 | -3.708 | 0.953 |
| 25-Jul-95 | 0.03 | 5 | 0.1121 | -1.215 | -3.601 | 0.953 |
| 17-Dec-93 | 0.03 | 6 | 0.1364 | -1.097 | -3.495 | 0.956 |
| 30-Nov-93 | 0.03 | 7 | 0.1606 | -0.992 | -3.484 | 0.963 |
| 17-Dec-93 | 0.03 | 8 | 0.1848 | -0.897 | -3.484 | 0.969 |
| 5-Oct-91 | 0.03 | 9 | 0.2091 | -0.810 | -3.462 | 0.973 |
| *30-Aug-99* | | 10 | 0.2333 | -0.728 | | |
| 18-Feb-94 | 0.03 | 11 | 0.2576 | -0.651 | -3.381 | 0.976 |
| 13-Dec-94 | 0.03 | 12 | 0.2818 | -0.577 | -3.371 | 0.980 |
| 11-Jul-95 | 0.03 | 13 | 0.3061 | -0.507 | -3.365 | 0.982 |
| 18-Feb-94 | 0.04 | 14 | 0.3303 | -0.439 | -3.313 | 0.983 |
| 13-Sep-94 | 0.04 | 15 | 0.3545 | -0.373 | -3.295 | 0.985 |
| 6-Oct-94 | 0.04 | 16 | 0.3788 | -0.309 | -3.276 | 0.987 |
| 20-Jan-94 | 0.04 | 17 | 0.4030 | -0.246 | -3.273 | 0.987 |
| 16-Aug-94 | 0.04 | 18 | 0.4273 | -0.183 | -3.241 | 0.987 |
| 27-Oct-93 | 0.04 | 19 | 0.4515 | -0.122 | -3.238 | 0.986 |
| 20-Jan-94 | 0.04 | 20 | 0.4758 | -0.061 | -3.238 | 0.985 |
| 10-Nov-97 | **0.04** | 21 | 0.5000 | 0.000 | -3.166 | 0.983 |
| 16-Aug-94 | 0.04 | 22 | 0.5242 | 0.061 | -3.105 | 0.982 |
| 25-Jul-94 | 0.05 | 23 | 0.5485 | 0.122 | -2.972 | 0.980 |
| 8-Mar-94 | 0.06 | 24 | 0.5727 | 0.183 | -2.895 | 0.978 |
| 23-Jun-94 | 0.06 | 25 | 0.5970 | 0.246 | -2.872 | 0.979 |
| 7-Apr-94 | 0.06 | 26 | 0.6212 | 0.309 | -2.833 | 0.978 |
| 8-Mar-95 | 0.06 | 27 | 0.6455 | 0.373 | -2.833 | 0.977 |
| *5-Aug-99* | | 28 | 0.6697 | 0.439 | | |
| 10-Jan-95 | 0.07 | 29 | 0.6939 | 0.507 | -2.710 | 0.972 |
| 7-Apr-94 | 0.07 | 30 | 0.7182 | 0.577 | -2.652 | 0.968 |
| 9-Feb-95 | 0.07 | 31 | 0.7424 | 0.651 | -2.640 | 0.963 |
| 24-Mar-94 | 0.08 | 32 | 0.7667 | 0.728 | -2.556 | 0.954 |
| 12-Apr-95 | 0.09 | 33 | 0.7909 | 0.810 | -2.428 | 0.941 |
| 25-Apr-95 | 0.09 | 34 | 0.8152 | 0.897 | -2.403 | 0.931 |
| 4-May-94 | 0.10 | 35 | 0.8394 | 0.992 | -2.258 | 0.907 |
| 7-Jun-94 | 0.11 | 36 | 0.8636 | 1.097 | -2.238 | 0.903 |
| 22-Mar-95 | 0.13 | 37 | 0.8879 | 1.215 | -2.072 | 0.861 |
| 19-May-94 | 0.13 | 38 | 0.9121 | 1.354 | -2.053 | |
| 13-Jun-95 | 0.14 | 39 | 0.9364 | 1.525 | -1.953 | |
| 18-May-91 | 0.22 | 40 | 0.9606 | 1.758 | -1.526 | |
| *8-Jul-99* | | 41 | 0.9848 | 2.166 | | |

update for EV, CV

dCd
LN Analysis

CC276
dCd

## Concentration

Conc. Data, EV=0.69 ug/L CV=.21

| | | Data-based LN | | |
|---|---|---|---|---|
| Avg: | 0.69 | u | ln[dCd] | [dCd] |
| SD: | 0.14 | 3 | 0.2 | 1.3 |
| CV: | 0.21 | 0 | -0.39 | 0.7 |
| Min: | 0.39 | -3 | -1.01 | 0.4 |
| Max: | 1.00 | | | |
| Median: | 0.70 | | | |

u=mLn(Conc.)+b:

update for r2, EV, CV $r^2$=0.956, EV=0.68 ug/L CV=.23; max r2=0.956

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.956 | u | lnConc | Conc |
| slope, m | 4.319 | 3 | 0.28 | 1.3 |
| intercept, b | 1.786 | 0 | -0.41 | 0.7 |
| N | 37 | -3 | -1.11 | 0.3 |
| E[Conc] | 0.68 | Parameter Estimates | | |
| SD[Conc] | 0.2 | from LN regression | | |
| CV[Conc] | 0.23 | update graph label | | |

N: 41

| Date | dCd Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.956 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 10-Nov-97 | 0.39 | 1 | 0.0152 | -2.166 | -0.942 | 0.956 |
| 18-May-91 | 0.4 | 2 | 0.0394 | -1.758 | -0.916 | 0.948 |
| 4-May-94 | 0.5 | 3 | 0.0636 | -1.525 | -0.693 | 0.951 |
| 19-May-94 | 0.5 | 4 | 0.0879 | -1.354 | -0.693 | 0.946 |
| 16-Nov-94 | 0.5 | 5 | 0.1121 | -1.215 | -0.693 | 0.939 |
| 11-Jul-95 | 0.5 | 6 | 0.1364 | -1.097 | -0.693 | 0.932 |
| *12-Nov-98* | | 7 | 0.1606 | -0.992 | | |
| *8-Jul-99* | | 8 | 0.1848 | -0.897 | | |
| *5-Aug-99* | | 9 | 0.2091 | -0.810 | | |
| *30-Aug-99* | | 10 | 0.2333 | -0.728 | | |
| 7-Apr-94 | 0.6 | 11 | 0.2576 | -0.651 | -0.511 | 0.924 |
| 7-Apr-94 | 0.6 | 12 | 0.2818 | -0.577 | -0.511 | 0.921 |
| 7-Jun-94 | 0.6 | 13 | 0.3061 | -0.507 | -0.511 | 0.915 |
| 23-Jun-94 | 0.6 | 14 | 0.3303 | -0.439 | -0.511 | 0.909 |
| 8-Mar-95 | 0.6 | 15 | 0.3545 | -0.373 | -0.511 | 0.901 |
| 13-Jun-95 | 0.6 | 16 | 0.3788 | -0.309 | -0.511 | 0.894 |
| 25-Jul-95 | 0.6 | 17 | 0.4030 | -0.246 | -0.511 | 0.888 |
| 14-Aug-95 | 0.6 | 18 | 0.4273 | -0.183 | -0.511 | 0.885 |
| 30-Nov-93 | 0.7 | 19 | 0.4515 | -0.122 | -0.357 | 0.894 |
| 17-Dec-93 | 0.7 | 20 | 0.4758 | -0.061 | -0.357 | 0.895 |
| 17-Dec-93 | 0.7 | 21 | 0.5000 | 0.000 | -0.357 | 0.895 |
| 16-Aug-94 | 0.7 | 22 | 0.5242 | 0.061 | -0.357 | 0.892 |
| 16-Aug-94 | 0.7 | 23 | 0.5485 | 0.122 | -0.357 | 0.886 |
| 13-Sep-94 | 0.7 | 24 | 0.5727 | 0.183 | -0.357 | 0.878 |
| 13-Dec-94 | 0.7 | 25 | 0.5970 | 0.246 | -0.357 | 0.866 |
| 9-Feb-95 | 0.7 | 26 | 0.6212 | 0.309 | -0.357 | 0.851 |
| 25-Apr-95 | 0.7 | 27 | 0.6455 | 0.373 | -0.357 | 0.833 |
| 13-Sep-95 | 0.7 | 28 | 0.6697 | 0.439 | -0.357 | 0.815 |
| 27-Oct-93 | 0.8 | 29 | 0.6939 | 0.507 | -0.223 | 0.809 |
| 20-Jan-94 | 0.8 | 30 | 0.7182 | 0.577 | -0.223 | 0.827 |
| 20-Jan-94 | 0.8 | 31 | 0.7424 | 0.651 | -0.223 | 0.843 |
| 18-Feb-94 | 0.8 | 32 | 0.7667 | 0.728 | -0.223 | 0.857 |
| 18-Feb-94 | 0.8 | 33 | 0.7909 | 0.810 | -0.223 | 0.867 |
| 8-Mar-94 | 0.8 | 34 | 0.8152 | 0.897 | -0.223 | 0.869 |
| 25-Jul-94 | 0.8 | 35 | 0.8394 | 0.992 | -0.223 | 0.860 |
| 6-Oct-94 | 0.8 | 36 | 0.8636 | 1.097 | -0.223 | 0.830 |
| 12-Apr-95 | 0.8 | 37 | 0.8879 | 1.215 | -0.223 | 0.765 |
| 5-Oct-91 | 0.9 | 38 | 0.9121 | 1.354 | -0.105 | |
| 22-Mar-95 | 0.9 | 39 | 0.9364 | 1.525 | -0.105 | |
| 24-Mar-94 | 1 | 40 | 0.9606 | 1.758 | 0.000 | |
| 10-Jan-95 | 1 | 41 | 0.9848 | 2.166 | 0.000 | |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| **dCd** | | **CC276** | | |
| **LN Analysis** | | **dCd** | | |
| **Discharge, Q** | | **Q Data, EV=20 cfs CV=1.06** | | |
| **Avg:** | **20** | **Q Data-based LN** | | |
| **SD:** | **21** | u | lnQ | Q |
| **CV:** | **1.06** | 3 | 5.2 | 184 |
| **Min:** | **6** | 0 | 2.61 | 14 |
| **Max:** | **103** | -3 | 0.01 | 1 |
| **Median:** | **12** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.878, EV=19.6 cfs CV=0.88; max r2=0.967**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.878 | u | lnQ | Q |
| slope, m: | 1.326 | 3 | 4.95 | 142 |
| intercept, b: | -3.565 | 0 | 2.69 | 15 |
| N: | 41 | -3 | 0.43 | 2 |
| E[Q]: | 19.6 | Parameter Estimates | | |
| SD[Q]: | 17 | from LN regression | | |
| CV[Q]: | 0.88 | update graph label | | |

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.967 r2 forward |
|---|---|---|---|---|---|---|
| | | N: 41 | | | | |
| update and rank for new data | | | | | | |
| 13-Sep-95 | 6.27 | 1 | 0.0152 | -2.166 | 1.836 | 0.878 |
| 5-Oct-91 | 6.48 | 2 | 0.0394 | -1.758 | 1.869 | 0.895 |
| 14-Aug-95 | 7.56 | 3 | 0.0636 | -1.525 | 2.023 | 0.902 |
| 18-Feb-94 | 7.9 | 4 | 0.0879 | -1.354 | 2.067 | 0.914 |
| 17-Dec-93 | 8.06 | 5 | 0.1121 | -1.215 | 2.087 | 0.925 |
| *12-Nov-98* | *8.09* | 6 | 0.1364 | -1.097 | 2.091 | 0.934 |
| 30-Nov-93 | 8.15 | 7 | 0.1606 | -0.992 | 2.098 | 0.942 |
| 17-Dec-93 | 8.15 | 8 | 0.1848 | -0.897 | 2.098 | 0.948 |
| 18-Feb-94 | 8.46 | 9 | 0.2091 | -0.810 | 2.135 | 0.953 |
| 25-Jul-95 | 8.46 | 10 | 0.2333 | -0.728 | 2.135 | 0.957 |
| 6-Oct-94 | 8.78 | 11 | 0.2576 | -0.651 | 2.172 | 0.960 |
| 20-Jan-94 | 8.8 | 12 | 0.2818 | -0.577 | 2.175 | 0.963 |
| 27-Oct-93 | 9.12 | 13 | 0.3061 | -0.507 | 2.210 | 0.965 |
| 20-Jan-94 | 9.12 | 14 | 0.3303 | -0.439 | 2.210 | 0.967 |
| 16-Nov-94 | 9.12 | 15 | 0.3545 | -0.373 | 2.210 | 0.967 |
| 13-Dec-94 | 9.12 | 16 | 0.3788 | -0.309 | 2.210 | 0.966 |
| 13-Sep-94 | 9.84 | 17 | 0.4030 | -0.246 | 2.286 | 0.964 |
| 16-Aug-94 | 10.39 | 18 | 0.4273 | -0.183 | 2.341 | 0.962 |
| 25-Jul-94 | 11.9 | 19 | 0.4515 | -0.122 | 2.477 | 0.960 |
| 16-Aug-94 | 11.9 | 20 | 0.4758 | -0.061 | 2.477 | 0.961 |
| *30-Aug-99* | *12* | 21 | 0.5000 | 0.000 | 2.485 | 0.961 |
| 10-Jan-95 | 12.37 | 22 | 0.5242 | 0.061 | 2.515 | 0.959 |
| 8-Mar-94 | 12.85 | 23 | 0.5485 | 0.122 | 2.553 | 0.956 |
| 11-Jul-95 | 12.85 | 24 | 0.5727 | 0.183 | 2.553 | 0.953 |
| 24-Mar-94 | 14.43 | 25 | 0.5970 | 0.246 | 2.669 | 0.948 |
| 23-Jun-94 | 17.53 | 26 | 0.6212 | 0.309 | 2.864 | 0.943 |
| 7-Apr-94 | 18.22 | 27 | 0.6455 | 0.373 | 2.903 | 0.946 |
| 8-Mar-95 | 18.22 | 28 | 0.6697 | 0.439 | 2.903 | 0.949 |
| 9-Feb-95 | 18.95 | 29 | 0.6939 | 0.507 | 2.942 | 0.949 |
| 10-Nov-97 | 20.1 | 30 | 0.7182 | 0.577 | 3.001 | 0.949 |
| 12-Apr-95 | 20.5 | 31 | 0.7424 | 0.651 | 3.020 | 0.948 |
| 7-Apr-94 | 21.84 | 32 | 0.7667 | 0.728 | 3.084 | 0.944 |
| *5-Aug-99* | *22* | 33 | 0.7909 | 0.810 | 3.091 | 0.938 |
| 25-Apr-95 | 24.01 | 34 | 0.8152 | 0.897 | 3.178 | 0.925 |
| 22-Mar-95 | 26 | 35 | 0.8394 | 0.992 | 3.258 | 0.906 |
| 7-Jun-94 | 33.06 | 36 | 0.8636 | 1.097 | 3.498 | 0.878 |
| 4-May-94 | 38.88 | 37 | 0.8879 | 1.215 | 3.660 | 0.836 |
| 13-Jun-95 | 43.93 | 38 | 0.9121 | 1.354 | 3.783 | |
| 19-May-94 | 47.69 | 39 | 0.9364 | 1.525 | 3.865 | |
| 18-May-91 | 101 | 40 | 0.9606 | 1.758 | 4.615 | |
| *8-Jul-99* | *103* | 41 | 0.9848 | 2.166 | 4.635 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC276 **Date:** 26-May-00
**Chemical:** dPb **Analyst:** J.Johnston
**Notes:** Template and Example Lognormal Analysis
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| Avg: | 34,720 | 20 | 4 | 0.3 | 0.00 | 0.00 | 0.00 |
| SD: | 636 | 21 | 1 | 0.2 | 1.00 | 1.00 | 1.00 |
| CV: | 0.02 | 1.06 | 0.28 | 0.7 | | | |
| Min: | 33,376 | 6 | 2 | 0.1 | -0.65 | -1.94 | -0.95 |
| Max: | 36,402 | 103 | 7 | 1.2 | 3.95 | 2.52 | 3.74 |
| Median: | 34,562 | 12 | 4 | 0.2 | -0.37 | -0.11 | -0.32 |

**dPb CC276 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.06)** update r2

| | | | |
|---|---|---|---|
| r2 Q,[COC]: | 0.06 | [dPb] | Q |
| slope, m: | -0.02 | 4 | 6.3 |
| intercept, b: | 4.5 | 4 | 19.9 |
| N: 32 | | 2 | 103 |

**LnConc. = mLn(Q)+b (r2=0.16)** update r2

| | | | | | |
|---|---|---|---|---|---|
| lnQ,ln[COC]: | 0.16 | ln[dPb] | ln Q | [dPb] | Q |
| slope, m: | -0.17 | 1.52 | 1.84 | 5 | 6 |
| intercept, b: | 1.83 | 1.33 | 2.99 | 4 | 20 |
| N: 33 | | 1.05 | 4.63 | 3 | 103 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2: | 0.006 | 0.0165 |
| m: | 0.0027 | 0.00014 |
| b: | -73 | -2.10 |

**LnQ = mTime +b**

**N= 41**

| Sampling Date | Q Discharge cfs x-axis | dPb Concentration ug/L y-axis | dPb Load lbs/day y-axis | Ln Q x-axis | Ln dPb Conc. y-axis | Ln dPb Load y-axis | dPb CC276 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | |
| **DATA:** | | | | | | | | | |
| *MFG* | *18-May-91* | *101* | | 4.62 | 1.10 | -2.26 | 3.85 | | |
| MFG | 5-Oct-91 | 6.48 | 3 0.10 | 1.87 | 1.79 | -1.22 | -0.64 | -0.99 | -0.95 |
| IDEQ | 27-Oct-93 | 9.12 | 6 0.29 | 2.21 | 1.79 | -1.22 | -0.51 | 1.64 | -0.12 |
| IDEQ | 30-Nov-93 | 8.15 | 5 0.22 | 2.10 | 1.61 | -1.52 | -0.56 | 0.77 | -0.45 |
| IDEQ | 17-Dec-93 | 8.15 | 6 0.26 | 2.10 | 1.79 | -1.34 | -0.56 | 1.64 | -0.26 |
| IDEQ | 17-Dec-93 | 8.06 | 6 0.26 | 2.09 | 1.79 | -1.35 | -0.56 | 1.64 | -0.27 |
| IDEQ | 20-Jan-94 | 9.12 | 4 0.20 | 2.21 | 1.39 | -1.63 | -0.51 | -0.11 | -0.55 |
| IDEQ | 20-Jan-94 | 8.8 | 4 0.19 | 2.17 | 1.39 | -1.66 | -0.53 | -0.11 | -0.58 |
| IDEQ | 18-Feb-94 | 8.46 | 5 0.23 | 2.14 | 1.61 | -1.48 | -0.54 | 0.77 | -0.41 |
| IDEQ | 18-Feb-94 | 7.9 | 5 0.21 | 2.07 | 1.61 | -1.55 | -0.57 | 0.77 | -0.48 |
| IDEQ | 8-Mar-94 | 12.85 | 3 0.21 | 2.55 | 1.10 | -1.57 | -0.33 | -0.99 | -0.50 |
| IDEQ | 24-Mar-94 | 14.43 | 4 0.31 | 2.67 | 1.39 | -1.17 | -0.26 | -0.11 | -0.05 |
| *IDEQ* | *7-Apr-94* | *18.22* | | 2.90 | | | -0.08 | | |
| *IDEQ* | *7-Apr-94* | *21.84* | | 3.08 | | | 0.09 | | |
| IDEQ | 4-May-94 | 38.88 | 4 0.84 | 3.66 | 1.39 | -0.18 | 0.90 | -0.11 | 2.24 |
| IDEQ | 19-May-94 | 47.69 | 3 0.77 | 3.86 | 1.10 | -0.26 | 1.32 | -0.99 | 1.95 |
| IDEQ | 7-Jun-94 | 33.06 | 3 0.53 | 3.50 | 1.10 | -0.63 | 0.63 | -0.99 | 0.92 |
| IDEQ | 23-Jun-94 | 17.53 | 4 0.38 | 2.86 | 1.39 | -0.97 | -0.11 | -0.11 | 0.24 |
| IDEQ | 25-Jul-94 | 11.9 | 7 0.45 | 2.48 | 1.95 | -0.80 | -0.38 | 2.52 | 0.55 |
| IDEQ | 16-Aug-94 | 11.9 | 5 0.32 | 2.48 | 1.61 | -1.14 | -0.38 | 0.77 | -0.01 |
| IDEQ | 16-Aug-94 | 10.39 | 5 0.28 | 2.34 | 1.61 | -1.27 | -0.45 | 0.77 | -0.19 |
| IDEQ | 13-Sep-94 | 9.84 | 4 0.21 | 2.29 | 1.39 | -1.55 | -0.48 | -0.11 | -0.48 |
| IDEQ | 6-Oct-94 | 8.78 | 5 0.24 | 2.17 | 1.61 | -1.44 | -0.53 | 0.77 | -0.38 |
| IDEQ | 16-Nov-94 | 9.12 | 3 0.15 | 2.21 | 1.10 | -1.92 | -0.51 | -0.99 | -0.76 |
| IDEQ | 13-Dec-94 | 9.12 | 3 0.15 | 2.21 | 1.10 | -1.92 | -0.51 | -0.99 | -0.76 |
| *IDEQ* | *10-Jan-95* | *12.37* | | 2.52 | | | -0.36 | | |
| *IDEQ* | *9-Feb-95* | *18.95* | | 2.94 | | | -0.04 | | |
| *IDEQ* | *8-Mar-95* | *18.22* | | 2.90 | | | -0.08 | | |
| IDEQ | 22-Mar-95 | 26 | 4 0.56 | 3.26 | 1.39 | -0.58 | 0.29 | -0.11 | 1.03 |
| IDEQ | 12-Apr-95 | 20.5 | 3 0.33 | 3.02 | 1.10 | -1.11 | 0.03 | -0.99 | 0.04 |
| IDEQ | 25-Apr-95 | 24.01 | 3 0.39 | 3.18 | 1.10 | -0.95 | 0.20 | -0.99 | 0.28 |
| IDEQ | 13-Jun-95 | 43.93 | 5 1.18 | 3.78 | 1.61 | 0.17 | 1.14 | 0.77 | 3.74 |
| IDEQ | 11-Jul-95 | 12.85 | 4 0.28 | 2.55 | 1.39 | -1.29 | -0.33 | -0.11 | -0.20 |
| IDEQ | 25-Jul-95 | 8.46 | 4 0.18 | 2.14 | 1.39 | -1.70 | -0.54 | -0.11 | -0.61 |
| IDEQ | 14-Aug-95 | 7.56 | 3 0.12 | 2.02 | 1.10 | -2.10 | -0.58 | -0.99 | -0.87 |
| IDEQ | 13-Sep-95 | 6.27 | 4 0.13 | 1.84 | 1.39 | -2.00 | -0.65 | -0.11 | -0.82 |
| URS | 10-Nov-97 | 20.1 | 1.92 0.21 | 3.00 | 0.65 | -1.57 | 0.01 | -1.94 | -0.50 |
| URS | 12-Nov-98 | 8.09 | 3.2 0.14 | 2.09 | 1.16 | -1.97 | -0.56 | -0.82 | -0.80 |
| *USGS* | *8-Jul-99* | *103* | | 4.63 | | | 3.95 | | |
| *USGS* | *5-Aug-99* | *22* | | 3.09 | | | 0.10 | | |
| *USGS* | *30-Aug-99* | *12* | | 2.48 | | | -0.37 | | |

**dPb**

**Concentration over time analysis**

| | dPb | CC276 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.180** | **-0.00025** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 18-May-91 | 1.70 | 5 | | |
| mid | 16-Aug-94 | 1.40 | 4 | | |
| last | 30-Aug-99 | 0.94 | 3 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

**Load over time analysis**

| | dPb | CC276 | | | | |
|---|---|---|---|---|---|---|
| | | | | **Load over time** | | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.002** | **-0.00005** | upd |
| | **Time** | **LnLoad** | **Load** | | | |
| first | 18-May-91 | -1.24 | 0.3 | | | |
| mid | 16-Aug-94 | -1.31 | 0.3 | | | |
| last | 30-Aug-99 | -1.40 | 0.2 | | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** | |
| | 0-Jan-00 | 0.00 | 1.00 | | | |
| | 30-Aug-99 | 0.00 | 1.00 | | | |

max r2: 1.000

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points delete last 4 rows | | |
| 0.180 | -0.00025 | 10.08 |
| 0.331 | -0.00037 | 14.35 |
| 0.288 | -0.00038 | 14.55 |
| 0.265 | -0.00036 | 13.78 |
| 0.251 | -0.00035 | 13.47 |
| 0.229 | -0.00032 | 12.57 |
| 0.203 | -0.00029 | 11.53 |
| 0.203 | -0.00030 | 11.71 |
| 0.204 | -0.00030 | 11.91 |
| 0.185 | -0.00029 | 11.33 |
| 0.163 | -0.00027 | 10.65 |
| 0.204 | -0.00030 | 11.85 |
| 0.203 | -0.00031 | 12.02 |
| 0.203 | -0.00031 | 12.02 |
| 0.203 | -0.00031 | 12.02 |
| 0.201 | -0.00031 | 12.16 |
| 0.251 | -0.00035 | 13.50 |
| 0.313 | -0.00039 | 15.00 |
| 0.318 | -0.00040 | 15.40 |
| 0.298 | -0.00034 | 13.16 |
| 0.266 | -0.00031 | 12.16 |
| 0.227 | -0.00028 | 10.90 |
| 0.209 | -0.00027 | 10.67 |
| 0.160 | -0.00022 | 8.90 |
| 0.205 | -0.00025 | 10.15 |
| 0.268 | -0.00030 | 11.71 |
| 0.268 | -0.00030 | 11.71 |
| 0.268 | -0.00030 | 11.71 |
| 0.268 | -0.00030 | 11.71 |
| 0.243 | -0.00029 | 11.24 |
| 0.306 | -0.00033 | 12.72 |
| 0.403 | -0.00038 | 14.79 |
| 0.351 | -0.00032 | 12.42 |
| 0.290 | -0.00029 | 11.29 |
| 0.183 | -0.00022 | 8.97 |
| 0.237 | -0.00031 | 12.11 |
| 1.000 | 0.00139 | -49.10 |

max r2: 1.000

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points. delete last 4 rows | | |
| 0.002 | -0.00005 | 0.51 |
| 0.045 | -0.00026 | 7.76 |
| 0.053 | -0.00032 | 9.70 |
| 0.053 | -0.00032 | 9.90 |
| 0.062 | -0.00035 | 10.95 |
| 0.065 | -0.00037 | 11.53 |
| 0.070 | -0.00039 | 12.23 |
| 0.086 | -0.00043 | 13.83 |
| 0.108 | -0.00049 | 15.79 |
| 0.123 | -0.00053 | 17.23 |
| 0.146 | -0.00059 | 19.16 |
| 0.175 | -0.00065 | 21.39 |
| 0.181 | -0.00067 | 22.25 |
| 0.181 | -0.00067 | 22.25 |
| 0.181 | -0.00067 | 22.25 |
| 0.151 | -0.00059 | 19.13 |
| 0.119 | -0.00049 | 15.85 |
| 0.095 | -0.00043 | 13.66 |
| 0.081 | -0.00040 | 12.67 |
| 0.061 | -0.00035 | 10.69 |
| 0.052 | -0.00033 | 10.00 |
| 0.049 | -0.00032 | 9.89 |
| 0.059 | -0.00036 | 11.35 |
| 0.064 | -0.00039 | 12.40 |
| 0.109 | -0.00052 | 16.77 |
| 0.184 | -0.00067 | 22.27 |
| 0.184 | -0.00067 | 22.27 |
| 0.184 | -0.00067 | 22.27 |
| 0.184 | -0.00067 | 22.27 |
| 0.146 | -0.00057 | 18.78 |
| 0.130 | -0.00055 | 17.99 |
| 0.097 | -0.00048 | 15.39 |
| 0.013 | -0.00007 | 0.58 |
| 0.055 | 0.00009 | -5.16 |
| 0.249 | 0.00020 | -8.92 |
| 0.073 | 0.00011 | -5.76 |
| 1.000 | -0.00109 | 37.31 |

update for EV, CV.

**dPb**
**LN Analysis**
**Load**

**CC276**
**dPb**
**Load Data, EV=0.32 lbs/day CV=.71**

| | | **Load Data-based LN** | | |
|---|---|---|---|---|
| **Avg:** | **0.32** | u | ln dPb Load | dPb Load |
| **SD:** | **0.2** | 3 | 0 6 | 1 79 |
| **CV:** | **0.71** | 0 | -1.34 | 0.26 |
| **Min:** | **0.1** | -3 | -3.26 | 0.04 |
| **Max:** | **1.2** | | | |
| **Median:** | **0.2** | | | |

**u=mLn(Load)+ b:**

pdate for r2, EV, CV: **$r^2$=0.978, EV=0.3 lbs/day CV=0.87; max r2=0.978** up

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.978 | u | lnLoad | Load |
| slope, m | 1.327 | 3 | 0.76 | 2 |
| intercept, b | 1.996 | 0 | -1.50 | 0.222 |
| N: | 32 | -3 | -3.76 | 0.023 |
| E[Load]: | 0.3 | Parameter Estimates | | |
| SD[Load]: | 0.3 | from LN regression | | |
| CV[Load]: | 0.87 | update graph label | | |

N: 41

| **Date** | **dPb Load lbs/day Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | max r2 0.978 **r2 forward** |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *30-Aug-99* | | 1 | 0.0152 | -2.166 | | |
| *10-Jan-95* | | 2 | 0.0394 | -1 758 | | |
| *5-Aug-99* | | 3 | 0.0636 | -1.525 | | |
| *7-Apr-94* | | 4 | 0.0879 | -1.354 | | |
| *8-Mar-95* | | 5 | 0.1121 | -1.215 | | |
| *9-Feb-95* | | 6 | 0.1364 | -1.097 | | |
| *7-Apr-94* | | 7 | 0.1606 | -0.992 | | |
| 5-Oct-91 | **0.1** | 8 | 0.1848 | -0.897 | -2.258 | 0.978 |
| 14-Aug-95 | **0.1** | 9 | 0.2091 | -0.810 | -2.104 | 0.977 |
| 13-Sep-95 | **0.1** | 10 | 0.2333 | -0.728 | -2.003 | 0.976 |
| 12-Nov-98 | **0.1** | 11 | 0.2576 | -0.651 | -1.971 | 0.974 |
| 16-Nov-94 | **0.1** | 12 | 0.2818 | -0.577 | -1.916 | 0.972 |
| 13-Dec-94 | **0.1** | 13 | 0.3061 | -0.507 | -1.916 | 0.969 |
| 25-Jul-95 | **0.2** | 14 | 0.3303 | -0.439 | -1.703 | 0.967 |
| 20-Jan-94 | **0.2** | 15 | 0.3545 | -0.373 | -1.664 | 0.967 |
| 20-Jan-94 | **0.2** | 16 | 0.3788 | -0.309 | -1.628 | 0.968 |
| 8-Mar-94 | **0.2** | 17 | 0.4030 | -0.246 | -1.573 | 0.969 |
| 10-Nov-97 | **0.2** | 18 | 0.4273 | -0.183 | -1.572 | 0.972 |
| 13-Sep-94 | **0.2** | 19 | 0.4515 | -0.122 | -1.552 | 0.973 |
| 18-Feb-94 | **0.2** | 20 | 0.4758 | -0.061 | -1.549 | 0.973 |
| 30-Nov-93 | **0.2** | 21 | 0 5000 | 0.000 | -1.518 | 0.972 |
| 18-Feb-94 | **0.2** | 22 | 0.5242 | 0.061 | -1.480 | 0.971 |
| 6-Oct-94 | **0.2** | 23 | 0.5485 | 0.122 | -1.443 | 0.969 |
| 17-Dec-93 | **0.3** | 24 | 0.5727 | 0.183 | -1.346 | 0.967 |
| 17-Dec-93 | **0.3** | 25 | 0.5970 | 0.246 | -1.335 | 0.969 |
| 11-Jul-95 | **0.3** | 26 | 0.6212 | 0.309 | -1.285 | 0.969 |
| *8-Jul-99* | | 27 | 0.6455 | 0.373 | | |
| 16-Aug-94 | **0.3** | 28 | 0.6697 | 0.439 | -1.275 | 0.970 |
| 27-Oct-93 | **0.3** | 29 | 0.6939 | 0.507 | -1.223 | 0.967 |
| 24-Mar-94 | **0.3** | 30 | 0.7182 | 0.577 | -1.169 | 0.963 |
| 16-Aug-94 | **0.3** | 31 | 0 7424 | 0.651 | -1.139 | 0.957 |
| 12-Apr-95 | **0.3** | 32 | 0.7667 | 0.728 | -1.106 | 0.950 |
| 23-Jun-94 | **0.4** | 33 | 0.7909 | 0.810 | -0.975 | 0.945 |
| 25-Apr-95 | **0.4** | 34 | 0.8152 | 0.897 | -0.948 | 0.934 |
| 25-Jul-94 | **0.4** | 35 | 0.8394 | 0.992 | -0.803 | 0.932 |
| 7-Jun-94 | **0.5** | 36 | 0.8636 | 1.097 | -0.628 | 0.925 |
| 22-Mar-95 | **0.6** | 37 | 0.8879 | 1.215 | -0.581 | 0.896 |
| 19-May-94 | **0.8** | 38 | 0.9121 | 1.354 | -0.262 | |
| *18-May-91* | | 39 | 0.9364 | 1.525 | | |
| 4-May-94 | **0.8** | 40 | 0.9606 | 1 758 | -0 178 | |
| 13-Jun-95 | **1.2** | 41 | 0.9848 | 2.166 | 0.167 | |

update for EV, CV

**dPb**
**LN Analysis**
**Concentration**

**CC276**
**dPb**
**Conc. Data, EV=4 ug/L CV=.28**

| | | Data-based LN | | |
|---|---|---|---|---|
| **Avg:** | **4** | u | ln[dPb] | [dPb] |
| **SD:** | **1** | 3 | 2.2 | 9 |
| **CV:** | **0.28** | 0 | 1.38 | 4 |
| **Min:** | **2** | -3 | 0.57 | 2 |
| **Max:** | **7** | | | |
| **Median:** | **4** | | | |

**u=mLn(Conc.)+b:**

pdate for r2, EV, CV **$r^2$=0.894, EV=3.7 ug/L CV=0.42; max r2=0.926**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0 894 | u | lnConc | Conc |
| slope, m | 2 462 | 3 | 2 45 | 12 |
| intercept, b | -3.028 | 0 | 1 23 | 3 |
| N | 32 | -3 | 0.01 | 1 0 |
| E[Conc] | 3 7 | Parameter Estimates | | |
| SD[Conc] | 2 | from LN regression | | |
| CV[Conc] | 0 42 | update graph label | | |

N 41

| Date | dPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.926 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *8-Jul-99* | | 1 | 0.0152 | -2.166 | | |
| *5-Aug-99* | | 2 | 0.0394 | -1.758 | | |
| *30-Aug-99* | | 3 | 0.0636 | -1.525 | | |
| *7-Apr-94* | | 4 | 0.0879 | -1.354 | | |
| *7-Apr-94* | | 5 | 0.1121 | -1.215 | | |
| *10-Jan-95* | | 6 | 0.1364 | -1.097 | | |
| *9-Feb-95* | | 7 | 0.1606 | -0.992 | | |
| *8-Mar-95* | | 8 | 0.1848 | -0 897 | | |
| *18-May-91* | | 9 | 0.2091 | -0.810 | | |
| 10-Nov-9" | 1 92 | 10 | 0.2333 | -0.728 | 0.652 | 0.894 |
| 5-Oct-91 | 3 | 11 | 0.2576 | -0.651 | 1 099 | 0.926 |
| 8-Mar-94 | 3 | 12 | 0.2818 | -0.577 | 1.099 | 0.924 |
| 19-May-94 | 3 | 13 | 0.3061 | -0.507 | 1.099 | 0.920 |
| 7-Jun-94 | 3 | 14 | 0.3303 | -0.439 | 1.099 | 0.915 |
| 16-Nov-94 | 3 | 15 | 0.3545 | -0.373 | 1.099 | 0.908 |
| 13-Dec-94 | 3 | 16 | 0.3788 | -0.309 | 1.099 | 0.900 |
| 12-Apr-95 | 3 | 17 | 0 4030 | -0.246 | 1.099 | 0.893 |
| 25-Apr-95 | 3 | 18 | 0.4273 | -0.183 | 1.099 | 0.886 |
| 14-Aug-95 | 3 | 19 | 0.4515 | -0.122 | 1.099 | 0.883 |
| 12-Nov-98 | 3.2 | 20 | 0.4758 | -0.061 | 1.163 | 0.892 |
| 20-Jan-94 | 4 | 21 | 0.5000 | 0.000 | 1.386 | 0.898 |
| 20-Jan-94 | 4 | 22 | 0.5242 | 0.061 | 1.386 | 0.900 |
| 24-Mar-94 | 4 | 23 | 0.5485 | 0.122 | 1.386 | 0.900 |
| 4-May-94 | 4 | 24 | 0.5727 | 0 183 | 1.386 | 0.897 |
| 23-Jun-94 | 4 | 25 | 0.5970 | 0.246 | 1.386 | 0.891 |
| 13-Sep-94 | 4 | 26 | 0.6212 | 0.309 | 1.386 | 0.881 |
| 22-Mar-95 | 4 | 27 | 0.6455 | 0.373 | 1.386 | 0.868 |
| 11-Jul-95 | 4 | 28 | 0.6697 | 0.439 | 1.386 | 0.851 |
| 25-Jul-95 | 4 | 29 | 0.6939 | 0.507 | 1.386 | 0.832 |
| 13-Sep-95 | 4 | 30 | 0 7182 | 0.577 | 1.386 | 0.819 |
| 30-Nov-93 | 5 | 31 | 0 7424 | 0.651 | 1 609 | 0.849 |
| 18-Feb-94 | 5 | 32 | 0.7667 | 0.728 | 1.609 | 0.864 |
| 18-Feb-94 | 5 | 33 | 0.7909 | 0.810 | 1.609 | 0.874 |
| 16-Aug-94 | 5 | 34 | 0.8152 | 0.897 | 1.609 | 0.877 |
| 16-Aug-94 | 5 | 35 | 0.8394 | 0.992 | 1.609 | 0.869 |
| 6-Oct-94 | 5 | 36 | 0.8636 | 1.097 | 1.609 | 0.841 |
| 13-Jun-95 | 5 | 37 | 0.8879 | 1.215 | 1.609 | 0.780 |
| 27-Oct-93 | 6 | 38 | 0 9121 | 1.354 | 1 792 | |
| 17-Dec-93 | 6 | 39 | 0.9364 | 1.525 | 1 792 | |
| 17-Dec-93 | 6 | 40 | 0.9606 | 1.758 | 1.792 | |
| 25-Jul-94 | 7 | 41 | 0.9848 | 2.166 | 1.946 | |

update for EV, CV
**dPb** **CC276**
**LN Analysis** **dPb**
**Discharge, Q** **Q Data, EV=20 cfs CV=1.06**

| | | **Q Data-based LN** | | |
|---|---|---|---|---|
| **Avg:** | **20** | u | lnQ | Q |
| **SD:** | **21** | 3 | 5.2 | 184 |
| **CV:** | **1.06** | 0 | 2.61 | 14 |
| **Min:** | **6** | -3 | 0.01 | 1 |
| **Max:** | **103** | | | |
| **Median:** | **12** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.878, EV=19.6 cfs CV=0.88; max r2=0.967**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.878 | u | lnQ | Q |
| slope, m | 1.326 | 3 | 4.95 | 142 |
| intercept, b | -3.565 | 0 | 2.69 | 15 |
| N: 41 | | -3 | 0.43 | 2 |
| E[Q] | 19.6 | Parameter Estimates | | |
| SD[Q] | 17 | from LN regression | | |
| CV[Q] | 0.88 | update graph label | | |

N: 41 — max r2 0.967

| **Date** | **Q Discharge cfs Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | **r2 forward** |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 6.27 | 1 | 0.0152 | -2.166 | 1.836 | 0.878 |
| 5-Oct-91 | 6.48 | 2 | 0.0394 | -1.758 | 1.869 | 0.895 |
| 14-Aug-95 | 7.56 | 3 | 0.0636 | -1.525 | 2.023 | 0.902 |
| 18-Feb-94 | 7.9 | 4 | 0.0879 | -1.354 | 2.067 | 0.914 |
| 17-Dec-93 | 8.06 | 5 | 0.1121 | -1.215 | 2.087 | 0.925 |
| 12-Nov-98 | 8.09 | 6 | 0.1364 | -1.097 | 2.091 | 0.934 |
| 30-Nov-93 | 8.15 | 7 | 0.1606 | -0.992 | 2.098 | 0.942 |
| 17-Dec-93 | 8.15 | 8 | 0.1848 | -0.897 | 2.098 | 0.948 |
| 18-Feb-94 | 8.46 | 9 | 0.2091 | -0.810 | 2.135 | 0.953 |
| 25-Jul-95 | 8.46 | 10 | 0.2333 | -0.728 | 2.135 | 0.957 |
| 6-Oct-94 | 8.78 | 11 | 0.2576 | -0.651 | 2.172 | 0.960 |
| 20-Jan-94 | 8.8 | 12 | 0.2818 | -0.577 | 2.175 | 0.963 |
| 27-Oct-93 | 9.12 | 13 | 0.3061 | -0.507 | 2.210 | 0.965 |
| 20-Jan-94 | 9.12 | 14 | 0.3303 | -0.439 | 2.210 | 0.967 |
| 16-Nov-94 | 9.12 | 15 | 0.3545 | -0.373 | 2.210 | 0.967 |
| 13-Dec-94 | 9.12 | 16 | 0.3788 | -0.309 | 2.210 | 0.966 |
| 13-Sep-94 | 9.84 | 17 | 0.4030 | -0.246 | 2.286 | 0.964 |
| 16-Aug-94 | 10.39 | 18 | 0.4273 | -0.183 | 2.341 | 0.962 |
| 25-Jul-94 | 11.9 | 19 | 0.4515 | -0.122 | 2.477 | 0.960 |
| 16-Aug-94 | 11.9 | 20 | 0.4758 | -0.061 | 2.477 | 0.961 |
| *30-Aug-99* | *12* | 21 | 0.5000 | 0.000 | 2.485 | 0.961 |
| *10-Jan-95* | *12.37* | 22 | 0.5242 | 0.061 | 2.515 | 0.959 |
| 8-Mar-94 | 12.85 | 23 | 0.5485 | 0.122 | 2.553 | 0.956 |
| 11-Jul-95 | 12.85 | 24 | 0.5727 | 0.183 | 2.553 | 0.953 |
| 24-Mar-94 | 14.43 | 25 | 0.5970 | 0.246 | 2.669 | 0.948 |
| 23-Jun-94 | 17.53 | 26 | 0.6212 | 0.309 | 2.864 | 0.943 |
| *7-Apr-94* | *18.22* | 27 | 0.6455 | 0.373 | 2.903 | 0.946 |
| *8-Mar-95* | *18.22* | 28 | 0.6697 | 0.439 | 2.903 | 0.949 |
| *9-Feb-95* | *18.95* | 29 | 0.6939 | 0.507 | 2.942 | 0.949 |
| 10-Nov-97 | 20.1 | 30 | 0.7182 | 0.577 | 3.001 | 0.949 |
| 12-Apr-95 | 20.5 | 31 | 0.7424 | 0.651 | 3.020 | 0.948 |
| *7-Apr-94* | *21.84* | 32 | 0.7667 | 0.728 | 3.084 | 0.944 |
| *5-Aug-99* | *22* | 33 | 0.7909 | 0.810 | 3.091 | 0.938 |
| 25-Apr-95 | 24.01 | 34 | 0.8152 | 0.897 | 3.178 | 0.925 |
| 22-Mar-95 | 26 | 35 | 0.8394 | 0.992 | 3.258 | 0.906 |
| 7-Jun-94 | 33.06 | 36 | 0.8636 | 1.097 | 3.498 | 0.878 |
| 4-May-94 | 38.88 | 37 | 0.8879 | 1.215 | 3.660 | 0.836 |
| 13-Jun-95 | 43.93 | 38 | 0.9121 | 1.354 | 3.783 | |
| 19-May-94 | 47.69 | 39 | 0.9364 | 1.525 | 3.865 | |
| *18-May-91* | *101* | 40 | 0.9606 | 1.758 | 4.615 | |
| *8-Jul-99* | *103* | 41 | 0.9848 | 2.166 | 4.635 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency | Candidate x-axis positions | |
|---|---|---|---|
| | secondary y-axis | x-axis position | |
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC276 **Date:** 26-May-00

**Chemical:** dZn **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,720 | 20 | 86 | 7 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 636 | 21 | 35 | 5 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.06 | 0.41 | 0.70 | | | | |
| **Min:** | 33,376 | 6 | 5 | 0 | | -0.65 | -2.31 | -1.36 |
| **Max:** | 36,402 | 103 | 155 | 31 | | 3.95 | 1.99 | 4.85 |
| **Median:** | 34,562 | 12 | 100 | 5 | | -0.37 | 0.41 | -0.39 |

**dZn CC276 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.07)** update r2

| | | | | |
|---|---|---|---|---|
| r2 Q,[COC] | 0.29 | [dZn] | Q | |
| slope, m | -0.9 | 98 | 6.3 | |
| intercept, b | 103.1 | 86 | 19.9 | |
| N | 41 | 12 | 103 | |

**LnConc. = mLn(Q)+b (r2=0.02)** update r2

| | | | | | |
|---|---|---|---|---|---|
| 2 lnQ,ln[COC] | 0.24 | ln[dZn] | ln Q | [dZn] | Q |
| slope, m | -0.59 | 4.76 | 1.84 | 117 | 6 |
| intercept, b | 5.84 | 4.08 | 2.99 | 59 | 20 |
| N | 41 | 3.12 | 4.63 | 23 | 103 |

**Q = mTime +b**

| | |
|---|---|
| r2: | 0.006 |
| m | 0.0027 |
| b | -73 |

**LnQ = mTime +b**

| |
|---|
| 0.016 |
| 0.00014 |
| -2.16 |

for graph: dZn 0

CC276

N= 41

| update for new data | Sampling Date | Q Discharge cfs | dZn Concentration ug/L | dZn Load lbs/day | Ln Q | Ln dZn Conc. | Ln dZn Load | Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 18-May-91 | 101 | 57 | 31 | 4.62 | 4.04 | 3.43 | 3.85 | -0.82 | 4.85 |
| MFG | 5-Oct-91 | 6.48 | 136 | 5 | 1.87 | 4.91 | 1.56 | -0.64 | 1.45 | -0.46 |
| IDEQ | 27-Oct-93 | 9.12 | 103 | 5 | 2.21 | 4.63 | 1.62 | -0.51 | 0.50 | -0.40 |
| IDEQ | 30-Nov-93 | 8.15 | 100 | 4 | 2.10 | 4.61 | 1.48 | -0.56 | 0.41 | -0.54 |
| IDEQ | 17-Dec-93 | 8.15 | 106 | 5 | 2.10 | 4.66 | 1.54 | -0.56 | 0.59 | -0.48 |
| IDEQ | 17-Dec-93 | 8.06 | 106 | 5 | 2.09 | 4.66 | 1.53 | -0.56 | 0.59 | -0.49 |
| IDEQ | 20-Jan-94 | 9.12 | 103 | 5 | 2.21 | 4.63 | 1.62 | -0.51 | 0.50 | -0.40 |
| IDEQ | 20-Jan-94 | 8.8 | 103 | 5 | 2.17 | 4.63 | 1.58 | -0.53 | 0.50 | -0.44 |
| IDEQ | 18-Feb-94 | 8.46 | 120 | 5 | 2.14 | 4.79 | 1.70 | -0.54 | 0.99 | -0.32 |
| IDEQ | 18-Feb-94 | 7.9 | 120 | 5 | 2.07 | 4.79 | 1.63 | -0.57 | 0.99 | -0.39 |
| IDEQ | 8-Mar-94 | 12.85 | 110 | 8 | 2.55 | 4.70 | 2.03 | -0.33 | 0.70 | 0.12 |
| IDEQ | 24-Mar-94 | 14.43 | 144 | 11 | 2.67 | 4.97 | 2.41 | -0.26 | 1.68 | 0.84 |
| IDEQ | 7-Apr-94 | 18.22 | 79 | 8 | 2.90 | 4.37 | 2.05 | -0.08 | -0.19 | 0.14 |
| IDEQ | 7-Apr-94 | 21.84 | 79 | 9 | 3.08 | 4.37 | 2.23 | 0.09 | -0.19 | 0.46 |
| IDEQ | 4-May-94 | 38.88 | 53 | 11 | 3.66 | 3.97 | 2.41 | 0.90 | -0.93 | 0.82 |
| IDEQ | 19-May-94 | 47.69 | 41 | 11 | 3.86 | 3.71 | 2.35 | 1.32 | -1.28 | 0.71 |
| IDEQ | 7-Jun-94 | 33.06 | 63 | 11 | 3.50 | 4.14 | 2.42 | 0.63 | -0.64 | 0.85 |
| IDEQ | 23-Jun-94 | 17.53 | 73 | 7 | 2.86 | 4.29 | 1.93 | -0.11 | -0.36 | -0.03 |
| IDEQ | 25-Jul-94 | 11.9 | 78 | 5 | 2.48 | 4.36 | 1.61 | -0.38 | -0.22 | -0.41 |
| IDEQ | 16-Aug-94 | 11.9 | 100 | 6 | 2.48 | 4.61 | 1.86 | -0.38 | 0.41 | -0.13 |
| IDEQ | 16-Aug-94 | 10.39 | 100 | 6 | 2.34 | 4.61 | 1.72 | -0.45 | 0.41 | -0.29 |
| IDEQ | 13-Sep-94 | 9.84 | 94 | 5 | 2.29 | 4.54 | 1.60 | -0.48 | 0.24 | -0.42 |
| IDEQ | 6-Oct-94 | 8.78 | 107 | 5 | 2.17 | 4.67 | 1.62 | -0.53 | 0.62 | -0.40 |
| IDEQ | 16-Nov-94 | 9.12 | 100 | 5 | 2.21 | 4.61 | 1.59 | -0.51 | 0.41 | -0.43 |
| IDEQ | 13-Dec-94 | 9.12 | 108 | 5 | 2.21 | 4.68 | 1.67 | -0.51 | 0.64 | -0.35 |
| IDEQ | 10-Jan-95 | 12.37 | 155 | 10 | 2.52 | 5.04 | 2.33 | -0.36 | 1.99 | 0.67 |
| IDEQ | 9-Feb-95 | 18.95 | 123 | 13 | 2.94 | 4.81 | 2.53 | -0.04 | 1.07 | 1.12 |
| IDEQ | 8-Mar-95 | 18.22 | 82 | 8 | 2.90 | 4.41 | 2.08 | -0.08 | -0.10 | 0.20 |
| IDEQ | 22-Mar-95 | 26 | 103 | 14 | 3.26 | 4.63 | 2.67 | 0.29 | 0.50 | 1.49 |
| IDEQ | 12-Apr-95 | 20.5 | 85 | 9 | 3.02 | 4.44 | 2.24 | 0.03 | -0.01 | 0.47 |
| IDEQ | 25-Apr-95 | 24.01 | 71 | 9 | 3.18 | 4.26 | 2.22 | 0.20 | -0.42 | 0.43 |
| IDEQ | 13-Jun-95 | 43.93 | 45 | 11 | 3.78 | 3.81 | 2.36 | 1.14 | -1.16 | 0.73 |
| IDEQ | 11-Jul-95 | 12.85 | 65 | 4 | 2.55 | 4.17 | 1.50 | -0.33 | -0.59 | -0.51 |
| IDEQ | 25-Jul-95 | 8.46 | 80 | 4 | 2.14 | 4.38 | 1.29 | -0.54 | -0.16 | -0.69 |
| IDEQ | 14-Aug-95 | 7.56 | 110 | 4 | 2.02 | 4.70 | 1.50 | -0.58 | 0.70 | -0.52 |
| IDEQ | 13-Sep-95 | 6.27 | 102 | 3 | 1.84 | 4.62 | 1.24 | -0.65 | 0.47 | -0.73 |
| URS | 10-Nov-97 | 20.1 | 39.3 | 4 | 3.00 | 3.67 | 1.45 | 0.01 | -1.32 | -0.56 |
| URS | 12-Nov-98 | 8.09 | 47.8 | 2 | 2.09 | 3.87 | 0.73 | -0.56 | -1.08 | -1.00 |
| USGS | 8-Jul-99 | 103 | 5 | 3 | 4.63 | 1.61 | 1.02 | 3.95 | -2.31 | -0.86 |
| USGS | 5-Aug-99 | 22 | 5 | 1 | 3.09 | 1.61 | -0.52 | 0.10 | -2.31 | -1.30 |
| USGS | 30-Aug-99 | 12 | 5 | 0 | 2.48 | 1.61 | -1.13 | -0.37 | -2.31 | -1.36 |

**dZn**

**Concentration over time analysis** r2 Slope, m

| | dZn | CC276 | | Concentration over time | |
|---|---|---|---|---|---|
| | LnConc.=mTime+b All data r2, m: | | | 0.596 | -0.00099 |
| | Time | Ln[COC] | [COC] | | |
| first | 18-May-91 | 5.59 | 266 | | |
| mid | 16-Aug-94 | 4.42 | 83 | | |
| last | 30-Aug-99 | 2.60 | 13 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

**Load over time analysis**

| | dZn | CC276 | | Load over time | |
|---|---|---|---|---|---|
| | LnLoad=mTime+b All data r2, m: | | | 0.502 | -0.00085 |
| | Time | LnLoad | Load | | |
| first | 18-May-91 | 2.86 | 18 | | |
| mid | 16-Aug-94 | 1.86 | 6 | | |
| last | 30-Aug-99 | 0.30 | 1 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

| | max r2 0.823 | | | max r2. 0.719 | | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points. delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| | 0.596 | -0.00099 | 38.52 | 0.502 | -0.00085 | 31.19 |
| | 0.697 | -0.00113 | 43.57 | 0.448 | -0.00080 | 29.33 |
| | 0.717 | -0.00120 | 46.12 | 0.516 | -0.00090 | 33.08 |
| | 0.717 | -0.00121 | 46.46 | 0.530 | -0.00092 | 33.86 |
| | 0.718 | -0.00122 | 46.80 | 0.552 | -0.00095 | 34.81 |
| | 0.717 | -0.00123 | 47.04 | 0.571 | -0.00098 | 35.72 |
| | 0.716 | -0.00124 | 47.30 | 0.593 | -0.00101 | 36.73 |
| | 0.715 | -0.00124 | 47.56 | 0.609 | -0.00103 | 37.59 |
| | 0.714 | -0.00125 | 47.84 | 0.629 | -0.00106 | 38.59 |
| | 0.709 | -0.00125 | 47.84 | 0.643 | -0.00108 | 39.41 |
| | 0.705 | -0.00125 | 47.84 | 0.663 | -0.00111 | 40.45 |
| | 0.701 | -0.00126 | 47.95 | 0.664 | -0.00112 | 40.85 |
| | 0.694 | -0.00124 | 47.56 | 0.656 | -0.00111 | 40.58 |
| | 0.698 | -0.00126 | 48.19 | 0.656 | -0.00112 | 40.92 |
| | 0.703 | -0.00128 | 48.90 | 0.650 | -0.00112 | 40.96 |
| | 0.729 | -0.00132 | 50.38 | 0.641 | -0.00111 | 40.59 |
| | 0.778 | -0.00138 | 52.51 | 0.631 | -0.00110 | 40.26 |
| | 0.798 | -0.00142 | 53.91 | 0.620 | -0.00109 | 39.71 |
| | 0.811 | -0.00146 | 55.11 | 0.619 | -0.00110 | 40.13 |
| | 0.821 | -0.00149 | 56.17 | 0.634 | -0.00113 | 41.24 |
| | 0.821 | -0.00150 | 56.71 | 0.635 | -0.00115 | 41.84 |
| | 0.821 | -0.00152 | 57.34 | 0.645 | -0.00118 | 42.90 |
| | 0.823 | -0.00154 | 58.11 | 0.663 | -0.00122 | 44.32 |
| | 0.820 | -0.00155 | 58.54 | 0.681 | -0.00126 | 45.84 |
| | 0.818 | -0.00157 | 59.03 | 0.702 | -0.00131 | 47.50 |
| | 0.812 | -0.00157 | 59.25 | 0.719 | -0.00135 | 49.11 |
| | 0.804 | -0.00154 | 58.18 | 0.707 | -0.00134 | 48.71 |
| | 0.793 | -0.00152 | 57.54 | 0.691 | -0.00130 | 47.40 |
| | 0.788 | -0.00154 | 58.16 | 0.678 | -0.00130 | 47.36 |
| | 0.775 | -0.00153 | 57.86 | 0.659 | -0.00123 | 44.69 |
| | 0.763 | -0.00154 | 58.27 | 0.630 | -0.00119 | 43.14 |
| | 0.758 | -0.00159 | 59.81 | 0.590 | -0.00113 | 40.99 |
| | 0.796 | -0.00172 | 64.68 | 0.536 | -0.00100 | 36.45 |
| | 0.805 | -0.00183 | 68.80 | 0.497 | -0.00101 | 36.65 |
| | 0.800 | -0.00197 | 73.73 | 0.476 | -0.00109 | 39.61 |
| | 0.744 | -0.00210 | 78.49 | 0.392 | -0.00116 | 42.17 |
| | 0.728 | -0.00363 | 133.94 | 0.537 | -0.00287 | 104.08 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dZn** | | **CC276** | | |
| **LN Analysis** | | **dZn** | | |
| **Load** | | **Load Data, EV=7 lbs/day CV=.72** | | |
| **Avg:** | **7** | **Load Data-based LN** | | |
| **SD:** | **5** | u | ln dZn Load | dZn Load |
| **CV:** | **0.70** | 3 | 3 7 | 38 |
| **Min:** | **0** | 0 | 1 75 | 6 |
| **Max:** | **31** | -3 | -0.15 | 1 |
| **Median:** | **5** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.823, EV=8.2 lbs/day CV=1.06; max r2=0.938**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.823 | u | lnLoad | Load |
| slope, m: | 1.151 | 3 | 4.33 | 76 |
| intercept, b | -1.985 | 0 | 1.72 | 6 |
| N: | 41 | -3 | -0.88 | 0 |
| E[Load]: | 8.2 | Parameter Estimates | | |
| SD[Load]: | 9 | from LN regression | | |
| CV[Load]: | 1.06 | update graph label | | |

| Date | dZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.938 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 30-Aug-99 | **0.3** | 1 | 0.0152 | -2.166 | -1.131 | 0.823 |
| 5-Aug-99 | **0.6** | 2 | 0.0394 | -1.758 | -0.525 | 0.857 |
| 12-Nov-98 | **2.1** | 3 | 0.0636 | -1.525 | 0.733 | 0.938 |
| 8-Jul-99 | **2.8** | 4 | 0.0879 | -1.354 | 1.019 | 0.935 |
| 13-Sep-95 | **3.4** | 5 | 0.1121 | -1.215 | 1.236 | 0.929 |
| 25-Jul-95 | **3.6** | 6 | 0.1364 | -1.097 | 1.292 | 0.925 |
| 10-Nov-97 | **4.2** | 7 | 0.1606 | -0.992 | 1.447 | 0.922 |
| 30-Nov-93 | **4.4** | 8 | 0.1848 | -0.897 | 1.478 | 0.925 |
| 14-Aug-95 | **4.5** | 9 | 0.2091 | -0.810 | 1.498 | 0.928 |
| 11-Jul-95 | **4.5** | 10 | 0.2333 | -0.728 | 1.503 | 0.931 |
| 17-Dec-93 | **4.6** | 11 | 0.2576 | -0.651 | 1.525 | 0.933 |
| 17-Dec-93 | **4.6** | 12 | 0.2818 | -0.577 | 1.536 | 0.935 |
| 5-Oct-91 | **4.7** | 13 | 0.3061 | -0.507 | 1.556 | 0.936 |
| 20-Jan-94 | **4.9** | 14 | 0.3303 | -0.439 | 1.584 | 0.936 |
| 16-Nov-94 | **4.9** | 15 | 0.3545 | -0.373 | 1.591 | 0.937 |
| 13-Sep-94 | **5.0** | 16 | 0.3788 | -0.309 | 1.605 | 0.937 |
| 25-Jul-94 | **5.0** | 17 | 0.4030 | -0.246 | 1.608 | 0.936 |
| 27-Oct-93 | **5.1** | 18 | 0.4273 | -0.183 | 1.620 | 0.933 |
| 20-Jan-94 | **5.1** | 19 | 0.4515 | -0.122 | 1.620 | 0.929 |
| 6-Oct-94 | **5.1** | 20 | 0.4758 | -0.061 | 1.620 | 0.923 |
| 18-Feb-94 | **5.1** | 21 | 0.5000 | 0.000 | 1.629 | 0.916 |
| 13-Dec-94 | **5.3** | 22 | 0.5242 | 0.061 | 1.668 | 0.908 |
| 18-Feb-94 | **5.5** | 23 | 0.5485 | 0.122 | 1.698 | 0.899 |
| 16-Aug-94 | **5.6** | 24 | 0.5727 | 0.183 | 1.721 | 0.890 |
| 16-Aug-94 | **6.4** | 25 | 0.5970 | 0.246 | 1.857 | 0.880 |
| 23-Jun-94 | **6.9** | 26 | 0.6212 | 0.309 | 1.929 | 0.867 |
| 8-Mar-94 | **7.6** | 27 | 0.6455 | 0.373 | 2.029 | 0.851 |
| 7-Apr-94 | **7.7** | 28 | 0.6697 | 0.439 | 2.047 | 0.838 |
| 8-Mar-95 | **8.0** | 29 | 0.6939 | 0.507 | 2.084 | 0.821 |
| 25-Apr-95 | **9.2** | 30 | 0.7182 | 0.577 | 2.216 | 0.801 |
| 7-Apr-94 | **9.3** | 31 | 0.7424 | 0.651 | 2.228 | 0.800 |
| 12-Apr-95 | **9.4** | 32 | 0.7667 | 0.728 | 2.238 | 0.796 |
| 10-Jan-95 | **10.3** | 33 | 0.7909 | 0.810 | 2.334 | 0.786 |
| 19-May-94 | **10.5** | 34 | 0.8152 | 0.897 | 2.353 | 0.803 |
| 13-Jun-95 | **10.6** | 35 | 0.8394 | 0.992 | 2.364 | 0.826 |
| 4-May-94 | **11.1** | 36 | 0.8636 | 1.097 | 2.406 | 0.848 |
| 24-Mar-94 | **11.2** | 37 | 0.8879 | 1.215 | 2.414 | 0.890 |
| 7-Jun-94 | **11.2** | 38 | 0.9121 | 1.354 | 2.416 | |
| 9-Feb-95 | **12.5** | 39 | 0.9364 | 1.525 | 2.529 | |
| 22-Mar-95 | **14.4** | 40 | 0.9606 | 1.758 | 2.668 | |
| 18-May-91 | **31.0** | 41 | 0.9848 | 2.166 | 3.433 | |

update for EV, CV

**dZn** **CC276**

**LN Analysis** **dZn**

## Concentration

**Conc. Data, EV=86 ug/L CV=0.41**

| | | Data-based LN | | |
|---|---|---|---|---|
| **Avg:** | **86** | u | ln(dZn) | (dZn) |
| **SD:** | **35** | 3 | 5.5 | 257 |
| **CV:** | **0.41** | 0 | 4.37 | 79 |
| **Min:** | **5** | -3 | 3.19 | 24 |
| **Max:** | **155** | | | |
| **Median:** | **100** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV **$r^2$=0.644, EV=122.4 ug/L CV=1.41; max r2=0.972**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.644 | u | lnConc | Conc |
| slope, m | 0.955 | 3 | 7.40 | 1637 |
| intercept, b | -4.068 | 0 | 4.26 | 71 |
| N | 41 | -3 | 1.12 | 3 |
| E[Conc] | 122.4 | Parameter Estimates | | |
| SD[Conc] | 173 | from LN regression | | |
| CV[Conc] | 1.41 | update graph label | | |

N 41

max r2 0.972

| Date | dZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 8-Jul-99 | 5 | 1 | 0.0152 | -2.166 | 1.609 | 0.644 |
| 5-Aug-99 | 5 | 2 | 0.0394 | -1.758 | 1.609 | 0.599 |
| 30-Aug-99 | 5 | 3 | 0.0636 | -1.525 | 1.609 | 0.600 |
| 10-Nov-97 | 39.3 | 4 | 0.0879 | -1.354 | 3.671 | 0.887 |
| 19-May-94 | 41 | 5 | 0.1121 | -1.215 | 3.714 | 0.884 |
| 13-Jun-95 | 45 | 6 | 0.1364 | -1.097 | 3.807 | 0.888 |
| 12-Nov-98 | 47.8 | 7 | 0.1606 | -0.992 | 3.867 | 0.893 |
| 4-May-94 | 53 | 8 | 0.1848 | -0.897 | 3.970 | 0.904 |
| 18-May-91 | 57 | 9 | 0.2091 | -0.810 | 4.043 | 0.913 |
| 7-Jun-94 | 63 | 10 | 0.2333 | -0.728 | 4.143 | 0.923 |
| 11-Jul-95 | 65 | 11 | 0.2576 | -0.651 | 4.174 | 0.926 |
| 25-Apr-95 | 71 | 12 | 0.2818 | -0.577 | 4.263 | 0.933 |
| 23-Jun-94 | 73 | 13 | 0.3061 | -0.507 | 4.290 | 0.932 |
| 25-Jul-94 | 78 | 14 | 0.3303 | -0.439 | 4.357 | 0.932 |
| 7-Apr-94 | 79 | 15 | 0.3545 | -0.373 | 4.369 | 0.927 |
| 7-Apr-94 | 79 | 16 | 0.3788 | -0.309 | 4.369 | 0.923 |
| 25-Jul-95 | 80 | 17 | 0.4030 | -0.246 | 4.382 | 0.922 |
| 8-Mar-95 | 82 | 18 | 0.4273 | -0.183 | 4.407 | 0.926 |
| 12-Apr-95 | 85 | 19 | 0.4515 | -0.122 | 4.443 | 0.932 |
| 13-Sep-94 | 94 | 20 | 0.4758 | -0.061 | 4.543 | 0.938 |
| 30-Nov-93 | 100 | 21 | 0.5000 | 0.000 | 4.605 | 0.933 |
| 16-Aug-94 | 100 | 22 | 0.5242 | 0.061 | 4.605 | 0.940 |
| 16-Aug-94 | 100 | 23 | 0.5485 | 0.122 | 4.605 | 0.945 |
| 16-Nov-94 | 100 | 24 | 0.5727 | 0.183 | 4.605 | 0.948 |
| 13-Sep-95 | 102 | 25 | 0.5970 | 0.246 | 4.625 | 0.949 |
| 27-Oct-93 | 103 | 26 | 0.6212 | 0.309 | 4.635 | 0.955 |
| 20-Jan-94 | 103 | 27 | 0.6455 | 0.373 | 4.635 | 0.962 |
| 20-Jan-94 | 103 | 28 | 0.6697 | 0.439 | 4.635 | 0.967 |
| 22-Mar-95 | 103 | 29 | 0.6939 | 0.507 | 4.635 | 0.969 |
| 17-Dec-93 | 106 | 30 | 0.7182 | 0.577 | 4.663 | 0.968 |
| 17-Dec-93 | 106 | 31 | 0.7424 | 0.651 | 4.663 | 0.972 |
| 6-Oct-94 | 107 | 32 | 0.7667 | 0.728 | 4.673 | 0.972 |
| 13-Dec-94 | 108 | 33 | 0.7909 | 0.810 | 4.682 | 0.969 |
| 8-Mar-94 | 110 | 34 | 0.8152 | 0.897 | 4.700 | 0.963 |
| 14-Aug-95 | 110 | 35 | 0.8394 | 0.992 | 4.700 | 0.954 |
| 18-Feb-94 | 120 | 36 | 0.8636 | 1.097 | 4.787 | 0.954 |
| 18-Feb-94 | 120 | 37 | 0.8879 | 1.215 | 4.787 | 0.950 |
| 9-Feb-95 | 123 | 38 | 0.9121 | 1.354 | 4.812 | |
| 5-Oct-91 | 136 | 39 | 0.9364 | 1.525 | 4.913 | |
| 24-Mar-94 | 144 | 40 | 0.9606 | 1.758 | 4.970 | |
| 10-Jan-95 | 155 | 41 | 0.9848 | 2.166 | 5.043 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dZn** | | **CC276** | | |
| **LN Analysis** | | **dZn** | | |
| **Discharge, Q** | | **Q Data, EV=17 cfs CV=0.99** | | |
| **Avg:** | **20** | **Q Data-based LN** | | |
| **SD:** | **21** | u | lnQ | Q |
| **CV:** | **1.06** | 3 | 5.2 | 184 |
| **Min:** | **6** | 0 | 2.61 | 14 |
| **Max:** | **103** | -3 | 0.01 | 1 |
| **Median:** | **12** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.878, EV=19.6 cfs CV=0.88; max r2=0.967**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.878 | u | lnQ | Q |
| slope, m | 1.326 | 3 | 4.95 | 142 |
| intercept, b | -3.565 | 0 | 2.69 | 15 |
| N: 41 | | -3 | 0.43 | 2 |
| E[Q]: | 19.6 | Parameter Estimates | | |
| SD[Q]: | 17 | from LN regression | | |
| CV[Q]: | 0.88 | update graph label | | |

N: 41

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.967 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 6.27 | 1 | 0.0152 | -2.166 | 1.836 | 0.878 |
| 5-Oct-91 | 6.48 | 2 | 0.0394 | -1 758 | 1.869 | 0.895 |
| 14-Aug-95 | 7.56 | 3 | 0.0636 | -1.525 | 2.023 | 0.902 |
| 18-Feb-94 | 7.9 | 4 | 0.0879 | -1.354 | 2.067 | 0.914 |
| 17-Dec-93 | 8.06 | 5 | 0.1121 | -1.215 | 2.087 | 0.925 |
| 12-Nov-98 | 8.09 | 6 | 0.1364 | -1.097 | 2.091 | 0.934 |
| 30-Nov-93 | 8.15 | 7 | 0.1606 | -0.992 | 2.098 | 0.942 |
| 17-Dec-93 | 8.15 | 8 | 0.1848 | -0.897 | 2.098 | 0.948 |
| 18-Feb-94 | 8.46 | 9 | 0.2091 | -0.810 | 2.135 | 0.953 |
| 25-Jul-95 | 8.46 | 10 | 0.2333 | -0.728 | 2.135 | 0.957 |
| 6-Oct-94 | 8.78 | 11 | 0.2576 | -0.651 | 2.172 | 0.960 |
| 20-Jan-94 | 8.8 | 12 | 0.2818 | -0.577 | 2.175 | 0.963 |
| 27-Oct-93 | 9.12 | 13 | 0.3061 | -0.507 | 2.210 | 0.965 |
| 20-Jan-94 | 9.12 | 14 | 0.3303 | -0.439 | 2.210 | 0.967 |
| 16-Nov-94 | 9.12 | 15 | 0.3545 | -0.373 | 2.210 | 0.967 |
| 13-Dec-94 | 9.12 | 16 | 0.3788 | -0.309 | 2.210 | 0.966 |
| 13-Sep-94 | 9.84 | 17 | 0.4030 | -0.246 | 2.286 | 0.964 |
| 16-Aug-94 | 10.39 | 18 | 0.4273 | -0.183 | 2.341 | 0.962 |
| 25-Jul-94 | 11.9 | 19 | 0.4515 | -0.122 | 2.477 | 0.960 |
| 16-Aug-94 | 11.9 | 20 | 0.4758 | -0.061 | 2.477 | 0.961 |
| 30-Aug-99 | 12 | 21 | 0.5000 | 0.000 | 2.485 | 0.961 |
| 10-Jan-95 | 12.37 | 22 | 0.5242 | 0.061 | 2.515 | 0.959 |
| 8-Mar-94 | 12.85 | 23 | 0.5485 | 0.122 | 2.553 | 0.956 |
| 11-Jul-95 | 12.85 | 24 | 0.5727 | 0.183 | 2.553 | 0.953 |
| 24-Mar-94 | 14 43 | 25 | 0.5970 | 0.246 | 2.669 | 0.948 |
| 23-Jun-94 | 17.53 | 26 | 0.6212 | 0.309 | 2.864 | 0.943 |
| 7-Apr-94 | 18.22 | 27 | 0.6455 | 0.373 | 2.903 | 0.946 |
| 8-Mar-95 | 18.22 | 28 | 0.6697 | 0.439 | 2.903 | 0.949 |
| 9-Feb-95 | 18.95 | 29 | 0.6939 | 0.507 | 2.942 | 0.949 |
| 10-Nov-97 | 20.1 | 30 | 0 7182 | 0.577 | 3.001 | 0.949 |
| 12-Apr-95 | 20.5 | 31 | 0.7424 | 0.651 | 3.020 | 0.948 |
| 7-Apr-94 | 21.84 | 32 | 0.7667 | 0.728 | 3.084 | 0.944 |
| 5-Aug-99 | 22 | 33 | 0.7909 | 0.810 | 3.091 | 0.938 |
| 25-Apr-95 | 24.01 | 34 | 0.8152 | 0.897 | 3.178 | 0.925 |
| 22-Mar-95 | 26 | 35 | 0.8394 | 0.992 | 3.258 | 0.906 |
| 7-Jun-94 | 33.06 | 36 | 0.8636 | 1.097 | 3.498 | 0.878 |
| 4-May-94 | 38.88 | 37 | 0.8879 | 1.215 | 3.660 | 0.836 |
| 13-Jun-95 | 43.93 | 38 | 0 9121 | 1.354 | 3.783 | |
| 19-May-94 | 47.69 | 39 | 0.9364 | 1.525 | 3.865 | |
| 18-May-91 | 101 | 40 | 0.9606 | 1.758 | 4.615 | |
| 8-Jul-99 | 103 | 41 | 0 9848 | 2.166 | 4.635 | |

**Secondary Scale For LN graphs**

| s | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC276 **Date:** 26-May-00
**Chemical:** tCd **Analyst:** J.Johnston
**Notes:**
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 34,720 | 20 | 1 | 0.1 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 636 | 21 | 0.2 | 0.1 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.06 | 0.24 | 1.31 | | | | |
| **Min:** | 33,376 | 6 | 0.3 | 0.02 | | -0.65 | -2.75 | -0.54 |
| **Max:** | 36,402 | 103 | 1 | 0.6 | | 3.95 | 2.13 | 5.70 |
| **Median:** | 34,562 | 12 | 1 | 0.05 | | -0.37 | 0.40 | -0.23 |

**tCd CC276 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

**Conc. = mQ+b (r2=0.0011)** update r2

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 Q,[COC] | 0.0011 | [tCd] | Q | r2 | 0.007 | 0.017 |
| slope, m | -0.0003 | 1 | 6.3 | m | 0.0028 | 0.00014 |
| intercept, b | 0.7 | 1 | 19.9 | b | -77 | -2.19 |
| N | 37 | 1 | 103 | | | |

**LnConc. = mLn(Q)+b (r2=0.10)** update r2

| | | | | | |
|---|---|---|---|---|---|
| nQ,ln[COC] | 0.10 | ln[tCd] | ln Q | [tCd] | Q |
| slope, m | -0.15 | -0.23 | 1.84 | 1 | 6 |
| intercept, b | 0.04 | -0.40 | 2.99 | 1 | 20 |
| N | 37 | -0.64 | 4.63 | 1 | 103 |

for graph: tCd 0

**N= 41** CC276

| | Sampling Date | Q Discharge cfs | tCd Concentration ug/L | tCd Load lbs/day | Ln Q | Ln tCd Conc. | Ln tCd Load | Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 18-May-91 | 101 | 1.1 | 0.60 | 4.62 | 0.10 | -0.51 | 3.85 | 2.13 | 5.70 |
| MFG | 5-Oct-91 | 6.48 | 1 | 0.03 | 1.87 | 0.00 | -3.36 | -0.64 | 1.55 | -0.39 |
| IDEQ | 27-Oct-93 | 9.12 | 0.8 | 0.04 | 2.21 | -0.22 | -3.24 | -0.51 | 0.40 | -0.34 |
| IDEQ | 30-Nov-93 | 8.15 | 0.7 | 0.03 | 2.10 | -0.36 | -3.48 | -0.56 | -0.17 | -0.43 |
| IDEQ | 17-Dec-93 | 8.15 | 0.8 | 0.04 | 2.10 | -0.22 | -3.35 | -0.56 | 0.40 | -0.38 |
| IDEQ | 17-Dec-93 | 8.06 | 0.8 | 0.03 | 2.09 | -0.22 | -3.36 | -0.56 | 0.40 | -0.39 |
| IDEQ | 20-Jan-94 | 9.12 | 0.8 | 0.04 | 2.21 | -0.22 | -3.24 | -0.51 | 0.40 | -0.34 |
| IDEQ | 20-Jan-94 | 8.8 | 0.8 | 0.04 | 2.17 | -0.22 | -3.27 | -0.53 | 0.40 | -0.35 |
| IDEQ | 18-Feb-94 | 8.46 | 0.8 | 0.04 | 2.14 | -0.22 | -3.31 | -0.54 | 0.40 | -0.37 |
| IDEQ | 18-Feb-94 | 7.9 | 0.8 | 0.03 | 2.07 | -0.22 | -3.38 | -0.57 | 0.40 | -0.40 |
| IDEQ | 8-Mar-94 | 12.85 | 0.8 | 0.06 | 2.55 | -0.22 | -2.89 | -0.33 | 0.40 | -0.17 |
| IDEQ | 24-Mar-94 | 14.43 | 0.9 | 0.07 | 2.67 | -0.11 | -2.66 | -0.26 | 0.98 | -0.01 |
| IDEQ | 7-Apr-94 | 18.22 | 0.7 | 0.07 | 2.90 | -0.36 | -2.68 | -0.08 | -0.17 | -0.02 |
| IDEQ | 7-Apr-94 | 21.84 | 0.7 | 0.08 | 3.08 | -0.36 | -2.50 | 0.09 | -0.17 | 0.13 |
| IDEQ | 4-May-94 | 38.88 | 0.5 | 0.10 | 3.66 | -0.69 | -2.26 | 0.90 | -1.32 | 0.37 |
| IDEQ | 19-May-94 | 47.69 | 0.25 | 0.06 | 3.86 | -1.39 | -2.75 | 1.32 | -2.75 | -0.07 |
| IDEQ | 7-Jun-94 | 33.06 | 0.5 | 0.09 | 3.50 | -0.69 | -2.42 | 0.63 | -1.32 | 0.20 |
| IDEQ | 23-Jun-94 | 17.53 | 0.6 | 0.06 | 2.86 | -0.51 | -2.87 | -0.11 | -0.74 | -0.15 |
| IDEQ | 25-Jul-94 | 11.9 | 0.8 | 0.05 | 2.48 | -0.22 | -2.97 | -0.38 | 0.40 | -0.21 |
| IDEQ | 16-Aug-94 | 11.9 | 0.9 | 0.06 | 2.48 | -0.11 | -2.85 | -0.38 | 0.98 | -0.14 |
| IDEQ | 16-Aug-94 | 10.39 | 0.9 | 0.05 | 2.34 | -0.11 | -2.99 | -0.45 | 0.98 | -0.22 |
| IDEQ | 13-Sep-94 | 9.84 | 0.7 | 0.04 | 2.29 | -0.36 | -3.30 | -0.48 | -0.17 | -0.36 |
| IDEQ | 6-Oct-94 | 8.78 | 0.8 | 0.04 | 2.17 | -0.22 | -3.28 | -0.53 | 0.40 | -0.35 |
| IDEQ | 16-Nov-94 | 9.12 | 0.7 | 0.03 | 2.21 | -0.36 | -3.37 | -0.51 | -0.17 | -0.39 |
| IDEQ | 13-Dec-94 | 9.12 | 0.7 | 0.03 | 2.21 | -0.36 | -3.37 | -0.51 | -0.17 | -0.39 |
| IDEQ | 10-Jan-95 | 12.37 | 1 | 0.07 | 2.52 | 0.00 | -2.71 | -0.36 | 1.55 | -0.04 |
| IDEQ | 9-Feb-95 | 18.95 | 0.8 | 0.08 | 2.94 | -0.22 | -2.51 | -0.04 | 0.40 | 0.12 |
| IDEQ | 8-Mar-95 | 18.22 | 0.5 | 0.05 | 2.90 | -0.69 | -3.02 | -0.08 | -1.32 | -0.23 |
| IDEQ | 22-Mar-95 | 26 | 0.8 | 0.11 | 3.26 | -0.22 | -2.19 | 0.29 | 0.40 | 0.45 |
| IDEQ | 12-Apr-95 | 20.5 | 0.8 | 0.09 | 3.02 | -0.22 | -2.43 | 0.03 | 0.40 | 0.19 |
| IDEQ | 25-Apr-95 | 24.01 | 0.6 | 0.08 | 3.18 | -0.51 | -2.56 | 0.20 | -0.74 | 0.08 |
| IDEQ | 13-Jun-95 | 43.93 | 0.7 | 0.17 | 3.78 | -0.36 | -1.80 | 1.14 | -0.17 | 1.03 |
| IDEQ | 11-Jul-95 | 12.85 | 0.5 | 0.03 | 2.55 | -0.69 | -3.36 | -0.33 | -1.32 | -0.39 |
| IDEQ | 25-Jul-95 | 8.46 | 0.9 | 0.04 | 2.14 | -0.11 | -3.20 | -0.54 | 0.98 | -0.32 |
| IDEQ | 14-Aug-95 | 7.56 | 0.6 | 0.02 | 2.02 | -0.51 | -3.71 | -0.58 | -0.74 | -0.50 |
| IDEQ | 13-Sep-95 | 6.27 | 0.6 | 0.02 | 1.84 | -0.51 | -3.90 | -0.65 | -0.74 | -0.54 |
| URS | 10-Nov-97 | 20.1 | 0.35 | 0.04 | 3.00 | -1.05 | -3.27 | 0.01 | -2.18 | -0.35 |
| *URS* | *12-Nov-98* | *8.09* | | | 2.09 | | | -0.56 | | |
| *USGS* | *8-Jul-99* | *22* | | | 3.09 | | | 0.10 | | |
| *USGS* | *5-Aug-99* | *103* | | | 4.63 | | | 3.95 | | |
| *USGS* | *30-Aug-99* | *12* | | | 2.48 | | | -0.37 | | |

tCd

**Concentration over time analysis**

| | tCd | CC276 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.234** | **-0.00037** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 18-May-91 | 0.08 | 1.1 | | |
| mid | 16-Aug-94 | -0.36 | 0.7 | | |
| last | 30-Aug-99 | -1.03 | 0.4 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

**Load over time analysis**

| | tCd | CC276 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.093** | **-0.00048** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 18-May-91 | -2.36 | 0.09 | | |
| mid | 16-Aug-94 | -2.93 | 0.05 | | |
| last | 30-Aug-99 | -3.83 | 0.02 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

max r2 1.000

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points delete last 4 rows | | |
| 0.234 | -0.00037 | 12.27 |
| 0.178 | -0.00036 | 12.07 |
| 0.137 | -0.00037 | 12.35 |
| 0.130 | -0.00036 | 12.23 |
| 0.133 | -0.00038 | 12.66 |
| 0.126 | -0.00037 | 12.49 |
| 0.118 | -0.00037 | 12.28 |
| 0.109 | -0.00036 | 12.01 |
| 0.100 | -0.00035 | 11.69 |
| 0.091 | -0.00034 | 11.29 |
| 0.082 | -0.00032 | 10.83 |
| 0.072 | -0.00031 | 10.29 |
| 0.055 | -0.00027 | 8.94 |
| 0.052 | -0.00027 | 8.95 |
| 0.050 | -0.00027 | 8.95 |
| 0.074 | -0.00034 | 11.22 |
| 0.332 | -0.00055 | 18.83 |
| 0.473 | -0.00065 | 22.31 |
| 0.560 | -0.00072 | 24.86 |
| 0.555 | -0.00074 | 25.24 |
| 0.532 | -0.00072 | 24.59 |
| 0.504 | -0.00069 | 23.77 |
| 0.522 | -0.00073 | 24.99 |
| 0.505 | -0.00073 | 24.97 |
| 0.515 | -0.00076 | 25.93 |
| 0.523 | -0.00078 | 26.84 |
| 0.510 | -0.00071 | 24.22 |
| 0.485 | -0.00068 | 23.16 |
| 0.637 | -0.00077 | 26.38 |
| 0.617 | -0.00074 | 25.28 |
| 0.597 | -0.00069 | 23.68 |
| 0.629 | -0.00074 | 25.30 |
| 0.604 | -0.00072 | 24.65 |
| 0.790 | -0.00084 | 29.08 |
| 0.999 | -0.00067 | 22.89 |
| 1.000 | -0.00068 | 23.37 |

max r2 1.000

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points delete last 4 rows | | |
| 0.093 | -0.00048 | 13.81 |
| 0.004 | 0.00009 | -5.96 |
| 0.000 | -0.00002 | -2.20 |
| 0.001 | -0.00006 | -0.97 |
| 0.006 | -0.00013 | 1.42 |
| 0.012 | -0.00018 | 3.41 |
| 0.022 | -0.00025 | 5.77 |
| 0.031 | -0.00030 | 7.60 |
| 0.045 | -0.00037 | 9.90 |
| 0.064 | -0.00044 | 12.51 |
| 0.094 | -0.00054 | 15.94 |
| 0.099 | -0.00057 | 16.92 |
| 0.092 | -0.00056 | 16.59 |
| 0.086 | -0.00055 | 16.27 |
| 0.070 | -0.00051 | 14.65 |
| 0.046 | -0.00040 | 11.10 |
| 0.040 | -0.00039 | 10.48 |
| 0.023 | -0.00029 | 7.24 |
| 0.021 | -0.00029 | 7.00 |
| 0.022 | -0.00030 | 7.44 |
| 0.019 | -0.00029 | 6.94 |
| 0.020 | -0.00030 | 7.55 |
| 0.033 | -0.00040 | 11.06 |
| 0.051 | -0.00051 | 14.96 |
| 0.082 | -0.00066 | 19.96 |
| 0.126 | -0.00082 | 25.58 |
| 0.119 | -0.00081 | 25.43 |
| 0.099 | -0.00074 | 23.04 |
| 0.110 | -0.00080 | 25.05 |
| 0.073 | -0.00062 | 18.54 |
| 0.042 | -0.00045 | 12.75 |
| 0.015 | -0.00027 | 6.18 |
| 0.118 | 0.00028 | -13.36 |
| 0.194 | 0.00037 | -16.44 |
| 0.896 | 0.00065 | -26.69 |
| 1.000 | 0.00079 | -31.63 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tCd** | | **CC276** | | |
| **LN Analysis** | | **tCd** | | |
| **Load** | | **Load Data, EV=0.1 lbs/day CV=1.31** | | |
| **Avg:** | **0.1** | **Load Data-based LN** | | |
| **SD:** | **0.1** | u | ln tCd Load | tCd Load |
| **CV:** | **1.31** | 3 | -0.2 | 0.859 |
| **Min:** | **0.02** | 0 | -3.15 | 0.043 |
| **Max:** | **1** | -3 | -6.15 | 0.002 |
| **Median:** | **0.05** | | | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.871, EV=0.1 #/d CV=0.89; max r2=0.919**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.871 | u | lnLoad | Load |
| slope, m | 1.31 | 3 | -0.76 | 0.5 |
| intercept, b | 3.998 | 0 | -3.06 | 0.047 |
| N: 37 | | -3 | -5.35 | 0.005 |
| E[Load] | 0.1 | Parameter Estimates | | |
| SD[Load] | 0.1 | from LN regression | | |
| CV[Load] | 0.89 | update graph label | | |

N: 41

| Date | tCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.919 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *30-Aug-99* | | 1 | 0.0152 | -2.166 | | |
| *8-Jul-99* | | 2 | 0.0394 | -1.758 | | |
| 13-Sep-95 | 0.02 | 3 | 0.0636 | -1.525 | -3.900 | 0.871 |
| *12-Nov-98* | | 4 | 0.0879 | -1.354 | | |
| 14-Aug-95 | 0.02 | 5 | 0.1121 | -1.215 | -3.713 | 0.863 |
| *5-Aug-99* | | 6 | 0.1364 | -1.097 | | |
| 30-Nov-93 | 0.03 | 7 | 0.1606 | -0.992 | -3.484 | 0.858 |
| 18-Feb-94 | 0.03 | 8 | 0.1848 | -0.897 | -3.381 | 0.860 |
| 16-Nov-94 | 0.03 | 9 | 0.2091 | -0.810 | -3.371 | 0.866 |
| 13-Dec-94 | 0.03 | 10 | 0.2333 | -0.728 | -3.371 | 0.872 |
| 11-Jul-95 | 0.03 | 11 | 0.2576 | -0.651 | -3.365 | 0.877 |
| 17-Dec-93 | 0.03 | 12 | 0.2818 | -0.577 | -3.361 | 0.880 |
| 5-Oct-91 | 0.03 | 13 | 0.3061 | -0.507 | -3.356 | 0.882 |
| 17-Dec-93 | 0.04 | 14 | 0.3303 | -0.439 | -3.350 | 0.883 |
| 18-Feb-94 | 0.04 | 15 | 0.3545 | -0.373 | -3.313 | 0.882 |
| 13-Sep-94 | 0.04 | 16 | 0.3788 | -0.309 | -3.295 | 0.882 |
| 6-Oct-94 | 0.04 | 17 | 0.4030 | -0.246 | -3.276 | 0.881 |
| 10-Nov-97 | 0.04 | 18 | 0.4273 | -0.183 | -3.274 | 0.879 |
| 20-Jan-94 | 0.04 | 19 | 0.4515 | -0.122 | -3.273 | 0.875 |
| 27-Oct-93 | 0.04 | 20 | 0.4758 | -0.061 | -3.238 | 0.869 |
| 20-Jan-94 | 0.04 | 21 | 0.5000 | 0.000 | -3.238 | 0.862 |
| 25-Jul-95 | 0.04 | 22 | 0.5242 | 0.061 | -3.195 | 0.852 |
| 8-Mar-95 | 0.05 | 23 | 0.5485 | 0.122 | -3.016 | 0.841 |
| 16-Aug-94 | 0.05 | 24 | 0.5727 | 0.183 | -2.990 | 0.838 |
| 25-Jul-94 | 0.05 | 25 | 0.5970 | 0.246 | -2.972 | 0.834 |
| 8-Mar-94 | 0.06 | 26 | 0.6212 | 0.309 | -2.895 | 0.828 |
| 23-Jun-94 | 0.06 | 27 | 0.6455 | 0.373 | -2.872 | 0.827 |
| 16-Aug-94 | 0.06 | 28 | 0.6697 | 0.439 | -2.854 | 0.823 |
| 19-May-94 | 0.06 | 29 | 0.6939 | 0.507 | -2.747 | 0.817 |
| 10-Jan-95 | 0.07 | 30 | 0.7182 | 0.577 | -2.710 | 0.821 |
| 7-Apr-94 | 0.07 | 31 | 0.7424 | 0.651 | -2.679 | 0.825 |
| 24-Mar-94 | 0.07 | 32 | 0.7667 | 0.728 | -2.661 | 0.830 |
| 25-Apr-95 | 0.08 | 33 | 0.7909 | 0.810 | -2.557 | 0.831 |
| 9-Feb-95 | 0.08 | 34 | 0.8152 | 0.897 | -2.506 | 0.847 |
| 7-Apr-94 | 0.08 | 35 | 0.8394 | 0.992 | -2.498 | 0.870 |
| 12-Apr-95 | 0.09 | 36 | 0.8636 | 1.097 | -2.428 | 0.889 |
| 7-Jun-94 | 0.09 | 37 | 0.8879 | 1.215 | -2.420 | 0.919 |
| 4-May-94 | 0.10 | 38 | 0.9121 | 1.354 | -2.258 | |
| 22-Mar-95 | 0.11 | 39 | 0.9364 | 1.525 | -2.190 | |
| 13-Jun-95 | 0.17 | 40 | 0.9606 | 1.758 | -1.799 | |
| 18-May-91 | 0.60 | 41 | 0.9848 | 2.166 | -0.515 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tCd** | | **CC276** | | |
| **LN Analysis** | | **tCd** | | |
| **Concentration** | | **Conc. Data, EV=0.73 ug/L CV=.24** | | |
| **Avg:** | **0.73** | **Data-based LN** | | |
| **SD:** | **0.17** | u | ln[tCd] | [tCd] |
| **CV:** | **0.24** | 3 | 0.4 | 1.4 |
| **Min:** | **0.25** | 0 | -0.34 | 0.7 |
| **Max:** | **1.10** | -3 | -1.05 | 0.4 |
| **Median:** | **0.80** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV **$r^2$=0.777, EV=0.7 ug/L CV=0.40; max r2=0.927**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.777 | u | lnConc | Conc |
| slope, m | 2.614 | 3 | 0.73 | 2 |
| intercept, b | 1.084 | 0 | -0.41 | 0.7 |
| N | 37 | -3 | -1.56 | 0.2 |
| E[Conc] | 0.71 | Parameter Estimates | | |
| SD[Conc] | 0.3 | from LN regression | | |
| CV[Conc] | 0.40 | update graph label | | |

| Date | tCd Concentration ug/L Ranked | N 41 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.927 r2 forward |
|---|---|---|---|---|---|---|
| update end rank for new data | | | | | | |
| *8-Jul-99* | | 1 | 0.0152 | -2.166 | | |
| *5-Aug-99* | | 2 | 0.0394 | -1.758 | | |
| *30-Aug-99* | | 3 | 0.0636 | -1.525 | | |
| 19-May-94 | 0.25 | 4 | 0.0879 | -1.354 | -1.386 | 0.777 |
| 10-Nov-97 | 0.35 | 5 | 0.1121 | -1.215 | -1.050 | 0.849 |
| 4-May-94 | 0.5 | 6 | 0.1364 | -1.097 | -0.693 | 0.894 |
| 7-Jun-94 | 0.5 | 7 | 0.1606 | -0.992 | -0.693 | 0.885 |
| 8-Mar-95 | 0.5 | 8 | 0.1848 | -0.897 | -0.693 | 0.879 |
| 11-Jul-95 | 0.5 | 9 | 0.2091 | -0.810 | -0.693 | 0.881 |
| *12-Nov-98* | | 10 | 0.2333 | -0.728 | | |
| 23-Jun-94 | 0.6 | 11 | 0.2576 | -0.651 | -0.511 | 0.900 |
| 25-Apr-95 | 0.6 | 12 | 0.2818 | -0.577 | -0.511 | 0.893 |
| 14-Aug-95 | 0.6 | 13 | 0.3061 | -0.507 | -0.511 | 0.888 |
| 13-Sep-95 | 0.6 | 14 | 0.3303 | -0.439 | -0.511 | 0.889 |
| 30-Nov-93 | 0.7 | 15 | 0.3545 | -0.373 | -0.357 | 0.904 |
| 7-Apr-94 | 0.7 | 16 | 0.3788 | -0.309 | -0.357 | 0.898 |
| 7-Apr-94 | 0.7 | 17 | 0.4030 | -0.246 | -0.357 | 0.891 |
| 13-Sep-94 | 0.7 | 18 | 0.4273 | -0.183 | -0.357 | 0.882 |
| 16-Nov-94 | 0.7 | 19 | 0.4515 | -0.122 | -0.357 | 0.872 |
| 13-Dec-94 | 0.7 | 20 | 0.4758 | -0.061 | -0.357 | 0.861 |
| 13-Jun-95 | 0.7 | 21 | 0.5000 | 0.000 | -0.357 | 0.850 |
| 27-Oct-93 | 0.8 | 22 | 0.5242 | 0.061 | -0.223 | 0.845 |
| 17-Dec-93 | 0.8 | 23 | 0.5485 | 0.122 | -0.223 | 0.860 |
| 17-Dec-93 | 0.8 | 24 | 0.5727 | 0.183 | -0.223 | 0.874 |
| 20-Jan-94 | 0.8 | 25 | 0.5970 | 0.246 | -0.223 | 0.887 |
| 20-Jan-94 | 0.8 | 26 | 0.6212 | 0.309 | -0.223 | 0.899 |
| 18-Feb-94 | 0.8 | 27 | 0.6455 | 0.373 | -0.223 | 0.910 |
| 18-Feb-94 | 0.8 | 28 | 0.6697 | 0.439 | -0.223 | 0.919 |
| 8-Mar-94 | 0.8 | 29 | 0.6939 | 0.507 | -0.223 | 0.925 |
| 25-Jul-94 | 0.8 | 30 | 0.7182 | 0.577 | -0.223 | 0.927 |
| 6-Oct-94 | 0.8 | 31 | 0.7424 | 0.651 | -0.223 | 0.925 |
| 9-Feb-95 | 0.8 | 32 | 0.7667 | 0.728 | -0.223 | 0.916 |
| 22-Mar-95 | 0.8 | 33 | 0.7909 | 0.810 | -0.223 | 0.900 |
| 12-Apr-95 | 0.8 | 34 | 0.8152 | 0.897 | -0.223 | 0.880 |
| 24-Mar-94 | 0.9 | 35 | 0.8394 | 0.992 | -0.105 | 0.898 |
| 16-Aug-94 | 0.9 | 36 | 0.8636 | 1.097 | -0.105 | 0.913 |
| 16-Aug-94 | 0.9 | 37 | 0.8879 | 1.215 | -0.105 | 0.912 |
| 25-Jul-95 | 0.9 | 38 | 0.9121 | 1.354 | -0.105 | |
| 5-Oct-91 | 1 | 39 | 0.9364 | 1.525 | 0.000 | |
| 10-Jan-95 | 1 | 40 | 0.9606 | 1.758 | 0.000 | |
| 18-May-91 | 1.1 | 41 | 0.9848 | 2.166 | 0.095 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tCd** | | **CC276** | | |
| **LN Analysis** | | **tCd** | | |
| **Discharge, Q** | | **Q Data, EV=20cfs CV=1.06** | | |
| **Avg:** | **20** | **Q Data-based LN** | | |
| **SD:** | **21** | u | lnQ | Q |
| **CV:** | **1.06** | 3 | 5.2 | 184 |
| **Min:** | **6** | 0 | 2.61 | 14 |
| **Max:** | **103** | -3 | 0.01 | 1 |
| **Median:** | **12** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.878, EV=19.6 cfs CV=0.88; max r2=0.967**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.878 | u | lnQ | Q |
| slope, m | 1.326 | 3 | 4.95 | 142 |
| intercept, b | -3.565 | 0 | 2.69 | 15 |
| N | 41 | -3 | 0.43 | 2 |
| E[Q] | 19.6 | Parameter Estimates | | |
| SD[Q] | 17 | from LN regression | | |
| CV[Q] | 0.88 | update graph label | | |

| Date | Q Discharge cfs Ranked | N 41 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.967 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 6.27 | 1 | 0.0152 | -2.166 | 1.836 | 0.878 |
| 5-Oct-91 | 6.48 | 2 | 0.0394 | -1.758 | 1.869 | 0.895 |
| 14-Aug-95 | 7.56 | 3 | 0.0636 | -1.525 | 2.023 | 0.902 |
| 18-Feb-94 | 7.9 | 4 | 0.0879 | -1.354 | 2.067 | 0.914 |
| 17-Dec-93 | 8.06 | 5 | 0.1121 | -1.215 | 2.087 | 0.925 |
| *12-Nov-98* | *8.09* | 6 | 0.1364 | -1.097 | 2.091 | 0.934 |
| 30-Nov-93 | 8.15 | 7 | 0.1606 | -0.992 | 2.098 | 0.942 |
| 17-Dec-93 | 8.15 | 8 | 0.1848 | -0.897 | 2.098 | 0.948 |
| 18-Feb-94 | 8.46 | 9 | 0.2091 | -0.810 | 2.135 | 0.953 |
| 25-Jul-95 | 8.46 | 10 | 0.2333 | -0.728 | 2.135 | 0.957 |
| 6-Oct-94 | 8.78 | 11 | 0.2576 | -0.651 | 2.172 | 0.960 |
| 20-Jan-94 | 8.8 | 12 | 0.2818 | -0.577 | 2.175 | 0.963 |
| 27-Oct-93 | 9.12 | 13 | 0.3061 | -0.507 | 2.210 | 0.965 |
| 20-Jan-94 | 9.12 | 14 | 0.3303 | -0.439 | 2.210 | 0.967 |
| 16-Nov-94 | 9.12 | 15 | 0.3545 | -0.373 | 2.210 | 0.967 |
| 13-Dec-94 | 9.12 | 16 | 0.3788 | -0.309 | 2.210 | 0.966 |
| 13-Sep-94 | 9.84 | 17 | 0.4030 | -0.246 | 2.286 | 0.964 |
| 16-Aug-94 | 10.39 | 18 | 0.4273 | -0.183 | 2.341 | 0.962 |
| 25-Jul-94 | 11.9 | 19 | 0.4515 | -0.122 | 2.477 | 0.960 |
| 16-Aug-94 | 11.9 | 20 | 0.4758 | -0.061 | 2.477 | 0.961 |
| *30-Aug-99* | *12* | 21 | 0.5000 | 0.000 | 2.485 | 0.961 |
| 10-Jan-95 | 12.37 | 22 | 0.5242 | 0.061 | 2.515 | 0.959 |
| 8-Mar-94 | 12.85 | 23 | 0.5485 | 0.122 | 2.553 | 0.956 |
| 11-Jul-95 | 12.85 | 24 | 0.5727 | 0.183 | 2.553 | 0.953 |
| 24-Mar-94 | 14.43 | 25 | 0.5970 | 0.246 | 2.669 | 0.948 |
| 23-Jun-94 | 17.53 | 26 | 0.6212 | 0.309 | 2.864 | 0.943 |
| 7-Apr-94 | 18.22 | 27 | 0.6455 | 0.373 | 2.903 | 0.946 |
| 8-Mar-95 | 18.22 | 28 | 0.6697 | 0.439 | 2.903 | 0.949 |
| 9-Feb-95 | 18.95 | 29 | 0.6939 | 0.507 | 2.942 | 0.949 |
| 10-Nov-97 | 20.1 | 30 | 0.7182 | 0.577 | 3.001 | 0.949 |
| 12-Apr-95 | 20.5 | 31 | 0.7424 | 0.651 | 3.020 | 0.948 |
| 7-Apr-94 | 21.84 | 32 | 0.7667 | 0.728 | 3.084 | 0.944 |
| *8-Jul-99* | *22* | 33 | 0.7909 | 0.810 | 3.091 | 0.938 |
| 25-Apr-95 | 24.01 | 34 | 0.8152 | 0.897 | 3.178 | 0.925 |
| 22-Mar-95 | 26 | 35 | 0.8394 | 0.992 | 3.258 | 0.906 |
| 7-Jun-94 | 33.06 | 36 | 0.8636 | 1.097 | 3.498 | 0.878 |
| 4-May-94 | 38.88 | 37 | 0.8879 | 1.215 | 3.660 | 0.836 |
| 13-Jun-95 | 43.93 | 38 | 0.9121 | 1.354 | 3.783 | |
| 19-May-94 | 47.69 | 39 | 0.9364 | 1.525 | 3.865 | |
| 18-May-91 | 101 | 40 | 0.9606 | 1.758 | 4.615 | |
| *5-Aug-99* | *103* | 41 | 0.9848 | 2.166 | 4.635 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **CC276** | **Date:** | **26-May-00** |
| **Chemical:** | **tPb** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 34,720 | 20 | 10 | 2 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 636 | 21 | 13 | 7 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.06 | 1.28 | 3.97 | | | | |
| **Min:** | 33,376 | 6 | 0 | 0 | | -0 65 | -0.76 | -0.25 |
| **Max:** | 36,402 | 103 | 85 | 46 | | 3.95 | 5.74 | 6.14 |
| **Median:** | 34,562 | 12 | 8 | 0 | | -0.37 | -0.17 | -0.19 |

| tPb CC276 | | : Concentration v. Discharge, Q | | | Q = mTime +b | LnQ = mTime +b |
|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.27)** | update r2 | | | | r2: 0.007 | 0.017 |
| r2 Q,[COC]: | 0.27 | [tPb] | Q | | m. 0.0028 | 0.00014 |
| slope, m: | 0.3 | 6 | 6.3 | | b -77 | -2.19 |
| intercept, b: | 4.1 | 10 | 19.9 | | | |
| N: 39 | | 37 | 103 | | | |
| **LnConc. = mLn(Q)+b (r2=0.0.003)** | update r2 | | | | | |
| lnQ,ln[COC]: | 0.003 | ln[tPb] | ln Q | [tPb] | Q | |
| slope, m. | -0.07 | 2.01 | 1.84 | 7 | 6 | |
| intercept, b. | 2.14 | 1.93 | 2.99 | 7 | 20 | |
| N: 39 | | 1.81 | 4.63 | 6 | 103 | |

**N= 41**

| | Sampling Date | Q Discharge cfs | tPb Concentration ug/L | tPb Load lbs/day | Ln Q | Ln tPb Conc. | Ln tPb Load | tPb CC276 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 18-May-91 | 101 | 85 | 46.2 | 4.62 | 4.44 | 3.83 | 3.85 | 5 74 | 6.14 |
| MFG | 5-Oct-91 | 6.48 | 13 | 0.5 | 1.87 | 2.56 | -0.79 | -0.64 | 0.22 | -0.19 |
| IDEQ | 27-Oct-93 | 9.12 | 7 | 0.3 | 2.21 | 1.95 | -1.07 | -0.51 | -0.25 | -0.20 |
| IDEQ | 30-Nov-93 | 8.15 | 10 | 0.4 | 2.10 | 2.30 | -0.82 | -0.56 | -0.02 | -0.19 |
| IDEQ | 17-Dec-93 | 8.15 | 8 | 0.4 | 2.10 | 2.08 | -1.05 | -0.56 | -0.17 | -0.20 |
| IDEQ | 17-Dec-93 | 8.06 | 8 | 0.3 | 2.09 | 2.08 | -1.06 | -0.56 | -0.17 | -0.20 |
| IDEQ | 20-Jan-94 | 9.12 | 7 | 0.3 | 2.21 | 1.95 | -1.07 | -0.51 | -0.25 | -0.20 |
| IDEQ | 20-Jan-94 | 8.8 | 7 | 0.3 | 2.17 | 1.95 | -1.10 | -0.53 | -0.25 | -0.21 |
| IDEQ | 18-Feb-94 | 8.46 | 7 | 0.3 | 2.14 | 1.95 | -1.14 | -0.54 | -0.25 | -0.21 |
| IDEQ | 18-Feb-94 | 7.9 | 7 | 0.3 | 2.07 | 1.95 | -1.21 | -0.57 | -0.25 | -0.21 |
| IDEQ | 8-Mar-94 | 12.85 | 6 | 0.4 | 2.55 | 1.79 | -0.88 | -0.33 | -0.32 | -0.19 |
| IDEQ | 24-Mar-94 | 14.43 | 11 | 0.9 | 2.67 | 2.40 | -0.16 | -0.26 | 0.06 | -0.13 |
| IDEQ | 7-Apr-94 | 18.22 | 8 | 0.8 | 2.90 | 2.08 | -0.24 | -0.08 | -0.17 | -0.14 |
| IDEQ | 7-Apr-94 | 21.84 | 8 | 0.9 | 3.08 | 2.08 | -0.06 | 0.09 | -0.17 | -0.12 |
| IDEQ | 4-May-94 | 38.88 | 6 | 1.3 | 3.66 | 1.79 | 0.23 | 0.90 | -0.32 | -0.08 |
| *IDEQ* | *19-May-94* | *47.69* | | | 3.86 | | | 1.32 | | |
| IDEQ | 7-Jun-94 | 33.06 | 5 | 0.9 | 3.50 | 1.61 | -0.12 | 0.63 | -0.40 | -0.13 |
| IDEQ | 23-Jun-94 | 17.53 | 6 | 0.6 | 2.86 | 1.79 | -0.57 | -0.11 | -0.32 | -0.17 |
| IDEQ | 25-Jul-94 | 11 9 | 9 | 0.6 | 2.48 | 2.20 | -0.55 | -0.38 | -0.09 | -0.17 |
| IDEQ | 16-Aug-94 | 11.9 | 11 | 0 7 | 2.48 | 2.40 | -0.35 | -0.38 | 0.06 | -0.15 |
| IDEQ | 16-Aug-94 | 10.39 | 11 | 0.6 | 2.34 | 2.40 | -0.49 | -0.45 | 0.06 | -0.17 |
| IDEQ | 13-Sep-94 | 9.84 | 11 | 0.6 | 2.29 | 2.40 | -0.54 | -0.48 | 0.06 | -0.17 |
| IDEQ | 6-Oct-94 | 8.78 | 6 | 0.3 | 2.17 | 1.79 | -1.26 | -0.53 | -0.32 | -0.21 |
| IDEQ | 16-Nov-94 | 9.12 | 7 | 0.3 | 2.21 | 1.95 | -1.07 | -0.51 | -0.25 | -0.20 |
| IDEQ | 13-Dec-94 | 9.12 | 6 | 0.3 | 2.21 | 1.79 | -1.22 | -0.51 | -0.32 | -0.21 |
| IDEQ | 10-Jan-95 | 12.37 | 12 | 0.8 | 2.52 | 2.48 | -0.22 | -0.36 | 0.14 | -0.14 |
| IDEQ | 9-Feb-95 | 18.95 | 8 | 0.8 | 2.94 | 2.08 | -0.20 | -0.04 | -0.17 | -0.14 |
| *IDEQ* | *8-Mar-95* | *18.22* | | | 2.90 | | | -0.08 | | |
| IDEQ | 22-Mar-95 | 26 | 8 | 1.1 | 3.26 | 2.08 | 0.11 | 0.29 | -0.17 | -0.10 |
| IDEQ | 12-Apr-95 | 20.5 | 12 | 1.3 | 3.02 | 2.48 | 0.28 | 0.03 | 0.14 | -0.07 |
| IDEQ | 25-Apr-95 | 24.01 | 8 | 1.0 | 3.18 | 2.08 | 0.03 | 0.20 | -0.17 | -0.11 |
| IDEQ | 13-Jun-95 | 43.93 | 16 | 3.8 | 3.78 | 2.77 | 1.33 | 1.14 | 0.45 | 0.27 |
| IDEQ | 11-Jul-95 | 12.85 | 10 | 0 7 | 2.55 | 2.30 | -0.37 | -0.33 | -0.02 | -0.16 |
| IDEQ | 25-Jul-95 | 8 46 | 30 | 1.4 | 2.14 | 3.40 | 0.31 | -0.54 | 1.52 | -0.06 |
| IDEQ | 14-Aug-95 | 7.56 | 7 | 0.3 | 2.02 | 1.95 | -1.26 | -0.58 | -0.25 | -0.21 |
| IDEQ | 13-Sep-95 | 6.27 | 7 | 0.2 | 1.84 | 1.95 | -1.44 | -0.65 | -0.25 | -0.22 |
| URS | 10-Nov-97 | 20.1 | 2.8 | 0.3 | 3.00 | 1.03 | -1.19 | 0.01 | -0.57 | -0.21 |
| URS | 12-Nov-98 | 8.09 | 4.9 | 0.2 | 2.09 | 1.59 | -1.55 | -0.56 | -0.41 | -0.22 |
| USGS | 8-Jul-99 | 22 | 1.1 | 0.1 | 3.09 | 0.10 | -2.04 | 0.10 | -0.70 | -0.23 |
| USGS | 5-Aug-99 | 103 | 0.62 | 0.3 | 4.63 | -0.48 | -1.07 | 3.95 | -0.73 | -0.20 |
| USGS | 30-Aug-99 | 12 | 0.24 | 0.02 | 2.48 | -1.43 | -4.17 | -0.37 | -0.76 | -0.25 |

tPb

**Concentration over time analysis**

| | tPb | CC276 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.608** | **-0.00110** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 18-May-91 | 3.44 | 31 | | |
| mid | 16-Aug-94 | 2.13 | 8 | | |
| last | 30-Aug-99 | 0.10 | 1 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

**Load over time analysis**

| | tPb | CC276 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.306** | **-0.00095** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 18-May-91 | 0.66 | 2 | | |
| mid | 16-Aug-94 | -0.47 | 1 | | |
| last | 30-Aug-99 | -2.21 | 0.11 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

| | max r2 | 0.778 | | max r2 | 0.564 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.608 | -0.00110 | 40.30 | 0.306 | -0.00095 | 32.23 |
| | 0.557 | -0.00101 | 36.98 | 0.219 | -0.00065 | 21.69 |
| | 0.564 | -0.00107 | 38.96 | 0.249 | -0.00073 | 24.63 |
| | 0.573 | -0.00109 | 39.68 | 0.265 | -0.00076 | 25.71 |
| | 0.570 | -0.00109 | 39.84 | 0.274 | -0.00078 | 26.42 |
| | 0.574 | -0.00110 | 40.33 | 0.290 | -0.00081 | 27.50 |
| | 0.577 | -0.00112 | 40.86 | 0.310 | -0.00084 | 28.71 |
| | 0.585 | -0.00114 | 41.57 | 0.330 | -0.00088 | 29.94 |
| | 0.594 | -0.00116 | 42.36 | 0.355 | -0.00092 | 31.37 |
| | 0.603 | -0.00118 | 43.13 | 0.383 | -0.00096 | 32.91 |
| | 0.613 | -0.00121 | 44.01 | 0.419 | -0.00101 | 34.75 |
| | 0.631 | -0.00124 | 45.20 | 0.441 | -0.00105 | 36.13 |
| | 0.626 | -0.00125 | 45.34 | 0.436 | -0.00106 | 36.26 |
| | 0.631 | -0.00127 | 46.08 | 0.433 | -0.00106 | 36.54 |
| | 0.637 | -0.00129 | 46.93 | 0.425 | -0.00106 | 36.49 |
| | 0.657 | -0.00133 | 48.40 | 0.410 | -0.00104 | 35.74 |
| | 0.657 | -0.00133 | 48.40 | 0.410 | -0.00104 | 35.74 |
| | 0.689 | -0.00138 | 50.31 | 0.400 | -0.00104 | 35.61 |
| | 0.712 | -0.00143 | 52.01 | 0.405 | -0.00106 | 36.45 |
| | 0.716 | -0.00145 | 52.83 | 0.409 | -0.00108 | 37.26 |
| | 0.712 | -0.00146 | 53.19 | 0.406 | -0.00109 | 37.62 |
| | 0.708 | -0.00148 | 53.62 | 0.407 | -0.00112 | 38.43 |
| | 0.702 | -0.00149 | 53.99 | 0.411 | -0.00114 | 39.42 |
| | 0.726 | -0.00155 | 56.16 | 0.460 | -0.00123 | 42.68 |
| | 0.741 | -0.00160 | 57.98 | 0.502 | -0.00132 | 45.68 |
| | 0.768 | -0.00167 | 60.54 | 0.564 | -0.00143 | 49.67 |
| | 0.760 | -0.00168 | 60.95 | 0.563 | -0.00146 | 50.74 |
| | 0.769 | -0.00173 | 62.87 | 0.559 | -0.00149 | 51.81 |
| | 0.769 | -0.00173 | 62.87 | 0.559 | -0.00149 | 51.81 |
| | 0.778 | -0.00179 | 64.97 | 0.539 | -0.00148 | 51.51 |
| | 0.767 | -0.00181 | 65.55 | 0.508 | -0.00144 | 50.11 |
| | 0.777 | -0.00189 | 68.66 | 0.476 | -0.00142 | 49.50 |
| | 0.750 | -0.00187 | 67.61 | 0.414 | -0.00113 | 39.00 |
| | 0.732 | -0.00192 | 69.69 | 0.353 | -0.00108 | 37.07 |
| | 0.659 | -0.00162 | 58.90 | 0.192 | -0.00073 | 24.18 |
| | 0.592 | -0.00176 | 63.94 | 0.150 | -0.00079 | 26.64 |
| | 0.526 | -0.00312 | 113.01 | 0.237 | -0.00221 | 78.11 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **tPb** | | **CC276** | | |
| **LN Analysis** | | **tPb** | | |
| **Load** | | **Load Data, EV=2 lbs/day CV=3.97** | | |
| **Avg:** | **2** | **Load Data-based LN** | | |
| **SD:** | **7** | u | ln tPb Load | tPb Load |
| **CV:** | **3.97** | 3 | 4.2 | 68 |
| **Min:** | **0.02** | 0 | -0.81 | 0.445 |
| **Max:** | **46** | -3 | -5.85 | 0.003 |
| **Median:** | **0.5** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.801, EV=1.2 lbs/day; CV=2.16; max r2=0.890**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.801 | u | lnLoad | Load |
| slope, m | 0.760 | 3 | 3.25 | 26 |
| intercept, b | 0.532 | 0 | -0 70 | 0.5 |
| N | 39 | -3 | -4.65 | 0.010 |
| E[Load] | 1.2 | Parameter Estimates | | |
| SD[Load] | 3 | from LN regression | | |
| CV[Load] | 2.16 | update graph label | | |

N 41

| Date | tPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.890 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 30-Aug-99 | 0.02 | 1 | 0.0152 | -2.166 | -4.167 | 0.801 |
| *8-Mar-95* | | 2 | 0.0394 | -1.758 | | |
| 8-Jul-99 | 0.1 | 3 | 0.0636 | -1.525 | -2.039 | 0.777 |
| 12-Nov-98 | 0.2 | 4 | 0.0879 | -1.354 | -1.545 | 0.762 |
| 13-Sep-95 | 0.2 | 5 | 0.1121 | -1.215 | -1.443 | 0.759 |
| 6-Oct-94 | 0.3 | 6 | 0.1364 | -1.097 | -1.261 | 0 758 |
| 14-Aug-95 | 0.3 | 7 | 0.1606 | -0.992 | -1.256 | 0.763 |
| 13-Dec-94 | 0.3 | 8 | 0.1848 | -0.897 | -1.223 | 0.766 |
| 18-Feb-94 | 0.3 | 9 | 0.2091 | -0.810 | -1.212 | 0 770 |
| 10-Nov-97 | 0.3 | 10 | 0.2333 | -0.728 | -1.195 | 0 772 |
| 18-Feb-94 | 0.3 | 11 | 0.2576 | -0.651 | -1.144 | 0.773 |
| *19-May-94* | | 12 | 0.2818 | -0.577 | | |
| 20-Jan-94 | 0.3 | 13 | 0.3061 | -0.507 | -1.104 | 0.776 |
| 27-Oct-93 | 0.3 | 14 | 0.3303 | -0.439 | -1.069 | 0 775 |
| 20-Jan-94 | 0.3 | 15 | 0.3545 | -0.373 | -1.069 | 0.775 |
| 16-Nov-94 | 0.3 | 16 | 0.3788 | -0.309 | -1.069 | 0.773 |
| 5-Aug-99 | 0.3 | 17 | 0 4030 | -0.246 | -1.068 | 0.768 |
| 17-Dec-93 | 0.3 | 18 | 0.4273 | -0.183 | -1.059 | 0.762 |
| 17-Dec-93 | 0.4 | 19 | 0.4515 | -0.122 | -1.048 | 0.753 |
| 8-Mar-94 | 0.4 | 20 | 0 4758 | -0.061 | -0.880 | 0.742 |
| 30-Nov-93 | 0.4 | 21 | 0.5000 | 0.000 | -0.824 | 0.735 |
| 5-Oct-91 | 0.5 | 22 | 0.5242 | 0.061 | -0.791 | 0.727 |
| 23-Jun-94 | 0.6 | 23 | 0.5485 | 0.122 | -0.569 | 0.719 |
| 25-Jul-94 | 0.6 | 24 | 0.5727 | 0.183 | -0.551 | 0.721 |
| 13-Sep-94 | 0.6 | 25 | 0.5970 | 0.246 | -0.541 | 0.722 |
| 16-Aug-94 | 0 6 | 26 | 0.6212 | 0.309 | -0 486 | 0 721 |
| 11-Jul-95 | 0.7 | 27 | 0.6455 | 0 373 | -0.369 | 0 721 |
| 16-Aug-94 | 0.7 | 28 | 0 6697 | 0 439 | -0.351 | 0.728 |
| 7-Apr-94 | 0.8 | 29 | 0.6939 | 0.507 | -0.243 | 0 734 |
| 10-Jan-95 | 0.8 | 30 | 0 7182 | 0.577 | -0.225 | 0.747 |
| 9-Feb-95 | 0.8 | 31 | 0 7424 | 0.651 | -0.204 | 0 761 |
| 24-Mar-94 | 0.9 | 32 | 0.7667 | 0.728 | -0.158 | 0.775 |
| 7-Jun-94 | 0.9 | 33 | 0.7909 | 0.810 | -0.117 | 0.791 |
| 7-Apr-94 | 0.9 | 34 | 0.8152 | 0.897 | -0.062 | 0.808 |
| 25-Apr-95 | 1.0 | 35 | 0.8394 | 0.992 | 0.033 | 0.827 |
| 22-Mar-95 | 1.1 | 36 | 0.8636 | 1.097 | 0.112 | 0.855 |
| 4-May-94 | 1.3 | 37 | 0.8879 | 1.215 | 0.227 | 0.890 |
| 12-Apr-95 | 1.3 | 38 | 0.9121 | 1.354 | 0.280 | |
| 25-Jul-95 | 1.4 | 39 | 0.9364 | 1.525 | 0.311 | |
| 13-Jun-95 | 3.8 | 40 | 0.9606 | 1.758 | 1.330 | |
| 18-May-91 | 46.19 | 41 | 0.9848 | 2.166 | 3.833 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tPb** | | **CC276** | | |
| **LN Analysis** | | **tPb** | | |
| **Concentration** | | **Conc. Data, EV=10 ug/L CV=1.28** | | |
| **Avg:** | **10** | **Data-based LN** | | |
| **SD:** | **13** | u | ln[tPb] | [tPb] |
| **CV:** | **1.28** | 3 | 4.8 | 120 |
| **Min:** | **0.24** | 0 | 1.84 | 6 |
| **Max:** | **85** | -3 | -1 11 | 0.3 |
| **Median:** | **8** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **$r^2$=0.791, EV=11.9 ug/L CV=1.53; max r2=0.967**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.791 | u | lnConc | Conc |
| slope, m | 0.911 | 3 | 5.17 | 176 |
| intercept, b | -1 711 | 0 | 1.88 | 7 |
| N | 39 | -3 | -1.41 | 0.2 |
| E[Conc] | 11.9 | Parameter Estimates | | |
| SD[Conc] | 18 | from LN regression | | |
| CV[Conc] | 1.53 | update graph label | | |

N 41

| Date | tPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.967 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 30-Aug-99 | 0.24 | 1 | 0.0152 | -2 166 | -1 427 | 0.791 |
| 5-Aug-99 | 0.62 | 2 | 0.0394 | -1 758 | -0.478 | 0.793 |
| 8-Jul-99 | 1.1 | 3 | 0.0636 | -1.525 | 0.095 | 0.796 |
| *19-May-94* | | 4 | 0.0879 | -1.354 | | |
| *8-Mar-95* | | 5 | 0.1121 | -1.215 | | |
| 10-Nov-97 | 2.8 | 6 | 0 1364 | -1.097 | 1.030 | 0.798 |
| 12-Nov-98 | 4.9 | 7 | 0.1606 | -0.992 | 1.589 | 0.782 |
| 7-Jun-94 | 5 | 8 | 0.1848 | -0.897 | 1 609 | 0.775 |
| 8-Mar-94 | 6 | 9 | 0.2091 | -0.810 | 1.792 | 0.767 |
| 4-May-94 | 6 | 10 | 0.2333 | -0.728 | 1.792 | 0.770 |
| 23-Jun-94 | 6 | 11 | 0.2576 | -0.651 | 1.792 | 0.771 |
| 6-Oct-94 | 6 | 12 | 0.2818 | -0.577 | 1.792 | 0.771 |
| 13-Dec-94 | 6 | 13 | 0.3061 | -0.507 | 1.792 | 0.769 |
| 27-Oct-93 | 7 | 14 | 0.3303 | -0.439 | 1.946 | 0.764 |
| 20-Jan-94 | 7 | 15 | 0.3545 | -0.373 | 1.946 | 0.772 |
| 20-Jan-94 | 7 | 16 | 0.3788 | -0.309 | 1.946 | 0.779 |
| 18-Feb-94 | 7 | 17 | 0.4030 | -0.246 | 1.946 | 0.784 |
| 18-Feb-94 | 7 | 18 | 0.4273 | -0.183 | 1.946 | 0.789 |
| 16-Nov-94 | 7 | 19 | 0.4515 | -0.122 | 1.946 | 0.792 |
| 14-Aug-95 | 7 | 20 | 0.4758 | -0.061 | 1.946 | 0.793 |
| 13-Sep-95 | 7 | 21 | 0.5000 | 0.000 | 1.946 | 0.791 |
| 17-Dec-93 | 8 | 22 | 0.5242 | 0.061 | 2.079 | 0.788 |
| 17-Dec-93 | 8 | 23 | 0.5485 | 0.122 | 2.079 | 0 797 |
| 7-Apr-94 | 8 | 24 | 0.5727 | 0.183 | 2.079 | 0.804 |
| 7-Apr-94 | 8 | 25 | 0.5970 | 0.246 | 2.079 | 0.809 |
| 9-Feb-95 | 8 | 26 | 0.6212 | 0.309 | 2.079 | 0.813 |
| 22-Mar-95 | 8 | 27 | 0.6455 | 0.373 | 2.079 | 0.813 |
| 25-Apr-95 | 8 | 28 | 0.6697 | 0 439 | 2.079 | 0.809 |
| 25-Jul-94 | 9 | 29 | 0.6939 | 0.507 | 2.197 | 0.801 |
| 30-Nov-93 | 10 | 30 | 0.7182 | 0.577 | 2.303 | 0.802 |
| 11-Jul-95 | 10 | 31 | 0 7424 | 0.651 | 2.303 | 0.816 |
| 24-Mar-94 | 11 | 32 | 0 7667 | 0.728 | 2.398 | 0.828 |
| 16-Aug-94 | 11 | 33 | 0.7909 | 0.810 | 2.398 | 0.857 |
| 16-Aug-94 | 11 | 34 | 0.8152 | 0.897 | 2.398 | 0.885 |
| 13-Sep-94 | 11 | 35 | 0 8394 | 0.992 | 2.398 | 0.912 |
| 10-Jan-95 | 12 | 36 | 0.8636 | 1.097 | 2 485 | 0.933 |
| 12-Apr-95 | 12 | 37 | 0.8879 | 1.215 | 2.485 | 0.967 |
| 5-Oct-91 | 13 | 38 | 0.9121 | 1.354 | 2.565 | |
| 13-Jun-95 | 16 | 39 | 0.9364 | 1.525 | 2.773 | |
| 25-Jul-95 | 30 | 40 | 0.9606 | 1.758 | 3 401 | |
| 18-May-91 | 85 | 41 | 0 9848 | 2.166 | 4 443 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tPb** | | **CC276** | | |
| **LN Analysis** | | **tPb** | | |
| **Discharge, Q** | | **Q Data, EV=20 cfs CV=1.06** | | |
| **Avg:** | **20** | **Q Data-based LN** | | |
| **SD:** | **21** | u | inQ | Q |
| **CV:** | **1.06** | 3 | 5.2 | 184 |
| **Min:** | **6** | 0 | 2.61 | 14 |
| **Max:** | **103** | -3 | 0.01 | 1 |
| **Median:** | **12** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV **r2=0.878, EV=19.6 cfs CV=0.88; max r2=0.967**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.878 | u | lnQ | Q |
| slope, m | 1.326 | 3 | 4.95 | 142 |
| intercept, b | -3.565 | 0 | 2.69 | 15 |
| N | 41 | -3 | 0.43 | 2 |
| E[Q] | 19.6 | Parameter Estimates | | |
| SD[Q] | 17 | from LN regression | | |
| CV[Q] | 0.88 | update graph label | | |

N 41

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.967 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 6.27 | 1 | 0.0152 | -2.166 | 1.836 | 0.878 |
| 5-Oct-91 | 6.48 | 2 | 0.0394 | -1.758 | 1.869 | 0.895 |
| 14-Aug-95 | 7.56 | 3 | 0.0636 | -1.525 | 2.023 | 0.902 |
| 18-Feb-94 | 7.9 | 4 | 0.0879 | -1.354 | 2.067 | 0.914 |
| 17-Dec-93 | 8.06 | 5 | 0.1121 | -1.215 | 2.087 | 0.925 |
| 12-Nov-98 | 8.09 | 6 | 0.1364 | -1.097 | 2.091 | 0.934 |
| 30-Nov-93 | 8.15 | 7 | 0.1606 | -0.992 | 2.098 | 0.942 |
| 17-Dec-93 | 8.15 | 8 | 0.1848 | -0.897 | 2.098 | 0.948 |
| 18-Feb-94 | 8.46 | 9 | 0.2091 | -0.810 | 2.135 | 0.953 |
| 25-Jul-95 | 8.46 | 10 | 0.2333 | -0.728 | 2.135 | 0.957 |
| 6-Oct-94 | 8.78 | 11 | 0.2576 | -0.651 | 2.172 | 0.960 |
| 20-Jan-94 | 8.8 | 12 | 0.2818 | -0.577 | 2.175 | 0.963 |
| 27-Oct-93 | 9.12 | 13 | 0.3061 | -0.507 | 2.210 | 0.965 |
| 20-Jan-94 | 9.12 | 14 | 0.3303 | -0.439 | 2.210 | 0.967 |
| 16-Nov-94 | 9.12 | 15 | 0.3545 | -0.373 | 2.210 | 0.967 |
| 13-Dec-94 | 9.12 | 16 | 0.3788 | -0.309 | 2.210 | 0.966 |
| 13-Sep-94 | 9.84 | 17 | 0.4030 | -0.246 | 2.286 | 0.964 |
| 16-Aug-94 | 10.39 | 18 | 0.4273 | -0.183 | 2.341 | 0.962 |
| 25-Jul-94 | 11.9 | 19 | 0.4515 | -0.122 | 2.477 | 0.960 |
| 16-Aug-94 | 11.9 | 20 | 0.4758 | -0.061 | 2.477 | 0.961 |
| 30-Aug-99 | 12 | 21 | 0.5000 | 0.000 | 2.485 | 0.961 |
| 10-Jan-95 | 12.37 | 22 | 0.5242 | 0.061 | 2.515 | 0.959 |
| 8-Mar-94 | 12.85 | 23 | 0.5485 | 0.122 | 2.553 | 0.956 |
| 11-Jul-95 | 12.85 | 24 | 0.5727 | 0.183 | 2.553 | 0.953 |
| 24-Mar-94 | 14.43 | 25 | 0.5970 | 0.246 | 2.669 | 0.948 |
| 23-Jun-94 | 17.53 | 26 | 0.6212 | 0.309 | 2.864 | 0.943 |
| 7-Apr-94 | 18.22 | 27 | 0.6455 | 0.373 | 2.903 | 0.946 |
| *8-Mar-95* | *18.22* | 28 | 0.6697 | 0.439 | 2.903 | 0.949 |
| 9-Feb-95 | 18.95 | 29 | 0.6939 | 0.507 | 2.942 | 0.949 |
| 10-Nov-97 | 20.1 | 30 | 0.7182 | 0.577 | 3.001 | 0.949 |
| 12-Apr-95 | 20.5 | 31 | 0.7424 | 0.651 | 3.020 | 0.948 |
| 7-Apr-94 | 21.84 | 32 | 0.7667 | 0.728 | 3.084 | 0.944 |
| 8-Jul-99 | 22 | 33 | 0.7909 | 0.810 | 3.091 | 0.938 |
| 25-Apr-95 | 24.01 | 34 | 0.8152 | 0.897 | 3.178 | 0.925 |
| 22-Mar-95 | 26 | 35 | 0.8394 | 0.992 | 3.258 | 0.906 |
| 7-Jun-94 | 33.06 | 36 | 0.8636 | 1.097 | 3.498 | 0.878 |
| 4-May-94 | 38.88 | 37 | 0.8879 | 1.215 | 3.660 | 0.836 |
| 13-Jun-95 | 43.93 | 38 | 0.9121 | 1.354 | 3.783 | |
| *19-May-94* | *47.69* | 39 | 0.9364 | 1.525 | 3.865 | |
| 18-May-91 | 101 | 40 | 0.9606 | 1.758 | 4.615 | |
| 5-Aug-99 | 103 | 41 | 0.9848 | 2.166 | 4.635 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC276 **Date:** 26-May-00
**Chemical:** tZn **Analyst:** J.Johnston
**Notes:**
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| Avg: | 34,720 | 20 | 92 | 9 | 0.00 | 0.00 | 0.00 |
| SD: | 636 | 21 | 40 | 17 | 1.00 | 1.00 | 1.00 |
| CV: | 0.02 | 1.06 | 0.44 | 1.80 | | | |
| Min: | 33,376 | 6 | 5 | 0 | -0.65 | -2.17 | -0.54 |
| Max: | 36,402 | 103 | 207 | 112 | 3.95 | 2.85 | 6.20 |
| Median: | 34,562 | 12 | 99 | 6 | -0.37 | 0.17 | -0.21 |

**tZn CC276 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.05)** update r2

| | | | |
|---|---|---|---|
| r2 Q,[COC] | 0.02 | [tZn] | Q |
| slope, m | -0.3 | 95 | 6.3 |
| intercept, b | 97.1 | 92 | 19.9 |
| N: 41 | | 71 | 103 |

**LnConc. = mLn(Q)+b (r2=0.07)** update r2

| | | | | | |
|---|---|---|---|---|---|
| lnQ,ln[COC]: | 0.14 | ln[tZn] | ln Q | [tZn] | Q |
| slope, m | -0.46 | 4.71 | 1.84 | 112 | 6 |
| intercept, b | 5.56 | 4.18 | 2.99 | 66 | 20 |
| N: 41 | | 3.42 | 4.63 | 31 | 103 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2: | 0.006 | 0.016 |
| m | 0.0027 | 0.00014 |
| b: | -73 | -2.10 |

**LnQ = mTime +b**

for graph
tZn 0
CC276

**N= 41**

| | Sampling Date | Q Discharge cfs | tZn Concentration ug/L | tZn Load lbs/day | Ln Q | Ln tZn Conc. | Ln tZn Load | Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 18-May-91 | 101 | 207 | 112 | 4.62 | 5.33 | 4.72 | 3.85 | 2.85 | 6.20 |
| MFG | 5-Oct-91 | 6.48 | 164 | 6 | 1.87 | 5.10 | 1.74 | -0.64 | 1.79 | -0.21 |
| IDEQ | 27-Oct-93 | 9.12 | 104 | 5 | 2.21 | 4.64 | 1.63 | -0.51 | 0.30 | -0.25 |
| IDEQ | 30-Nov-93 | 8.15 | 99.2 | 4 | 2.10 | 4.60 | 1.47 | -0.56 | 0.18 | -0.29 |
| IDEQ | 17-Dec-93 | 8.15 | 109 | 5 | 2.10 | 4.69 | 1.56 | -0.56 | 0.42 | -0.27 |
| IDEQ | 17-Dec-93 | 8.06 | 109 | 5 | 2.09 | 4.69 | 1.55 | -0.56 | 0.42 | -0.27 |
| IDEQ | 20-Jan-94 | 9.12 | 120 | 6 | 2.21 | 4.79 | 1.77 | -0.51 | 0.69 | -0.20 |
| IDEQ | 20-Jan-94 | 8.8 | 120 | 6 | 2.17 | 4.79 | 1.74 | -0.53 | 0.69 | -0.21 |
| IDEQ | 18-Feb-94 | 8.46 | 123 | 6 | 2.14 | 4.81 | 1.72 | -0.54 | 0.77 | -0.22 |
| IDEQ | 18-Feb-94 | 7.9 | 123 | 5 | 2.07 | 4.81 | 1.65 | -0.57 | 0.77 | -0.24 |
| IDEQ | 8-Mar-94 | 12.85 | 110 | 8 | 2.55 | 4.70 | 2.03 | -0.33 | 0.45 | -0.10 |
| IDEQ | 24-Mar-94 | 14.43 | 136 | 11 | 2.67 | 4.91 | 2.36 | -0.26 | 1.09 | 0.08 |
| IDEQ | 7-Apr-94 | 18.22 | 76 | 7 | 2.90 | 4.33 | 2.01 | -0.08 | -0.40 | -0.11 |
| IDEQ | 7-Apr-94 | 21.84 | 76 | 9 | 3.08 | 4.33 | 2.19 | 0.09 | -0.40 | -0.02 |
| IDEQ | 4-May-94 | 38.88 | 53 | 11 | 3.66 | 3.97 | 2.41 | 0.90 | -0.97 | 0.11 |
| IDEQ | 19-May-94 | 47.69 | 43 | 11 | 3.86 | 3.76 | 2.40 | 1.32 | -1.22 | 0.11 |
| IDEQ | 7-Jun-94 | 33.06 | 63 | 11 | 3.50 | 4.14 | 2.42 | 0.63 | -0.72 | 0.12 |
| IDEQ | 23-Jun-94 | 17.53 | 75 | 7 | 2.86 | 4.32 | 1.96 | -0.11 | -0.42 | -0.13 |
| IDEQ | 25-Jul-94 | 11.9 | 79 | 5 | 2.48 | 4.37 | 1.62 | -0.38 | -0.32 | -0.25 |
| IDEQ | 16-Aug-94 | 11.9 | 106 | 7 | 2.48 | 4.66 | 1.91 | -0.38 | 0.35 | -0.15 |
| IDEQ | 16-Aug-94 | 10.39 | 106 | 6 | 2.34 | 4.66 | 1.78 | -0.45 | 0.35 | -0.20 |
| IDEQ | 13-Sep-94 | 9.84 | 97 | 5 | 2.29 | 4.57 | 1.64 | -0.48 | 0.12 | -0.25 |
| IDEQ | 6-Oct-94 | 8.78 | 111 | 5 | 2.17 | 4.71 | 1.66 | -0.53 | 0.47 | -0.24 |
| IDEQ | 16-Nov-94 | 9.12 | 100 | 5 | 2.21 | 4.61 | 1.59 | -0.51 | 0.20 | -0.26 |
| IDEQ | 13-Dec-94 | 9.12 | 111 | 5 | 2.21 | 4.71 | 1.69 | -0.51 | 0.47 | -0.23 |
| IDEQ | 10-Jan-95 | 12.37 | 157 | 10 | 2.52 | 5.06 | 2.35 | -0.36 | 1.61 | 0.07 |
| IDEQ | 9-Feb-95 | 18.95 | 118 | 12 | 2.94 | 4.77 | 2.49 | -0.04 | 0.64 | 0.17 |
| IDEQ | 8-Mar-95 | 18.22 | 84 | 8 | 2.90 | 4.43 | 2.11 | -0.08 | -0.20 | -0.06 |
| IDEQ | 22-Mar-95 | 26 | 115 | 16 | 3.26 | 4.74 | 2.78 | 0.29 | 0.57 | 0.41 |
| IDEQ | 12-Apr-95 | 20.5 | 91 | 10 | 3.02 | 4.51 | 2.31 | 0.03 | -0.03 | 0.05 |
| IDEQ | 25-Apr-95 | 24.01 | 79 | 10 | 3.18 | 4.37 | 2.32 | 0.20 | -0.32 | 0.06 |
| IDEQ | 13-Jun-95 | 43.93 | 51 | 12 | 3.78 | 3.93 | 2.49 | 1.14 | -1.02 | 0.17 |
| IDEQ | 11-Jul-95 | 12.85 | 67 | 5 | 2.55 | 4.20 | 1.53 | -0.33 | -0.62 | -0.28 |
| IDEQ | 25-Jul-95 | 8.46 | 98 | 4 | 2.14 | 4.58 | 1.50 | -0.54 | 0.15 | -0.29 |
| IDEQ | 14-Aug-95 | 7.56 | 83 | 3 | 2.02 | 4.42 | 1.22 | -0.58 | -0.22 | -0.35 |
| IDEQ | 13-Sep-95 | 6.27 | 99 | 3 | 1.84 | 4.60 | 1.21 | -0.65 | 0.17 | -0.35 |
| URS | 10-Nov-97 | 20.1 | 48.1 | 5 | 3.00 | 3.87 | 1.65 | 0.01 | -1.09 | -0.24 |
| URS | 12-Nov-98 | 8.09 | 48.2 | 2 | 2.09 | 3.88 | 0.74 | -0.56 | -1.09 | -0.43 |
| USGS | 8-Jul-99 | 103 | 4.6 | 2.5 | 4.63 | 1.53 | 0.94 | 3.95 | -2.17 | -0.40 |
| USGS | 5-Aug-99 | 22 | 5.5 | 0.7 | 3.09 | 1.70 | -0.43 | 0.10 | -2.15 | -0.52 |
| USGS | 30-Aug-99 | 12 | 4.6 | 0.3 | 2.48 | 1.53 | -1.21 | -0.37 | -2.17 | -0.54 |

tZn

**Concentration over time analysis** r2 Slope, m

| | | | | | |
|---|---|---|---|---|---|
| | **tZn** | **CC276** | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.705** | **-0.00111** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 18-May-91 | 5.81 | 333 | | |
| mid | 16-Aug-94 | 4.50 | 90 | | |
| last | 30-Aug-99 | 2.46 | 12 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

**Load over time analysis**

| | | | | | |
|---|---|---|---|---|---|
| | **tZn** | **CC276** | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.514** | **-0.00097** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 18-May-91 | 3.09 | 22 | | |
| mid | 16-Aug-94 | 1.94 | 7 | | |
| last | 30-Aug-99 | 0.15 | 1 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

| | | | | | |
|---|---|---|---|---|---|
| 0.705 | -0.00111 | 42.77 | 0.514 | -0.00097 | 35.44 |
| 0.705 | -0.00111 | 42.77 | 0.514 | -0.00097 | 35.44 |
| 0.705 | -0.00111 | 42.77 | 0.514 | -0.00097 | 35.44 |
| 0.705 | -0.00111 | 42.77 | 0.514 | -0.00097 | 35.44 |
| 0.705 | -0.00111 | 42.77 | 0.514 | -0.00097 | 35.44 |
| 0.705 | -0.00111 | 42.77 | 0.514 | -0.00097 | 35.44 |
| 0.703 | -0.00115 | 44.33 | 0.457 | -0.00082 | 30.08 |
| 0.713 | -0.00121 | 46.43 | 0.509 | -0.00091 | 33.40 |
| 0.714 | -0.00122 | 46.81 | 0.523 | -0.00093 | 34.20 |
| 0.715 | -0.00123 | 47.20 | 0.546 | -0.00096 | 35.21 |
| 0.714 | -0.00124 | 47.45 | 0.565 | -0.00099 | 36.13 |
| 0.714 | -0.00125 | 47.73 | 0.587 | -0.00102 | 37.15 |
| 0.710 | -0.00125 | 47.80 | 0.597 | -0.00104 | 37.83 |
| 0.706 | -0.00125 | 47.89 | 0.610 | -0.00106 | 38.63 |
| 0.702 | -0.00125 | 47.88 | 0.623 | -0.00108 | 39.45 |
| 0.697 | -0.00125 | 47.87 | 0.642 | -0.00111 | 40.48 |
| 0.694 | -0.00126 | 48.01 | 0.643 | -0.00112 | 40.91 |
| 0.687 | -0.00125 | 47.76 | 0.637 | -0.00112 | 40.78 |
| 0.693 | -0.00127 | 48.51 | 0.638 | -0.00113 | 41.24 |
| 0.701 | -0.00129 | 49.35 | 0.634 | -0.00114 | 41.41 |
| 0.729 | -0.00134 | 50.90 | 0.625 | -0.00113 | 41.12 |
| 0.776 | -0.00140 | 53.01 | 0.615 | -0.00112 | 40.76 |
| 0.798 | -0.00144 | 54.48 | 0.604 | -0.00110 | 40.29 |
| 0.812 | -0.00147 | 55.71 | 0.603 | -0.00112 | 40.73 |
| 0.822 | -0.00150 | 56.83 | 0.618 | -0.00115 | 41.90 |
| 0.822 | -0.00152 | 57.32 | 0.619 | -0.00117 | 42.45 |
| 0.821 | -0.00153 | 57.90 | 0.627 | -0.00119 | 43.46 |
| 0.823 | -0.00156 | 58.69 | 0.644 | -0.00123 | 44.90 |
| 0.820 | -0.00157 | 59.11 | 0.662 | -0.00128 | 46.42 |
| 0.819 | -0.00158 | 59.71 | 0.684 | -0.00133 | 48.19 |
| 0.814 | -0.00159 | 59.97 | 0.701 | -0.00137 | 49.82 |
| 0.805 | -0.00156 | 58.99 | 0.688 | -0.00136 | 49.51 |
| 0.795 | -0.00155 | 58.65 | 0.672 | -0.00133 | 48.50 |
| 0.791 | -0.00157 | 59.36 | 0.659 | -0.00134 | 48.57 |
| 0.777 | -0.00156 | 58.84 | 0.638 | -0.00126 | 45.66 |
| 0.764 | -0.00157 | 59.14 | 0.608 | -0.00121 | 44.01 |
| 0.755 | -0.00160 | 60.29 | 0.565 | -0.00114 | 41.47 |
| max r2 | 0.000 | | max r2: | 0.000 | |
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |

update for EV, CV

**tZn** **CC276**

**LN Analysis** **tZn**

**Load** **Load Data, EV=9 lbs/day CV=1.82**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **9** | **Load Data-based LN** | | |
| **SD:** | **17** | u | ln tZn Load | tZn Load |
| **CV:** | **1.80** | 3 | 5.1 | 165 |
| **Min:** | **0** | 0 | 1.50 | 4 |
| **Max:** | **112** | -3 | -2.11 | 0 |
| **Median:** | **6** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.804, EV=9.8 lbs/day CV=1.29; max r2=0.815**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.804 | u | lnLoad | Load |
| slope, m | 1.008 | 3 | 4.76 | 117 |
| intercept, b | -1.800 | 0 | 1.79 | 6 |
| N: | 41 | -3 | -1.19 | 0 |
| E[Load]. | 9.8 | Parameter Estimates | | |
| SD[Load]. | 13 | from LN regression | | |
| CV[Load]. | 1.29 | update graph label | | |

| Date | tZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 = 0.815 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | N: 41 | | | |
| 30-Aug-99 | 0 | 1 | 0.0152 | -2.166 | -1.214 | 0.804 |
| 5-Aug-99 | 1 | 2 | 0.0394 | -1 758 | -0.429 | 0.808 |
| 12-Nov-98 | 2 | 3 | 0.0636 | -1.525 | 0.741 | 0.815 |
| 8-Jul-99 | 3 | 4 | 0.0879 | -1.354 | 0.936 | 0.797 |
| 13-Sep-95 | 3 | 5 | 0.1121 | -1.215 | 1.206 | 0.781 |
| 14-Aug-95 | 3 | 6 | 0.1364 | -1.097 | 1.217 | 0.772 |
| 30-Nov-93 | 4 | 7 | 0.1606 | -0.992 | 1 470 | 0.760 |
| 25-Jul-95 | 4 | 8 | 0.1848 | -0.897 | 1.495 | 0.761 |
| 11-Jul-95 | 5 | 9 | 0.2091 | -0.810 | 1.533 | 0.761 |
| 17-Dec-93 | 5 | 10 | 0.2333 | -0.728 | 1.553 | 0.762 |
| 17-Dec-93 | 5 | 11 | 0.2576 | -0.651 | 1.564 | 0.763 |
| 16-Nov-94 | 5 | 12 | 0.2818 | -0.577 | 1.591 | 0.763 |
| 25-Jul-94 | 5 | 13 | 0.3061 | -0.507 | 1.621 | 0.763 |
| 27-Oct-93 | 5.1 | 14 | 0.3303 | -0.439 | 1.630 | 0.764 |
| 13-Sep-94 | 5 | 15 | 0.3545 | -0.373 | 1.636 | 0.764 |
| 10-Nov-97 | 5 | 16 | 0.3788 | -0.309 | 1.649 | 0.762 |
| 18-Feb-94 | 5 | 17 | 0.4030 | -0.246 | 1.654 | 0.760 |
| 6-Oct-94 | 5 | 18 | 0.4273 | -0.183 | 1.657 | 0.755 |
| 13-Dec-94 | 5 | 19 | 0.4515 | -0.122 | 1.695 | 0.749 |
| 18-Feb-94 | 6 | 20 | 0.4758 | -0.061 | 1.722 | 0 743 |
| 20-Jan-94 | 6 | 21 | 0.5000 | 0.000 | 1 737 | 0.736 |
| 5-Oct-91 | 5.7 | 22 | 0.5242 | 0.061 | 1.744 | 0.727 |
| 20-Jan-94 | 6 | 23 | 0.5485 | 0.122 | 1.773 | 0.715 |
| 16-Aug-94 | 6 | 24 | 0.5727 | 0.183 | 1.779 | 0.701 |
| 16-Aug-94 | 7 | 25 | 0.5970 | 0.246 | 1.915 | 0.683 |
| 23-Jun-94 | 7 | 26 | 0.6212 | 0.309 | 1.956 | 0.673 |
| 7-Apr-94 | 7 | 27 | 0.6455 | 0.373 | 2.008 | 0.662 |
| 8-Mar-94 | 8 | 28 | 0.6697 | 0.439 | 2.029 | 0.653 |
| 8-Mar-95 | 8 | 29 | 0.6939 | 0.507 | 2.108 | 0.640 |
| 7-Apr-94 | 9 | 30 | 0.7182 | 0.577 | 2.189 | 0.633 |
| 12-Apr-95 | 10 | 31 | 0.7424 | 0.651 | 2.306 | 0.632 |
| 25-Apr-95 | 10 | 32 | 0 7667 | 0.728 | 2.323 | 0.651 |
| 10-Jan-95 | 10 | 33 | 0.7909 | 0.810 | 2.346 | 0.672 |
| 24-Mar-94 | 11 | 34 | 0.8152 | 0.897 | 2.357 | 0.699 |
| 19-May-94 | 11 | 35 | 0.8394 | 0.992 | 2.401 | 0.727 |
| 4-May-94 | 11 | 36 | 0.8636 | 1.097 | 2.406 | 0.769 |
| 7-Jun-94 | 11 | 37 | 0 8879 | 1.215 | 2.416 | 0.815 |
| 9-Feb-95 | 12 | 38 | 0.9121 | 1.354 | 2.487 | |
| 13-Jun-95 | 12 | 39 | 0.9364 | 1.525 | 2.489 | |
| 22-Mar-95 | 16 | 40 | 0.9606 | 1 758 | 2.778 | |
| 18-May-91 | 112.5 | 41 | 0.9848 | 2.166 | 4.723 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tZn** | | **CC276** | | |
| **LN Analysis** | | **tZn** | | |
| **Concentration** | | **Conc. Data, EV=92 ug/L CV=.44** | | |
| **Avg:** | **92** | **Data-based LN** | | |
| **SD:** | **40** | u | ln[tZn] | [tZn] |
| **CV:** | **0.44** | 3 | 5.7 | 296 |
| **Min:** | **5** | 0 | 4.43 | 84 |
| **Max:** | **207** | -3 | 3.18 | 24 |
| **Median:** | **99** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV $r^2$=0.658, EV=133.3 ug/L CV=1.46; max r2=0.975

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.658 | u | lnConc | Conc |
| slope, m | 0.935 | 3 | 7.53 | 1862 |
| intercept, b | -4.039 | 0 | 4.32 | 75 |
| N | 41 | -3 | 1.11 | 3 |
| E[Conc] | 133.3 | Parameter Estimates | | |
| SD[Conc] | 195 | from LN regression | | |
| CV[Conc] | 1.46 | update graph label | | |

| Date | tZn Concentration ug/L Ranked | N 41 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.975 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 8-Jul-99 | 4.6 | 1 | 0.0152 | -2.166 | 1.526 | 0.658 |
| 30-Aug-99 | 4.6 | 2 | 0.0394 | -1.758 | 1.526 | 0.617 |
| 5-Aug-99 | 5.5 | 3 | 0.0636 | -1.525 | 1.705 | 0.636 |
| 19-May-94 | 43 | 4 | 0.0879 | -1.354 | 3.761 | 0.930 |
| 10-Nov-97 | 48.1 | 5 | 0.1121 | -1.215 | 3.873 | 0.929 |
| 12-Nov-98 | 48.2 | 6 | 0.1364 | -1.097 | 3.875 | 0.926 |
| 13-Jun-95 | 51 | 7 | 0.1606 | -0.992 | 3.932 | 0.930 |
| 4-May-94 | 53 | 8 | 0.1848 | -0.897 | 3.970 | 0.938 |
| 7-Jun-94 | 63 | 9 | 0.2091 | -0.810 | 4.143 | 0.954 |
| 11-Jul-95 | 67 | 10 | 0.2333 | -0.728 | 4.205 | 0.955 |
| 23-Jun-94 | 75 | 11 | 0.2576 | -0.651 | 4.317 | 0.956 |
| 7-Apr-94 | 76 | 12 | 0.2818 | -0.577 | 4.331 | 0.952 |
| 7-Apr-94 | 76 | 13 | 0.3061 | -0.507 | 4.331 | 0.948 |
| 25-Jul-94 | 79 | 14 | 0.3303 | -0.439 | 4.369 | 0.945 |
| 25-Apr-95 | 79 | 15 | 0.3545 | -0.373 | 4.369 | 0.941 |
| 14-Aug-95 | 83 | 16 | 0.3788 | -0.309 | 4.419 | 0.938 |
| 8-Mar-95 | 84 | 17 | 0.4030 | -0.246 | 4.431 | 0.934 |
| 12-Apr-95 | 91 | 18 | 0.4273 | -0.183 | 4.511 | 0.930 |
| 13-Sep-94 | 97 | 19 | 0.4515 | -0.122 | 4.575 | 0.924 |
| 25-Jul-95 | 98 | 20 | 0.4758 | -0.061 | 4.585 | 0.924 |
| 13-Sep-95 | 99 | 21 | 0.5000 | 0.000 | 4.595 | 0.923 |
| 30-Nov-93 | 99.2 | 22 | 0.5242 | 0.061 | 4.597 | 0.923 |
| 16-Nov-94 | 100 | 23 | 0.5485 | 0.122 | 4.605 | 0.920 |
| 27-Oct-93 | 104 | 24 | 0.5727 | 0.183 | 4.644 | 0.916 |
| 16-Aug-94 | 106 | 25 | 0.5970 | 0.246 | 4.663 | 0.917 |
| 16-Aug-94 | 106 | 26 | 0.6212 | 0.309 | 4.663 | 0.922 |
| 17-Dec-93 | 109 | 27 | 0.6455 | 0.373 | 4.691 | 0.924 |
| 17-Dec-93 | 109 | 28 | 0.6697 | 0.439 | 4.691 | 0.932 |
| 8-Mar-94 | 110 | 29 | 0.6939 | 0.507 | 4.700 | 0.937 |
| 6-Oct-94 | 111 | 30 | 0.7182 | 0.577 | 4.710 | 0.942 |
| 13-Dec-94 | 111 | 31 | 0.7424 | 0.651 | 4.710 | 0.946 |
| 22-Mar-95 | 115 | 32 | 0.7667 | 0.728 | 4.745 | 0.945 |
| 9-Feb-95 | 118 | 33 | 0.7909 | 0.810 | 4.771 | 0.950 |
| 20-Jan-94 | 120 | 34 | 0.8152 | 0.897 | 4.787 | 0.960 |
| 20-Jan-94 | 120 | 35 | 0.8394 | 0.992 | 4.787 | 0.973 |
| 18-Feb-94 | 123 | 36 | 0.8636 | 1.097 | 4.812 | 0.975 |
| 18-Feb-94 | 123 | 37 | 0.8879 | 1.215 | 4.812 | 0.973 |
| 24-Mar-94 | 136 | 38 | 0.9121 | 1.354 | 4.913 | |
| 10-Jan-95 | 157 | 39 | 0.9364 | 1.525 | 5.056 | |
| 5-Oct-91 | 164 | 40 | 0.9606 | 1.758 | 5.100 | |
| 18-May-91 | 207 | 41 | 0.9848 | 2.166 | 5.333 | |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| **tZn** | | **CC276** | | |
| **LN Analysis** | | **tZn** | | |
| **Discharge, Q** | | **Q Data, EV=17 cfs CV=0.99** | | |
| **Avg:** | **20** | **Q Data-based LN** | | |
| **SD:** | **21** | u | lnQ | Q |
| **CV:** | **1.06** | 3 | 5.2 | 184 |
| **Min:** | **6** | 0 | 2.61 | 14 |
| **Max:** | **103** | -3 | 0.01 | 1 |
| **Median:** | **12** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.878 EV=19.6 cfs CV=0.88; max r2=0.967**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.878 | u | lnQ | Q |
| slope, m | 1.326 | 3 | 4.95 | 142 |
| intercept, b | -3.565 | 0 | 2.69 | 15 |
| N: | 41 | -3 | 0.43 | 2 |
| E[Q]: | 19.6 | Parameter Estmates | | |
| SD[Q]: | 17 | from LN regression | | |
| CV[Q]: | 0.88 | update graph label | | |

| Date | Q Discharge cfs Ranked | i rank (N: 41) | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.967 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 6.2 | 1 | 0.0152 | -2.166 | 1.836 | 0.878 |
| 5-Oct-91 | 6.48 | 2 | 0.0394 | -1.758 | 1.869 | 0.895 |
| 14-Aug-95 | 7.56 | 3 | 0.0636 | -1.525 | 2.023 | 0.902 |
| 18-Feb-94 | 7 9 | 4 | 0.0879 | -1.354 | 2.067 | 0.914 |
| 17-Dec-93 | 8.06 | 5 | 0.1121 | -1.215 | 2.087 | 0.925 |
| 12-Nov-98 | 8.09 | 6 | 0.1364 | -1.097 | 2.091 | 0.934 |
| 30-Nov-93 | 8.15 | 7 | 0.1606 | -0.992 | 2.098 | 0.942 |
| 17-Dec-93 | 8.15 | 8 | 0.1848 | -0.897 | 2.098 | 0.948 |
| 18-Feb-94 | 8.46 | 9 | 0.2091 | -0.810 | 2.135 | 0.953 |
| 25-Jul-95 | 8.46 | 10 | 0.2333 | -0.728 | 2.135 | 0.957 |
| 6-Oct-94 | 8.78 | 11 | 0.2576 | -0.651 | 2.172 | 0.960 |
| 20-Jan-94 | 8.8 | 12 | 0.2818 | -0.577 | 2.175 | 0.963 |
| 27-Oct-93 | 9 12 | 13 | 0.3061 | -0.507 | 2.210 | 0.965 |
| 20-Jan-94 | 9.12 | 14 | 0.3303 | -0.439 | 2.210 | 0.967 |
| 16-Nov-94 | 9.12 | 15 | 0.3545 | -0.373 | 2.210 | 0.967 |
| 13-Dec-94 | 9.12 | 16 | 0.3788 | -0.309 | 2.210 | 0.966 |
| 13-Sep-94 | 9.84 | 17 | 0.4030 | -0.246 | 2.286 | 0.964 |
| 16-Aug-94 | 10.39 | 18 | 0.4273 | -0.183 | 2.341 | 0.962 |
| 25-Jul-94 | 11.9 | 19 | 0.4515 | -0.122 | 2.477 | 0.960 |
| 16-Aug-94 | 11.9 | 20 | 0.4758 | -0.061 | 2.477 | 0.961 |
| 30-Aug-99 | 12 | 21 | 0.5000 | 0.000 | 2.485 | 0.961 |
| 10-Jan-95 | 12.37 | 22 | 0.5242 | 0.061 | 2.515 | 0.959 |
| 8-Mar-94 | 12.85 | 23 | 0.5485 | 0.122 | 2.553 | 0.956 |
| 11-Jul-95 | 12.85 | 24 | 0.5727 | 0.183 | 2.553 | 0.953 |
| 24-Mar-94 | 14.43 | 25 | 0.5970 | 0.246 | 2.669 | 0.948 |
| 23-Jun-94 | 17.53 | 26 | 0.6212 | 0.309 | 2.864 | 0.943 |
| 7-Apr-94 | 18.22 | 27 | 0.6455 | 0.373 | 2.903 | 0.946 |
| 8-Mar-95 | 18.22 | 28 | 0.6697 | 0.439 | 2.903 | 0.949 |
| 9-Feb-95 | 18.95 | 29 | 0.6939 | 0.507 | 2.942 | 0.949 |
| 10-Nov-97 | 20.1 | 30 | 0.7182 | 0.577 | 3.001 | 0.949 |
| 12-Apr-95 | 20.5 | 31 | 0 7424 | 0.651 | 3.020 | 0.948 |
| 7-Apr-94 | 21 84 | 32 | 0.7667 | 0 728 | 3.084 | 0.944 |
| 5-Aug-99 | 22 | 33 | 0 7909 | 0.810 | 3.091 | 0.938 |
| 25-Apr-95 | 24.01 | 34 | 0.8152 | 0.897 | 3.178 | 0.925 |
| 22-Mar-95 | 26 | 35 | 0.8394 | 0.992 | 3.258 | 0.906 |
| 7-Jun-94 | 33.06 | 36 | 0.8636 | 1.097 | 3.498 | 0.878 |
| 4-May-94 | 38.88 | 37 | 0.8879 | 1.215 | 3.660 | 0.836 |
| 13-Jun-95 | 43.93 | 38 | 0.9121 | 1.354 | 3 783 | |
| 19-May-94 | 47.69 | 39 | 0.9364 | 1.525 | 3.865 | |
| 18-May-91 | 101 | 40 | 0.9606 | 1.758 | 4.615 | |
| 8-Jul-99 | 103 | 41 | 0.9848 | 2.166 | 4.635 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC278 **Date:** 24-May-00

**Chemical:** dCd **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,587 | 27 | 2 | 0.2 | 0.00 | 0.00 | 0.00 |
| **SD:** | 435 | 36 | 1 | 0.1 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.33 | 0.42 | 0.52 | | | |
| **Min:** | 33,375 | 6 | 0.4 | 0.1 | -0.58 | -1.97 | -1.14 |
| **Max:** | 35,929 | 206 | 6 | 1 | 5.00 | 3.25 | 2.41 |
| **Median:** | 34,551 | 14 | 2 | 0.2 | -0.36 | 0.09 | -0.50 |

**dCd CC278 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.38)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 Q,[COC]: | 0.38 | [dCd] | Q | | |
| slope, m | -0.02 | 3 | 6.2 | | |
| intercept, b | 2.8 | 2 | 27.0 | | |
| N: 38 | | -1 | 206 | | |

**LnConc. = mLn(Q)+b (r2=0.64)** update r2

| | | | | | |
|---|---|---|---|---|---|
| 2 lnQ,ln[COC] | 0.64 | ln[dCd] | ln Q | [dCd] | Q |
| slope, m | -0.53 | 1.29 | 1.82 | 4 | 6 |
| intercept, b | 2.25 | 0.51 | 3.29 | 2 | 27 |
| N: 38 | | -0.56 | 5.33 | 1 | 206 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2: | 0.103 | 0.061 |
| m: | 0.0265 | 0.00047 |
| b | -889 | -13.23 |

for graph 0

N= 38

| update for new data | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd CC278 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 101.6 | 0.9 | 0 | 4.62 | -0.11 | -0.71 | 2.08 | -1.47 | 2.28 |
| MFG | 5-Oct-91 | 10.3 | 2.8 | 0 | 2.33 | 1.03 | -1.86 | -0.46 | 0.44 | -0.59 |
| IDEQ | 27-Oct-93 | 9.18 | 3.1 | 0 | 2.22 | 1.13 | -1.88 | -0.50 | 0.74 | -0.61 |
| IDEQ | 30-Nov-93 | 7.96 | 5.6 | 0 | 2.07 | 1.72 | -1.43 | -0.53 | 3.25 | 0.13 |
| IDEQ | 17-Dec-93 | 8.46 | 3.1 | 0 | 2.14 | 1.13 | -1.96 | -0.52 | 0.74 | -0.71 |
| IDEQ | 17-Dec-93 | 6.19 | 3.1 | 0 | 1.82 | 1.13 | -2.27 | -0.58 | 0.74 | -1.03 |
| IDEQ | 20-Jan-94 | 8.87 | 3.3 | 0 | 2.18 | 1.19 | -1.86 | -0.51 | 0.94 | -0.58 |
| IDEQ | 20-Jan-94 | 7.73 | 3.3 | 0 | 2.05 | 1.19 | -1.99 | -0.54 | 0.94 | -0.74 |
| IDEQ | 18-Feb-94 | 8.29 | 2.9 | 0 | 2.12 | 1.06 | -2.05 | -0.52 | 0.54 | -0.81 |
| IDEQ | 8-Mar-94 | 15.41 | 3.4 | 0 | 2.74 | 1.22 | -1.27 | -0.32 | 1.04 | 0.49 |
| IDEQ | 24-Mar-94 | 14.48 | 2.8 | 0 | 2.67 | 1.03 | -1.52 | -0.35 | 0.44 | -0.05 |
| IDEQ | 24-Mar-94 | 16.46 | 2.8 | 0 | 2.80 | 1.03 | -1.39 | -0.29 | 0.44 | 0.20 |
| IDEQ | 7-Apr-94 | 27.29 | 2.4 | 0 | 3.31 | 0.88 | -1.04 | 0.01 | 0.04 | 1.09 |
| IDEQ | 7-Apr-94 | 32.14 | 2.4 | 0 | 3.47 | 0.88 | -0.88 | 0.14 | 0.04 | 1.63 |
| IDEQ | 4-May-94 | 47.88 | 1.3 | 0 | 3.87 | 0.26 | -1.09 | 0.58 | -1.06 | 0.94 |
| IDEQ | 19-May-94 | 62.32 | 0.7 | 0 | 4.13 | -0.36 | -1.45 | 0.99 | -1.67 | 0.09 |
| IDEQ | 7-Jun-94 | 44.85 | 1.2 | 0 | 3.80 | 0.18 | -1.24 | 0.50 | -1.17 | 0.56 |
| IDEQ | 23-Jun-94 | 22.53 | 1.4 | 0 | 3.11 | 0.34 | -1.77 | -0.12 | -0.96 | -0.47 |
| IDEQ | 25-Jul-94 | 10.18 | 1.7 | 0 | 2.32 | 0.53 | -2.37 | -0.47 | -0.66 | -1.12 |
| IDEQ | 16-Aug-94 | 9.97 | 3 | 0 | 2.30 | 1.10 | -1.83 | -0.47 | 0.64 | -0.54 |
| IDEQ | 16-Aug-94 | 8.89 | 3 | 0 | 2.18 | 1.10 | -1.94 | -0.50 | 0.64 | -0.69 |
| IDEQ | 13-Sep-94 | 9.18 | 2.3 | 0 | 2.22 | 0.83 | -2.18 | -0.50 | -0.06 | -0.94 |
| IDEQ | 6-Oct-94 | 8.46 | 2.5 | 0 | 2.14 | 0.92 | -2.17 | -0.52 | 0.14 | -0.94 |
| IDEQ | 16-Nov-94 | 9 | 2.5 | 0 | 2.20 | 0.92 | -2.11 | -0.50 | 0.14 | -0.88 |
| IDEQ | 13-Dec-94 | 8.81 | 3 | 0 | 2.18 | 1.10 | -1.95 | -0.51 | 0.64 | -0.70 |
| IDEQ | 10-Jan-95 | 13.6 | 3.4 | 0 | 2.61 | 1.22 | -1.39 | -0.37 | 1.04 | 0.21 |
| IDEQ | 9-Feb-95 | 22.05 | 3 | 0 | 3.09 | 1.10 | -1.03 | -0.14 | 0.64 | 1.12 |
| IDEQ | 8-Mar-95 | 24.53 | 1.7 | 0 | 3.20 | 0.53 | -1.49 | -0.07 | -0.66 | 0.00 |
| IDEQ | 22-Mar-95 | 37.69 | 2.5 | 1 | 3.63 | 0.92 | -0.68 | 0.30 | 0.14 | 2.41 |
| IDEQ | 12-Apr-95 | 26.15 | 2.1 | 0 | 3.26 | 0.74 | -1.22 | -0.02 | -0.26 | 0.61 |
| IDEQ | 13-Jun-95 | 76.08 | 0.9 | 0 | 4.33 | -0.11 | -1.00 | 1.37 | -1.47 | 1.23 |
| IDEQ | 27-Jun-95 | 27.88 | 0.6 | 0 | 3.33 | -0.51 | -2.41 | 0.03 | -1.77 | -1.14 |
| IDEQ | 11-Jul-95 | 15.74 | 1.6 | 0 | 2.76 | 0.47 | -2.00 | -0.31 | -0.76 | -0.76 |
| IDEQ | 25-Jul-95 | 12.51 | 2.2 | 0 | 2.53 | 0.79 | -1.91 | -0.40 | -0.16 | -0.65 |
| IDEQ | 14-Aug-95 | 9.57 | 2 | 0 | 2.26 | 0.69 | -2.27 | -0.49 | -0.36 | -1.03 |
| IDEQ | 13-Sep-95 | 7.8 | 2.4 | 0 | 2.05 | 0.88 | -2.30 | -0.53 | 0.04 | -1.05 |
| URS | 10-Nov-97 | 28.2 | 2.39 | 0 | 3.34 | 0.87 | -1.01 | 0.03 | 0.03 | 1.18 |
| URS | 14-May-98 | 206 | 0.4 | 0 | 5.33 | -0.92 | -0.81 | 5.00 | -1.97 | 1.87 |

dCd

**Concentration over time analysis**

| | dCd | CC278 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | Concentration over time | |
| | LnConc.=mTime+b All data r2, m: | | | 0.090 | -0.00037 |
| | Time | Ln[COC] | [COC] | | |
| first | 17-May-91 | 1.19 | 3 | | |
| mid | 5-Aug-94 | 0.75 | 2 | | |
| last | 14-May-98 | 0.24 | 1 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

**Load over time analysis**

| | dCd | CC278 | | Load over time | |
|---|---|---|---|---|---|
| | LnLoad=mTime+b All data r2, m: | | | 0.006 | 0.00009 |
| | Time | LnLoad | Load | | |
| first | 17-May-91 | -1.74 | 0 | | |
| mid | 5-Aug-94 | -1.63 | 0 | | |
| last | 14-May-98 | -1.50 | 0 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

| | max r2 | 0.450 | | max r2 | 0.938 | |
|---|---|---|---|---|---|---|
| | Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | | |
| | r2 | slope | intercept | r2 | slope | intercept |
| | only on >4 data points. delete last 4 rows | | | only on >4 data points. delete last 4 rows | | |
| | 0.090 | -0.00037 | 13.64 | 0.006 | 0.00009 | -4.81 |
| | 0.235 | -0.00066 | 23.52 | 0.065 | 0.00032 | -12.63 |
| | 0.257 | -0.00077 | 27.60 | 0.062 | 0.00035 | -13.84 |
| | 0.247 | -0.00077 | 27.35 | 0.058 | 0.00034 | -13.52 |
| | 0.223 | -0.00070 | 25.16 | 0.066 | 0.00037 | -14.55 |
| | 0.212 | -0.00069 | 24.63 | 0.059 | 0.00036 | -13.97 |
| | 0.198 | -0.00067 | 24.03 | 0.045 | 0.00031 | -12.26 |
| | 0.183 | -0.00065 | 23.13 | 0.040 | 0.00029 | -11.81 |
| | 0.167 | -0.00062 | 22.10 | 0.032 | 0.00027 | -10.84 |
| | 0.155 | -0.00060 | 21.41 | 0.024 | 0.00023 | -9.59 |
| | 0.137 | -0.00056 | 20.06 | 0.032 | 0.00027 | -10.94 |
| | 0.125 | -0.00054 | 19.26 | 0.035 | 0.00028 | -11.48 |
| | 0.112 | -0.00051 | 18.32 | 0.042 | 0.00032 | -12.60 |
| | 0.103 | -0.00050 | 17.87 | 0.064 | 0.00039 | -15.22 |
| | 0.094 | -0.00048 | 17.33 | 0.109 | 0.00050 | -19.00 |
| | 0.115 | -0.00054 | 19.35 | 0.153 | 0.00059 | -22.14 |
| | 0.203 | -0.00068 | 24.40 | 0.176 | 0.00064 | -24.06 |
| | 0.256 | -0.00077 | 27.52 | 0.226 | 0.00073 | -27.14 |
| | 0.302 | -0.00085 | 30.27 | 0.231 | 0.00075 | -28.00 |
| | 0.329 | -0.00090 | 32.20 | 0.203 | 0.00069 | -25.88 |
| | 0.310 | -0.00088 | 31.43 | 0.200 | 0.00070 | -26.16 |
| | 0.288 | -0.00086 | 30.47 | 0.188 | 0.00069 | -25.87 |
| | 0.282 | -0.00086 | 30.77 | 0.162 | 0.00064 | -24.07 |
| | 0.268 | -0.00086 | 30.51 | 0.135 | 0.00058 | -21.88 |
| | 0.253 | -0.00084 | 30.00 | 0.109 | 0.00052 | -19.68 |
| | 0.225 | -0.00079 | 28.13 | 0.090 | 0.00047 | -18.03 |
| | 0.190 | -0.00070 | 25.00 | 0.102 | 0.00052 | -19.60 |
| | 0.156 | -0.00062 | 22.00 | 0.155 | 0.00063 | -23.73 |
| | 0.152 | -0.00062 | 22.24 | 0.169 | 0.00068 | -25.37 |
| | 0.119 | -0.00054 | 19.42 | 0.368 | 0.00092 | -33.92 |
| | 0.091 | -0.00048 | 17.12 | 0.524 | 0.00110 | -40.32 |
| | 0.143 | -0.00061 | 21.66 | 0.920 | 0.00135 | -49.42 |
| | 0.400 | -0.00092 | 32.73 | 0.926 | 0.00130 | -47.37 |
| | 0.450 | -0.00104 | 36.99 | 0.938 | 0.00136 | -49.52 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | **CC278** | | |
| **LN Analysis** | | **dCd** | | |
| **Load** | | **Load Data, EV=0.2 lbs/day CV=.52** | | |
| **Avg:** | **0.2** | **Load Data-based LN** | | |
| **SD:** | **0.1** | u | ln dCd Load | dCd Load |
| **CV:** | **0.52** | 3 | -0.1 | 1 |
| **Min:** | **0.1** | 0 | -1.62 | 0 |
| **Max:** | **1** | -3 | -3.09 | 0 |
| **Median:** | **0.2** | | | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.954, EV=0.2lbs/day CV=0.58; max r2=0.966**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.954 | u | lnLoad | Load |
| slope, m | 1.863 | 3 | -0.01 | 1 |
| intercept, b | 3.027 | 0 | -1.62 | 0 |
| N: 38 | | -3 | -3.24 | 0 |
| E[Load] | 0.2 | Parameter Estimates | | |
| SD[Load] | 0 | from LN regression | | |
| CV[Load] | 0.58 | update graph label | | |

| Date | dCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.966 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | N: 38 | | | | |
| 27-Jun-95 | 0.1 | 1 | 0.0163 | -2.136 | -2.408 | 0.954 |
| 25-Jul-94 | 0.1 | 2 | 0.0425 | -1.723 | -2.374 | 0.963 |
| 13-Sep-95 | 0.1 | 3 | 0.0686 | -1.486 | -2.295 | 0.965 |
| 14-Aug-95 | 0.1 | 4 | 0.0948 | -1.312 | -2.273 | 0.966 |
| 17-Dec-93 | 0.1 | 5 | 0.1209 | -1.170 | -2.271 | 0.966 |
| 13-Sep-94 | 0.1 | 6 | 0.1471 | -1.049 | -2.175 | 0.963 |
| 6-Oct-94 | 0.1 | 7 | 0.1732 | -0.942 | -2.173 | 0.962 |
| 16-Nov-94 | 0.1 | 8 | 0.1993 | -0.844 | -2.112 | 0.959 |
| 18-Feb-94 | 0.1 | 9 | 0.2255 | -0.754 | -2.045 | 0.956 |
| 11-Jul-95 | 0.1 | 10 | 0.2516 | -0.669 | -1.999 | 0.953 |
| 20-Jan-94 | 0.1 | 11 | 0.2778 | -0.589 | -1.986 | 0.951 |
| 17-Dec-93 | 0.1 | 12 | 0.3039 | -0.513 | -1.958 | 0.947 |
| 13-Dec-94 | 0.1 | 13 | 0.3301 | -0.440 | -1.951 | 0.943 |
| 16-Aug-94 | 0.1 | 14 | 0.3562 | -0.369 | -1.942 | 0.938 |
| 25-Jul-95 | 0.1 | 15 | 0.3824 | -0.299 | -1.910 | 0.932 |
| 27-Oct-93 | 0.2 | 16 | 0.4085 | -0.231 | -1.877 | 0.927 |
| 5-Oct-91 | 0.2 | 17 | 0.4346 | -0.165 | -1.863 | 0.921 |
| 20-Jan-94 | 0.2 | 18 | 0.4608 | -0.098 | -1.855 | 0.917 |
| 16-Aug-94 | 0.2 | 19 | 0.4869 | -0.033 | -1.827 | 0.918 |
| 23-Jun-94 | 0.2 | 20 | 0.5131 | 0.033 | -1.774 | 0.930 |
| 24-Mar-94 | 0.2 | 21 | 0.5392 | 0.098 | -1.523 | 0.955 |
| 8-Mar-95 | 0.2 | 22 | 0.5654 | 0.165 | -1.495 | 0.951 |
| 19-May-94 | 0.2 | 23 | 0.5915 | 0.231 | -1.449 | 0.946 |
| 30-Nov-93 | 0.2 | 24 | 0.6176 | 0.299 | -1.428 | 0.941 |
| 24-Mar-94 | 0.2 | 25 | 0.6438 | 0.369 | -1.395 | 0.935 |
| 10-Jan-95 | 0.2 | 26 | 0.6699 | 0.440 | -1.391 | 0.931 |
| 8-Mar-94 | 0.3 | 27 | 0.6961 | 0.513 | -1.266 | 0.943 |
| 7-Jun-94 | 0.3 | 28 | 0.7222 | 0.589 | -1.239 | 0.937 |
| 12-Apr-95 | 0.3 | 29 | 0.7484 | 0.669 | -1.219 | 0.932 |
| 4-May-94 | 0.3 | 30 | 0.7745 | 0.754 | -1.094 | 0.944 |
| 7-Apr-94 | 0.4 | 31 | 0.8007 | 0.844 | -1.043 | 0.931 |
| 9-Feb-95 | 0.4 | 32 | 0.8268 | 0.942 | -1.033 | 0.921 |
| 10-Nov-97 | 0.4 | 33 | 0.8529 | 1.049 | -1.014 | 0.898 |
| 13-Jun-95 | 0.4 | 34 | 0.8791 | 1.170 | -0.999 | 0.859 |
| 7-Apr-94 | 0.4 | 35 | 0.9052 | 1.312 | -0.879 | |
| 14-May-98 | 0.4 | 36 | 0.9314 | 1.486 | -0.813 | |
| 17-May-91 | 0.5 | 37 | 0.9575 | 1.723 | -0.709 | |
| 22-Mar-95 | 0.5 | 38 | 0.9837 | 2.136 | -0.679 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| dCd | | CC278 | | |
| LN Analysis | | dCd | | |
| **Concentration** | | Conc. Data, EV=2 ug/L CV=.42 | | |
| Avg: | 2 | Data-based LN | | |
| SD: | 1 | u | ln(dCd) | (dCd) |
| CV: | 0.42 | 3 | 2.0 | 7 |
| Min: | 0 | 0 | 0.78 | 2 |
| Max: | 6 | -3 | -0.44 | 1 |
| Median: | 2 | | | |

u=mLn(Conc.)+b:

update for r2, EV, CV $r^2$=0.861, EV=2.5 ug/L CV=0.67; max r2=0.892

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.861 | u | lnConc | Conc |
| slope, m | 1.651 | 3 | 2.56 | 13 |
| intercept, b | -1.222 | 0 | 0.74 | 2 |
| N: | 38 | -3 | -1.08 | 0 |
| E[Conc] | 2.5 | Parameter Estimates | | |
| SD[Conc] | 2 | from LN regression | | |
| CV[Conc] | 0.67 | update graph label | | |

| Date | dCd Concentration ug/L Ranked | N: 38 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.892 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 14-May-98 | 0.4 | 1 | 0.0163 | -2.136 | -0.916 | 0.861 |
| 27-Jun-95 | 0.6 | 2 | 0.0425 | -1.723 | -0.511 | 0.855 |
| 19-May-94 | 0.7 | 3 | 0.0686 | -1.486 | -0.357 | 0.851 |
| 17-May-91 | 0.9 | 4 | 0.0948 | -1.312 | -0.105 | 0.855 |
| 13-Jun-95 | 0.9 | 5 | 0.1209 | -1.170 | -0.105 | 0.853 |
| 7-Jun-94 | 1.2 | 6 | 0.1471 | -1.049 | 0.182 | 0.876 |
| 4-May-94 | 1.3 | 7 | 0.1732 | -0.942 | 0.262 | 0.877 |
| 23-Jun-94 | 1.4 | 8 | 0.1993 | -0.844 | 0.336 | 0.881 |
| 11-Jul-95 | 1.6 | 9 | 0.2255 | -0.754 | 0.470 | 0.888 |
| 25-Jul-94 | 1.7 | 10 | 0.2516 | -0.669 | 0.531 | 0.887 |
| 8-Mar-95 | 1.7 | 11 | 0.2778 | -0.589 | 0.531 | 0.884 |
| 14-Aug-95 | 2 | 12 | 0.3039 | -0.513 | 0.693 | 0.892 |
| 12-Apr-95 | 2.1 | 13 | 0.3301 | -0.440 | 0.742 | 0.884 |
| 25-Jul-95 | 2.2 | 14 | 0.3562 | -0.369 | 0.788 | 0.874 |
| 13-Sep-94 | 2.3 | 15 | 0.3824 | -0.299 | 0.833 | 0.862 |
| 10-Nov-97 | 2.39 | 16 | 0.4085 | -0.231 | 0.871 | 0.852 |
| 7-Apr-94 | 2.4 | 17 | 0.4346 | -0.165 | 0.875 | 0.844 |
| 7-Apr-94 | 2.4 | 18 | 0.4608 | -0.098 | 0.875 | 0.833 |
| 13-Sep-95 | 2.4 | 19 | 0.4869 | -0.033 | 0.875 | 0.819 |
| 6-Oct-94 | 2.5 | 20 | 0.5131 | 0.033 | 0.916 | 0.802 |
| 16-Nov-94 | 2.5 | 21 | 0.5392 | 0.098 | 0.916 | 0.785 |
| 22-Mar-95 | 2.5 | 22 | 0.5654 | 0.165 | 0.916 | 0.763 |
| 5-Oct-91 | 2.8 | 23 | 0.5915 | 0.231 | 1.030 | 0.736 |
| 24-Mar-94 | 2.8 | 24 | 0.6176 | 0.299 | 1.030 | 0.732 |
| 24-Mar-94 | 2.8 | 25 | 0.6438 | 0.369 | 1.030 | 0.723 |
| 18-Feb-94 | 2.9 | 26 | 0.6699 | 0.440 | 1.065 | 0.708 |
| 16-Aug-94 | 3 | 27 | 0.6961 | 0.513 | 1.099 | 0.704 |
| 16-Aug-94 | 3 | 28 | 0.7222 | 0.589 | 1.099 | 0.717 |
| 13-Dec-94 | 3 | 29 | 0.7484 | 0.669 | 1.099 | 0.728 |
| 9-Feb-95 | 3 | 30 | 0.7745 | 0.754 | 1.099 | 0.734 |
| 27-Oct-93 | 3.1 | 31 | 0.8007 | 0.844 | 1.131 | 0.732 |
| 17-Dec-93 | 3.1 | 32 | 0.8268 | 0.942 | 1.131 | 0.751 |
| 17-Dec-93 | 3.1 | 33 | 0.8529 | 1.049 | 1.131 | 0.762 |
| 20-Jan-94 | 3.3 | 34 | 0.8791 | 1.170 | 1.194 | 0.755 |
| 20-Jan-94 | 3.3 | 35 | 0.9052 | 1.312 | 1.194 | |
| 8-Mar-94 | 3.4 | 36 | 0.9314 | 1.486 | 1.224 | |
| 10-Jan-95 | 3.4 | 37 | 0.9575 | 1.723 | 1.224 | |
| 30-Nov-93 | 5.6 | 38 | 0.9837 | 2.136 | 1.723 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | **CC278** | | |
| **LN Analysis** | | **dCd** | | |
| **Discharge, Q** | | **Q Data, EV=27 cfs CV=1.33** | | |
| **Avg:** | **27** | **Q Data-based LN** | | |
| **SD:** | **36** | u | lnQ | Q |
| **CV:** | **1.33** | 3 | 5.8 | 334 |
| **Min:** | **6** | 0 | 2.78 | 16 |
| **Max:** | **206** | -3 | -0.24 | 1 |
| **Median:** | **14** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV **r2=0.886, EV=26.3 cfs CV=1.13; max r2=0.995**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.886 | u | lnQ | Q |
| slope, m | 1.105 | 3 | 5.58 | 264 |
| intercept, b | -3.160 | 0 | 2.86 | 17 |
| N | 38 | -3 | 0.14 | 1.2 |
| E[Q] | 26.3 | Parameter Estimates | | |
| SD[Q] | 30 | from LN regression | | |
| CV[Q] | 1.13 | update graph label | | |

| | Q | N 38 | | | | max r2 0.995 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 17-Dec-93 | 6.19 | 1 | 0.0163 | -2.136 | 1.823 | 0.886 |
| 20-Jan-94 | 7.73 | 2 | 0.0425 | -1.723 | 2.045 | 0.903 |
| 13-Sep-95 | 7.8 | 3 | 0.0686 | -1.486 | 2.054 | 0.921 |
| 30-Nov-93 | 7.96 | 4 | 0.0948 | -1.312 | 2.074 | 0.935 |
| 18-Feb-94 | 8.29 | 5 | 0.1209 | -1.170 | 2.115 | 0.945 |
| 17-Dec-93 | 8.46 | 6 | 0.1471 | -1.049 | 2.135 | 0.955 |
| 6-Oct-94 | 8.46 | 7 | 0.1732 | -0.942 | 2.135 | 0.964 |
| 20-Jan-94 | 8.81 | 8 | 0.1993 | -0.844 | 2.176 | 0.970 |
| 13-Dec-94 | 8.81 | 9 | 0.2255 | -0.754 | 2.176 | 0.977 |
| 16-Aug-94 | 8.89 | 10 | 0.2516 | -0.669 | 2.185 | 0.981 |
| 16-Nov-94 | 9 | 11 | 0.2778 | -0.589 | 2.197 | 0.985 |
| 27-Oct-93 | 9.18 | 12 | 0.3039 | -0.513 | 2.217 | 0.987 |
| 13-Sep-94 | 9.18 | 13 | 0.3301 | -0.440 | 2.217 | 0.988 |
| 14-Aug-95 | 9.57 | 14 | 0.3562 | -0.369 | 2.259 | 0.988 |
| 16-Aug-94 | 9.97 | 15 | 0.3824 | -0.299 | 2.300 | 0.988 |
| 25-Jul-94 | 10.18 | 16 | 0.4085 | -0.231 | 2.320 | 0.987 |
| 5-Oct-91 | 10.3 | 17 | 0.4346 | -0.165 | 2.332 | 0.986 |
| 25-Jul-95 | 12.51 | 18 | 0.4608 | -0.098 | 2.527 | 0.985 |
| 10-Jan-95 | 13.6 | 19 | 0.4869 | -0.033 | 2.610 | 0.984 |
| 24-Mar-94 | 14.48 | 20 | 0.5131 | 0.033 | 2.673 | 0.983 |
| 8-Mar-94 | 15.41 | 21 | 0.5392 | 0.098 | 2.735 | 0.982 |
| 11-Jul-95 | 15.74 | 22 | 0.5654 | 0.165 | 2.756 | 0.980 |
| 24-Mar-94 | 16.46 | 23 | 0.5915 | 0.231 | 2.801 | 0.978 |
| 9-Feb-95 | 22.05 | 24 | 0.6176 | 0.299 | 3.093 | 0.975 |
| 23-Jun-94 | 22.53 | 25 | 0.6438 | 0.369 | 3.115 | 0.978 |
| 8-Mar-95 | 24.53 | 26 | 0.6699 | 0.440 | 3.200 | 0.980 |
| 12-Apr-95 | 26.15 | 27 | 0.6961 | 0.513 | 3.264 | 0.984 |
| 7-Apr-94 | 27.29 | 28 | 0.7222 | 0.589 | 3.307 | 0.989 |
| 27-Jun-95 | 27.88 | 29 | 0.7484 | 0.669 | 3.328 | 0.993 |
| 10-Nov-97 | 28.2 | 30 | 0.7745 | 0.754 | 3.339 | 0.995 |
| 7-Apr-94 | 32.14 | 31 | 0.8007 | 0.844 | 3.470 | 0.994 |
| 22-Mar-95 | 37.69 | 32 | 0.8268 | 0.942 | 3.629 | 0.992 |
| 7-Jun-94 | 44.85 | 33 | 0.8529 | 1.049 | 3.803 | 0.991 |
| 4-May-94 | 47.88 | 34 | 0.8791 | 1.170 | 3.869 | 0.994 |
| 19-May-94 | 62.32 | 35 | 0.9052 | 1.312 | 4.132 | |
| 13-Jun-95 | 76.08 | 36 | 0.9314 | 1.486 | 4.332 | |
| 17-May-91 | 101.6 | 37 | 0.9575 | 1.723 | 4.621 | |
| 14-May-98 | 206 | 38 | 0.9837 | 2.136 | 5.328 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **CC278** | **Date:** | **24-May-00** |
| **Chemical:** | **dPb** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,587 | 27 | 7 | 1 | 0 00 | 0.00 | 0 00 |
| **SD:** | 435 | 36 | 2 | 1 | 1 00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.33 | 0.33 | 0.90 | | | |
| **Min:** | 33,375 | 6 | 3 | 0 | -0 58 | -1 67 | -0 66 |
| **Max:** | 35,929 | 206 | 11 | 3 | 5.00 | 1.85 | 4.21 |
| **Median:** | 34,551 | 14 | 7 | 0 | -0.36 | 0.09 | -0.33 |

| dPb | CC278 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.22)** | | update r2 | | | r2: | 0.103 | 0.061 |
| r2 Q,[COC]: | 0.22 | [dPb] | Q | | m | 0.0265 | 0.00047 |
| slope, m: | 0.0 | 7 | 6.2 | | b | -889 | -13.23 |
| intercept, b: | 7.6 | 7 | 27.0 | | | | |
| N: 37 | | 1 | 206 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.49)** | | update r2 | | | | | |
| lnQ,ln[COC]: | 0.49 | ln[dPb] | ln Q | [dPb] | Q | | |
| slope, m: | -0.32 | 2.17 | 1.82 | 9 | 6 | | |
| intercept, b: | 2.75 | 1.70 | 3.29 | 5 | 27 | | |
| N: 37 | | 1.05 | 5.33 | 3 | 206 | | |

for graph
dPb 0
CC278

**N= 38**

| | Sampling Date | Q Discharge | dPb Concentration | dPb Load | Ln Q | Ln dPb Conc. | Ln dPb Load | Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 101.6 | | | 4.62 | | | 2.08 | | |
| MFG | 5-Oct-91 | 10.3 | 9 | 0.5 | 2.33 | 2.20 | -0.70 | -0 46 | 0.97 | -0.33 |
| IDEQ | 27-Oct-93 | 9.18 | 8 | 0.4 | 2.22 | 2.08 | -0.93 | -0.50 | 0.53 | -0.49 |
| IDEQ | 30-Nov-93 | 7.96 | 8 | 0.3 | 2.07 | 2.08 | -1.07 | -0.53 | 0.53 | -0.58 |
| IDEQ | 17-Dec-93 | 8 46 | 10 | 0.5 | 2.14 | 2.30 | -0 79 | -0.52 | 1.41 | -0 40 |
| IDEQ | 17-Dec-93 | 6.19 | 10 | 0.3 | 1.82 | 2.30 | -1.10 | -0.58 | 1.41 | -0.59 |
| IDEQ | 20-Jan-94 | 8.81 | 8 | 0.4 | 2.18 | 2.08 | -0.97 | -0.51 | 0.53 | -0.52 |
| IDEQ | 20-Jan-94 | 7.73 | 8 | 0.3 | 2.05 | 2.08 | -1.10 | -0.54 | 0.53 | -0.59 |
| IDEQ | 18-Feb-94 | 8.29 | 8 | 0 4 | 2.12 | 2.08 | -1.03 | -0.52 | 0.53 | -0.55 |
| IDEQ | 8-Mar-94 | 15 41 | 6 | 0 5 | 2.74 | 1 79 | -0 70 | -0.32 | -0.35 | -0.34 |
| IDEQ | 24-Mar-94 | 14 48 | 5 | 0 4 | 2.67 | 1.61 | -0.94 | -0.35 | -0.79 | -0.50 |
| IDEQ | 24-Mar-94 | 16 46 | 5 | 0 4 | 2.80 | 1.61 | -0.81 | -0.29 | -0.79 | -0 42 |
| IDEQ | 7-Apr-94 | 27 29 | 4 | 0.6 | 3.31 | 1.39 | -0.53 | 0.01 | -1.23 | -0.20 |
| IDEQ | 7-Apr-94 | 32 14 | 4 | 0 7 | 3.47 | 1.39 | -0.37 | 0.14 | -1.23 | -0.04 |
| IDEQ | 4-May-94 | 47.88 | 5 | 1.3 | 3.87 | 1.61 | 0.25 | 0.58 | -0.79 | 0.89 |
| IDEQ | 19-May-94 | 62.32 | 4 | 1.3 | 4.13 | 1.39 | 0.29 | 0.99 | -1.23 | 0.97 |
| IDEQ | 7-Jun-94 | 44.85 | 4 | 1.0 | 3.80 | 1.39 | -0.04 | 0.50 | -1.23 | 0.39 |
| IDEQ | 23-Jun-94 | 22.53 | 6 | 0.7 | 3.11 | 1.79 | -0.32 | -0.12 | -0.35 | 0.02 |
| IDEQ | 25-Jul-94 | 10.18 | 11 | 0.6 | 2.32 | 2.40 | -0.51 | -0.47 | 1.85 | -0.17 |
| IDEQ | 16-Aug-94 | 9.97 | 11 | 0.6 | 2.30 | 2.40 | -0.53 | -0.47 | 1.85 | -0.19 |
| IDEQ | 16-Aug-94 | 8.89 | 11 | 0.5 | 2.18 | 2.40 | -0.64 | -0.50 | 1.85 | -0.29 |
| IDEQ | 13-Sep-94 | 9.18 | 7 | 0.3 | 2.22 | 1.95 | -1.06 | -0.50 | 0.09 | -0.57 |
| IDEQ | 6-Oct-94 | 8.46 | 7 | 0.3 | 2.14 | 1.95 | -1.14 | -0.52 | 0.09 | -0.61 |
| IDEQ | 16-Nov-94 | 9 | 6 | 0.3 | 2.20 | 1.79 | -1.24 | -0.50 | -0.35 | -0.66 |
| IDEQ | 13-Dec-94 | 8.81 | 7 | 0.3 | 2.18 | 1.95 | -1.10 | -0.51 | 0.09 | -0.59 |
| IDEQ | 10-Jan-95 | 13.6 | 4 | 0.3 | 2.61 | 1.39 | -1.23 | -0.37 | -1.23 | -0.65 |
| IDEQ | 9-Feb-95 | 22.05 | [illegible] | 0.8 | 3.09 | 1.95 | -0.19 | -0 14 | 0.09 | 0.18 |
| IDEQ | 8-Mar-95 | 24.53 | 3 | 0 4 | 3.20 | 1.10 | -0.93 | -0.07 | -1.67 | -0.49 |
| IDEQ | 22-Mar-95 | 37.69 | 6 | 1.2 | 3.63 | 1.79 | 0.20 | 0.30 | -0.35 | 0.78 |
| IDEQ | 12-Apr-95 | 26.15 | 5 | 0 7 | 3.26 | 1.61 | -0.35 | -0.02 | -0.79 | -0.02 |
| IDEQ | 13-Jun-95 | 76.08 | [illegible] | 2.9 | 4.33 | 1.95 | 1.05 | 1.37 | 0.09 | 3.33 |
| IDEQ | 27-Jun-95 | 27.88 | 5 | 0.7 | 3.33 | 1.61 | -0.29 | 0.03 | -0.79 | 0.05 |
| IDEQ | 11-Jul-95 | 15.74 | 9 | 0.8 | 2.76 | 2.20 | -0.27 | -0.31 | 0.97 | 0.07 |
| IDEQ | 25-Jul-95 | 12.51 | 10 | 0.7 | 2.53 | 2.30 | -0.40 | -0.40 | 1.41 | -0.06 |
| IDEQ | 14-Aug-95 | 9.57 | 8 | 0.4 | 2.26 | 2.08 | -0.89 | -0.49 | 0.53 | -0.47 |
| IDEQ | 13-Sep-95 | 7.8 | 7 | 0.3 | 2.05 | 1.95 | -1.23 | -0.53 | 0.09 | -0.65 |
| URS | 10-Nov-97 | 28.2 | 5.16 | 0.8 | 3.34 | 1.64 | -0.24 | 0.03 | -0.72 | 0.11 |
| URS | 14-May-98 | 206 | 3.1 | 3.4 | 5.33 | 1.13 | 1.23 | 5.00 | -1.62 | 4.21 |

dPb

**Concentration over time analysis**

| | dPb | CC278 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.112** | **-0.00030** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 17-May-91 | 2.23 | 9 | | |
| mid | 5-Aug-94 | 1.88 | 7 | | |
| last | 14-May-98 | 1.46 | 4 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

**Load over time analysis**

| | dPb | CC278 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.201** | **0.00067** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 17-May-91 | -1.39 | 0 | | |
| mid | 5-Aug-94 | -0.60 | 1 | | |
| last | 14-May-98 | 0.32 | 1 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

max r2 0.876

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points; delete last 4 rows | | |
| 0.112 | -0.00030 | 12.30 |
| 0.112 | -0.00030 | 12.30 |
| 0.088 | -0.00030 | 12.23 |
| 0.080 | -0.00029 | 11.85 |
| 0.072 | -0.00028 | 11.42 |
| 0.057 | -0.00024 | 10.24 |
| 0.042 | -0.00020 | 8.91 |
| 0.034 | -0.00019 | 8.23 |
| 0.026 | -0.00016 | 7.47 |
| 0.019 | -0.00014 | 6.64 |
| 0.019 | -0.00014 | 6.74 |
| 0.024 | -0.00016 | 7.49 |
| 0.031 | -0.00019 | 8.36 |
| 0.052 | -0.00024 | 10.19 |
| 0.083 | -0.00030 | 12.35 |
| 0.102 | -0.00034 | 13.70 |
| 0.153 | -0.00041 | 16.22 |
| 0.226 | -0.00049 | 19.03 |
| 0.247 | -0.00053 | 20.22 |
| 0.217 | -0.00048 | 18.47 |
| 0.184 | -0.00042 | 16.44 |
| 0.145 | -0.00035 | 13.94 |
| 0.133 | -0.00034 | 13.64 |
| 0.120 | -0.00033 | 13.24 |
| 0.122 | -0.00034 | 13.64 |
| 0.108 | -0.00032 | 13.09 |
| 0.176 | -0.00041 | 15.98 |
| 0.161 | -0.00039 | 15.58 |
| 0.425 | -0.00055 | 20.99 |
| 0.465 | -0.00059 | 22.50 |
| 0.622 | -0.00069 | 26.05 |
| 0.630 | -0.00071 | 26.93 |
| 0.876 | -0.00085 | 31.80 |
| 0.859 | -0.00084 | 31.37 |

max r2 0.683

**Forward time Regression on Ln Load(t)**

| r2 | slope |
|---|---|
| only on >4 data points; delete last 4 rows | |
| 0.201 | 0.00067 |
| 0.201 | 0.00067 |
| 0.238 | 0.00083 |
| 0.229 | 0.00082 |
| 0.216 | 0.00080 |
| 0.211 | 0.00080 |
| 0.196 | 0.00077 |
| 0.184 | 0.00076 |
| 0.167 | 0.00072 |
| 0.153 | 0.00069 |
| 0.147 | 0.00069 |
| 0.134 | 0.00066 |
| 0.124 | 0.00064 |
| 0.123 | 0.00065 |
| 0.130 | 0.00068 |
| 0.175 | 0.00079 |
| 0.239 | 0.00091 |
| 0.286 | 0.00101 |
| 0.312 | 0.00108 |
| 0.324 | 0.00112 |
| 0.335 | 0.00117 |
| 0.339 | 0.00120 |
| 0.317 | 0.00117 |
| 0.289 | 0.00111 |
| 0.257 | 0.00102 |
| 0.226 | 0.00094 |
| 0.188 | 0.00081 |
| 0.198 | 0.00085 |
| 0.164 | 0.00076 |
| 0.210 | 0.00087 |
| 0.204 | 0.00089 |
| 0.543 | 0.00125 |
| 0.594 | 0.00136 |
| 0.683 | 0.00155 |

update for EV, CV

**dPb** **CC278**

**LN Analysis** **dPb**

**Load** **Load Data, EV=1 lbs/day CV=.90**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **1** | **Load Data-based LN** | | |
| **SD:** | **1** | u | ln dPb Load | dPb Load |
| **CV:** | **0.90** | 3 | 1.7 | 5 |
| **Min:** | **0.3** | 0 | -0.63 | 1 |
| **Max:** | **3** | -3 | -2.95 | 0.1 |
| **Median:** | **0.5** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.888, EV=0.7 lbs/day CV=.72; max r2=0.95**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.888 | u | lnLoad | Load |
| slope, m | 1.551 | 3 | 1.39 | 4 |
| intercept, b | 0.840 | 0 | -0.54 | 1 |
| N: | 37 | -3 | -2.48 | 0.08 |
| E[Load]: | 0.7 | Parameter Estimates | | |
| SD[Load]: | 1 | from LN regression | | |
| CV[Load]: | 0.72 | update graph label | | |

N: 38

| intercept | Date | dPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.946 r2 forward |
|---|---|---|---|---|---|---|---|
| | update and rank for new data | | | | | | |
| -23.84 | 16-Nov-94 | **0.3** | 1 | 0.0163 | -2.136 | -1.236 | 0.888 |
| -23.84 | 10-Jan-95 | **0.3** | 2 | 0.0425 | -1.723 | -1.229 | 0.911 |
| -29.21 | 13-Sep-95 | **0.3** | 3 | 0.0686 | -1.486 | -1.225 | 0.922 |
| -29.02 | 6-Oct-94 | **0.3** | 4 | 0.0948 | -1.312 | -1.144 | 0.927 |
| -28.29 | 13-Dec-94 | **0.3** | 5 | 0.1209 | -1.170 | -1.103 | 0.933 |
| -28.35 | 20-Jan-94 | **0.3** | 6 | 0.1471 | -1.049 | -1.101 | 0.939 |
| -27.38 | 17-Dec-93 | **0.3** | 7 | 0.1732 | -0.942 | -1.100 | 0.943 |
| -26.70 | 30-Nov-93 | **0.3** | 8 | 0.1993 | -0.844 | -1.071 | 0.945 |
| -25.48 | 13-Sep-94 | **0.3** | 9 | 0.2255 | -0.754 | -1.062 | 0.946 |
| -24.36 | 18-Feb-94 | **0.4** | 10 | 0.2516 | -0.669 | -1.031 | 0.946 |
| -24.26 | 20-Jan-94 | **0.4** | 11 | 0.2778 | -0.589 | -0.970 | 0.945 |
| -23.25 | 24-Mar-94 | **0.4** | 12 | 0.3039 | -0.513 | -0.943 | 0.945 |
| -22.57 | 27-Oct-93 | **0.4** | 13 | 0.3301 | -0.440 | -0.929 | 0.944 |
| -22.90 | 8-Mar-95 | **0.4** | 14 | 0.3562 | -0.369 | -0.927 | 0.942 |
| -23.98 | 14-Aug-95 | **0.4** | 15 | 0.3824 | -0.299 | -0.887 | 0.939 |
| -27.79 | 24-Mar-94 | **0.4** | 16 | 0.4085 | -0.231 | -0.815 | 0.935 |
| -32.23 | 17-Dec-93 | **0.5** | 17 | 0.4346 | -0.165 | -0.787 | 0.932 |
| -35.63 | 8-Mar-94 | **0.5** | 18 | 0.4608 | -0.098 | -0.698 | 0.928 |
| -38.05 | 5-Oct-91 | **0.5** | 19 | 0.4869 | -0.033 | -0.696 | 0.925 |
| -39.61 | 16-Aug-94 | **0.5** | 20 | 0.5131 | 0.033 | -0.642 | 0.921 |
| -41.15 | 7-Apr-94 | **0.6** | 21 | 0.5392 | 0.098 | -0.532 | 0.917 |
| -42.40 | 16-Aug-94 | **0.6** | 22 | 0.5654 | 0.165 | -0.528 | 0.917 |
| -41.21 | 25-Jul-94 | **0.6** | 23 | 0.5915 | 0.231 | -0.507 | 0.916 |
| -39.15 | 25-Jul-95 | **0.7** | 24 | 0.6176 | 0.299 | -0.396 | 0.912 |
| -36.04 | 7-Apr-94 | **0.7** | 25 | 0.6438 | 0.369 | -0.369 | 0.917 |
| -33.08 | 12-Apr-95 | **0.7** | 26 | 0.6699 | 0.440 | -0.352 | 0.922 |
| -28.62 | 23-Jun-94 | **0.7** | 27 | 0.6961 | 0.513 | -0.318 | 0.925 |
| -30.15 | 27-Jun-95 | **0.7** | 28 | 0.7222 | 0.589 | -0.288 | 0.929 |
| -26.62 | 11-Jul-95 | **0.8** | 29 | 0.7484 | 0.669 | -0.272 | 0.933 |
| -30.84 | 10-Nov-97 | **0.8** | 30 | 0.7745 | 0.754 | -0.245 | 0.933 |
| -31.39 | 17-May-91 | | 31 | 0.8007 | 0.844 | | |
| -44.14 | 9-Feb-95 | **0.8** | 32 | 0.8268 | 0.942 | -0.186 | 0.928 |
| -48.29 | 7-Jun-94 | **1.0** | 33 | 0.8529 | 1.049 | -0.035 | 0.907 |
| -55.14 | 22-Mar-95 | **1.2** | 34 | 0.8791 | 1.170 | 0.196 | 0.875 |
| | 4-May-94 | **1.3** | 35 | 0.9052 | 1.312 | 0.253 | |
| | 19-May-94 | **1.3** | 36 | 0.9314 | 1.486 | 0.294 | |
| | 13-Jun-95 | **2.9** | 37 | 0.9575 | 1.723 | 1.053 | |
| | 14-May-98 | **3.4** | 38 | 0.9837 | 2.136 | 1.234 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dPb** | | **CC278** | | |
| **LN Analysis** | | **dPb** | | |
| **Concentration** | | **Conc. Data, EV=7 ug/L CV=.33** | | |
| **Avg:** | **7** | **Data-based LN** | | |
| **SD:** | **2** | u | ln[dPb] | [dPb] |
| **CV:** | **0.33** | 3 | 2.8 | 17 |
| **Min:** | **3** | 0 | 1.86 | 6 |
| **Max:** | **11** | -3 | 0.89 | 2 |
| **Median:** | **7** | | | |

**u=mLn{Conc.}+b:**

update for r2, EV, CV **$r^2$=0.955, EV=6.8 ug/L CV=.41; max r2=0.96**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.955 | u | lnConc | Conc |
| slope, m | 2.515 | 3 | 3.03 | 21 |
| intercept, b | -4.609 | 0 | 1.83 | 6 |
| N: 37 | | -3 | 0.64 | 2 |
| E[Conc] | 6.8 | Parameter Estimates | | |
| SD[Conc] | 3 | from LN regression | | |
| CV[Conc] | 0.41 | update graph label | | |

N: 38

| Date | dPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.955 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 17-May-91 | | 1 | 0.0163 | -2.136 | | |
| 8-Mar-95 | 3 | 2 | 0.0425 | -1.723 | 1.099 | 0.955 |
| 14-May-98 | 3.1 | 3 | 0.0686 | -1.486 | 1.131 | 0.950 |
| 7-Apr-94 | 4 | 4 | 0.0948 | -1.312 | 1.386 | 0.950 |
| 7-Apr-94 | 4 | 5 | 0.1209 | -1.170 | 1.386 | 0.945 |
| 19-May-94 | 4 | 6 | 0.1471 | -1.049 | 1.386 | 0.940 |
| 7-Jun-94 | 4 | 7 | 0.1732 | -0.942 | 1.386 | 0.936 |
| 10-Jan-95 | 4 | 8 | 0.1993 | -0.844 | 1.386 | 0.934 |
| 24-Mar-94 | 5 | 9 | 0.2255 | -0.754 | 1.609 | 0.939 |
| 24-Mar-94 | 5 | 10 | 0.2516 | -0.669 | 1.609 | 0.934 |
| 4-May-94 | 5 | 11 | 0.2778 | -0.589 | 1.609 | 0.929 |
| 12-Apr-95 | 5 | 12 | 0.3039 | -0.513 | 1.609 | 0.923 |
| 27-Jun-95 | 5 | 13 | 0.3301 | -0.440 | 1.609 | 0.920 |
| 10-Nov-97 | 5.16 | 14 | 0.3562 | -0.369 | 1.641 | 0.922 |
| 8-Mar-94 | 6 | 15 | 0.3824 | -0.299 | 1.792 | 0.929 |
| 23-Jun-94 | 6 | 16 | 0.4085 | -0.231 | 1.792 | 0.923 |
| 16-Nov-94 | 6 | 17 | 0.4346 | -0.165 | 1.792 | 0.916 |
| 22-Mar-95 | 6 | 18 | 0.4608 | -0.098 | 1.792 | 0.912 |
| 13-Sep-94 | 7 | 19 | 0.4869 | -0.033 | 1.946 | 0.916 |
| 6-Oct-94 | 7 | 20 | 0.5131 | 0.033 | 1.946 | 0.910 |
| 13-Dec-94 | 7 | 21 | 0.5392 | 0.098 | 1.946 | 0.903 |
| 9-Feb-95 | 7 | 22 | 0.5654 | 0.165 | 1.946 | 0.892 |
| 13-Jun-95 | 7 | 23 | 0.5915 | 0.231 | 1.946 | 0.880 |
| 13-Sep-95 | 7 | 24 | 0.6176 | 0.299 | 1.946 | 0.867 |
| 27-Oct-93 | 8 | 25 | 0.6438 | 0.369 | 2.079 | 0.864 |
| 30-Nov-93 | 8 | 26 | 0.6699 | 0.440 | 2.079 | 0.854 |
| 20-Jan-94 | 8 | 27 | 0.6961 | 0.513 | 2.079 | 0.837 |
| 20-Jan-94 | 8 | 28 | 0.7222 | 0.589 | 2.079 | 0.812 |
| 18-Feb-94 | 8 | 29 | 0.7484 | 0.669 | 2.079 | 0.779 |
| 14-Aug-95 | 8 | 30 | 0.7745 | 0.754 | 2.079 | 0.741 |
| 5-Oct-91 | 9 | 31 | 0.8007 | 0.844 | 2.197 | 0.759 |
| 11-Jul-95 | 9 | 32 | 0.8268 | 0.942 | 2.197 | 0.698 |
| 17-Dec-93 | 10 | 33 | 0.8529 | 1.049 | 2.303 | 0.686 |
| 17-Dec-93 | 10 | 34 | 0.8791 | 1.170 | 2.303 | 0.607 |
| 25-Jul-95 | 10 | 35 | 0.9052 | 1.312 | 2.303 | |
| 25-Jul-94 | 11 | 36 | 0.9314 | 1.486 | 2.398 | |
| 16-Aug-94 | 11 | 37 | 0.9575 | 1.723 | 2.398 | |
| 16-Aug-94 | 11 | 38 | 0.9837 | 2.136 | 2.398 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dPb** | | **CC278** | | |
| **LN Analysis** | | **dPb** | | |
| **Discharge, Q** | | **Q Data, EV=27 cfs CV=1.33** | | |
| **Avg:** | **27** | **Q Data-based LN** | | |
| **SD:** | **36** | u | lnQ | Q |
| **CV:** | **1.33** | 3 | 5.8 | 334 |
| **Min:** | **6** | 0 | 2.78 | 16 |
| **Max:** | **206** | -3 | -0.24 | 1 |
| **Median:** | **14** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.886, EV=26.3 cfs CV=1.13; max r2=0.995**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.886 | u | lnQ | Q |
| slope, m | 1.105 | 3 | 5.58 | 264 |
| intercept, b | -3.160 | 0 | 2.86 | 17 |
| N | 38 | -3 | 0.14 | 1.2 |
| E[Q] | 26.3 | Parameter Estimates | | |
| SD[Q] | 30 | from LN regression | | |
| CV[Q] | 1.13 | update graph label | | |

N 38

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.995 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 17-Dec-93 | 6.19 | 1 | 0.0163 | -2.136 | 1.823 | 0.886 |
| 20-Jan-94 | 7.73 | 2 | 0.0425 | -1.723 | 2.045 | 0.903 |
| 13-Sep-95 | 7.8 | 3 | 0.0686 | -1.486 | 2.054 | 0.921 |
| 30-Nov-93 | 7.96 | 4 | 0.0948 | -1.312 | 2.074 | 0.935 |
| 18-Feb-94 | 8.29 | 5 | 0.1209 | -1.170 | 2.115 | 0.945 |
| 17-Dec-93 | 8.46 | 6 | 0.1471 | -1.049 | 2.135 | 0.955 |
| 6-Oct-94 | 8.46 | 7 | 0.1732 | -0.942 | 2.135 | 0.964 |
| 20-Jan-94 | 8.81 | 8 | 0.1993 | -0.844 | 2.176 | 0.970 |
| 13-Dec-94 | 8.81 | 9 | 0.2255 | -0.754 | 2.176 | 0.977 |
| 16-Aug-94 | 8.89 | 10 | 0.2516 | -0.669 | 2.185 | 0.981 |
| 16-Nov-94 | 9 | 11 | 0.2778 | -0.589 | 2.197 | 0.985 |
| 27-Oct-93 | 9.18 | 12 | 0.3039 | -0.513 | 2.217 | 0.987 |
| 13-Sep-94 | 9.18 | 13 | 0.3301 | -0.440 | 2.217 | 0.988 |
| 14-Aug-95 | 9.57 | 14 | 0.3562 | -0.369 | 2.259 | 0.988 |
| 16-Aug-94 | 9.97 | 15 | 0.3824 | -0.299 | 2.300 | 0.988 |
| 25-Jul-94 | 10.18 | 16 | 0.4085 | -0.231 | 2.320 | 0.987 |
| 5-Oct-91 | 10.3 | 17 | 0.4346 | -0.165 | 2.332 | 0.986 |
| 25-Jul-95 | 12.51 | 18 | 0.4608 | -0.098 | 2.527 | 0.985 |
| 10-Jan-95 | 13.6 | 19 | 0.4869 | -0.033 | 2.610 | 0.984 |
| 24-Mar-94 | 14.48 | 20 | 0.5131 | 0.033 | 2.673 | 0.983 |
| 8-Mar-94 | 15.41 | 21 | 0.5392 | 0.098 | 2.735 | 0.982 |
| 11-Jul-95 | 15.74 | 22 | 0.5654 | 0.165 | 2.756 | 0.980 |
| 24-Mar-94 | 16.46 | 23 | 0.5915 | 0.231 | 2.801 | 0.978 |
| 9-Feb-95 | 22.05 | 24 | 0.6176 | 0.299 | 3.093 | 0.975 |
| 23-Jun-94 | 22.53 | 25 | 0.6438 | 0.369 | 3.115 | 0.978 |
| 8-Mar-95 | 24.53 | 26 | 0.6699 | 0.440 | 3.200 | 0.980 |
| 12-Apr-95 | 26.15 | 27 | 0.6961 | 0.513 | 3.264 | 0.984 |
| 7-Apr-94 | 27.29 | 28 | 0.7222 | 0.589 | 3.307 | 0.989 |
| 27-Jun-95 | 27.88 | 29 | 0.7484 | 0.669 | 3.328 | 0.993 |
| 10-Nov-93 | 28.2 | 30 | 0.7745 | 0.754 | 3.339 | 0.995 |
| 7-Apr-94 | 32.14 | 31 | 0.8007 | 0.844 | 3.470 | 0.994 |
| 22-Mar-95 | 37.69 | 32 | 0.8268 | 0.942 | 3.629 | 0.992 |
| 7-Jun-94 | 44.85 | 33 | 0.8529 | 1.049 | 3.803 | 0.991 |
| 4-May-94 | 47.88 | 34 | 0.8791 | 1.170 | 3.869 | 0.994 |
| 19-May-94 | 62.32 | 35 | 0.9052 | 1.312 | 4.132 | |
| 13-Jun-95 | 76.08 | 36 | 0.9314 | 1.486 | 4.332 | |
| 17-May-91 | 101.6 | 37 | 0.9575 | 1.723 | 4.621 | |
| 14-May-98 | 206 | 38 | 0.9837 | 2.136 | 5.328 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC278 **Date:** 24-Feb-00

**Chemical:** dZn **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| Avg: | 34,597 | 27 | 355 | 34 | | 0.00 | 0.00 | 0.00 |
| SD: | 464 | 36 | 147 | 19 | | 1.00 | 1.00 | 1.00 |
| CV: | 0.01 | 1.33 | 0.41 | 0.57 | | | | |
| Min: | 33,375 | 6 | 78 | 15 | | -0.58 | -1.89 | -0.97 |
| Max: | 36,109 | 206 | 606 | 86 | | 5.00 | 1.71 | 2.75 |
| Median: | 34,551 | 14 | 364 | 25 | | -0.36 | 0.06 | -0.46 |

dZn CC278 : Concentration v. Discharge, Q

Q = mTime +b LnQ = mTime +b

**Conc. = mQ+b (r2=0.39)** update r2

| | | [dZn] | Q | r2: | 0.091 | 0.059 |
|---|---|---|---|---|---|---|
| r2 Q,[COC]: | 0.39 | | | m: | 0.0234 | 0.00043 |
| slope, m: | -2.6 | 408 | 6.2 | b: | -782 | -12.05 |
| intercept, b: | 423.9 | 355 | 27.0 | | | |
| N: 38 | | -104 | 206 | | | |

**LnConc. = mLn(Q)+b (r2=0.65)** update r2

| | | | | | |
|---|---|---|---|---|---|
| lnQ,ln[COC] | 0.65 | ln[dZn] | ln Q | [dZn] | Q |
| slope, m: | -0.54 | 6.31 | 1.82 | 549 | 6 |
| intercept, b: | 7.29 | 5.52 | 3.29 | 249 | 27 |
| N: 38 | | 4.42 | 5.33 | 83 | 206 |

N= 38

| | | | | | | | | dZn | for graph 0 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | CC278 | |
| | Sampling Date | Q Discharge | dZn Concentration | dZn Load | Ln Q | Ln dZn Conc. | Ln dZn Load | Standardized Values = (x - Avg)/SD | |
| update for new data | | cfs | ug/L | lbs/day | | | | Q | Conc | Load |
| DATA: | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 102 | 148 | 81 | 4.62 | 5.00 | 4.39 | 2.08 | -1.41 | 2.46 |
| MFG | 5-Oct-91 | 10 | 321 | 18 | 2.33 | 5.77 | 2.88 | -0.46 | -0.23 | -0.83 |
| IDEQ | 27-Oct-93 | 9 | 497 | 25 | 2.22 | 6.21 | 3.20 | -0.50 | 0.97 | -0.48 |
| IDEQ | 30-Nov-93 | 7.96 | 465 | 20 | 2.07 | 6.14 | 2.99 | -0.53 | 0.75 | -0.72 |
| IDEQ | 17-Dec-93 | 8 | 507 | 23 | 2.14 | 6.23 | 3.14 | -0.52 | 1.04 | -0.56 |
| IDEQ | 17-Dec-93 | 6 | 507 | 17 | 1.82 | 6.23 | 2.83 | -0.58 | 1.04 | -0.88 |
| IDEQ | 20-Jan-94 | 9 | 531 | 25 | 2.18 | 6.27 | 3.23 | -0.51 | 1.20 | -0.45 |
| IDEQ | 20-Jan-94 | 8 | 531 | 22 | 2.05 | 6.27 | 3.09 | -0.54 | 1.20 | -0.61 |
| IDEQ | 18-Feb-94 | 8 | 521 | 23 | 2.12 | 6.26 | 3.15 | -0.52 | 1.13 | -0.55 |
| IDEQ | 8-Mar-94 | 15 | 540 | 45 | 2.74 | 6.29 | 3.80 | -0.32 | 1.26 | 0.58 |
| IDEQ | 24-Mar-94 | 14 | 400 | 31 | 2.67 | 5.99 | 3.44 | -0.35 | 0.31 | -0.13 |
| IDEQ | 24-Mar-94 | 16 | 400 | 35 | 2.80 | 5.99 | 3.57 | -0.29 | 0.31 | 0.09 |
| IDEQ | 7-Apr-94 | 27 | 334 | 49 | 3.31 | 5.81 | 3.89 | 0.01 | -0.14 | 0.80 |
| IDEQ | 7-Apr-94 | 32 | 334 | 58 | 3.47 | 5.81 | 4.06 | 0.14 | -0.14 | 1.25 |
| IDEQ | 4-May-94 | 48 | 152 | 39 | 3.87 | 5.02 | 3.67 | 0.58 | -1.38 | 0.28 |
| IDEQ | 19-May-94 | 62 | 103 | 35 | 4.13 | 4.63 | 3.54 | 0.99 | -1.72 | 0.04 |
| IDEQ | 7-Jun-94 | 45 | 159 | 38 | 3.80 | 5.07 | 3.65 | 0.50 | -1.34 | 0.24 |
| IDEQ | 23-Jun-94 | 23 | 190 | 23 | 3.11 | 5.25 | 3.14 | -0.12 | -1.12 | -0.56 |
| IDEQ | 25-Jul-94 | 10.18 | 286 | 16 | 2.32 | 5.66 | 2.75 | -0.47 | -0.47 | -0.94 |
| IDEQ | 16-Aug-94 | 10 | 472 | 25 | 2.30 | 6.16 | 3.23 | -0.47 | 0.80 | -0.44 |
| IDEQ | 16-Aug-94 | 9 | 472 | 23 | 2.18 | 6.16 | 3.12 | -0.50 | 0.80 | -0.58 |
| IDEQ | 13-Sep-94 | 9 | 368 | 18 | 2.22 | 5.91 | 2.90 | -0.50 | 0.09 | -0.81 |
| IDEQ | 6-Oct-94 | 8 | 378 | 17 | 2.14 | 5.93 | 2.85 | -0.52 | 0.16 | -0.86 |
| IDEQ | 16-Nov-94 | 9 | 425 | 21 | 2.20 | 6.05 | 3.02 | -0.50 | 0.48 | -0.69 |
| IDEQ | 13-Dec-94 | 9 | 493 | 23 | 2.18 | 6.20 | 3.15 | -0.51 | 0.94 | -0.54 |
| IDEQ | 10-Jan-95 | 14 | 545 | 40 | 2.61 | 6.30 | 3.69 | -0.37 | 1.30 | 0.32 |
| IDEQ | 9-Feb-95 | 22 | 606 | 72 | 3.09 | 6.41 | 4.28 | -0.14 | 1.71 | 1.99 |
| IDEQ | 8-Mar-95 | 25 | 273 | 36 | 3.20 | 5.61 | 3.58 | -0.07 | -0.56 | 0.12 |
| IDEQ | 22-Mar-95 | 38 | 383 | 78 | 3.63 | 5.95 | 4.35 | 0.30 | 0.19 | 2.29 |
| IDEQ | 12-Apr-95 | 26 | 305 | 43 | 3.26 | 5.72 | 3.76 | -0.02 | -0.34 | 0.48 |
| IDEQ | 13-Jun-95 | 76 | 90 | 37 | 4.33 | 4.50 | 3.61 | 1.37 | -1.81 | 0.16 |
| IDEQ | 27-Jun-95 | 28 | 107 | 16 | 3.33 | 4.67 | 2.78 | 0.03 | -1.69 | -0.92 |
| IDEQ | 11-Jul-95 | 16 | 228 | 19 | 2.76 | 5.43 | 2.96 | -0.31 | -0.87 | -0.75 |
| IDEQ | 25-Jul-95 | 12.51 | 317 | 21 | 2.53 | 5.76 | 3.06 | -0.40 | -0.26 | -0.65 |
| IDEQ | 14-Aug-95 | 10 | 306 | 16 | 2.26 | 5.72 | 2.76 | -0.49 | -0.33 | -0.94 |
| IDEQ | 13-Sep-95 | 8 | 360 | 15 | 2.05 | 5.89 | 2.72 | -0.53 | 0.04 | -0.97 |
| URS | 14-May-98 | 206 | 78 | 86 | 5.33 | 4.36 | 4.46 | 5.00 | -1.89 | 2.75 |
| URS | 10-Nov-98 | 28 | 351 | 53 | 3.34 | 5.86 | 3.98 | 0.03 | -0.03 | 1.02 |

**dZn**

**Concentration over time analysis**

| | dZn | CC278 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **Concentration over time** | |
| | **Time** | **Ln[COC]** | **[COC]** | **0.044** | **-0.00025** |
| first | 17-May-91 | 6.05 | 426 | | |
| mid | 5-Aug-94 | 5.76 | 318 | | |
| last | 10-Nov-98 | 5.37 | 216 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 10-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | dZn | CC278 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.029** | **0.00018** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 17-May-91 | 3.16 | 24 | | |
| mid | 5-Aug-94 | 3.38 | 29 | | |
| last | 10-Nov-98 | 3.66 | 39 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 10-Nov-98 | 0.00 | 1 | | |

max r2 0.230

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points delete last 4 rows | | |
| 0.044 | -0.00025 | 14.37 |
| 0.124 | -0.00045 | 21.32 |
| 0.153 | -0.00056 | 25.03 |
| 0.142 | -0.00054 | 24.43 |
| 0.133 | -0.00052 | 23.94 |
| 0.122 | -0.00050 | 23.16 |
| 0.109 | -0.00048 | 22.29 |
| 0.096 | -0.00045 | 21.22 |
| 0.083 | -0.00041 | 20.01 |
| 0.070 | -0.00038 | 18.77 |
| 0.056 | -0.00034 | 17.31 |
| 0.049 | -0.00032 | 16.59 |
| 0.042 | -0.00029 | 15.78 |
| 0.038 | -0.00028 | 15.45 |
| 0.034 | -0.00027 | 15.07 |
| 0.053 | -0.00034 | 17.41 |
| 0.106 | -0.00045 | 21.45 |
| 0.149 | -0.00053 | 24.29 |
| 0.190 | -0.00060 | 26.77 |
| 0.201 | -0.00063 | 27.78 |
| 0.184 | -0.00061 | 26.83 |
| 0.164 | -0.00057 | 25.69 |
| 0.155 | -0.00057 | 25.45 |
| 0.144 | -0.00055 | 24.99 |
| 0.126 | -0.00052 | 23.81 |
| 0.102 | -0.00046 | 21.66 |
| 0.073 | -0.00037 | 18.56 |
| 0.040 | -0.00025 | 14.28 |
| 0.033 | -0.00023 | 13.57 |
| 0.014 | -0.00015 | 10.48 |
| 0.004 | -0.00008 | 7.97 |
| 0.045 | -0.00024 | 13.85 |
| 0.185 | -0.00044 | 21.02 |
| 0.230 | -0.00052 | 23.93 |

max r2 0.874

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points delete last 4 rows | | |
| 0.029 | 0.00018 | -2.91 |
| 0.136 | 0.00041 | -11.00 |
| 0.111 | 0.00041 | -10.87 |
| 0.108 | 0.00041 | -10.84 |
| 0.098 | 0.00039 | -10.23 |
| 0.092 | 0.00038 | -9.95 |
| 0.078 | 0.00035 | -8.75 |
| 0.074 | 0.00035 | -8.57 |
| 0.066 | 0.00033 | -7.99 |
| 0.060 | 0.00032 | -7.50 |
| 0.074 | 0.00035 | -8.86 |
| 0.077 | 0.00036 | -9.25 |
| 0.085 | 0.00039 | -10.10 |
| 0.111 | 0.00045 | -12.08 |
| 0.161 | 0.00053 | -14.95 |
| 0.188 | 0.00057 | -16.64 |
| 0.208 | 0.00061 | -18.04 |
| 0.241 | 0.00067 | -19.96 |
| 0.236 | 0.00067 | -20.07 |
| 0.213 | 0.00063 | -18.60 |
| 0.211 | 0.00064 | -18.83 |
| 0.200 | 0.00063 | -18.60 |
| 0.178 | 0.00059 | -17.26 |
| 0.151 | 0.00054 | -15.38 |
| 0.131 | 0.00050 | -14.05 |
| 0.116 | 0.00047 | -13.07 |
| 0.132 | 0.00052 | -14.59 |
| 0.232 | 0.00065 | -19.43 |
| 0.259 | 0.00070 | -21.29 |
| 0.524 | 0.00091 | -28.53 |
| 0.704 | 0.00105 | -33.76 |
| 0.874 | 0.00119 | -38.58 |
| 0.863 | 0.00117 | -38.11 |
| 0.860 | 0.00121 | -39.32 |

update for EV, CV

**dZn** **CC278**
**LN Analysis** **dZn**
**Load** **Load Data, EV=619 lbs/day CV=.79**

| | | | | |
|---|---|---|---|---|
| **Avg.** | **34** | **Load Data-based LN** | | |
| **SD:** | **19** | u | ln dZn Load | dZn Load |
| **CV:** | **0.57** | 3 | 5.0 | 143 |
| **Min:** | **15** | 0 | 3.38 | 29 |
| **Max:** | **86** | -3 | 1.79 | 6 |
| **Median:** | **25** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.937, EV=34.0 lbs/day CV=.57; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.937 | u | lnLoad | Load |
| slope, m | 1.876 | 3 | 4.98 | 146 |
| intercept, b | -6.350 | 0 | 3.39 | 30 |
| N: | 38 | -3 | 1.79 | 6 |
| E[Load] | 34.0 | Parameter Estimates | | |
| SD[Load] | 20 | from LN regression | | |
| CV[Load] | 0.57 | update graph label | | |

| Date | dZn Load lbs/day Ranked | N: 38 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.972 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 15 | 1 | 0.0163 | -2.136 | 2.715 | 0.937 |
| 25-Jul-94 | 16 | 2 | 0.0425 | -1.723 | 2.751 | 0.955 |
| 14-Aug-95 | 16 | 3 | 0.0686 | -1.486 | 2.757 | 0.964 |
| 27-Jun-95 | 16 | 4 | 0.0948 | -1.312 | 2.776 | 0.968 |
| 17-Dec-93 | 17 | 5 | 0.1209 | -1.170 | 2.826 | 0.970 |
| 6-Oct-94 | 17 | 6 | 0.1471 | -1.049 | 2.845 | 0.972 |
| 5-Oct-91 | 18 | 7 | 0.1732 | -0.942 | 2.879 | 0.972 |
| 13-Sep-94 | 18 | 8 | 0.1993 | -0.844 | 2.900 | 0.972 |
| 11-Jul-95 | 19 | 9 | 0.2255 | -0.754 | 2.960 | 0.971 |
| 30-Nov-93 | 20 | 10 | 0.2516 | -0.669 | 2.991 | 0.971 |
| 16-Nov-94 | 21 | 11 | 0.2778 | -0.589 | 3.024 | 0.970 |
| 25-Jul-95 | 21 | 12 | 0.3039 | -0.513 | 3.060 | 0.970 |
| 20-Jan-94 | 22 | 13 | 0.3301 | -0.440 | 3.095 | 0.969 |
| 16-Aug-94 | 23 | 14 | 0.3562 | -0.369 | 3.117 | 0.968 |
| 23-Jun-94 | 23 | 15 | 0.3824 | -0.299 | 3.137 | 0.967 |
| 17-Dec-93 | 23 | 16 | 0.4085 | -0.231 | 3.139 | 0.965 |
| 18-Feb-94 | 23 | 17 | 0.4346 | -0.165 | 3.146 | 0.962 |
| 13-Dec-94 | 23 | 18 | 0.4608 | -0.098 | 3.151 | 0.958 |
| 27-Oct-93 | 25 | 19 | 0.4869 | -0.033 | 3.201 | 0.955 |
| 20-Jan-94 | 25 | 20 | 0.5131 | 0.033 | 3.226 | 0.952 |
| 16-Aug-94 | 25 | 21 | 0.5392 | 0.098 | 3.231 | 0.950 |
| 24-Mar-94 | 31 | 22 | 0.5654 | 0.165 | 3.439 | 0.957 |
| 19-May-94 | 35 | 23 | 0.5915 | 0.231 | 3.542 | 0.952 |
| 24-Mar-94 | 35 | 24 | 0.6176 | 0.299 | 3.567 | 0.949 |
| 8-Mar-95 | 36 | 25 | 0.6438 | 0.369 | 3.584 | 0.945 |
| 13-Jun-95 | 37 | 26 | 0.6699 | 0.440 | 3.607 | 0.939 |
| 7-Jun-94 | 38 | 27 | 0.6961 | 0.513 | 3.647 | 0.931 |
| 4-May-94 | 39 | 28 | 0.7222 | 0.589 | 3.668 | 0.920 |
| 10-Jan-95 | 40 | 29 | 0.7484 | 0.669 | 3.686 | 0.906 |
| 12-Apr-95 | 43 | 30 | 0.7745 | 0.754 | 3.759 | 0.889 |
| 8-Mar-94 | 45 | 31 | 0.8007 | 0.844 | 3.802 | 0.865 |
| 7-Apr-94 | 49 | 32 | 0.8268 | 0.942 | 3.893 | 0.839 |
| 10-Nov-98 | 53 | 33 | 0.8529 | 1.049 | 3.975 | 0.799 |
| 7-Apr-94 | 58 | 34 | 0.8791 | 1.170 | 4.056 | 0.747 |
| 9-Feb-95 | 72 | 35 | 0.9052 | 1.312 | 4.275 | |
| 22-Mar-95 | 78 | 36 | 0.9314 | 1.486 | 4.352 | |
| 17-May-91 | 81 | 37 | 0.9575 | 1.723 | 4.393 | |
| 14-May-98 | 86 | 38 | 0.9837 | 2.136 | 4.460 | |

update for EV, CV

**dZn**
**LN Analysis**
**Concentration**

**CC278**
**dZn**
**Conc. Data, EV=2,738 ug/L CV=.52**
**Data-based LN**

| | |
|---|---|
| **Avg:** | **355** |
| **SD:** | **147** |
| **CV:** | **0.41** |
| **Min:** | **78** |
| **Max:** | **606** |
| **Median:** | **364** |

| u | ln{dZn} | {dZn} |
|---|---|---|
| 3 | 7.0 | 1078 |
| 0 | 5.79 | 328 |
| -3 | 4.60 | 100 |

**u=mLn{Conc.}+b:**

update for r2, EV, CV **$r^2$=0.868, EV=378.2 ug/L CV=.67; max r2=0.95**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.868 | u | lnConc | Conc |
| slope, m | 1.641 | 3 | 7.58 | 1955 |
| intercept, b | -9.434 | 0 | 5.75 | 314 |
| N | 38 | -3 | 3.92 | 50 |
| E{Conc} | 378.2 | Parameter Estmates | | |
| SD{Conc} | 254 | from LN regression | | |
| CV{Conc} | 0.67 | update graph label | | |

N 38

| Date | dZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.950 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 14-May-98 | 78 | 1 | 0.0163 | -2.136 | 4.357 | 0.868 |
| 13-Jun-95 | 90 | 2 | 0.0425 | -1.723 | 4.500 | 0.848 |
| 19-May-94 | 103 | 3 | 0.0686 | -1.486 | 4.635 | 0.836 |
| 27-Jun-95 | 107 | 4 | 0.0948 | -1.312 | 4.673 | 0.830 |
| 17-May-91 | 148 | 5 | 0.1209 | -1.170 | 4.997 | 0.841 |
| 4-May-94 | 152 | 6 | 0.1471 | -1.049 | 5.024 | 0.837 |
| 7-Jun-94 | 159 | 7 | 0.1732 | -0.942 | 5.069 | 0.845 |
| 23-Jun-94 | 190 | 8 | 0.1993 | -0.844 | 5.247 | 0.878 |
| 11-Jul-95 | 228 | 9 | 0.2255 | -0.754 | 5.429 | 0.908 |
| 8-Mar-95 | 273 | 10 | 0.2516 | -0.669 | 5.609 | 0.923 |
| 25-Jul-94 | 286 | 11 | 0.2778 | -0.589 | 5.656 | 0.920 |
| 12-Apr-95 | 305 | 12 | 0.3039 | -0.513 | 5.720 | 0.915 |
| 14-Aug-95 | 306 | 13 | 0.3301 | -0.440 | 5.724 | 0.908 |
| 25-Jul-95 | 317 | 14 | 0.3562 | -0.369 | 5.759 | 0.901 |
| 5-Oct-91 | 321 | 15 | 0.3824 | -0.299 | 5.771 | 0.894 |
| 7-Apr-94 | 334 | 16 | 0.4085 | -0.231 | 5.811 | 0.887 |
| 7-Apr-94 | 334 | 17 | 0.4346 | -0.165 | 5.811 | 0.879 |
| 10-Nov-98 | 351 | 18 | 0.4608 | -0.098 | 5.861 | 0.874 |
| 13-Sep-95 | 360 | 19 | 0.4869 | -0.033 | 5.886 | 0.866 |
| 13-Sep-94 | 368 | 20 | 0.5131 | 0.033 | 5.908 | 0.857 |
| 6-Oct-94 | 378 | 21 | 0.5392 | 0.098 | 5.935 | 0.849 |
| 22-Mar-95 | 383 | 22 | 0.5654 | 0.165 | 5.948 | 0.841 |
| 24-Mar-94 | 400 | 23 | 0.5915 | 0.231 | 5.991 | 0.843 |
| 24-Mar-94 | 400 | 24 | 0.6176 | 0.299 | 5.991 | 0.842 |
| 16-Nov-94 | 425 | 25 | 0.6438 | 0.369 | 6.052 | 0.893 |
| 30-Nov-93 | 465 | 26 | 0.6699 | 0.440 | 6.142 | 0.950 |
| 16-Aug-94 | 472 | 27 | 0.6961 | 0.513 | 6.157 | 0.944 |
| 16-Aug-94 | 472 | 28 | 0.7222 | 0.589 | 6.157 | 0.936 |
| 13-Dec-94 | 493 | 29 | 0.7484 | 0.669 | 6.201 | 0.940 |
| 27-Oct-93 | 497 | 30 | 0.7745 | 0.754 | 6.209 | 0.929 |
| 17-Dec-93 | 507 | 31 | 0.8007 | 0.844 | 6.229 | 0.914 |
| 17-Dec-93 | 507 | 32 | 0.8268 | 0.942 | 6.229 | 0.903 |
| 18-Feb-94 | 521 | 33 | 0.8529 | 1.049 | 6.256 | 0.874 |
| 20-Jan-94 | 531 | 34 | 0.8791 | 1.170 | 6.275 | 0.861 |
| 20-Jan-94 | 531 | 35 | 0.9052 | 1.312 | 6.275 | |
| 8-Mar-94 | 540 | 36 | 0.9314 | 1.486 | 6.292 | |
| 10-Jan-95 | 545 | 37 | 0.9575 | 1.723 | 6.301 | |
| 9-Feb-95 | 606 | 38 | 0.9837 | 2.136 | 6.407 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dZn** | | **CC278** | | |
| **LN Analysis** | | **dZn** | | |
| **Discharge, Q** | | **Q Data, EV=27 cfs CV=1.33** | | |
| **Avg:** | **27** | **Q Data-based LN** | | |
| **SD:** | **36** | u | lnQ | Q |
| **CV:** | **1.33** | 3 | 5.8 | 334 |
| **Min:** | **6** | 0 | 2.78 | 16 |
| **Max:** | **206** | -3 | -0.24 | 1 |
| **Median:** | **14** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.886, EV=26.3 cfs CV=1.13; max r2=0.995**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.886 | u | lnQ | Q |
| slope, m: | 1.105 | 3 | 5.58 | 264 |
| intercept, b: | -3.160 | 0 | 2.86 | 17 |
| N: | 38 | -3 | 0.14 | 1 |
| E[Q]: | 26.3 | Parameter Estimates | | |
| SD[Q]: | 30 | from LN regression | | |
| CV[Q]: | 1.13 | update graph label | | |

| | Q | N 38 | | | | max r2 0.995 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 17-Dec-93 | **6** | 1 | 0.0163 | -2.136 | 1.823 | 0.886 |
| 20-Jan-94 | **8** | 2 | 0.0425 | -1.723 | 2.045 | 0.903 |
| 13-Sep-95 | **8** | 3 | 0.0686 | -1.486 | 2.054 | 0.921 |
| 30-Nov-93 | **7.96** | 4 | 0.0948 | -1.312 | 2.074 | 0.935 |
| 18-Feb-94 | **8** | 5 | 0.1209 | -1.170 | 2.115 | 0.945 |
| 17-Dec-93 | **8** | 6 | 0.1471 | -1.049 | 2.135 | 0.955 |
| 6-Oct-94 | **8** | 7 | 0.1732 | -0.942 | 2.135 | 0.964 |
| 20-Jan-94 | **9** | 8 | 0.1993 | -0.844 | 2.176 | 0.970 |
| 13-Dec-94 | **9** | 9 | 0.2255 | -0.754 | 2.176 | 0.977 |
| 16-Aug-94 | **9** | 10 | 0.2516 | -0.669 | 2.185 | 0.981 |
| 16-Nov-94 | **9** | 11 | 0.2778 | -0.589 | 2.197 | 0.985 |
| 27-Oct-93 | **9** | 12 | 0.3039 | -0.513 | 2.217 | 0.987 |
| 13-Sep-94 | **9** | 13 | 0.3301 | -0.440 | 2.217 | 0.988 |
| 14-Aug-95 | **10** | 14 | 0.3562 | -0.369 | 2.259 | 0.988 |
| 16-Aug-94 | **10** | 15 | 0.3824 | -0.299 | 2.300 | 0.988 |
| 25-Jul-94 | **10.18** | 16 | 0.4085 | -0.231 | 2.320 | 0.987 |
| 5-Oct-91 | **10** | 17 | 0.4346 | -0.165 | 2.332 | 0.986 |
| 25-Jul-95 | **12.51** | 18 | 0.4608 | -0.098 | 2.527 | 0.985 |
| 10-Jan-95 | **14** | 19 | 0.4869 | -0.033 | 2.610 | 0.984 |
| 24-Mar-94 | **14** | 20 | 0.5131 | 0.033 | 2.673 | 0.983 |
| 8-Mar-94 | **15** | 21 | 0.5392 | 0.098 | 2.735 | 0.982 |
| 11-Jul-95 | **16** | 22 | 0.5654 | 0.165 | 2.756 | 0.980 |
| 24-Mar-94 | **16** | 23 | 0.5915 | 0.231 | 2.801 | 0.978 |
| 9-Feb-95 | **22** | 24 | 0.6176 | 0.299 | 3.093 | 0.975 |
| 23-Jun-94 | **23** | 25 | 0.6438 | 0.369 | 3.115 | 0.978 |
| 8-Mar-95 | **25** | 26 | 0.6699 | 0.440 | 3.200 | 0.980 |
| 12-Apr-95 | **26** | 27 | 0.6961 | 0.513 | 3.264 | 0.984 |
| 7-Apr-94 | **27** | 28 | 0.7222 | 0.589 | 3.307 | 0.989 |
| 27-Jun-95 | **28** | 29 | 0.7484 | 0.669 | 3.328 | 0.993 |
| 10-Nov-98 | **28** | 30 | 0.7745 | 0.754 | 3.339 | 0.995 |
| 7-Apr-94 | **32** | 31 | 0.8007 | 0.844 | 3.470 | 0.994 |
| 22-Mar-95 | **38** | 32 | 0.8268 | 0.942 | 3.629 | 0.992 |
| 7-Jun-94 | **45** | 33 | 0.8529 | 1.049 | 3.803 | 0.991 |
| 4-May-94 | **48** | 34 | 0.8791 | 1.170 | 3.869 | 0.994 |
| 19-May-94 | **62** | 35 | 0.9052 | 1.312 | 4.132 | |
| 13-Jun-95 | **76** | 36 | 0.9314 | 1.486 | 4.332 | |
| 17-May-91 | **102** | 37 | 0.9575 | 1.723 | 4.621 | |
| 14-May-98 | **206** | 38 | 0.9837 | 2.136 | 5.328 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | see comment |
|---|---|
| **Station:** CC278 | **Date:** 25-May-00 |
| **Chemical:** tCd | **Analyst:** J.Johnston |
| **Notes:** | |
| **Input Discharge and Concentration Data below (in red)** | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,587 | 27 | 2 | 0.2 | 0.00 | 0.00 | 0.00 |
| **SD:** | 435 | 36 | 1 | 0.1 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.33 | 0.40 | 0.54 | | | |
| **Min:** | 33,375 | 6 | 0.3 | 0.1 | -0.58 | -2.18 | -1.04 |
| **Max:** | 35,929 | 206 | 6 | 1 | 5.00 | 3.28 | 3.83 |
| **Median:** | 34,551 | 14 | 3 | 0.2 | -0.36 | 0.14 | -0.50 |

**tCd CC278 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.41)** update r2

| | | | | |
|---|---|---|---|---|
| r2 Q,[COC] | 0.41 | [tCd] | Q | |
| slope, m | -0.02 | 3 | 6.2 | |
| intercept, b | 2.9 | 2 | 27.0 | |
| N: 38 | | -1 | 206 | |

**LnConc. = mLn(Q)+b (r2=0.70)** update r2

| | | | | | |
|---|---|---|---|---|---|
| lnQ,ln[COC] | 0.70 | ln[tCd] | ln Q | [tCd] | Q |
| slope, m | -0.53 | 1.33 | 1.82 | 4 | 6 |
| intercept, b | 2.30 | 0.55 | 3.29 | 2 | 27 |
| N: 38 | | -0.54 | 5.33 | 1 | 206 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2 | 0.103 | 0.061 |
| m | 0.0265 | 0.00047 |
| b | -889 | -13.23 |

**LnQ = mTime +b**

for graph 0

N= 38

| update for new data | Sampling Date | Q Discharge cfs x-axis | tCd Concentration ug/L y-axis | tCd Load lbs/day y-axis | Ln Q x-axis | Ln tCd Conc. y-axis | Ln tCd Load y-axis | tCd CC278 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | | | | | | | | | |
| MFG | 17-May-91 | 101.6 | 1.3 | 0.7 | 4.62 | 0.26 | -0.34 | 2.08 | -1.15 | 3.83 |
| MFG | 5-Oct-91 | 10.3 | 2.9 | 0.2 | 2.33 | 1.06 | -1.83 | -0.46 | 0.50 | -0.56 |
| IDEQ | 27-Oct-93 | 9.18 | 3 | 0.1 | 2.22 | 1.10 | -1.91 | -0.50 | 0.60 | -0.66 |
| IDEQ | 30-Nov-93 | 7.96 | 5.6 | 0.2 | 2.07 | 1.72 | -1.43 | -0.53 | 3.28 | 0.07 |
| IDEQ | 17-Dec-93 | 8.46 | 3 | 0.1 | 2.14 | 1.10 | -1.99 | -0.52 | 0.60 | -0.75 |
| IDEQ | 17-Dec-93 | 6.19 | 3 | 0.1 | 1.82 | 1.10 | -2.30 | -0.58 | 0.60 | -1.04 |
| IDEQ | 20-Jan-94 | 8.81 | 3.4 | 0.2 | 2.18 | 1.22 | -1.83 | -0.51 | 1.01 | -0.55 |
| IDEQ | 20-Jan-94 | 7.73 | 3.4 | 0.1 | 2.05 | 1.22 | -1.96 | -0.54 | 1.01 | -0.71 |
| IDEQ | 18-Feb-94 | 8.29 | 2.8 | 0.1 | 2.12 | 1.03 | -2.08 | -0.52 | 0.39 | -0.84 |
| IDEQ | 8-Mar-94 | 15.41 | 3.4 | 0.3 | 2.74 | 1.22 | -1.27 | -0.32 | 1.01 | 0.41 |
| IDEQ | 24-Mar-94 | 14.48 | 3 | 0.2 | 2.67 | 1.10 | -1.45 | -0.35 | 0.60 | 0.02 |
| IDEQ | 24-Mar-94 | 16.46 | 3 | 0.3 | 2.80 | 1.10 | -1.33 | -0.29 | 0.60 | 0.28 |
| IDEQ | 7-Apr-94 | 27.29 | 2.1 | 0.3 | 3.31 | 0.74 | -1.18 | 0.01 | -0.33 | 0.62 |
| IDEQ | 7-Apr-94 | 32.14 | 2.1 | 0.4 | 3.47 | 0.74 | -1.01 | 0.14 | -0.33 | 1.06 |
| IDEQ | 4-May-94 | 47.88 | 1.3 | 0.3 | 3.87 | 0.26 | -1.09 | 0.58 | -1.15 | 0.83 |
| IDEQ | 19-May-94 | 62.32 | 0.8 | 0.3 | 4.13 | -0.22 | -1.32 | 0.99 | -1.67 | 0.30 |
| IDEQ | 7-Jun-94 | 44.85 | 1.3 | 0.3 | 3.80 | 0.26 | -1.16 | 0.50 | -1.15 | 0.66 |
| IDEQ | 23-Jun-94 | 22.53 | 1.4 | 0.2 | 3.11 | 0.34 | -1.77 | -0.12 | -1.05 | -0.49 |
| IDEQ | 25-Jul-94 | 10.18 | 2.2 | 0.1 | 2.32 | 0.79 | -2.12 | -0.47 | -0.23 | -0.88 |
| IDEQ | 16-Aug-94 | 9.97 | 3.1 | 0.2 | 2.30 | 1.13 | -1.79 | -0.47 | 0.70 | -0.51 |
| IDEQ | 16-Aug-94 | 8.89 | 3.1 | 0.1 | 2.18 | 1.13 | -1.91 | -0.50 | 0.70 | -0.66 |
| IDEQ | 13-Sep-94 | 9.18 | 2.4 | 0.1 | 2.22 | 0.88 | -2.13 | -0.50 | -0.02 | -0.89 |
| IDEQ | 6-Oct-94 | 8.46 | 2.7 | 0.1 | 2.14 | 0.99 | -2.10 | -0.52 | 0.29 | -0.86 |
| IDEQ | 16-Nov-94 | 9 | 2.9 | 0.1 | 2.20 | 1.06 | -1.96 | -0.50 | 0.50 | -0.72 |
| IDEQ | 13-Dec-94 | 8.81 | 2.8 | 0.1 | 2.18 | 1.03 | -2.02 | -0.51 | 0.39 | -0.78 |
| IDEQ | 10-Jan-95 | 13.6 | 3.5 | 0.3 | 2.61 | 1.25 | -1.36 | -0.37 | 1.11 | 0.20 |
| IDEQ | 9-Feb-95 | 22.05 | 3 | 0.4 | 3.09 | 1.10 | -1.03 | -0.14 | 0.60 | 1.00 |
| IDEQ | 8-Mar-95 | 24.53 | 1.7 | 0.2 | 3.20 | 0.53 | -1.49 | -0.07 | -0.74 | -0.05 |
| IDEQ | 22-Mar-95 | 37.69 | 2.4 | 0.5 | 3.63 | 0.88 | -0.72 | 0.30 | -0.02 | 2.04 |
| IDEQ | 12-Apr-95 | 26.15 | 2.1 | 0.3 | 3.26 | 0.74 | -1.22 | -0.02 | -0.33 | 0.52 |
| IDEQ | 13-Jun-95 | 76.08 | 1 | 0.4 | 4.33 | 0.00 | -0.89 | 1.37 | -1.46 | 1.43 |
| IDEQ | 27-Jun-95 | 27.88 | 1 | 0.1 | 3.33 | 0.00 | -1.90 | 0.03 | -1.46 | -0.64 |
| IDEQ | 11-Jul-95 | 15.74 | 1.5 | 0.1 | 2.76 | 0.41 | -2.06 | -0.31 | -0.95 | -0.83 |
| IDEQ | 25-Jul-95 | 12.51 | 2.3 | 0.2 | 2.53 | 0.83 | -1.87 | -0.40 | -0.12 | -0.61 |
| IDEQ | 14-Aug-95 | 9.57 | 2.2 | 0.1 | 2.26 | 0.79 | -2.18 | -0.49 | -0.23 | -0.94 |
| IDEQ | 13-Sep-95 | 7.8 | 2.7 | 0.1 | 2.05 | 0.99 | -2.18 | -0.53 | 0.29 | -0.94 |
| URS | 10-Nov-97 | 28.2 | 2.2 | 0.3 | 3.34 | 0.79 | -1.10 | 0.03 | -0.23 | 0.82 |
| URS | 14-May-98 | 206 | 0.3 | 0.3 | 5.33 | -1.20 | -1.10 | 5.00 | -2.18 | 0.81 |

tCd

**Concentration over time analysis**

| | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **tCd** | **CC278** | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.155** | **-0.00047** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 17-May-91 | 1.35 | 4 | | |
| mid | 5-Aug-94 | 0.79 | 2 | | |
| last | 14-May-98 | 0.14 | 1 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

**Load over time analysis**

| | | | | | |
|---|---|---|---|---|---|
| | **tCd** | **CC278** | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.000** | **-0.00001** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 17-May-91 | -1.58 | 0 | | |
| mid | 5-Aug-94 | -1.59 | 0 | | |
| last | 14-May-98 | -1.60 | 0 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

max r2 0.536

**Forward time Regression on Ln Concentration(t)**

| **r2** | **slope** | **intercept** |
|---|---|---|
| only on >4 data points delete last 4 rows | | |
| 0.155 | -0.00047 | 17.11 |
| 0.285 | -0.00071 | 25.38 |
| 0.314 | -0.00084 | 29.91 |
| 0.307 | -0.00084 | 29.92 |
| 0.285 | -0.00078 | 27.90 |
| 0.275 | -0.00078 | 27.66 |
| 0.264 | -0.00077 | 27.38 |
| 0.249 | -0.00075 | 26.60 |
| 0.232 | -0.00072 | 25.71 |
| 0.222 | -0.00071 | 25.36 |
| 0.204 | -0.00068 | 24.27 |
| 0.190 | -0.00066 | 23.49 |
| 0.174 | -0.00063 | 22.58 |
| 0.174 | -0.00064 | 22.95 |
| 0.174 | -0.00065 | 23.39 |
| 0.208 | -0.00072 | 25.86 |
| 0.319 | -0.00087 | 30.82 |
| 0.384 | -0.00096 | 34.06 |
| 0.452 | -0.00105 | 37.34 |
| 0.462 | -0.00109 | 38.56 |
| 0.446 | -0.00107 | 38.08 |
| 0.427 | -0.00106 | 37.49 |
| 0.424 | -0.00107 | 38.13 |
| 0.410 | -0.00107 | 38.01 |
| 0.389 | -0.00105 | 37.19 |
| 0.368 | -0.00102 | 36.28 |
| 0.336 | -0.00095 | 33.60 |
| 0.304 | -0.00088 | 31.26 |
| 0.308 | -0.00091 | 32.26 |
| 0.279 | -0.00087 | 30.74 |
| 0.253 | -0.00084 | 29.73 |
| 0.332 | -0.00098 | 34.69 |
| 0.465 | -0.00118 | 41.91 |
| 0.536 | -0.00135 | 47.91 |

max r2 0.922

**Forward time Regression on Ln Load(t)**

| **r2** | **slope** | **intercept** |
|---|---|---|
| only on >4 data points delete last 4 rows | | |
| 0.000 | -0.00001 | -1.34 |
| 0.056 | 0.00026 | -10.77 |
| 0.051 | 0.00029 | -11.53 |
| 0.045 | 0.00027 | -10.94 |
| 0.052 | 0.00029 | -11.81 |
| 0.043 | 0.00027 | -10.94 |
| 0.028 | 0.00021 | -8.91 |
| 0.023 | 0.00020 | -8.34 |
| 0.016 | 0.00016 | -7.24 |
| 0.008 | 0.00012 | -5.64 |
| 0.013 | 0.00015 | -6.73 |
| 0.016 | 0.00016 | -7.25 |
| 0.021 | 0.00019 | -8.34 |
| 0.034 | 0.00025 | -10.14 |
| 0.061 | 0.00033 | -12.95 |
| 0.094 | 0.00040 | -15.63 |
| 0.120 | 0.00046 | -17.63 |
| 0.169 | 0.00054 | -20.59 |
| 0.168 | 0.00055 | -20.93 |
| 0.146 | 0.00051 | -19.53 |
| 0.140 | 0.00051 | -19.51 |
| 0.126 | 0.00049 | -18.85 |
| 0.099 | 0.00043 | -16.71 |
| 0.073 | 0.00037 | -14.38 |
| 0.054 | 0.00031 | -12.48 |
| 0.033 | 0.00024 | -9.88 |
| 0.040 | 0.00027 | -11.00 |
| 0.076 | 0.00037 | -14.47 |
| 0.082 | 0.00039 | -15.35 |
| 0.234 | 0.00060 | -22.60 |
| 0.363 | 0.00074 | -27.71 |
| 0.898 | 0.00098 | -36.39 |
| 0.922 | 0.00103 | -38.18 |
| 0.915 | 0.00105 | -38.60 |

update for EV, CV.

**tCd** **CC278**

**LN Analysis** **tCd**

**Load** **Load Data, EV=0 lbs/day CV=0.54**

| | | **Load Data-based LN** | | |
|---|---|---|---|---|
| **Avg:** | **0.2** | u | ln tCd Load | tCd Load |
| **SD:** | **0.1** | 3 | -0.1 | 0.9 |
| **CV:** | **0.54** | 0 | -1.60 | 0.2 |
| **Min:** | **0.1** | -3 | -3.12 | 0.0 |
| **Max:** | **0.7** | | | |
| **Median:** | **0.2** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.936, EV=0.2 lbs/day CV=0.55; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.936 | u | lnLoad | Load |
| slope, m | 1.950 | 3.0 | -0.05 | 1.0 |
| intercept, b | 3.099 | 0.0 | -1.59 | 0.2 |
| N | 38 | -3.0 | -3.13 | 0.0 |
| E[Load]: | 0.2 | Parameter Estimates | | |
| SD[Load] | 0.1 | from LN regression | | |
| CV[Load] | 0.55 | update graph label | | |

| | **tCd** | N 38 | | | | max r2 0.975 |
|---|---|---|---|---|---|---|
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 17-Dec-93 | **0.10** | 1 | 0.0163 | -2.136 | -2.304 | 0.936 |
| 14-Aug-95 | **0.11** | 2 | 0.0425 | -1.723 | -2.178 | 0.946 |
| 13-Sep-95 | **0.11** | 3 | 0.0686 | -1.486 | -2.178 | 0.955 |
| 13-Sep-94 | **0.12** | 4 | 0.0948 | -1.312 | -2.133 | 0.959 |
| 25-Jul-94 | **0.12** | 5 | 0.1209 | -1.170 | -2.116 | 0.963 |
| 6-Oct-94 | **0.12** | 6 | 0.1471 | -1.049 | -2.096 | 0.964 |
| 18-Feb-94 | **0.12** | 7 | 0.1732 | -0.942 | -2.080 | 0.965 |
| 11-Jul-95 | **0.13** | 8 | 0.1993 | -0.844 | -2.063 | 0.964 |
| 13-Dec-94 | **0.13** | 9 | 0.2255 | -0.754 | -2.020 | 0.962 |
| 17-Dec-93 | **0.14** | 10 | 0.2516 | -0.669 | -1.991 | 0.961 |
| 16-Nov-94 | **0.14** | 11 | 0.2778 | -0.589 | -1.963 | 0.958 |
| 20-Jan-94 | **0.14** | 12 | 0.3039 | -0.513 | -1.956 | 0.956 |
| 27-Oct-93 | **0.15** | 13 | 0.3301 | -0.440 | -1.909 | 0.952 |
| 16-Aug-94 | **0.15** | 14 | 0.3562 | -0.369 | -1.909 | 0.948 |
| 27-Jun-95 | **0.15** | 15 | 0.3824 | -0.299 | -1.897 | 0.943 |
| 25-Jul-95 | **0.15** | 16 | 0.4085 | -0.231 | -1.866 | 0.939 |
| 5-Oct-91 | **0.16** | 17 | 0.4346 | -0.165 | -1.828 | 0.934 |
| 20-Jan-94 | **0.16** | 18 | 0.4608 | -0.098 | -1.825 | 0.930 |
| 16-Aug-94 | **0.17** | 19 | 0.4869 | -0.033 | -1.794 | 0.929 |
| 23-Jun-94 | **0.17** | 20 | 0.5131 | 0.033 | -1.774 | 0.935 |
| 8-Mar-95 | **0.22** | 21 | 0.5392 | 0.098 | -1.495 | 0.957 |
| 24-Mar-94 | **0.23** | 22 | 0.5654 | 0.165 | -1.454 | 0.952 |
| 30-Nov-93 | **0.24** | 23 | 0.5915 | 0.231 | -1.428 | 0.947 |
| 10-Jan-95 | **0.26** | 24 | 0.6176 | 0.299 | -1.362 | 0.940 |
| 24-Mar-94 | **0.27** | 25 | 0.6438 | 0.369 | -1.326 | 0.935 |
| 19-May-94 | **0.27** | 26 | 0.6699 | 0.440 | -1.316 | 0.931 |
| 8-Mar-94 | **0.28** | 27 | 0.6961 | 0.513 | -1.266 | 0.924 |
| 12-Apr-95 | **0.30** | 28 | 0.7222 | 0.589 | -1.219 | 0.918 |
| 7-Apr-94 | **0.31** | 29 | 0.7484 | 0.669 | -1.177 | 0.917 |
| 7-Jun-94 | **0.31** | 30 | 0.7745 | 0.754 | -1.159 | 0.922 |
| 14-May-98 | **0.33** | 31 | 0.8007 | 0.844 | -1.101 | 0.926 |
| 10-Nov-97 | **0.33** | 32 | 0.8268 | 0.942 | -1.097 | 0.949 |
| 4-May-94 | **0.33** | 33 | 0.8529 | 1.049 | -1.094 | 0.968 |
| 9-Feb-95 | **0.36** | 34 | 0.8791 | 1.170 | -1.033 | 0.975 |
| 7-Apr-94 | **0.36** | 35 | 0.9052 | 1.312 | -1.013 | |
| 13-Jun-95 | **0.41** | 36 | 0.9314 | 1.486 | -0.893 | |
| 22-Mar-95 | **0.49** | 37 | 0.9575 | 1.723 | -0.720 | |
| 17-May-91 | **0.71** | 38 | 0.9837 | 2.136 | -0.342 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tCd** | | **CC278** | | |
| **LN Analysis** | | **tCd** | | |
| **Concentration** | | **Conc. Data, EV=2.4 ug/L CV=.40** | | |
| **Avg:** | **2.4** | **Data-based LN** | | |
| **SD:** | **1.0** | u | ln[tCd] | [tCd] |
| **CV:** | **0.4** | 3.0 | 2.0 | 7 |
| **Min:** | **0.3** | 0.0 | 0.81 | 2 |
| **Max:** | **5.6** | -3.0 | -0.35 | 1 |
| **Median:** | **2.6** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV **$r^2$=0.835, EV=2.6 ug/L CV=0.65; max r2=0.89**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.835 | u | lnConc | Conc |
| slope, m | 1.691 | 3.0 | 2.55 | 13 |
| intercept, b | -1.312 | 0.0 | 0.78 | 2 |
| N: | 38 | -3.0 | -1.00 | 0 |
| E[Conc] | 2.6 | Parameter Estimates | | |
| SD[Conc] | 2 | from LN regression | | |
| CV[Conc] | 0.65 | update graph label | | |

| Date | tCd Concentration ug/L Ranked | N 38 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.893 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 14-May-98 | 0.3 | 1 | 0.0163 | -2.136 | -1.204 | 0.835 |
| 19-May-94 | 0.8 | 2 | 0.0425 | -1.723 | -0.223 | 0.891 |
| 13-Jun-95 | 1 | 3 | 0.0686 | -1.486 | 0.000 | 0.886 |
| 27-Jun-95 | 1 | 4 | 0.0948 | -1.312 | 0.000 | 0.877 |
| 17-May-91 | 1.3 | 5 | 0.1209 | -1.170 | 0.262 | 0.879 |
| 4-May-94 | 1.3 | 6 | 0.1471 | -1.049 | 0.262 | 0.869 |
| 7-Jun-94 | 1.3 | 7 | 0.1732 | -0.942 | 0.262 | 0.863 |
| 23-Jun-94 | 1.4 | 8 | 0.1993 | -0.844 | 0.336 | 0.867 |
| 11-Jul-95 | 1.5 | 9 | 0.2255 | -0.754 | 0.405 | 0.875 |
| 8-Mar-95 | 1.7 | 10 | 0.2516 | -0.669 | 0.531 | 0.888 |
| 7-Apr-94 | 2.1 | 11 | 0.2778 | -0.589 | 0.742 | 0.893 |
| 7-Apr-94 | 2.1 | 12 | 0.3039 | -0.513 | 0.742 | 0.884 |
| 12-Apr-95 | 2.1 | 13 | 0.3301 | -0.440 | 0.742 | 0.874 |
| 25-Jul-94 | 2.2 | 14 | 0.3562 | -0.369 | 0.788 | 0.863 |
| 14-Aug-95 | 2.2 | 15 | 0.3824 | -0.299 | 0.788 | 0.851 |
| 10-Nov-97 | 2.2 | 16 | 0.4085 | -0.231 | 0.788 | 0.838 |
| 25-Jul-95 | 2.3 | 17 | 0.4346 | -0.165 | 0.833 | 0.824 |
| 13-Sep-94 | 2.4 | 18 | 0.4608 | -0.098 | 0.875 | 0.807 |
| 22-Mar-95 | 2.4 | 19 | 0.4869 | -0.033 | 0.875 | 0.788 |
| 6-Oct-94 | 2.7 | 20 | 0.5131 | 0.033 | 0.993 | 0.766 |
| 13-Sep-95 | 2.7 | 21 | 0.5392 | 0.098 | 0.993 | 0.757 |
| 18-Feb-94 | 2.8 | 22 | 0.5654 | 0.165 | 1.030 | 0.743 |
| 13-Dec-94 | 2.8 | 23 | 0.5915 | 0.231 | 1.030 | 0.738 |
| 5-Oct-91 | 2.9 | 24 | 0.6176 | 0.299 | 1.065 | 0.728 |
| 16-Nov-94 | 2.9 | 25 | 0.6438 | 0.369 | 1.065 | 0.731 |
| 27-Oct-93 | 3 | 26 | 0.6699 | 0.440 | 1.099 | 0.730 |
| 17-Dec-93 | 3 | 27 | 0.6961 | 0.513 | 1.099 | 0.747 |
| 17-Dec-93 | 3 | 28 | 0.7222 | 0.589 | 1.099 | 0.762 |
| 24-Mar-94 | 3 | 29 | 0.7484 | 0.669 | 1.099 | 0.775 |
| 24-Mar-94 | 3 | 30 | 0.7745 | 0.754 | 1.099 | 0.784 |
| 9-Feb-95 | 3 | 31 | 0.8007 | 0.844 | 1.099 | 0.786 |
| 16-Aug-94 | 3.1 | 32 | 0.8268 | 0.942 | 1.131 | 0.775 |
| 16-Aug-94 | 3.1 | 33 | 0.8529 | 1.049 | 1.131 | 0.774 |
| 20-Jan-94 | 3.4 | 34 | 0.8791 | 1.170 | 1.224 | 0.747 |
| 20-Jan-94 | 3.4 | 35 | 0.9052 | 1.312 | 1.224 | |
| 8-Mar-94 | 3.4 | 36 | 0.9314 | 1.486 | 1.224 | |
| 10-Jan-95 | 3.5 | 37 | 0.9575 | 1.723 | 1.253 | |
| 30-Nov-93 | 5.6 | 38 | 0.9837 | 2.136 | 1.723 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tCd** | | **CC278** | | |
| **LN Analysis** | | **tCd** | | |
| **Discharge, Q** | | **Q Data, EV=27 cfs CV=1.33** | | |
| **Avg:** | **27** | **Q Data-based LN** | | |
| **SD:** | **36** | u | lnQ | Q |
| **CV:** | **1.33** | 3.0 | 5.8 | 334 |
| **Min:** | **6** | 0.0 | 2.78 | 16 |
| **Max:** | **206** | -3.0 | -0.24 | 1 |
| **Median:** | **14** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.886, EV=26.3 cfs CV=1.13; max r2=0.995**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.886 | u | lnQ | Q |
| slope, m. | 1.105 | 3 | 5.58 | 264 |
| intercept, b | -3.160 | 0 | 2.86 | 17 |
| N: 38 | | -3 | 0.14 | 1.2 |
| E[Q] | 26.3 | Parameter Estimates | | |
| SD[Q] | 30 | from LN regression | | |
| CV[Q] | 1.13 | update graph label | | |

N: 38

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.995 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 17-Dec-93 | 6.19 | 1 | 0.0163 | -2.136 | 1.823 | 0.886 |
| 20-Jan-94 | 7.73 | 2 | 0.0425 | -1.723 | 2.045 | 0.903 |
| 13-Sep-95 | 7.8 | 3 | 0.0686 | -1.486 | 2.054 | 0.921 |
| 30-Nov-93 | 7.96 | 4 | 0.0948 | -1.312 | 2.074 | 0.935 |
| 18-Feb-94 | 8.29 | 5 | 0.1209 | -1.170 | 2.115 | 0.945 |
| 17-Dec-93 | 8.46 | 6 | 0.1471 | -1.049 | 2.135 | 0.955 |
| 6-Oct-94 | 8.46 | 7 | 0.1732 | -0.942 | 2.135 | 0.964 |
| 20-Jan-94 | 8.81 | 8 | 0.1993 | -0.844 | 2.176 | 0.970 |
| 13-Dec-94 | 8.81 | 9 | 0.2255 | -0.754 | 2.176 | 0.977 |
| 16-Aug-94 | 8.89 | 10 | 0.2516 | -0.669 | 2.185 | 0.981 |
| 16-Nov-94 | 9 | 11 | 0.2778 | -0.589 | 2.197 | 0.985 |
| 27-Oct-93 | 9.18 | 12 | 0.3039 | -0.513 | 2.217 | 0.987 |
| 13-Sep-94 | 9.18 | 13 | 0.3301 | -0.440 | 2.217 | 0.988 |
| 14-Aug-95 | 9.57 | 14 | 0.3562 | -0.369 | 2.259 | 0.988 |
| 16-Aug-94 | 9.97 | 15 | 0.3824 | -0.299 | 2.300 | 0.988 |
| 25-Jul-94 | 10.18 | 16 | 0.4085 | -0.231 | 2.320 | 0.987 |
| 5-Oct-91 | 10.3 | 17 | 0.4346 | -0.165 | 2.332 | 0.986 |
| 25-Jul-95 | 12.51 | 18 | 0.4608 | -0.098 | 2.527 | 0.985 |
| 10-Jan-95 | 13.6 | 19 | 0.4869 | -0.033 | 2.610 | 0.984 |
| 24-Mar-94 | 14.48 | 20 | 0.5131 | 0.033 | 2.673 | 0.983 |
| 8-Mar-94 | 15.41 | 21 | 0.5392 | 0.098 | 2.735 | 0.982 |
| 11-Jul-95 | 15.74 | 22 | 0.5654 | 0.165 | 2.756 | 0.980 |
| 24-Mar-94 | 16.46 | 23 | 0.5915 | 0.231 | 2.801 | 0.978 |
| 9-Feb-95 | 22.05 | 24 | 0.6176 | 0.299 | 3.093 | 0.975 |
| 23-Jun-94 | 22.53 | 25 | 0.6438 | 0.369 | 3.115 | 0.978 |
| 8-Mar-95 | 24.53 | 26 | 0.6699 | 0.440 | 3.200 | 0.980 |
| 12-Apr-95 | 26.15 | 27 | 0.6961 | 0.513 | 3.264 | 0.984 |
| 7-Apr-94 | 27.29 | 28 | 0.7222 | 0.589 | 3.307 | 0.989 |
| 27-Jun-95 | 27.88 | 29 | 0.7484 | 0.669 | 3.328 | 0.993 |
| 10-Nov-97 | 28.2 | 30 | 0.7745 | 0.754 | 3.339 | 0.995 |
| 7-Apr-94 | 32.14 | 31 | 0.8007 | 0.844 | 3.470 | 0.994 |
| 22-Mar-95 | 37.69 | 32 | 0.8268 | 0.942 | 3.629 | 0.992 |
| 7-Jun-94 | 44.85 | 33 | 0.8529 | 1.049 | 3.803 | 0.991 |
| 4-May-94 | 47.88 | 34 | 0.8791 | 1.170 | 3.869 | 0.994 |
| 19-May-94 | 62.32 | 35 | 0.9052 | 1.312 | 4.132 | |
| 13-Jun-95 | 76.08 | 36 | 0.9314 | 1.486 | 4.332 | |
| 17-May-91 | 101.6 | 37 | 0.9575 | 1.723 | 4.621 | |
| 14-May-98 | 206 | 38 | 0.9837 | 2.136 | 5.328 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC278 **Date:** 25-May-00

**Chemical:** tPb **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load |
|---|---|---|---|---|
| **Avg:** | 34,587 | 27 | 13 | 2 |
| **SD:** | 435 | 36 | 5 | 2 |
| **CV:** | 0.01 | 1.33 | 0.37 | 1.02 |
| **Min:** | 33,375 | 6 | 6 | 0 |
| **Max:** | 35,929 | 206 | 32 | 8 |
| **Median:** | 34,551 | 14 | 12 | 1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | 0.00 | 0.00 | 0.00 |
| | | | | | 1.00 | 1.00 | 1.00 |
| | | | | | -0.58 | -1.46 | -0.68 |
| | | | | | 5.00 | 3.83 | 3.90 |
| | | | | | -0.36 | -0.24 | -0.32 |

**tPb CC278 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.16)** update r2

| | | | |
|---|---|---|---|
| r2 Q,[COC]: | 0.16 | [tPb] | Q |
| slope, m: | -0.1 | 14 | 6.2 |
| intercept, b: | 14.7 | 13 | 27.0 |
| N: 38 | | 3 | 206 |

**LnConc. = mLn(Q)+b (r2=0.38)** update r2

| | | | | | |
|---|---|---|---|---|---|
| lnQ,ln[COC]: | 0.38 | ln[tPb] | ln Q | [tPb] | Q |
| slope, m: | -0.27 | 2.80 | 1.82 | 16 | 6 |
| intercept, b: | 3.29 | 2.40 | 3.29 | 11 | 27 |
| N: 38 | | 1.84 | 5.33 | 6 | 206 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | for graph | |
| | | | | | | | | tPb | 0 | |
| | | | | | | | | CC278 | | |
| **N= 38** | | | | | | | | | | |
| | **Sampling Date** | **Q Discharge** | **tPb Concentration** | **tPb Load** | **Ln Q** | **Ln tPb Conc.** | **Ln tPb Load** | **Standardized Values = (x - Avg)/SD** | | |
| update for new data | | **cfs** | **ug/L** | **lbs/day** | | | | **Q** | **Conc** | **Load** |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 101.6 | 14 | 7.7 | 4.62 | 2.64 | 2.04 | 2.08 | 0.17 | 3.90 |
| MFG | 5-Oct-91 | 10.3 | 16 | 0.9 | 2.33 | 2.77 | -0.12 | -0.46 | 0.57 | -0.41 |
| IDEQ | 27-Oct-93 | 9.18 | 14 | 0.7 | 2.22 | 2.64 | -0.37 | -0.50 | 0.17 | -0.54 |
| IDEQ | 30-Nov-93 | 7.96 | 14 | 0.6 | 2.07 | 2.64 | -0.51 | -0.53 | 0.17 | -0.60 |
| IDEQ | 17-Dec-93 | 8.46 | 14 | 0.6 | 2.14 | 2.64 | -0.45 | -0.52 | 0.17 | -0.57 |
| IDEQ | 17-Dec-93 | 6.19 | 14 | 0.5 | 1.82 | 2.64 | -0.76 | -0.58 | 0.17 | -0.68 |
| IDEQ | 20-Jan-94 | 8.81 | 17 | 0.8 | 2.18 | 2.83 | -0.22 | -0.51 | 0.78 | -0.46 |
| IDEQ | 20-Jan-94 | 7.73 | 17 | 0.7 | 2.05 | 2.83 | -0.35 | -0.54 | 0.78 | -0.53 |
| IDEQ | 18-Feb-94 | 8.29 | 14 | 0.6 | 2.12 | 2.64 | -0.47 | -0.52 | 0.17 | -0.58 |
| IDEQ | 8-Mar-94 | 15.41 | 16 | 1.3 | 2.74 | 2.77 | 0.28 | -0.32 | 0.57 | -0.13 |
| IDEQ | 24-Mar-94 | 14.48 | 12 | 0.9 | 2.67 | 2.48 | -0.07 | -0.35 | -0.24 | -0.38 |
| IDEQ | 24-Mar-94 | 16.46 | 12 | 1.1 | 2.80 | 2.48 | 0.06 | -0.29 | -0.24 | -0.30 |
| IDEQ | 7-Apr-94 | 27.29 | 9 | 1.3 | 3.31 | 2.20 | 0.28 | 0.01 | -0.85 | -0.14 |
| IDEQ | 7-Apr-94 | 32.14 | 9 | 1.6 | 3.47 | 2.20 | 0.44 | 0.14 | -0.85 | 0.01 |
| IDEQ | 4-May-94 | 47.88 | 10 | 2.6 | 3.87 | 2.30 | 0.95 | 0.58 | -0.65 | 0.66 |
| IDEQ | 19-May-94 | 62.32 | 6 | 2.0 | 4.13 | 1.79 | 0.70 | 0.99 | -1.46 | 0.30 |
| IDEQ | 7-Jun-94 | 44.85 | 6 | 1.4 | 3.80 | 1.79 | 0.37 | 0.50 | -1.46 | -0.06 |
| IDEQ | 23-Jun-94 | 22.53 | 12 | 1.5 | 3.11 | 2.48 | 0.37 | -0.12 | -0.24 | -0.05 |
| IDEQ | 25-Jul-94 | 10.18 | 10 | 0.5 | 2.32 | 2.30 | -0.60 | -0.47 | -0.65 | -0.63 |
| IDEQ | 16-Aug-94 | 9.97 | 18 | 1.0 | 2.30 | 2.89 | -0.04 | -0.47 | 0.98 | -0.36 |
| IDEQ | 16-Aug-94 | 8.89 | 18 | 0.9 | 2.18 | 2.89 | -0.15 | -0.50 | 0.98 | -0.43 |
| IDEQ | 13-Sep-94 | 9.18 | 12 | 0.6 | 2.22 | 2.48 | -0.52 | -0.50 | -0.24 | -0.60 |
| IDEQ | 6-Oct-94 | 8.46 | 13 | 0.6 | 2.14 | 2.56 | -0.52 | -0.52 | -0.04 | -0.60 |
| IDEQ | 16-Nov-94 | 9 | 12 | 0.6 | 2.20 | 2.48 | -0.54 | -0.50 | -0.24 | -0.61 |
| IDEQ | 13-Dec-94 | 8.81 | 11 | 0.5 | 2.18 | 2.40 | -0.65 | -0.51 | -0.44 | -0.65 |
| IDEQ | 10-Jan-95 | 13.6 | 22 | 1.6 | 2.61 | 3.09 | 0.48 | -0.37 | 1.79 | 0.05 |
| IDEQ | 9-Feb-95 | 22.05 | 17 | 2.0 | 3.09 | 2.83 | 0.70 | -0.14 | 0.78 | 0.31 |
| IDEQ | 8-Mar-95 | 24.53 | 6 | 0.8 | 3.20 | 1.79 | -0.23 | -0.07 | -1.46 | -0.47 |
| IDEQ | 22-Mar-95 | 37.69 | 12 | 2.4 | 3.63 | 2.48 | 0.89 | 0.30 | -0.24 | 0.57 |
| IDEQ | 12-Apr-95 | 26.15 | 11 | 1.5 | 3.26 | 2.40 | 0.44 | -0.02 | -0.44 | 0.01 |
| IDEQ | 13-Jun-95 | 76.08 | 10 | 4.1 | 4.33 | 2.30 | 1.41 | 1.37 | -0.65 | 1.63 |
| IDEQ | 27-Jun-95 | 27.88 | 10 | 1.5 | 3.33 | 2.30 | 0.41 | 0.03 | -0.65 | -0.02 |
| IDEQ | 11-Jul-95 | 15.74 | 12 | 1.0 | 2.76 | 2.48 | 0.02 | -0.31 | -0.24 | -0.33 |
| IDEQ | 25-Jul-95 | 12.51 | 20 | 1.3 | 2.53 | 3.00 | 0.30 | -0.40 | 1.39 | -0.12 |
| IDEQ | 14-Aug-95 | 9.57 | 15 | 0.8 | 2.26 | 2.71 | -0.26 | -0.49 | 0.37 | -0.49 |
| IDEQ | 13-Sep-95 | 7.8 | 32 | 1.3 | 2.05 | 3.47 | 0.29 | -0.53 | 3.83 | -0.12 |
| URS | 10-Nov-97 | 28.2 | 7.4 | 1.1 | 3.34 | 2.00 | 0.12 | 0.03 | -1.18 | -0.26 |
| URS | 14-May-98 | 206 | 6.6 | 7.3 | 5.33 | 1.89 | 1.99 | 5.00 | -1.34 | 3.68 |

tPb

**Concentration over time analysis**

tPb CC278

**LnConc.=mTime+b All data r2, m:**

| | Time | Ln[COC] | [COC] |
|---|---|---|---|
| first | 17-May-91 | 2.78 | 16 |
| mid | 5-Aug-94 | 2.52 | 12 |
| last | 14-May-98 | 2.22 | 9 |

**LnConc.=mTime+b >'96 r2, m:**

| | | |
|---|---|---|
| 0-Jan-00 | 0.00 | 1 |
| 14-May-98 | 0.00 | 1 |

**Load over time analysis**

tPb CC278

**LnLoad=mTime+b All data r2, m:**

| | Time | LnLoad | Load |
|---|---|---|---|
| first | 17-May-91 | -0.15 | 1 |
| mid | 5-Aug-94 | 0.14 | 1 |
| last | 14-May-98 | 0.48 | 2 |

**LnLoad=mTime+b >'96 r2, m:**

| | | |
|---|---|---|
| 0-Jan-00 | 0.00 | 1 |
| 14-May-98 | 0.00 | 1 |

max r2 0.813

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.068 | -0.00022 | 10.01 |
| 0.070 | -0.00025 | 11.06 |
| 0.057 | -0.00025 | 11.16 |
| 0.053 | -0.00025 | 11.03 |
| 0.050 | -0.00024 | 10.87 |
| 0.047 | -0.00024 | 10.69 |
| 0.043 | -0.00023 | 10.48 |
| 0.034 | -0.00021 | 9.61 |
| 0.025 | -0.00018 | 8.61 |
| 0.021 | -0.00017 | 8.21 |
| 0.015 | -0.00014 | 7.30 |
| 0.015 | -0.00014 | 7.32 |
| 0.014 | -0.00014 | 7.35 |
| 0.022 | -0.00017 | 8.51 |
| 0.031 | -0.00021 | 9.88 |
| 0.039 | -0.00024 | 10.89 |
| 0.083 | -0.00034 | 14.32 |
| 0.162 | -0.00045 | 18.17 |
| 0.175 | -0.00048 | 19.15 |
| 0.211 | -0.00053 | 21.04 |
| 0.191 | -0.00050 | 20.15 |
| 0.167 | -0.00047 | 19.06 |
| 0.179 | -0.00050 | 20.08 |
| 0.183 | -0.00052 | 20.71 |
| 0.194 | -0.00055 | 21.77 |
| 0.219 | -0.00060 | 23.45 |
| 0.183 | -0.00053 | 20.86 |
| 0.157 | -0.00048 | 19.41 |
| 0.321 | -0.00064 | 24.89 |
| 0.345 | -0.00068 | 26.49 |
| 0.402 | -0.00076 | 29.28 |
| 0.502 | -0.00087 | 33.08 |
| 0.664 | -0.00102 | 38.59 |
| 0.813 | -0.00120 | 44.94 |

| r2 | Slope, m |
|---|---|
| **Concentration over time** | |
| **0.068** | **-0.00022** |
| **0.000** | **0.00000** |
| **Load over time** | |
| **0.027** | **0.00025** |
| **0.000** | **0.00000** |

max r2 0.504

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.027 | 0.00025 | -8.44 |
| 0.231 | 0.00073 | -25.08 |
| 0.262 | 0.00088 | -30.28 |
| 0.251 | 0.00086 | -29.83 |
| 0.235 | 0.00084 | -28.84 |
| 0.220 | 0.00081 | -27.91 |
| 0.196 | 0.00075 | -25.80 |
| 0.186 | 0.00074 | -25.33 |
| 0.171 | 0.00071 | -24.34 |
| 0.153 | 0.00066 | -22.79 |
| 0.160 | 0.00069 | -23.70 |
| 0.152 | 0.00068 | -23.42 |
| 0.149 | 0.00069 | -23.57 |
| 0.156 | 0.00071 | -24.58 |
| 0.174 | 0.00077 | -26.46 |
| 0.234 | 0.00089 | -30.60 |
| 0.286 | 0.00099 | -34.13 |
| 0.313 | 0.00105 | -36.48 |
| 0.345 | 0.00113 | -39.12 |
| 0.319 | 0.00107 | -37.04 |
| 0.314 | 0.00108 | -37.44 |
| 0.302 | 0.00108 | -37.28 |
| 0.271 | 0.00100 | -34.77 |
| 0.237 | 0.00092 | -31.68 |
| 0.201 | 0.00081 | -27.91 |
| 0.162 | 0.00066 | -22.71 |
| 0.168 | 0.00069 | -23.74 |
| 0.196 | 0.00076 | -26.32 |
| 0.159 | 0.00066 | -22.72 |
| 0.212 | 0.00078 | -26.85 |
| 0.217 | 0.00082 | -28.16 |
| 0.462 | 0.00109 | -38.00 |
| 0.504 | 0.00119 | -41.51 |
| 0.473 | 0.00119 | -41.57 |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| **tPb** | | **CC278** | | |
| **LN Analysis** | | **tPb** | | |
| **Load** | | **Load Data, EV=2 lbs/day CV=1.02** | | |
| **Avg:** | **2** | **Load Data-based LN** | | |
| **SD:** | **2** | u | ln tPb Load | tPb Load |
| **CV:** | **1.02** | 3 | 2.6 | 14 |
| **Min:** | **0** | 0 | 0.07 | 1 |
| **Max:** | **8** | -3 | -2.47 | 0.1 |
| **Median:** | **1** | | | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.904, EV=1.5 lbs/day CV=0.83; max r2=0.94**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.904 | u | lnLoad | Load |
| slope, m | 1.384 | 3 | 2.32 | 10 |
| intercept, b | -0.207 | 0 | 0.15 | 1 |
| N: 38 | | -3 | -2.02 | 0.1 |
| E[Load] | 1.5 | Parameter Estimates | | |
| SD[Load] | 1 | from LN regression | | |
| CV[Load] | 0.83 | update graph label | | |

| | tPb | N: 38 | | | | max r2 0.940 |
|---|---|---|---|---|---|---|
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 17-Dec-93 | **0.5** | 1 | 0.0163 | -2.136 | -0.763 | 0.904 |
| 13-Dec-94 | **0.5** | 2 | 0.0425 | -1.723 | -0.651 | 0.917 |
| 25-Jul-94 | **0.5** | 3 | 0.0686 | -1.486 | -0.602 | 0.925 |
| 16-Nov-94 | **0.6** | 4 | 0.0948 | -1.312 | -0.543 | 0.931 |
| 6-Oct-94 | **0.6** | 5 | 0.1209 | -1.170 | -0.525 | 0.936 |
| 13-Sep-94 | **0.6** | 6 | 0.1471 | -1.049 | -0.523 | 0.939 |
| 30-Nov-93 | **0.6** | 7 | 0.1732 | -0.942 | -0.512 | 0.940 |
| 18-Feb-94 | **0.6** | 8 | 0.1993 | -0.844 | -0.471 | 0.939 |
| 17-Dec-93 | **0.6** | 9 | 0.2255 | -0.754 | -0.451 | 0.937 |
| 27-Oct-93 | **0.7** | 10 | 0.2516 | -0.669 | -0.369 | 0.935 |
| 20-Jan-94 | **0.7** | 11 | 0.2778 | -0.589 | -0.347 | 0.933 |
| 14-Aug-95 | **0.8** | 12 | 0.3039 | -0.513 | -0.258 | 0.931 |
| 8-Mar-95 | **0.8** | 13 | 0.3301 | -0.440 | -0.233 | 0.930 |
| 20-Jan-94 | **0.8** | 14 | 0.3562 | -0.369 | -0.216 | 0.928 |
| 16-Aug-94 | **0.9** | 15 | 0.3824 | -0.299 | -0.150 | 0.925 |
| 5-Oct-91 | **0.9** | 16 | 0.4085 | -0.231 | -0.120 | 0.922 |
| 24-Mar-94 | **0.9** | 17 | 0.4346 | -0.165 | -0.067 | 0.919 |
| 16-Aug-94 | **1.0** | 18 | 0.4608 | -0.098 | -0.035 | 0.916 |
| 11-Jul-95 | **1.0** | 19 | 0.4869 | -0.033 | 0.016 | 0.912 |
| 24-Mar-94 | **1.1** | 20 | 0.5131 | 0.033 | 0.061 | 0.909 |
| 10-Nov-97 | **1.1** | 21 | 0.5392 | 0.098 | 0.116 | 0.905 |
| 7-Apr-94 | **1.3** | 22 | 0.5654 | 0.165 | 0.279 | 0.901 |
| 8-Mar-94 | **1.3** | 23 | 0.5915 | 0.231 | 0.283 | 0.910 |
| 13-Sep-95 | **1.3** | 24 | 0.6176 | 0.299 | 0.295 | 0.917 |
| 25-Jul-95 | **1.3** | 25 | 0.6438 | 0.369 | 0.297 | 0.923 |
| 7-Jun-94 | **1.4** | 26 | 0.6699 | 0.440 | 0.370 | 0.925 |
| 23-Jun-94 | **1.5** | 27 | 0.6961 | 0.513 | 0.375 | 0.933 |
| 27-Jun-95 | **1.5** | 28 | 0.7222 | 0.589 | 0.405 | 0.936 |
| 12-Apr-95 | **1.5** | 29 | 0.7484 | 0.669 | 0.437 | 0.938 |
| 7-Apr-94 | **1.6** | 30 | 0.7745 | 0.754 | 0.442 | 0.937 |
| 10-Jan-95 | **1.6** | 31 | 0.8007 | 0.844 | 0.476 | 0.927 |
| 19-May-94 | **2.0** | 32 | 0.8268 | 0.942 | 0.699 | 0.909 |
| 9-Feb-95 | **2.0** | 33 | 0.8529 | 1.049 | 0.701 | 0.895 |
| 22-Mar-95 | **2.4** | 34 | 0.8791 | 1.170 | 0.889 | 0.856 |
| 4-May-94 | **2.6** | 35 | 0.9052 | 1.312 | 0.946 | |
| 13-Jun-95 | **4.1** | 36 | 0.9314 | 1.486 | 1.409 | |
| 14-May-98 | **7.3** | 37 | 0.9575 | 1.723 | 1.990 | |
| 17-May-91 | **7.7** | 38 | 0.9837 | 2.136 | 2.035 | |

update for EV, CV

**tPb**
**LN Analysis**
**Concentration**

**CC278**
**tPb**
**Conc. Data, EV=13 ug/L CV=.37**
**Data-based LN**

| | | u | ln[tPb] | [tPb] |
|---|---|---|---|---|
| **Avg:** | 13 | | | |
| **SD:** | 5 | 3 | 3.6 | 36 |
| **CV:** | 0.37 | 0 | 2.51 | 12 |
| **Min:** | 6 | -3 | 1.43 | 4 |
| **Max:** | 32 | | | |
| **Median:** | 12 | | | |

**u=mLn(Conc.}+b:**

update for r2, EV, CV **$r^2$=0.962, EV=13.3 ug/L CV=.40; max r2=0.96**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.962 | u | lnConc. | Conc. |
| slope, m. | 2.617 | 3 | 3.66 | 39 |
| intercept, b | -6.580 | 0 | 2.51 | 12 |
| N. 38 | | -3 | 1.37 | 4 |
| E[Conc] | 13.3 | Parameter Estimates | | |
| SD[Conc] | 5 | from LN regression | | |
| CV[Conc] | 0.40 | update graph label | | |

| Date | tPb Concentration ug/L Ranked | N. 38 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.962 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 19-May-94 | 6 | 1 | 0.0163 | -2.136 | 1.792 | 0.962 |
| 7-Jun-94 | 6 | 2 | 0.0425 | -1.723 | 1.792 | 0.958 |
| 8-Mar-95 | 6 | 3 | 0.0686 | -1.486 | 1.792 | 0.954 |
| 14-May-98 | 6.6 | 4 | 0.0948 | -1.312 | 1.887 | 0.957 |
| 10-Nov-97 | 7.4 | 5 | 0.1209 | -1.170 | 2.001 | 0.961 |
| 7-Apr-94 | 9 | 6 | 0.1471 | -1.049 | 2.197 | 0.962 |
| 7-Apr-94 | 9 | 7 | 0.1732 | -0.942 | 2.197 | 0.959 |
| 4-May-94 | 10 | 8 | 0.1993 | -0.844 | 2.303 | 0.955 |
| 25-Jul-94 | 10 | 9 | 0.2255 | -0.754 | 2.303 | 0.954 |
| 13-Jun-95 | 10 | 10 | 0.2516 | -0.669 | 2.303 | 0.951 |
| 27-Jun-95 | 10 | 11 | 0.2778 | -0.589 | 2.303 | 0.947 |
| 13-Dec-94 | 11 | 12 | 0.3039 | -0.513 | 2.398 | 0.943 |
| 12-Apr-95 | 11 | 13 | 0.3301 | -0.440 | 2.398 | 0.940 |
| 24-Mar-94 | 12 | 14 | 0.3562 | -0.369 | 2.485 | 0.936 |
| 24-Mar-94 | 12 | 15 | 0.3824 | -0.299 | 2.485 | 0.939 |
| 23-Jun-94 | 12 | 16 | 0.4085 | -0.231 | 2.485 | 0.941 |
| 13-Sep-94 | 12 | 17 | 0.4346 | -0.165 | 2.485 | 0.941 |
| 16-Nov-94 | 12 | 18 | 0.4608 | -0.098 | 2.485 | 0.938 |
| 22-Mar-95 | 12 | 19 | 0.4869 | -0.033 | 2.485 | 0.934 |
| 11-Jul-95 | 12 | 20 | 0.5131 | 0.033 | 2.485 | 0.927 |
| 6-Oct-94 | 13 | 21 | 0.5392 | 0.098 | 2.565 | 0.920 |
| 17-May-91 | 14 | 22 | 0.5654 | 0.165 | 2.639 | 0.914 |
| 27-Oct-93 | 14 | 23 | 0.5915 | 0.231 | 2.639 | 0.920 |
| 30-Nov-93 | 14 | 24 | 0.6176 | 0.299 | 2.639 | 0.924 |
| 17-Dec-93 | 14 | 25 | 0.6438 | 0.369 | 2.639 | 0.925 |
| 17-Dec-93 | 14 | 26 | 0.6699 | 0.440 | 2.639 | 0.921 |
| 18-Feb-94 | 14 | 27 | 0.6961 | 0.513 | 2.639 | 0.913 |
| 14-Aug-95 | 15 | 28 | 0.7222 | 0.589 | 2.708 | 0.899 |
| 5-Oct-91 | 16 | 29 | 0.7484 | 0.669 | 2.773 | 0.890 |
| 8-Mar-94 | 16 | 30 | 0.7745 | 0.754 | 2.773 | 0.896 |
| 20-Jan-94 | 17 | 31 | 0.8007 | 0.844 | 2.833 | 0.893 |
| 20-Jan-94 | 17 | 32 | 0.8268 | 0.942 | 2.833 | 0.919 |
| 9-Feb-95 | 17 | 33 | 0.8529 | 1.049 | 2.833 | 0.938 |
| 16-Aug-94 | 18 | 34 | 0.8791 | 1.170 | 2.890 | 0.943 |
| 16-Aug-94 | 18 | 35 | 0.9052 | 1.312 | 2.890 | |
| 25-Jul-95 | 20 | 36 | 0.9314 | 1.486 | 2.996 | |
| 10-Jan-95 | 22 | 37 | 0.9575 | 1.723 | 3.091 | |
| 13-Sep-95 | 32 | 38 | 0.9837 | 2.136 | 3.466 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **tPb** | | **CC278** | | |
| **LN Analysis** | | **tPb** | | |
| **Discharge, Q** | | **Q Data, EV=27 cfs CV=1.33** | | |
| **Avg:** | **27** | **Q Data-based LN** | | |
| **SD:** | **36** | u | lnQ | Q |
| **CV:** | **1.33** | 3 | 5.8 | 334 |
| **Min:** | **6** | 0 | 2.78 | 16 |
| **Max:** | **206** | -3 | -0.24 | 1 |
| **Median:** | **14** | | | |

**u=mLn{Q}+b:**

update for r2, EV, CV: **r2=0.886, EV=26.3 cfs CV=1.13; max r2=0.995**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.886 | u | lnQ | Q |
| slope, m | 1.105 | 3 | 5.58 | 264 |
| intercept, b | -3.160 | 0 | 2.86 | 17 |
| N | 38 | -3 | 0.14 | 1.2 |
| E[Q] | 26.3 | Parameter Estimates | | |
| SD[Q] | 30 | from LN regression | | |
| CV[Q] | 1.13 | update graph label | | |

N 38 — max r2 0.995

| Date | Q Discharge cfs | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | Ranked | | | | | |
| 17-Dec-93 | 6.19 | 1 | 0.0163 | -2.136 | 1.823 | 0.886 |
| 20-Jan-94 | 7.73 | 2 | 0.0425 | -1.723 | 2.045 | 0.903 |
| 13-Sep-95 | 7.8 | 3 | 0.0686 | -1.486 | 2.054 | 0.921 |
| 30-Nov-93 | 7.96 | 4 | 0.0948 | -1.312 | 2.074 | 0.935 |
| 18-Feb-94 | 8.29 | 5 | 0.1209 | -1.170 | 2.115 | 0.945 |
| 17-Dec-93 | 8.46 | 6 | 0.1471 | -1.049 | 2.135 | 0.955 |
| 6-Oct-94 | 8.46 | 7 | 0.1732 | -0.942 | 2.135 | 0.964 |
| 20-Jan-94 | 8.81 | 8 | 0.1993 | -0.844 | 2.176 | 0.970 |
| 13-Dec-94 | 8.81 | 9 | 0.2255 | -0.754 | 2.176 | 0.977 |
| 16-Aug-94 | 8.89 | 10 | 0.2516 | -0.669 | 2.185 | 0.981 |
| 16-Nov-94 | 9 | 11 | 0.2778 | -0.589 | 2.197 | 0.985 |
| 27-Oct-93 | 9.18 | 12 | 0.3039 | -0.513 | 2.217 | 0.987 |
| 13-Sep-94 | 9.18 | 13 | 0.3301 | -0.440 | 2.217 | 0.988 |
| 14-Aug-95 | 9.57 | 14 | 0.3562 | -0.369 | 2.259 | 0.988 |
| 16-Aug-94 | 9.97 | 15 | 0.3824 | -0.299 | 2.300 | 0.988 |
| 25-Jul-94 | 10.18 | 16 | 0.4085 | -0.231 | 2.320 | 0.987 |
| 5-Oct-91 | 10.3 | 17 | 0.4346 | -0.165 | 2.332 | 0.986 |
| 25-Jul-95 | 12.51 | 18 | 0.4608 | -0.098 | 2.527 | 0.985 |
| 10-Jan-95 | 13.6 | 19 | 0.4869 | -0.033 | 2.610 | 0.984 |
| 24-Mar-94 | 14.48 | 20 | 0.5131 | 0.033 | 2.673 | 0.983 |
| 8-Mar-94 | 15.41 | 21 | 0.5392 | 0.098 | 2.735 | 0.982 |
| 11-Jul-95 | 15.74 | 22 | 0.5654 | 0.165 | 2.756 | 0.980 |
| 24-Mar-94 | 16.46 | 23 | 0.5915 | 0.231 | 2.801 | 0.978 |
| 9-Feb-95 | 22.05 | 24 | 0.6176 | 0.299 | 3.093 | 0.975 |
| 23-Jun-94 | 22.53 | 25 | 0.6438 | 0.369 | 3.115 | 0.978 |
| 8-Mar-95 | 24.53 | 26 | 0.6699 | 0.440 | 3.200 | 0.980 |
| 12-Apr-95 | 26.15 | 27 | 0.6961 | 0.513 | 3.264 | 0.984 |
| 7-Apr-94 | 27.29 | 28 | 0.7222 | 0.589 | 3.307 | 0.989 |
| 27-Jun-95 | 27.88 | 29 | 0.7484 | 0.669 | 3.328 | 0.993 |
| 10-Nov-93 | 28.2 | 30 | 0.7745 | 0.754 | 3.339 | 0.995 |
| 7-Apr-94 | 32.14 | 31 | 0.8007 | 0.844 | 3.470 | 0.994 |
| 22-Mar-95 | 37.69 | 32 | 0.8268 | 0.942 | 3.629 | 0.992 |
| 7-Jun-94 | 44.85 | 33 | 0.8529 | 1.049 | 3.803 | 0.991 |
| 4-May-94 | 47.88 | 34 | 0.8791 | 1.170 | 3.869 | 0.994 |
| 19-May-94 | 62.32 | 35 | 0.9052 | 1.312 | 4.132 | |
| 13-Jun-95 | 76.08 | 36 | 0.9314 | 1.486 | 4.332 | |
| 17-May-91 | 101.6 | 37 | 0.9575 | 1.723 | 4.621 | |
| 14-May-98 | 206 | 38 | 0.9837 | 2.136 | 5.328 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **CC278** | **Date:** | **25-May-00** |
| **Chemical:** | **tZn** | **Analyst:** | **J.Johnston** |
| ***Notes:*** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 34,587 | 27 | 368 | 35 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 435 | 36 | 153 | 20 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.33 | 0.42 | 0.57 | | | | |
| **Min:** | 33,375 | 6 | 78 | 16 | | -0.58 | -1.89 | -0.95 |
| **Max:** | 35,929 | 206 | 591 | 91 | | 5.00 | 1.46 | 2.84 |
| **Median:** | 34,551 | 14 | 392 | 25 | | -0.36 | 0.16 | -0.47 |

| tZn CC278 | | : Concentration v. Discharge, Q | | | Q = mTime +b | LnQ = mTime +b |
|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.40)** | update r2 | | | | r2 | 0.103 | 0.061 |
| r2 Q,[COC] | 0.40 | [tZn] | Q | | m | 0.0265 | 0.00047 |
| slope, m | -2.7 | 424 | 6.2 | | b | -889 | -13.23 |
| intercept, b | 440.3 | 368 | 27.0 | | | | |
| N: 38 | | -113 | 206 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.67)** | | update r2 | | | | | |
| lnQ,ln[COC] | 0.67 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m | -0.55 | 6.36 | 1.82 | 576 | 6 | | |
| intercept, b | 7.36 | 5.54 | 3.29 | 255 | 27 | | |
| N: 38 | | 4.42 | 5.33 | 83 | 206 | | |

N= 38

| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | for graph: tZn CC278 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 101.6 | 167 | 91 | 4.62 | 5.12 | 4.51 | 2.08 | -1.31 | 2.84 |
| MFG | 5-Oct-91 | 10.3 | 409 | 23 | 2.33 | 6.01 | 3.12 | -0.46 | 0.27 | -0.61 |
| IDEQ | 27-Oct-93 | 9.18 | 491 | 24 | 2.22 | 6.20 | 3.19 | -0.50 | 0.80 | -0.53 |
| IDEQ | 30-Nov-93 | 7.96 | 583 | 25 | 2.07 | 6.37 | 3.22 | -0.53 | 1.41 | -0.49 |
| IDEQ | 17-Dec-93 | 8.46 | 518 | 24 | 2.14 | 6.25 | 3.16 | -0.52 | 0.98 | -0.56 |
| IDEQ | 17-Dec-93 | 6.19 | 518 | 17 | 1.82 | 6.25 | 2.85 | -0.58 | 0.98 | -0.88 |
| IDEQ | 20-Jan-94 | 8.81 | 561 | 27 | 2.18 | 6.33 | 3.28 | -0.51 | 1.26 | -0.41 |
| IDEQ | 20-Jan-94 | 7.73 | 561 | 23 | 2.05 | 6.33 | 3.15 | -0.54 | 1.26 | -0.57 |
| IDEQ | 18-Feb-94 | 8.29 | 518 | 23 | 2.12 | 6.25 | 3.14 | -0.52 | 0.98 | -0.59 |
| IDEQ | 8-Mar-94 | 15.41 | 550 | 46 | 2.74 | 6.31 | 3.82 | -0.32 | 1.19 | 0.54 |
| IDEQ | 24-Mar-94 | 14.48 | 392 | 31 | 2.67 | 5.97 | 3.42 | -0.35 | 0.16 | -0.21 |
| IDEQ | 24-Mar-94 | 16.46 | 392 | 35 | 2.80 | 5.97 | 3.55 | -0.29 | 0.16 | 0.00 |
| IDEQ | 7-Apr-94 | 27.29 | 331 | 49 | 3.31 | 5.80 | 3.88 | 0.01 | -0.24 | 0.70 |
| IDEQ | 7-Apr-94 | 32.14 | 331 | 57 | 3.47 | 5.80 | 4.05 | 0.14 | -0.24 | 1.13 |
| IDEQ | 4-May-94 | 47.88 | 154 | 40 | 3.87 | 5.04 | 3.68 | 0.58 | -1.40 | 0.25 |
| IDEQ | 19-May-94 | 62.32 | 96 | 32 | 4.13 | 4.56 | 3.47 | 0.99 | -1.77 | -0.13 |
| IDEQ | 7-Jun-94 | 44.85 | 151 | 36 | 3.80 | 5.02 | 3.60 | 0.50 | -1.42 | 0.08 |
| IDEQ | 23-Jun-94 | 22.53 | 203 | 25 | 3.11 | 5.31 | 3.20 | -0.12 | -1.08 | -0.51 |
| IDEQ | 25-Jul-94 | 10.18 | 295 | 16 | 2.32 | 5.69 | 2.78 | -0.47 | -0.48 | -0.93 |
| IDEQ | 16-Aug-94 | 9.97 | 480 | 26 | 2.30 | 6.17 | 3.25 | -0.47 | 0.73 | -0.45 |
| IDEQ | 16-Aug-94 | 8.89 | 480 | 23 | 2.18 | 6.17 | 3.13 | -0.50 | 0.73 | -0.59 |
| IDEQ | 13-Sep-94 | 9.18 | 374 | 18 | 2.22 | 5.92 | 2.92 | -0.50 | 0.04 | -0.82 |
| IDEQ | 6-Oct-94 | 8.46 | 406 | 18 | 2.14 | 6.01 | 2.92 | -0.52 | 0.25 | -0.82 |
| IDEQ | 16-Nov-94 | 9 | 424 | 21 | 2.20 | 6.05 | 3.02 | -0.50 | 0.37 | -0.71 |
| IDEQ | 13-Dec-94 | 8.81 | 496 | 24 | 2.18 | 6.21 | 3.16 | -0.51 | 0.84 | -0.57 |
| IDEQ | 10-Jan-95 | 13.6 | 591 | 43 | 2.61 | 6.38 | 3.77 | -0.37 | 1.46 | 0.43 |
| IDEQ | 9-Feb-95 | 22.05 | 586 | 70 | 3.09 | 6.37 | 4.24 | -0.14 | 1.42 | 1.75 |
| IDEQ | 8-Mar-95 | 24.53 | 272 | 36 | 3.20 | 5.61 | 3.58 | -0.07 | -0.63 | 0.06 |
| IDEQ | 22-Mar-95 | 37.69 | 419 | 85 | 3.63 | 6.04 | 4.44 | 0.30 | 0.33 | 2.52 |
| IDEQ | 12-Apr-95 | 26.15 | 322 | 45 | 3.26 | 5.77 | 3.81 | -0.02 | -0.30 | 0.53 |
| IDEQ | 13-Jun-95 | 76.08 | 95 | 39 | 4.33 | 4.55 | 3.66 | 1.37 | -1.78 | 0.21 |
| IDEQ | 27-Jun-95 | 27.88 | 112 | 17 | 3.33 | 4.72 | 2.82 | 0.03 | -1.67 | -0.90 |
| IDEQ | 11-Jul-95 | 15.74 | 223 | 19 | 2.76 | 5.41 | 2.94 | -0.31 | -0.95 | -0.80 |
| IDEQ | 25-Jul-95 | 12.51 | 328 | 22 | 2.53 | 5.79 | 3.09 | -0.40 | -0.26 | -0.64 |
| IDEQ | 14-Aug-95 | 9.57 | 309 | 16 | 2.26 | 5.73 | 2.77 | -0.49 | -0.38 | -0.95 |
| IDEQ | 13-Sep-95 | 7.8 | 409 | 17 | 2.05 | 6.01 | 2.84 | -0.53 | 0.27 | -0.88 |
| URS | 10-Nov-97 | 28.2 | 352 | 53 | 3.34 | 5.86 | 3.98 | 0.03 | -0.10 | 0.94 |
| URS | 14-May-98 | 206 | 78 | 86 | 5.33 | 4.36 | 4.46 | 5.00 | -1.89 | 2.60 |

tZn

| | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| **Concentration over time analysis** | | | | | |
| | **tZn** | **CC278** | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.071** | **-0.00034** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 17-May-91 | 6.19 | 490 | | |
| mid | 5-Aug-94 | 5.79 | 329 | | |
| last | 14-May-98 | 5.33 | 206 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |
| | **Load over time analysis** | | | | |
| | **tZn** | **CC278** | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.012** | **0.00012** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 17-May-91 | 3.27 | 26 | | |
| mid | 5-Aug-94 | 3.41 | 30 | | |
| last | 14-May-98 | 3.59 | 36 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| max r2 | 0.475 | | max r2 | 0.960 | |
| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points delete last 4 rows | | | only on >4 data points, delete last 4 rows | | |
| 0.071 | -0.00034 | 17.55 | 0.012 | 0.00012 | -0.90 |
| 0.166 | -0.00058 | 25.74 | 0.115 | 0.00040 | -10.40 |
| 0.184 | -0.00068 | 29.50 | 0.112 | 0.00044 | -11.94 |
| 0.174 | -0.00067 | 29.05 | 0.107 | 0.00044 | -11.82 |
| 0.158 | -0.00064 | 27.98 | 0.103 | 0.00044 | -11.73 |
| 0.146 | -0.00062 | 27.16 | 0.097 | 0.00043 | -11.44 |
| 0.132 | -0.00059 | 26.23 | 0.081 | 0.00039 | -10.06 |
| 0.117 | -0.00055 | 24.94 | 0.078 | 0.00039 | -9.99 |
| 0.100 | -0.00051 | 23.48 | 0.070 | 0.00037 | -9.46 |
| 0.086 | -0.00047 | 22.16 | 0.062 | 0.00035 | -8.84 |
| 0.071 | -0.00043 | 20.50 | 0.079 | 0.00040 | -10.51 |
| 0.064 | -0.00041 | 19.86 | 0.081 | 0.00041 | -10.88 |
| 0.056 | -0.00039 | 19.12 | 0.088 | 0.00044 | -11.80 |
| 0.053 | -0.00038 | 18.95 | 0.117 | 0.00050 | -14.14 |
| 0.049 | -0.00038 | 18.75 | 0.170 | 0.00060 | -17.58 |
| 0.075 | -0.00046 | 21.81 | 0.199 | 0.00066 | -19.68 |
| 0.152 | -0.00062 | 27.38 | 0.215 | 0.00070 | -21.08 |
| 0.220 | -0.00074 | 31.49 | 0.244 | 0.00076 | -23.17 |
| 0.273 | -0.00083 | 34.69 | 0.242 | 0.00077 | -23.58 |
| 0.290 | -0.00087 | 36.24 | 0.216 | 0.00072 | -21.84 |
| 0.272 | -0.00085 | 35.44 | 0.213 | 0.00073 | -22.15 |
| 0.251 | -0.00082 | 34.45 | 0.202 | 0.00073 | -21.89 |
| 0.243 | -0.00083 | 34.63 | 0.176 | 0.00068 | -20.21 |
| 0.229 | -0.00082 | 34.23 | 0.149 | 0.00062 | -18.16 |
| 0.211 | -0.00079 | 33.32 | 0.126 | 0.00057 | -16.35 |
| 0.183 | -0.00073 | 31.16 | 0.108 | 0.00053 | -15.00 |
| 0.146 | -0.00062 | 27.37 | 0.129 | 0.00059 | -17.23 |
| 0.107 | -0.00050 | 22.83 | 0.223 | 0.00075 | -22.90 |
| 0.100 | -0.00049 | 22.64 | 0.246 | 0.00081 | -24.98 |
| 0.065 | -0.00039 | 18.89 | 0.546 | 0.00108 | -34.45 |
| 0.042 | -0.00031 | 16.18 | 0.758 | 0.00127 | -41.26 |
| 0.139 | -0.00052 | 23.66 | 0.960 | 0.00144 | -47.41 |
| 0.373 | -0.00078 | 32.91 | 0.956 | 0.00143 | -47.19 |
| 0.475 | -0.00093 | 38.32 | 0.956 | 0.00146 | -48.19 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tZn** | | **CC278** | | |
| **LN Analysis** | | **tZn** | | |
| **Load** | | **Load Data, EV=35 lbs/day CV=.57** | | |
| **Avg:** | **35** | **Load Data-based LN** | | |
| **SD:** | **20** | u | ln tZn Load | tZn Load |
| **CV:** | **0.57** | 3 | 5.0 | 149 |
| **Min:** | **16** | 0 | 3.41 | 30 |
| **Max:** | **91** | -3 | 1.81 | 6 |
| **Median:** | **25** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV **$r^2$=0.933, EV=35.0 lbs/day CV=0.56; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.933 | u | lnLoad | Load |
| slope, m | 1.907 | 3 | 4.99 | 147 |
| intercept, b | -6.519 | 0 | 3.42 | 30 |
| N | 38 | -3 | 1.84 | 6 |
| E[Load] | 35.0 | Parameter Estimates | | |
| SD[Load] | 20 | from LN regression | | |
| CV[Load] | 0.56 | update graph label | | |

| | tZn | N 38 | | | | max r2 0.976 |
|---|---|---|---|---|---|---|
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 14-Aug-95 | **16** | 1 | 0.0163 | -2.136 | 2.767 | 0.933 |
| 25-Jul-94 | **16** | 2 | 0.0425 | -1.723 | 2.782 | 0.951 |
| 27-Jun-95 | **17** | 3 | 0.0686 | -1.486 | 2.821 | 0.958 |
| 13-Sep-95 | **17** | 4 | 0.0948 | -1.312 | 2.843 | 0.963 |
| 17-Dec-93 | **17** | 5 | 0.1209 | -1.170 | 2.848 | 0.966 |
| 13-Sep-94 | **18** | 6 | 0.1471 | -1.049 | 2.916 | 0.966 |
| 6-Oct-94 | **18** | 7 | 0.1732 | -0.942 | 2.917 | 0.968 |
| 11-Jul-95 | **19** | 8 | 0.1993 | -0.844 | 2.938 | 0.967 |
| 16-Nov-94 | **21** | 9 | 0.2255 | -0.754 | 3.022 | 0.966 |
| 25-Jul-95 | **22** | 10 | 0.2516 | -0.669 | 3.094 | 0.967 |
| 5-Oct-91 | **23** | 11 | 0.2778 | -0.589 | 3.121 | 0.970 |
| 16-Aug-94 | **23** | 12 | 0.3039 | -0.513 | 3.134 | 0.973 |
| 18-Feb-94 | **23** | 13 | 0.3301 | -0.440 | 3.140 | 0.975 |
| 20-Jan-94 | **23** | 14 | 0.3562 | -0.369 | 3.150 | 0.976 |
| 13-Dec-94 | **24** | 15 | 0.3824 | -0.299 | 3.157 | 0.976 |
| 17-Dec-93 | **24** | 16 | 0.4085 | -0.231 | 3.160 | 0.975 |
| 27-Oct-93 | **24** | 17 | 0.4346 | -0.165 | 3.188 | 0.973 |
| 23-Jun-94 | **25** | 18 | 0.4608 | -0.098 | 3.203 | 0.971 |
| 30-Nov-93 | **25** | 19 | 0.4869 | -0.033 | 3.218 | 0.968 |
| 16-Aug-94 | **26** | 20 | 0.5131 | 0.033 | 3.248 | 0.966 |
| 20-Jan-94 | **27** | 21 | 0.5392 | 0.098 | 3.281 | 0.964 |
| 24-Mar-94 | **31** | 22 | 0.5654 | 0.165 | 3.419 | 0.964 |
| 19-May-94 | **32** | 23 | 0.5915 | 0.231 | 3.472 | 0.960 |
| 24-Mar-94 | **35** | 24 | 0.6176 | 0.299 | 3.547 | 0.955 |
| 8-Mar-95 | **36** | 25 | 0.6438 | 0.369 | 3.581 | 0.950 |
| 7-Jun-94 | **36** | 26 | 0.6699 | 0.440 | 3.596 | 0.943 |
| 13-Jun-95 | **39** | 27 | 0.6961 | 0.513 | 3.661 | 0.935 |
| 4-May-94 | **40** | 28 | 0.7222 | 0.589 | 3.681 | 0.925 |
| 10-Jan-95 | **43** | 29 | 0.7484 | 0.669 | 3.767 | 0.911 |
| 12-Apr-95 | **45** | 30 | 0.7745 | 0.754 | 3.813 | 0.895 |
| 8-Mar-94 | **46** | 31 | 0.8007 | 0.844 | 3.820 | 0.872 |
| 7-Apr-94 | **49** | 32 | 0.8268 | 0.942 | 3.884 | 0.840 |
| 10-Nov-97 | **53** | 33 | 0.8529 | 1.049 | 3.978 | 0.796 |
| 7-Apr-94 | **57** | 34 | 0.8791 | 1.170 | 4.047 | 0.723 |
| 9-Feb-95 | **70** | 35 | 0.9052 | 1.312 | 4.242 | |
| 22-Mar-95 | **85** | 36 | 0.9314 | 1.486 | 4.442 | |
| 14-May-98 | **86** | 37 | 0.9575 | 1.723 | 4.460 | |
| 17-May-91 | **91** | 38 | 0.9837 | 2.136 | 4.514 | |

update for EV, CV

tZn
LN Analysis
**Concentration**

CC278
tZn
Conc. Data, EV=368 ug/L CV=.42
Data-based LN

| | |
|---|---|
| Avg: | 368 |
| SD: | 153 |
| CV: | 0.42 |
| Min: | 78 |
| Max: | 591 |
| Median: | 392 |

| u | ln[tZn] | [tZn] |
|---|---|---|
| 3 | 7.0 | 1127 |
| 0 | 5.83 | 340 |
| -3 | 4.63 | 102 |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: $r^2$=0.865, EV=393.5 ug/L CV=0.69; max r2=0.91

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.865 | u | lnConc | Conc |
| slope, m | 1.610 | 3 | 7.65 | 2091 |
| intercept, b | -9.312 | 0 | 5.78 | 325 |
| N: | 38 | -3 | 3.92 | 50 |
| E[Conc] | 393.5 | Parameter Estimates | | |
| SD[Conc] | 270 | from LN regression | | |
| CV[Conc] | 0.69 | update graph label | | |

N: 38

| Date | tZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.913 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 14-May-98 | 78 | 1 | 0.0163 | -2.136 | 4.357 | 0.865 |
| 13-Jun-95 | 95 | 2 | 0.0425 | -1.723 | 4.554 | 0.845 |
| 19-May-94 | 96 | 3 | 0.0686 | -1.486 | 4.564 | 0.830 |
| 27-Jun-95 | 112 | 4 | 0.0948 | -1.312 | 4.718 | 0.830 |
| 7-Jun-94 | 151 | 5 | 0.1209 | -1.170 | 5.017 | 0.838 |
| 4-May-94 | 154 | 6 | 0.1471 | -1.049 | 5.037 | 0.834 |
| 17-May-91 | 167 | 7 | 0.1732 | -0.942 | 5.118 | 0.845 |
| 23-Jun-94 | 203 | 8 | 0.1993 | -0.844 | 5.313 | 0.872 |
| 11-Jul-95 | 223 | 9 | 0.2255 | -0.754 | 5.407 | 0.889 |
| 8-Mar-95 | 272 | 10 | 0.2516 | -0.669 | 5.606 | 0.913 |
| 25-Jul-94 | 295 | 11 | 0.2778 | -0.589 | 5.687 | 0.913 |
| 14-Aug-95 | 309 | 12 | 0.3039 | -0.513 | 5.733 | 0.908 |
| 12-Apr-95 | 322 | 13 | 0.3301 | -0.440 | 5.775 | 0.902 |
| 25-Jul-95 | 328 | 14 | 0.3562 | -0.369 | 5.793 | 0.895 |
| 7-Apr-94 | 331 | 15 | 0.3824 | -0.299 | 5.802 | 0.887 |
| 7-Apr-94 | 331 | 16 | 0.4085 | -0.231 | 5.802 | 0.882 |
| 10-Nov-97 | 352 | 17 | 0.4346 | -0.165 | 5.864 | 0.885 |
| 13-Sep-94 | 374 | 18 | 0.4608 | -0.098 | 5.924 | 0.883 |
| 24-Mar-94 | 392 | 19 | 0.4869 | -0.033 | 5.971 | 0.874 |
| 24-Mar-94 | 392 | 20 | 0.5131 | 0.033 | 5.971 | 0.862 |
| 6-Oct-94 | 406 | 21 | 0.5392 | 0.098 | 6.006 | 0.850 |
| 5-Oct-91 | 409 | 22 | 0.5654 | 0.165 | 6.014 | 0.834 |
| 13-Sep-95 | 409 | 23 | 0.5915 | 0.231 | 6.014 | 0.818 |
| 22-Mar-95 | 419 | 24 | 0.6176 | 0.299 | 6.038 | 0.813 |
| 16-Nov-94 | 424 | 25 | 0.6438 | 0.369 | 6.050 | 0.818 |
| 16-Aug-94 | 480 | 26 | 0.6699 | 0.440 | 6.174 | 0.889 |
| 16-Aug-94 | 480 | 27 | 0.6961 | 0.513 | 6.174 | 0.873 |
| 27-Oct-93 | 491 | 28 | 0.7222 | 0.589 | 6.196 | 0.860 |
| 13-Dec-94 | 496 | 29 | 0.7484 | 0.669 | 6.207 | 0.841 |
| 17-Dec-93 | 518 | 30 | 0.7745 | 0.754 | 6.250 | 0.828 |
| 17-Dec-93 | 518 | 31 | 0.8007 | 0.844 | 6.250 | 0.790 |
| 18-Feb-94 | 518 | 32 | 0.8268 | 0.942 | 6.250 | 0.741 |
| 8-Mar-94 | 550 | 33 | 0.8529 | 1.049 | 6.310 | 0.835 |
| 20-Jan-94 | 561 | 34 | 0.8791 | 1.170 | 6.330 | 0.781 |
| 20-Jan-94 | 561 | 35 | 0.9052 | 1.312 | 6.330 | |
| 30-Nov-93 | 583 | 36 | 0.9314 | 1.486 | 6.368 | |
| 9-Feb-95 | 586 | 37 | 0.9575 | 1.723 | 6.373 | |
| 10-Jan-95 | 591 | 38 | 0.9837 | 2.136 | 6.382 | |

update for EV, CV:

**tZn**
**LN Analysis**
**Discharge, Q**

**CC278**
**tZn**
**Q Data, EV=27 cfs CV=1.33**
**Q Data-based LN**

| | | u | lnQ | Q |
|---|---|---|---|---|
| **Avg:** | **27** | 3 | 5.8 | 334 |
| **SD:** | **36** | 0 | 2.78 | 16 |
| **CV:** | **1.33** | -3 | -0.24 | 1 |
| **Min:** | **6** | | | |
| **Max:** | **206** | | | |
| **Median:** | **14** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.886, EV=26.3 cfs CV=1.13; max r2=0.995**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.886 | u | lnQ | Q |
| slope, m | 1.105 | 3 | 5.58 | 264 |
| intercept, b | -3.160 | 0 | 2.86 | 17 |
| N | 38 | -3 | 0.14 | 1 |
| E[Q] | 26.3 | Parameter Estimates | | |
| SD[Q] | 30 | from LN regression | | |
| CV[Q] | 1.13 | update graph label | | |

N= 38

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.995 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 17-Dec-93 | 6.19 | 1 | 0.0163 | -2.136 | 1.823 | 0.886 |
| 20-Jan-94 | 7.73 | 2 | 0.0425 | -1.723 | 2.045 | 0.903 |
| 13-Sep-95 | 7.8 | 3 | 0.0686 | -1.486 | 2.054 | 0.921 |
| 30-Nov-93 | 7.96 | 4 | 0.0948 | -1.312 | 2.074 | 0.935 |
| 18-Feb-94 | 8.29 | 5 | 0.1209 | -1.170 | 2.115 | 0.945 |
| 17-Dec-93 | 8.46 | 6 | 0.1471 | -1.049 | 2.135 | 0.955 |
| 6-Oct-94 | 8.46 | 7 | 0.1732 | -0.942 | 2.135 | 0.964 |
| 20-Jan-94 | 8.81 | 8 | 0.1993 | -0.844 | 2.176 | 0.970 |
| 13-Dec-94 | 8.81 | 9 | 0.2255 | -0.754 | 2.176 | 0.977 |
| 16-Aug-94 | 8.89 | 10 | 0.2516 | -0.669 | 2.185 | 0.981 |
| 16-Nov-94 | 9 | 11 | 0.2778 | -0.589 | 2.197 | 0.985 |
| 27-Oct-93 | 9.18 | 12 | 0.3039 | -0.513 | 2.217 | 0.987 |
| 13-Sep-94 | 9.18 | 13 | 0.3301 | -0.440 | 2.217 | 0.988 |
| 14-Aug-95 | 9.57 | 14 | 0.3562 | -0.369 | 2.259 | 0.988 |
| 16-Aug-94 | 9.97 | 15 | 0.3824 | -0.299 | 2.300 | 0.988 |
| 25-Jul-94 | 10.18 | 16 | 0.4085 | -0.231 | 2.320 | 0.987 |
| 5-Oct-91 | 10.3 | 17 | 0.4346 | -0.165 | 2.332 | 0.986 |
| 25-Jul-95 | 12.51 | 18 | 0.4608 | -0.098 | 2.527 | 0.985 |
| 10-Jan-95 | 13.6 | 19 | 0.4869 | -0.033 | 2.610 | 0.984 |
| 24-Mar-94 | 14.48 | 20 | 0.5131 | 0.033 | 2.673 | 0.983 |
| 8-Mar-94 | 15.41 | 21 | 0.5392 | 0.098 | 2.735 | 0.982 |
| 11-Jul-95 | 15.74 | 22 | 0.5654 | 0.165 | 2.756 | 0.980 |
| 24-Mar-94 | 16.46 | 23 | 0.5915 | 0.231 | 2.801 | 0.978 |
| 9-Feb-95 | 22.05 | 24 | 0.6176 | 0.299 | 3.093 | 0.975 |
| 23-Jun-94 | 22.53 | 25 | 0.6438 | 0.369 | 3.115 | 0.978 |
| 8-Mar-95 | 24.53 | 26 | 0.6699 | 0.440 | 3.200 | 0.980 |
| 12-Apr-95 | 26.15 | 27 | 0.6961 | 0.513 | 3.264 | 0.984 |
| 7-Apr-94 | 27.29 | 28 | 0.7222 | 0.589 | 3.307 | 0.989 |
| 27-Jun-95 | 27.88 | 29 | 0.7484 | 0.669 | 3.328 | 0.993 |
| 10-Nov-97 | 28.2 | 30 | 0.7745 | 0.754 | 3.339 | 0.995 |
| 7-Apr-94 | 32.14 | 31 | 0.8007 | 0.844 | 3.470 | 0.994 |
| 22-Mar-95 | 37.69 | 32 | 0.8268 | 0.942 | 3.629 | 0.992 |
| 7-Jun-94 | 44.85 | 33 | 0.8529 | 1.049 | 3.803 | 0.991 |
| 4-May-94 | 47.88 | 34 | 0.8791 | 1.170 | 3.869 | 0.994 |
| 19-May-94 | 62.32 | 35 | 0.9052 | 1.312 | 4.132 | |
| 13-Jun-95 | 76.08 | 36 | 0.9314 | 1.486 | 4.332 | |
| 17-May-91 | 101.6 | 37 | 0.9575 | 1.723 | 4.621 | |
| 14-May-98 | 206 | 38 | 0.9837 | 2.136 | 5.328 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny | Candidate x-axis positions | |
|---|---|---|---|
| | secondary y-axis | x-axis position | |
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC282 **Date:** 26-May-00

**Chemical:** dCd **Analyst:** J.Johnston

**Notes:**

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| Avg: | 35,615 | 52 | 7 | 1 | 0.00 | 0.00 | 0.00 |
| SD: | 451 | 53 | 3 | 1 | 1.00 | 1.00 | 1.00 |
| CV: | 0.01 | 1.03 | 0.47 | 0.59 | | | |
| Min: | 34,990 | 11 | 2 | 0.3 | -0.76 | -1.49 | -1.36 |
| Max: | 36,227 | 238 | 16 | 4 | 3.50 | 2.81 | 3.43 |
| Median: | 35,743 | 33 | 6 | 1 | -0.35 | -0.16 | -0.18 |

dCd CC282 : Concentration v. Discharge, Q

**Conc. = mQ+b (r2=0.24)** update r2

| | | | |
|---|---|---|---|
| r2 Q,[COC] | 0.24 | [dCd] | Q |
| slope, m | -0.03 | 8 | 11.3 |
| intercept, b | 8.5 | 7 | 51.8 |
| N 23 | | 1 | 238 |

**LnConc. = mLn(Q)+b (r2=0.36)** update r2

| | | | | | |
|---|---|---|---|---|---|
| lnQ,ln[COC] | 0.36 | ln[dCd] | ln Q | [dCd] | Q |
| slope, m | -0.39 | 2.29 | 2.42 | 10 | 11 |
| intercept, b | 3.24 | 1.70 | 3.95 | 5 | 52 |
| N 23 | | 1.10 | 5.47 | 3 | 238 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2: | 0.009 | 0.002 |
| m: | 0.0111 | 0.00008 |
| b | -345 | 0.74 |

**LnQ = mTime +b**

for graph

dCd 0

CC282

**N= 23**

| update for new data | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| DATA: | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 18-Oct-95 | 11.3 | 7 | 0.4 | 2.42 | 1.95 | -0.85 | -0.76 | 0.03 | -1.20 |
| IDEQ | 21-Nov-95 | 78.4 | 4.2 | 1.8 | 4.36 | 1.44 | 0.57 | 0.50 | -0.84 | 0.35 |
| IDEQ | 27-Dec-95 | 37.4 | 6.4 | 1.3 | 3.62 | 1.86 | 0.25 | -0.27 | -0.16 | -0.21 |
| IDEQ | 17-Jan-96 | 37.4 | 11 | 2.2 | 3.62 | 2.40 | 0.79 | -0.27 | 1.27 | 0.86 |
| IDEQ | 29-Feb-96 | 47.3 | 5.3 | 1.3 | 3.86 | 1.67 | 0.30 | -0.08 | -0.50 | -0.14 |
| IDEQ | 28-Mar-96 | 32.9 | 5.3 | 0.9 | 3.49 | 1.67 | -0.06 | -0.35 | -0.50 | -0.61 |
| IDEQ | 8-May-96 | 56.3 | 4.6 | 1.4 | 4.03 | 1.53 | 0.33 | 0.09 | -0.71 | -0.08 |
| IDEQ | 19-Jun-96 | 96 | 2.3 | 1.2 | 4.56 | 0.83 | 0.17 | 0.83 | -1.43 | -0.32 |
| IDEQ | 24-Jul-96 | 23.5 | 4.8 | 0.6 | 3.16 | 1.57 | -0.50 | -0.53 | -0.65 | -0.99 |
| IDEQ | 21-Aug-96 | 18.7 | 5.7 | 0.6 | 2.93 | 1.74 | -0.56 | -0.62 | -0.37 | -1.03 |
| IDEQ | 26-Sep-96 | 11.5 | 4.7 | 0.3 | 2.44 | 1.55 | -1.24 | -0.76 | -0.68 | -1.36 |
| URS | 9-Nov-97 | 34.7 | 7.95 | 1.5 | 3.55 | 2.07 | 0.39 | -0.32 | 0.32 | 0.02 |
| IDEQ | 23-Apr-98 | 179 | 4.6 | 4.4 | 5.19 | 1.53 | 1.49 | 2.39 | -0.71 | 3.43 |
| URS | 14-May-98 | 238 | 2.1 | 2.7 | 5.47 | 0.74 | 0.99 | 3.50 | -1.49 | 1.42 |
| IDEQ | 26-Jun-98 | 68 | 4.3 | 1.6 | 4.23 | 1.46 | 0.46 | 0.32 | -0.81 | 0.14 |
| IDEQ | 28-Jul-98 | 35.8 | 6.8 | 1.3 | 3.58 | 1.92 | 0.27 | -0.30 | -0.03 | -0.18 |
| IDEQ | 26-Aug-98 | 30.9 | 6.7 | 1.1 | 3.43 | 1.90 | 0.11 | -0.39 | -0.06 | -0.41 |
| IDEQ | 24-Sep-98 | 23.5 | 8.4 | 1.1 | 3.16 | 2.13 | 0.06 | -0.53 | 0.46 | -0.47 |
| IDEQ | 26-Oct-98 | 26.1 | 7.9 | 1.1 | 3.26 | 2.07 | 0.10 | -0.48 | 0.31 | -0.41 |
| URS | 13-Nov-98 | 20.01 | 9.8 | 1.1 | 3.00 | 2.28 | 0.05 | -0.60 | 0.90 | -0.48 |
| IDEQ | 25-Nov-98 | 29 | 16 | 2.5 | 3.37 | 2.77 | 0.91 | -0.43 | 2.81 | 1.19 |
| IDEQ | 15-Jan-99 | 28.4 | 12 | 1.8 | 3.35 | 2.48 | 0.61 | -0.44 | 1.58 | 0.43 |
| IDEQ | 8-Mar-99 | 25.6 | 11 | 1.5 | 3.24 | 2.40 | 0.42 | -0.49 | 1.27 | 0.06 |

**dCd**

**Concentration over time analysis**

| | dCd | CC282 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.146** | **0.00041** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 18-Oct-95 | 1.57 | 5 | | |
| mid | 9-Nov-97 | 1.88 | 7 | | |
| last | 8-Mar-99 | 2.07 | 8 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Mar-99 | 0.00 | 1 | | |

**Load over time analysis**

| | dCd | CC282 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.139** | **0.00049** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 18-Oct-95 | -0.08 | 1 | | |
| mid | 9-Nov-97 | 0.28 | 1 | | |
| last | 8-Mar-99 | 0.52 | 2 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Mar-99 | 0.00 | 1 | | |

| | max r2 | 0.729 | | max r2 | 0.433 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| | 0.146 | 0.00041 | -12.62 | 0.139 | 0.00049 | -17.10 |
| | 0.175 | 0.00046 | -14.68 | 0.086 | 0.00037 | -12.87 |
| | 0.152 | 0.00045 | -14.10 | 0.121 | 0.00046 | -16.06 |
| | 0.172 | 0.00050 | -16.06 | 0.135 | 0.00051 | -17.91 |
| | 0.305 | 0.00069 | -22.76 | 0.230 | 0.00069 | -24.47 |
| | 0.323 | 0.00076 | -25.22 | 0.276 | 0.00081 | -28.77 |
| | 0.347 | 0.00085 | -28.56 | 0.275 | 0.00087 | -30.99 |
| | 0.348 | 0.00093 | -31.38 | 0.355 | 0.00109 | -38.84 |
| | 0.224 | 0.00073 | -24.37 | 0.433 | 0.00136 | -48.41 |
| | 0.201 | 0.00080 | -26.86 | 0.377 | 0.00142 | -50.56 |
| | 0.245 | 0.00114 | -38.91 | 0.280 | 0.00146 | -52.34 |
| | 0.330 | 0.00235 | -82.57 | 0.070 | -0.00089 | 32.57 |
| | 0.714 | 0.00476 | -169.57 | 0.184 | -0.00199 | 72.17 |
| | 0.729 | 0.00534 | -190.72 | 0.016 | -0.00048 | 17.88 |
| | 0.657 | 0.00382 | -135.80 | 0.090 | 0.00109 | -39.00 |
| | 0.516 | 0.00294 | -104.06 | 0.221 | 0.00200 | -71.80 |
| | 0.403 | 0.00280 | -98.85 | 0.275 | 0.00266 | -95.93 |
| | 0.203 | 0.00196 | -68.34 | 0.212 | 0.00273 | -98.29 |
| | 0.075 | 0.00131 | -45.04 | 0.088 | 0.00196 | -70.52 |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| **dCd** | | **CC282** | | |
| **LN Analysis** | | **dCd** | | |
| **Load** | | **Load Data, EV=1 lbs/day CV=.59** | | |
| **Avg:** | **1** | **Load Data-based LN** | | |
| **SD:** | **1** | u | ln dCd Load | dCd Load |
| **CV:** | **0.59** | 3 | 1.9 | 6 |
| **Min:** | **0.3** | 0.0 | 0.23 | 1 |
| **Max:** | **4** | -3 | -1.40 | 0.2 |
| **Median:** | **1** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.950, EV=1.5 lbs/day CV=.71; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.950 | u | lnLoad | Load |
| slope, m | 1.564 | 3 | 2.14 | 8 |
| intercept, b | -0.345 | 0 | 0.22 | 1 |
| N | 23 | -3 | -1.70 | 0.2 |
| E[Load]: | 1.5 | Parameter Estimates | | |
| SD[Load]: | 1 | from LN regression | | |
| CV[Load] | 0.71 | update graph label | | |

| Date | dCd Load lbs/day Ranked | i rank | N, 23 i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.975 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 26-Sep-96 | **0.3** | 1 | 0.0269 | -1.929 | -1.235 | 0.950 |
| 18-Oct-95 | **0.4** | 2 | 0.0699 | -1.477 | -0.854 | 0.949 |
| 21-Aug-96 | **0.6** | 3 | 0.1129 | -1.211 | -0.556 | 0.950 |
| 24-Jul-96 | **0.6** | 4 | 0.1559 | -1.011 | -0.499 | 0.946 |
| 28-Mar-96 | **0.9** | 5 | 0.1989 | -0.845 | -0.064 | 0.954 |
| 13-Nov-98 | **1.1** | 6 | 0.2419 | -0.700 | 0.054 | 0.951 |
| 24-Sep-98 | **1.1** | 7 | 0.2849 | -0.568 | 0.060 | 0.957 |
| 26-Oct-98 | **1.1** | 8 | 0.3280 | -0.446 | 0.104 | 0.958 |
| 26-Aug-98 | **1.1** | 9 | 0.3710 | -0.329 | 0.108 | 0.960 |
| 19-Jun-96 | **1.2** | 10 | 0.4140 | -0.217 | 0.172 | 0.958 |
| 27-Dec-95 | **1.3** | 11 | 0.4570 | -0.108 | 0.253 | 0.958 |
| 28-Jul-98 | **1.3** | 12 | 0.5000 | 0.000 | 0.270 | 0.964 |
| 29-Feb-96 | **1.3** | 13 | 0.5430 | 0.108 | 0.299 | 0.968 |
| 8-May-96 | **1.4** | 14 | 0.5860 | 0.217 | 0.332 | 0.970 |
| 9-Nov-97 | **1.5** | 15 | 0.6290 | 0.329 | 0.395 | 0.971 |
| 8-Mar-99 | **1.5** | 16 | 0.6720 | 0.446 | 0.415 | 0.975 |
| 26-Jun-98 | **1.6** | 17 | 0.7151 | 0.568 | 0.463 | 0.972 |
| 21-Nov-95 | **1.8** | 18 | 0.7581 | 0.700 | 0.572 | 0.965 |
| 15-Jan-99 | **1.8** | 19 | 0.8011 | 0.845 | 0.606 | 0.961 |
| 17-Jan-96 | **2.2** | 20 | 0.8441 | 1.011 | 0.794 | |
| 25-Nov-98 | **2.5** | 21 | 0.8871 | 1.211 | 0.915 | |
| 14-May-98 | **2.7** | 22 | 0.9301 | 1.477 | 0.989 | |
| 23-Apr-98 | **4.4** | 23 | 0.9731 | 1.929 | 1.488 | |

update for EV, CV

| dCd | | CC282 | | |
|---|---|---|---|---|
| LN Analysis | | dCd | | |
| **Concentration** | | Conc. Data, EV=7 ug/L CV=.47 | | |
| Avg: | 7 | Data-based LN | | |
| SD: | 3 | u | ln[dCd] | [dCd] |
| CV: | 0.47 | 3 | 3.2 | 24 |
| Min: | 2 | 0 | 1.83 | 6 |
| Max: | 16 | -3 | 0.50 | 2 |
| Median: | 6 | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV $r^2$=0.964, EV=7.1 ug/L CV=0.55; max r2=0.99

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.964 | u | lnConc | Conc |
| slope, m | 1.941 | 3 | 3.37 | 29 |
| intercept, b | -3.540 | 0 | 1.82 | 6 |
| N | 23 | -3 | 0.28 | 1 |
| E[Conc] | 7.1 | Parameter Estimates | | |
| SD[Conc] | 4 | from LN regression | | |
| CV[Conc] | 0.55 | update graph label | | |

| | dCd | | N: 23 | | | | max r2 0.988 |
|---|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 14-May-98 | 2.1 | 1 | 0.0269 | -1.929 | 0.742 | 0.964 |
| 19-Jun-96 | 2.3 | 2 | 0.0699 | -1.477 | 0.833 | 0.958 |
| 21-Nov-95 | 4.2 | 3 | 0.1129 | -1.211 | 1.435 | 0.977 |
| 26-Jun-98 | 4.3 | 4 | 0.1559 | -1.011 | 1.459 | 0.983 |
| 8-May-96 | 4.6 | 5 | 0.1989 | -0.845 | 1.526 | 0.985 |
| 23-Apr-98 | 4.6 | 6 | 0.2419 | -0.700 | 1.526 | 0.988 |
| 26-Sep-96 | 4.7 | 7 | 0.2849 | -0.568 | 1.548 | 0.988 |
| 24-Jul-96 | 4.8 | 8 | 0.3280 | -0.446 | 1.569 | 0.987 |
| 29-Feb-96 | 5.3 | 9 | 0.3710 | -0.329 | 1.668 | 0.985 |
| 28-Mar-96 | 5.3 | 10 | 0.4140 | -0.217 | 1.668 | 0.983 |
| 21-Aug-96 | 5.7 | 11 | 0.4570 | -0.108 | 1.740 | 0.982 |
| 27-Dec-95 | 6.4 | 12 | 0.5000 | 0.000 | 1.856 | 0.979 |
| 26-Aug-98 | 6.7 | 13 | 0.5430 | 0.108 | 1.902 | 0.977 |
| 28-Jul-98 | 6.8 | 14 | 0.5860 | 0.217 | 1.917 | 0.974 |
| 18-Oct-95 | 7 | 15 | 0.6290 | 0.329 | 1.946 | 0.969 |
| 26-Oct-98 | 7.9 | 16 | 0.6720 | 0.446 | 2.067 | 0.963 |
| 9-Nov-95 | 7.95 | 17 | 0.7151 | 0.568 | 2.073 | 0.956 |
| 24-Sep-98 | 8.4 | 18 | 0.7581 | 0.700 | 2.128 | 0.943 |
| 13-Nov-98 | 9.8 | 19 | 0.8011 | 0.845 | 2.282 | 0.937 |
| 17-Jan-96 | 11 | 20 | 0.8441 | 1.011 | 2.398 | |
| 8-Mar-99 | 11 | 21 | 0.8871 | 1.211 | 2.398 | |
| 15-Jan-99 | 12 | 22 | 0.9301 | 1.477 | 2.485 | |
| 25-Nov-98 | 16 | 23 | 0.9731 | 1.929 | 2.773 | |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| **dCd** | | **CC282** | | |
| **LN Analysis** | | **dCd** | | |
| **Discharge, Q** | | **Q Data, EV=52 cfs CV=1.03** | | |
| **Avg:** | **52** | **Q Data-based LN** | | |
| **SD:** | **53** | u | lnQ | Q |
| **CV:** | **1.03** | 3 | 6.1 | 460 |
| **Min:** | **11** | 0 | 3.59 | 36 |
| **Max:** | **238** | -3 | 1.04 | 3 |
| **Median:** | **33** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.930, EV=51.9 cfs CV=.96; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.930 | u | lnQ | Q |
| slope, m | 1.237 | 3 | 6.05 | 423 |
| intercept, b | -4.481 | 0 | 3.62 | 37 |
| N | 23 | -3 | 1.20 | 3 |
| E[Q] | 51.9 | Parameter Estimates | | |
| SD[Q] | 50 | from LN regression | | |
| CV[Q] | 0.96 | update graph label | | |

N: 23

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.980 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 18-Oct-95 | 11.3 | 1 | 0.0269 | -1.929 | 2.425 | 0.930 |
| 26-Sep-96 | 11.5 | 2 | 0.0699 | -1.477 | 2.442 | 0.928 |
| 21-Aug-96 | 18.7 | 3 | 0.1129 | -1.211 | 2.929 | 0.916 |
| 13-Nov-98 | 20.01 | 4 | 0.1559 | -1.011 | 2.996 | 0.920 |
| 24-Jul-96 | 23.5 | 5 | 0.1989 | -0.845 | 3.157 | 0.921 |
| 24-Sep-98 | 23.5 | 6 | 0.2419 | -0.700 | 3.157 | 0.931 |
| 8-Mar-99 | 25.6 | 7 | 0.2849 | -0.568 | 3.243 | 0.936 |
| 26-Oct-98 | 26.1 | 8 | 0.3280 | -0.446 | 3.262 | 0.943 |
| 15-Jan-99 | 28.4 | 9 | 0.3710 | -0.329 | 3.346 | 0.948 |
| 25-Nov-98 | 29 | 10 | 0.4140 | -0.217 | 3.367 | 0.955 |
| 26-Aug-98 | 30.9 | 11 | 0.4570 | -0.108 | 3.431 | 0.960 |
| 28-Mar-96 | 32.9 | 12 | 0.5000 | 0.000 | 3.493 | 0.966 |
| 9-Nov-97 | 34.7 | 13 | 0.5430 | 0.108 | 3.547 | 0.972 |
| 28-Jul-98 | 35.8 | 14 | 0.5860 | 0.217 | 3.578 | 0.978 |
| 27-Dec-95 | 37.4 | 15 | 0.6290 | 0.329 | 3.622 | 0.980 |
| 17-Jan-96 | 37.4 | 16 | 0.6720 | 0.446 | 3.622 | 0.978 |
| 29-Feb-96 | 47.3 | 17 | 0.7151 | 0.568 | 3.857 | 0.973 |
| 8-May-96 | 56.3 | 18 | 0.7581 | 0.700 | 4.031 | 0.964 |
| 26-Jun-98 | 68.7 | 19 | 0.8011 | 0.845 | 4.230 | 0.951 |
| 21-Nov-95 | 78.4 | 20 | 0.8441 | 1.011 | 4.362 | |
| 19-Jun-96 | 96 | 21 | 0.8871 | 1.211 | 4.564 | |
| 23-Apr-98 | 179 | 22 | 0.9301 | 1.477 | 5.187 | |
| 14-May-98 | 238 | 23 | 0.9731 | 1.929 | 5.472 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC282 **Date:** 30-May-00

**Chemical:** dPb **Analyst:** J.Johnston

**Notes:**

Input Discharge and Concentration Data below (in red)

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,615 | 52 | 27 | 10 | 0 00 | 0 00 | 0.00 |
| **SD:** | 451 | 53 | 20 | 21 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.03 | 0.77 | 2.22 | | | |
| **Min:** | 34,990 | 11 | 12 | 1 | -0.76 | -0.71 | -0.41 |
| **Max:** | 36,227 | 238 | 112 | 108 | 3.50 | 4.19 | 4.60 |
| **Median:** | 35,743 | 33 | 21 | 4 | -0.35 | -0.27 | -0.24 |

**dPb CC282 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.14)** update r2

| | | | |
|---|---|---|---|
| r2 Q,[COC]: | 0.14 | [dPb] | Q |
| slope, m: | 0.1 | 21 | 11.3 |
| intercept, b | 19.0 | 27 | 51.8 |
| N | 23 | 54 | 238 |

**LnConc. = mLn(Q)+b (r2=0.07)** update r2

| | | | | | |
|---|---|---|---|---|---|
| lnQ,ln[COC]: | 0.07 | ln[dPb] | ln Q | [dPb] | Q |
| slope, m. | 0.17 | 2.91 | 2.42 | 18 | 11 |
| intercept, b: | 2.49 | 3.18 | 3.95 | 24 | 52 |
| N: | 23 | 3.44 | 5.47 | 31 | 238 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2: | 0.009 | 0.002 |
| m: | 0.0111 | 0.00008 |
| b: | -345 | 0 74 |

**LnQ = mTime +b**

for graph 0

**N= 23**

| | Sampling Date | Q Discharge cfs | dPb Concentration ug/L | dPb Load lbs/day | Ln Q | Ln dPb Conc. | Ln dPb Load | dPb CC282 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 18-Oct-95 | 11.3 | 15 | 1 | 2.42 | 2.71 | -0.09 | -0.76 | -0.56 | -0.41 |
| IDEQ | 21-Nov-95 | 78 4 | 12 | 5 | 4.36 | 2.48 | 1.62 | 0.50 | -0.71 | -0.21 |
| IDEQ | 27-Dec-95 | 37.4 | 19 | 4 | 3.62 | 2.94 | 1.34 | -0.27 | -0.37 | -0.27 |
| IDEQ | 17-Jan-96 | 37.4 | 25 | 5 | 3.62 | 3.22 | 1.62 | -0.27 | -0.07 | -0.21 |
| IDEQ | 29-Feb-96 | 47.3 | 19 | 5 | 3.86 | 2.94 | 1.58 | -0.08 | -0.37 | -0.22 |
| IDEQ | 28-Mar-96 | 32.9 | 21 | 4 | 3.49 | 3.04 | 1.31 | -0.35 | -0.27 | -0.28 |
| IDEQ | 8-May-96 | 56.3 | 22 | 7 | 4.03 | 3.09 | 1.90 | 0.09 | -0.22 | -0.14 |
| IDEQ | 19-Jun-96 | 96 | 15 | 8 | 4.56 | 2.71 | 2.05 | 0.83 | -0.56 | -0.09 |
| IDEQ | 24-Jul-96 | 23.5 | 20 | 3 | 3.16 | 3.00 | 0.93 | -0.53 | -0.32 | -0.33 |
| IDEQ | 21-Aug-96 | 18.7 | 12 | 1 | 2.93 | 2.48 | 0.19 | -0.62 | -0.71 | -0.39 |
| IDEQ | 26-Sep-96 | 11.5 | 18 | 1 | 2.44 | 2.89 | 0.11 | -0.76 | -0.42 | -0.40 |
| URS | 9-Nov-97 | 34.7 | 36.2 | 7 | 3.55 | 3.59 | 1.91 | -0.32 | 0.47 | -0.13 |
| IDEQ | 23-Apr-98 | 179 | 112 | 108 | 5.19 | 4.72 | 4.68 | 2.39 | 4.19 | 4.60 |
| URS | 14-May-98 | 238 | 16.9 | 22 | 5.47 | 2.83 | 3.07 | 3.50 | -0.47 | 0.56 |
| IDEQ | 26-Jun-98 | 68.7 | 22 | 8 | 4.23 | 3.09 | 2.10 | 0.32 | -0.22 | -0.07 |
| IDEQ | 28-Jul-98 | 35.8 | 40 | 8 | 3.58 | 3.69 | 2.04 | -0.30 | 0.66 | -0.09 |
| IDEQ | 26-Aug-98 | 30.9 | 27 | 4 | 3.43 | 3.30 | 1.50 | -0.39 | 0.02 | -0.24 |
| IDEQ | 24-Sep-98 | 23.5 | 52 | 7 | 3.16 | 3.95 | 1.88 | -0.53 | 1.25 | -0.14 |
| IDEQ | 26-Oct-98 | 26.1 | 26 | 4 | 3.26 | 3.26 | 1.29 | -0.48 | -0.03 | -0.28 |
| URS | 13-Nov-98 | 20.01 | 12.8 | 1 | 3.00 | 2.55 | 0.32 | -0.60 | -0.67 | -0.39 |
| IDEQ | 25-Nov-98 | 29 | 26 | 4 | 3.37 | 3.26 | 1 40 | -0.43 | -0.03 | -0.26 |
| IDEQ | 15-Jan-99 | 28 4 | 22 | 3 | 3.35 | 3.09 | 1.21 | -0 44 | -0.22 | -0.29 |
| IDEQ | 8-Mar-99 | 25.6 | 19 | 3 | 3.24 | 2.94 | 0.96 | -0.49 | -0.37 | -0.33 |

**dPb**

**Concentration over time analysis**

| | dPb | CC282 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.168** | **0.00045** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 18-Oct-95 | 2.84 | 17 | | |
| mid | 9-Nov-97 | 3.18 | 24 | | |
| last | 8-Mar-99 | 3.39 | 30 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Mar-99 | 0.00 | 1 | | |

**Load over time analysis**

| | dPb | CC282 | | **Load over time** | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.058** | **0.00053** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 18-Oct-95 | 1.19 | 3 | | |
| mid | 9-Nov-97 | 1.59 | 5 | | |
| last | 8-Mar-99 | 1.84 | 6 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Mar-99 | 0.00 | 1 | | |

| | max r2 | 0.353 | | max r2 | 0.666 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points. delete last 4 rows | | | only on >4 data points. delete last 4 rows | | |
| | 0.168 | 0.00045 | -12.82 | 0.058 | 0.00053 | -17.30 |
| | 0.144 | 0.00043 | -12.09 | 0.024 | 0.00033 | -10.28 |
| | 0.102 | 0.00036 | -9.74 | 0.027 | 0.00037 | -11.70 |
| | 0.092 | 0.00036 | -9.71 | 0.024 | 0.00037 | -11.56 |
| | 0.109 | 0.00042 | -11.72 | 0.028 | 0.00042 | -13.42 |
| | 0.098 | 0.00042 | -11.89 | 0.031 | 0.00048 | -15.43 |
| | 0.097 | 0.00045 | -13.05 | 0.026 | 0.00048 | -15.47 |
| | 0.102 | 0.00051 | -15.15 | 0.044 | 0.00068 | -22.61 |
| | 0.060 | 0.00043 | -12.16 | 0.085 | 0.00105 | -36.20 |
| | 0.046 | 0.00044 | -12.55 | 0.063 | 0.00105 | -36.25 |
| | 0.001 | -0.00009 | 6.44 | 0.002 | 0.00024 | -6.99 |
| | 0.181 | -0.00185 | 70.03 | 0.361 | -0.00509 | 185.17 |
| | 0.219 | -0.00279 | 103.93 | 0.666 | -0.00953 | 345.67 |
| | 0.025 | -0.00069 | 28.23 | 0.644 | -0.00652 | 236.83 |
| | 0.179 | -0.00211 | 79.37 | 0.489 | -0.00484 | 176.17 |
| | 0.353 | -0.00349 | 129.23 | 0.366 | -0.00444 | 161.49 |
| | 0.235 | -0.00311 | 115.69 | 0.193 | -0.00325 | 118.61 |
| | 0.268 | -0.00402 | 148.60 | 0.139 | -0.00325 | 118.65 |
| | 0.008 | -0.00048 | 20.50 | 0.000 | 0.00017 | -4.98 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dPb** | | **CC282** | | |
| **LN Analysis** | | **dPb** | | |
| **Load** | | **Load Data, EV=10 lbs/day CV=2.22** | | |
| **Avg:** | **10** | **Load Data-based LN** | | |
| **SD:** | **21** | u | ln dPb Load | dPb Load |
| **CV:** | **2.22** | 3 | 5.4 | 216 |
| **Min:** | **1** | 0 | 1.37 | 4 |
| **Max:** | **108** | -3 | -2.63 | 0.1 |
| **Median:** | **4** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.874, EV=8.5 lbs/day CV=1.58; max r2=0.91**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.874 | u | lnLoad | Load |
| slope, m: | 0.895 | 3 | 4.87 | 130 |
| intercept, b | -1.359 | 0 | 1.52 | 5 |
| N: 23 | | -3 | -1.83 | 0.2 |
| E[Load]: | 8.5 | Parameter Estimates | | |
| SD[Load] | 13 | from LN regression | | |
| CV[Load]: | 1.58 | update graph label | | |

| Date | dPb Load lbs/day Ranked | N: 23 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.905 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 18-Oct-95 | 1 | 1 | 0.0269 | -1.929 | -0.092 | 0.874 |
| 26-Sep-96 | 1 | 2 | 0.0699 | -1.477 | 0.108 | 0.861 |
| 21-Aug-96 | 1 | 3 | 0.1129 | -1.211 | 0.188 | 0.843 |
| 13-Nov-98 | 1 | 4 | 0.1559 | -1.011 | 0.321 | 0.820 |
| 24-Jul-96 | 3 | 5 | 0.1989 | -0.845 | 0.928 | 0.793 |
| 8-Mar-99 | 3 | 6 | 0.2419 | -0.700 | 0.962 | 0.786 |
| 15-Jan-99 | 3 | 7 | 0.2849 | -0.568 | 1.212 | 0.773 |
| 26-Oct-98 | 4 | 8 | 0.3280 | -0.446 | 1.295 | 0.776 |
| 28-Mar-96 | 4 | 9 | 0.3710 | -0.329 | 1.313 | 0.781 |
| 27-Dec-95 | 4 | 10 | 0.4140 | -0.217 | 1.341 | 0.784 |
| 25-Nov-98 | 4 | 11 | 0.4570 | -0.108 | 1.400 | 0.784 |
| 26-Aug-98 | 4 | 12 | 0.5000 | 0.000 | 1.502 | 0.784 |
| 29-Feb-96 | 5 | 13 | 0.5430 | 0.108 | 1.576 | 0.789 |
| 17-Jan-96 | 5 | 14 | 0.5860 | 0.217 | 1.615 | 0.798 |
| 21-Nov-95 | 5 | 15 | 0.6290 | 0.329 | 1.622 | 0.805 |
| 24-Sep-98 | 7 | 16 | 0.6720 | 0.446 | 1.883 | 0.803 |
| 8-May-96 | 7 | 17 | 0.7151 | 0.568 | 1.897 | 0.838 |
| 9-Nov-97 | 7 | 18 | 0.7581 | 0.700 | 1.911 | 0.874 |
| 28-Jul-98 | 8 | 19 | 0.8011 | 0.845 | 2.042 | 0.905 |
| 19-Jun-96 | 8 | 20 | 0.8441 | 1.011 | 2.047 | |
| 26-Jun-98 | 8 | 21 | 0.8871 | 1.211 | 2.096 | |
| 14-May-98 | 22 | 22 | 0.9301 | 1.477 | 3.075 | |
| 23-Apr-98 | 108 | 23 | 0.9731 | 1.929 | 4.681 | |

update for EV, CV

**dPb** **CC282**

**LN Analysis** **dPb**

**Concentration** **Conc. Data, EV=27 ug/L CV=.77**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **27** | **Data-based LN** | | |
| **SD:** | **20** | u | ln[dPb] | [dPb] |
| **CV:** | **0.77** | 3 | 5.1 | 163 |
| **Min:** | **12** | 0 | 3.05 | 21 |
| **Max:** | **112** | -3 | 1.00 | 3 |
| **Median:** | **21** | | | |

**u=mLn[Conc.]+b:**

update for r2, EV, CV $r^2$**=0.863, EV=26.5 ug/L CV=0.61; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.863 | u | lnConc | Conc. |
| slope, m | 1.781 | 3 | 4.81 | 122 |
| intercept, b | -5.558 | 0 | 3.12 | 23 |
| N | 23 | -3 | 1.44 | 4 |
| E[Conc] | 26.5 | Parameter Estimates | | |
| SD[Conc] | 16 | from LN regression | | |
| CV[Conc] | 0.61 | update graph label | | |

| | dPb | N 23 | | | | max r2 0.971 |
|---|---|---|---|---|---|---|
| | **Concentration** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **ug/L Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 21-Nov-95 | 12 | 1 | 0.0269 | -1.929 | 2.485 | 0.863 |
| 21-Aug-96 | 12 | 2 | 0.0699 | -1.477 | 2.485 | 0.874 |
| 13-Nov-98 | 12.8 | 3 | 0.1129 | -1.211 | 2.549 | 0.867 |
| 18-Oct-95 | 15 | 4 | 0.1559 | -1.011 | 2.708 | 0.858 |
| 19-Jun-96 | 15 | 5 | 0.1989 | -0.845 | 2.708 | 0.858 |
| 14-May-98 | 16.9 | 6 | 0.2419 | -0.700 | 2.827 | 0.851 |
| 26-Sep-96 | 18 | 7 | 0.2849 | -0.568 | 2.890 | 0.854 |
| 27-Dec-95 | 19 | 8 | 0.3280 | -0.446 | 2.944 | 0.862 |
| 29-Feb-96 | 19 | 9 | 0.3710 | -0.329 | 2.944 | 0.875 |
| 8-Mar-99 | 19 | 10 | 0.4140 | -0.217 | 2.944 | 0.883 |
| 24-Jul-96 | 20 | 11 | 0.4570 | -0.108 | 2.996 | 0.887 |
| 28-Mar-96 | 21 | 12 | 0.5000 | 0.000 | 3.045 | 0.894 |
| 8-May-96 | 22 | 13 | 0.5430 | 0.108 | 3.091 | 0.905 |
| 26-Jun-98 | 22 | 14 | 0.5860 | 0.217 | 3.091 | 0.920 |
| 15-Jan-99 | 22 | 15 | 0.6290 | 0.329 | 3.091 | 0.930 |
| 17-Jan-96 | 25 | 16 | 0.6720 | 0.446 | 3.219 | 0.930 |
| 26-Oct-98 | 26 | 17 | 0.7151 | 0.568 | 3.258 | 0.948 |
| 25-Nov-98 | 26 | 18 | 0.7581 | 0.700 | 3.258 | 0.967 |
| 26-Aug-98 | 27 | 19 | 0.8011 | 0.845 | 3.296 | 0.971 |
| 9-Nov-97 | 36.2 | 20 | 0.8441 | 1.011 | 3.589 | |
| 28-Jul-98 | 40 | 21 | 0.8871 | 1.211 | 3.689 | |
| 24-Sep-98 | 52 | 22 | 0.9301 | 1.477 | 3.951 | |
| 23-Apr-98 | 112 | 23 | 0.9731 | 1.929 | 4.718 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dPb** | | **CC282** | | |
| **LN Analysis** | | **dPb** | | |
| **Discharge, Q** | | **Q Data, EV=52 cfs CV=1.03** | | |
| **Avg:** | **52** | **Q Data-based LN** | | |
| **SD:** | **53** | u | lnQ | Q |
| **CV:** | **1.03** | 3 | 6.1 | 460 |
| **Min:** | **11** | 0 | 3.59 | 36 |
| **Max:** | **238** | -3 | 1.04 | 3 |
| **Median:** | **33** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.930, EV=51.9 cfs CV=0.96; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.930 | u | lnQ | Q |
| slope, m | 1.237 | 3 | 6.05 | 423 |
| intercept, b | -4 481 | 0 | 3.62 | 37 |
| N: 23 | | -3 | 1.20 | 3 |
| E[Q]: | 51.9 | Parameter Estimates | | |
| SD[Q] | 50 | from LN regression | | |
| CV[Q] | 0.96 | update graph label | | |

N: 23

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.980 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 18-Oct-95 | 11.3 | 1 | 0.0269 | -1.929 | 2.425 | 0.930 |
| 26-Sep-96 | 11.5 | 2 | 0.0699 | -1.477 | 2.442 | 0.928 |
| 21-Aug-96 | 18.7 | 3 | 0.1129 | -1.211 | 2.929 | 0.916 |
| 13-Nov-98 | 20.01 | 4 | 0.1559 | -1.011 | 2.996 | 0.920 |
| 24-Jul-96 | 23.5 | 5 | 0.1989 | -0.845 | 3.157 | 0.921 |
| 24-Sep-98 | 23.5 | 6 | 0.2419 | -0.700 | 3.157 | 0.931 |
| 8-Mar-99 | 25.6 | 7 | 0.2849 | -0.568 | 3.243 | 0.936 |
| 26-Oct-98 | 26.1 | 8 | 0.3280 | -0.446 | 3.262 | 0.943 |
| 15-Jan-99 | 28.4 | 9 | 0.3710 | -0.329 | 3.346 | 0.948 |
| 25-Nov-98 | 29 | 10 | 0.4140 | -0.217 | 3.367 | 0.955 |
| 26-Aug-98 | 30.9 | 11 | 0.4570 | -0.108 | 3.431 | 0.960 |
| 28-Mar-96 | 32.9 | 12 | 0.5000 | 0.000 | 3.493 | 0.966 |
| 9-Nov-97 | 34.7 | 13 | 0.5430 | 0.108 | 3.547 | 0.972 |
| 28-Jul-98 | 35.8 | 14 | 0.5860 | 0.217 | 3.578 | 0.978 |
| 27-Dec-95 | 37.4 | 15 | 0.6290 | 0.329 | 3.622 | 0.980 |
| 17-Jan-96 | 37.4 | 16 | 0.6720 | 0.446 | 3.622 | 0.978 |
| 29-Feb-96 | 47.3 | 17 | 0.7151 | 0.568 | 3.857 | 0.973 |
| 8-May-96 | 56.3 | 18 | 0.7581 | 0.700 | 4.031 | 0.964 |
| 26-Jun-98 | 68.7 | 19 | 0.8011 | 0.845 | 4.230 | 0.951 |
| 21-Nov-95 | 78.4 | 20 | 0.8441 | 1.011 | 4.362 | |
| 19-Jun-96 | 96 | 21 | 0.8871 | 1.211 | 4.564 | |
| 23-Apr-98 | 179 | 22 | 0.9301 | 1.477 | 5.187 | |
| 14-May-98 | 238 | 23 | 0.9731 | 1.929 | 5.472 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC282 **Date:** 29-May-00
**Chemical:** dZn **Analyst:** J.Johnston
**Notes:** Template and Example Lognormal Analysis
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,615 | 52 | 1,073 | 229 | 0.00 | 0.00 | 0.00 |
| **SD:** | 451 | 53 | 471 | 129 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.03 | 0.44 | 0.56 | | | |
| **Min:** | 34,990 | 11 | 315 | 48 | -0.76 | -1.61 | -1.40 |
| **Max:** | 36,227 | 238 | 2,380 | 653 | 3.50 | 2.78 | 3.28 |
| **Median:** | 35,743 | 33 | 1,090 | 213 | -0.35 | 0.04 | -0.13 |

**dZn CC282 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.27)** update r2

| | | | |
|---|---|---|---|
| r2 Q,[COC]: | 0.27 | [dZn] | Q |
| slope, m: | -4.6 | 1,259 | 11.3 |
| intercept, b | 1310.5 | 1,073 | 51.8 |
| N: 23 | | 220 | 238 |

**LnConc. = mLn(Q)+b (r2=0.37)** update r2

| | | | | | |
|---|---|---|---|---|---|
| lnQ,ln[COC] | 0.37 | ln[dZn] | ln Q | [dZn] | Q |
| slope, m: | -0.38 | 7.33 | 2.42 | 1,532 | 11 |
| intercept, b: | 8.25 | 6.76 | 3.95 | 861 | 52 |
| N: 23 | | 6.18 | 5.47 | 483 | 238 |

**Q = mTime +b**

| | |
|---|---|
| r2: | 0.009 |
| m: | 0.0111 |
| b: | -345 |

**LnQ = mTime +b**

| |
|---|
| 0.002 |
| 0.00008 |
| 0.74 |

for graph: dZn = 0, CC282 = 0

**N= 23**

| update for new data | Sampling Date | Q Discharge cfs | dZn Concentration ug/L | dZn Load lbs/day | Ln Q | Ln dZn Conc. | Ln dZn Load | Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 18-Oct-95 | 11.3 | 1130 | 69 | 2.42 | 7.03 | 4.23 | -0.76 | 0.12 | -1.24 |
| IDEQ | 21-Nov-95 | 78.4 | 686 | 289 | 4.36 | 6.53 | 5.67 | 0.50 | -0.82 | 0.47 |
| IDEQ | 27-Dec-95 | 37.4 | 1110 | 223 | 3.62 | 7.01 | 5.41 | -0.27 | 0.08 | -0.05 |
| IDEQ | 17-Jan-96 | 37.4 | 1860 | 374 | 3.62 | 7.53 | 5.92 | -0.27 | 1.67 | 1.12 |
| IDEQ | 29-Feb-96 | 47.3 | 1100 | 280 | 3.86 | 7.00 | 5.63 | -0.08 | 0.06 | 0.39 |
| IDEQ | 28-Mar-96 | 32.9 | 1120 | 198 | 3.49 | 7.02 | 5.29 | -0.35 | 0.10 | -0.24 |
| IDEQ | 8-May-96 | 56.3 | 830 | 251 | 4.03 | 6.72 | 5.53 | 0.09 | -0.52 | 0.17 |
| IDEQ | 19-Jun-96 | 96 | 400 | 207 | 4.56 | 5.99 | 5.33 | 0.83 | -1.43 | -0.18 |
| IDEQ | 24-Jul-96 | 23.5 | 739 | 93 | 3.16 | 6.61 | 4.54 | -0.53 | -0.71 | -1.05 |
| IDEQ | 21-Aug-96 | 18.7 | 884 | 89 | 2.93 | 6.78 | 4.49 | -0.62 | -0.40 | -1.09 |
| IDEQ | 26-Sep-96 | 11.5 | 778 | 48 | 2.44 | 6.66 | 3.87 | -0.76 | -0.63 | -1.40 |
| URS | 9-Nov-97 | 34.7 | 1140 | 213 | 3.55 | 7.04 | 5.36 | -0.32 | 0.14 | -0.13 |
| IDEQ | 23-Apr-98 | 179 | 678 | 653 | 5.19 | 6.52 | 6.48 | 2.39 | -0.84 | 3.28 |
| URS | 14-May-98 | 238 | 315 | 403 | 5.47 | 5.75 | 6.00 | 3.50 | -1.61 | 1.35 |
| IDEQ | 26-Jun-98 | 68.7 | 624 | 231 | 4.23 | 6.44 | 5.44 | 0.32 | -0.95 | 0.01 |
| IDEQ | 28-Jul-98 | 35.8 | 891 | 172 | 3.58 | 6.79 | 5.15 | -0.30 | -0.39 | -0.45 |
| IDEQ | 26-Aug-98 | 30.9 | 981 | 163 | 3.43 | 6.89 | 5.09 | -0.39 | -0.20 | -0.51 |
| IDEQ | 24-Sep-98 | 23.5 | 1090 | 138 | 3.16 | 6.99 | 4.93 | -0.53 | 0.04 | -0.71 |
| IDEQ | 26-Oct-98 | 26.1 | 1170 | 164 | 3.26 | 7.06 | 5.10 | -0.48 | 0.21 | -0.50 |
| URS | 13-Nov-98 | 20.01 | 1390 | 150 | 3.00 | 7.24 | 5.01 | -0.60 | 0.67 | -0.62 |
| IDEQ | 25-Nov-98 | 29 | 2380 | 371 | 3.37 | 7.77 | 5.92 | -0.43 | 2.78 | 1.10 |
| IDEQ | 15-Jan-99 | 28.4 | 1660 | 254 | 3.35 | 7.41 | 5.54 | -0.44 | 1.25 | 0.19 |
| IDEQ | 8-Mar-99 | 25.6 | 1730 | 238 | 3.24 | 7.46 | 5.47 | -0.49 | 1.40 | 0.07 |

dZn

Concentration over time analysis

| | dZn | CC282 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | Concentration over time | |
| | LnConc.=mTime+b All data r2, m: | | | 0.041 | 0.00020 |
| | Time | Ln[COC] | [COC] | | |
| first | 18-Oct-95 | 6.75 | 857 | | |
| mid | 9-Nov-97 | 6.91 | 999 | | |
| last | 8-Mar-99 | 7.01 | 1,103 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Mar-99 | 0.00 | 1 | | |

Load over time analysis

| | dZn | CC282 | | Load over time | |
|---|---|---|---|---|---|
| | LnLoad=mTime+b All data r2, m: | | | 0.049 | 0.00028 |
| | Time | LnLoad | Load | | |
| first | 18-Oct-95 | 5.10 | 164 | | |
| mid | 9-Nov-97 | 5.31 | 203 | | |
| last | 8-Mar-99 | 5.45 | 233 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Mar-99 | 0.00 | 1 | | |

| | max r2 | 0.774 | | max r2 | 0.391 | |
|---|---|---|---|---|---|---|
| | Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | | |
| | r2 | slope | intercept | r2 | slope | intercept |
| | only on >4 data points delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| | 0.041 | 0.00020 | -0.38 | 0.049 | 0.00028 | -4.86 |
| | 0.054 | 0.00025 | -1.90 | 0.015 | 0.00015 | -0.09 |
| | 0.038 | 0.00021 | -0.75 | 0.030 | 0.00022 | -2.71 |
| | 0.051 | 0.00026 | -2.44 | 0.038 | 0.00027 | -4.29 |
| | 0.138 | 0.00043 | -8.62 | 0.096 | 0.00044 | -10.33 |
| | 0.183 | 0.00053 | -12.25 | 0.155 | 0.00059 | -15.80 |
| | 0.255 | 0.00068 | -17.53 | 0.188 | 0.00070 | -19.96 |
| | 0.282 | 0.00079 | -21.39 | 0.287 | 0.00095 | -28.85 |
| | 0.173 | 0.00063 | -15.58 | 0.391 | 0.00125 | -39.62 |
| | 0.154 | 0.00069 | -17.73 | 0.336 | 0.00130 | -41.42 |
| | 0.200 | 0.00101 | -29.29 | 0.242 | 0.00134 | -42.73 |
| | 0.346 | 0.00239 | -79.14 | 0.057 | -0.00085 | 36.01 |
| | 0.745 | 0.00483 | -167.24 | 0.154 | -0.00191 | 74.50 |
| | 0.774 | 0.00549 | -191.20 | 0.007 | -0.00033 | 17.41 |
| | 0.716 | 0.00417 | -143.54 | 0.135 | 0.00144 | -46.75 |
| | 0.599 | 0.00350 | -119.16 | 0.309 | 0.00255 | -86.90 |
| | 0.476 | 0.00323 | -109.56 | 0.325 | 0.00310 | -106.64 |
| | 0.309 | 0.00269 | -89.77 | 0.291 | 0.00346 | -119.71 |
| | 0.117 | 0.00168 | -53.22 | 0.119 | 0.00233 | -78.71 |

update for EV, CV:

| dZn | | CC282 |
|---|---|---|
| LN Analysis | | dZn |
| Load | | Load Data, EV=229 lbs/day CV=.56 |
| Avg: | 229 | Load Data-based LN |
| SD: | 129 | u n dZn Load dZn Load |
| CV: | 0.56 | 3 6.9 965 |
| Min: | 48 | 0 5.30 200 |
| Max: | 653 | -3 3.72 41 |
| Median: | 213 | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.962, EV=238.8 lbs/day CV=0.70; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.962 | u | lnLoad | Load |
| slope, m | 1.591 | 3 | 7.16 | 1292 |
| intercept, b | -8.395 | 0 | 5.28 | 196 |
| N: | 23 | -3 | 3.39 | 30 |
| E[Load] | 238.8 | Parameter Estimates | | |
| SD[Load] | 166 | from LN regression | | |
| CV[Load] | 0.70 | update graph label | | |

N 23

| Date | dZn Load lbs/day Ranked | i rank | -3/8 / N+1/4 lotting point | u y-axis | Ln x-axis | max r2 0.973 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 26-Sep-96 | 48 | 1 | 0.0269 | -1.929 | 3.874 | 0.962 |
| 18-Oct-95 | 69 | 2 | 0.0699 | -1.477 | 4.230 | 0.961 |
| 21-Aug-96 | 89 | 3 | 0.1129 | -1.211 | 4.488 | 0.961 |
| 24-Jul-96 | 93 | 4 | 0.1559 | -1.011 | 4.537 | 0.960 |
| 24-Sep-98 | 138 | 5 | 0.1989 | -0.845 | 4.926 | 0.973 |
| 13-Nov-98 | 150 | 6 | 0.2419 | -0.700 | 5.008 | 0.969 |
| 26-Aug-98 | 163 | 7 | 0.2849 | -0.568 | 5.094 | 0.966 |
| 26-Oct-98 | 164 | 8 | 0.3280 | -0.446 | 5.102 | 0.963 |
| 28-Jul-98 | 172 | 9 | 0.3710 | -0.329 | 5.145 | 0.958 |
| 28-Mar-96 | 198 | 10 | 0.4140 | -0.217 | 5.289 | 0.951 |
| 19-Jun-96 | 207 | 11 | 0.4570 | -0.108 | 5.331 | 0.951 |
| 9-Nov-97 | 213 | 12 | 0.5000 | 0.000 | 5.360 | 0.952 |
| 27-Dec-95 | 223 | 13 | 0.5430 | 0.108 | 5.409 | 0.951 |
| 26-Jun-98 | 231 | 14 | 0.5860 | 0.217 | 5.441 | 0.953 |
| 8-Mar-99 | 238 | 15 | 0.6290 | 0.329 | 5.473 | 0.953 |
| 8-May-96 | 251 | 16 | 0.6720 | 0.446 | 5.527 | 0.950 |
| 15-Jan-99 | 254 | 17 | 0.7151 | 0.568 | 5.536 | 0.948 |
| 29-Feb-96 | 280 | 18 | 0.7581 | 0.700 | 5.635 | 0.932 |
| 21-Nov-95 | 289 | 19 | 0.8011 | 0.845 | 5.668 | 0.913 |
| 25-Nov-98 | 371 | 20 | 0.8441 | 1.011 | 5.917 | |
| 17-Jan-96 | 374 | 21 | 0.8871 | 1.211 | 5.925 | |
| 14-May-98 | 403 | 22 | 0.9301 | 1.477 | 6.000 | |
| 23-Apr-98 | 653 | 23 | 0.9731 | 1.929 | 6.481 | |

update for EV, CV

**dZn**
**LN Analysis**

**Concentration**

| | |
|---|---|
| **Avg:** | **1,073** |
| **SD:** | **471** |
| **CV:** | **0.44** |
| **Min:** | **315** |
| **Max:** | **2,380** |
| **Median:** | **1,090** |

**CC282**
**dZn**
**Conc. Data, EV=1,073 ug/L CV=.44**
**Data-based LN**

| u | ln[dZn] | [dZn] |
|---|---|---|
| 3 | 8.1 | 3459 |
| 0 | 6.89 | 983 |
| -3 | 5.63 | 279 |

**u=mLn(Conc.)+b:**

update for r2, EV, CV **$r^2$=0.959, EV=1098.8 ug/L CV=0.52; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.959 | u | lnConc | Conc |
| slope, m | 2.029 | 3 | 8.36 | 4268 |
| intercept, b | -13.964 | 0 | 6.88 | 973 |
| N | 23 | -3 | 5.40 | 222 |
| E[Conc] | 1098.8 | Parameter Estimates | | |
| SD[Conc] | 576 | from LN regression | | |
| CV[Conc] | 0.52 | update graph label | | |

N 23

max r2 0.975

| Date | dZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 14-May-98 | 315 | 1 | 0.0269 | -1.929 | 5.753 | 0.959 |
| 19-Jun-96 | 400 | 2 | 0.0699 | -1.477 | 5.991 | 0.961 |
| 26-Jun-98 | 624 | 3 | 0.1129 | -1.211 | 6.436 | 0.975 |
| 23-Apr-98 | 678 | 4 | 0.1559 | -1.011 | 6.519 | 0.973 |
| 21-Nov-95 | 686 | 5 | 0.1989 | -0.845 | 6.531 | 0.970 |
| 24-Jul-96 | 739 | 6 | 0.2419 | -0.700 | 6.605 | 0.966 |
| 26-Sep-96 | 778 | 7 | 0.2849 | -0.568 | 6.657 | 0.961 |
| 8-May-96 | 830 | 8 | 0.3280 | -0.446 | 6.721 | 0.955 |
| 21-Aug-96 | 884 | 9 | 0.3710 | -0.329 | 6.784 | 0.949 |
| 28-Jul-98 | 891 | 10 | 0.4140 | -0.217 | 6.792 | 0.943 |
| 26-Aug-98 | 981 | 11 | 0.4570 | -0.108 | 6.889 | 0.933 |
| 24-Sep-98 | 1090 | 12 | 0.5000 | 0.000 | 6.994 | 0.927 |
| 29-Feb-96 | 1100 | 13 | 0.5430 | 0.108 | 7.003 | 0.939 |
| 27-Dec-95 | 1110 | 14 | 0.5860 | 0.217 | 7.012 | 0.950 |
| 28-Mar-96 | 1120 | 15 | 0.6290 | 0.329 | 7.021 | 0.956 |
| 18-Oct-95 | 1130 | 16 | 0.6720 | 0.446 | 7.030 | 0.957 |
| 9-Nov-97 | 1140 | 17 | 0.7151 | 0.568 | 7.039 | 0.948 |
| 26-Oct-98 | 1170 | 18 | 0.7581 | 0.700 | 7.065 | 0.932 |
| 13-Nov-98 | 1390 | 19 | 0.8011 | 0.845 | 7.237 | 0.955 |
| 15-Jan-99 | 1660 | 20 | 0.8441 | 1.011 | 7.415 | |
| 8-Mar-99 | 1730 | 21 | 0.8871 | 1.211 | 7.456 | |
| 17-Jan-96 | 1860 | 22 | 0.9301 | 1.477 | 7.528 | |
| 25-Nov-98 | 2380 | 23 | 0.9731 | 1.929 | 7.775 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dZn** | | **CC282** | | |
| **LN Analysis** | | **dZn** | | |
| **Discharge, Q** | | **Q Data, EV=52 cfs CV=1.03** | | |
| **Avg:** | **52** | **Q Data-based LN** | | |
| **SD:** | **53** | u | lnQ | Q |
| **CV:** | **1.03** | 3 | 6.1 | 460 |
| **Min:** | **11** | 0 | 3.59 | 36 |
| **Max:** | **238** | -3 | 1.04 | 3 |
| **Median:** | **33** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.930, EV=51.9 cfs CV=0.96; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.930 | u | lnQ | Q |
| slope, m | 1.237 | 3 | 6.05 | 423 |
| intercept, b | -4.481 | 0 | 3.62 | 37 |
| N: 23 | | -3 | 1.20 | 3 |
| E[Q] | 51.9 | Parameter Estimates | | |
| SD[Q] | 50 | from LN regression | | |
| CV[Q] | 0.96 | update graph label | | |

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.980 r2 forward |
|---|---|---|---|---|---|---|
| | | N: 23 | | | | |
| update and rank for new data | | | | | | |
| 18-Oct-95 | 11.3 | 1 | 0.0269 | -1.929 | 2.425 | 0.930 |
| 26-Sep-96 | 11.5 | 2 | 0.0699 | -1.477 | 2.442 | 0.928 |
| 21-Aug-96 | 18.7 | 3 | 0.1129 | -1.211 | 2.929 | 0.916 |
| 13-Nov-98 | 20.01 | 4 | 0.1559 | -1.011 | 2.996 | 0.920 |
| 24-Jul-96 | 23.5 | 5 | 0.1989 | -0.845 | 3.157 | 0.921 |
| 24-Sep-98 | 23.5 | 6 | 0.2419 | -0.700 | 3.157 | 0.931 |
| 8-Mar-99 | 25.6 | 7 | 0.2849 | -0.568 | 3.243 | 0.936 |
| 26-Oct-98 | 26.1 | 8 | 0.3280 | -0.446 | 3.262 | 0.943 |
| 15-Jan-99 | 28.4 | 9 | 0.3710 | -0.329 | 3.346 | 0.948 |
| 25-Nov-98 | 29 | 10 | 0.4140 | -0.217 | 3.367 | 0.955 |
| 26-Aug-98 | 30.9 | 11 | 0.4570 | -0.108 | 3.431 | 0.960 |
| 28-Mar-96 | 32.9 | 12 | 0.5000 | 0.000 | 3.493 | 0.966 |
| 9-Nov-97 | 34.7 | 13 | 0.5430 | 0.108 | 3.547 | 0.972 |
| 28-Jul-98 | 35.8 | 14 | 0.5860 | 0.217 | 3.578 | 0.978 |
| 27-Dec-95 | 37.4 | 15 | 0.6290 | 0.329 | 3.622 | 0.980 |
| 17-Jan-96 | 37.4 | 16 | 0.6720 | 0.446 | 3.622 | 0.978 |
| 29-Feb-96 | 47.3 | 17 | 0.7151 | 0.568 | 3.857 | 0.973 |
| 8-May-96 | 56.3 | 18 | 0.7581 | 0.700 | 4.031 | 0.964 |
| 26-Jun-98 | 68.7 | 19 | 0.8011 | 0.845 | 4.230 | 0.951 |
| 21-Nov-95 | 78.4 | 20 | 0.8441 | 1.011 | 4.362 | |
| 19-Jun-96 | 96 | 21 | 0.8871 | 1.211 | 4.564 | |
| 23-Apr-98 | 179 | 22 | 0.9301 | 1.477 | 5.187 | |
| 14-May-98 | 238 | 23 | 0.9731 | 1.929 | 5.472 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Da** see comment

**Station:** CC82 **Date:** 30-May-00
**Chemical:** tCd **Analyst:** J.Johnston
**Notes:** Template and Example Lognormal Analysis
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,615 | 52 | 7 | 2 | 0.00 | 0.00 | 0.00 |
| **SD:** | 451 | 53 | 3 | 1 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.03 | 0.47 | 0.91 | | | |
| **Min:** | 34,990 | 11 | 2 | 0.3 | -0.76 | -1.50 | -0.92 |
| **Max:** | 36,227 | 238 | 15 | 8 | 3.50 | 2.23 | 4.30 |
| **Median:** | 35,743 | 33 | 7 | 1 | -0.35 | -0.17 | -0.24 |

**tCd CC82 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.149)** | update r2 | **0.15** | 0.149 | | r2: | 0.009 | 0.002 |
| r2 Q,[COC]: | 0.15 | [tCd] | Q | | m: | 0.0111 | 0.00008 |
| slope, m: | 0.0 | 8 | 11.3 | | b: | -345 | 0.74 |
| intercept, b: | 8.6 | 7 | 51.8 | | | | |
| N: 23 | | 3 | 238 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.25)** | update r2 | 0.25 | | 0.25 | | | |
| lnQ,ln[COC]: | 0.25 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m | -0.34 | 2.28 | 2.42 | 10 | 11 | | |
| intercept, b | 3.10 | 1.76 | 3.95 | 6 | 52 | | |
| N: 23 | | 1.24 | 5.47 | 3 | 238 | | |

for graph: tCd 0

N= 23 CC82

| | Sampling Date | Q Discharge | tCd Concentration | tCd Load | Ln Q | Ln tCd Conc. | Ln tCd Load | Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 18-Oct-95 | 11.3 | 8 | 0.5 | 2.42 | 2.08 | -0.72 | -0.76 | 0.21 | -0.78 |
| IDEQ | 21-Nov-95 | 78.4 | 4.2 | 1.8 | 4.36 | 1.44 | 0.57 | 0.50 | -0.90 | 0.08 |
| IDEQ | 27-Dec-95 | 37.4 | 6.4 | 1.3 | 3.62 | 1.86 | 0.25 | -0.27 | -0.26 | -0.24 |
| IDEQ | 17-Jan-96 | 37.4 | 12 | 2.4 | 3.62 | 2.48 | 0.88 | -0.27 | 1.36 | 0.51 |
| IDEQ | 29-Feb-96 | 47.3 | 5.4 | 1.4 | 3.86 | 1.69 | 0.32 | -0.08 | -0.55 | -0.18 |
| IDEQ | 28-Mar-96 | 32.9 | 5.3 | 0.9 | 3.49 | 1.67 | -0.06 | -0.35 | -0.58 | -0.48 |
| IDEQ | 8-May-96 | 56.3 | 4.4 | 1.3 | 4.03 | 1.48 | 0.29 | 0.09 | -0.84 | -0.21 |
| IDEQ | 19-Jun-96 | 96 | 2.3 | 1.2 | 4.56 | 0.83 | 0.17 | 0.83 | -1.45 | -0.31 |
| IDEQ | 24-Jul-96 | 23.5 | 4.8 | 0.6 | 3.16 | 1.57 | -0.50 | -0.53 | -0.72 | -0.70 |
| IDEQ | 21-Aug-96 | 18.7 | 5.9 | 0.6 | 2.93 | 1.77 | -0.52 | -0.62 | -0.40 | -0.71 |
| IDEQ | 26-Sep-96 | 11.5 | 4.4 | 0.3 | 2.44 | 1.48 | -1.30 | -0.76 | -0.84 | -0.92 |
| URS | 9-Nov-97 | 34.7 | 7.1 | 1.3 | 3.55 | 1.96 | 0.28 | -0.32 | -0.06 | -0.22 |
| IDEQ | 23-Apr-98 | 179 | 8.4 | 8.1 | 5.19 | 2.13 | 2.09 | 2.39 | 0.32 | 4.30 |
| URS | 14-May-98 | 238 | 2.1 | 2.7 | 5.47 | 0.74 | 0.99 | 3.50 | -1.50 | 0.69 |
| IDEQ | 26-Jun-98 | 68.7 | 4.2 | 1.6 | 4.23 | 1.44 | 0.44 | 0.32 | -0.90 | -0.06 |
| IDEQ | 28-Jul-98 | 35.8 | 6.7 | 1.3 | 3.58 | 1.90 | 0.25 | -0.30 | -0.17 | -0.24 |
| IDEQ | 26-Aug-98 | 30.9 | 6.7 | 1.1 | 3.43 | 1.90 | 0.11 | -0.39 | -0.17 | -0.36 |
| IDEQ | 24-Sep-98 | 23.5 | 8.6 | 1.1 | 3.16 | 2.15 | 0.08 | -0.53 | 0.38 | -0.38 |
| IDEQ | 26-Oct-98 | 26.1 | 8.3 | 1.2 | 3.26 | 2.12 | 0.15 | -0.48 | 0.29 | -0.32 |
| URS | 13-Nov-98 | 20.01 | 11.5 | 1.2 | 3.00 | 2.44 | 0.21 | -0.60 | 1.22 | -0.27 |
| IDEQ | 25-Nov-98 | 29 | 15 | 2.3 | 3.37 | 2.71 | 0.85 | -0.43 | 2.23 | 0.46 |
| IDEQ | 15-Jan-99 | 28.4 | 13 | 2.0 | 3.35 | 2.56 | 0.69 | -0.44 | 1.65 | 0.23 |
| IDEQ | 8-Mar-99 | 25.6 | 13 | 1.8 | 3.24 | 2.56 | 0.58 | -0.49 | 1.65 | 0.09 |

tCd

**Concentration over time analysis** r2 Slope, m

| | tCd | CC82 | | Concentration over time | |
|---|---|---|---|---|---|
| | LnConc.=mTime+b All data r2, m: | | | 0.171 | 0.00046 |
| | Time | Ln[COC] | [COC] | | |
| first | 18-Oct-95 | 1.58 | 5 | | |
| mid | 9-Nov-97 | 1.93 | 7 | | |
| last | 8-Mar-99 | 2.15 | 9 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Mar-99 | 0.00 | 1 | | |

**Load over time analysis**

| | tCd | CC82 | | Load over time | |
|---|---|---|---|---|---|
| | LnLoad=mTime+b All data r2, m: | | | 0.141 | 0.00054 |
| | Time | LnLoad | Load | | |
| first | 18-Oct-95 | -0.07 | 1 | | |
| mid | 9-Nov-97 | 0.34 | 1 | | |
| last | 8-Mar-99 | 0.60 | 2 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Mar-99 | 0.00 | 1 | | |

| | max r2 | 0.806 | | max r2 | 0.502 | |
|---|---|---|---|---|---|---|
| | Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | | |
| | r2 | slope | intercept | r2 | slope | intercept |
| | only on >4 data points delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| | 0.171 | 0.00046 | -14.57 | 0.141 | 0.00054 | -19.05 |
| | 0.214 | 0.00054 | -17.31 | 0.096 | 0.00044 | -15.50 |
| | 0.189 | 0.00052 | -16.77 | 0.127 | 0.00053 | -18.73 |
| | 0.208 | 0.00058 | -18.75 | 0.137 | 0.00059 | -20.60 |
| | 0.362 | 0.00078 | -26.15 | 0.228 | 0.00079 | -27.85 |
| | 0.382 | 0.00086 | -28.91 | 0.268 | 0.00091 | -32.45 |
| | 0.406 | 0.00096 | -32.46 | 0.266 | 0.00098 | -34.89 |
| | 0.397 | 0.00103 | -34.99 | 0.323 | 0.00119 | -42.45 |
| | 0.274 | 0.00084 | -28.14 | 0.384 | 0.00146 | -52.18 |
| | 0.247 | 0.00091 | -30.85 | 0.331 | 0.00153 | -54.55 |
| | 0.302 | 0.00130 | -44.66 | 0.252 | 0.00163 | -58.09 |
| | 0.344 | 0.00242 | -85.23 | 0.036 | -0.00081 | 29.91 |
| | 0.577 | 0.00432 | -153.82 | 0.172 | -0.00242 | 87.92 |
| | 0.806 | 0.00588 | -210.09 | 0.000 | 0.00005 | -1.49 |
| | 0.785 | 0.00448 | -159.52 | 0.263 | 0.00175 | -62.73 |
| | 0.713 | 0.00364 | -129.27 | 0.447 | 0.00270 | -97.01 |
| | 0.619 | 0.00352 | -124.85 | 0.502 | 0.00339 | -121.93 |
| | 0.442 | 0.00269 | -94.77 | 0.417 | 0.00346 | -124.71 |
| | 0.256 | 0.00209 | -72.99 | 0.240 | 0.00274 | -98.48 |

update for EV, CV.

**tCd** **CC82**
**LN Analysis** **tCd**
**Load** **Load Data, EV=1.65 #/d CV=0.907**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **2** | **Load Data-based LN** | | |
| **SD:** | **1** | u | ln tCd Load | tCd Load |
| **CV:** | **0.91** | 3 | 2.5 | 12 |
| **Min:** | **0.3** | 0 | 0.20 | 1 |
| **Max:** | **8** | -3 | -2.12 | 0.1 |
| **Median:** | **1** | | | |

2 1.65
0.91 0.907

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.914, EV=1.69#/d CV=0.828; max r2=0.99**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad | 0.914 | u | lnLoad | Load | | |
| slope, m | 1.384 | 3 | 2.43 | 11 | | |
| intercept, b. | -0.368 | 0 | 0.27 | 1 | | |
| N: 23 | | -3 | -1.90 | 0.1 | | |
| E[Load]: | 1.7 | Parameter Estimates | | | 0.914 | 0.914 |
| SD[Load]: | 1 | from LN regression | | | 1.7 | 1.69 |
| CV[Load]: | 0.83 | update graph label | | | 0.8 | 0.828 |
| | | | | | max r2 | |

| | **tCd** | N: 23 | | | | 0.914 | |
|---|---|---|---|---|---|---|---|
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** | |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward | |
| | **Ranked** | | | | | | |
| update and rank for new data | | | | | | | |
| 26-Sep-96 | **0.3** | 1 | 0.0269 | -1.929 | -1.301 | 0.914 | |
| 18-Oct-95 | **0.5** | 2 | 0.0699 | -1.477 | -0.721 | 0.898 | |
| 21-Aug-96 | **0.6** | 3 | 0.1129 | -1.211 | -0.522 | 0.880 | |
| 24-Jul-96 | **0.6** | 4 | 0.1559 | -1.011 | -0.499 | 0.861 | |
| 28-Mar-96 | **0.9** | 5 | 0.1989 | -0.845 | -0.064 | 0.840 | |
| 24-Sep-98 | **1.1** | 6 | 0.2419 | -0.700 | 0.084 | 0.832 | |
| 26-Aug-98 | **1.1** | 7 | 0.2849 | -0.568 | 0.108 | 0.838 | |
| 26-Oct-98 | **1.2** | 8 | 0.3280 | -0.446 | 0.153 | 0.842 | |
| 19-Jun-96 | **1.2** | 9 | 0.3710 | -0.329 | 0.172 | 0.849 | |
| 13-Nov-98 | **1.2** | 10 | 0.4140 | -0.217 | 0.214 | 0.853 | |
| 27-Dec-95 | **1.3** | 11 | 0.4570 | -0.108 | 0.253 | 0.860 | |
| 28-Jul-98 | **1.3** | 12 | 0.5000 | 0.000 | 0.255 | 0.869 | |
| 9-Nov-97 | **1.3** | 13 | 0.5430 | 0.108 | 0.282 | 0.873 | |
| 8-May-96 | **1.3** | 14 | 0.5860 | 0.217 | 0.287 | 0.874 | |
| 29-Feb-96 | **1.4** | 15 | 0.6290 | 0.329 | 0.318 | 0.866 | |
| 26-Jun-98 | **1.6** | 16 | 0.6720 | 0.446 | 0.440 | 0.849 | |
| 21-Nov-95 | **1.8** | 17 | 0.7151 | 0.568 | 0.572 | 0.839 | |
| 8-Mar-99 | **1.8** | 18 | 0.7581 | 0.700 | 0.582 | 0.850 | |
| 15-Jan-99 | **2.0** | 19 | 0.8011 | 0.845 | 0.686 | 0.844 | |
| 25-Nov-98 | **2.3** | 20 | 0.8441 | 1.011 | 0.850 | | |
| 17-Jan-96 | **2.4** | 21 | 0.8871 | 1.211 | 0.882 | | |
| 14-May-98 | **2.7** | 22 | 0.9301 | 1.477 | 0.989 | | |
| 23-Apr-98 | **8.1** | 23 | 0.9731 | 1.929 | 2.091 | | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| tCd | | CC82 | | | 7.29 |
| LN Analysis | | tCd | | 0.47 | 0.473 |

## Concentration

Conc. Data, EV=7.29 ug/L CV=0.473

| | | | | |
|---|---|---|---|---|
| Avg: | 7 | Data-based LN | | |
| SD: | 3 | u | ln[tCd] | [tCd] |
| CV: | 0.47 | 3 | 3.2 | 25 |
| Min: | 2 | 0 | 1.89 | 7 |
| Max: | 15 | -3 | 0.54 | 2 |
| Median: | 7 | | | |

u=mLn(Conc.)+b:

update for r2, EV, CV r2=0.963, EV=7.5 ug/L CV=0.585; max r2=0.99

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.963 | 0.963 |
| | | | | 7.5 | 7.5 |
| | | | | 0.585 | 0.585 |
| r2 u,lnConc | 0.963 | u | lnConc | Conc | |
| slope, m | 1.842 | 3 | 3.50 | 33 | |
| intercept, b | -3.442 | 0 | 1.87 | 6 | |
| N | 23 | -3 | 0.24 | 1 | |
| E[Conc] | 7.5 | Parameter Estimates | | | |
| SD[Conc] | 4 | from LN regression | | | |
| CV[Conc] | 0.59 | update graph label | | | |

| Date | tCd Concentration ug/L Ranked | N 23 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.975 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 14-May-98 | 2.1 | 1 | 0.0269 | -1.929 | 0.742 | 0.963 |
| 19-Jun-96 | 2.3 | 2 | 0.0699 | -1.477 | 0.833 | 0.956 |
| 21-Nov-95 | 4.2 | 3 | 0.1129 | -1.211 | 1.435 | 0.972 |
| 26-Jun-98 | 4.2 | 4 | 0.1559 | -1.011 | 1.435 | 0.975 |
| 8-May-96 | 4.4 | 5 | 0.1989 | -0.845 | 1.482 | 0.972 |
| 26-Sep-96 | 4.4 | 6 | 0.2419 | -0.700 | 1.482 | 0.969 |
| 24-Jul-96 | 4.8 | 7 | 0.2849 | -0.568 | 1.569 | 0.965 |
| 28-Mar-96 | 5.3 | 8 | 0.3280 | -0.446 | 1.668 | 0.960 |
| 29-Feb-96 | 5.4 | 9 | 0.3710 | -0.329 | 1.686 | 0.953 |
| 21-Aug-96 | 5.9 | 10 | 0.4140 | -0.217 | 1.775 | 0.947 |
| 27-Dec-95 | 6.4 | 11 | 0.4570 | -0.108 | 1.856 | 0.938 |
| 28-Jul-98 | 6.7 | 12 | 0.5000 | 0.000 | 1.902 | 0.928 |
| 26-Aug-98 | 6.7 | 13 | 0.5430 | 0.108 | 1.902 | 0.915 |
| 9-Nov-97 | 7.1 | 14 | 0.5860 | 0.217 | 1.960 | 0.899 |
| 18-Oct-95 | 8 | 15 | 0.6290 | 0.329 | 2.079 | 0.879 |
| 26-Oct-98 | 8.3 | 16 | 0.6720 | 0.446 | 2.116 | 0.851 |
| 23-Apr-98 | 8.4 | 17 | 0.7151 | 0.568 | 2.128 | 0.810 |
| 24-Sep-98 | 8.6 | 18 | 0.7581 | 0.700 | 2.152 | 0.755 |
| 13-Nov-98 | 11.5 | 19 | 0.8011 | 0.845 | 2.442 | 0.951 |
| 17-Jan-96 | 12 | 20 | 0.8441 | 1.011 | 2.485 | |
| 15-Jan-99 | 13 | 21 | 0.8871 | 1.211 | 2.565 | |
| 8-Mar-99 | 13 | 22 | 0.9301 | 1.477 | 2.565 | |
| 25-Nov-98 | 15 | 23 | 0.9731 | 1.929 | 2.708 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **CC82** | | | 52 | 51.8 |
| **LN Analysis** | | **tCd** | | | 1.03 | 1.03 |
| **Discharge, Q** | | **Q Data, EV=51.8 cfs CV=1.03** | | | | |
| **Avg:** | **52** | **Q Data-based LN** | | | | |
| **SD:** | **53** | u | lnQ | Q | | |
| **CV:** | **1.03** | 3 | 6.1 | 460 | | |
| **Min:** | **11** | 0 | 3.59 | 36 | | |
| **Max:** | **238** | -3 | 1.04 | 3 | | |
| **Median:** | **33** | | | | | |
| | | | | | 0.930 | 0.93 |
| | | | | | 51.9 | 51.9 |
| | | **u=mLn(Q)+b:** | | | 0.96 | 0.96 |

update for r2, EV, CV: **r2=0.93, EV=51.9 cfs CV=0.96; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.930 | u | lnQ | Q |
| slope, m | 1.237 | 3 | 6.05 | 423 |
| intercept, b | -4.481 | 0 | 3.62 | 37 |
| N | 23 | -3 | 1.20 | 3 |
| E[Q] | 51.9 | Parameter Estimates | | |
| SD[Q] | 50 | from LN regression | | |
| CV[Q] | 0.96 | update graph label | | |

N 23 — max r2 0.980

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 18-Oct-95 | 11.3 | 1 | 0.0269 | -1.929 | 2.425 | 0.930 |
| 26-Sep-96 | 11.5 | 2 | 0.0699 | -1.477 | 2.442 | 0.928 |
| 21-Aug-96 | 18.7 | 3 | 0.1129 | -1.211 | 2.929 | 0.916 |
| 13-Nov-98 | 20.01 | 4 | 0.1559 | -1.011 | 2.996 | 0.920 |
| 24-Jul-96 | 23.5 | 5 | 0.1989 | -0.845 | 3.157 | 0.921 |
| 24-Sep-98 | 23.5 | 6 | 0.2419 | -0.700 | 3.157 | 0.931 |
| 8-Mar-99 | 25.6 | 7 | 0.2849 | -0.568 | 3.243 | 0.936 |
| 26-Oct-98 | 26.1 | 8 | 0.3280 | -0.446 | 3.262 | 0.943 |
| 15-Jan-99 | 28.4 | 9 | 0.3710 | -0.329 | 3.346 | 0.948 |
| 25-Nov-98 | 29 | 10 | 0.4140 | -0.217 | 3.367 | 0.955 |
| 26-Aug-98 | 30.9 | 11 | 0.4570 | -0.108 | 3.431 | 0.960 |
| 28-Mar-96 | 32.9 | 12 | 0.5000 | 0.000 | 3.493 | 0.966 |
| 9-Nov-97 | 34.7 | 13 | 0.5430 | 0.108 | 3.547 | 0.972 |
| 28-Jul-98 | 35.8 | 14 | 0.5860 | 0.217 | 3.578 | 0.978 |
| 27-Dec-95 | 37.4 | 15 | 0.6290 | 0.329 | 3.622 | 0.980 |
| 17-Jan-96 | 37.4 | 16 | 0.6720 | 0.446 | 3.622 | 0.978 |
| 29-Feb-96 | 47.3 | 17 | 0.7151 | 0.568 | 3.857 | 0.973 |
| 8-May-96 | 56.3 | 18 | 0.7581 | 0.700 | 4.031 | 0.964 |
| 26-Jun-98 | 68.7 | 19 | 0.8011 | 0.845 | 4.230 | 0.951 |
| 21-Nov-95 | 78.4 | 20 | 0.8441 | 1.011 | 4.362 | |
| 19-Jun-96 | 96 | 21 | 0.8871 | 1.211 | 4.564 | |
| 23-Apr-98 | 179 | 22 | 0.9301 | 1.477 | 5.187 | |
| 14-May-98 | 238 | 23 | 0.9731 | 1.929 | 5.472 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC282 **Date:** 2-Jun-00

**Chemical:** tPb **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,615 | 52 | 133 | 82 | 0.00 | 0.00 | 0.00 |
| **SD:** | 451 | 53 | 341 | 332 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.03 | 2.57 | 4.04 | | | |
| **Min:** | 34,990 | 11 | 18 | 2.2 | -0.76 | -0.34 | -0.24 |
| **Max:** | 36,227 | 238 | 1,700 | 1,637 | 3.50 | 4.60 | 4.69 |
| **Median:** | 35,743 | 33 | 42 | 8 | -0.35 | -0.27 | -0.22 |

| tPb CC282 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.215)** | update r2 | | **0.21** | 0.215 | r2: | 0.009 | 0.002 |
| r2 Q,[COC]: | 0.21 | [tPb] | Q | | m: | 0.0111 | 0.00008 |
| slope, m: | 3.0 | 13 | 11.3 | | b: | -345 | 0.74 |
| intercept, b: | -21.0 | 133 | 51.8 | | | | |
| N: 23 | | 686 | 238 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.0115)** | | update r2 | 0.01 | 0.0115 | | | |
| lnQ,ln[COC]: | 0.01 | ln[tPb] | ln Q | [tPb] | Q | | |
| slope, m: | 0.14 | 3.85 | 2.42 | 47 | 11 | | |
| intercept, b: | 3.52 | 4.06 | 3.95 | 58 | 52 | | |
| N: 23 | | 4.26 | 5.47 | 71 | 238 | | |

**N= 23**

| | Sampling Date | Q Discharge cfs | tPb Concentration ug/L | tPb Load lbs/day | Ln Q | Ln tPb Conc. | Ln tPb Load | tPb CC282 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | for graph 0 | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 18-Oct-95 | 11.3 | 66 | 4 | 2.42 | 4.19 | 1.39 | -0.76 | -0.20 | -0.24 |
| IDEQ | 21-Nov-95 | 78.4 | 18 | 8 | 4.36 | 2.89 | 2.03 | 0.50 | -0.34 | -0.22 |
| IDEQ | 27-Dec-95 | 37.4 | 27 | 5 | 3.62 | 3.30 | 1.69 | -0.27 | -0.31 | -0.23 |
| IDEQ | 17-Jan-96 | 37.4 | 53 | 11 | 3.62 | 3.97 | 2.37 | -0.27 | -0.23 | -0.22 |
| IDEQ | 29-Feb-96 | 47.3 | 30 | 8 | 3.86 | 3.40 | 2.03 | -0.08 | -0.30 | -0.22 |
| IDEQ | 28-Mar-96 | 32.9 | 39 | 7 | 3.49 | 3.66 | 1.93 | -0.35 | -0.28 | -0.23 |
| IDEQ | 8-May-96 | 56.3 | 45 | 14 | 4.03 | 3.81 | 2.61 | 0.09 | -0.26 | -0.21 |
| IDEQ | 19-Jun-96 | 96 | 28 | 14 | 4.56 | 3.33 | 2.67 | 0.83 | -0.31 | -0.20 |
| IDEQ | 24-Jul-96 | 23.5 | 36 | 5 | 3.16 | 3.58 | 1.52 | -0.53 | -0.28 | -0.23 |
| IDEQ | 21-Aug-96 | 18.7 | 51 | 5 | 2.93 | 3.93 | 1.64 | -0.62 | -0.24 | -0.23 |
| IDEQ | 26-Sep-96 | 11.5 | 36 | 2 | 2.44 | 3.58 | 0.80 | -0.76 | -0.28 | -0.24 |
| URS | 9-Nov-97 | 34.7 | 58.3 | 11 | 3.55 | 4.07 | 2.39 | -0.32 | -0.22 | -0.21 |
| IDEQ | 23-Apr-98 | 179 | 1700 | 1637 | 5.19 | 7.44 | 7.40 | 2.39 | 4.60 | 4.69 |
| URS | 14-May-98 | 238 | 32.5 | 42 | 5.47 | 3.48 | 3.73 | 3.50 | -0.29 | -0.12 |
| IDEQ | 26-Jun-98 | 68.7 | 40 | 15 | 4.23 | 3.69 | 2.69 | 0.32 | -0.27 | -0.20 |
| IDEQ | 28-Jul-98 | 35.8 | 48 | 9 | 3.58 | 3.87 | 2.22 | -0.30 | -0.25 | -0.22 |
| IDEQ | 26-Aug-98 | 30.9 | 41 | 7 | 3.43 | 3.71 | 1.92 | -0.39 | -0.27 | -0.23 |
| IDEQ | 24-Sep-98 | 23.5 | 160 | 20 | 3.16 | 5.08 | 3.01 | -0.53 | 0.08 | -0.19 |
| IDEQ | 26-Oct-98 | 26.1 | 47 | 7 | 3.26 | 3.85 | 1.89 | -0.48 | -0.25 | -0.23 |
| URS | 13-Nov-98 | 20.01 | 354 | 38 | 3.00 | 5.87 | 3.64 | -0.60 | 0.65 | -0.13 |
| IDEQ | 25-Nov-98 | 29 | 63 | 10 | 3.37 | 4.14 | 2.29 | -0.43 | -0.20 | -0.22 |
| IDEQ | 15-Jan-99 | 28.4 | 42 | 6 | 3.35 | 3.74 | 1.86 | -0.44 | -0.27 | -0.23 |
| IDEQ | 8-Mar-99 | 25.6 | 40 | 6 | 3.24 | 3.69 | 1.71 | -0.49 | -0.27 | -0.23 |

**tPb**

**Concentration over time analysis**

| | tPb | CC282 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.141** | **0.00078** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 18-Oct-95 | 3.52 | 34 | | |
| mid | 9-Nov-97 | 4.11 | 61 | | |
| last | 8-Mar-99 | 4.49 | 89 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Mar-99 | 0.00 | 1 | | |

**Load over time analysis**

| | tPb | CC282 | | |
|---|---|---|---|---|
| | | | | **Load over time** |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.096** | **0.00086** |
| | **Time** | **LnLoad** | **Load** | |
| first | 18-Oct-95 | 1.87 | 6 | |
| mid | 9-Nov-97 | 2.52 | 12 | |
| last | 8-Mar-99 | 2.94 | 19 | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | |
| | 8-Mar-99 | 0.00 | 1 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| max r2 | 0.323 | | | max r2: | 0.417 | |
| **Forward time Regression on Ln Concentration(t)** | | | | **Forward time Regression on Ln Load(t)** | | |
| **r2** | **slope** | **intercept** | | **r2** | **slope** | **intercept** |
| only on >4 data points delete last 4 rows | | | | only on >4 data points delete last 4 rows | | |
| 0.141 | 0.00078 | -23.77 | | 0.096 | 0.00086 | -28.26 |
| 0.165 | 0.00088 | -27.43 | | 0.076 | 0.00079 | -25.61 |
| 0.127 | 0.00079 | -24.01 | | 0.071 | 0.00080 | -25.97 |
| 0.103 | 0.00074 | -22.16 | | 0.056 | 0.00074 | -24.01 |
| 0.109 | 0.00081 | -24.71 | | 0.059 | 0.00081 | -26.42 |
| 0.086 | 0.00076 | -22.92 | | 0.052 | 0.00081 | -26.47 |
| 0.074 | 0.00075 | -22.83 | | 0.041 | 0.00078 | -25.25 |
| 0.067 | 0.00079 | -24.10 | | 0.051 | 0.00095 | -31.55 |
| 0.035 | 0.00062 | -18.11 | | 0.068 | 0.00125 | -42.15 |
| 0.013 | 0.00045 | -11.87 | | 0.038 | 0.00106 | -35.56 |
| 0.005 | 0.00037 | -8.83 | | 0.010 | 0.00069 | -22.26 |
| 0.027 | -0.00147 | 57.32 | | 0.157 | -0.00471 | 172.46 |
| 0.095 | -0.00379 | 141.19 | | 0.417 | -0.01054 | 382.93 |
| 0.034 | 0.00153 | -51.25 | | 0.282 | -0.00429 | 157.35 |
| 0.001 | 0.00030 | -6.55 | | 0.096 | -0.00244 | 90.25 |
| 0.014 | -0.00131 | 51.64 | | 0.061 | -0.00226 | 83.89 |
| 0.075 | -0.00351 | 131.12 | | 0.110 | -0.00365 | 134.04 |
| 0.323 | -0.00847 | 310.36 | | 0.354 | -0.00769 | 280.41 |
| 0.215 | -0.00785 | 288.12 | | 0.243 | -0.00720 | 262.64 |

update for EV, CV.

**tPb** **CC282**
**LN Analysis** **tPb**
**Load** **Load Data, EV=82.1 #/d CV=4.04**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **82** | **Load Data-based LN** | | |
| **SD:** | **332** | u | ln tPb Load | tPb Load |
| **CV:** | **4.04** | 3 | 8.0 | 3129 |
| **Min:** | **2.2** | 0 | 2.98 | 20 |
| **Max:** | **1,637** | -3 | -2.08 | 0.1 |
| **Median:** | **8** | | | |

| | |
|---|---|
| 82 | 82.1 |
| 4.04 | 4 04 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.685, EV=40.1lbs/day CV=3.46; max r2=0.99**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad | 0.685 | u | lnLoad | Load | | |
| slope, m: | 0.624 | 3 | 7.21 | 1358 | | |
| intercept, b | -1.504 | 0 | 2.41 | 11 | | |
| N: | 23 | -3 | -2.40 | 0.1 | | |
| E[Load] | 40.1 | Parameter Estimates | | | 0.685 | 0.685 |
| SD[Load] | 139 | from LN regression | | | 40.1 | 40.1 |
| CV[Load] | 3.46 | update graph label | | | 3.5 | 3.46 |
| | | | | | max r2 | |
| | | N. 23 | | | 0.865 | |

| | Date | tPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|---|
| s | update and rank for new data | | | | | | |
| | 26-Sep-96 | 2 | 1 | 0.0269 | -1.929 | 0.801 | 0.685 |
| | 18-Oct-95 | 4 | 2 | 0.0699 | -1 477 | 1.389 | 0.669 |
| | 24-Jul-96 | 5 | 3 | 0 1129 | -1.211 | 1.515 | 0.676 |
| | 21-Aug-96 | 5 | 4 | 0.1559 | -1 011 | 1.635 | 0.684 |
| | 27-Dec-95 | 5 | 5 | 0.1989 | -0.845 | 1.692 | 0.693 |
| | 8-Mar-99 | 6 | 6 | 0.2419 | -0.700 | 1.706 | 0.702 |
| | 15-Jan-99 | 6 | 7 | 0.2849 | -0.568 | 1.859 | 0.707 |
| | 26-Oct-98 | 7 | 8 | 0.3280 | -0.446 | 1.887 | 0.718 |
| | 26-Aug-98 | 7 | 9 | 0.3710 | -0.329 | 1.919 | 0.729 |
| | 28-Mar-96 | 7 | 10 | 0.4140 | -0.217 | 1.932 | 0.738 |
| | 21-Nov-95 | 8 | 11 | 0.4570 | -0.108 | 2.027 | 0.744 |
| | 29-Feb-96 | 8 | 12 | 0.5000 | 0.000 | 2.033 | 0.752 |
| | 28-Jul-98 | 9 | 13 | 0.5430 | 0.108 | 2.224 | 0.755 |
| | 25-Nov-98 | 10 | 14 | 0 5860 | 0.217 | 2.285 | 0 769 |
| | 17-Jan-96 | 11 | 15 | 0.6290 | 0.329 | 2.367 | 0.783 |
| | 9-Nov-97 | 11 | 16 | 0.6720 | 0.446 | 2.387 | 0.800 |
| | 8-May-96 | 14 | 17 | 0.7151 | 0.568 | 2.612 | 0.811 |
| | 19-Jun-96 | 14 | 18 | 0.7581 | 0.700 | 2.671 | 0.839 |
| | 26-Jun-98 | 15 | 19 | 0 8011 | 0.845 | 2.694 | 0.865 |
| | 24-Sep-98 | 20 | 20 | 0.8441 | 1.011 | 3.007 | |
| | 13-Nov-98 | 38 | 21 | 0.8871 | 1.211 | 3.640 | |
| | 14-May-98 | 42 | 22 | 0.9301 | 1.477 | 3.728 | |
| | 23-Apr-98 | 1637 | 23 | 0.9731 | 1.929 | 7.401 | |

| | | update for EV, CV | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **CC282** | | 133 | 133 | |
| **LN Analysis** | | **tPb** | | 2.57 | 2.57 | |
| **Concentration** | | **Conc. Data, EV=133 ug/L CV=2.57** | | | | |
| **Avg:** | 133 | **Data-based LN** | | | | |
| **SD:** | 341 | u | ln[tPb] | [tPb] | | |
| **CV:** | 2.57 | 3 | 8.1 | 3451 | | |
| **Min:** | 18 | 0 | 3.88 | 48 | | |
| **Max:** | 1,700 | -3 | -0 40 | 1 | | |
| **Median:** | 42 | | | | | |

| | | | | | 0.681 | 0.681 |
|---|---|---|---|---|---|---|
| | **u=mLn(Conc.)+b:** | | | | 113.8 | 114 |
| update for r2, EV, CV: | **r2=0.681, EV=114 ug/L CV=1.8; max r2=0.99** | | | | 1.800 | 1.8 |
| | r2 u,lnConc | 0.681 | u | lnConc | Conc | |
| | slope, m | 0 832 | 3 | 7.62 | 2033 | |
| | intercept, b | -3.338 | 0 | 4.01 | 55 | |
| | N 23 | | -3 | 0 41 | 2 | |
| | E[Conc] | 113.8 | Parameter Estimates | | | |
| | SD[Conc] | 205 | from LN regression | | | |
| | CV[Conc] | 1.80 | update graph label | | | |

| | **tPb** | N 23 | | | | max r2 0.983 |
|---|---|---|---|---|---|---|
| | **Concentration** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **ug/L** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 21-Nov-95 | 18 | 1 | 0.0269 | -1.929 | 2.890 | 0.681 |
| 27-Dec-95 | 27 | 2 | 0.0699 | -1 477 | 3.296 | 0.672 |
| 19-Jun-96 | 28 | 3 | 0 1129 | -1.211 | 3.332 | 0.686 |
| 29-Feb-96 | 30 | 4 | 0.1559 | -1.011 | 3.401 | 0.694 |
| 14-May-98 | 32.5 | 5 | 0.1989 | -0.845 | 3.481 | 0.702 |
| 24-Jul-96 | 36 | 6 | 0.2419 | -0.700 | 3.584 | 0.713 |
| 26-Sep-96 | 36 | - | 0.2849 | -0.568 | 3.584 | 0.731 |
| 28-Mar-96 | 39 | 8 | 0.3280 | -0.446 | 3.664 | 0.745 |
| 26-Jun-98 | 40 | 9 | 0.3710 | -0.329 | 3.689 | 0.765 |
| 8-Mar-99 | 40 | 10 | 0.4140 | -0.217 | 3.689 | 0.786 |
| 26-Aug-98 | 41 | 11 | 0.4570 | -0.108 | 3.714 | 0.804 |
| 15-Jan-99 | 42 | 12 | 0.5000 | 0.000 | 3.738 | 0.823 |
| 8-May-96 | 45 | 13 | 0.5430 | 0.108 | 3.807 | 0.841 |
| 26-Oct-98 | 47 | 14 | 0.5860 | 0.217 | 3.850 | 0.863 |
| 28-Jul-98 | 48 | 15 | 0.6290 | 0.329 | 3.871 | 0.888 |
| 21-Aug-96 | 51 | 16 | 0.6720 | 0.446 | 3.932 | 0.912 |
| 17-Jan-96 | 53 | 17 | 0.7151 | 0.568 | 3.970 | 0.937 |
| 9-Nov-97 | 58.3 | 18 | 0.7581 | 0.700 | 4.066 | 0.960 |
| 25-Nov-98 | 63 | 19 | 0.8011 | 0.845 | 4.143 | 0.983 |
| 18-Oct-95 | 66 | 20 | 0.8441 | 1.011 | 4 190 | |
| 24-Sep-98 | 160 | 21 | 0.8871 | 1.211 | 5.075 | |
| 13-Nov-98 | 354 | 22 | 0.9301 | 1 477 | 5.869 | |
| 23-Apr-98 | 1700 | 23 | 0.9731 | 1.929 | 7.438 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **CC282** | | | 52 | 51.8 |
| **LN Analysis** | | **tPb** | | | 1.03 | 1.03 |
| **Discharge, Q** | | **Q Data, EV=51.8 cfs CV=1.03** | | | | |
| **Avg:** | **52** | **Q Data-based LN** | | | | |
| **SD:** | **53** | u | lnQ | Q | | |
| **CV:** | **1.03** | 3 | b 1 | 460 | | |
| **Min:** | **11** | 0 | 3.59 | 36 | | |
| **Max:** | **238** | -3 | 1.04 | 3 | | |
| **Median:** | **33** | | | | | |
| | | | | | 0.930 | 0.93 |
| | | | | | 51.9 | 51.9 |
| | **u=mLn{Q}+b:** | | | | 0.96 | 0.96 |

update for r2, EV, CV: **r2=0.93, EV=51.9 cfs CV=0.96; max r2=0.98**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnQ | 0.930 | u | lnQ | Q | |
| slope, m | 1.237 | 3 | 6.05 | 423 | |
| intercept, b | -4 481 | 0 | 3.62 | 37 | |
| N | 23 | -3 | 1.20 | 3 | |
| E[Q] | 51 9 | Parameter Estimates | | | |
| SD[Q] | 50 | from LN regression | | | |
| CV[Q] | 0.96 | update graph label | | | |

N: 23

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.980 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 18-Oct-95 | 11.3 | 1 | 0.0269 | -1.929 | 2.425 | 0.930 |
| 26-Sep-96 | 11.5 | 2 | 0.0699 | -1.477 | 2.442 | 0.928 |
| 21-Aug-96 | 18 7 | 3 | 0.1129 | -1.211 | 2.929 | 0.916 |
| 13-Nov-98 | 20.01 | 4 | 0.1559 | -1.011 | 2.996 | 0.920 |
| 24-Jul-96 | 23.5 | 5 | 0.1989 | -0.845 | 3.157 | 0.921 |
| 24-Sep-98 | 23.5 | 6 | 0.2419 | -0.700 | 3.157 | 0.931 |
| 8-Mar-99 | 25.6 | 7 | 0.2849 | -0.568 | 3.243 | 0.936 |
| 26-Oct-98 | 26.1 | 8 | 0.3280 | -0 446 | 3.262 | 0.943 |
| 15-Jan-99 | 28.4 | 9 | 0.3710 | -0.329 | 3.346 | 0.948 |
| 25-Nov-98 | 29 | 10 | 0.4140 | -0.217 | 3.367 | 0.955 |
| 26-Aug-98 | 30.9 | 11 | 0 4570 | -0.108 | 3.431 | 0.960 |
| 28-Mar-96 | 32.9 | 12 | 0.5000 | 0.000 | 3.493 | 0.966 |
| 9-Nov-97 | 34.7 | 13 | 0.5430 | 0.108 | 3.547 | 0.972 |
| 28-Jul-98 | 35.8 | 14 | 0.5860 | 0.217 | 3.578 | 0.978 |
| 27-Dec-95 | 37.4 | 15 | 0.6290 | 0.329 | 3.622 | 0.980 |
| 17-Jan-96 | 37.4 | 16 | 0.6720 | 0.446 | 3.622 | 0.978 |
| 29-Feb-96 | 47.3 | 17 | 0.7151 | 0.568 | 3.857 | 0.973 |
| 8-May-96 | 56.3 | 18 | 0.7581 | 0.700 | 4.031 | 0.964 |
| 26-Jun-98 | 68 7 | 19 | 0 8011 | 0.845 | 4.230 | 0.951 |
| 21-Nov-95 | 78 4 | 20 | 0 8441 | 1.011 | 4.362 | |
| 19-Jun-96 | 96 | 21 | 0.8871 | 1.211 | 4.564 | |
| 23-Apr-98 | 179 | 22 | 0.9301 | 1 477 | 5.187 | |
| 14-May-98 | 238 | 23 | 0.9731 | 1.929 | 5.472 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC282 **Date:** 2-Jun-00
**Chemical:** tZn **Analyst:** J.Johnston
**Notes:** Template and Example Lognormal Analysis
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| Avg: | 35,615 | 52 | 1,104 | 245 | 0.00 | 0.00 | 0.00 |
| SD: | 451 | 53 | 471 | 181 | 1.00 | 1.00 | 1.00 |
| CV: | 0.01 | 1.03 | 0.43 | 0.74 | | | |
| Min: | 34,990 | 11 | 312 | 49.2 | -0.76 | -1.68 | -1.08 |
| Max: | 36,227 | 238 | 2,330 | 982 | 3.50 | 2.60 | 4.07 |
| Median: | 35,743 | 33 | 1,070 | 208 | -0.35 | -0.07 | -0.20 |

| tZn | CC282 | | : Concentration v. Discharge, Q | | | Q = mTime +b | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| Conc. = mQ+b (r2=0.218) | | update r2 | 0.22 | 0.218 | | r2: 0.009 | 0.002 |
| r2 Q,[COC]: | 0.22 | [tZn] | Q | | | m: 0.0111 | 0.00008 |
| slope, m: | -4.1 | 1,272 | 11.3 | | | b -345 | 0.74 |
| intercept, b: | 1318.8 | 1,104 | 51.8 | | | | |
| N: 23 | | 333 | 238 | | | | |
| LnConc. = mLn(Q)+b (r2=0.323) | | update r2 | 0.32 | 0.323 | | | |
| 2 lnQ,ln[COC]: | 0.32 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m: | -0.35 | 7.33 | 2.42 | 1,529 | 11 | | |
| intercept, b: | 8.19 | 6.80 | 3.95 | 895 | 52 | | |
| N: 23 | | 6.26 | 5.47 | 523 | 238 | | |

N= 23

| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | for graph tZn CC282 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| DATA: | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 18-Oct-95 | 11.3 | 1180 | 72 | 2.42 | 7.07 | 4.27 | -0.76 | 0.16 | -0.95 |
| IDEQ | 21-Nov-95 | 78.4 | 705 | 297 | 4.36 | 6.56 | 5.69 | 0.50 | -0.85 | 0.29 |
| IDEQ | 27-Dec-95 | 37.4 | 1070 | 215 | 3.62 | 6.98 | 5.37 | -0.27 | -0.07 | -0.16 |
| IDEQ | 17-Jan-96 | 37.4 | 1860 | 374 | 3.62 | 7.53 | 5.92 | -0.27 | 1.60 | 0.72 |
| IDEQ | 29-Feb-96 | 47.3 | 1080 | 275 | 3.86 | 6.98 | 5.62 | -0.08 | -0.05 | 0.17 |
| IDEQ | 28-Mar-96 | 32.9 | 1100 | 195 | 3.49 | 7.00 | 5.27 | -0.35 | -0.01 | -0.28 |
| IDEQ | 8-May-96 | 56.3 | 810 | 245 | 4.03 | 6.70 | 5.50 | 0.09 | -0.62 | 0.00 |
| IDEQ | 19-Jun-96 | 96 | 403 | 208 | 4.56 | 6.00 | 5.34 | 0.83 | -1.49 | -0.20 |
| IDEQ | 24-Jul-96 | 23.5 | 760 | 96 | 3.16 | 6.63 | 4.57 | -0.53 | -0.73 | -0.82 |
| IDEQ | 21-Aug-96 | 18.7 | 979 | 98 | 2.93 | 6.89 | 4.59 | -0.62 | -0.27 | -0.81 |
| IDEQ | 26-Sep-96 | 11.5 | 796 | 49 | 2.44 | 6.68 | 3.90 | -0.76 | -0.65 | -1.08 |
| URS | 9-Nov-97 | 34.7 | 1110 | 207 | 3.55 | 7.01 | 5.33 | -0.32 | 0.01 | -0.21 |
| IDEQ | 23-Apr-98 | 179 | 1020 | 982 | 5.19 | 6.93 | 6.89 | 2.39 | -0.18 | 4.07 |
| URS | 14-May-98 | 238 | 312 | 399 | 5.47 | 5.74 | 5.99 | 3.50 | -1.68 | 0.86 |
| IDEQ | 26-Jun-98 | 68.7 | 612 | 226 | 4.23 | 6.42 | 5.42 | 0.32 | -1.04 | -0.10 |
| IDEQ | 28-Jul-98 | 35.8 | 893 | 172 | 3.58 | 6.79 | 5.15 | -0.30 | -0.45 | -0.40 |
| IDEQ | 26-Aug-98 | 30.9 | 971 | 161 | 3.43 | 6.88 | 5.08 | -0.39 | -0.28 | -0.46 |
| IDEQ | 24-Sep-98 | 23.5 | 1100 | 139 | 3.16 | 7.00 | 4.93 | -0.53 | -0.01 | -0.58 |
| IDEQ | 26-Oct-98 | 26.1 | 1170 | 164 | 3.26 | 7.06 | 5.10 | -0.48 | 0.14 | -0.44 |
| URS | 13-Nov-98 | 20.01 | 1660 | 179 | 3.00 | 7.41 | 5.19 | -0.60 | 1.18 | -0.36 |
| IDEQ | 25-Nov-98 | 29 | 2330 | 364 | 3.37 | 7.75 | 5.90 | -0.43 | 2.60 | 0.66 |
| IDEQ | 15-Jan-99 | 28.4 | 1720 | 263 | 3.35 | 7.45 | 5.57 | -0.44 | 1.31 | 0.10 |
| IDEQ | 8-Mar-99 | 25.6 | 1760 | 242 | 3.24 | 7.47 | 5.49 | -0.49 | 1.39 | -0.01 |

tZn

**Concentration over time analysis**

| | tZn | CC282 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.056** | **0.00024** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 18-Oct-95 | 6.76 | 864 | | |
| mid | 9-Nov-97 | 6.94 | 1,034 | | |
| last | 8-Mar-99 | 7.06 | 1,162 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Mar-99 | 0.00 | 1 | | |

**Load over time analysis**

| | tZn | CC282 | | **Load over time** | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.057** | **0.00032** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 18-Oct-95 | 5.11 | 165 | | |
| mid | 9-Nov-97 | 5.35 | 210 | | |
| last | 8-Mar-99 | 5.50 | 246 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Mar-99 | 0.00 | 1 | | |

max r2 0.785

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points. delete last 4 rows | | |
| 0.056 | 0.00024 | -1.63 |
| 0.074 | 0.00029 | -3.34 |
| 0.056 | 0.00026 | -2.34 |
| 0.067 | 0.00030 | -3.76 |
| 0.159 | 0.00047 | -9.88 |
| 0.200 | 0.00056 | -13.23 |
| 0.263 | 0.00070 | -18.12 |
| 0.277 | 0.00079 | -21.29 |
| 0.163 | 0.00061 | -14.87 |
| 0.138 | 0.00065 | -16.32 |
| 0.198 | 0.00100 | -29.00 |
| 0.318 | 0.00229 | -75.36 |
| 0.621 | 0.00440 | -151.80 |
| 0.785 | 0.00570 | -198.56 |
| 0.731 | 0.00438 | -151.10 |
| 0.620 | 0.00365 | -124.69 |
| 0.496 | 0.00335 | -113.72 |
| 0.312 | 0.00263 | -87.83 |
| 0.096 | 0.00140 | -43.24 |

max r2 0.390

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points. delete last 4 rows | | |
| 0.057 | 0.00032 | -6.11 |
| 0.022 | 0.00019 | -1.53 |
| 0.039 | 0.00027 | -4.29 |
| 0.045 | 0.00031 | -5.61 |
| 0.100 | 0.00047 | -11.58 |
| 0.150 | 0.00062 | -16.78 |
| 0.174 | 0.00072 | -20.54 |
| 0.250 | 0.00095 | -28.75 |
| 0.332 | 0.00123 | -38.91 |
| 0.275 | 0.00126 | -40.02 |
| 0.201 | 0.00133 | -42.43 |
| 0.054 | -0.00095 | 39.78 |
| 0.172 | -0.00234 | 89.93 |
| 0.001 | -0.00013 | 10.05 |
| 0.197 | 0.00165 | -54.31 |
| 0.382 | 0.00271 | -92.43 |
| 0.390 | 0.00322 | -110.80 |
| 0.328 | 0.00341 | -117.77 |
| 0.122 | 0.00205 | -68.73 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tZn** | | **CC282** | | |
| **LN Analysis** | | **tZn** | | |
| **Load** | | **Load Data, EV=245 #/d CV=0.741** | | |
| **Avg:** | **245** | **Load Data-based LN** | | |
| **SD:** | **181** | u | ln tZn Load | tZn Load |
| **CV:** | **0.74** | 3 | 7.3 | 1430 |
| **Min:** | **49.2** | 0 | 5.28 | 197 |
| **Max:** | **982** | -3 | 3.30 | 27.0 |
| **Median:** | **208** | | | |
| | | 245 | 245 | |
| | | 0.74 | 0.741 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.945, EV=251#/d CV=0.741; max r2=0.99**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad | 0.945 | u | lnLoad | Load | | |
| slope, m | 1.512 | 3 | 7.29 | 1469 | | |
| intercept, b | -8.026 | 0 | 5.31 | 202 | | |
| N: | 23 | -3 | 3.32 | 27.8 | | |
| E[Load} | 251.4 | Parameter Estimates | | | 0.945 | 0.945 |
| SD[Load]: | 186 | from LN regression | | | 251.4 | 251 |
| CV[Load]: | 0.74 | update graph label | | | 0.7 | 0.741 |
| | | | | | max r2 | |
| | tZn | N: 23 | | | 0.945. | |

| Date | Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 26-Sep-96 | **49** | 1 | 0.0269 | -1.929 | 3.897 | 0.945 |
| 18-Oct-95 | **72** | 2 | 0.0699 | -1.477 | 4.273 | 0.935 |
| 24-Jul-96 | **96** | 3 | 0.1129 | -1.211 | 4.565 | 0.926 |
| 21-Aug-96 | **98** | 4 | 0.1559 | -1.011 | 4.590 | 0.914 |
| 24-Sep-98 | **139** | 5 | 0.1989 | -0.845 | 4.935 | 0.903 |
| 26-Aug-98 | **161** | 6 | 0.2419 | -0.700 | 5.084 | 0.894 |
| 26-Oct-98 | **164** | 7 | 0.2849 | -0.568 | 5.102 | 0.893 |
| 28-Jul-98 | **172** | 8 | 0.3280 | -0.446 | 5.147 | 0.888 |
| 13-Nov-98 | **179** | 9 | 0.3710 | -0.329 | 5.186 | 0.883 |
| 28-Mar-96 | **195** | 10 | 0.4140 | -0.217 | 5.271 | 0.876 |
| 9-Nov-97 | **207** | 11 | 0.4570 | -0.108 | 5.334 | 0.875 |
| 19-Jun-96 | **208** | 12 | 0.5000 | 0.000 | 5.338 | 0.880 |
| 27-Dec-95 | **215** | 13 | 0.5430 | 0.108 | 5.372 | 0.879 |
| 26-Jun-98 | **226** | 14 | 0.5860 | 0.217 | 5.421 | 0.876 |
| 8-Mar-99 | **242** | 15 | 0.6290 | 0.329 | 5.491 | 0.874 |
| 8-May-96 | **245** | 16 | 0.6720 | 0.446 | 5.503 | 0.879 |
| 15-Jan-99 | **263** | 17 | 0.7151 | 0.568 | 5.571 | 0.874 |
| 29-Feb-96 | **275** | 18 | 0.7581 | 0.700 | 5.616 | 0.871 |
| 21-Nov-95 | **297** | 19 | 0.8011 | 0.845 | 5.695 | 0.858 |
| 25-Nov-98 | **364** | 20 | 0.8441 | 1.011 | 5.896 | |
| 17-Jan-96 | **374** | 21 | 0.8871 | 1.211 | 5.925 | |
| 14-May-98 | **399** | 22 | 0.9301 | 1.477 | 5.990 | |
| 23-Apr-98 | **982** | 23 | 0.9731 | 1.929 | 6.890 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | **CC282** | | 1,104 | 1100 |
| **LN Analysis** | | **tZn** | | 0 43 | 0 427 |
| **Concentration** | | **Conc. Data, EV=1100 ug/L CV=0.427** | | | |
| **Avg:** | **1,104** | **Data-based LN** | | | |
| **SD:** | **471** | u | ln[tZn] | [tZn] | |
| **CV:** | **0.43** | 3 | 8.2 | 3465 | |
| **Min:** | **312** | 0 | 6.92 | 1016 | |
| **Max:** | **2,330** | -3 | 5 70 | 298 | |
| **Median:** | **1,070** | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.941 | 0.941 |
| **u=mLn{Conc.}+b:** | | | | 1135.4 | 1140 |
| update for r2, EV, CV: | **r2=0.941, EV=1140 ug/L CV=0.53; max r2=0.99** | | | 0.530 | 0.53 |
| r2 u,lnConc | 0.941 | u | lnConc | Conc | |
| slope, m | 2.009 | 3 | 8.40 | 4466 | |
| intercept, b | -13.884 | 0 | 6.91 | 1003 | |
| N | 23 | -3 | 5.42 | 225 | |
| E[Conc] | 1135.4 | Parameter Estimates | | | |
| SD[Conc] | 602 | from LN regression | | | |
| CV[Conc] | 0.53 | update graph label | | | |

| | tZn | N | 23 | | | max r2 0.960 |
|---|---|---|---|---|---|---|
| | **Concentration** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **ug/L Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 14-May-98 | 312 | 1 | 0.0269 | -1.929 | 5.743 | 0.941 |
| 19-Jun-96 | 403 | 2 | 0.0699 | -1.477 | 5.999 | 0.943 |
| 26-Jun-98 | 612 | 3 | 0.1129 | -1.211 | 6.417 | 0.960 |
| 21-Nov-95 | 705 | 4 | 0.1559 | -1.011 | 6.558 | 0.954 |
| 24-Jul-96 | 760 | 5 | 0.1989 | -0.845 | 6.633 | 0.948 |
| 26-Sep-96 | 796 | 6 | 0.2419 | -0.700 | 6.680 | 0.942 |
| 8-May-96 | 810 | 7 | 0.2849 | -0.568 | 6.697 | 0.935 |
| 28-Jul-98 | 893 | 8 | 0.3280 | -0.446 | 6.795 | 0.925 |
| 26-Aug-98 | 971 | 9 | 0.3710 | -0.329 | 6.878 | 0.918 |
| 21-Aug-96 | 979 | 10 | 0.4140 | -0.217 | 6.887 | 0.918 |
| 23-Apr-98 | 1020 | 11 | 0.4570 | -0.108 | 6.928 | 0.913 |
| 27-Dec-95 | 1070 | 12 | 0.5000 | 0.000 | 6.975 | 0.911 |
| 29-Feb-96 | 1080 | 13 | 0.5430 | 0.108 | 6.985 | 0.913 |
| 28-Mar-96 | 1100 | 14 | 0.5860 | 0.217 | 7.003 | 0.910 |
| 24-Sep-98 | 1100 | 15 | 0.6290 | 0.329 | 7.003 | 0.901 |
| 9-Nov-97 | 1110 | 16 | 0.6720 | 0.446 | 7.012 | 0.881 |
| 26-Oct-98 | 1170 | 17 | 0.7151 | 0.568 | 7.065 | 0.847 |
| 18-Oct-95 | 1180 | 18 | 0.7581 | 0.700 | 7.073 | 0.800 |
| 13-Nov-98 | 1660 | 19 | 0.8011 | 0.845 | 7.415 | 0.924 |
| 15-Jan-99 | 1720 | 20 | 0.8441 | 1.011 | 7.450 | |
| 8-Mar-99 | 1760 | 21 | 0.8871 | 1.211 | 7.473 | |
| 17-Jan-96 | 1860 | 22 | 0.9301 | 1.477 | 7.528 | |
| 25-Nov-98 | 2330 | 23 | 0.9731 | 1.929 | 7.754 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **CC282** | | | 52 | 51.8 |
| **LN Analysis** | | **tZn** | | | 1.03 | 1.03 |
| **Discharge, Q** | | **Q Data, EV=51.8 cfs CV=1.03** | | | | |
| **Avg:** | **52** | **Q Data-based LN** | | | | |
| **SD:** | **53** | u | lnQ | Q | | |
| **CV:** | **1.03** | 3 | 6.1 | 460 | | |
| **Min:** | **11** | 0 | 3.59 | 36 | | |
| **Max:** | **238** | -3 | 1.04 | 3 | | |
| **Median:** | **33** | | | | | |
| | | | | | 0.930 | 0.93 |
| | | | | | 51.9 | 51.9 |
| | **u=mLn(Q)+b:** | | | | 0.96 | 0.96 |

update for r2, EV, CV: **r2=0.93, EV=51.9 cfs CV=0.96; max r2=0.98**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnQ | 0.930 | u | lnQ | Q | |
| slope, m: | 1.237 | 3 | 6.05 | 423 | |
| intercept, b. | -4.481 | 0 | 3.62 | 37 | |
| N: 23 | | -3 | 1.20 | 3 | |
| E[Q]. | 51.9 | Parameter Estimates | | | |
| SD[Q]. | 50 | from LN regression | | | |
| CV[Q]. | 0.96 | update graph label | | | |

N: 23

max r2 0.980

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 18-Oct-95 | 11.3 | 1 | 0.0269 | -1.929 | 2.425 | 0.930 |
| 26-Sep-96 | 11.5 | 2 | 0.0699 | -1.477 | 2.442 | 0.928 |
| 21-Aug-96 | 18.7 | 3 | 0.1129 | -1.211 | 2.929 | 0.916 |
| 13-Nov-98 | 20.01 | 4 | 0.1559 | -1.011 | 2.996 | 0.920 |
| 24-Jul-96 | 23.5 | 5 | 0.1989 | -0.845 | 3.157 | 0.921 |
| 24-Sep-98 | 23.5 | 6 | 0.2419 | -0.700 | 3.157 | 0.931 |
| 8-Mar-99 | 25.6 | 7 | 0.2849 | -0.568 | 3.243 | 0.936 |
| 26-Oct-98 | 26.1 | 8 | 0.3280 | -0.446 | 3.262 | 0.943 |
| 15-Jan-99 | 28.4 | 9 | 0.3710 | -0.329 | 3.346 | 0.948 |
| 25-Nov-98 | 29 | 10 | 0.4140 | -0.217 | 3.367 | 0.955 |
| 26-Aug-98 | 30.9 | 11 | 0.4570 | -0.108 | 3.431 | 0.960 |
| 28-Mar-96 | 32.9 | 12 | 0.5000 | 0.000 | 3.493 | 0.966 |
| 9-Nov-97 | 34.7 | 13 | 0.5430 | 0.108 | 3.547 | 0.972 |
| 28-Jul-98 | 35.8 | 14 | 0.5860 | 0.217 | 3.578 | 0.978 |
| 27-Dec-95 | 37.4 | 15 | 0.6290 | 0.329 | 3.622 | 0.980 |
| 17-Jan-96 | 37.4 | 16 | 0.6720 | 0.446 | 3.622 | 0.978 |
| 29-Feb-96 | 47.3 | 17 | 0.7151 | 0.568 | 3.857 | 0.973 |
| 8-May-96 | 56.3 | 18 | 0.7581 | 0.700 | 4.031 | 0.964 |
| 26-Jun-98 | 68.7 | 19 | 0.8011 | 0.845 | 4.230 | 0.951 |
| 21-Nov-95 | 78.4 | 20 | 0.8441 | 1.011 | 4.362 | |
| 19-Jun-96 | 96 | 21 | 0.8871 | 1.211 | 4.564 | |
| 23-Apr-98 | 179 | 22 | 0.9301 | 1.477 | 5.187 | |
| 14-May-98 | 238 | 23 | 0.9731 | 1.929 | 5.472 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC284 **Date:** 29-May-00
**Chemical:** dCd **Analyst:** J.Johnston
**Notes:** Template and Example Lognormal Analysis
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 34,638 | 38 | 8 | 1.4 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 400 | 35 | 4 | 1.0 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 0.93 | 0.43 | 0.7 | | | | |
| **Min:** | 33,375 | 7 | 3 | 0.3 | | -0.87 | -1.61 | -1.12 |
| **Max:** | 35,743 | 172 | 16 | 5.2 | | 3.78 | 2.19 | 3.93 |
| **Median:** | 34,634 | 24 | 7 | 1.2 | | -0.39 | -0.29 | -0.16 |

**dCd CC284 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.21)** update r2

| | | [dCd] | Q |
|---|---|---|---|
| r2 Q,[COC] | 0.21 | | |
| slope, m | -0.05 | 10 | 7.1 |
| intercept, b | 9.9 | 8 | 37.9 |
| N: 42 | | 2 | 172 |

**LnConc. = mLn(Q)+b (r2=0.28)** update r2

| | | ln[dCd] | ln Q | [dCd] | Q |
|---|---|---|---|---|---|
| lnQ,ln[COC] | 0.28 | | | | |
| slope, m | -0.31 | 2.42 | 1.96 | 11 | 7 |
| intercept, b | 3.03 | 1.91 | 3.64 | 7 | 38 |
| N: 42 | | 1.44 | 5.15 | 4 | 172 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2: | 0.004 | 0.035 |
| m | -0.0058 | 0.00037 |
| b | 237 | -9.59 |

**LnQ = mTime +b**

**N= 42**

| | Sampling Date | Q Discharge | dCd Concentration | dCd Load | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd CC284 Standardized Values = (x - Avg)/SD | | |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | Q | Conc | Load |
| MFG | 17-May-91 | 171.6 | 2.5 | 2.3 | 5.15 | 0.92 | 0.84 | 3.78 | -1.61 | 0.96 |
| MFG | 5-Oct-91 | 16.1 | 7.5 | 0.6 | 2.78 | 2.01 | -0.43 | -0.62 | -0.20 | -0.73 |
| IDEQ | 27-Oct-93 | 7.88 | 6.3 | 0.3 | 2.06 | 1.84 | -1.32 | -0.85 | -0.54 | -1.12 |
| IDEQ | 30-Nov-93 | 12.6 | 8.5 | 0.6 | 2.53 | 2.14 | -0.55 | -0.72 | 0.08 | -0.81 |
| IDEQ | 17-Dec-93 | 7.24 | 10.7 | 0.4 | 1.98 | 2.37 | -0.88 | -0.87 | 0.70 | -0.97 |
| IDEQ | 17-Dec-93 | 10.66 | 10.7 | 0.6 | 2.37 | 2.37 | -0.49 | -0.77 | 0.70 | -0.77 |
| IDEQ | 20-Jan-94 | 7.88 | 12 | 0.5 | 2.06 | 2.48 | -0.68 | -0.85 | 1.07 | -0.88 |
| IDEQ | 20-Jan-94 | 11.68 | 12 | 0.8 | 2.46 | 2.48 | -0.28 | -0.74 | 1.07 | -0.63 |
| IDEQ | 18-Feb-94 | 7.12 | 12 | 0.5 | 1.96 | 2.48 | -0.78 | -0.87 | 1.07 | -0.93 |
| IDEQ | 8-Mar-94 | 21.27 | 14 | 1.6 | 3.06 | 2.64 | 0.47 | -0.47 | 1.63 | 0.24 |
| IDEQ | 24-Mar-94 | 21.27 | 15 | 1.7 | 3.06 | 2.71 | 0.54 | -0.47 | 1.91 | 0.35 |
| IDEQ | 7-Apr-94 | 59.82 | 8.3 | 2.7 | 4.09 | 2.12 | 0.98 | 0.62 | 0.02 | 1.33 |
| IDEQ | 4-May-94 | 59.82 | 4.3 | 1.4 | 4.09 | 1.46 | 0.32 | 0.62 | -1.10 | 0.01 |
| IDEQ | 19-May-94 | 73.12 | 2.8 | 1.1 | 4.29 | 1.03 | 0.10 | 1.00 | -1.53 | -0.27 |
| IDEQ | 7-Jun-94 | 51.06 | 5.1 | 1.4 | 3.93 | 1.63 | 0.34 | 0.37 | -0.88 | 0.03 |
| IDEQ | 23-Jun-94 | 33.34 | 5.6 | 1.0 | 3.51 | 1.72 | 0.00 | -0.13 | -0.74 | -0.37 |
| IDEQ | 25-Jul-94 | 19.76 | 6 | 0.6 | 2.98 | 1.79 | -0.45 | -0.51 | -0.62 | -0.75 |
| IDEQ | 16-Aug-94 | 17.71 | 7.2 | 0.7 | 2.87 | 1.97 | -0.38 | -0.57 | -0.29 | -0.70 |
| IDEQ | 16-Aug-94 | 13.57 | 7.2 | 0.5 | 2.61 | 1.97 | -0.64 | -0.69 | -0.29 | -0.86 |
| IDEQ | 13-Sep-94 | 16.48 | 5.8 | 0.5 | 2.80 | 1.76 | -0.67 | -0.61 | -0.68 | -0.87 |
| IDEQ | 6-Oct-94 | 15.33 | 7.1 | 0.6 | 2.73 | 1.96 | -0.54 | -0.64 | -0.31 | -0.80 |
| IDEQ | 16-Nov-94 | 16.78 | 12 | 1.1 | 2.82 | 2.48 | 0.08 | -0.60 | 1.07 | -0.29 |
| IDEQ | 13-Dec-94 | 16.48 | 15 | 1.3 | 2.80 | 2.71 | 0.29 | -0.61 | 1.91 | -0.04 |
| IDEQ | 10-Jan-95 | 25.13 | 16 | 2.2 | 3.22 | 2.77 | 0.77 | -0.36 | 2.19 | 0.81 |
| IDEQ | 9-Feb-95 | 39.63 | 9.8 | 2.1 | 3.68 | 2.28 | 0.74 | 0.05 | 0.45 | 0.73 |
| IDEQ | 8-Mar-95 | 38.13 | 6.8 | 1.4 | 3.64 | 1.92 | 0.33 | 0.01 | -0.40 | 0.03 |
| IDEQ | 22-Mar-95 | 80.94 | 12 | 5.2 | 4.39 | 2.48 | 1.65 | 1.22 | 1.07 | 3.93 |
| IDEQ | 12-Apr-95 | 58.64 | 6.7 | 2.1 | 4.07 | 1.90 | 0.75 | 0.59 | -0.43 | 0.76 |
| IDEQ | 25-Apr-95 | 47 | 5.8 | 1.5 | 3.85 | 1.76 | 0.38 | 0.26 | -0.68 | 0.10 |
| IDEQ | 13-Jun-95 | 158.04 | 2.9 | 2.5 | 5.06 | 1.06 | 0.90 | 3.40 | -1.50 | 1.12 |
| IDEQ | 27-Jun-95 | 38.13 | 3.6 | 0.7 | 3.64 | 1.28 | -0.30 | 0.01 | -1.30 | -0.64 |
| IDEQ | 11-Jul-95 | 23.33 | 5 | 0.6 | 3.15 | 1.61 | -0.47 | -0.41 | -0.91 | -0.76 |
| IDEQ | 25-Jul-95 | 18.71 | 5.9 | 0.6 | 2.93 | 1.77 | -0.52 | -0.54 | -0.65 | -0.79 |
| IDEQ | 14-Aug-95 | 15.89 | 6.5 | 0.6 | 2.77 | 1.87 | -0.59 | -0.62 | -0.48 | -0.83 |
| IDEQ | 13-Sep-95 | 14.02 | 6.9 | 0.5 | 2.64 | 1.93 | -0.65 | -0.68 | -0.37 | -0.87 |
| IDEQ | 18-Oct-95 | 35.3 | 8.1 | 1.5 | 3.56 | 2.09 | 0.43 | -0.07 | -0.03 | 0.17 |
| IDEQ | 21-Nov-95 | 95.4 | 4.3 | 2.2 | 4.56 | 1.46 | 0.79 | 1.63 | -1.10 | 0.85 |
| IDEQ | 27-Dec-95 | 41.2 | 7.8 | 1.7 | 3.72 | 2.05 | 0.55 | 0.09 | -0.12 | 0.37 |
| IDEQ | 17-Jan-96 | 48.1 | 15 | 3.9 | 3.87 | 2.71 | 1.36 | 0.29 | 1.91 | 2.56 |
| IDEQ | 29-Feb-96 | 52.1 | 6.7 | 1.9 | 3.95 | 1.90 | 0.63 | 0.40 | -0.43 | 0.52 |
| IDEQ | 28-Mar-96 | 39.6 | 8.7 | 1.9 | 3.68 | 2.16 | 0.62 | 0.05 | 0.14 | 0.49 |
| URS | 9-Nov-97 | 35 | 8.98 | 1.7 | 3.56 | 2.19 | 0.53 | -0.08 | 0.22 | 0.33 |

dCd

**Concentration over time analysis**

| | dCd | CC284 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | Concentration over time | |
| | LnConc.=mTime+b All data r2, m: | | | 0.009 | 0.00011 |
| | Time | Ln[COC] | [COC] | | |
| first | 17-May-91 | 1.87 | 7 | | |
| mid | 26-Oct-94 | 2.01 | 7 | | |
| last | 9-Nov-97 | 2.12 | 8 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Nov-97 | 0.00 | 1 | | |

**Load over time analysis**

| | dCd | CC284 | | Load over time | |
|---|---|---|---|---|---|
| | LnLoad=mTime+b All data r2, m: | | | 0.082 | 0.00048 |
| | Time | LnLoad | Load | | |
| first | 17-May-91 | -0.51 | 1 | | |
| mid | 26-Oct-94 | 0.09 | 1 | | |
| last | 9-Nov-97 | 0.62 | 2 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Nov-97 | 0.00 | 1 | | |

max r2 0.241

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points delete last 4 rows | | |
| 0.009 | 0.00011 | -1.69 |
| 0.012 | -0.00014 | 6.78 |
| 0.018 | -0.00019 | 8.73 |
| 0.024 | -0.00023 | 9.93 |
| 0.023 | -0.00023 | 9.89 |
| 0.016 | -0.00019 | 8.80 |
| 0.010 | -0.00016 | 7.52 |
| 0.004 | -0.00010 | 5.55 |
| 0.000 | -0.00004 | 3.22 |
| 0.001 | 0.00004 | 0.63 |
| 0.008 | 0.00015 | -3.17 |
| 0.032 | 0.00028 | -7.93 |
| 0.043 | 0.00034 | -9.74 |
| 0.027 | 0.00027 | -7.52 |
| 0.005 | 0.00011 | -2.00 |
| 0.001 | 0.00005 | 0.17 |
| 0.000 | 0.00000 | 2.03 |
| 0.001 | -0.00005 | 3.60 |
| 0.001 | -0.00006 | 3.95 |
| 0.003 | -0.00007 | 4.39 |
| 0.006 | -0.00014 | 6.93 |
| 0.008 | -0.00017 | 7.93 |
| 0.001 | -0.00005 | 3.81 |
| 0.006 | 0.00015 | -3.26 |
| 0.052 | 0.00040 | -12.04 |
| 0.092 | 0.00053 | -16.82 |
| 0.100 | 0.00058 | -18.30 |
| 0.214 | 0.00081 | -26.37 |
| 0.238 | 0.00088 | -28.97 |
| 0.241 | 0.00092 | -30.24 |
| 0.197 | 0.00071 | -23.01 |
| 0.145 | 0.00053 | -16.63 |
| 0.100 | 0.00043 | -12.92 |
| 0.070 | 0.00036 | -10.46 |
| 0.049 | 0.00031 | -8.71 |
| 0.035 | 0.00027 | -7.32 |
| 0.040 | 0.00030 | -8.47 |
| 0.003 | -0.00006 | 4.23 |

max r2 0.211

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.082 | 0.00048 | -16.51 |
| 0.188 | 0.00082 | -28.48 |
| 0.192 | 0.00097 | -33.41 |
| 0.156 | 0.00084 | -29.10 |
| 0.138 | 0.00080 | -27.67 |
| 0.112 | 0.00071 | -24.56 |
| 0.094 | 0.00066 | -22.80 |
| 0.072 | 0.00058 | -19.87 |
| 0.060 | 0.00054 | -18.49 |
| -0.037 | 0.00042 | -14.22 |
| 0.046 | 0.00048 | -16.31 |
| 0.059 | 0.00056 | -19.08 |
| 0.099 | 0.00072 | -25.02 |
| 0.111 | 0.00079 | -27.38 |
| 0.113 | 0.00082 | -28.50 |
| 0.128 | 0.00091 | -31.42 |
| 0.126 | 0.00093 | -32.22 |
| 0.102 | 0.00085 | -29.41 |
| 0.081 | 0.00077 | -26.58 |
| 0.049 | 0.00060 | -20.58 |
| 0.021 | 0.00039 | -13.15 |
| 0.004 | 0.00017 | -5.46 |
| 0.001 | 0.00009 | -2.82 |
| 0.001 | 0.00006 | -1.81 |
| 0.004 | 0.00017 | -5.65 |
| 0.009 | 0.00029 | -9.60 |
| 0.009 | 0.00029 | -9.80 |
| 0.068 | 0.00072 | -24.79 |
| 0.108 | 0.00092 | -31.89 |
| 0.127 | 0.00103 | -35.98 |
| 0.211 | 0.00131 | -45.72 |
| 0.181 | 0.00122 | -42.46 |
| 0.137 | 0.00103 | -35.83 |
| 0.083 | 0.00075 | -25.97 |
| 0.023 | 0.00034 | -11.33 |
| 0.045 | -0.00025 | 9.56 |
| 0.137 | -0.00043 | 15.85 |
| 0.135 | -0.00045 | 16.46 |

update for EV, CV:

**dCd**
**LN Analysis**
**Load**

**CC284**
**dCd**
**Load Data, EV=1.4lbs/day CV=0.7**

| | |
|---|---|
| **Avg:** | **1.4** |
| **SD:** | **1.0** |
| **CV:** | **0.7** |
| **Min:** | **0.3** |
| **Max:** | **5.2** |
| **Median:** | **1.2** |

**Load Data-based LN**

| u | ln dCd Load | dCd Load |
|---|---|---|
| 3 | 2.0 | 7.7 |
| 0 | 0.1 | 1.1 |
| -3 | -1.82 | 0.2 |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.960, EV=1.4 lbs/day CV=0.81; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.960 | u | lnLoad | Load |
| slope, m. | 1.414 | 3 | 2.21 | 9 |
| intercept, b. | -0.127 | 0 | 0.09 | 1 |
| N: | 42 | -3 | -2.03 | 0.1 |
| E[Load]: | 1.4 | Parameter Estimates | | |
| SD[Load]: | 1 | from LN regression | | |
| CV[Load] | 0.81 | update graph label | | |

| Date | dCd Load lbs/day Ranked | N: 42 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.968 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Oct-93 | 0.3 | 1 | 0.0148 | -2.176 | -1.320 | 0.960 |
| 17-Dec-93 | 0.4 | 2 | 0.0385 | -1.769 | -0.875 | 0.956 |
| 18-Feb-94 | 0.5 | 3 | 0.0621 | -1.537 | -0.777 | 0.957 |
| 20-Jan-94 | 0.5 | 4 | 0.0858 | -1.367 | -0.676 | 0.958 |
| 13-Sep-94 | 0.5 | 5 | 0.1095 | -1.229 | -0.665 | 0.960 |
| 13-Sep-95 | 0.5 | 6 | 0.1331 | -1.112 | -0.653 | 0.960 |
| 16-Aug-94 | 0.5 | 7 | 0.1568 | -1.008 | -0.643 | 0.959 |
| 14-Aug-95 | 0.6 | 8 | 0.1805 | -0.914 | -0.588 | 0.956 |
| 30-Nov-93 | 0.6 | 9 | 0.2041 | -0.827 | -0.551 | 0.953 |
| 6-Oct-94 | 0.6 | 10 | 0.2278 | -0.746 | -0.535 | 0.950 |
| 25-Jul-95 | 0.6 | 11 | 0.2515 | -0.670 | -0.521 | 0.946 |
| 17-Dec-93 | 0.6 | 12 | 0.2751 | -0.597 | -0.488 | 0.942 |
| 11-Jul-95 | 0.6 | 13 | 0.2988 | -0.528 | -0.466 | 0.938 |
| 25-Jul-94 | 0.6 | 14 | 0.3225 | -0.461 | -0.450 | 0.934 |
| 5-Oct-93 | 0.6 | 15 | 0.3462 | -0.396 | -0.431 | 0.932 |
| 16-Aug-94 | 0.7 | 16 | 0.3698 | -0.332 | -0.377 | 0.933 |
| 27-Jun-95 | 0.7 | 17 | 0.3935 | -0.270 | -0.303 | 0.938 |
| 20-Jan-94 | 0.8 | 18 | 0.4172 | -0.209 | -0.282 | 0.945 |
| 23-Jun-94 | 1.0 | 19 | 0.4408 | -0.149 | 0.004 | 0.964 |
| 16-Nov-94 | 1.1 | 20 | 0.4645 | -0.089 | 0.080 | 0.963 |
| 19-May-94 | 1.1 | 21 | 0.4882 | -0.030 | 0.097 | 0.960 |
| 13-Dec-94 | 1.3 | 22 | 0.5118 | 0.030 | 0.285 | 0.959 |
| 4-May-94 | 1.4 | 23 | 0.5355 | 0.089 | 0.325 | 0.957 |
| 8-Mar-95 | 1.4 | 24 | 0.5592 | 0.149 | 0.333 | 0.956 |
| 7-Jun-94 | 1.4 | 25 | 0.5828 | 0.209 | 0.337 | 0.954 |
| 25-Apr-95 | 1.5 | 26 | 0.6065 | 0.270 | 0.383 | 0.949 |
| 18-Oct-95 | 1.5 | 27 | 0.6302 | 0.332 | 0.431 | 0.945 |
| 8-Mar-94 | 1.6 | 28 | 0.6538 | 0.396 | 0.471 | 0.941 |
| 9-Nov-97 | 1.7 | 29 | 0.6775 | 0.461 | 0.525 | 0.937 |
| 24-Mar-94 | 1.7 | 30 | 0.7012 | 0.528 | 0.540 | 0.937 |
| 27-Dec-95 | 1.7 | 31 | 0.7249 | 0.597 | 0.547 | 0.935 |
| 28-Mar-96 | 1.9 | 32 | 0.7485 | 0.670 | 0.617 | 0.928 |
| 29-Feb-96 | 1.9 | 33 | 0.7722 | 0.746 | 0.630 | 0.927 |
| 9-Feb-95 | 2.1 | 34 | 0.7959 | 0.827 | 0.737 | 0.920 |
| 12-Apr-95 | 2.1 | 35 | 0.8195 | 0.914 | 0.748 | 0.936 |
| 10-Jan-95 | 2.2 | 36 | 0.8432 | 1.008 | 0.772 | 0.949 |
| 21-Nov-95 | 2.2 | 37 | 0.8669 | 1.112 | 0.792 | 0.962 |
| 17-May-91 | 2.3 | 38 | 0.8905 | 1.229 | 0.836 | 0.968 |
| 13-Jun-95 | 2.5 | 39 | 0.9142 | 1.367 | 0.902 | |
| 7-Apr-94 | 2.7 | 40 | 0.9379 | 1.537 | 0.983 | |
| 17-Jan-96 | 3.9 | 41 | 0.9615 | 1.769 | 1.356 | |
| 22-Mar-95 | 5.2 | 42 | 0.9852 | 2.176 | 1.654 | |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| dCd | | CC284 | | |
| LN Analysis | | dCd | | |
| **Concentration** | | Conc. Data, EV=8 ug/L CV=.43 | | |
| Avg: | 8 | Data-based LN | | |
| SD: | 4 | u | ln[dCd] | [dCd] |
| CV: | 0.43 | 3 | 3.3 | 26 |
| Min: | 3 | 0 | 2.02 | 8 |
| Max: | 16 | -3 | 0.78 | 2 |
| Median: | 7 | | | |

**u=mLn{Conc.}+b:**

update for r2, EV, CV: **$r^2$=0.970, EV=8.4 ug/L CV=.51; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.970 | u | lnConc | Conc |
| slope, m: | 2.070 | 3 | 3.46 | 32 |
| intercept, b: | -4.155 | 0 | 2.01 | 7 |
| N: | 42 | -3 | 0.56 | 2 |
| E[Conc] | 8.4 | Parameter Estimates | | |
| SD[Conc] | 4 | from LN regression | | |
| CV[Conc] | 0.51 | update graph label | | |

| Date | dCd Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.972 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 17-May-91 | 2.5 | 1 | 0.0148 | -2.176 | 0.916 | 0.970 |
| 19-May-94 | 2.8 | 2 | 0.0385 | -1.769 | 1.030 | 0.966 |
| 13-Jun-95 | 2.9 | 3 | 0.0621 | -1.537 | 1.065 | 0.965 |
| 27-Jun-95 | 3.6 | 4 | 0.0858 | -1.367 | 1.281 | 0.972 |
| 4-May-94 | 4.3 | 5 | 0.1095 | -1.229 | 1.459 | 0.972 |
| 21-Nov-95 | 4.3 | 6 | 0.1331 | -1.112 | 1.459 | 0.970 |
| 11-Jul-95 | 5 | 7 | 0.1568 | -1.008 | 1.609 | 0.969 |
| 7-Jun-94 | 5.1 | 8 | 0.1805 | -0.914 | 1.629 | 0.967 |
| 23-Jun-94 | 5.6 | 9 | 0.2041 | -0.827 | 1.723 | 0.964 |
| 13-Sep-94 | 5.8 | 10 | 0.2278 | -0.746 | 1.758 | 0.963 |
| 25-Apr-95 | 5.8 | 11 | 0.2515 | -0.670 | 1.758 | 0.961 |
| 25-Jul-95 | 5.9 | 12 | 0.2751 | -0.597 | 1.775 | 0.958 |
| 25-Jul-94 | 6 | 13 | 0.2988 | -0.528 | 1.792 | 0.955 |
| 27-Oct-93 | 6.3 | 14 | 0.3225 | -0.461 | 1.841 | 0.952 |
| 14-Aug-95 | 6.5 | 15 | 0.3462 | -0.396 | 1.872 | 0.948 |
| 12-Apr-95 | 6.7 | 16 | 0.3698 | -0.332 | 1.902 | 0.945 |
| 29-Feb-96 | 6.7 | 17 | 0.3935 | -0.270 | 1.902 | 0.941 |
| 8-Mar-95 | 6.8 | 18 | 0.4172 | -0.209 | 1.917 | 0.937 |
| 13-Sep-95 | 6.9 | 19 | 0.4408 | -0.149 | 1.932 | 0.931 |
| 6-Oct-94 | 7.1 | 20 | 0.4645 | -0.089 | 1.960 | 0.925 |
| 16-Aug-94 | 7.2 | 21 | 0.4882 | -0.030 | 1.974 | 0.919 |
| 16-Aug-94 | 7.2 | 22 | 0.5118 | 0.030 | 1.974 | 0.912 |
| 5-Oct-91 | 7.5 | 23 | 0.5355 | 0.089 | 2.015 | 0.905 |
| 27-Dec-95 | 7.8 | 24 | 0.5592 | 0.149 | 2.054 | 0.898 |
| 18-Oct-95 | 8.1 | 25 | 0.5828 | 0.209 | 2.092 | 0.890 |
| 7-Apr-94 | 8.3 | 26 | 0.6065 | 0.270 | 2.116 | 0.879 |
| 30-Nov-93 | 8.5 | 27 | 0.6302 | 0.332 | 2.140 | 0.869 |
| 28-Mar-96 | 8.7 | 28 | 0.6538 | 0.396 | 2.163 | 0.860 |
| 9-Nov-95 | 8.98 | 29 | 0.6775 | 0.461 | 2.195 | 0.857 |
| 9-Feb-95 | 9.8 | 30 | 0.7012 | 0.528 | 2.282 | 0.868 |
| 17-Dec-93 | 10.7 | 31 | 0.7249 | 0.597 | 2.370 | 0.864 |
| 17-Dec-93 | 10.7 | 32 | 0.7485 | 0.670 | 2.370 | 0.842 |
| 20-Jan-94 | 12 | 33 | 0.7722 | 0.746 | 2.485 | 0.825 |
| 20-Jan-94 | 12 | 34 | 0.7959 | 0.827 | 2.485 | 0.807 |
| 18-Feb-94 | 12 | 35 | 0.8195 | 0.914 | 2.485 | 0.775 |
| 16-Nov-94 | 12 | 36 | 0.8432 | 1.008 | 2.485 | 0.720 |
| 22-Mar-95 | 12 | 37 | 0.8669 | 1.112 | 2.485 | 0.635 |
| 8-Mar-94 | 14 | 38 | 0.8905 | 1.229 | 2.639 | 0.797 |
| 24-Mar-94 | 15 | 39 | 0.9142 | 1.367 | 2.708 | |
| 13-Dec-94 | 15 | 40 | 0.9379 | 1.537 | 2.708 | |
| 17-Jan-96 | 15 | 41 | 0.9615 | 1.769 | 2.708 | |
| 10-Jan-95 | 16 | 42 | 0.9852 | 2.176 | 2.773 | |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| **dCd** | | **CC284** | | |
| **LN Analysis** | | **dCd** | | |
| **Discharge, Q** | | **Q Data, EV=38 cfs CV=0.93** | | |
| **Avg:** | **38** | **Q Data-based LN** | | |
| **SD:** | **35** | u | lnQ | Q |
| **CV:** | **0.93** | 3 | 5.7 | 298 |
| **Min:** | **7** | 0 | 3.32 | 28 |
| **Max:** | **172** | -3 | 0.95 | 3 |
| **Median:** | **24** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.977, EV=38.5 cfs CV=0.99; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.977 | u | lnQ | Q |
| slope, m | 1.208 | 3 | 5.79 | 328 |
| intercept, b | -3.997 | 0 | 3.31 | 27 |
| N: | 42 | -3 | 0.83 | 2 |
| E[Q]: | 38.5 | Parameter Estimates | | |
| SD[Q]: | 38 | from LN regression | | |
| CV[Q]: | 0.99 | update graph label | | |

| | Q | N: 42 | | | | max r2 0.983 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 18-Feb-94 | 7.12 | 1 | 0.0148 | -2.176 | 1.963 | 0.977 |
| 17-Dec-93 | 7.24 | 2 | 0.0385 | -1.769 | 1.980 | 0.983 |
| 27-Oct-93 | 7.88 | 3 | 0.0621 | -1.537 | 2.064 | 0.983 |
| 20-Jan-94 | 7.88 | 4 | 0.0858 | -1.367 | 2.064 | 0.982 |
| 17-Dec-93 | 10.66 | 5 | 0.1095 | -1.229 | 2.366 | 0.980 |
| 20-Jan-94 | 11.68 | 6 | 0.1331 | -1.112 | 2.458 | 0.980 |
| 30-Nov-93 | 12.6 | 7 | 0.1568 | -1.008 | 2.534 | 0.979 |
| 16-Aug-94 | 13.57 | 8 | 0.1805 | -0.914 | 2.608 | 0.979 |
| 13-Sep-95 | 14.02 | 9 | 0.2041 | -0.827 | 2.640 | 0.979 |
| 6-Oct-94 | 15.33 | 10 | 0.2278 | -0.746 | 2.730 | 0.978 |
| 14-Aug-95 | 15.89 | 11 | 0.2515 | -0.670 | 2.766 | 0.979 |
| 5-Oct-91 | 16.1 | 12 | 0.2751 | -0.597 | 2.779 | 0.978 |
| 13-Sep-94 | 16.48 | 13 | 0.2988 | -0.528 | 2.802 | 0.977 |
| 13-Dec-94 | 16.48 | 14 | 0.3225 | -0.461 | 2.802 | 0.976 |
| 16-Nov-94 | 16.78 | 15 | 0.3462 | -0.396 | 2.820 | 0.974 |
| 16-Aug-94 | 17.71 | 16 | 0.3698 | -0.332 | 2.874 | 0.972 |
| 25-Jul-95 | 18.71 | 17 | 0.3935 | -0.270 | 2.929 | 0.970 |
| 25-Jul-94 | 19.76 | 18 | 0.4172 | -0.209 | 2.984 | 0.968 |
| 8-Mar-94 | 21.27 | 19 | 0.4408 | -0.149 | 3.057 | 0.966 |
| 24-Mar-94 | 21.27 | 20 | 0.4645 | -0.089 | 3.057 | 0.964 |
| 11-Jul-95 | 23.33 | 21 | 0.4882 | -0.030 | 3.150 | 0.965 |
| 10-Jan-95 | 25.13 | 22 | 0.5118 | 0.030 | 3.224 | 0.964 |
| 23-Jun-94 | 33.34 | 23 | 0.5355 | 0.089 | 3.507 | 0.964 |
| 9-Nov-97 | 35 | 24 | 0.5592 | 0.149 | 3.555 | 0.964 |
| 18-Oct-95 | 35.3 | 25 | 0.5828 | 0.209 | 3.564 | 0.964 |
| 8-Mar-95 | 38.13 | 26 | 0.6065 | 0.270 | 3.641 | 0.963 |
| 27-Jun-95 | 38.13 | 27 | 0.6302 | 0.332 | 3.641 | 0.964 |
| 28-Mar-96 | 39.6 | 28 | 0.6538 | 0.396 | 3.679 | 0.964 |
| 9-Feb-95 | 39.63 | 29 | 0.6775 | 0.461 | 3.680 | 0.962 |
| 27-Dec-95 | 41.2 | 30 | 0.7012 | 0.528 | 3.718 | 0.958 |
| 25-Apr-95 | 47 | 31 | 0.7249 | 0.597 | 3.850 | 0.953 |
| 17-Jan-96 | 48.1 | 32 | 0.7485 | 0.670 | 3.873 | 0.953 |
| 7-Jun-94 | 51.06 | 33 | 0.7722 | 0.746 | 3.933 | 0.949 |
| 29-Feb-96 | 52.1 | 34 | 0.7959 | 0.827 | 3.953 | 0.947 |
| 12-Apr-95 | 58.64 | 35 | 0.8195 | 0.914 | 4.071 | 0.938 |
| 7-Apr-94 | 59.82 | 36 | 0.8432 | 1.008 | 4.091 | 0.936 |
| 4-May-94 | 59.82 | 37 | 0.8669 | 1.112 | 4.091 | 0.923 |
| 19-May-94 | 73.12 | 38 | 0.8905 | 1.229 | 4.292 | 0.894 |
| 22-Mar-95 | 80.94 | 39 | 0.9142 | 1.367 | 4.394 | |
| 21-Nov-95 | 95.4 | 40 | 0.9379 | 1.537 | 4.558 | |
| 13-Jun-95 | 158.04 | 41 | 0.9615 | 1.769 | 5.063 | |
| 17-May-91 | 171.6 | 42 | 0.9852 | 2.176 | 5.145 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC284 **Date:** 30-May-00

**Chemical:** dPb **Analyst:** J.Johnston

**Notes:**

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load |
|---|---|---|---|---|
| Avg. | 34,638 | 38 | 23 | 5 |
| SD: | 400 | 35 | 27 | 7 |
| CV: | 0.01 | 0.93 | 1.20 | 1.46 |
| Min: | 33,375 | 7 | 4 | 0 |
| Max: | 35,743 | 172 | 188 | 40 |
| Median: | 34,634 | 24 | 17 | 3 |

| | | | |
|---|---|---|---|
| | 0.00 | 0.00 | 0.00 |
| | 1.00 | 1.00 | 1.00 |
| | -0.87 | -0.69 | -0.61 |
| | 3.78 | 6.04 | 5.21 |
| | -0.39 | -0.21 | -0.26 |

**dPb CC284 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.0002)** update r2

| | | | |
|---|---|---|---|
| r2 Q,[COC]: | 0.0002 | [dPb] | Q |
| slope, m: | 0.01 | 23 | 7.1 |
| intercept, b: | 22.4 | 23 | 37.9 |
| N: 41 | | 24 | 172 |

**LnConc. = mLn(Q)+b (r2=0.01)** update r2

| | | | | | |
|---|---|---|---|---|---|
| lnQ,ln[COC]: | 0.01 | ln[dPb] | ln Q | [dPb] | Q |
| slope, m: | 0.07 | 2.81 | 1.96 | 17 | 7 |
| intercept, b: | 2.67 | 2.92 | 3.64 | 19 | 38 |
| N: 41 | | 3.03 | 5.15 | 21 | 172 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2 | 0.004 | 0.035 |
| m | -0.0058 | 0.00037 |
| b | 237 | -9.59 |

**LnQ = mTime +b**

N= 42

| | Sampling Date | Q Discharge | dPb Concentration | dPb Load | Ln Q | Ln dPb Conc. | Ln dPb Load | dPb CC284 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 171.6 | 4 | 3.7 | 5.15 | 1.39 | 1.31 | 3.78 | -0.69 | -0.14 |
| MFG | 5-Oct-91 | 16.1 | 6 | 0.5 | 2.78 | 1.79 | -0.65 | -0.62 | -0.61 | -0.61 |
| IDEQ | 27-Oct-93 | 7.88 | 15 | 0.6 | 2.06 | 2.71 | -0.45 | -0.85 | -0.29 | -0.59 |
| IDEQ | 30-Nov-93 | 12.6 | 15 | 1.0 | 2.53 | 2.71 | 0.02 | -0.72 | -0.29 | -0.54 |
| IDEQ | 17-Dec-93 | 7.24 | 18 | 0.7 | 1.98 | 2.89 | -0.36 | -0.87 | -0.18 | -0.58 |
| IDEQ | 17-Dec-93 | 10.66 | 18 | 1.0 | 2.37 | 2.89 | 0.03 | -0.77 | -0.18 | -0.53 |
| IDEQ | 20-Jan-94 | 7.88 | 18 | 0.8 | 2.06 | 2.89 | -0.27 | -0.85 | -0.18 | -0.57 |
| IDEQ | 20-Jan-94 | 11.68 | 18 | 1.1 | 2.46 | 2.89 | 0.12 | -0.74 | -0.18 | -0.52 |
| IDEQ | 18-Feb-94 | 7.12 | 13 | 0.5 | 1.96 | 2.56 | -0.70 | -0.87 | -0.36 | -0.61 |
| IDEQ | 8-Mar-94 | 21.27 | 25 | 2.9 | 3.06 | 3.22 | 1.05 | -0.47 | 0.08 | -0.26 |
| IDEQ | 24-Mar-94 | 21.27 | 25 | 2.9 | 3.06 | 3.22 | 1.05 | -0.47 | 0.08 | -0.26 |
| IDEQ | 7-Apr-94 | 59.82 | 18 | 5.8 | 4.09 | 2.89 | 1.76 | 0.62 | -0.18 | 0.17 |
| IDEQ | 4-May-94 | 59.82 | 16 | 5.1 | 4.09 | 2.77 | 1.64 | 0.62 | -0.25 | 0.07 |
| IDEQ | 19-May-94 | 73.12 | 15 | 5.9 | 4.29 | 2.71 | 1.78 | 1.00 | -0.29 | 0.18 |
| IDEQ | 7-Jun-94 | 51.06 | 17 | 4.7 | 3.93 | 2.83 | 1.54 | 0.37 | -0.21 | 0.00 |
| IDEQ | 23-Jun-94 | 33.34 | 20 | 3.6 | 3.51 | 3.00 | 1.28 | -0.13 | -0.10 | -0.16 |
| IDEQ | 25-Jul-94 | 19.76 | 18 | 1.9 | 2.98 | 2.89 | 0.65 | -0.51 | -0.18 | -0.40 |
| IDEQ | 16-Aug-94 | 17.71 | 17 | 1.6 | 2.87 | 2.83 | 0.48 | -0.57 | -0.21 | -0.45 |
| IDEQ | 16-Aug-94 | 13.57 | 17 | 1.2 | 2.61 | 2.83 | 0.22 | -0.69 | -0.21 | -0.50 |
| IDEQ | 13-Sep-94 | 16.48 | 10 | 0.9 | 2.80 | 2.30 | -0.12 | -0.61 | -0.47 | -0.56 |
| IDEQ | 6-Oct-94 | 15.33 | 10 | 0.8 | 2.73 | 2.30 | -0.19 | -0.64 | -0.47 | -0.56 |
| IDEQ | 16-Nov-94 | 16.78 | 14 | 1.3 | 2.82 | 2.64 | 0.23 | -0.60 | -0.32 | -0.50 |
| IDEQ | 13-Dec-94 | 16.48 | 14 | 1.2 | 2.80 | 2.64 | 0.22 | -0.61 | -0.32 | -0.50 |
| IDEQ | 10-Jan-95 | 25.13 | 16 | 2.2 | 3.22 | 2.77 | 0.77 | -0.36 | -0.25 | -0.37 |
| IDEQ | 9-Feb-95 | 39.63 | 17 | 3.6 | 3.68 | 2.83 | 1.29 | 0.05 | -0.21 | -0.15 |
| IDEQ | 8-Mar-95 | 38.13 | 15 | 3.1 | 3.64 | 2.71 | 1.12 | 0.01 | -0.29 | -0.23 |
| IDEQ | 22-Mar-95 | 80.94 | 26 | 11.3 | 4.39 | 3.26 | 2.43 | 1.22 | 0.12 | 0.98 |
| *IDEQ* | *12-Apr-95* | *58.64* | | | 4.07 | | | 0.59 | | |
| IDEQ | 25-Apr-95 | 47 | 18 | 4.6 | 3.85 | 2.89 | 1.52 | 0.26 | -0.18 | -0.02 |
| IDEQ | 13-Jun-95 | 158.04 | 23 | 19.6 | 5.06 | 3.14 | 2.97 | 3.40 | 0.01 | 2.19 |
| IDEQ | 27-Jun-95 | 38.13 | 16 | 3.3 | 3.64 | 2.77 | 1.19 | 0.01 | -0.25 | -0.20 |
| IDEQ | 11-Jul-95 | 23.33 | 20 | 2.5 | 3.15 | 3.00 | 0.92 | -0.41 | -0.10 | -0.32 |
| IDEQ | 25-Jul-95 | 18.71 | 22 | 2.2 | 2.93 | 3.09 | 0.80 | -0.54 | -0.03 | -0.36 |
| IDEQ | 14-Aug-95 | 15.89 | 19 | 1.6 | 2.77 | 2.94 | 0.49 | -0.62 | -0.14 | -0.45 |
| IDEQ | 13-Sep-95 | 14.02 | 14 | 1.1 | 2.64 | 2.64 | 0.05 | -0.68 | -0.32 | -0.53 |
| IDEQ | 18-Oct-95 | 35.3 | 16 | 3.0 | 3.56 | 2.77 | 1.11 | -0.07 | -0.25 | -0.24 |
| IDEQ | 21-Nov-95 | 95.4 | 16 | 8.2 | 4.56 | 2.77 | 2.11 | 1.63 | -0.25 | 0.52 |
| IDEQ | 27-Dec-95 | 41.2 | 26 | 5.8 | 3.72 | 3.26 | 1.75 | 0.09 | 0.12 | 0.16 |
| IDEQ | 17-Jan-96 | 48.1 | 52 | 13.5 | 3.87 | 3.95 | 2.60 | 0.29 | 1.07 | 1.30 |
| IDEQ | 29-Feb-96 | 52.1 | 27 | 7.6 | 3.95 | 3.30 | 2.02 | 0.40 | 0.15 | 0.43 |
| IDEQ | 28-Mar-96 | 39.6 | 188 | 40.1 | 3.68 | 5.24 | 3.69 | 0.05 | 6.04 | 5.21 |
| URS | 9-Nov-97 | 35 | 42.8 | 8.1 | 3.56 | 3.76 | 2.09 | -0.08 | 0.73 | 0.50 |

dPb

**Concentration over time analysis**

| | dPb | CC284 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.454** | **0.00093** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 17-May-91 | 1.73 | 6 | | |
| mid | 26-Oct-94 | 2.90 | 18 | | |
| last | 9-Nov-97 | 3.94 | 51 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Nov-97 | 0.00 | 1 | | |

**Load over time analysis**

| | dPb | CC284 | | **Load over time** | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.263** | **0.00129** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 17-May-91 | -0.66 | 1 | | |
| mid | 26-Oct-94 | 0.96 | 3 | | |
| last | 9-Nov-97 | 2.39 | 11 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Nov-97 | 0.00 | 1 | | |

max r2 0.454

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points, delete last 4 rows | | |
| 0.454 | 0.00093 | -29.42 |
| 0.346 | 0.00085 | -26.42 |
| 0.254 | 0.00079 | -24.51 |
| 0.249 | 0.00080 | -24.85 |
| 0.244 | 0.00081 | -25.09 |
| 0.249 | 0.00084 | -26.12 |
| 0.256 | 0.00087 | -27.33 |
| 0.262 | 0.00091 | -28.49 |
| 0.270 | 0.00095 | -29.87 |
| 0.255 | 0.00093 | -29.51 |
| 0.290 | 0.00102 | -32.66 |
| 0.332 | 0.00113 | -36.18 |
| 0.344 | 0.00118 | -38.15 |
| 0.345 | 0.00122 | -39.40 |
| 0.340 | 0.00124 | -40.31 |
| 0.346 | 0.00129 | -42.10 |
| 0.369 | 0.00139 | -45.31 |
| 0.381 | 0.00146 | -47.80 |
| 0.387 | 0.00152 | -49.98 |
| 0.396 | 0.00160 | -52.75 |
| 0.360 | 0.00153 | -50.45 |
| 0.318 | 0.00144 | -47.30 |
| 0.295 | 0.00142 | -46.56 |
| 0.269 | 0.00139 | -45.28 |
| 0.251 | 0.00137 | -44.81 |
| 0.234 | 0.00136 | -44.49 |
| 0.207 | 0.00130 | -42.22 |
| 0.225 | 0.00141 | -46.16 |
| 0.225 | 0.00141 | -46.16 |
| 0.207 | 0.00139 | -45.43 |
| 0.207 | 0.00143 | -46.71 |
| 0.179 | 0.00134 | -43.50 |
| 0.161 | 0.00130 | -42.21 |
| 0.148 | 0.00128 | -41.71 |
| 0.120 | 0.00118 | -38.06 |
| 0.069 | 0.00087 | -26.85 |
| 0.025 | 0.00050 | -13.81 |
| 0.000 | -0.00004 | 5.21 |

max r2. 0.385

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.263 | 0.00129 | -43.65 |
| 0.385 | 0.00179 | -61.06 |
| 0.351 | 0.00193 | -65.99 |
| 0.324 | 0.00185 | -63.27 |
| 0.307 | 0.00182 | -62.10 |
| 0.280 | 0.00173 | -58.98 |
| 0.259 | 0.00168 | -57.21 |
| 0.230 | 0.00157 | -53.55 |
| 0.207 | 0.00151 | -51.30 |
| 0.168 | 0.00131 | -44.17 |
| 0.169 | 0.00135 | -45.70 |
| 0.171 | 0.00140 | -47.34 |
| 0.206 | 0.00157 | -53.54 |
| 0.239 | 0.00174 | -59.51 |
| 0.287 | 0.00197 | -67.26 |
| 0.327 | 0.00217 | -74.37 |
| 0.356 | 0.00234 | -80.51 |
| 0.349 | 0.00239 | -82.02 |
| 0.333 | 0.00239 | -81.98 |
| 0.302 | 0.00231 | -79.47 |
| 0.257 | 0.00212 | -72.58 |
| 0.204 | 0.00184 | -62.94 |
| 0.162 | 0.00163 | -55.58 |
| 0.118 | 0.00137 | -46.18 |
| 0.091 | 0.00121 | -40.82 |
| 0.082 | 0.00119 | -40.00 |
| 0.066 | 0.00110 | -36.75 |
| 0.110 | 0.00145 | -49.08 |
| 0.110 | 0.00145 | -49.08 |
| 0.111 | 0.00151 | -51.16 |
| 0.220 | 0.00202 | -69.42 |
| 0.209 | 0.00202 | -69.33 |
| 0.181 | 0.00190 | -65.12 |
| 0.141 | 0.00168 | -57.21 |
| 0.083 | 0.00121 | -40.68 |
| 0.013 | 0.00035 | -9.97 |
| 0.008 | -0.00023 | 10.51 |
| 0.025 | -0.00043 | 17.43 |

update for EV, CV:

**dPb**
**LN Analysis**
**CC284**
**dPb**
**Load**
**Load Data, EV=5 lbs/day CV=1.46**

| | | **Load Data-based LN** | | |
|---|---|---|---|---|
| **Avg:** | **5** | u | ln dPb Load | dPb Load |
| **SD:** | **7** | 3 | 4.2 | 65 |
| **CV:** | **1.46** | 0 | 0.97 | 3 |
| **Min:** | **0** | -3 | -2.23 | 0.1 |
| **Max:** | **40** | | | |
| **Median:** | **3** | | | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.986, EV=4.6 lbs/day CV=1.57; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.986 | u | lnLoad | Load |
| slope, m: | 0.898 | 3 | 4.25 | 70 |
| intercept, b: | -0.813 | 0 | 0.91 | 2 |
| N: | 41 | -3 | -2.44 | 0.09 |
| E[Load]: | 4.6 | Parameter Estimates | | |
| SD[Load]: | 7 | from LN regression | | |
| CV[Load] | 1.57 | update graph label | | |

| | **dPb** | N: 42 | | | | max r2 0.994 |
|---|---|---|---|---|---|---|
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| *12-Apr-95* | | 1 | 0.0148 | -2.176 | | |
| 18-Feb-94 | **0.5** | 2 | 0.0385 | -1.769 | -0.697 | 0.986 |
| 5-Oct-91 | **0.5** | 3 | 0.0621 | -1.537 | -0.654 | 0.989 |
| 27-Oct-93 | **0.6** | 4 | 0.0858 | -1.367 | -0.453 | 0.989 |
| 17-Dec-93 | **0.7** | 5 | 0.1095 | -1.229 | -0.355 | 0.989 |
| 20-Jan-94 | **0.8** | 6 | 0.1331 | -1.112 | -0.270 | 0.990 |
| 6-Oct-94 | **0.8** | 7 | 0.1568 | -1.008 | -0.193 | 0.990 |
| 13-Sep-94 | **0.9** | 8 | 0.1805 | -0.914 | -0.120 | 0.989 |
| 30-Nov-93 | **1.0** | 9 | 0.2041 | -0.827 | 0.017 | 0.989 |
| 17-Dec-93 | **1.0** | 10 | 0.2278 | -0.746 | 0.032 | 0.989 |
| 13-Sep-95 | **1.1** | 11 | 0.2515 | -0.670 | 0.054 | 0.988 |
| 20-Jan-94 | **1.1** | 12 | 0.2751 | -0.597 | 0.123 | 0.987 |
| 16-Aug-94 | **1.2** | 13 | 0.2988 | -0.528 | 0.216 | 0.987 |
| 13-Dec-94 | **1.2** | 14 | 0.3225 | -0.461 | 0.216 | 0.985 |
| 16-Nov-94 | **1.3** | 15 | 0.3462 | -0.396 | 0.234 | 0.985 |
| 16-Aug-94 | **1.6** | 16 | 0.3698 | -0.332 | 0.482 | 0.985 |
| 14-Aug-95 | **1.6** | 17 | 0.3935 | -0.270 | 0.485 | 0.984 |
| 25-Jul-94 | **1.9** | 18 | 0.4172 | -0.209 | 0.649 | 0.983 |
| 10-Jan-95 | **2.2** | 19 | 0.4408 | -0.149 | 0.772 | 0.981 |
| 25-Jul-95 | **2.2** | 20 | 0.4645 | -0.089 | 0.795 | 0.980 |
| 11-Jul-95 | **2.5** | 21 | 0.4882 | -0.030 | 0.920 | 0.979 |
| 8-Mar-94 | **2.9** | 22 | 0.5118 | 0.030 | 1.051 | 0.978 |
| 24-Mar-94 | **2.9** | 23 | 0.5355 | 0.089 | 1.051 | 0.980 |
| 18-Oct-95 | **3.0** | 24 | 0.5592 | 0.149 | 1.111 | 0.980 |
| 8-Mar-95 | **3.1** | 25 | 0.5828 | 0.209 | 1.124 | 0.981 |
| 27-Jun-95 | **3.3** | 26 | 0.6065 | 0.270 | 1.189 | 0.980 |
| 23-Jun-94 | **3.6** | 27 | 0.6302 | 0.332 | 1.277 | 0.979 |
| 9-Feb-95 | **3.6** | 28 | 0.6538 | 0.396 | 1.288 | 0.979 |
| 17-May-91 | **3.7** | 29 | 0.6775 | 0.461 | 1.306 | 0.978 |
| 25-Apr-95 | **4.6** | 30 | 0.7012 | 0.528 | 1.515 | 0.974 |
| 7-Jun-94 | **4.7** | 31 | 0.7249 | 0.597 | 1.541 | 0.976 |
| 4-May-94 | **5.1** | 32 | 0.7485 | 0.670 | 1.639 | 0.975 |
| 27-Dec-95 | **5.8** | 33 | 0.7722 | 0.746 | 1.751 | 0.977 |
| 7-Apr-94 | **5.8** | 34 | 0.7959 | 0.827 | 1.757 | 0.983 |
| 19-May-94 | **5.9** | 35 | 0.8195 | 0.914 | 1.775 | 0.984 |
| 29-Feb-96 | **7.6** | 36 | 0.8432 | 1.008 | 2.024 | 0.980 |
| 9-Nov-97 | **8.1** | 37 | 0.8669 | 1.112 | 2.087 | 0.988 |
| 21-Nov-95 | **8.2** | 38 | 0.8905 | 1.229 | 2.106 | 0.994 |
| 22-Mar-95 | **11.3** | 39 | 0.9142 | 1.367 | 2.427 | |
| 17-Jan-96 | **13.5** | 40 | 0.9379 | 1.537 | 2.599 | |
| 13-Jun-95 | **19.6** | 41 | 0.9615 | 1.769 | 2.973 | |
| 28-Mar-96 | **40.1** | 42 | 0.9852 | 2.176 | 3.690 | |

update for EV, CV

**dPb**
**LN Analysis**
**CC284**
**dPb**

**Concentration**

**Conc. Data, EV=23 ug/L CV=1.20**

| | | Data-based LN | | |
|---|---|---|---|---|
| **Avg:** | **23** | u | ln[dPb] | [dPb] |
| **SD:** | **27** | 3 | 5.5 | 248 |
| **CV:** | **1.20** | 0 | 2.68 | 15 |
| **Min:** | **4** | -3 | -0.15 | 1 |
| **Max:** | **188** | | | |
| **Median:** | **17** | | | |

**u=mLn{Conc.}+b:**

update for r2, EV, CV: **$r^2$=0.771, EV=22.3 ug/L CV=0.79; max r2=0.95**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc. | 0.771 | u | lnConc | Conc |
| slope, m | 1.439 | 3 | 4.95 | 141 |
| intercept, b | -4.120 | 0 | 2.86 | 18 |
| N | 41 | -3 | 0.78 | 2 |
| E[Conc] | 22.3 | Parameter Estimates | | |
| SD[Conc] | 18 | from LN regression | | |
| CV[Conc] | 0.79 | update graph label | | |

| Date | dPb Concentration ug/L Ranked | i rank (N 42) | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.948 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *12-Apr-95* | | 1 | 0.0148 | -2.176 | | |
| 17-May-91 | 4 | 2 | 0.0385 | -1.769 | 1.386 | 0.771 |
| 5-Oct-91 | 6 | 3 | 0.0621 | -1.537 | 1.792 | 0.751 |
| 13-Sep-94 | 10 | 4 | 0.0858 | -1.367 | 2.303 | 0.727 |
| 6-Oct-94 | 10 | 5 | 0.1095 | -1.229 | 2.303 | 0.714 |
| 18-Feb-94 | 13 | 6 | 0.1331 | -1.112 | 2.565 | 0.697 |
| 16-Nov-94 | 14 | 7 | 0.1568 | -1.008 | 2.639 | 0.696 |
| 13-Dec-94 | 14 | 8 | 0.1805 | -0.914 | 2.639 | 0.700 |
| 13-Sep-95 | 14 | 9 | 0.2041 | -0.827 | 2.639 | 0.702 |
| 27-Oct-93 | 15 | 10 | 0.2278 | -0.746 | 2.708 | 0.702 |
| 30-Nov-93 | 15 | 11 | 0.2515 | -0.670 | 2.708 | 0.708 |
| 19-May-94 | 15 | 12 | 0.2751 | -0.597 | 2.708 | 0.713 |
| 8-Mar-95 | 15 | 13 | 0.2988 | -0.528 | 2.708 | 0.716 |
| 4-May-94 | 16 | 14 | 0.3225 | -0.461 | 2.773 | 0.718 |
| 10-Jan-95 | 16 | 15 | 0.3462 | -0.396 | 2.773 | 0.726 |
| 27-Jun-95 | 16 | 16 | 0.3698 | -0.332 | 2.773 | 0.733 |
| 18-Oct-95 | 16 | 17 | 0.3935 | -0.270 | 2.773 | 0.739 |
| 21-Nov-95 | 16 | 18 | 0.4172 | -0.209 | 2.773 | 0.743 |
| 7-Jun-94 | 17 | 19 | 0.4408 | -0.149 | 2.833 | 0.747 |
| 16-Aug-94 | 17 | 20 | 0.4645 | -0.089 | 2.833 | 0.756 |
| 16-Aug-94 | 17 | 21 | 0.4882 | -0.030 | 2.833 | 0.764 |
| 9-Feb-95 | 17 | 22 | 0.5118 | 0.030 | 2.833 | 0.771 |
| 17-Dec-93 | 18 | 23 | 0.5355 | 0.089 | 2.890 | 0.776 |
| 17-Dec-93 | 18 | 24 | 0.5592 | 0.149 | 2.890 | 0.788 |
| 20-Jan-94 | 18 | 25 | 0.5828 | 0.209 | 2.890 | 0.799 |
| 20-Jan-94 | 18 | 26 | 0.6065 | 0.270 | 2.890 | 0.809 |
| 7-Apr-94 | 18 | 27 | 0.6302 | 0.332 | 2.890 | 0.817 |
| 25-Jul-94 | 18 | 28 | 0.6538 | 0.396 | 2.890 | 0.823 |
| 25-Apr-95 | 18 | 29 | 0.6775 | 0.461 | 2.890 | 0.826 |
| 14-Aug-95 | 19 | 30 | 0.7012 | 0.528 | 2.944 | 0.826 |
| 23-Jun-94 | 20 | 31 | 0.7249 | 0.597 | 2.996 | 0.828 |
| 11-Jul-95 | 20 | 32 | 0.7485 | 0.670 | 2.996 | 0.834 |
| 25-Jul-95 | 22 | 33 | 0.7722 | 0.746 | 3.091 | 0.835 |
| 13-Jun-95 | 23 | 34 | 0.7959 | 0.827 | 3.135 | 0.846 |
| 8-Mar-94 | 25 | 35 | 0.8195 | 0.914 | 3.219 | 0.861 |
| 24-Mar-94 | 25 | 36 | 0.8432 | 1.008 | 3.219 | 0.891 |
| 22-Mar-95 | 26 | 37 | 0.8669 | 1.112 | 3.258 | 0.918 |
| 27-Dec-95 | 26 | 38 | 0.8905 | 1.229 | 3.258 | 0.948 |
| 29-Feb-96 | 27 | 39 | 0.9142 | 1.367 | 3.296 | |
| 9-Nov-97 | 42.8 | 40 | 0.9379 | 1.537 | 3.757 | |
| 17-Jan-96 | 52 | 41 | 0.9615 | 1.769 | 3.951 | |
| 28-Mar-96 | 188 | 42 | 0.9852 | 2.176 | 5.236 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dPb** | | **CC284** | | |
| **LN Analysis** | | **dPb** | | |
| **Discharge, Q** | | **Q Data, EV=38 cfs CV=0.93** | | |
| **Avg:** | **38** | **Q Data-based LN** | | |
| **SD:** | **35** | u | lnQ | Q |
| **CV:** | **0.93** | 3 | 5.7 | 298 |
| **Min:** | **7** | 0 | 3.32 | 28 |
| **Max:** | **172** | -3 | 0.95 | 3 |
| **Median:** | **24** | | | |

**u=mLn{Q}+b:**

update for r2, EV, CV: **r2=0.977, EV=38.5 cfs CV=0.99; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.977 | u | lnQ | Q |
| slope, m | 1.208 | 3 | 5.79 | 328 |
| intercept, b | -3.997 | 0 | 3.31 | 27 |
| N | 42 | -3 | 0.83 | 2 |
| E[Q] | 38.5 | Parameter Estimates | | |
| SD[Q] | 38 | from LN regression | | |
| CV[Q] | 0.99 | update graph label | | |

| | Q | | | | | | max r2 |
|---|---|---|---|---|---|---|---|
| | | N | 42 | | | | 0.983 |
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 18-Feb-94 | 7.12 | 1 | 0.0148 | -2.176 | 1.963 | 0.977 |
| 17-Dec-93 | 7.24 | 2 | 0.0385 | -1.769 | 1.980 | 0.983 |
| 27-Oct-93 | 7.88 | 3 | 0.0621 | -1.537 | 2.064 | 0.983 |
| 20-Jan-94 | 7.88 | 4 | 0.0858 | -1.367 | 2.064 | 0.982 |
| 17-Dec-93 | 10.66 | 5 | 0.1095 | -1.229 | 2.366 | 0.980 |
| 20-Jan-94 | 11.68 | 6 | 0.1331 | -1.112 | 2.458 | 0.980 |
| 30-Nov-93 | 12.6 | 7 | 0.1568 | -1.008 | 2.534 | 0.979 |
| 16-Aug-94 | 13.57 | 8 | 0.1805 | -0.914 | 2.608 | 0.979 |
| 13-Sep-95 | 14.02 | 9 | 0.2041 | -0.827 | 2.640 | 0.979 |
| 6-Oct-94 | 15.33 | 10 | 0.2278 | -0.746 | 2.730 | 0.978 |
| 14-Aug-95 | 15.89 | 11 | 0.2515 | -0.670 | 2.766 | 0.979 |
| 5-Oct-91 | 16.1 | 12 | 0.2751 | -0.597 | 2.779 | 0.978 |
| 13-Sep-94 | 16.48 | 13 | 0.2988 | -0.528 | 2.802 | 0.977 |
| 13-Dec-94 | 16.48 | 14 | 0.3225 | -0.461 | 2.802 | 0.976 |
| 16-Nov-94 | 16.78 | 15 | 0.3462 | -0.396 | 2.820 | 0.974 |
| 16-Aug-94 | 17.71 | 16 | 0.3698 | -0.332 | 2.874 | 0.972 |
| 25-Jul-95 | 18.71 | 17 | 0.3935 | -0.270 | 2.929 | 0.970 |
| 25-Jul-94 | 19.76 | 18 | 0.4172 | -0.209 | 2.984 | 0.968 |
| 8-Mar-94 | 21.27 | 19 | 0.4408 | -0.149 | 3.057 | 0.966 |
| 24-Mar-94 | 21.27 | 20 | 0.4645 | -0.089 | 3.057 | 0.964 |
| 11-Jul-95 | 23.33 | 21 | 0.4882 | -0.030 | 3.150 | 0.965 |
| 10-Jan-95 | 25.13 | 22 | 0.5118 | 0.030 | 3.224 | 0.964 |
| 23-Jun-94 | 33.34 | 23 | 0.5355 | 0.089 | 3.507 | 0.964 |
| 9-Nov-97 | 35 | 24 | 0.5592 | 0.149 | 3.555 | 0.964 |
| 18-Oct-95 | 35.3 | 25 | 0.5828 | 0.209 | 3.564 | 0.964 |
| 8-Mar-95 | 38.13 | 26 | 0.6065 | 0.270 | 3.641 | 0.963 |
| 27-Jun-95 | 38.13 | 27 | 0.6302 | 0.332 | 3.641 | 0.964 |
| 28-Mar-96 | 39.6 | 28 | 0.6538 | 0.396 | 3.679 | 0.964 |
| 9-Feb-95 | 39.63 | 29 | 0.6775 | 0.461 | 3.680 | 0.962 |
| 27-Dec-95 | 41.2 | 30 | 0.7012 | 0.528 | 3.718 | 0.958 |
| 25-Apr-95 | 47 | 31 | 0.7249 | 0.597 | 3.850 | 0.953 |
| 17-Jan-96 | 48.1 | 32 | 0.7485 | 0.670 | 3.873 | 0.953 |
| 7-Jun-94 | 51.06 | 33 | 0.7722 | 0.746 | 3.933 | 0.949 |
| 29-Feb-96 | 52.1 | 34 | 0.7959 | 0.827 | 3.953 | 0.947 |
| *12-Apr-95* | *58.64* | 35 | 0.8195 | 0.914 | 4.071 | 0.938 |
| 7-Apr-94 | 59.82 | 36 | 0.8432 | 1.008 | 4.091 | 0.936 |
| 4-May-94 | 59.82 | 37 | 0.8669 | 1.112 | 4.091 | 0.923 |
| 19-May-94 | 73.12 | 38 | 0.8905 | 1.229 | 4.292 | 0.894 |
| 22-Mar-95 | 80.94 | 39 | 0.9142 | 1.367 | 4.394 | |
| 21-Nov-95 | 95.4 | 40 | 0.9379 | 1.537 | 4.558 | |
| 13-Jun-95 | 158.04 | 41 | 0.9615 | 1.769 | 5.063 | |
| 17-May-91 | 171.6 | 42 | 0.9852 | 2.176 | 5.145 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | **CC284** | **Date:** 29-May-00 |
| **Chemical:** | **dZn** | **Analyst:** J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | |
| **Input Discharge and Concentration Data below (in red)** | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,638 | 38 | 1,344 | 222 | 0.00 | 0.00 | 0.00 |
| **SD:** | 400 | 35 | 641 | 162 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 0.93 | 0.48 | 0.73 | | | |
| **Min:** | 33,375 | 7 | 435 | 48 | -0.87 | -1.42 | -1.07 |
| **Max:** | 35,743 | 172 | 2,660 | 888 | 3.78 | 2.05 | 4.12 |
| **Median:** | 34,634 | 24 | 1,135 | 189 | -0.39 | -0.33 | -0.20 |

**dZn CC284 : Concentration v. Discharge, Q**

| | | | | | | Q = mTime +b | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.18)** | update r2 | | | | r2: | 0.004 | 0.035 |
| r2 Q,[COC]: | 0.18 | [dZn] | Q | | m: | -0.0058 | 0.00037 |
| slope, m: | -7.8 | 1,584 | 7.1 | | b: | 237 | -9.59 |
| intercept, b: | 1639.1 | 1,344 | 37.9 | | | | |
| N: 42 | | 302 | 172 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.27)** | update r2 | | | | | | |
| 2 lnQ,ln[COC]: | 0.27 | ln[dZn] | ln Q | [dZn] | Q | | |
| slope, m: | -0.32 | 7.52 | 1.96 | 1,844 | 7 | | |
| intercept, b | 8.15 | 6.98 | 3.64 | 1,074 | 38 | | |
| N: 42 | | 6.49 | 5.15 | 659 | 172 | | |

N= 42

| | Sampling Date | Q Discharge | dZn Concentration | dZn Load | Ln Q | Ln dZn Conc. | Ln dZn Load | for graph dZn CC284 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 171.6 | 485 | 448 | 5.15 | 6.18 | 6.10 | 3.78 | -1.34 | 1.40 |
| MFG | 5-Oct-91 | 16.1 | 999 | 87 | 2.78 | 6.91 | 4.46 | -0.62 | -0.54 | -0.84 |
| IDEQ | 27-Oct-93 | 7.88 | 1130 | 48 | 2.06 | 7.03 | 3.87 | -0.85 | -0.33 | -1.07 |
| IDEQ | 30-Nov-93 | 12.6 | 1650 | 112 | 2.53 | 7.41 | 4.72 | -0.72 | 0.48 | -0.68 |
| IDEQ | 17-Dec-93 | 7.24 | 2130 | 83 | 1.98 | 7.66 | 4.42 | -0.87 | 1.23 | -0.86 |
| IDEQ | 17-Dec-93 | 10.66 | 2130 | 122 | 2.37 | 7.66 | 4.81 | -0.77 | 1.23 | -0.62 |
| IDEQ | 20-Jan-94 | 7.88 | 2310 | 98 | 2.06 | 7.75 | 4.58 | -0.85 | 1.51 | -0.77 |
| IDEQ | 20-Jan-94 | 11.68 | 2310 | 145 | 2.46 | 7.75 | 4.98 | -0.74 | 1.51 | -0.47 |
| IDEQ | 18-Feb-94 | 7.12 | 1970 | 75 | 1.96 | 7.59 | 4.32 | -0.87 | 0.98 | -0.90 |
| IDEQ | 8-Mar-94 | 21.27 | 2440 | 279 | 3.06 | 7.80 | 5.63 | -0.47 | 1.71 | 0.36 |
| IDEQ | 24-Mar-94 | 21.27 | 2470 | 283 | 3.06 | 7.81 | 5.64 | -0.47 | 1.76 | 0.38 |
| IDEQ | 7-Apr-94 | 59.82 | 1280 | 412 | 4.09 | 7.15 | 6.02 | 0.62 | -0.10 | 1.18 |
| IDEQ | 4-May-94 | 59.82 | 586 | 189 | 4.09 | 6.37 | 5.24 | 0.62 | -1.18 | -0.20 |
| IDEQ | 19-May-94 | 73.12 | 480 | 189 | 4.29 | 6.17 | 5.24 | 1.00 | -1.35 | -0.20 |
| IDEQ | 7-Jun-94 | 51.06 | 728 | 200 | 3.93 | 6.59 | 5.30 | 0.37 | -0.96 | -0.13 |
| IDEQ | 23-Jun-94 | 33.34 | 728 | 131 | 3.51 | 6.59 | 4.87 | -0.13 | -0.96 | -0.56 |
| IDEQ | 25-Jul-94 | 19.76 | 969 | 103 | 2.98 | 6.88 | 4.63 | -0.51 | -0.58 | -0.73 |
| IDEQ | 16-Aug-94 | 17.71 | 1050 | 100 | 2.87 | 6.96 | 4.61 | -0.57 | -0.46 | -0.75 |
| IDEQ | 16-Aug-94 | 13.57 | 1050 | 77 | 2.61 | 6.96 | 4.34 | -0.69 | -0.46 | -0.90 |
| IDEQ | 13-Sep-94 | 16.48 | 709 | 63 | 2.80 | 6.56 | 4.14 | -0.61 | -0.99 | -0.98 |
| IDEQ | 6-Oct-94 | 15.33 | 1060 | 87 | 2.73 | 6.97 | 4.47 | -0.64 | -0.44 | -0.83 |
| IDEQ | 16-Nov-94 | 16.78 | 1980 | 179 | 2.82 | 7.59 | 5.19 | -0.60 | 0.99 | -0.27 |
| IDEQ | 13-Dec-94 | 16.48 | 2460 | 218 | 2.80 | 7.81 | 5.38 | -0.61 | 1.74 | -0.02 |
| IDEQ | 10-Jan-95 | 25.13 | 2660 | 360 | 3.22 | 7.89 | 5.89 | -0.36 | 2.05 | 0.85 |
| IDEQ | 9-Feb-95 | 39.63 | 1690 | 360 | 3.68 | 7.43 | 5.89 | 0.05 | 0.54 | 0.86 |
| IDEQ | 8-Mar-95 | 38.13 | 1120 | 230 | 3.64 | 7.02 | 5.44 | 0.01 | -0.35 | 0.05 |
| IDEQ | 22-Mar-95 | 80.94 | 2040 | 888 | 4.39 | 7.62 | 6.79 | 1.22 | 1.09 | 4.12 |
| IDEQ | 12-Apr-95 | 58.64 | 1140 | 360 | 4.07 | 7.04 | 5.89 | 0.59 | -0.32 | 0.85 |
| IDEQ | 25-Apr-95 | 47 | 964 | 244 | 3.85 | 6.87 | 5.50 | 0.26 | -0.59 | 0.14 |
| IDEQ | 13-Jun-95 | 158.04 | 435 | 370 | 5.06 | 6.08 | 5.91 | 3.40 | -1.42 | 0.92 |
| IDEQ | 27-Jun-95 | 38.13 | 580 | 119 | 3.64 | 6.36 | 4.78 | 0.01 | -1.19 | -0.64 |
| IDEQ | 11-Jul-95 | 23.33 | 787 | 99 | 3.15 | 6.67 | 4.59 | -0.41 | -0.87 | -0.76 |
| IDEQ | 25-Jul-95 | 18.71 | 818 | 82 | 2.93 | 6.71 | 4.41 | -0.54 | -0.82 | -0.86 |
| IDEQ | 14-Aug-95 | 15.89 | 1010 | 86 | 2.77 | 6.92 | 4.46 | -0.62 | -0.52 | -0.84 |
| IDEQ | 13-Sep-95 | 14.02 | 893 | 67 | 2.64 | 6.79 | 4.21 | -0.68 | -0.70 | -0.95 |
| IDEQ | 18-Oct-95 | 35.3 | 1280 | 243 | 3.56 | 7.15 | 5.49 | -0.07 | -0.10 | 0.13 |
| IDEQ | 21-Nov-95 | 95.4 | 788 | 404 | 4.56 | 6.67 | 6.00 | 1.63 | -0.87 | 1.13 |
| IDEQ | 27-Dec-95 | 41.2 | 1240 | 275 | 3.72 | 7.12 | 5.62 | 0.09 | -0.16 | 0.33 |
| IDEQ | 17-Jan-96 | 48.1 | 2070 | 536 | 3.87 | 7.64 | 6.28 | 0.29 | 1.13 | 1.94 |
| IDEQ | 29-Feb-96 | 52.1 | 1220 | 342 | 3.95 | 7.11 | 5.83 | 0.40 | -0.19 | 0.74 |
| IDEQ | 28-Mar-96 | 39.6 | 1350 | 288 | 3.68 | 7.21 | 5.66 | 0.05 | 0.01 | 0.41 |
| URS | 9-Nov-97 | 35 | 1240 | 233 | 3.56 | 7.12 | 5.45 | -0.08 | -0.16 | 0.07 |

**dZn**

**Concentration over time analysis**

| | dZn | CC284 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.000** | **0.00002** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 17-May-91 | 7.05 | 1,157 | | |
| mid | 26-Oct-94 | 7.08 | 1,194 | | |
| last | 9-Nov-97 | 7.11 | 1,226 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Nov-97 | 0.00 | 1 | | |

**Load over time analysis**

| | dZn | CC284 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.054** | **0.00040** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 17-May-91 | 4.67 | 106 | | |
| mid | 26-Oct-94 | 5.17 | 175 | | |
| last | 9-Nov-97 | 5.61 | 272 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Nov-97 | 0.00 | 1 | | |

max r2. 0.230

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points delete last 4 rows | | |
| 0.000 | 0.00002 | 6.24 |
| 0.021 | -0.00020 | 13.94 |
| 0.044 | -0.00033 | 18.67 |
| 0.049 | -0.00036 | 19.64 |
| 0.042 | -0.00034 | 19.00 |
| 0.029 | -0.00029 | 17.11 |
| 0.018 | -0.00023 | 14.90 |
| 0.007 | -0.00014 | 12.07 |
| 0.001 | -0.00005 | 8.73 |
| 0.000 | 0.00003 | 5.87 |
| 0.009 | 0.00016 | 1.43 |
| 0.035 | 0.00031 | -3.73 |
| 0.046 | 0.00036 | -5.60 |
| 0.027 | 0.00028 | -2.65 |
| 0.007 | 0.00014 | 2.18 |
| 0.001 | 0.00006 | 4.84 |
| 0.000 | -0.00003 | 7.99 |
| 0.001 | -0.00007 | 9.35 |
| 0.003 | -0.00009 | 10.27 |
| 0.004 | -0.00013 | 11.43 |
| 0.020 | -0.00027 | 16.47 |
| 0.027 | -0.00032 | 18.43 |
| 0.011 | -0.00021 | 14.34 |
| 0.000 | -0.00001 | 7.33 |
| 0.020 | 0.00024 | -1.56 |
| 0.053 | 0.00040 | -6.90 |
| 0.062 | 0.00044 | -8.58 |
| 0.176 | 0.00069 | -17.26 |
| 0.216 | 0.00079 | -20.64 |
| 0.230 | 0.00084 | -22.59 |
| 0.188 | 0.00062 | -14.94 |
| 0.135 | 0.00045 | -8.94 |
| 0.090 | 0.00035 | -5.41 |
| 0.045 | 0.00024 | -1.25 |
| 0.025 | 0.00018 | 0.79 |
| 0.001 | 0.00004 | 5.89 |
| 0.002 | 0.00004 | 5.58 |
| 0.101 | -0.00025 | 16.00 |

max r2. 0.384

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points. delete last 4 rows | | |
| 0.054 | 0.00040 | -8.58 |
| 0.158 | 0.00076 | -21.32 |
| 0.139 | 0.00083 | -23.48 |
| 0.107 | 0.00071 | -19.39 |
| 0.097 | 0.00068 | -18.56 |
| 0.078 | 0.00062 | -16.25 |
| 0.069 | 0.00059 | -15.42 |
| 0.055 | 0.00054 | -13.34 |
| 0.050 | 0.00052 | -12.98 |
| 0.031 | 0.00041 | -8.98 |
| 0.041 | 0.00049 | -11.71 |
| 0.055 | 0.00058 | -14.88 |
| 0.091 | 0.00075 | -20.88 |
| 0.096 | 0.00080 | -22.50 |
| 0.102 | 0.00085 | -24.33 |
| 0.112 | 0.00092 | -26.75 |
| 0.102 | 0.00090 | -26.26 |
| 0.083 | 0.00083 | -23.66 |
| 0.063 | 0.00073 | -20.26 |
| 0.034 | 0.00054 | -13.54 |
| 0.008 | 0.00026 | -3.62 |
| 0.000 | 0.00001 | 5.05 |
| 0.000 | -0.00006 | 7.71 |
| 0.001 | -0.00009 | 8.78 |
| 0.000 | 0.00002 | 4.83 |
| 0.002 | 0.00015 | 0.32 |
| 0.002 | 0.00016 | -0.08 |
| 0.043 | 0.00060 | -15.68 |
| 0.079 | 0.00082 | -23.56 |
| 0.100 | 0.00096 | -28.33 |
| 0.165 | 0.00122 | -37.65 |
| 0.141 | 0.00114 | -34.77 |
| 0.103 | 0.00096 | -28.32 |
| 0.052 | 0.00063 | -16.75 |
| 0.007 | 0.00021 | -1.83 |
| 0.177 | -0.00048 | 22.77 |
| 0.384 | -0.00068 | 29.90 |
| 0.334 | -0.00064 | 28.22 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dZn** | | **CC284** | | |
| **LN Analysis** | | **dZn** | | |
| **Load** | | **Load Data, EV=222 lbs/day CV=.73** | | |
| **Avg:** | **222** | **Load Data-based LN** | | |
| **SD:** | **162** | u | ln dZn Load | dZn Load |
| **CV:** | **0.73** | 3 | 7.1 | 1271 |
| **Min:** | **48** | 0 | 5.19 | 179 |
| **Max:** | **888** | -3 | 3.23 | 25 |
| **Median:** | **189** | | | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.969, EV=227.2 lbs/day CV=0.82; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.969 | u | lnLoad | Load |
| slope, m: | 1.393 | 3 | 7.32 | 1513 |
| intercept, b: | -7.199 | 0 | 5.17 | 176 |
| N: | 42 | -3 | 3.01 | 20 |
| E[Load] | 227.2 | Parameter Estimates | | |
| SD[Load] | 187 | from LN regression | | |
| CV[Load] | 0.82 | update graph label | | |

| Date | dZn Load lbs/day Ranked | N: 42 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.971 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Oct-93 | **48** | 1 | 0.0148 | -2.176 | 3.869 | 0.969 |
| 13-Sep-94 | **63** | 2 | 0.0385 | -1.769 | 4.141 | 0.969 |
| 13-Sep-95 | **67** | 3 | 0.0621 | -1.537 | 4.210 | 0.970 |
| 18-Feb-94 | **75** | 4 | 0.0858 | -1.367 | 4.324 | 0.970 |
| 16-Aug-94 | **77** | 5 | 0.1095 | -1.229 | 4.339 | 0.971 |
| 25-Jul-95 | **82** | 6 | 0.1331 | -1.112 | 4.411 | 0.970 |
| 17-Dec-93 | **83** | 7 | 0.1568 | -1.008 | 4.418 | 0.969 |
| 14-Aug-95 | **86** | 8 | 0.1805 | -0.914 | 4.458 | 0.967 |
| 5-Oct-91 | **87** | 9 | 0.2041 | -0.827 | 4.461 | 0.965 |
| 6-Oct-94 | **87** | 10 | -0.2278 | -0.746 | 4.471 | 0.962 |
| 20-Jan-94 | **98** | 11 | 0.2515 | -0.670 | 4.584 | 0.960 |
| 11-Jul-95 | **99** | 12 | 0.2751 | -0.597 | 4.593 | 0.957 |
| 16-Aug-94 | **100** | 13 | 0.2988 | -0.528 | 4.606 | 0.954 |
| 25-Jul-94 | **103** | 14 | 0.3225 | -0.461 | 4.635 | 0.952 |
| 30-Nov-93 | **112** | 15 | 0.3462 | -0.396 | 4.717 | 0.952 |
| 27-Jun-95 | **119** | 16 | 0.3698 | -0.332 | 4.779 | 0.952 |
| 17-Dec-93 | **122** | 17 | 0.3935 | -0.270 | 4.805 | 0.953 |
| 23-Jun-94 | **131** | 18 | 0.4172 | -0.209 | 4.872 | 0.957 |
| 20-Jan-94 | **145** | 19 | 0.4408 | -0.149 | 4.978 | 0.964 |
| 16-Nov-94 | **179** | 20 | 0.4645 | -0.089 | 5.186 | 0.970 |
| 4-May-94 | **189** | 21 | 0.4882 | -0.030 | 5.240 | 0.967 |
| 19-May-94 | **189** | 22 | 0.5118 | 0.030 | 5.241 | 0.964 |
| 7-Jun-94 | **200** | 23 | 0.5355 | 0.089 | 5.298 | 0.961 |
| 13-Dec-94 | **218** | 24 | 0.5592 | 0.149 | 5.385 | 0.958 |
| 8-Mar-95 | **230** | 25 | 0.5828 | 0.209 | 5.437 | 0.954 |
| 9-Nov-97 | **233** | 26 | 0.6065 | 0.270 | 5.453 | 0.949 |
| 18-Oct-95 | **243** | 27 | 0.6302 | 0.332 | 5.493 | 0.944 |
| 25-Apr-95 | **244** | 28 | 0.6538 | 0.396 | 5.496 | 0.938 |
| 27-Dec-95 | **275** | 29 | 0.6775 | 0.461 | 5.616 | 0.930 |
| 8-Mar-94 | **279** | 30 | 0.7012 | 0.528 | 5.632 | 0.924 |
| 24-Mar-94 | **283** | 31 | 0.7249 | 0.597 | 5.644 | 0.916 |
| 28-Mar-96 | **288** | 32 | 0.7485 | 0.670 | 5.662 | 0.904 |
| 29-Feb-96 | **342** | 33 | 0.7722 | 0.746 | 5.835 | 0.887 |
| 10-Jan-95 | **360** | 34 | 0.7959 | 0.827 | 5.885 | 0.893 |
| 12-Apr-95 | **360** | 35 | 0.8195 | 0.914 | 5.885 | 0.914 |
| 9-Feb-95 | **360** | 36 | 0.8432 | 1.008 | 5.887 | 0.930 |
| 13-Jun-95 | **370** | 37 | 0.8669 | 1.112 | 5.913 | 0.938 |
| 21-Nov-95 | **404** | 38 | 0.8905 | 1.229 | 6.003 | 0.939 |
| 7-Apr-94 | **412** | 39 | 0.9142 | 1.367 | 6.021 | |
| 17-May-91 | **448** | 40 | 0.9379 | 1.537 | 6.104 | |
| 17-Jan-96 | **536** | 41 | 0.9615 | 1.769 | 6.284 | |
| 22-Mar-95 | **888** | 42 | 0.9852 | 2.176 | 6.789 | |

update for EV, CV.

**dZn**
**LN Analysis**
**Concentration**

CC284
dZn
Conc. Data, EV=1,344 ug/L CV=.48
Data-based LN

| | |
|---|---|
| Avg: | 1,344 |
| SD: | 641 |
| CV: | 0.48 |
| Min: | 435 |
| Max: | 2,660 |
| Median: | 1,135 |

| u | ln[dZn] | [dZn] |
|---|---|---|
| 3 | 8.5 | 4717 |
| 0 | 7.10 | 1213 |
| -3 | 5.74 | 312 |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **$r^2$=0.966, EV=1367.6 ug/L CV=0.56; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc. | 0.966 | u | lnConc. | Conc |
| slope, m | 1.917 | 3 | 8.65 | 5708 |
| intercept, b | -13.582 | 0 | 7.08 | 1194 |
| N: | 42 | -3 | 5.52 | 250 |
| E[Conc] | 1367.6 | Parameter Estimates | | |
| SD[Conc] | 765 | from LN regression | | |
| CV[Conc] | 0.56 | update graph label | | |

| Date | dZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.966 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Jun-95 | 435 | 1 | 0.0148 | -2.176 | 6.075 | 0.966 |
| 19-May-94 | 480 | 2 | 0.0385 | -1.769 | 6.174 | 0.963 |
| 17-May-91 | 485 | 3 | 0.0621 | -1.537 | 6.184 | 0.959 |
| 27-Jun-95 | 580 | 4 | 0.0858 | -1.367 | 6.363 | 0.956 |
| 4-May-94 | 586 | 5 | 0.1095 | -1.229 | 6.373 | 0.952 |
| 13-Sep-94 | 709 | 6 | 0.1331 | -1.112 | 6.564 | 0.949 |
| 7-Jun-94 | 728 | 7 | 0.1568 | -1.008 | 6.590 | 0.945 |
| 23-Jun-94 | 728 | 8 | 0.1805 | -0.914 | 6.590 | 0.941 |
| 11-Jul-95 | 787 | 9 | 0.2041 | -0.827 | 6.668 | 0.936 |
| 21-Nov-95 | 788 | 10 | 0.2278 | -0.746 | 6.669 | 0.931 |
| 25-Jul-95 | 818 | 11 | 0.2515 | -0.670 | 6.707 | 0.926 |
| 13-Sep-95 | 893 | 12 | 0.2751 | -0.597 | 6.795 | 0.920 |
| 25-Apr-95 | 964 | 13 | 0.2988 | -0.528 | 6.871 | 0.914 |
| 25-Jul-94 | 969 | 14 | 0.3225 | -0.461 | 6.876 | 0.909 |
| 5-Oct-91 | 999 | 15 | 0.3462 | -0.396 | 6.907 | 0.902 |
| 14-Aug-95 | 1010 | 16 | 0.3698 | -0.332 | 6.918 | 0.895 |
| 16-Aug-94 | 1050 | 17 | 0.3935 | -0.270 | 6.957 | 0.887 |
| 16-Aug-94 | 1050 | 18 | 0.4172 | -0.209 | 6.957 | 0.878 |
| 6-Oct-94 | 1060 | 19 | 0.4408 | -0.149 | 6.966 | 0.868 |
| 8-Mar-95 | 1120 | 20 | 0.4645 | -0.089 | 7.021 | 0.856 |
| 27-Oct-93 | 1130 | 21 | 0.4882 | -0.030 | 7.030 | 0.844 |
| 12-Apr-95 | 1140 | 22 | 0.5118 | 0.030 | 7.039 | 0.829 |
| 29-Feb-96 | 1220 | 23 | 0.5355 | 0.089 | 7.107 | 0.815 |
| 27-Dec-95 | 1240 | 24 | 0.5592 | 0.149 | 7.123 | 0.796 |
| 9-Nov-97 | 1240 | 25 | 0.5828 | 0.209 | 7.123 | 0.777 |
| 7-Apr-94 | 1280 | 26 | 0.6065 | 0.270 | 7.155 | 0.759 |
| 18-Oct-95 | 1280 | 27 | 0.6302 | 0.332 | 7.155 | 0.743 |
| 28-Mar-96 | 1350 | 28 | 0.6538 | 0.396 | 7.208 | 0.758 |
| 30-Nov-93 | 1650 | 29 | 0.6775 | 0.461 | 7.409 | 0.843 |
| 9-Feb-95 | 1690 | 30 | 0.7012 | 0.528 | 7.432 | 0.856 |
| 18-Feb-94 | 1970 | 31 | 0.7249 | 0.597 | 7.586 | 0.933 |
| 16-Nov-94 | 1980 | 32 | 0.7485 | 0.670 | 7.591 | 0.923 |
| 22-Mar-95 | 2040 | 33 | 0.7722 | 0.746 | 7.621 | 0.914 |
| 17-Jan-96 | 2070 | 34 | 0.7959 | 0.827 | 7.635 | 0.899 |
| 17-Dec-93 | 2130 | 35 | 0.8195 | 0.914 | 7.664 | 0.884 |
| 17-Dec-93 | 2130 | 36 | 0.8432 | 1.008 | 7.664 | 0.858 |
| 20-Jan-94 | 2310 | 37 | 0.8669 | 1.112 | 7.745 | 0.919 |
| 20-Jan-94 | 2310 | 38 | 0.8905 | 1.229 | 7.745 | 0.891 |
| 8-Mar-94 | 2440 | 39 | 0.9142 | 1.367 | 7.800 | |
| 13-Dec-94 | 2460 | 40 | 0.9379 | 1.537 | 7.808 | |
| 24-Mar-94 | 2470 | 41 | 0.9615 | 1.769 | 7.812 | |
| 10-Jan-95 | 2660 | 42 | 0.9852 | 2.176 | 7.886 | |

update for EV, CV

**dZn** **CC284**
**LN Analysis** **dZn**
**Discharge, Q** **Q Data, EV=38 cfs CV=0.93**

| | | Q Data-based LN | | |
|---|---|---|---|---|
| **Avg:** | **38** | u | lnQ | Q |
| **SD:** | **35** | 3 | 5.7 | 298 |
| **CV:** | **0.93** | 0 | 3.32 | 28 |
| **Min:** | **7** | -3 | 0.95 | 3 |
| **Max:** | **172** | | | |
| **Median:** | **24** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV **r2=0.977, EV=38.5 cfs CV=0.99; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.977 | u | lnQ | Q |
| slope, m | 1.208 | 3 | 5.79 | 328 |
| intercept, b | -3.997 | 0 | 3.31 | 27 |
| N: | 42 | -3 | 0.83 | 2 |
| E[Q]: | 38.5 | Parameter Estimates | | |
| SD[Q] | 38 | from LN regression | | |
| CV[Q] | 0.99 | update graph label | | |

N: 42

| Date | Q Discharge cfs | i rank Ranked | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.983 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 18-Feb-94 | 7.12 | 1 | 0.0148 | -2.176 | 1.963 | 0.977 |
| 17-Dec-93 | 7.24 | 2 | 0.0385 | -1.769 | 1.980 | 0.983 |
| 27-Oct-93 | 7.88 | 3 | 0.0621 | -1.537 | 2.064 | 0.983 |
| 20-Jan-94 | 7.88 | 4 | 0.0858 | -1.367 | 2.064 | 0.982 |
| 17-Dec-93 | 10.66 | 5 | 0.1095 | -1.229 | 2.366 | 0.980 |
| 20-Jan-94 | 11.68 | 6 | 0.1331 | -1.112 | 2.458 | 0.980 |
| 30-Nov-93 | 12.6 | 7 | 0.1568 | -1.008 | 2.534 | 0.979 |
| 16-Aug-94 | 13.57 | 8 | 0.1805 | -0.914 | 2.608 | 0.979 |
| 13-Sep-95 | 14.02 | 9 | 0.2041 | -0.827 | 2.640 | 0.979 |
| 6-Oct-94 | 15.33 | 10 | 0.2278 | -0.746 | 2.730 | 0.978 |
| 14-Aug-95 | 15.89 | 11 | 0.2515 | -0.670 | 2.766 | 0.979 |
| 5-Oct-91 | 16.1 | 12 | 0.2751 | -0.597 | 2.779 | 0.978 |
| 13-Sep-94 | 16.48 | 13 | 0.2988 | -0.528 | 2.802 | 0.977 |
| 13-Dec-94 | 16.48 | 14 | 0.3225 | -0.461 | 2.802 | 0.976 |
| 16-Nov-94 | 16.78 | 15 | 0.3462 | -0.396 | 2.820 | 0.974 |
| 16-Aug-94 | 17.71 | 16 | 0.3698 | -0.332 | 2.874 | 0.972 |
| 25-Jul-95 | 18.71 | 17 | 0.3935 | -0.270 | 2.929 | 0.970 |
| 25-Jul-94 | 19.76 | 18 | 0.4172 | -0.209 | 2.984 | 0.968 |
| 8-Mar-94 | 21.27 | 19 | 0.4408 | -0.149 | 3.057 | 0.966 |
| 24-Mar-94 | 21.27 | 20 | 0.4645 | -0.089 | 3.057 | 0.964 |
| 11-Jul-95 | 23.33 | 21 | 0.4882 | -0.030 | 3.150 | 0.965 |
| 10-Jan-95 | 25.13 | 22 | 0.5118 | 0.030 | 3.224 | 0.964 |
| 23-Jun-94 | 33.34 | 23 | 0.5355 | 0.089 | 3.507 | 0.964 |
| 9-Nov-97 | 35 | 24 | 0.5592 | 0.149 | 3.555 | 0.964 |
| 18-Oct-95 | 35.3 | 25 | 0.5828 | 0.209 | 3.564 | 0.964 |
| 8-Mar-95 | 38.13 | 26 | 0.6065 | 0.270 | 3.641 | 0.963 |
| 27-Jun-95 | 38.13 | 27 | 0.6302 | 0.332 | 3.641 | 0.964 |
| 28-Mar-96 | 39.6 | 28 | 0.6538 | 0.396 | 3.679 | 0.964 |
| 9-Feb-95 | 39.63 | 29 | 0.6775 | 0.461 | 3.680 | 0.962 |
| 27-Dec-95 | 41.2 | 30 | 0.7012 | 0.528 | 3.718 | 0.958 |
| 25-Apr-95 | 47 | 31 | 0.7249 | 0.597 | 3.850 | 0.953 |
| 17-Jan-96 | 48.1 | 32 | 0.7485 | 0.670 | 3.873 | 0.953 |
| 7-Jun-94 | 51.06 | 33 | 0.7722 | 0.746 | 3.933 | 0.949 |
| 29-Feb-96 | 52.1 | 34 | 0.7959 | 0.827 | 3.953 | 0.947 |
| 12-Apr-95 | 58.64 | 35 | 0.8195 | 0.914 | 4.071 | 0.938 |
| 7-Apr-94 | 59.82 | 36 | 0.8432 | 1.008 | 4.091 | 0.936 |
| 4-May-94 | 59.82 | 37 | 0.8669 | 1.112 | 4.091 | 0.923 |
| 19-May-94 | 73.12 | 38 | 0.8905 | 1.229 | 4.292 | 0.894 |
| 22-Mar-95 | 80.94 | 39 | 0.9142 | 1.367 | 4.394 | |
| 21-Nov-95 | 95.4 | 40 | 0.9379 | 1.537 | 4.558 | |
| 13-Jun-95 | 158.04 | 41 | 0.9615 | 1.769 | 5.063 | |
| 17-May-91 | 171.6 | 42 | 0.9852 | 2.176 | 5.145 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC284 **Date:** 2-Jun-00
**Chemical:** tCd **Analyst:** J.Johnston
**Notes:** Template and Example Lognormal Analysis
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,638 | 38 | 9 | 2 | 0.00 | 0.00 | 0.00 |
| **SD:** | 400 | 35 | 4 | 1 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 0.93 | 0.47 | 0.83 | | | |
| **Min:** | 33,375 | 7 | 3 | 0.3 | -0.87 | -1.40 | -0.99 |
| **Max:** | 35,743 | 172 | 21 | 7 | 3.78 | 3.03 | 4.33 |
| **Median:** | 34,634 | 24 | 8 | 1 | -0.39 | -0.29 | -0.24 |

**tCd CC284 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.116)** | update r2 | **0.12** | 0.116 | r2: | 0.004 | 0.035 | |
| r2 Q,[COC]: | 0.12 | [tCd] | Q | m: | -0.0058 | 0.00037 | |
| slope, m: | 0.0 | 10 | 7.1 | b | 237 | -9.59 | |
| intercept, b: | 10.2 | 9 | 37.9 | | | | |
| N: 42 | | 3 | 172 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.19)** | | update r2 | 0.19 | 0.19 | | | |
| 2 lnQ,ln[COC]: | 0.19 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m: | -0.25 | 2.40 | 1.96 | 11 | 7 | | |
| intercept, b: | 2.89 | 1.98 | 3.64 | 7 | 38 | | |
| N: 42 | | 1.60 | 5.15 | 5 | 172 | | |

for graph: tCd 0

**N= 42** CC284

| | Sampling Date | Q Discharge | tCd Concentration | tCd Load | Ln Q | Ln tCd Conc. | Ln tCd Load | Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 171.6 | 3.3 | 3.0 | 5.15 | 1.19 | 1.11 | 3.78 | -1.33 | 1.22 |
| MFG | 5-Oct-91 | 16.1 | 7.6 | 0.7 | 2.78 | 2.03 | -0.42 | -0.62 | -0.27 | -0.68 |
| IDEQ | 27-Oct-93 | 7.88 | 6.3 | 0.3 | 2.06 | 1.84 | -1.32 | -0.85 | -0.59 | -0.99 |
| IDEQ | 30-Nov-93 | 12.6 | 8.5 | 0.6 | 2.53 | 2.14 | -0.55 | -0.72 | -0.05 | -0.74 |
| IDEQ | 17-Dec-93 | 7.24 | 10.2 | 0.4 | 1.98 | 2.32 | -0.92 | -0.87 | 0.37 | -0.88 |
| IDEQ | 17-Dec-93 | 10.66 | 10.2 | 0.6 | 2.37 | 2.32 | -0.54 | -0.77 | 0.37 | -0.73 |
| IDEQ | 20-Jan-94 | 7.88 | 12 | 0.5 | 2.06 | 2.48 | -0.68 | -0.85 | 0.82 | -0.79 |
| IDEQ | 20-Jan-94 | 11.68 | 12 | 0.8 | 2.46 | 2.48 | -0.28 | -0.74 | 0.82 | -0.60 |
| IDEQ | 18-Feb-94 | 7.12 | 11 | 0.4 | 1.96 | 2.40 | -0.86 | -0.87 | 0.57 | -0.86 |
| IDEQ | 8-Mar-94 | 21.27 | 15 | 1.7 | 3.06 | 2.71 | 0.54 | -0.47 | 1.56 | 0.16 |
| IDEQ | 24-Mar-94 | 21.27 | 15 | 1.7 | 3.06 | 2.71 | 0.54 | -0.47 | 1.56 | 0.16 |
| IDEQ | 7-Apr-94 | 59.82 | 7.9 | 2.5 | 4.09 | 2.07 | 0.93 | 0.62 | -0.19 | 0.82 |
| IDEQ | 4-May-94 | 59.82 | 3.9 | 1.3 | 4.09 | 1.36 | 0.23 | 0.62 | -1.18 | -0.20 |
| IDEQ | 19-May-94 | 73.12 | 3.3 | 1.3 | 4.29 | 1.19 | 0.26 | 1.00 | -1.33 | -0.17 |
| IDEQ | 7-Jun-94 | 51.06 | 5.6 | 1.5 | 3.93 | 1.72 | 0.43 | 0.37 | -0.76 | 0.02 |
| IDEQ | 23-Jun-94 | 33.34 | 5.6 | 1.0 | 3.51 | 1.72 | 0.00 | -0.13 | -0.76 | -0.40 |
| IDEQ | 25-Jul-94 | 19.76 | 6.9 | 0.7 | 2.98 | 1.93 | -0.31 | -0.51 | -0.44 | -0.62 |
| IDEQ | 16-Aug-94 | 17.71 | 7.4 | 0.7 | 2.87 | 2.00 | -0.35 | -0.57 | -0.32 | -0.64 |
| IDEQ | 16-Aug-94 | 13.57 | 7.4 | 0.5 | 2.61 | 2.00 | -0.62 | -0.69 | -0.32 | -0.77 |
| IDEQ | 13-Sep-94 | 16.48 | 6.2 | 0.5 | 2.80 | 1.82 | -0.60 | -0.61 | -0.61 | -0.76 |
| IDEQ | 6-Oct-94 | 15.33 | 8.8 | 0.7 | 2.73 | 2.17 | -0.32 | -0.64 | 0.03 | -0.62 |
| IDEQ | 16-Nov-94 | 16.78 | 11 | 1.0 | 2.82 | 2.40 | -0.01 | -0.60 | 0.57 | -0.41 |
| IDEQ | 13-Dec-94 | 16.48 | 13 | 1.2 | 2.80 | 2.56 | 0.14 | -0.61 | 1.06 | -0.28 |
| IDEQ | 10-Jan-95 | 25.13 | 18 | 2.4 | 3.22 | 2.89 | 0.89 | -0.36 | 2.30 | 0.73 |
| IDEQ | 9-Feb-95 | 39.63 | 10.3 | 2.2 | 3.68 | 2.33 | 0.79 | 0.05 | 0.40 | 0.54 |
| IDEQ | 8-Mar-95 | 38.13 | 7.6 | 1.6 | 3.64 | 2.03 | 0.44 | 0.01 | -0.27 | 0.04 |
| IDEQ | 22-Mar-95 | 80.94 | 16 | 7.0 | 4.39 | 2.77 | 1.94 | 1.22 | 1.80 | 4.33 |
| IDEQ | 12-Apr-95 | 58.64 | 6.7 | 2.1 | 4.07 | 1.90 | 0.75 | 0.59 | -0.49 | 0.48 |
| IDEQ | 25-Apr-95 | 47 | 6.2 | 1.6 | 3.85 | 1.82 | 0.45 | 0.26 | -0.61 | 0.05 |
| IDEQ | 13-Jun-95 | 158.04 | 3 | 2.6 | 5.06 | 1.10 | 0.94 | 3.40 | -1.40 | 0.83 |
| IDEQ | 27-Jun-95 | 38.13 | 4.1 | 0.8 | 3.64 | 1.41 | -0.17 | 0.01 | -1.13 | -0.53 |
| IDEQ | 11-Jul-95 | 23.33 | 5.1 | 0.6 | 3.15 | 1.63 | -0.45 | -0.41 | -0.88 | -0.69 |
| IDEQ | 25-Jul-95 | 18.71 | 6.2 | 0.6 | 2.93 | 1.82 | -0.47 | -0.54 | -0.61 | -0.70 |
| IDEQ | 14-Aug-95 | 15.89 | 6.7 | 0.6 | 2.77 | 1.90 | -0.56 | -0.62 | -0.49 | -0.74 |
| IDEQ | 13-Sep-95 | 14.02 | 6.8 | 0.5 | 2.64 | 1.92 | -0.67 | -0.68 | -0.47 | -0.79 |
| IDEQ | 18-Oct-95 | 35.3 | 8.5 | 1.6 | 3.56 | 2.14 | 0.48 | -0.07 | -0.05 | 0.08 |
| IDEQ | 21-Nov-95 | 95.4 | 4.8 | 2.5 | 4.56 | 1.57 | 0.90 | 1.63 | -0.96 | 0.76 |
| IDEQ | 27-Dec-95 | 41.2 | 7.4 | 1.6 | 3.72 | 2.00 | 0.49 | 0.09 | -0.32 | 0.10 |
| IDEQ | 17-Jan-96 | 48.1 | 14 | 3.6 | 3.87 | 2.64 | 1.29 | 0.29 | 1.31 | 1.68 |
| IDEQ | 29-Feb-96 | 52.1 | 6.7 | 1.9 | 3.95 | 1.90 | 0.63 | 0.40 | -0.49 | 0.29 |
| IDEQ | 28-Mar-96 | 39.6 | 21 | 4.5 | 3.68 | 3.04 | 1.50 | 0.05 | 3.03 | 2.35 |
| URS | 9-Nov-97 | 35 | 7.7 | 1.4 | 3.56 | 2.04 | 0.37 | -0.08 | -0.24 | -0.05 |

tCd

**Concentration over time analysis**

| | tCd | CC284 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **Concentration over time** | |
| | **Time** | **Ln[COC]** | **[COC]** | **0.010** | **0.00011** |
| first | 17-May-91 | 1.91 | 7 | | |
| mid | 26-Oct-94 | 2.06 | 8 | | |
| last | 9-Nov-97 | 2.19 | 9 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Nov-97 | 0.00 | 1 | | |

**Load over time analysis**

| | tCd | CC284 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.073** | **0.00049** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 17-May-91 | -0.47 | 1 | | |
| mid | 26-Oct-94 | 0.14 | 1 | | |
| last | 9-Nov-97 | 0.68 | 2 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Nov-97 | 0.00 | 1 | | |

max r2 0.143

**Forward time Regression on Ln Concentration(t)**

max r2 0.229

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept | r2 | slope | intercept |
|---|---|---|---|---|---|
| only on >4 data points delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| 0.010 | 0.00011 | -1.92 | 0.073 | 0.00049 | -16.74 |
| 0.003 | -0.00007 | 4.45 | 0.194 | 0.00089 | -30.81 |
| 0.006 | -0.00011 | 5.89 | 0.199 | 0.00105 | -36.25 |
| 0.009 | -0.00015 | 7.15 | 0.163 | 0.00092 | -31.89 |
| 0.009 | -0.00015 | 7.17 | 0.146 | 0.00088 | -30.39 |
| 0.006 | -0.00012 | 6.37 | 0.118 | 0.00078 | -26.99 |
| 0.004 | -0.00010 | 5.44 | 0.099 | 0.00072 | -24.88 |
| 0.001 | -0.00004 | 3.62 | 0.076 | 0.00063 | -21.80 |
| -0.000 | 0.00002 | 1.47 | 0.063 | 0.00059 | -20.24 |
| 0.002 | 0.00007 | -0.44 | 0.038 | 0.00045 | -15.29 |
| 0.012 | 0.00018 | -4.34 | 0.047 | 0.00051 | -17.49 |
| 0.034 | 0.00031 | -8.81 | 0.058 | 0.00058 | -19.97 |
| 0.040 | 0.00034 | -9.98 | 0.088 | 0.00073 | -25.25 |
| 0.021 | 0.00025 | -6.72 | 0.092 | 0.00077 | -26.57 |
| 0.004 | 0.00011 | -1.75 | 0.097 | 0.00082 | -28.26 |
| 0.001 | 0.00005 | 0.27 | 0.111 | 0.00091 | -31.32 |
| 0.000 | -0.00002 | 2.66 | 0.106 | 0.00091 | -31.59 |
| 0.001 | -0.00005 | 3.75 | 0.088 | 0.00085 | -29.26 |
| 0.001 | -0.00007 | 4.45 | 0.068 | 0.00076 | -26.07 |
| 0.002 | -0.00009 | 5.33 | 0.039 | 0.00057 | -19.63 |
| 0.007 | -0.00017 | 8.02 | 0.015 | 0.00036 | -12.07 |
| 0.006 | -0.00016 | 7.70 | 0.004 | 0.00018 | -5.69 |
| 0.002 | -0.00009 | 5.07 | 0.000 | 0.00006 | -1.56 |
| 0.001 | 0.00005 | 0.30 | 0.000 | -0.00004 | 1.75 |
| 0.021 | 0.00030 | -8.54 | 0.001 | 0.00008 | -2.15 |
| 0.040 | 0.00042 | -12.72 | 0.003 | 0.00017 | -5.50 |
| 0.045 | 0.00046 | -14.19 | 0.003 | 0.00018 | -5.69 |
| 0.136 | 0.00075 | -24.24 | 0.048 | 0.00066 | -22.66 |
| 0.143 | 0.00079 | -25.85 | 0.074 | 0.00083 | -28.77 |
| 0.142 | 0.00082 | -26.75 | 0.087 | 0.00094 | -32.49 |
| 0.094 | 0.00059 | -18.81 | 0.142 | 0.00119 | -41.52 |
| 0.054 | 0.00042 | -12.76 | 0.120 | 0.00111 | -38.59 |
| 0.026 | 0.00029 | -7.98 | 0.082 | 0.00089 | -30.89 |
| 0.011 | 0.00019 | -4.60 | 0.039 | 0.00059 | -20.11 |
| 0.003 | 0.00010 | -1.33 | 0.002 | 0.00013 | -3.95 |
| 0.000 | -0.00002 | 2.79 | 0.102 | -0.00054 | 19.68 |
| 0.001 | -0.00005 | 3.87 | 0.218 | -0.00078 | 28.19 |
| 0.068 | -0.00045 | 18.12 | 0.229 | -0.00084 | 30.35 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tCd** | | **CC284** | | |
| **LN Analysis** | | **tCd** | | |
| **Load** | | **Load Data, EV=1.51 lbs/day CV=0.835** | | |
| **Avg:** | **2** | **Load Data-based LN** | | |
| **SD:** | **1** | u | ln tCd Load | tCd Load |
| **CV:** | **0.83** | 3 | 2.3 | 10 |
| **Min:** | **0.3** | 0 | 0.15 | 1 |
| **Max:** | **7** | -3 | -2.03 | 0.1 |
| **Median:** | **1** | | | |
| | | 2 | 1.51 | |
| | | 0.83 | 0.835 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.976, EV=1.53lbs/day CV=0.876; max r2=0.998**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.976 | u | lnLoad | Load |
| slope, m | 1.325 | 3 | 2.41 | 11 |
| intercept, b | -0.188 | 0 | 0.14 | 1 |
| N: | 42 | -3 | -2.12 | 0.1 |
| E[Load]: | 1.5 | Parameter Estimates | | |
| SD[Load]: | 1 | from LN regression | | |
| CV[Load]: | 0.88 | update graph label | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | **tCd** | N: 42 | | | | max r2 0.998 |
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 27-Oct-93 | **0.3** | 1 | 0.0148 | -2.176 | -1.320 | 0.976 |
| 17-Dec-93 | **0.4** | 2 | 0.0385 | -1.769 | -0.923 | 0.974 |
| 18-Feb-94 | **0.4** | 3 | 0.0621 | -1.537 | -0.864 | 0.976 |
| 20-Jan-94 | **0.5** | 4 | 0.0858 | -1.367 | -0.676 | 0.977 |
| 13-Sep-95 | **0.5** | 5 | 0.1095 | -1.229 | -0.668 | 0.980 |
| 16-Aug-94 | **0.5** | 6 | 0.1331 | -1.112 | -0.616 | 0.981 |
| 13-Sep-94 | **0.5** | 7 | 0.1568 | -1.008 | -0.598 | 0.982 |
| 14-Aug-95 | **0.6** | 8 | 0.1805 | -0.914 | -0.557 | 0.982 |
| 30-Nov-93 | **0.6** | 9 | 0.2041 | -0.827 | -0.551 | 0.982 |
| 17-Dec-93 | **0.6** | 10 | 0.2278 | -0.746 | -0.536 | 0.980 |
| 25-Jul-95 | **0.6** | 11 | 0.2515 | -0.670 | -0.471 | 0.979 |
| 11-Jul-95 | **0.6** | 12 | 0.2751 | -0.597 | -0.446 | 0.977 |
| 5-Oct-91 | **0.7** | 13 | 0.2988 | -0.528 | -0.418 | 0.976 |
| 16-Aug-94 | **0.7** | 14 | 0.3225 | -0.461 | -0.349 | 0.974 |
| 6-Oct-94 | **0.7** | 15 | 0.3462 | -0.396 | -0.321 | 0.973 |
| 25-Jul-94 | **0.7** | 16 | 0.3698 | -0.332 | -0.310 | 0.971 |
| 20-Jan-94 | **0.8** | 17 | 0.3935 | -0.270 | -0.282 | 0.972 |
| 27-Jun-95 | **0.8** | 18 | 0.4172 | -0.209 | -0.173 | 0.976 |
| 16-Nov-94 | **1.0** | 19 | 0.4408 | -0.149 | -0.007 | 0.979 |
| 23-Jun-94 | **1.0** | 20 | 0.4645 | -0.089 | 0.004 | 0.977 |
| 13-Dec-94 | **1.2** | 21 | 0.4882 | -0.030 | 0.142 | 0.977 |
| 4-May-94 | **1.3** | 22 | 0.5118 | 0.030 | 0.227 | 0.975 |
| 19-May-94 | **1.3** | 23 | 0.5355 | 0.089 | 0.261 | 0.973 |
| 9-Nov-97 | **1.4** | 24 | 0.5592 | 0.149 | 0.372 | 0.971 |
| 7-Jun-94 | **1.5** | 25 | 0.5828 | 0.209 | 0.431 | 0.971 |
| 8-Mar-95 | **1.6** | 26 | 0.6065 | 0.270 | 0.444 | 0.974 |
| 25-Apr-95 | **1.6** | 27 | 0.6302 | 0.332 | 0.450 | 0.976 |
| 18-Oct-95 | **1.6** | 28 | 0.6538 | 0.396 | 0.479 | 0.976 |
| 27-Dec-95 | **1.6** | 29 | 0.6775 | 0.461 | 0.495 | 0.976 |
| 8-Mar-94 | **1.7** | 30 | 0.7012 | 0.528 | 0.540 | 0.974 |
| 24-Mar-94 | **1.7** | 31 | 0.7249 | 0.597 | 0.540 | 0.971 |
| 29-Feb-96 | **1.9** | 32 | 0.7485 | 0.670 | 0.630 | 0.967 |
| 12-Apr-95 | **2.1** | 33 | 0.7722 | 0.746 | 0.748 | 0.961 |
| 9-Feb-95 | **2.2** | 34 | 0.7959 | 0.827 | 0.787 | 0.962 |
| 10-Jan-95 | **2.4** | 35 | 0.8195 | 0.914 | 0.889 | 0.962 |
| 21-Nov-95 | **2.5** | 36 | 0.8432 | 1.008 | 0.902 | 0.978 |
| 7-Apr-94 | **2.5** | 37 | 0.8669 | 1.112 | 0.933 | 0.990 |
| 13-Jun-95 | **2.6** | 38 | 0.8905 | 1.229 | 0.936 | 0.998 |
| 17-May-91 | **3.0** | 39 | 0.9142 | 1.367 | 1.114 | |
| 17-Jan-96 | **3.6** | 40 | 0.9379 | 1.537 | 1.287 | |
| 28-Mar-96 | **4.5** | 41 | 0.9615 | 1.769 | 1.498 | |
| 22-Mar-95 | **7.0** | 42 | 0.9852 | 2.176 | 1.941 | |

update for EV, CV.

| | | | | | |
|---|---|---|---|---|---|
| tCd | | CC284 | | 9 | 8.69 |
| LN Analysis | | tCd | | 0.47 | 0.467 |
| **Concentration** | | Conc. Data, EV=8.69 ug/L CV=0.467 | | | |
| Avg: | 9 | Data-based LN | | | |
| SD: | 4 | u | ln[tCd] | [tCd] | |
| CV: | 0.47 | 3 | 3.4 | 30 | |
| Min: | 3 | 0 | 2.06 | 8 | |
| Max: | 21 | -3 | 0.73 | 2 | |
| Median: | 8 | | | | |

u=mLn(Conc.)+b:

update for r2, EV, CV r2=0.985, EV=8.77 ug/L CV=0.504; max r2=0.99

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.985 | 0.985 |
| | | | | 8.8 | 8.77 |
| | | | | 0.504 | 0.504 |
| r2 u,lnConc. | 0.985 | u | lnConc | Conc. | |
| slope, m | 2.103 | 3 | 3.49 | 33 | |
| intercept, b | -4.329 | 0 | 2.06 | 8 | |
| N | 42 | -3 | 0.63 | 2 | |
| E[Conc] | 8.8 | Parameter Estimates | | | |
| SD[Conc] | 4 | from LN regression | | | |
| CV[Conc] | 0.50 | update graph label | | | |

0.976
1.53
0.876

| Date | tCd Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.985 r2 forward |
|---|---|---|---|---|---|---|
| updata and rank for new data | | | | | | |
| 13-Jun-95 | 3 | 1 | 0.0148 | -2.176 | 1.099 | 0.985 |
| 17-May-91 | 3.3 | 2 | 0.0385 | -1.769 | 1.194 | 0.984 |
| 19-May-94 | 3.3 | 3 | 0.0621 | -1.537 | 1.194 | 0.982 |
| 4-May-94 | 3.9 | 4 | 0.0858 | -1.367 | 1.361 | 0.983 |
| 27-Jun-95 | 4.1 | 5 | 0.1095 | -1.229 | 1.411 | 0.982 |
| 21-Nov-95 | 4.8 | 6 | 0.1331 | -1.112 | 1.569 | 0.982 |
| 11-Jul-95 | 5.1 | 7 | 0.1568 | -1.008 | 1.629 | 0.981 |
| 7-Jun-94 | 5.6 | 8 | 0.1805 | -0.914 | 1.723 | 0.980 |
| 23-Jun-94 | 5.6 | 9 | 0.2041 | -0.827 | 1.723 | 0.980 |
| 13-Sep-94 | 6.2 | 10 | 0.2278 | -0.746 | 1.825 | 0.979 |
| 25-Apr-95 | 6.2 | 11 | 0.2515 | -0.670 | 1.825 | 0.981 |
| 25-Jul-95 | 6.2 | 12 | 0.2751 | -0.597 | 1.825 | 0.982 |
| 27-Oct-93 | 6.3 | 13 | 0.2988 | -0.528 | 1.841 | 0.983 |
| 12-Apr-95 | 6.7 | 14 | 0.3225 | -0.461 | 1.902 | 0.982 |
| 14-Aug-95 | 6.7 | 15 | 0.3462 | -0.396 | 1.902 | 0.984 |
| 29-Feb-96 | 6.7 | 16 | 0.3698 | -0.332 | 1.902 | 0.984 |
| 13-Sep-95 | 6.8 | 17 | 0.3935 | -0.270 | 1.917 | 0.984 |
| 25-Jul-94 | 6.9 | 18 | 0.4172 | -0.209 | 1.932 | 0.983 |
| 16-Aug-94 | 7.4 | 19 | 0.4408 | -0.149 | 2.001 | 0.981 |
| 16-Aug-94 | 7.4 | 20 | 0.4645 | -0.089 | 2.001 | 0.982 |
| 27-Dec-95 | 7.4 | 21 | 0.4882 | -0.030 | 2.001 | 0.981 |
| 5-Oct-91 | 7.6 | 22 | 0.5118 | 0.030 | 2.028 | 0.979 |
| 8-Mar-95 | 7.6 | 23 | 0.5355 | 0.089 | 2.028 | 0.977 |
| 9-Nov-97 | 7.7 | 24 | 0.5592 | 0.149 | 2.041 | 0.975 |
| 7-Apr-94 | 7.9 | 25 | 0.5828 | 0.209 | 2.067 | 0.974 |
| 30-Nov-93 | 8.5 | 26 | 0.6065 | 0.270 | 2.140 | 0.975 |
| 18-Oct-95 | 8.5 | 27 | 0.6302 | 0.332 | 2.140 | 0.974 |
| 6-Oct-94 | 8.8 | 28 | 0.6538 | 0.396 | 2.175 | 0.977 |
| 17-Dec-93 | 10.2 | 29 | 0.6775 | 0.461 | 2.322 | 0.985 |
| 17-Dec-93 | 10.2 | 30 | 0.7012 | 0.528 | 2.322 | 0.984 |
| 9-Feb-95 | 10.3 | 31 | 0.7249 | 0.597 | 2.332 | 0.981 |
| 18-Feb-94 | 11 | 32 | 0.7485 | 0.670 | 2.398 | 0.981 |
| 16-Nov-94 | 11 | 33 | 0.7722 | 0.746 | 2.398 | 0.977 |
| 20-Jan-94 | 12 | 34 | 0.7959 | 0.827 | 2.485 | 0.980 |
| 20-Jan-94 | 12 | 35 | 0.8195 | 0.914 | 2.485 | 0.976 |
| 13-Dec-94 | 13 | 36 | 0.8432 | 1.008 | 2.565 | 0.983 |
| 17-Jan-96 | 14 | 37 | 0.8669 | 1.112 | 2.639 | 0.982 |
| 8-Mar-94 | 15 | 38 | 0.8905 | 1.229 | 2.708 | 0.976 |
| 24-Mar-94 | 15 | 39 | 0.9142 | 1.367 | 2.708 | |
| 22-Mar-95 | 16 | 40 | 0.9379 | 1.537 | 2.773 | |
| 10-Jan-95 | 18 | 41 | 0.9615 | 1.769 | 2.890 | |
| 28-Mar-96 | 21 | 42 | 0.9852 | 2.176 | 3.045 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **CC284** | | | 38 | 37.9 |
| **LN Analysis** | | **tCd** | | | 0.93 | 0.932 |
| **Discharge, Q** | | **Q Data, EV=37.9 cfs CV=0.932** | | | | |
| **Avg:** | **38** | **Q Data-based LN** | | | | |
| **SD:** | **35** | u | lnQ | Q | | |
| **CV:** | **0.93** | 3 | 5.7 | 298 | | |
| **Min:** | **7** | 0 | 3.32 | 28 | | |
| **Max:** | **172** | -3 | 0.95 | 3 | | |
| **Median:** | **24** | | | | | |

| | | |
|---|---|---|
| | 0.977 | 0.977 |
| | 38.5 | 38.5 |
| **u=mLn(Q)+b:** | 0.99 | 0.992 |

update for r2, EV, CV: **r2=0.977, EV=38.5 cfs CV=0.992; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.977 | u | lnQ | Q |
| slope, m | 1.208 | 3 | 5.79 | 328 |
| intercept, b | -3.997 | 0 | 3.31 | 27 |
| N: 42 | | -3 | 0.83 | 2 |
| E[Q] | 38.5 | Parameter Estimates | | |
| SD[Q] | 38 | from LN regression | | |
| CV[Q] | 0.99 | update graph label | | |

| | | | | | | max r2 0.983 |
|---|---|---|---|---|---|---|
| | **Q** | | N: 42 | | | |
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 18-Feb-94 | 7.12 | 1 | 0.0148 | -2.176 | 1.963 | 0.977 |
| 17-Dec-93 | 7.24 | 2 | 0.0385 | -1.769 | 1.980 | 0.983 |
| 27-Oct-93 | 7.88 | 3 | 0.0621 | -1.537 | 2.064 | 0.983 |
| 20-Jan-94 | 7.88 | 4 | 0.0858 | -1.367 | 2.064 | 0.982 |
| 17-Dec-93 | 10.66 | 5 | 0.1095 | -1.229 | 2.366 | 0.980 |
| 20-Jan-94 | 11.68 | 6 | 0.1331 | -1.112 | 2.458 | 0.980 |
| 30-Nov-93 | 12.6 | 7 | 0.1568 | -1.008 | 2.534 | 0.979 |
| 16-Aug-94 | 13.57 | 8 | 0.1805 | -0.914 | 2.608 | 0.979 |
| 13-Sep-95 | 14.02 | 9 | 0.2041 | -0.827 | 2.640 | 0.979 |
| 6-Oct-94 | 15.33 | 10 | 0.2278 | -0.746 | 2.730 | 0.978 |
| 14-Aug-95 | 15.89 | 11 | 0.2515 | -0.670 | 2.766 | 0.979 |
| 5-Oct-91 | 16.1 | 12 | 0.2751 | -0.597 | 2.779 | 0.978 |
| 13-Sep-94 | 16.48 | 13 | 0.2988 | -0.528 | 2.802 | 0.977 |
| 13-Dec-94 | 16.48 | 14 | 0.3225 | -0.461 | 2.802 | 0.976 |
| 16-Nov-94 | 16.78 | 15 | 0.3462 | -0.396 | 2.820 | 0.974 |
| 16-Aug-94 | 17.71 | 16 | 0.3698 | -0.332 | 2.874 | 0.972 |
| 25-Jul-95 | 18.71 | 17 | 0.3935 | -0.270 | 2.929 | 0.970 |
| 25-Jul-94 | 19.76 | 18 | 0.4172 | -0.209 | 2.984 | 0.968 |
| 8-Mar-94 | 21.27 | 19 | 0.4408 | -0.149 | 3.057 | 0.966 |
| 24-Mar-94 | 21.27 | 20 | 0.4645 | -0.089 | 3.057 | 0.964 |
| 11-Jul-95 | 23.33 | 21 | 0.4882 | -0.030 | 3.150 | 0.965 |
| 10-Jan-95 | 25.13 | 22 | 0.5118 | 0.030 | 3.224 | 0.964 |
| 23-Jun-94 | 33.34 | 23 | 0.5355 | 0.089 | 3.507 | 0.964 |
| 9-Nov-97 | 35 | 24 | 0.5592 | 0.149 | 3.555 | 0.964 |
| 18-Oct-95 | 35.3 | 25 | 0.5828 | 0.209 | 3.564 | 0.964 |
| 8-Mar-95 | 38.13 | 26 | 0.6065 | 0.270 | 3.641 | 0.963 |
| 27-Jun-95 | 38.13 | 27 | 0.6302 | 0.332 | 3.641 | 0.964 |
| 28-Mar-96 | 39.6 | 28 | 0.6538 | 0.396 | 3.679 | 0.964 |
| 9-Feb-95 | 39.63 | 29 | 0.6775 | 0.461 | 3.680 | 0.962 |
| 27-Dec-95 | 41.2 | 30 | 0.7012 | 0.528 | 3.718 | 0.958 |
| 25-Apr-95 | 47 | 31 | 0.7249 | 0.597 | 3.850 | 0.953 |
| 17-Jan-96 | 48.1 | 32 | 0.7485 | 0.670 | 3.873 | 0.953 |
| 7-Jun-94 | 51.06 | 33 | 0.7722 | 0.746 | 3.933 | 0.949 |
| 29-Feb-96 | 52.1 | 34 | 0.7959 | 0.827 | 3.953 | 0.947 |
| 12-Apr-95 | 58.64 | 35 | 0.8195 | 0.914 | 4.071 | 0.938 |
| 7-Apr-94 | 59.82 | 36 | 0.8432 | 1.008 | 4.091 | 0.936 |
| 4-May-94 | 59.82 | 37 | 0.8669 | 1.112 | 4.091 | 0.923 |
| 19-May-94 | 73.12 | 38 | 0.8905 | 1.229 | 4.292 | 0.894 |
| 22-Mar-95 | 80.94 | 39 | 0.9142 | 1.367 | 4.394 | |
| 21-Nov-95 | 95.4 | 40 | 0.9379 | 1.537 | 4.558 | |
| 13-Jun-95 | 158.04 | 41 | 0.9615 | 1.769 | 5.063 | |
| 17-May-91 | 171.6 | 42 | 0.9852 | 2.176 | 5.145 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC284 **Date:** 2-Jun-00

**Chemical:** tPb **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,638 | 38 | 106 | 22 | 0.00 | 0.00 | 0.00 |
| **SD:** | 400 | 35 | 409 | 88 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 0.93 | 3.88 | 3.96 | | | |
| **Min:** | 33,375 | ? | 14 | 1.4 | -0.87 | -0.22 | -0.24 |
| **Max:** | 35,743 | 172 | 2,720 | 579 | 3.78 | 6.39 | 6.36 |
| **Median:** | 34,634 | 24 | 36 | 5 | -0.39 | -0.17 | -0.20 |

| tPb CC284 | | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.00005** update r2 | | | **0.00** | 5.95E-05 | | r2 | 0.004 | 0.035 |
| r2 Q,[COC] | 0.0001 | [tPb] | Q | | | m: | -0.0058 | 0.00037 |
| slope, m: | 0.1 | 103 | 7.1 | | | b: | 237 | -9.59 |
| intercept, b | 102.2 | 106 | 37.9 | | | | | |
| N: 42 | | 118 | 172 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.00103)** | | update r2 | | 0.00 | 0.00103 | | | |
| lnQ,ln[COC] | 0.001 | ln[tPb] | ln Q | [tPb] | Q | | | |
| slope, m: | 0.03 | 3.67 | 1.96 | 39 | ? | | | |
| intercept, b: | 3.61 | 3.72 | 3.64 | 41 | 38 | | | |
| N: 42 | | 3.77 | 5.15 | 43 | 172 | | | |

**N= 42**

| | Sampling Date | Q Discharge | tPb Concentration | tPb Load | Ln Q | Ln tPb Conc. | Ln tPb Load | tPb CC284 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 171.6 | 21 | 19 | 5.15 | 3.04 | 2.96 | 3.78 | -0.21 | -0.03 |
| MFG | 5-Oct-91 | 16.1 | 29 | 3 | 2.78 | 3.37 | 0.92 | -0.62 | -0.19 | -0.22 |
| IDEQ | 27-Oct-93 | 7.88 | 45 | 2 | 2.06 | 3.81 | 0.65 | -0.85 | -0.15 | -0.23 |
| IDEQ | 30-Nov-93 | 12.6 | 43 | 3 | 2.53 | 3.76 | 1.07 | -0.72 | -0.15 | -0.22 |
| IDEQ | 17-Dec-93 | 7.24 | 36 | 1 | 1.98 | 3.58 | 0.34 | -0.87 | -0.17 | -0.24 |
| IDEQ | 17-Dec-93 | 10.66 | 36 | 2 | 2.37 | 3.58 | 0.72 | -0.77 | -0.17 | -0.23 |
| IDEQ | 20-Jan-94 | 7.88 | 40 | 2 | 2.06 | 3.69 | 0.53 | -0.85 | -0.16 | -0.23 |
| IDEQ | 20-Jan-94 | 11.68 | 40 | 3 | 2.46 | 3.69 | 0.92 | -0.74 | -0.16 | -0.22 |
| IDEQ | 18-Feb-94 | 7.12 | 36 | 1 | 1.96 | 3.58 | 0.32 | -0.87 | -0.17 | -0.24 |
| IDEQ | 8-Mar-94 | 21.27 | 42 | 5 | 3.06 | 3.74 | 1.57 | -0.47 | -0.16 | -0.20 |
| IDEQ | 24-Mar-94 | 21.27 | 41 | 5 | 3.06 | 3.71 | 1.55 | -0.47 | -0.16 | -0.20 |
| IDEQ | 7-Apr-94 | 59.82 | 28 | 9 | 4.09 | 3.33 | 2.20 | 0.62 | -0.19 | -0.15 |
| IDEQ | 4-May-94 | 59.82 | 25 | 8 | 4.09 | 3.22 | 2.09 | 0.62 | -0.20 | -0.16 |
| IDEQ | 19-May-94 | 73.12 | 14 | 6 | 4.29 | 2.64 | 1.71 | 1.00 | -0.22 | -0.19 |
| IDEQ | 7-Jun-94 | 51.06 | 24 | 7 | 3.93 | 3.18 | 1.89 | 0.37 | -0.20 | -0.18 |
| IDEQ | 23-Jun-94 | 33.34 | 33 | 6 | 3.51 | 3.50 | 1.78 | -0.13 | -0.18 | -0.19 |
| IDEQ | 25-Jul-94 | 19.76 | 31 | 3 | 2.98 | 3.43 | 1.19 | -0.51 | -0.18 | -0.22 |
| IDEQ | 16-Aug-94 | 17.71 | 39 | 4 | 2.87 | 3.66 | 1.31 | -0.57 | -0.16 | -0.21 |
| IDEQ | 16-Aug-94 | 13.57 | 39 | 3 | 2.61 | 3.66 | 1.05 | -0.69 | -0.16 | -0.22 |
| IDEQ | 13-Sep-94 | 16.48 | 40 | 4 | 2.80 | 3.69 | 1.27 | -0.61 | -0.16 | -0.21 |
| IDEQ | 6-Oct-94 | 15.33 | 31 | 3 | 2.73 | 3.43 | 0.94 | -0.64 | -0.18 | -0.22 |
| IDEQ | 16-Nov-94 | 16.78 | 30 | 3 | 2.82 | 3.40 | 1.00 | -0.60 | -0.18 | -0.22 |
| IDEQ | 13-Dec-94 | 16.48 | 31 | 3 | 2.80 | 3.43 | 1.01 | -0.61 | -0.18 | -0.22 |
| IDEQ | 10-Jan-95 | 25.13 | 82 | 11 | 3.22 | 4.41 | 2.41 | -0.36 | -0.06 | -0.13 |
| IDEQ | 9-Feb-95 | 39.63 | 28 | 6 | 3.68 | 3.33 | 1.79 | 0.05 | -0.19 | -0.18 |
| IDEQ | 8-Mar-95 | 38.13 | 21 | 4 | 3.64 | 3.04 | 1.46 | 0.01 | -0.21 | -0.20 |
| IDEQ | 22-Mar-95 | 80.94 | 42 | 18 | 4.39 | 3.74 | 2.91 | 1.22 | -0.16 | -0.04 |
| IDEQ | 12-Apr-95 | 58.64 | 27 | 9 | 4.07 | 3.30 | 2.14 | 0.59 | -0.19 | -0.16 |
| IDEQ | 25-Apr-95 | 47 | 48 | 12 | 3.85 | 3.87 | 2.50 | 0.26 | -0.14 | -0.11 |
| IDEQ | 13-Jun-95 | 158.04 | 29 | 25 | 5.06 | 3.37 | 3.21 | 3.40 | -0.19 | 0.03 |
| IDEQ | 27-Jun-95 | 38.13 | 41 | 8 | 3.64 | 3.71 | 2.13 | 0.01 | -0.16 | -0.16 |
| IDEQ | 11-Jul-95 | 23.33 | 29 | 4 | 3.15 | 3.37 | 1.29 | -0.41 | -0.19 | -0.21 |
| IDEQ | 25-Jul-95 | 18.71 | 31 | 3 | 2.93 | 3.43 | 1.14 | -0.54 | -0.18 | -0.22 |
| IDEQ | 14-Aug-95 | 15.89 | 30 | 3 | 2.77 | 3.40 | 0.94 | -0.62 | -0.18 | -0.22 |
| IDEQ | 13-Sep-95 | 14.02 | 30 | 2 | 2.64 | 3.40 | 0.82 | -0.68 | -0.18 | -0.23 |
| IDEQ | 18-Oct-95 | 35.3 | 46 | 9 | 3.56 | 3.83 | 2.17 | -0.07 | -0.15 | -0.15 |
| IDEQ | 21-Nov-95 | 95.4 | 88 | 45 | 4.56 | 4.48 | 3.81 | 1.63 | -0.04 | 0.26 |
| IDEQ | 27-Dec-95 | 41.2 | 44 | 10 | 3.72 | 3.78 | 2.28 | 0.09 | -0.15 | -0.14 |
| IDEQ | 17-Jan-96 | 48.1 | 208 | 54 | 3.87 | 5.34 | 3.99 | 0.29 | 0.25 | 0.36 |
| IDEQ | 29-Feb-96 | 52.1 | 48 | 13 | 3.95 | 3.87 | 2.60 | 0.40 | -0.14 | -0.10 |
| IDEQ | 28-Mar-96 | 39.6 | 2720 | 579 | 3.68 | 7.91 | 6.36 | 0.05 | 6.39 | 6.36 |
| URS | 9-Nov-97 | 35 | 70.7 | 13 | 3.56 | 4.26 | 2.59 | -0.08 | -0.09 | -0.10 |

tPb

**Concentration over time analysis**

| | tPb | CC284 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | **Concentration over time** | | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.154** | **0.00077** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 17-May-91 | 2.74 | 16 | | |
| mid | 26-Oct-94 | 3.71 | 41 | | |
| last | 9-Nov-97 | 4.57 | 96 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Nov-97 | 0.00 | 1 | | |

**Load over time analysis**

| | tPb | CC284 | | |
|---|---|---|---|---|
| | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | **0.163** | **0.00114** |
| | **Time** | **LnLoad** | **Load** | |
| first | 17-May-91 | 0.35 | 1 | |
| mid | 26-Oct-94 | 1.79 | 6 | |
| last | 9-Nov-97 | 3.06 | 21 | |
| | **LnLoad=mTime+b >'96 r2, m:** | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | |
| | 9-Nov-97 | 0.00 | 1 | |

max r2 0.234

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.154 | 0.00077 | -22.96 |
| 0.144 | 0.00085 | -25.64 |
| 0.160 | 0.00104 | -32.42 |
| 0.171 | 0.00111 | -34.66 |
| 0.181 | 0.00116 | -36.70 |
| 0.184 | 0.00120 | -38.09 |
| 0.188 | 0.00125 | -39.72 |
| 0.196 | 0.00131 | -41.80 |
| 0.205 | 0.00138 | -44.25 |
| 0.210 | 0.00144 | -46.19 |
| 0.222 | 0.00152 | -49.11 |
| 0.234 | 0.00161 | -52.18 |
| 0.229 | 0.00164 | -53.22 |
| 0.219 | 0.00164 | -53.40 |
| 0.189 | 0.00153 | -49.50 |
| 0.174 | 0.00151 | -48.61 |
| 0.170 | 0.00154 | -49.79 |
| 0.163 | 0.00155 | -50.26 |
| 0.165 | 0.00161 | -52.38 |
| 0.167 | 0.00169 | -55.05 |
| 0.170 | 0.00177 | -57.99 |
| 0.161 | 0.00179 | -58.56 |
| 0.150 | 0.00178 | -58.15 |
| 0.138 | 0.00176 | -57.52 |
| 0.170 | 0.00201 | -66.33 |
| 0.154 | 0.00196 | -64.59 |
| 0.129 | 0.00180 | -59.04 |
| 0.124 | 0.00182 | -59.79 |
| 0.103 | 0.00169 | -55.06 |
| 0.099 | 0.00172 | -56.22 |
| 0.080 | 0.00156 | -50.60 |
| 0.069 | 0.00148 | -47.70 |
| 0.047 | 0.00123 | -38.95 |
| 0.026 | 0.00093 | -28.12 |
| 0.007 | 0.00049 | -12.71 |
| 0.000 | -0.00009 | 8.08 |
| 0.012 | -0.00064 | 27.48 |
| 0.028 | -0.00100 | 40.26 |

max r2 0.348

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.163 | 0.00114 | -37.78 |
| 0.317 | 0.00181 | -60.90 |
| 0.348 | 0.00220 | -74.57 |
| 0.332 | 0.00218 | -73.69 |
| 0.324 | 0.00219 | -74.26 |
| 0.300 | 0.00211 | -71.45 |
| 0.282 | 0.00207 | -70.04 |
| 0.258 | 0.00199 | -67.21 |
| 0.240 | 0.00195 | -65.96 |
| 0.209 | 0.00181 | -61.04 |
| 0.206 | 0.00185 | -62.25 |
| 0.202 | 0.00188 | -63.33 |
| 0.221 | 0.00203 | -68.50 |
| 0.236 | 0.00216 | -73.25 |
| 0.238 | 0.00224 | -76.01 |
| 0.247 | 0.00236 | -80.20 |
| 0.253 | 0.00247 | -84.04 |
| 0.237 | 0.00245 | -83.27 |
| 0.223 | 0.00244 | -82.90 |
| 0.199 | 0.00236 | -80.02 |
| 0.180 | 0.00230 | -78.08 |
| 0.149 | 0.00213 | -71.95 |
| 0.119 | 0.00192 | -64.78 |
| 0.089 | 0.00167 | -56.07 |
| 0.095 | 0.00178 | -59.94 |
| 0.083 | 0.00171 | -57.36 |
| 0.064 | 0.00152 | -50.54 |
| 0.078 | 0.00173 | -58.21 |
| 0.073 | 0.00173 | -57.99 |
| 0.077 | 0.00184 | -61.95 |
| 0.101 | 0.00216 | -73.31 |
| 0.096 | 0.00217 | -73.53 |
| 0.069 | 0.00184 | -61.86 |
| 0.037 | 0.00132 | -43.63 |
| 0.006 | 0.00052 | -15.32 |
| 0.011 | -0.00061 | 24.97 |
| 0.059 | -0.00137 | 51.80 |
| 0.055 | -0.00139 | 52.49 |

update for EV, CV:

**tPb** **CC284**

**LN Analysis** **tPb**

**Load** **Load Data, EV=22.2 lbs/day CV=3.96**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **22** | **Load Data-based LN** | | |
| **SD:** | **88** | u | ln tPb Load | tPb Load |
| **CV:** | **3.96** | 3 | 6.7 | 831 |
| **Min:** | **1.4** | 0 | 1.69 | 5 |
| **Max:** | **579** | -3 | -3.34 | 0.04 |
| **Median:** | **5** | | | |
| | | 22 | 22.2 | |
| | | 3.96 | 3.96 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.856, EV=13.4#/d CV=1.99; max r2=0.92**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.856 | u | lnLoad | Load | | |
| slope, m: | 0.791 | 3 | 5.59 | 268 | | |
| intercept, b: | -1.421 | 0 | 1.80 | 6 | | |
| N: | 42 | -3 | -2.00 | 0.1 | | |
| E[Load]: | 13.4 | Parameter Estimates | | | 0.856 | 0.856 |
| SD[Load]: | 27 | from LN regression | | | 13.4 | 13.4 |
| CV[Load]: | 1.99 | update graph label | | | 2.0 | 1.99 |
| | | | | | max r2 | |
| | tPb | N 42 | | | 0.924 | |

| Date | Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 18-Feb-94 | 1 | 1 | 0.0148 | -2.176 | 0.321 | 0.856 |
| 17-Dec-93 | 1 | 2 | 0.0385 | -1.769 | 0.338 | 0.867 |
| 20-Jan-94 | 2 | 3 | 0.0621 | -1.537 | 0.528 | 0.869 |
| 27-Oct-93 | 2 | 4 | 0.0858 | -1.367 | 0.646 | 0.872 |
| 17-Dec-93 | 2 | 5 | 0.1095 | -1.229 | 0.725 | 0.875 |
| 13-Sep-95 | 2 | 6 | 0.1331 | -1.112 | 0.817 | 0.878 |
| 5-Oct-91 | 3 | 7 | 0.1568 | -1.008 | 0.921 | 0.881 |
| 20-Jan-94 | 3 | 8 | 0.1805 | -0.914 | 0.922 | 0.887 |
| 6-Oct-94 | 3 | 9 | 0.2041 | -0.827 | 0.939 | 0.890 |
| 14-Aug-95 | 3 | 10 | 0.2278 | -0.746 | 0.942 | 0.893 |
| 16-Nov-94 | 3 | 11 | 0.2515 | -0.670 | 0.996 | 0.893 |
| 13-Dec-94 | 3 | 12 | 0.2751 | -0.597 | 1.011 | 0.894 |
| 16-Aug-94 | 3 | 13 | 0.2988 | -0.528 | 1.046 | 0.894 |
| 30-Nov-93 | 3 | 14 | 0.3225 | -0.461 | 1.070 | 0.892 |
| 25-Jul-95 | 3 | 15 | 0.3462 | -0.396 | 1.138 | 0.890 |
| 25-Jul-94 | 3 | 16 | 0.3698 | -0.332 | 1.193 | 0.888 |
| 13-Sep-94 | 4 | 17 | 0.3935 | -0.270 | 1.266 | 0.885 |
| 11-Jul-95 | 4 | 18 | 0.4172 | -0.209 | 1.292 | 0.883 |
| 16-Aug-94 | 4 | 19 | 0.4408 | -0.149 | 1.313 | 0.879 |
| 8-Mar-95 | 4 | 20 | 0.4645 | -0.089 | 1.460 | 0.874 |
| 24-Mar-94 | 5 | 21 | 0.4882 | -0.030 | 1.546 | 0.871 |
| 8-Mar-94 | 5 | 22 | 0.5118 | 0.030 | 1.570 | 0.868 |
| 19-May-94 | 6 | 23 | 0.5355 | 0.089 | 1.706 | 0.864 |
| 23-Jun-94 | 6 | 24 | 0.5592 | 0.149 | 1.778 | 0.863 |
| 9-Feb-95 | 6 | 25 | 0.5828 | 0.209 | 1.787 | 0.862 |
| 7-Jun-94 | 7 | 26 | 0.6065 | 0.270 | 1.886 | 0.859 |
| 4-May-94 | 8 | 27 | 0.6302 | 0.332 | 2.085 | 0.858 |
| 27-Jun-95 | 8 | 28 | 0.6538 | 0.396 | 2.130 | 0.865 |
| 12-Apr-95 | 9 | 29 | 0.6775 | 0.461 | 2.142 | 0.873 |
| 18-Oct-95 | 9 | 30 | 0.7012 | 0.528 | 2.167 | 0.879 |
| 7-Apr-94 | 9 | 31 | 0.7249 | 0.597 | 2.198 | 0.884 |
| 27-Dec-95 | 10 | 32 | 0.7485 | 0.670 | 2.278 | 0.886 |
| 10-Jan-95 | 11 | 33 | 0.7722 | 0.746 | 2.406 | 0.888 |
| 25-Apr-95 | 12 | 34 | 0.7959 | 0.827 | 2.496 | 0.895 |
| 9-Nov-97 | 13 | 35 | 0.8195 | 0.914 | 2.589 | 0.903 |
| 29-Feb-96 | 13 | 36 | 0.8432 | 1.008 | 2.599 | 0.911 |
| 22-Mar-95 | 18 | 37 | 0.8669 | 1.112 | 2.906 | 0.908 |
| 17-May-91 | 19 | 38 | 0.8905 | 1.229 | 2.965 | 0.924 |
| 13-Jun-95 | 25 | 39 | 0.9142 | 1.367 | 3.205 | |
| 21-Nov-95 | 45 | 40 | 0.9379 | 1.537 | 3.810 | |
| 17-Jan-96 | 54 | 41 | 0.9615 | 1.769 | 3.986 | |
| 28-Mar-96 | 579 | 42 | 0.9852 | 2.176 | 6.362 | |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tPb** | | **CC284** | | 106 | 106 |
| **LN Analysis** | | **tPb** | | 3.88 | 3.88 |
| **Concentration** | | **Conc. Data, EV=106 ug/L CV=3.88** | | | |
| **Avg:** | 106 | **Data-based LN** | | | |
| **SD:** | 409 | u | ln[tPb] | [tPb] | |
| **CV:** | 3.88 | 3 | 8.3 | 3903 | |
| **Min:** | 14 | 0 | 3.27 | 26 | |
| **Max:** | 2,720 | -3 | -1.72 | 0.2 | |
| **Median:** | 36 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.575 | 0.575 |
| | **u=mLn(Conc.)+b:** | | | | 72.6 | 72.6 |
| update for r2, EV, CV: | **r2=0.575, EV=72.6 ug/L CV=1.46; max r2=0.90** | | | | 1 461 | 1 46 |
| | r2 u,lnConc | 0.575 | u | lnConc. | Conc | |
| | slope, m: | 0.935 | 3 | 6.92 | 1013 | |
| | intercept, b | -3.474 | 0 | 3.71 | 41 | |
| | N 42 | | -3 | 0.51 | 2 | |
| | E[Conc] | 72.6 | Parameter Estimates | | | |
| | SD[Conc]: | 106 | from LN regression | | | |
| | CV[Conc] | 1.46 | update graph label | | | |

| | tPb | N 42 | | | | max r2 0.895 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 19-May-94 | 14 | 1 | 0.0148 | -2.176 | 2.639 | 0.575 |
| 17-May-91 | 21 | 2 | 0.0385 | -1.769 | 3.045 | 0.557 |
| 8-Mar-95 | 21 | 3 | 0.0621 | -1.537 | 3.045 | 0.558 |
| 7-Jun-94 | 24 | 4 | 0.0858 | -1.367 | 3.178 | 0.554 |
| 4-May-94 | 25 | 5 | 0.1095 | -1.229 | 3.219 | 0.556 |
| 12-Apr-95 | 27 | 6 | 0.1331 | -1.112 | 3.296 | 0.558 |
| 7-Apr-94 | 28 | 7 | 0.1568 | -1.008 | 3.332 | 0.564 |
| 9-Feb-95 | 28 | 8 | 0.1805 | -0.914 | 3.332 | 0.570 |
| 5-Oct-91 | 29 | 9 | 0.2041 | -0.827 | 3.367 | 0.575 |
| 13-Jun-95 | 29 | 10 | 0.2278 | -0.746 | 3.367 | 0.581 |
| 11-Jul-95 | 29 | 11 | 0.2515 | -0.670 | 3.367 | 0.586 |
| 16-Nov-94 | 30 | 12 | 0.2751 | -0.597 | 3.401 | 0.590 |
| 14-Aug-95 | 30 | 13 | 0.2988 | -0.528 | 3.401 | 0.596 |
| 13-Sep-95 | 30 | 14 | 0.3225 | -0.461 | 3.401 | 0.600 |
| 25-Jul-94 | 31 | 15 | 0.3462 | -0.396 | 3.434 | 0.604 |
| 6-Oct-94 | 31 | 16 | 0.3698 | -0.332 | 3.434 | 0.608 |
| 13-Dec-94 | 31 | 17 | 0.3935 | -0.270 | 3.434 | 0.612 |
| 25-Jul-95 | 31 | 18 | 0.4172 | -0.209 | 3.434 | 0.615 |
| 23-Jun-94 | 33 | 19 | 0.4408 | -0.149 | 3.497 | 0.616 |
| 17-Dec-93 | 36 | 20 | 0.4645 | -0.089 | 3.584 | 0.620 |
| 17-Dec-93 | 36 | 21 | 0.4882 | -0.030 | 3.584 | 0.629 |
| 18-Feb-94 | 36 | 22 | 0.5118 | 0.030 | 3.584 | 0.638 |
| 16-Aug-94 | 39 | 23 | 0.5355 | 0.089 | 3.664 | 0.647 |
| 16-Aug-94 | 39 | 24 | 0.5592 | 0.149 | 3.664 | 0.661 |
| 20-Jan-94 | 40 | 25 | 0.5828 | 0.209 | 3.689 | 0.675 |
| 20-Jan-94 | 40 | 26 | 0.6065 | 0.270 | 3.689 | 0.691 |
| 13-Sep-94 | 40 | 27 | 0.6302 | 0.332 | 3.689 | 0.707 |
| 24-Mar-94 | 41 | 28 | 0.6538 | 0.396 | 3.714 | 0.723 |
| 27-Jun-95 | 41 | 29 | 0.6775 | 0.461 | 3.714 | 0.741 |
| 8-Mar-94 | 42 | 30 | 0.7012 | 0.528 | 3.738 | 0.758 |
| 22-Mar-95 | 42 | 31 | 0.7249 | 0.597 | 3.738 | 0.778 |
| 30-Nov-93 | 43 | 32 | 0.7485 | 0.670 | 3.761 | 0.796 |
| 27-Dec-95 | 44 | 33 | 0.7722 | 0.746 | 3.784 | 0.817 |
| 27-Oct-93 | 45 | 34 | 0.7959 | 0.827 | 3.807 | 0.838 |
| 18-Oct-95 | 46 | 35 | 0.8195 | 0.914 | 3.829 | 0.858 |
| 25-Apr-95 | 48 | 36 | 0.8432 | 1.008 | 3.871 | 0.878 |
| 29-Feb-96 | 48 | 37 | 0.8669 | 1.112 | 3.871 | 0.894 |
| 9-Nov-97 | 70.7 | 38 | 0.8905 | 1.229 | 4.258 | 0.895 |
| 10-Jan-95 | 82 | 39 | 0.9142 | 1.367 | 4.407 | |
| 21-Nov-95 | 88 | 40 | 0.9379 | 1.537 | 4.477 | |
| 17-Jan-96 | 208 | 41 | 0.9615 | 1.769 | 5.338 | |
| 28-Mar-96 | 2720 | 42 | 0.9852 | 2.176 | 7.908 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **CC284** | | | 38 | 37.9 |
| **LN Analysis** | | **tPb** | | | 0.93 | 0.932 |
| **Discharge, Q** | | **Q Data, EV=37.9 cfs CV=0.932** | | | | |
| **Avg:** | **38** | **Q Data-based LN** | | | | |
| **SD:** | **35** | u | lnQ | Q | | |
| **CV:** | **0.93** | 3 | 5.7 | 298 | | |
| **Min:** | **7** | 0 | 3.32 | 28 | | |
| **Max:** | **172** | -3 | 0.95 | 3 | | |
| **Median:** | **24** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.977 | 0.977 |
| | | | | | 38.5 | 38.5 |
| **u=mLn(Q)+b:** | | | | | 0.99 | 0.992 |
| update for r2, EV, CV: | **r2=0.977, EV=38.5 cfs CV=0.992; max r2=0.98** | | | | | |
| | r2 u,lnQ: | 0.977 | u | lnQ | Q | |
| | slope, m: | 1.208 | 3 | 5.79 | 328 | |
| | intercept, b: | -3.997 | 0 | 3.31 | 27 | |
| | N: 42 | | -3 | 0.83 | 2 | |
| | E[Q] | 38.5 | Parameter Estimates | | | |
| | SD[Q] | 38 | from LN regression | | | |
| | CV[Q]: | 0.99 | update graph label | | | |

| | | | | | | max r2 |
|---|---|---|---|---|---|---|
| | **Q** | N: 42 | | | | 0.983 |
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 18-Feb-94 | 7.12 | 1 | 0.0148 | -2.176 | 1.963 | 0.977 |
| 17-Dec-93 | 7.24 | 2 | 0.0385 | -1.769 | 1.980 | 0.983 |
| 27-Oct-93 | 7.88 | 3 | 0.0621 | -1.537 | 2.064 | 0.983 |
| 20-Jan-94 | 7.88 | 4 | 0.0858 | -1.367 | 2.064 | 0.982 |
| 17-Dec-93 | 10.66 | 5 | 0.1095 | -1.229 | 2.366 | 0.980 |
| 20-Jan-94 | 11.68 | 6 | 0.1331 | -1.112 | 2.458 | 0.980 |
| 30-Nov-93 | 12.6 | 7 | 0.1568 | -1.008 | 2.534 | 0.979 |
| 16-Aug-94 | 13.57 | 8 | 0.1805 | -0.914 | 2.608 | 0.979 |
| 13-Sep-95 | 14.02 | 9 | 0.2041 | -0.827 | 2.640 | 0.979 |
| 6-Oct-94 | 15.33 | 10 | 0.2278 | -0.746 | 2.730 | 0.978 |
| 14-Aug-95 | 15.89 | 11 | 0.2515 | -0.670 | 2.766 | 0.979 |
| 5-Oct-91 | 16.1 | 12 | 0.2751 | -0.597 | 2.779 | 0.978 |
| 13-Sep-94 | 16.48 | 13 | 0.2988 | -0.528 | 2.802 | 0.977 |
| 13-Dec-94 | 16.48 | 14 | 0.3225 | -0.461 | 2.802 | 0.976 |
| 16-Nov-94 | 16.78 | 15 | 0.3462 | -0.396 | 2.820 | 0.974 |
| 16-Aug-94 | 17.71 | 16 | 0.3698 | -0.332 | 2.874 | 0.972 |
| 25-Jul-95 | 18.71 | 17 | 0.3935 | -0.270 | 2.929 | 0.970 |
| 25-Jul-94 | 19.76 | 18 | 0.4172 | -0.209 | 2.984 | 0.968 |
| 8-Mar-94 | 21.27 | 19 | 0.4408 | -0.149 | 3.057 | 0.966 |
| 24-Mar-94 | 21.27 | 20 | 0.4645 | -0.089 | 3.057 | 0.964 |
| 11-Jul-95 | 23.33 | 21 | 0.4882 | -0.030 | 3.150 | 0.965 |
| 10-Jan-95 | 25.13 | 22 | 0.5118 | 0.030 | 3.224 | 0.964 |
| 23-Jun-94 | 33.34 | 23 | 0.5355 | 0.089 | 3.507 | 0.964 |
| 9-Nov-97 | 35 | 24 | 0.5592 | 0.149 | 3.555 | 0.964 |
| 18-Oct-95 | 35.3 | 25 | 0.5828 | 0.209 | 3.564 | 0.964 |
| 8-Mar-95 | 38.13 | 26 | 0.6065 | 0.270 | 3.641 | 0.963 |
| 27-Jun-95 | 38.13 | 27 | 0.6302 | 0.332 | 3.641 | 0.964 |
| 28-Mar-96 | 39.6 | 28 | 0.6538 | 0.396 | 3.679 | 0.964 |
| 9-Feb-95 | 39.63 | 29 | 0.6775 | 0 461 | 3.680 | 0.962 |
| 27-Dec-95 | 41.2 | 30 | 0.7012 | 0.528 | 3.718 | 0.958 |
| 25-Apr-95 | 47 | 31 | 0.7249 | 0.597 | 3.850 | 0.953 |
| 17-Jan-96 | 48.1 | 32 | 0.7485 | 0.670 | 3.873 | 0.953 |
| 7-Jun-94 | 51.06 | 33 | 0.7722 | 0.746 | 3.933 | 0.949 |
| 29-Feb-96 | 52.1 | 34 | 0.7959 | 0.827 | 3.953 | 0.947 |
| 12-Apr-95 | 58.64 | 35 | 0.8195 | 0.914 | 4.071 | 0.938 |
| 7-Apr-94 | 59.82 | 36 | 0.8432 | 1.008 | 4.091 | 0.936 |
| 4-May-94 | 59.82 | 37 | 0.8669 | 1.112 | 4.091 | 0.923 |
| 19-May-94 | 73.12 | 38 | 0.8905 | 1.229 | 4.292 | 0.894 |
| 22-Mar-95 | 80.94 | 39 | 0.9142 | 1.367 | 4.394 | |
| 21-Nov-95 | 95.4 | 40 | 0.9379 | 1.537 | 4.558 | |
| 13-Jun-95 | 158.04 | 41 | 0.9615 | 1.769 | 5.063 | |
| 17-May-91 | 171.6 | 42 | 0.9852 | 2.176 | 5.145 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC284 **Date:** 2-Jun-00

**Chemical:** tZn **Analyst:** J.Johnston

Notes: Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,638 | 38 | 1,371 | 227 | 0.00 | 0.00 | 0.00 |
| **SD:** | 400 | 35 | 637 | 170 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 0.93 | 0.46 | 0.75 | | | |
| **Min:** | 33,375 | 7 | 444 | 48.3 | -0.87 | -1.45 | -1.06 |
| **Max:** | 35,743 | 172 | 2,710 | 954 | 3.78 | 2.10 | 4.28 |
| **Median:** | 34,634 | 24 | 1,170 | 187 | -0.39 | -0.32 | -0.24 |

| tZn | CC284 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.186)** | | update r2 | 0.19 | 0.186 | r2: | 0.004 | 0.035 |
| r2 Q,[COC]: | 0.19 | [tZn] | Q | | m: | -0.0058 | 0.00037 |
| slope, m: | -7.8 | 1,610 | 7.1 | | b: | 237 | -9.59 |
| intercept, b: | 1665.7 | 1,371 | 37.9 | | | | |
| N: | 42 | 333 | 172 | | | | |
| **LnConc. = mLn{Q}+b (r2=0.266)** | | update r2 | 0.27 | 0.266 | | | |
| r2 lnQ,ln[COC]: | 0.27 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m: | -0.32 | 7.54 | 1.96 | 1,883 | 7 | | |
| intercept, b: | 8.17 | 7.00 | 3.64 | 1,100 | 38 | | |
| N: | 42 | 6.52 | 5.15 | 677 | 172 | | |

**N= 42**

| update for new data | Sampling Date | Q Discharge cfs | tZn Concentration ug/L | tZn Load lbs/day | Ln Q | Ln tZn Conc. | Ln tZn Load | for graph 0 tZn CC284 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 171.6 | 475 | 439 | 5.15 | 6.16 | 6.08 | 3.78 | -1.41 | 1.24 |
| MFG | 5-Oct-91 | 16.1 | 1290 | 112 | 2.78 | 7.16 | 4.72 | -0.62 | -0.13 | -0.68 |
| IDEQ | 27-Oct-93 | 7.88 | 1140 | 48 | 2.06 | 7.04 | 3.88 | -0.85 | -0.36 | -1.06 |
| IDEQ | 30-Nov-93 | 12.6 | 1640 | 111 | 2.53 | 7.40 | 4.71 | -0.72 | 0.42 | -0.69 |
| IDEQ | 17-Dec-93 | 7.24 | 2070 | 81 | 1.98 | 7.64 | 4.39 | -0.87 | 1.10 | -0.87 |
| IDEQ | 17-Dec-93 | 10.66 | 2070 | 119 | 2.37 | 7.64 | 4.78 | -0.77 | 1.10 | -0.64 |
| IDEQ | 20-Jan-94 | 7.88 | 2310 | 98 | 2.06 | 7.75 | 4.58 | -0.85 | 1.47 | -0.76 |
| IDEQ | 20-Jan-94 | 11.68 | 2310 | 145 | 2.46 | 7.75 | 4.98 | -0.74 | 1.47 | -0.49 |
| IDEQ | 18-Feb-94 | 7.12 | 1920 | 74 | 1.96 | 7.56 | 4.30 | -0.87 | 0.86 | -0.91 |
| IDEQ | 8-Mar-94 | 21.27 | 2410 | 276 | 3.06 | 7.79 | 5.62 | -0.47 | 1.63 | 0.28 |
| IDEQ | 24-Mar-94 | 21.27 | 2440 | 279 | 3.06 | 7.80 | 5.63 | -0.47 | 1.68 | 0.31 |
| IDEQ | 7-Apr-94 | 59.82 | 1260 | 406 | 4.09 | 7.14 | 6.01 | 0.62 | -0.17 | 1.05 |
| IDEQ | 4-May-94 | 59.82 | 585 | 188 | 4.09 | 6.37 | 5.24 | 0.62 | -1.23 | -0.23 |
| IDEQ | 19-May-94 | 73.12 | 470 | 185 | 4.29 | 6.15 | 5.22 | 1.00 | -1.41 | -0.25 |
| IDEQ | 7-Jun-94 | 51.06 | 725 | 199 | 3.93 | 6.59 | 5.29 | 0.37 | -1.01 | -0.17 |
| IDEQ | 23-Jun-94 | 33.34 | 743 | 133 | 3.51 | 6.61 | 4.89 | -0.13 | -0.99 | -0.56 |
| IDEQ | 25-Jul-94 | 19.76 | 984 | 105 | 2.98 | 6.89 | 4.65 | -0.51 | -0.61 | -0.72 |
| IDEQ | 16-Aug-94 | 17.71 | 1080 | 103 | 2.87 | 6.98 | 4.63 | -0.57 | -0.46 | -0.73 |
| IDEQ | 16-Aug-94 | 13.57 | 1080 | 79 | 2.61 | 6.98 | 4.37 | -0.69 | -0.46 | -0.88 |
| IDEQ | 13-Sep-94 | 16.48 | 800 | 71 | 2.80 | 6.68 | 4.26 | -0.61 | -0.90 | -0.92 |
| IDEQ | 6-Oct-94 | 15.33 | 1120 | 92 | 2.73 | 7.02 | 4.53 | -0.64 | -0.39 | -0.80 |
| IDEQ | 16-Nov-94 | 16.78 | 1980 | 179 | 2.82 | 7.59 | 5.19 | -0.60 | 0.96 | -0.29 |
| IDEQ | 13-Dec-94 | 16.48 | 2480 | 220 | 2.80 | 7.82 | 5.39 | -0.61 | 1.74 | -0.04 |
| IDEQ | 10-Jan-95 | 25.13 | 2710 | 366 | 3.22 | 7.90 | 5.90 | -0.36 | 2.10 | 0.82 |
| IDEQ | 9-Feb-95 | 39.63 | 1680 | 358 | 3.68 | 7.43 | 5.88 | 0.05 | 0.48 | 0.77 |
| IDEQ | 8-Mar-95 | 38.13 | 1110 | 228 | 3.64 | 7.01 | 5.43 | 0.01 | -0.41 | 0.00 |
| IDEQ | 22-Mar-95 | 80.94 | 2190 | 954 | 4.39 | 7.69 | 6.86 | 1.22 | 1.28 | 4.28 |
| IDEQ | 12-Apr-95 | 58.64 | 1170 | 369 | 4.07 | 7.06 | 5.91 | 0.59 | -0.32 | 0.84 |
| IDEQ | 25-Apr-95 | 47 | 1060 | 268 | 3.85 | 6.97 | 5.59 | 0.26 | -0.49 | 0.24 |
| IDEQ | 13-Jun-95 | 158.04 | 444 | 378 | 5.06 | 6.10 | 5.93 | 3.40 | -1.45 | 0.88 |
| IDEQ | 27-Jun-95 | 38.13 | 583 | 120 | 3.64 | 6.37 | 4.78 | 0.01 | -1.24 | -0.64 |
| IDEQ | 11-Jul-95 | 23.33 | 791 | 99 | 3.15 | 6.67 | 4.60 | -0.41 | -0.91 | -0.76 |
| IDEQ | 25-Jul-95 | 18.71 | 818 | 82 | 2.93 | 6.71 | 4.41 | -0.54 | -0.87 | -0.86 |
| IDEQ | 14-Aug-95 | 15.89 | 1020 | 87 | 2.77 | 6.93 | 4.47 | -0.62 | -0.55 | -0.83 |
| IDEQ | 13-Sep-95 | 14.02 | 926 | 70 | 2.64 | 6.83 | 4.25 | -0.68 | -0.70 | -0.93 |
| IDEQ | 18-Oct-95 | 35.3 | 1300 | 247 | 3.56 | 7.17 | 5.51 | -0.07 | -0.11 | 0.11 |
| IDEQ | 21-Nov-95 | 95.4 | 820 | 421 | 4.56 | 6.71 | 6.04 | 1.63 | -0.86 | 1.14 |
| IDEQ | 27-Dec-95 | 41.2 | 1220 | 270 | 3.72 | 7.11 | 5.60 | 0.09 | -0.24 | 0.25 |
| IDEQ | 17-Jan-96 | 48.1 | 2100 | 543 | 3.87 | 7.65 | 6.30 | 0.29 | 1.14 | 1.86 |
| IDEQ | 29-Feb-96 | 52.1 | 1170 | 328 | 3.95 | 7.06 | 5.79 | 0.40 | -0.32 | 0.59 |
| IDEQ | 28-Mar-96 | 39.6 | 1800 | 383 | 3.68 | 7.50 | 5.95 | 0.05 | 0.67 | 0.92 |
| URS | 9-Nov-97 | 35 | 1290 | 243 | 3.56 | 7.16 | 5.49 | -0.08 | -0.13 | 0.09 |

tZn

**Concentration over time analysis**

| | tZn | CC284 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.000** | **0.00003** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 17-May-91 | 7.08 | 1,183 | | |
| mid | 26-Oct-94 | 7.11 | 1,222 | | |
| last | 9-Nov-97 | 7.14 | 1,256 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Nov-97 | 0.00 | 1 | | |

**Load over time analysis**

| | tZn | CC284 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.054** | **0.00040** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 17-May-91 | 4.69 | 109 | | |
| mid | 26-Oct-94 | 5.19 | 179 | | |
| last | 9-Nov-97 | 5.63 | 279 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Nov-97 | 0.00 | 1 | | |

| | max r2: 0.242 | | | max r2: 0.375 | | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points. delete last 4 rows | | | only on >4 data points. delete last 4 rows | | |
| | 0.000 | 0.00003 | 6.23 | 0.054 | 0.00040 | -8.59 |
| | 0.023 | -0.00021 | 14.32 | 0.153 | 0.00075 | -20.94 |
| | 0.030 | -0.00027 | 16.62 | 0.156 | 0.00089 | -25.53 |
| | 0.034 | -0.00030 | 17.52 | 0.124 | 0.00077 | -21.51 |
| | 0.029 | -0.00028 | 16.88 | 0.113 | 0.00075 | -20.68 |
| | 0.019 | -0.00023 | 15.10 | 0.092 | 0.00068 | -18.26 |
| | 0.010 | -0.00017 | 13.01 | 0.082 | 0.00065 | -17.31 |
| | 0.003 | -0.00009 | 10.18 | 0.066 | 0.00059 | -15.23 |
| | 0.000 | 0.00001 | 6.84 | 0.060 | 0.00058 | -14.86 |
| | 0.002 | 0.00008 | 4.14 | 0.039 | 0.00046 | -10.71 |
| | 0.015 | 0.00021 | -0.20 | 0.050 | 0.00054 | -13.34 |
| | 0.044 | 0.00035 | -5.24 | 0.064 | 0.00062 | -16.39 |
| | 0.054 | 0.00040 | -6.94 | 0.100 | 0.00079 | -22.22 |
| | 0.033 | 0.00031 | -3.89 | 0.104 | 0.00083 | -23.74 |
| | 0.010 | 0.00017 | 1.20 | 0.108 | 0.00088 | -25.31 |
| | 0.003 | 0.00009 | 4.04 | 0.116 | 0.00094 | -27.55 |
| | 0.000 | 0.00000 | 7.23 | 0.106 | 0.00093 | -27.02 |
| | 0.001 | -0.00005 | 8.67 | 0.086 | 0.00085 | -24.34 |
| | 0.002 | -0.00007 | 9.58 | 0.066 | 0.00075 | -20.94 |
| | 0.003 | -0.00010 | 10.74 | 0.037 | 0.00056 | -14.23 |
| | 0.013 | -0.00022 | 14.90 | 0.011 | 0.00030 | -5.18 |
| | 0.018 | -0.00027 | 16.49 | 0.001 | 0.00007 | 3.10 |
| | 0.006 | -0.00016 | 12.53 | 0.000 | -0.00001 | 5.90 |
| | 0.000 | 0.00004 | 5.61 | 0.000 | -0.00004 | 7.07 |
| | 0.026 | 0.00029 | -3.27 | 0.000 | 0.00007 | 3.12 |
| | 0.058 | 0.00044 | -8.32 | 0.003 | 0.00019 | -1.10 |
| | 0.065 | 0.00047 | -9.64 | 0.003 | 0.00019 | -1.14 |
| | 0.180 | 0.00073 | -18.77 | 0.047 | 0.00064 | -17.19 |
| | 0.216 | 0.00083 | -22.14 | 0.083 | 0.00087 | -25.06 |
| | 0.242 | 0.00091 | -24.97 | 0.110 | 0.00103 | -30.70 |
| | 0.200 | 0.00069 | -17.32 | 0.175 | 0.00129 | -40.03 |
| | 0.148 | 0.00052 | -11.14 | 0.150 | 0.00121 | -36.97 |
| | 0.102 | 0.00041 | -7.34 | 0.110 | 0.00102 | -30.26 |
| | 0.054 | 0.00028 | -2.76 | 0.057 | 0.00068 | -18.26 |
| | 0.030 | 0.00021 | -0.30 | 0.010 | 0.00024 | -2.92 |
| | 0.003 | 0.00007 | 4.89 | 0.152 | -0.00045 | 21.77 |
| | 0.002 | 0.00006 | 5.13 | 0.375 | -0.00067 | 29.45 |
| | 0.071 | -0.00024 | 15.81 | 0.328 | -0.00063 | 28.03 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tZn** | | **CC284** | | |
| **LN Analysis** | | **tZn** | | |
| **Load** | | **Load Data, EV=227 lbs/day CV=0.745** | | |
| **Avg:** | **227** | **Load Data-based LN** | | |
| **SD:** | **170** | u | ln tZn Load | tZn Load |
| **CV:** | **0.75** | 3 | 7.2 | 1340 |
| **Min:** | **48.3** | 0 | 5.21 | 182 |
| **Max:** | **954** | -3 | 3.21 | 24.8 |
| **Median:** | **187** | | | |
| | | 227 | 227 | |
| | | 0.75 | 0.745 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.966, EV=233lbs/day CV=0.822; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.966 | u | lnLoad | Load |
| slope, m: | 1.391 | 3 | 7.35 | 1553 |
| intercept, b | -7.222 | 0 | 5.19 | 180 |
| N: | 42 | -3 | 3.03 | 20.8 |
| E[Load] | 232.7 | Parameter Estimates | | |
| SD[Load] | 191 | from LN regression | | |
| CV[Load] | 0.82 | update graph label | | |

| | | | | | | 0.966 |
|---|---|---|---|---|---|---|
| | | | | | | 232.7 |
| | | | | | | 0.8 |
| | | | | | | max r2 |
| | **tZn** | N | 42 | | | 0.971 |
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| update and rank for new data | | | | | | |
| 27-Oct-93 | **48** | 1 | 0.0148 | -2.176 | 3.878 | 0.966 |
| 13-Sep-95 | **70** | 2 | 0.0385 | -1.769 | 4.246 | 0.966 |
| 13-Sep-94 | **71** | 3 | 0.0621 | -1.537 | 4.262 | 0.970 |
| 18-Feb-94 | **74** | 4 | 0.0858 | -1.367 | 4.298 | 0.971 |
| 16-Aug-94 | **79** | 5 | 0.1095 | -1.229 | 4.368 | 0.971 |
| 17-Dec-93 | **81** | 6 | 0.1331 | -1.112 | 4.390 | 0.970 |
| 25-Jul-95 | **82** | 7 | 0.1568 | -1.008 | 4.411 | 0.969 |
| 14-Aug-95 | **87** | 8 | 0.1805 | -0.914 | 4.468 | 0.966 |
| 6-Oct-94 | **92** | 9 | 0.2041 | -0.827 | 4.526 | 0.964 |
| 20-Jan-94 | **98** | 10 | 0.2278 | -0.746 | 4.584 | 0.961 |
| 11-Jul-95 | **99** | 11 | 0.2515 | -0.670 | 4.598 | 0.958 |
| 16-Aug-94 | **103** | 12 | 0.2751 | -0.597 | 4.634 | 0.955 |
| 25-Jul-94 | **105** | 13 | 0.2988 | -0.528 | 4.650 | 0.952 |
| 30-Nov-93 | **111** | 14 | 0.3225 | -0.461 | 4.711 | 0.949 |
| 5-Oct-91 | **112** | 15 | 0.3462 | -0.396 | 4.716 | 0.946 |
| 17-Dec-93 | **119** | 16 | 0.3698 | -0.332 | 4.777 | 0.945 |
| 27-Jun-95 | **120** | 17 | 0.3935 | -0.270 | 4.784 | 0.944 |
| 23-Jun-94 | **133** | 18 | 0.4172 | -0.209 | 4.892 | 0.949 |
| 20-Jan-94 | **145** | 19 | 0.4408 | -0.149 | 4.978 | 0.953 |
| 16-Nov-94 | **179** | 20 | 0.4645 | -0.089 | 5.186 | 0.957 |
| 19-May-94 | **185** | 21 | 0.4882 | -0.030 | 5.220 | 0.953 |
| 4-May-94 | **188** | 22 | 0.5118 | 0.030 | 5.238 | 0.949 |
| 7-Jun-94 | **199** | 23 | 0.5355 | 0.089 | 5.294 | 0.945 |
| 13-Dec-94 | **220** | 24 | 0.5592 | 0.149 | 5.393 | 0.940 |
| 8-Mar-95 | **228** | 25 | 0.5828 | 0.209 | 5.428 | 0.934 |
| 9-Nov-97 | **243** | 26 | 0.6065 | 0.270 | 5.493 | 0.927 |
| 18-Oct-95 | **247** | 27 | 0.6302 | 0.332 | 5.509 | 0.920 |
| 25-Apr-95 | **268** | 28 | 0.6538 | 0.396 | 5.591 | 0.911 |
| 27-Dec-95 | **270** | 29 | 0.6775 | 0.461 | 5.600 | 0.903 |
| 8-Mar-94 | **276** | 30 | 0.7012 | 0.528 | 5.620 | 0.891 |
| 24-Mar-94 | **279** | 31 | 0.7249 | 0.597 | 5.632 | 0.876 |
| 29-Feb-96 | **328** | 32 | 0.7485 | 0.670 | 5.793 | 0.856 |
| 9-Feb-95 | **358** | 33 | 0.7722 | 0.746 | 5.881 | 0.846 |
| 10-Jan-95 | **366** | 34 | 0.7959 | 0.827 | 5.904 | 0.858 |
| 12-Apr-95 | **369** | 35 | 0.8195 | 0.914 | 5.911 | 0.876 |
| 13-Jun-95 | **378** | 36 | 0.8432 | 1.008 | 5.934 | 0.891 |
| 28-Mar-96 | **383** | 37 | 0.8669 | 1.112 | 5.949 | 0.909 |
| 7-Apr-94 | **406** | 38 | 0.8905 | 1.229 | 6.005 | 0.923 |
| 21-Nov-95 | **421** | 39 | 0.9142 | 1.367 | 6.042 | |
| 17-May-91 | **439** | 40 | 0.9379 | 1.537 | 6.083 | |
| 17-Jan-96 | **543** | 41 | 0.9615 | 1.769 | 6.298 | |
| 22-Mar-95 | **954** | 42 | 0.9852 | 2.176 | 6.860 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | **CC284** | | 1,371 | 1370 |
| **LN Analysis** | | **tZn** | | 0.46 | 0.465 |
| **Concentration** | | **Conc. Data, EV=1370 ug/L CV=0.465** | | | |
| **Avg:** | **1,371** | **Data-based LN** | | | |
| **SD:** | **637** | u | ln[tZn] | [tZn] | |
| **CV:** | **0.46** | 3 | 8.5 | 4687 | |
| **Min:** | **444** | 0 | 7.13 | 1243 | |
| **Max:** | **2,710** | -3 | 5.80 | 330 | |
| **Median:** | **1,170** | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.965 | 0.965 |
| | **u=mLn{Conc.}+b:** | | | | 1398.1 | 1400 |
| update for r2, EV, CV: | **r2=0.965, EV=1400 ug/L CV=0.557; max r2=0.97** | | | | 0.557 | 0.557 |
| | r2 u,lnConc: | 0.965 | u | lnConc | Conc | |
| | slope, m: | 1.925 | 3 | 8.67 | 5804 | |
| | intercept, b: | -13.684 | 0 | 7.11 | 1222 | |
| | N: | 42 | -3 | 5.55 | 257 | |
| 0.966 | E[Conc]: | 1398.1 | Parameter Estimates | | | |
| 233 | SD[Conc]: | 778 | from LN regression | | | |
| 0.822 | CV[Conc]: | 0.56 | update graph label | | | |

| | tZn | N 42 | | | | max r2 0.965 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 13-Jun-95 | 444 | 1 | 0.0148 | -2.176 | 6.096 | 0.965 |
| 19-May-94 | 470 | 2 | 0.0385 | -1.769 | 6.153 | 0.961 |
| 17-May-91 | 475 | 3 | 0.0621 | -1.537 | 6.163 | 0.957 |
| 27-Jun-95 | 583 | 4 | 0.0858 | -1.367 | 6.368 | 0.956 |
| 4-May-94 | 585 | 5 | 0.1095 | -1.229 | 6.372 | 0.952 |
| 7-Jun-94 | 725 | 6 | 0.1331 | -1.112 | 6.586 | 0.950 |
| 23-Jun-94 | 743 | 7 | 0.1568 | -1.008 | 6.611 | 0.946 |
| 11-Jul-95 | 791 | 8 | 0.1805 | -0.914 | 6.673 | 0.942 |
| 13-Sep-94 | 800 | 9 | 0.2041 | -0.827 | 6.685 | 0.937 |
| 25-Jul-95 | 818 | 10 | 0.2278 | -0.746 | 6.707 | 0.932 |
| 21-Nov-95 | 820 | 11 | 0.2515 | -0.670 | 6.709 | 0.927 |
| 13-Sep-95 | 926 | 12 | 0.2751 | -0.597 | 6.831 | 0.923 |
| 25-Jul-94 | 984 | 13 | 0.2988 | -0.528 | 6.892 | 0.917 |
| 14-Aug-95 | 1020 | 14 | 0.3225 | -0.461 | 6.928 | 0.911 |
| 25-Apr-95 | 1060 | 15 | 0.3462 | -0.396 | 6.966 | 0.905 |
| 16-Aug-94 | 1080 | 16 | 0.3698 | -0.332 | 6.985 | 0.898 |
| 16-Aug-94 | 1080 | 17 | 0.3935 | -0.270 | 6.985 | 0.891 |
| 8-Mar-95 | 1110 | 18 | 0.4172 | -0.209 | 7.012 | 0.882 |
| 6-Oct-94 | 1120 | 19 | 0.4408 | -0.149 | 7.021 | 0.872 |
| 27-Oct-93 | 1140 | 20 | 0.4645 | -0.089 | 7.039 | 0.861 |
| 12-Apr-95 | 1170 | 21 | 0.4882 | -0.030 | 7.065 | 0.848 |
| 29-Feb-96 | 1170 | 22 | 0.5118 | 0.030 | 7.065 | 0.835 |
| 27-Dec-95 | 1220 | 23 | 0.5355 | 0.089 | 7.107 | 0.822 |
| 7-Apr-94 | 1260 | 24 | 0.5592 | 0.149 | 7.139 | 0.807 |
| 5-Oct-91 | 1290 | 25 | 0.5828 | 0.209 | 7.162 | 0.792 |
| 9-Nov-97 | 1290 | 26 | 0.6065 | 0.270 | 7.162 | 0.779 |
| 18-Oct-95 | 1300 | 27 | 0.6302 | 0.332 | 7.170 | 0.788 |
| 30-Nov-93 | 1640 | 28 | 0.6538 | 0.396 | 7.402 | 0.888 |
| 9-Feb-95 | 1680 | 29 | 0.6775 | 0.461 | 7.427 | 0.895 |
| 28-Mar-96 | 1800 | 30 | 0.7012 | 0.528 | 7.496 | 0.926 |
| 18-Feb-94 | 1920 | 31 | 0.7249 | 0.597 | 7.560 | 0.948 |
| 16-Nov-94 | 1980 | 32 | 0.7485 | 0.670 | 7.591 | 0.949 |
| 17-Dec-93 | 2070 | 33 | 0.7722 | 0.746 | 7.635 | 0.949 |
| 17-Dec-93 | 2070 | 34 | 0.7959 | 0.827 | 7.635 | 0.939 |
| 17-Jan-96 | 2100 | 35 | 0.8195 | 0.914 | 7.650 | 0.933 |
| 22-Mar-95 | 2190 | 36 | 0.8432 | 1.008 | 7.692 | 0.950 |
| 20-Jan-94 | 2310 | 37 | 0.8669 | 1.112 | 7.745 | 0.957 |
| 20-Jan-94 | 2310 | 38 | 0.8905 | 1.229 | 7.745 | 0.952 |
| 8-Mar-94 | 2410 | 39 | 0.9142 | 1.367 | 7.787 | |
| 24-Mar-94 | 2440 | 40 | 0.9379 | 1.537 | 7.800 | |
| 13-Dec-94 | 2480 | 41 | 0.9615 | 1.769 | 7.816 | |
| 10-Jan-95 | 2710 | 42 | 0.9852 | 2.176 | 7.905 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **CC284** | | | 38 | 37.9 |
| **LN Analysis** | | **tZn** | | | 0.93 | 0.932 |
| **Discharge, Q** | | **Q Data, EV=37.9 cfs CV=0.932** | | | | |
| **Avg:** | **38** | **Q Data-based LN** | | | | |
| **SD:** | **35** | u | lnQ | Q | | |
| **CV:** | **0.93** | 3 | 5.7 | 298 | | |
| **Min:** | **7** | 0 | 3.32 | 28 | | |
| **Max:** | **172** | -3 | 0.95 | 3 | | |
| **Median:** | **24** | | | | | |
| | | | | | 0.977 | 0.977 |
| | | | | | 38.5 | 38.5 |
| **u=mLn(Q)+b:** | | | | | 0.99 | 0.992 |

update for r2, EV, CV: **r2=0.977, EV=38.5 cfs CV=0.992; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.977 | u | lnQ | Q |
| slope, m: | 1.208 | 3 | 5.79 | 328 |
| intercept, b: | -3 997 | 0 | 3.31 | 27 |
| N: | 42 | -3 | 0.83 | 2 |
| E[Q]: | 38.5 | Parameter Estimates | | |
| SD[Q]: | 38 | from LN regression | | |
| CV[Q]: | 0.99 | update graph label | | |

N: 42 — max r2: 0.983

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 18-Feb-94 | 7.12 | 1 | 0.0148 | -2.176 | 1.963 | 0.977 |
| 17-Dec-93 | 7.24 | 2 | 0.0385 | -1.769 | 1.980 | 0.983 |
| 27-Oct-93 | 7.88 | 3 | 0.0621 | -1.537 | 2.064 | 0.983 |
| 20-Jan-94 | 7.88 | 4 | 0.0858 | -1.367 | 2.064 | 0.982 |
| 17-Dec-93 | 10.66 | 5 | 0.1095 | -1.229 | 2.366 | 0.980 |
| 20-Jan-94 | 11.68 | 6 | 0.1331 | -1.112 | 2.458 | 0.980 |
| 30-Nov-93 | 12.6 | 7 | 0.1568 | -1.008 | 2.534 | 0.979 |
| 16-Aug-94 | 13.57 | 8 | 0.1805 | -0.914 | 2.608 | 0.979 |
| 13-Sep-95 | 14.02 | 9 | 0.2041 | -0.827 | 2.640 | 0.979 |
| 6-Oct-94 | 15.33 | 10 | 0.2278 | -0.746 | 2.730 | 0.978 |
| 14-Aug-95 | 15.89 | 11 | 0.2515 | -0.670 | 2.766 | 0.979 |
| 5-Oct-91 | 16.1 | 12 | 0.2751 | -0.597 | 2.779 | 0.978 |
| 13-Sep-94 | 16 48 | 13 | 0.2988 | -0.528 | 2.802 | 0.977 |
| 13-Dec-94 | 16 48 | 14 | 0.3225 | -0.461 | 2.802 | 0.976 |
| 16-Nov-94 | 16 78 | 15 | 0.3462 | -0.396 | 2.820 | 0.974 |
| 16-Aug-94 | 17.71 | 16 | 0.3698 | -0.332 | 2.874 | 0.972 |
| 25-Jul-95 | 18.71 | 17 | 0.3935 | -0.270 | 2.929 | 0.970 |
| 25-Jul-94 | 19.76 | 18 | 0 4172 | -0.209 | 2.984 | 0.968 |
| 8-Mar-94 | 21.27 | 19 | 0.4408 | -0.149 | 3.057 | 0.966 |
| 24-Mar-94 | 21.27 | 20 | 0.4645 | -0.089 | 3.057 | 0.964 |
| 11-Jul-95 | 23.33 | 21 | 0.4882 | -0.030 | 3.150 | 0.965 |
| 10-Jan-95 | 25.13 | 22 | 0.5118 | 0.030 | 3.224 | 0.964 |
| 23-Jun-94 | 33.34 | 23 | 0.5355 | 0.089 | 3.507 | 0.964 |
| 9-Nov-97 | 35 | 24 | 0.5592 | 0.149 | 3.555 | 0.964 |
| 18-Oct-95 | 35.3 | 25 | 0.5828 | 0.209 | 3.564 | 0.964 |
| 8-Mar-95 | 38.13 | 26 | 0.6065 | 0.270 | 3.641 | 0.963 |
| 27-Jun-95 | 38.13 | 27 | 0.6302 | 0.332 | 3.641 | 0.964 |
| 28-Mar-96 | 39 6 | 28 | 0.6538 | 0.396 | 3.679 | 0.964 |
| 9-Feb-95 | 39 63 | 29 | 0.6775 | 0.461 | 3.680 | 0.962 |
| 27-Dec-95 | 41.2 | 30 | 0.7012 | 0.528 | 3 718 | 0.958 |
| 25-Apr-95 | 47 | 31 | 0.7249 | 0.597 | 3.850 | 0.953 |
| 17-Jan-96 | 48.1 | 32 | 0.7485 | 0.670 | 3.873 | 0.953 |
| 7-Jun-94 | 51.06 | 33 | 0.7722 | 0.746 | 3.933 | 0.949 |
| 29-Feb-96 | 52.1 | 34 | 0.7959 | 0.827 | 3.953 | 0.947 |
| 12-Apr-95 | 58.64 | 35 | 0.8195 | 0.914 | 4.071 | 0.938 |
| 7-Apr-94 | 59.82 | 36 | 0.8432 | 1.008 | 4.091 | 0.936 |
| 4-May-94 | 59.82 | 37 | 0.8669 | 1.112 | 4.091 | 0.923 |
| 19-May-94 | 73.12 | 38 | 0.8905 | 1.229 | 4.292 | 0.894 |
| 22-Mar-95 | 80.94 | 39 | 0.9142 | 1.367 | 4.394 | |
| 21-Nov-95 | 95.4 | 40 | 0.9379 | 1.537 | 4.558 | |
| 13-Jun-95 | 158.04 | 41 | 0.9615 | 1.769 | 5.063 | |
| 17-May-91 | 171.6 | 42 | 0.9852 | 2.176 | 5.145 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **CC285** | **Date:** | **29-May-00** |
| **Chemical:** | **dCd** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load |
|---|---|---|---|---|
| **Avg:** | 35,890 | 74 | 10 | 3 |
| **SD:** | 618 | 89 | 6 | 2 |
| **CV:** | 0.02 | 1.19 | 0.56 | 0.81 |
| **Min:** | 33,375 | 12 | 1 | 0 |
| **Max:** | 36,402 | 345 | 28 | 9 |
| **Median:** | 36,033 | 30 | 10 | 2 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | 0.00 | 0.00 | 0.00 |
| | | | | | 1.00 | 1.00 | 1.00 |
| | | | | | -0.70 | -1.61 | -1.19 |
| | | | | | 3.05 | 3.22 | 3.26 |
| | | | | | -0.50 | -0.05 | -0.32 |

**dCd CC285 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.22)** update r2

| | | | |
|---|---|---|---|
| r2 Q,[COC]: | 0.27 | [dCd] | Q |
| slope, m: | -0.03 | 12 | 12.0 |
| intercept, b: | 12.4 | 10 | 74.3 |
| N: 38 | | 1 | 345 |

**LnConc. = mLn(Q)+b (r2=0.13)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.30 | ln[dCd] | ln Q | [dCd] | Q |
| slope, m | -0.40 | 2.62 | 2.48 | 14 | 12 |
| intercept, b. | 3.62 | 1.90 | 4.31 | 7 | 74 |
| N: 38 | | 1.28 | 5.84 | 4 | 345 |

| | | | |
|---|---|---|---|
| | **Q = mTime +b** | **LnQ = mTime +b** | |
| r2: | 0.000 | 0.000 | |
| m: | -0.0028 | 0.00000 | |
| b: | 174 | 3.95 | |

**N= 38**

| | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd CC285 Standardized Values = (x - Avg)/SD Q | for graph 0 Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 199.5 | 2.7 | 2.9 | 5.30 | 0.99 | 1.06 | 1.41 | -1.29 | 0.14 |
| MFG | 5-Oct-91 | 14.2 | 10.1 | 0.8 | 2.65 | 2.31 | -0.26 | -0.68 | 0.03 | -0.87 |
| IDEQ | 24-Jun-97 | 118 | 3.1 | 2.0 | 4.77 | 1.13 | 0.68 | 0.49 | -1.22 | -0.30 |
| IDEQ | 23-Jul-97 | 73.3 | 5 | 2.0 | 4.29 | 1.61 | 0.68 | -0.01 | -0.88 | -0.30 |
| IDEQ | 14-Aug-97 | 30.3 | 8.5 | 1.4 | 3.41 | 2.14 | 0.33 | -0.50 | -0.26 | -0.57 |
| IDEQ | 4-Sep-97 | 26.7 | 11 | 1.6 | 3.28 | 2.40 | 0.46 | -0.54 | 0.19 | -0.48 |
| IDEQ | 16-Oct-97 | 21.9 | 6.4 | 0.8 | 3.09 | 1.86 | -0.28 | -0.59 | -0.63 | -0.87 |
| URS | 9-Nov-97 | 42.6 | 10.7 | 2.5 | 3.75 | 2.37 | 0.90 | -0.36 | 0.13 | -0.07 |
| IDEQ | 26-Nov-97 | 24.8 | 9.5 | 1.3 | 3.21 | 2.25 | 0.24 | -0.56 | -0.08 | -0.63 |
| IDEQ | 19-Dec-97 | 20.4 | 14 | 1.5 | 3.02 | 2.64 | 0.43 | -0.61 | 0.72 | -0.50 |
| IDEQ | 22-Jan-98 | 18.7 | 0.9 | 0.1 | 2.93 | -0.11 | -2.40 | -0.63 | -1.61 | -1.19 |
| IDEQ | 26-Feb-98 | 20.4 | 14 | 1.5 | 3.02 | 2.64 | 0.43 | -0.61 | 0.72 | -0.50 |
| IDEQ | 20-Mar-98 | 31.4 | 13 | 2.2 | 3.45 | 2.56 | 0.79 | -0.48 | 0.54 | -0.19 |
| IDEQ | 23-Apr-98 | 154 | 6.5 | 5.4 | 5.04 | 1.87 | 1.68 | 0.90 | -0.62 | 1.32 |
| URS | 14-May-98 | 223 | 3.4 | 4.1 | 5.41 | 1.22 | 1.41 | 1.68 | -1.17 | 0.70 |
| IDEQ | 28-May-98 | 293 | 5.2 | 8.2 | 5.68 | 1.65 | 2.10 | 2.47 | -0.85 | 2.66 |
| IDEQ | 26-Jun-98 | 62 | 6.4 | 2.1 | 4.13 | 1.86 | 0.76 | -0.14 | -0.63 | -0.22 |
| IDEQ | 28-Jul-98 | 33.8 | 10 | 1.8 | 3.52 | 2.30 | 0.60 | -0.46 | 0.01 | -0.37 |
| IDEQ | 26-Aug-98 | 26.2 | 11 | 1.6 | 3.27 | 2.40 | 0.44 | -0.54 | 0.19 | -0.50 |
| IDEQ | 26-Aug-98 | 26.2 | 9.8 | 1.4 | 3.27 | 2.28 | 0.32 | -0.54 | -0.03 | -0.58 |
| IDEQ | 24-Sep-98 | 21.5 | 10 | 1.2 | 3.07 | 2.30 | 0.15 | -0.59 | 0.01 | -0.68 |
| IDEQ | 26-Oct-98 | 23.1 | 9.4 | 1.2 | 3.14 | 2.24 | 0.16 | -0.58 | -0.10 | -0.68 |
| USGS | 27-Oct-98 | 12 | 13 | 0.8 | 2.48 | 2.56 | -0.18 | -0.70 | 0.54 | -0.83 |
| USGS | 18-Nov-98 | 14 | 16 | 1.2 | 2.64 | 2.77 | 0.19 | -0.68 | 1.08 | -0.66 |
| IDEQ | 25-Nov-98 | 29.2 | 28 | 4.4 | 3.37 | 3.33 | 1.48 | -0.51 | 3.22 | 0.86 |
| USGS | 15-Dec-98 | 19 | 19 | 1.9 | 2.94 | 2.94 | 0.66 | -0.62 | 1.61 | -0.31 |
| IDEQ | 15-Jan-99 | 34.4 | 17 | 3.1 | 3.54 | 2.83 | 1.15 | -0.45 | 1.26 | 0.26 |
| USGS | 20-Jan-99 | 23 | 16 | 2.0 | 3.14 | 2.77 | 0.68 | -0.58 | 1.08 | -0.29 |
| IDEQ | 23-Feb-99 | 23.1 | 14 | 1.7 | 3.14 | 2.64 | 0.55 | -0.58 | 0.72 | -0.41 |
| IDEQ | 8-Mar-99 | 29.2 | 14 | 2.2 | 3.37 | 2.64 | 0.79 | -0.51 | 0.72 | -0.19 |
| USGS | 23-Mar-99 | 88 | 20 | 9.5 | 4.48 | 3.00 | 2.25 | 0.15 | 1.79 | 3.26 |
| USGS | 21-Apr-99 | 122 | 8.9 | 5.8 | 4.80 | 2.19 | 1.77 | 0.54 | -0.19 | 1.54 |
| USGS | 5-May-99 | 77 | 6 | 2.5 | 4.34 | 1.79 | 0.91 | 0.03 | -0.70 | -0.05 |
| USGS | 24-May-99 | 329 | 4.2 | 7.4 | 5.80 | 1.44 | 2.01 | 2.87 | -1.03 | 2.29 |
| USGS | 15-Jun-99 | 345 | 2.4 | 4.5 | 5.84 | 0.88 | 1.49 | 3.05 | -1.35 | 0.88 |
| USGS | 8-Jul-99 | 117 | 3 | 1.9 | 4.76 | 1.10 | 0.64 | 0.48 | -1.24 | -0.34 |
| USGS | 5-Aug-99 | 31 | 7 | 1.2 | 3.43 | 1.95 | 0.15 | -0.49 | -0.53 | -0.68 |
| USGS | 30-Aug-99 | 24 | 9 | 1.2 | 3.18 | 2.20 | 0.15 | -0.57 | -0.17 | -0.68 |

dCd

**Concentration over time analysis**

| | dCd | CC285 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.039** | **0.00022** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 17-May-91 | 1.55 | 5 | | |
| mid | 26-Aug-98 | 2.14 | 8 | | |
| last | 30-Aug-99 | 2.22 | 9 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

**Load over time analysis**

| | dCd | CC285 | | |
|---|---|---|---|---|
| | | | | **Load over time** |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.027** **0.00021** |
| | **Time** | **LnLoad** | **Load** | |
| first | 17-May-91 | 0.13 | 1 | |
| mid | 26-Aug-98 | 0.70 | 2 | |
| last | 30-Aug-99 | 0.78 | 2 | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | |
| | 30-Aug-99 | 0.00 | 1 | |

max r2 0.585

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.039 | 0.00022 | -5.76 |
| 0.001 | 0.00004 | 0.73 |
| 0.018 | 0.00040 | -12.31 |
| 0.004 | 0.00019 | -4.76 |
| 0.000 | 0.00007 | -0.19 |
| 0.000 | 0.00006 | -0.10 |
| 0.002 | 0.00014 | -2.98 |
| 0.000 | 0.00006 | 0.15 |
| 0.001 | 0.00013 | -2.60 |
| 0.002 | 0.00018 | -4.41 |
| 0.009 | 0.00042 | -12.92 |
| 0.024 | -0.00059 | 23.57 |
| 0.014 | -0.00047 | 19.27 |
| 0.007 | -0.00035 | 14.93 |
| 0.017 | -0.00059 | 23.62 |
| 0.080 | -0.00130 | 49.37 |
| 0.164 | -0.00196 | 73.18 |
| 0.257 | -0.00261 | 96.87 |
| 0.297 | -0.00301 | 111.40 |
| 0.325 | -0.00336 | 123.98 |
| 0.389 | -0.00400 | 147.02 |
| 0.456 | -0.00468 | 171.89 |
| 0.536 | -0.00542 | 198.89 |
| 0.580 | -0.00613 | 224.46 |
| 0.585 | -0.00661 | 242.02 |
| 0.509 | -0.00628 | 230.00 |
| 0.452 | -0.00633 | 231.71 |
| 0.390 | -0.00620 | 227.08 |
| 0.310 | -0.00605 | 221.69 |
| 0.231 | -0.00558 | 204.65 |
| 0.123 | -0.00437 | 160.59 |
| 0.008 | 0.00097 | -33.57 |
| 0.203 | 0.00520 | -187.29 |
| 0.585 | 0.01089 | -394.45 |

max r2 0.909

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points, delete last 4 rows | | |
| 0.027 | 0.00021 | -7.04 |
| 0.087 | 0.00052 | -17.90 |
| 0.075 | 0.00097 | -34.34 |
| 0.083 | 0.00107 | -38.03 |
| 0.092 | 0.00119 | -42.21 |
| 0.088 | 0.00122 | -43.40 |
| 0.088 | 0.00130 | -46.13 |
| 0.062 | 0.00113 | -39.88 |
| 0.076 | 0.00132 | -47.03 |
| 0.066 | 0.00131 | -46.39 |
| 0.063 | 0.00135 | -48.18 |
| 0.000 | 0.00006 | -1.14 |
| 0.001 | -0.00016 | 6.52 |
| 0.002 | -0.00023 | 9.36 |
| 0.001 | 0.00018 | -5.82 |
| 0.011 | 0.00055 | -19.20 |
| 0.089 | 0.00156 | -55.57 |
| 0.102 | 0.00180 | -64.21 |
| 0.102 | 0.00192 | -68.80 |
| 0.089 | 0.00190 | -68.12 |
| 0.066 | 0.00176 | -62.85 |
| 0.034 | 0.00133 | -47.15 |
| 0.011 | 0.00076 | -26.75 |
| 0.005 | -0.00054 | 20.43 |
| 0.056 | -0.00180 | 66.40 |
| 0.030 | -0.00145 | 53.64 |
| 0.080 | -0.00262 | 96.23 |
| 0.085 | -0.00302 | 110.58 |
| 0.195 | -0.00525 | 191.52 |
| 0.420 | -0.00848 | 309.20 |
| 0.753 | -0.01310 | 476.79 |
| 0.658 | -0.01270 | 462.35 |
| 0.578 | -0.01276 | 464.43 |
| 0.909 | -0.02026 | 737.55 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | **CC285** | | |
| **LN Analysis** | | **dCd** | | |
| **Load** | | **Load Data, EV=2 lbs/day CV=.88** | | |
| **Avg:** | **3** | **Load Data-based LN** | | |
| **SD:** | **2** | u | ln dCd Load | dCd Load |
| **CV:** | **0.81** | 3 | 2.8 | 17 |
| **Min:** | **0** | 0 | 0.70 | 2 |
| **Max:** | **9** | -3 | -1.44 | 0.2 |
| **Median:** | **2** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.883, EV=2.9 lbs/day CV=1.10; max r2=0.966**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.883 | u | lnLoad | Load |
| slope, m | 1.121 | 3 | 3.34 | 28 |
| intercept, b. | -0.747 | 0 | 0.67 | 2 |
| N: | 38 | -3 | -2.01 | 0.13 |
| E[Load] | 2.9 | Parameter Estimates | | |
| SD[Load] | 3 | from LN regression | | |
| CV[Load]: | 1.10 | update graph label | | |

N: 38

| Date | dCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.966 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 22-Jan-98 | **0.1** | 1 | 0.0163 | -2.136 | -2.402 | 0.883 |
| 16-Oct-97 | **0.8** | 2 | 0.0425 | -1.723 | -0.282 | 0.959 |
| 5-Oct-91 | **0.8** | 3 | 0.0686 | -1.486 | -0.259 | 0.959 |
| 27-Oct-98 | **0.8** | 4 | 0.0948 | -1.312 | -0.175 | 0.956 |
| 24-Sep-98 | **1.2** | 5 | 0.1209 | -1.170 | 0.146 | 0.952 |
| 30-Aug-99 | **1.2** | 6 | 0.1471 | -1.049 | 0.150 | 0.958 |
| 5-Aug-99 | **1.2** | 7 | 0.1732 | -0.942 | 0.155 | 0.961 |
| 26-Oct-98 | **1.2** | 8 | 0.1993 | -0.844 | 0.155 | 0.963 |
| 18-Nov-98 | **1.2** | 9 | 0.2255 | -0.754 | 0.187 | 0.963 |
| 26-Nov-97 | **1.3** | 10 | 0.2516 | -0.669 | 0.237 | 0.962 |
| 26-Aug-98 | **1.4** | 11 | 0.2778 | -0.589 | 0.323 | 0.961 |
| 14-Aug-97 | **1.4** | 12 | 0.3039 | -0.513 | 0.326 | 0.962 |
| 19-Dec-97 | **1.5** | 13 | 0.3301 | -0.440 | 0.430 | 0.961 |
| 26-Feb-98 | **1.5** | 14 | 0.3562 | -0.369 | 0.430 | 0.964 |
| 26-Aug-98 | **1.6** | 15 | 0.3824 | -0.299 | 0.439 | 0.964 |
| 4-Sep-97 | **1.6** | 16 | 0.4085 | -0.231 | 0.457 | 0.964 |
| 23-Feb-99 | **1.7** | 17 | 0.4346 | -0.165 | 0.554 | 0.962 |
| 28-Jul-98 | **1.8** | 18 | 0.4608 | -0.098 | 0.598 | 0.962 |
| 8-Jul-99 | **1.9** | 19 | 0.4869 | -0.033 | 0.636 | 0.964 |
| 15-Dec-98 | **1.9** | 20 | 0.5131 | 0.033 | 0.664 | 0.965 |
| 24-Jun-97 | **2.0** | 21 | 0.5392 | 0.098 | 0.677 | 0.966 |
| 23-Jul-97 | **2.0** | 22 | 0.5654 | 0.165 | 0.679 | 0.965 |
| 20-Jan-99 | **2.0** | 23 | 0.5915 | 0.231 | 0.683 | 0.962 |
| 26-Jun-98 | **2.1** | 24 | 0.6176 | 0.299 | 0.758 | 0.957 |
| 20-Mar-98 | **2.2** | 25 | 0.6438 | 0.369 | 0.787 | 0.952 |
| 8-Mar-99 | **2.2** | 26 | 0.6699 | 0.440 | 0.788 | 0.945 |
| 9-Nov-97 | **2.5** | 27 | 0.6961 | 0.513 | 0.897 | 0.940 |
| 5-May-99 | **2.5** | 28 | 0.7222 | 0.589 | 0.910 | 0.932 |
| 17-May-91 | **2.9** | 29 | 0.7484 | 0.669 | 1.064 | 0.935 |
| 15-Jan-99 | **3.1** | 30 | 0.7745 | 0.754 | 1.146 | 0.934 |
| 14-May-98 | **4.1** | 31 | 0.8007 | 0.844 | 1.406 | 0.950 |
| 25-Nov-98 | **4.4** | 32 | 0.8268 | 0.942 | 1.481 | 0.937 |
| 15-Jun-99 | **4.5** | 33 | 0.8529 | 1.049 | 1.494 | 0.917 |
| 23-Apr-98 | **5.4** | 34 | 0.8791 | 1.170 | 1.684 | 0.920 |
| 21-Apr-99 | **5.8** | 35 | 0.9052 | 1.312 | 1.765 | |
| 24-May-99 | **7.4** | 36 | 0.9314 | 1.486 | 2.006 | |
| 28-May-98 | **8.2** | 37 | 0.9575 | 1.723 | 2.104 | |
| 23-Mar-99 | **9.5** | 38 | 0.9837 | 2.136 | 2.248 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | **CC285** | | |
| **LN Analysis** | | **dCd** | | |
| **Concentration** | | **Conc. Data, EV=10 ug/L CV=.56** | | |
| **Avg:** | **10** | **Data-based LN** | | |
| **SD:** | **6** | u | ln[dCd] | [dCd] |
| **CV:** | **0.56** | 3 | 3.7 | 42 |
| **Min:** | **0.9** | 0 | 2.16 | 9 |
| **Max:** | **28** | -3 | 0.58 | 2 |
| **Median:** | **10** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV. **$r^2$=0.930, EV=10.8 ug/L CV=0.85; max r2=0.981**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.930 | u | lnConc | Conc |
| slope, m | 1.351 | 3 | 4.32 | 76 |
| intercept, b | -2.842 | 0 | 2.10 | 8 |
| N | 38 | -3 | -0.12 | 1 |
| E[Conc] | 10.8 | Parameter Estimates | | |
| SD[Conc] | 9 | from LN regression | | |
| CV[Conc] | 0.85 | update graph label | | |

| | dCd | N | 38 | | | max r2 0.981 |
|---|---|---|---|---|---|---|
| | Concentration | j | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 22-Jan-98 | 0.9 | 1 | 0.0163 | -2.136 | -0.105 | 0.930 |
| 15-Jun-99 | 2.4 | 2 | 0.0425 | -1.723 | 0.875 | 0.953 |
| 17-May-91 | 2.7 | 3 | 0.0686 | -1.486 | 0.993 | 0.948 |
| 8-Jul-99 | 3 | 4 | 0.0948 | -1.312 | 1.099 | 0.946 |
| 24-Jun-97 | 3.1 | 5 | 0.1209 | -1.170 | 1.131 | 0.945 |
| 14-May-98 | 3.4 | 6 | 0.1471 | -1.049 | 1.224 | 0.951 |
| 24-May-99 | 4.2 | 7 | 0.1732 | -0.942 | 1.435 | 0.963 |
| 23-Jul-97 | 5 | 8 | 0.1993 | -0.844 | 1.609 | 0.969 |
| 28-May-98 | 5.2 | 9 | 0.2255 | -0.754 | 1.649 | 0.969 |
| 5-May-99 | 6 | 10 | 0.2516 | -0.669 | 1.792 | 0.972 |
| 16-Oct-97 | 6.4 | 11 | 0.2778 | -0.589 | 1.856 | 0.971 |
| 26-Jun-98 | 6.4 | 12 | 0.3039 | -0.513 | 1.856 | 0.969 |
| 23-Apr-98 | 6.5 | 13 | 0.3301 | -0.440 | 1.872 | 0.970 |
| 5-Aug-99 | 7 | 14 | 0.3562 | -0.369 | 1.946 | 0.976 |
| 14-Aug-97 | 8.5 | 15 | 0.3824 | -0.299 | 2.140 | 0.981 |
| 21-Apr-99 | 8.9 | 16 | 0.4085 | -0.231 | 2.186 | 0.979 |
| 30-Aug-99 | 9 | 17 | 0.4346 | -0.165 | 2.197 | 0.978 |
| 26-Oct-98 | 9.4 | 18 | 0.4608 | -0.098 | 2.241 | 0.977 |
| 26-Nov-97 | 9.5 | 19 | 0.4869 | -0.033 | 2.251 | 0.976 |
| 26-Aug-98 | 9.8 | 20 | 0.5131 | 0.033 | 2.282 | 0.974 |
| 28-Jul-98 | 10 | 21 | 0.5392 | 0.098 | 2.303 | 0.972 |
| 24-Sep-98 | 10 | 22 | 0.5654 | 0.165 | 2.303 | 0.970 |
| 5-Oct-91 | 10.1 | 23 | 0.5915 | 0.231 | 2.313 | 0.966 |
| 9-Nov-97 | 10.2 | 24 | 0.6176 | 0.299 | 2.370 | 0.963 |
| 4-Sep-97 | 11 | 25 | 0.6438 | 0.369 | 2.398 | 0.958 |
| 26-Aug-98 | 11 | 26 | 0.6699 | 0.440 | 2.398 | 0.953 |
| 20-Mar-98 | 13 | 27 | 0.6961 | 0.513 | 2.565 | 0.953 |
| 27-Oct-98 | 13 | 28 | 0.7222 | 0.589 | 2.565 | 0.954 |
| 19-Dec-97 | 14 | 29 | 0.7484 | 0.669 | 2.639 | 0.949 |
| 26-Feb-98 | 14 | 30 | 0.7745 | 0.754 | 2.639 | 0.961 |
| 23-Feb-99 | 14 | 31 | 0.8007 | 0.844 | 2.639 | 0.966 |
| 8-Mar-99 | 14 | 32 | 0.8268 | 0.942 | 2.639 | 0.962 |
| 18-Nov-98 | 16 | 33 | 0.8529 | 1.049 | 2.773 | 0.950 |
| 20-Jan-99 | 16 | 34 | 0.8791 | 1.170 | 2.773 | 0.966 |
| 15-Jan-99 | 17 | 35 | 0.9052 | 1.312 | 2.833 | |
| 15-Dec-98 | 19 | 36 | 0.9314 | 1.486 | 2.944 | |
| 23-Mar-99 | 20 | 37 | 0.9575 | 1.723 | 2.996 | |
| 25-Nov-98 | 28 | 38 | 0.9837 | 2.136 | 3.332 | |

update for EV, CV

| | | |
|---|---|---|
| **dCd** | | **CC285** |
| **LN Analysis** | | **dCd** |
| **Discharge, Q** | | **Q Data, EV=70 cfs CV=1.28** |
| **Avg:** | **74** | **Q Data-based LN** |
| **SD:** | **89** | |
| **CV:** | **1.19** | |
| **Min:** | **12** | |
| **Max:** | **345** | |
| **Median:** | **30** | |

| u | lnQ | Q |
|---|---|---|
| 3 | 6.7 | 803 |
| 0 | 3.86 | 48 |
| -3 | 1.04 | 3 |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.886, EV=76.0 cfs CV=1.40; max r2=0.950**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.886 | u | lnQ | Q |
| slope, m: | 0.959 | 3 | 6.91 | 1007 |
| intercept, b: | -3.635 | 0 | 3.79 | 44 |
| N: 38 | | -3 | 0.66 | 2 |
| E[Q]: | 76.0 | Parameter Estimates | | |
| SD[Q] | 107 | from LN regression | | |
| CV[Q]: | 1.40 | update graph label | | |

N: 38

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.950 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Oct-98 | 12 | 1 | 0.0163 | -2.136 | 2.485 | 0.886 |
| 18-Nov-98 | 14 | 2 | 0.0425 | -1.723 | 2.639 | 0.896 |
| 5-Oct-91 | 14.2 | 3 | 0.0686 | -1.486 | 2.653 | 0.902 |
| 22-Jan-98 | 18.7 | 4 | 0.0948 | -1.312 | 2.929 | 0.903 |
| 15-Dec-98 | 19 | 5 | 0.1209 | -1.170 | 2.944 | 0.912 |
| 19-Dec-97 | 20.4 | 6 | 0.1471 | -1.049 | 3.016 | 0.919 |
| 26-Feb-98 | 20.4 | 7 | 0.1732 | -0.942 | 3.016 | 0.926 |
| 24-Sep-98 | 21.5 | 8 | 0.1993 | -0.844 | 3.068 | 0.931 |
| 16-Oct-97 | 21.9 | 9 | 0.2255 | -0.754 | 3.086 | 0.937 |
| 20-Jan-99 | 23 | 10 | 0.2516 | -0.669 | 3.135 | 0.941 |
| 26-Oct-98 | 23.1 | 11 | 0.2778 | -0.589 | 3.140 | 0.945 |
| 23-Feb-99 | 23.1 | 12 | 0.3039 | -0.513 | 3.140 | 0.948 |
| 30-Aug-99 | 24 | 13 | 0.3301 | -0.440 | 3.178 | 0.949 |
| 26-Nov-97 | 24.8 | 14 | 0.3562 | -0.369 | 3.211 | 0.950 |
| 26-Aug-98 | 26.2 | 15 | 0.3824 | -0.299 | 3.266 | 0.950 |
| 26-Aug-98 | 26.2 | 16 | 0.4085 | -0.231 | 3.266 | 0.949 |
| 4-Sep-97 | 26.7 | 17 | 0.4346 | -0.165 | 3.285 | 0.947 |
| 25-Nov-98 | 29.2 | 18 | 0.4608 | -0.098 | 3.374 | 0.943 |
| 8-Mar-99 | 29.2 | 19 | 0.4869 | -0.033 | 3.374 | 0.939 |
| 14-Aug-97 | 30.3 | 20 | 0.5131 | 0.033 | 3.411 | 0.933 |
| 5-Aug-99 | 31 | 21 | 0.5392 | 0.098 | 3.434 | 0.926 |
| 20-Mar-98 | 31.4 | 22 | 0.5654 | 0.165 | 3.447 | 0.918 |
| 28-Jul-98 | 33.8 | 23 | 0.5915 | 0.231 | 3.520 | 0.911 |
| 15-Jan-99 | 34.4 | 24 | 0.6176 | 0.299 | 3.538 | 0.906 |
| 9-Nov-97 | 42.6 | 25 | 0.6438 | 0.369 | 3.752 | 0.915 |
| 26-Jun-98 | 62 | 26 | 0.6699 | 0.440 | 4.127 | 0.928 |
| 23-Jul-97 | 73.3 | 27 | 0.6961 | 0.513 | 4.295 | 0.921 |
| 5-May-99 | 77 | 28 | 0.7222 | 0.589 | 4.344 | 0.910 |
| 23-Mar-99 | 88 | 29 | 0.7484 | 0.669 | 4.477 | 0.901 |
| 8-Jul-99 | 117 | 30 | 0.7745 | 0.754 | 4.762 | 0.892 |
| 24-Jun-97 | 118 | 31 | 0.8007 | 0.844 | 4.771 | 0.868 |
| 21-Apr-99 | 122 | 32 | 0.8268 | 0.942 | 4.804 | 0.836 |
| 23-Apr-98 | 154 | 33 | 0.8529 | 1.049 | 5.037 | 0.829 |
| 17-May-91 | 199.5 | 34 | 0.8791 | 1.170 | 5.296 | 0.820 |
| 14-May-98 | 223 | 35 | 0.9052 | 1.312 | 5.407 | |
| 28-May-98 | 293 | 36 | 0.9314 | 1.486 | 5.680 | |
| 24-May-99 | 329 | 37 | 0.9575 | 1.723 | 5.796 | |
| 15-Jun-99 | 345 | 38 | 0.9837 | 2.136 | 5.844 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC285 **Date:** 30-May-00

**Chemical:** dPb **Analyst:** J.Johnston

**Notes:**

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,893 | 73 | 35 | 13 | 0.00 | 0.00 | 0.00 |
| **SD:** | 611 | 88 | 18 | 18 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.20 | 0.53 | 1.37 | | | |
| **Min:** | 33,375 | 12 | 2 | 0.2 | -0.70 | -1.82 | -0.72 |
| **Max:** | 36,402 | 345 | 91 | 75 | 3.10 | 3.03 | 3.43 |
| **Median:** | 36,033 | 30 | 34 | 7 | -0.49 | -0.06 | -0.37 |

**dPb CC285 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

**Conc. = mQ+b (r2=0.001)** update r2

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 Q,[COC]: | 0.005 | [dPb] | Q | r2 | 0.000 | 0.000 |
| slope, m: | 0.0 | 36 | 12.0 | m | -0.0031 | -0.00001 |
| intercept, b: | 36.2 | 35 | 73.2 | b | 184 | 4.01 |
| N: 39 | | 31 | 345 | | | |

**LnConc. = mLn(Q)+b (r2=0.01)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.00 | ln[dPb] | ln Q | [dPb] | Q |
| slope, m: | -0.01 | 3.38 | 2.48 | 29 | 12 |
| intercept, b: | 3.40 | 3.37 | 4.29 | 29 | 73 |
| N: 39 | | 3.35 | 5.84 | 29 | 345 |

for graph 0

**N= 39**

| update for new data | Sampling Date | Q Discharge cfs | dPb Concentration ug/L | dPb Load lbs/day | Ln Q | Ln dPb Conc. | Ln dPb Load | dPb CC285 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 199.5 | 4 | 4.3 | 5.30 | 1.39 | 1.46 | 1.44 | -1.69 | -0.49 |
| MFG | 5-Oct-91 | 14.2 | 8 | 0.6 | 2.65 | 2.08 | -0.49 | -0.67 | -1.47 | -0.70 |
| IDEQ | 24-Jun-97 | 118 | 27 | 17.1 | 4.77 | 3.30 | 2.84 | 0.51 | -0.44 | 0.22 |
| IDEQ | 23-Jul-97 | 73.3 | 36 | 14.2 | 4.29 | 3.58 | 2.65 | 0.00 | 0.05 | 0.05 |
| IDEQ | 14-Aug-97 | 30.3 | 80 | 13.0 | 3.41 | 4.38 | 2.57 | -0.49 | 2.43 | -0.01 |
| IDEQ | 4-Sep-97 | 26.7 | 43 | 6.2 | 3.28 | 3.76 | 1.82 | -0.53 | 0.43 | -0.39 |
| IDEQ | 16-Oct-97 | 21.9 | 45 | 5.3 | 3.09 | 3.81 | 1.67 | -0.58 | 0.54 | -0.44 |
| URS | 9-Nov-97 | 42.6 | 47.7 | 10.9 | 3.75 | 3.86 | 2.39 | -0.35 | 0.68 | -0.13 |
| IDEQ | 26-Nov-97 | 24.8 | 70 | 9.3 | 3.21 | 4.25 | 2.23 | -0.55 | 1.89 | -0.21 |
| IDEQ | 19-Dec-97 | 20.4 | 61 | 6.7 | 3.02 | 4.11 | 1.90 | -0.60 | 1.40 | -0.36 |
| IDEQ | 22-Jan-98 | 18.7 | 1.5 | 0.2 | 2.93 | 0.41 | -1.89 | -0.62 | -1.82 | -0.72 |
| IDEQ | 26-Feb-98 | 20.4 | 38 | 4.2 | 3.02 | 3.64 | 1.43 | -0.60 | 0.16 | -0.50 |
| IDEQ | 20-Mar-98 | 31.4 | 39 | 6.6 | 3.45 | 3.66 | 1.89 | -0.48 | 0.21 | -0.37 |
| IDEQ | 23-Apr-98 | 154 | 91 | 75.4 | 5.04 | 4.51 | 4.32 | 0.92 | 3.03 | 3.43 |
| URS | 14-May-98 | 223 | 61.2 | 73.4 | 5.41 | 4.11 | 4.30 | 1.71 | 1.41 | 3.33 |
| IDEQ | 28-May-98 | 293 | 35 | 55.2 | 5.68 | 3.56 | 4.01 | 2.50 | -0.01 | 2.32 |
| IDEQ | 26-Jun-98 | 62 | 34 | 11.3 | 4.13 | 3.53 | 2.43 | -0.13 | -0.06 | -0.10 |
| IDEQ | 28-Jul-98 | 33.8 | 41 | 7.5 | 3.52 | 3.71 | 2.01 | -0.45 | 0.32 | -0.32 |
| IDEQ | 28-Jul-98 | 33.8 | 43 | 7.8 | 3.52 | 3.76 | 2.06 | -0.45 | 0.43 | -0.30 |
| IDEQ | 26-Aug-98 | 26.2 | 34 | 4.8 | 3.27 | 3.53 | 1.57 | -0.54 | -0.06 | -0.47 |
| IDEQ | 26-Aug-98 | 26.2 | 36 | 5.1 | 3.27 | 3.58 | 1.62 | -0.54 | 0.05 | -0.45 |
| IDEQ | 24-Sep-98 | 21.5 | 46 | 5.3 | 3.07 | 3.83 | 1.67 | -0.59 | 0.59 | -0.44 |
| IDEQ | 26-Oct-98 | 23.1 | 30 | 3.7 | 3.14 | 3.40 | 1.32 | -0.57 | -0.28 | -0.52 |
| USGS | 27-Oct-98 | 12 | 31 | 2.0 | 2.48 | 3.43 | 0.69 | -0.70 | -0.22 | -0.62 |
| USGS | 18-Nov-98 | 14 | 22 | 1.7 | 2.64 | 3.09 | 0.51 | -0.67 | -0.71 | -0.64 |
| IDEQ | 25-Nov-98 | 29.2 | 43 | 6.8 | 3.37 | 3.76 | 1.91 | -0.50 | 0.43 | -0.36 |
| USGS | 15-Dec-98 | 19 | 22 | 2.2 | 2.94 | 3.09 | 0.81 | -0.62 | -0.71 | -0.61 |
| IDEQ | 15-Jan-99 | 34.4 | 34 | 6.3 | 3.54 | 3.53 | 1.84 | -0.44 | -0.06 | -0.38 |
| USGS | 20-Jan-99 | 23 | 24 | 3.0 | 3.14 | 3.18 | 1.09 | -0.57 | -0.60 | -0.57 |
| IDEQ | 23-Feb-99 | 23.1 | 24 | 3.0 | 3.14 | 3.18 | 1.09 | -0.57 | -0.60 | -0.57 |
| IDEQ | 8-Mar-99 | 29.2 | 30 | 4.7 | 3.37 | 3.40 | 1.55 | -0.50 | -0.28 | -0.47 |
| USGS | 23-Mar-99 | 88 | 37 | 17.5 | 4.48 | 3.61 | 2.86 | 0.17 | 0.10 | 0.24 |
| USGS | 21-Apr-99 | 122 | 24 | 15.8 | 4.80 | 3.18 | 2.76 | 0.56 | -0.60 | 0.14 |
| USGS | 5-May-99 | 77 | 19 | 7.9 | 4.34 | 2.94 | 2.06 | 0.04 | -0.87 | -0.30 |
| USGS | 24-May-99 | 329 | 25 | 44.3 | 5.80 | 3.22 | 3.79 | 2.91 | -0.55 | 1.71 |
| USGS | 15-Jun-99 | 345 | 19 | 35.3 | 5.84 | 2.94 | 3.56 | 3.10 | -0.87 | 1.22 |
| USGS | 8-Jul-99 | 117 | 16 | 10.1 | 4.76 | 2.77 | 2.31 | 0.50 | -1.04 | -0.17 |
| USGS | 5-Aug-99 | 31 | 21 | 3.5 | 3.43 | 3.04 | 1.25 | -0.48 | -0.77 | -0.54 |
| USGS | 30-Aug-99 | 24 | 27 | 3.5 | 3.18 | 3.30 | 1.25 | -0.56 | -0.44 | -0.54 |

**dPb**

**Concentration over time analysis**

| | dPb | CC285 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.153** | **0.00047** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 17-May-91 | 2.18 | 9 | | |
| mid | 26-Aug-98 | 3.44 | 31 | | |
| last | 30-Aug-99 | 3.61 | 37 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

**Load over time analysis**

| | dPb | CC285 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.058** | **0.00047** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 17-May-91 | 0.75 | 2 | | |
| mid | 26-Aug-98 | 1.99 | 7 | | |
| last | 30-Aug-99 | 2.16 | 9 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | max r2 | 0.587 | | max r2. | 0.923 | |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points. delete last 4 rows | | | only on >4 data points. delete last 4 row | | |
| | 0.153 | 0.00047 | -13.63 | 0.058 | 0.00047 | -14.85 |
| | 0.022 | 0.00022 | -4.46 | 0.071 | 0.00070 | -23.06 |
| | 0.088 | -0.00085 | 33.95 | 0.003 | -0.00027 | 11.82 |
| | 0.106 | -0.00098 | 38.66 | 0.000 | -0.00009 | 5.25 |
| | 0.111 | -0.00105 | 41.30 | 0.000 | 0.00008 | -0.90 |
| | 0.078 | -0.00090 | 35.94 | 0.002 | 0.00026 | -7.59 |
| | 0.071 | -0.00091 | 36.12 | 0.002 | 0.00026 | -7.35 |
| | 0.061 | -0.00089 | 35.35 | 0.001 | 0.00020 | -5.12 |
| | 0.049 | -0.00083 | 33.39 | 0.003 | 0.00037 | -11.53 |
| | 0.024 | -0.00061 | 25.21 | 0.005 | 0.00054 | -17.45 |
| | 0.008 | -0.00037 | 16.64 | 0.006 | 0.00060 | -19.66 |
| | 0.548 | -0.00176 | 66.87 | 0.024 | -0.00106 | 40.46 |
| | 0.569 | -0.00189 | 71.85 | 0.044 | -0.00150 | 56.46 |
| | 0.587 | -0.00203 | 76.93 | 0.056 | -0.00182 | 67.72 |
| | 0.552 | -0.00172 | 65.56 | 0.014 | -0.00087 | 33.53 |
| | 0.495 | -0.00153 | 58.63 | 0.002 | 0.00031 | -9.42 |
| | 0.496 | -0.00162 | 61.91 | 0.066 | 0.00169 | -59.36 |
| | 0.502 | -0.00172 | 65.54 | 0.112 | 0.00232 | -82.04 |
| | 0.463 | -0.00168 | 64.04 | 0.139 | 0.00273 | -97.04 |
| | 0.404 | -0.00158 | 60.53 | 0.183 | 0.00335 | -119.67 |
| | 0.384 | -0.00162 | 61.79 | 0.191 | 0.00365 | -130.31 |
| | 0.344 | -0.00161 | 61.56 | 0.209 | 0.00414 | -148.32 |
| | 0.247 | -0.00129 | 49.99 | 0.232 | 0.00472 | -169.05 |
| | 0.227 | -0.00131 | 50.56 | 0.221 | 0.00488 | -175.07 |
| | 0.193 | -0.00129 | 49.80 | 0.159 | 0.00431 | -154.23 |
| | 0.292 | -0.00171 | 65.26 | 0.082 | 0.00310 | -110.36 |
| | 0.153 | -0.00114 | 44.70 | 0.093 | 0.00369 | -131.66 |
| | 0.256 | -0.00166 | 63.52 | 0.026 | 0.00204 | -71.96 |
| | 0.153 | -0.00129 | 50.04 | 0.018 | 0.00189 | -66.47 |
| | 0.194 | -0.00169 | 64.68 | 0.003 | -0.00089 | 34.51 |
| | 0.236 | -0.00212 | 80.03 | 0.101 | -0.00502 | 184.58 |
| | 0.143 | -0.00180 | 68.67 | 0.364 | -0.01053 | 384.87 |
| | 0.010 | 0.00039 | -10.93 | 0.399 | -0.01328 | 484.99 |
| | 0.104 | 0.00141 | -48.04 | 0.445 | -0.01655 | 603.68 |
| | 0.054 | 0.00125 | -42.35 | 0.923 | -0.02991 | 1089.65 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dPb** | | **CC285** | | |
| **LN Analysis** | | **dPb** | | |
| **Load** | | **Load Data, EV=13 lbs/day CV=1.43** | | |
| **Avg:** | **13** | **Load Data-based LN** | | |
| **SD:** | **18** | u | ln dPb Load | dPb Load |
| **CV:** | **1.37** | 3 | 5.1 | 170 |
| **Min:** | **0.2** | 0 | 2.05 | 8 |
| **Max:** | **75** | -3 | -1.03 | 0.4 |
| **Median:** | **7** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.934, EV=15.4 lbs/day CV=2.01; max r2=0.959**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.934 | u | lnLoad | Load |
| slope, m: | 0.787 | 3 | 5.74 | 311 |
| intercept, b | -1.515 | 0 | 1.93 | 7 |
| N: | 39 | -3 | -1.89 | 0.15 |
| E[Load] | 15.4 | Parameter Estimates | | |
| SD[Load] | 31 | from LN regression | | |
| CV[Load] | 2.01 | update graph label | | |

N: 39

max r2 0.959

| | Date | dPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|---|
| ws | update and rank for new data | | | | | | |
| | 22-Jan-98 | **0.2** | 1 | 0.0159 | -2.146 | -1.891 | 0.934 |
| | 5-Oct-91 | **0.6** | 2 | 0.0414 | -1.735 | -0.492 | 0.957 |
| | 18-Nov-98 | **1.7** | 3 | 0.0669 | -1.499 | 0.505 | 0.959 |
| | 27-Oct-98 | **2.0** | 4 | 0.0924 | -1.326 | 0.694 | 0.956 |
| | 15-Dec-98 | **2.2** | 5 | 0.1178 | -1.186 | 0.810 | 0.954 |
| | 20-Jan-99 | **3.0** | 6 | 0.1433 | -1.066 | 1.088 | 0.951 |
| | 23-Feb-99 | **3.0** | 7 | 0.1688 | -0.959 | 1.093 | 0.952 |
| | 30-Aug-99 | **3.5** | 8 | 0.1943 | -0.862 | 1.249 | 0.951 |
| | 5-Aug-99 | **3.5** | 9 | 0.2197 | -0.773 | 1.253 | 0.952 |
| | 26-Oct-98 | **3.7** | 10 | 0.2452 | -0.690 | 1.316 | 0.952 |
| | 26-Feb-98 | **4.2** | 11 | 0.2707 | -0.611 | 1.428 | 0.951 |
| | 17-May-91 | **4.3** | 12 | 0.2962 | -0.535 | 1.457 | 0.952 |
| | 8-Mar-99 | **4.7** | 13 | 0.3217 | -0.463 | 1.550 | 0.953 |
| | 26-Aug-98 | **4.8** | 14 | 0.3471 | -0.393 | 1.567 | 0.954 |
| | 26-Aug-98 | **5.1** | 15 | 0.3726 | -0.325 | 1.624 | 0.954 |
| | 16-Oct-97 | **5.3** | 16 | 0.3981 | -0.258 | 1.668 | 0.955 |
| | 24-Sep-98 | **5.3** | 17 | 0.4236 | -0.193 | 1.672 | 0.955 |
| | 4-Sep-97 | **6.2** | 18 | 0.4490 | -0.128 | 1.821 | 0.953 |
| | 15-Jan-99 | **6.3** | 19 | 0.4745 | -0.064 | 1.839 | 0.955 |
| | 20-Mar-98 | **6.6** | 20 | 0.5000 | 0.000 | 1.885 | 0.955 |
| | 19-Dec-97 | **6.7** | 21 | 0.5255 | 0.064 | 1.901 | 0.955 |
| | 25-Nov-98 | **6.8** | 22 | 0.5510 | 0.128 | 1.910 | 0.953 |
| | 28-Jul-98 | **7.5** | 23 | 0.5764 | 0.193 | 2.009 | 0.950 |
| | 28-Jul-98 | **7.8** | 24 | 0.6019 | 0.258 | 2.057 | 0.946 |
| | 5-May-99 | **7.9** | 25 | 0.6274 | 0.325 | 2.063 | 0.941 |
| | 26-Nov-97 | **9.3** | 26 | 0.6529 | 0.393 | 2.234 | 0.934 |
| | 8-Jul-99 | **10.1** | 27 | 0.6783 | 0.463 | 2.310 | 0.927 |
| | 9-Nov-97 | **10.9** | 28 | 0.7038 | 0.535 | 2.392 | 0.918 |
| | 26-Jun-98 | **11.3** | 29 | 0.7293 | 0.611 | 2.428 | 0.907 |
| | 14-Aug-97 | **13.0** | 30 | 0.7548 | 0.690 | 2.568 | 0.891 |
| | 23-Jul-97 | **14.2** | 31 | 0.7803 | 0.773 | 2.653 | 0.871 |
| | 21-Apr-99 | **15.8** | 32 | 0.8057 | 0.862 | 2.757 | 0.842 |
| | 24-Jun-97 | **17.1** | 33 | 0.8312 | 0.959 | 2.841 | 0.801 |
| | 23-Mar-99 | **17.5** | 34 | 0.8567 | 1.066 | 2.863 | 0.743 |
| | 15-Jun-99 | **35.3** | 35 | 0.8822 | 1.186 | 3.563 | 0.843 |
| | 24-May-99 | **44.3** | 36 | 0.9076 | 1.326 | 3.790 | |
| | 28-May-98 | **55.2** | 37 | 0.9331 | 1.499 | 4.010 | |
| | 14-May-98 | **73.4** | 38 | 0.9586 | 1.735 | 4.296 | |
| | 23-Apr-98 | **75.4** | 39 | 0.9841 | 2.146 | 4.323 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dPb** | | **CC285** | | |
| **LN Analysis** | | **dPb** | | |
| **Concentration** | | **Conc. Data, EV=35 ug/L CV=.53** | | |
| **Avg:** | **35** | **Data-based LN** | | |
| **SD:** | **18** | u | ln[dPb] | [dPb] |
| **CV:** | **0.53** | 3 | 4.9 | 137 |
| **Min:** | **2** | 0 | 3.44 | 31 |
| **Max:** | **91** | -3 | 1.96 | 7 |
| **Median:** | **34** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **$r^2$=0.798, EV=42.0 ug/L CV=1.04; max r2=0.986**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.798 | u | lnConc | Conc. |
| slope, m: | 1.165 | 3 | 5.95 | 382 |
| intercept, b: | -3.925 | 0 | 3.37 | 29 |
| N: | 39 | -3 | 0.79 | 2 |
| E[Conc] | 42.0 | Parameter Estimates | | |
| SD[Conc] | 44 | from LN regression | | |
| CV[Conc] | 1.04 | update graph label | | |

| Date | dPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.986 r2 forward |
|---|---|---|---|---|---|---|
| | | N: 39 | | | | |
| update and rank for new data | | | | | | |
| 22-Jan-98 | 1.5 | 1 | 0.0159 | -2.146 | 0.405 | 0.798 |
| 17-May-91 | 4 | 2 | 0.0414 | -1.735 | 1.386 | 0.863 |
| 5-Oct-91 | 8 | 3 | 0.0669 | -1.499 | 2.079 | 0.939 |
| 8-Jul-99 | 16 | 4 | 0.0924 | -1.326 | 2.773 | 0.986 |
| 5-May-99 | 19 | 5 | 0.1178 | -1.186 | 2.944 | 0.985 |
| 15-Jun-99 | 19 | 6 | 0.1433 | -1.066 | 2.944 | 0.984 |
| 5-Aug-99 | 21 | 7 | 0.1688 | -0.959 | 3.045 | 0.983 |
| 18-Nov-98 | 22 | 8 | 0.1943 | -0.862 | 3.091 | 0.982 |
| 15-Dec-98 | 22 | 9 | 0.2197 | -0.773 | 3.091 | 0.981 |
| 20-Jan-99 | 24 | 10 | 0.2452 | -0.690 | 3.178 | 0.979 |
| 23-Feb-99 | 24 | 11 | 0.2707 | -0.611 | 3.178 | 0.978 |
| 21-Apr-99 | 24 | 12 | 0.2962 | -0.535 | 3.178 | 0.976 |
| 24-May-99 | 25 | 13 | 0.3217 | -0.463 | 3.219 | 0.974 |
| 24-Jun-97 | 27 | 14 | 0.3471 | -0.393 | 3.296 | 0.972 |
| 30-Aug-99 | 27 | 15 | 0.3726 | -0.325 | 3.296 | 0.970 |
| 26-Oct-98 | 30 | 16 | 0.3981 | -0.258 | 3.401 | 0.967 |
| 8-Mar-99 | 30 | 17 | 0.4236 | -0.193 | 3.401 | 0.966 |
| 27-Oct-98 | 31 | 18 | 0.4490 | -0.128 | 3.434 | 0.964 |
| 26-Jun-98 | 34 | 19 | 0.4745 | -0.064 | 3.526 | 0.961 |
| 26-Aug-98 | 34 | 20 | 0.5000 | 0.000 | 3.526 | 0.964 |
| 15-Jan-99 | 34 | 21 | 0.5255 | 0.064 | 3.526 | 0.966 |
| 28-May-98 | 35 | 22 | 0.5510 | 0.128 | 3.555 | 0.965 |
| 23-Jul-97 | 36 | 23 | 0.5764 | 0.193 | 3.584 | 0.965 |
| 26-Aug-98 | 36 | 24 | 0.6019 | 0.258 | 3.584 | 0.966 |
| 23-Mar-99 | 37 | 25 | 0.6274 | 0.325 | 3.611 | 0.964 |
| 26-Feb-98 | 38 | 26 | 0.6529 | 0.393 | 3.638 | 0.962 |
| 20-Mar-98 | 39 | 27 | 0.6783 | 0.463 | 3.664 | 0.959 |
| 28-Jul-98 | 41 | 28 | 0.7038 | 0.535 | 3.714 | 0.956 |
| 4-Sep-97 | 43 | 29 | 0.7293 | 0.611 | 3.761 | 0.954 |
| 28-Jul-98 | 43 | 30 | 0.7548 | 0.690 | 3.761 | 0.957 |
| 25-Nov-98 | 43 | 31 | 0.7803 | 0.773 | 3.761 | 0.953 |
| 16-Oct-97 | 45 | 32 | 0.8057 | 0.862 | 3.807 | 0.942 |
| 24-Sep-98 | 46 | 33 | 0.8312 | 0.959 | 3.829 | 0.927 |
| 9-Nov-97 | 47.7 | 34 | 0.8567 | 1.066 | 3.865 | 0.911 |
| 19-Dec-97 | 61 | 35 | 0.8822 | 1.186 | 4.111 | 0.965 |
| 14-May-98 | 61.2 | 36 | 0.9076 | 1.326 | 4.114 | |
| 26-Nov-97 | 70 | 37 | 0.9331 | 1.499 | 4.248 | |
| 14-Aug-97 | 80 | 38 | 0.9586 | 1.735 | 4.382 | |
| 23-Apr-98 | 91 | 39 | 0.9841 | 2.146 | 4.511 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dPb** | | **CC285** | | |
| **LN Analysis** | | **dPb** | | |
| **Discharge, Q** | | **Q Data, EV=69 cfs CV=1.28** | | |
| **Avg:** | **73** | **Q Data-based LN** | | |
| **SD:** | **88** | u | lnQ | Q |
| **CV:** | **1.20** | 3 | 6.7 | 796 |
| **Min:** | **12** | 0 | 3.85 | 47 |
| **Max:** | **345** | -3 | 1.02 | 3 |
| **Median:** | **30** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.884, EV=74.5 cfs CV=1.37; max r2=0.950**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.884 | u | lnQ | Q |
| slope, m: | 0.971 | 3 | 6.87 | 963 |
| intercept, b: | -3.672 | 0 | 3.78 | 44 |
| N: 39 | | -3 | 0.69 | 2.0 |
| E[Q]: | 74.5 | Parameter Estimates | | |
| SD[Q]: | 102 | from LN regression | | |
| CV[Q]: | 1.37 | update graph label | | |

N: 39

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.950 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Oct-98 | 12 | 1 | 0.0159 | -2.146 | 2.485 | 0.884 |
| 18-Nov-98 | 14 | 2 | 0.0414 | -1.735 | 2.639 | 0.894 |
| 5-Oct-91 | 14.2 | 3 | 0.0669 | -1.499 | 2.653 | 0.900 |
| 22-Jan-98 | 18.7 | 4 | 0.0924 | -1.326 | 2.929 | 0.901 |
| 15-Dec-98 | 19 | 5 | 0.1178 | -1.186 | 2.944 | 0.910 |
| 19-Dec-97 | 20.4 | 6 | 0.1433 | -1.066 | 3.016 | 0.916 |
| 26-Feb-98 | 20.4 | 7 | 0.1688 | -0.959 | 3.016 | 0.924 |
| 24-Sep-98 | 21.5 | 8 | 0.1943 | -0.862 | 3.068 | 0.929 |
| 16-Oct-97 | 21.9 | 9 | 0.2197 | -0.773 | 3.086 | 0.934 |
| 20-Jan-99 | 23 | 10 | 0.2452 | -0.690 | 3.135 | 0.939 |
| 26-Oct-98 | 23.1 | 11 | 0.2707 | -0.611 | 3.140 | 0.943 |
| 23-Feb-99 | 23.1 | 12 | 0.2962 | -0.535 | 3.140 | 0.946 |
| 30-Aug-99 | 24 | 13 | 0.3217 | -0.463 | 3.178 | 0.948 |
| 26-Nov-97 | 24.8 | 14 | 0.3471 | -0.393 | 3.211 | 0.949 |
| 26-Aug-98 | 26.2 | 15 | 0.3726 | -0.325 | 3.266 | 0.949 |
| 26-Aug-98 | 26.2 | 16 | 0.3981 | -0.258 | 3.266 | 0.950 |
| 4-Sep-97 | 26.7 | 17 | 0.4236 | -0.193 | 3.285 | 0.948 |
| 25-Nov-98 | 29.2 | 18 | 0.4490 | -0.128 | 3.374 | 0.946 |
| 8-Mar-99 | 29.2 | 19 | 0.4745 | -0.064 | 3.374 | 0.943 |
| 14-Aug-97 | 30.3 | 20 | 0.5000 | 0.000 | 3.411 | 0.939 |
| 5-Aug-99 | 31 | 21 | 0.5255 | 0.064 | 3.434 | 0.934 |
| 20-Mar-98 | 31.4 | 22 | 0.5510 | 0.128 | 3.447 | 0.927 |
| 28-Jul-98 | 33.8 | 23 | 0.5764 | 0.193 | 3.520 | 0.919 |
| 28-Jul-98 | 33.8 | 24 | 0.6019 | 0.258 | 3.520 | 0.910 |
| 15-Jan-99 | 34.4 | 25 | 0.6274 | 0.325 | 3.538 | 0.905 |
| 9-Nov-97 | 42.6 | 26 | 0.6529 | 0.393 | 3.752 | 0.914 |
| 26-Jun-98 | 62 | 27 | 0.6783 | 0.463 | 4.127 | 0.927 |
| 23-Jul-97 | 73.3 | 28 | 0.7038 | 0.535 | 4.295 | 0.921 |
| 5-May-99 | 77 | 29 | 0.7293 | 0.611 | 4.344 | 0.909 |
| 23-Mar-99 | 88 | 30 | 0.7548 | 0.690 | 4.477 | 0.901 |
| 8-Jul-99 | 117 | 31 | 0.7803 | 0.773 | 4.762 | 0.891 |
| 24-Jun-97 | 118 | 32 | 0.8057 | 0.862 | 4.771 | 0.868 |
| 21-Apr-99 | 122 | 33 | 0.8312 | 0.959 | 4.804 | 0.836 |
| 23-Apr-98 | 154 | 34 | 0.8567 | 1.066 | 5.037 | 0.828 |
| 17-May-91 | 199.5 | 35 | 0.8822 | 1.186 | 5.296 | 0.819 |
| 14-May-98 | 223 | 36 | 0.9076 | 1.326 | 5.407 | |
| 28-May-98 | 293 | 37 | 0.9331 | 1.499 | 5.680 | |
| 24-May-99 | 329 | 38 | 0.9586 | 1.735 | 5.796 | |
| 15-Jun-99 | 345 | 39 | 0.9841 | 2.146 | 5.844 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **CC285** | **Date:** | **23-May-00** |
| **Chemical:** | **dZn** | **Analyst:** | **J.Johnston** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,890 | 74 | 1,381 | 366 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 618 | 89 | 804 | 299 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.19 | 0.58 | 0.82 | | | | |
| **Min:** | 33,375 | 12 | 151 | 15 | | -0.70 | -1.53 | -1.17 |
| **Max:** | 36,402 | 345 | 3,950 | 1,382 | | 3.05 | 3.20 | 3.40 |
| **Median:** | 36,033 | 30 | 1,225 | 274 | | -0.50 | -0.19 | -0.31 |

| **dZn** | **CC285** | | **: Concentration v. Discharge, Q** | | **Q = mTime +b** | | **LnQ = mTime +b** |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.19)** | | update r2 | | | r2: | 0.000 | 0.000 |
| r2 Q,[COC]: | 0.24 | [dZn] | Q | | m: | -0.0028 | 0.00000 |
| slope, m: | -4.4 | 1,655 | 12.0 | | b: | 174 | 3.95 |
| intercept, b | 1708.2 | 1,381 | 74.3 | | | | |
| N: 38 | | 190 | 345 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.12)** | | update r2 | | | | | |
| r2 lnQ,ln[COC] | 0.28 | ln[dZn] | ln Q | [dZn] | Q | | |
| slope, m | -0.37 | 7.53 | 2.48 | 1,861 | 12 | | |
| intercept, b | 8.46 | 6.85 | 4.31 | 941 | 74 | | |
| N: 38 | | 6.27 | 5.84 | 530 | 345 | | |

| | | | | | | | | dZn | for graph 0 | |
|---|---|---|---|---|---|---|---|---|---|---|
| **N= 38** | | | | | | | | CC285 | | |
| | **Sampling Date** | **Q Discharge** | **dZn Concentration** | **dZn Load** | **Ln Q** | **Ln dZn Conc.** | **Ln dZn Load** | **Standardized Values = (x - Avg)/SD** | | |
| update for new data | | **cfs** | **ug/L** | **lbs/day** | | | | **Q** | **Conc** | **Load** |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 199.5 | 555 | 596 | 5.30 | 6.32 | 6.39 | 1.41 | -1.03 | 0.77 |
| MFG | 5-Oct-91 | 14.2 | 1740 | 133 | 2.65 | 7.46 | 4.89 | -0.68 | 0.45 | -0.78 |
| IDEQ | 24-Jun-97 | 118 | 505 | 321 | 4.77 | 6.22 | 5.77 | 0.49 | -1.09 | -0.15 |
| IDEQ | 23-Jul-97 | 73.3 | 784 | 309 | 4.29 | 6.66 | 5.73 | -0.01 | -0.74 | -0.19 |
| IDEQ | 14-Aug-97 | 30.3 | 1230 | 201 | 3.41 | 7.11 | 5.30 | -0.50 | -0.19 | -0.55 |
| IDEQ | 4-Sep-97 | 26.7 | 1440 | 207 | 3.28 | 7.27 | 5.33 | -0.54 | 0.07 | -0.53 |
| IDEQ | 16-Oct-97 | 21.9 | 736 | 87 | 3.09 | 6.60 | 4.46 | -0.59 | -0.80 | -0.93 |
| URS | 9-Nov-97 | 42.6 | 1480 | 339 | 3.75 | 7.30 | 5.83 | -0.36 | 0.12 | -0.09 |
| IDEQ | 26-Nov-97 | 24.8 | 1450 | 193 | 3.21 | 7.28 | 5.27 | -0.56 | 0.09 | -0.58 |
| IDEQ | 19-Dec-97 | 20.4 | 1760 | 193 | 3.02 | 7.47 | 5.26 | -0.61 | 0.47 | -0.58 |
| IDEQ | 22-Jan-98 | 18.7 | 151 | 15 | 2.93 | 5.02 | 2.72 | -0.63 | -1.53 | -1.17 |
| IDEQ | 26-Feb-98 | 20.4 | 1890 | 207 | 3.02 | 7.54 | 5.33 | -0.61 | 0.63 | -0.53 |
| IDEQ | 20-Mar-98 | 31.4 | 1840 | 311 | 3.45 | 7.52 | 5.74 | -0.48 | 0.57 | -0.18 |
| IDEQ | 23-Apr-98 | 154 | 917 | 760 | 5.04 | 6.82 | 6.63 | 0.90 | -0.58 | 1.32 |
| URS | 14-May-98 | 223 | 475 | 570 | 5.41 | 6.16 | 6.35 | 1.68 | -1.13 | 0.68 |
| IDEQ | 28-May-98 | 293 | 739 | 1165 | 5.68 | 6.61 | 7.06 | 2.47 | -0.80 | 2.68 |
| IDEQ | 26-Jun-98 | 62 | 810 | 270 | 4.13 | 6.70 | 5.60 | -0.14 | -0.71 | -0.32 |
| IDEQ | 28-Jul-98 | 33.8 | 1150 | 209 | 3.52 | 7.05 | 5.34 | -0.46 | -0.29 | -0.52 |
| IDEQ | 26-Aug-98 | 26.2 | 1210 | 171 | 3.27 | 7.10 | 5.14 | -0.54 | -0.21 | -0.65 |
| IDEQ | 26-Aug-98 | 26.2 | 1220 | 172 | 3.27 | 7.11 | 5.15 | -0.54 | -0.20 | -0.65 |
| IDEQ | 24-Sep-98 | 21.5 | 1230 | 142 | 3.07 | 7.11 | 4.96 | -0.59 | -0.19 | -0.75 |
| IDEQ | 26-Oct-98 | 23.1 | 1080 | 134 | 3.14 | 6.98 | 4.90 | -0.58 | -0.37 | -0.77 |
| USGS | 27-Oct-98 | 12 | 1660 | 107 | 2.48 | 7.41 | 4.67 | -0.70 | 0.35 | -0.87 |
| USGS | 18-Nov-98 | 14 | 2290 | 172 | 2.64 | 7.74 | 5.15 | -0.68 | 1.13 | -0.65 |
| IDEQ | 25-Nov-98 | 29.2 | 3950 | 621 | 3.37 | 8.28 | 6.43 | -0.51 | 3.20 | 0.85 |
| USGS | 15-Dec-98 | 19 | 2790 | 285 | 2.94 | 7.93 | 5.65 | -0.62 | 1.75 | -0.27 |
| IDEQ | 15-Jan-99 | 34.4 | 2420 | 448 | 3.54 | 7.79 | 6.10 | -0.45 | 1.29 | 0.28 |
| USGS | 20-Jan-99 | 23 | 2250 | 278 | 3.14 | 7.72 | 5.63 | -0.58 | 1.08 | -0.29 |
| IDEQ | 23-Feb-99 | 23.1 | 1950 | 242 | 3.14 | 7.58 | 5.49 | -0.58 | 0.71 | -0.41 |
| IDEQ | 8-Mar-99 | 29.2 | 2280 | 358 | 3.37 | 7.73 | 5.88 | -0.51 | 1.12 | -0.03 |
| USGS | 23-Mar-99 | 88 | 2920 | 1382 | 4.48 | 7.98 | 7.23 | 0.15 | 1.91 | 3.40 |
| USGS | 21-Apr-99 | 122 | 1290 | 847 | 4.80 | 7.16 | 6.74 | 0.54 | -0.11 | 1.61 |
| USGS | 5-May-99 | 77 | 956 | 396 | 4.34 | 6.86 | 5.98 | 0.03 | -0.53 | 0.10 |
| USGS | 24-May-99 | 329 | 505 | 894 | 5.80 | 6.22 | 6.80 | 2.87 | -1.09 | 1.77 |
| USGS | 15-Jun-99 | 345 | 307 | 570 | 5.84 | 5.73 | 6.35 | 3.05 | -1.34 | 0.68 |
| USGS | 8-Jul-99 | 117 | 457 | 288 | 4.76 | 6.12 | 5.66 | 0.48 | -1.15 | -0.26 |
| USGS | 5-Aug-99 | 31 | 944 | 157 | 3.43 | 6.85 | 5.06 | -0.49 | -0.54 | -0.70 |
| USGS | 30-Aug-99 | 24 | 1130 | 146 | 3.18 | 7.03 | 4.98 | -0.57 | -0.31 | -0.74 |

**dZn**

**Concentration over time analysis**

| dZn | CC285 | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| **LnConc.=mTime+b All data r2, m:** | | | | **0.010** | **0.00011** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 17-May-91 | 6.78 | 876 | | |
| mid | 26-Aug-98 | 7.06 | 1,160 | | |
| last | 30-Aug-99 | 7.10 | 1,207 | | |
| **LnConc.=mTime+b >'96 r2, m:** | | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

**Load over time analysis**

| dZn | CC285 | | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| **LnLoad=mTime+b All data r2, m:** | | | | **0.006** | **0.00010** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 17-May-91 | 5.35 | 211 | | |
| mid | 26-Aug-98 | 5.62 | 276 | | |
| last | 30-Aug-99 | 5.66 | 286 | | |
| **LnLoad=mTime+b >'96 r2, m:** | | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

max r2 0.682

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.010 | 0.00011 | 3.25 |
| 0.001 | -0.00004 | 8.54 |
| 0.015 | 0.00036 | -5.75 |
| 0.004 | 0.00018 | 0.41 |
| 0.001 | 0.00010 | 3.66 |
| 0.001 | 0.00011 | 2.95 |
| 0.003 | 0.00019 | 0.26 |
| 0.000 | 0.00005 | 5.17 |
| 0.001 | 0.00013 | 2.26 |
| 0.003 | 0.00023 | -1.18 |
| 0.010 | 0.00044 | -8.68 |
| 0.014 | -0.00047 | 24.16 |
| 0.007 | -0.00034 | 19.29 |
| 0.002 | -0.00017 | 13.33 |
| 0.006 | -0.00036 | 20.20 |
| 0.045 | -0.00102 | 43.90 |
| 0.098 | -0.00159 | 64.57 |
| 0.171 | -0.00222 | 87.70 |
| 0.218 | -0.00269 | 104.65 |
| 0.265 | -0.00316 | 121.80 |
| 0.335 | -0.00386 | 147.12 |
| 0.415 | -0.00465 | 175.58 |
| 0.529 | -0.00558 | 209.59 |
| 0.594 | -0.00644 | 240.85 |
| 0.602 | -0.00697 | 259.95 |
| 0.532 | -0.00673 | 251.25 |
| 0.478 | -0.00682 | 254.35 |
| 0.422 | -0.00678 | 253.05 |
| 0.354 | -0.00684 | 255.19 |
| 0.286 | -0.00663 | 247.56 |
| 0.158 | -0.00515 | 193.91 |
| 0.000 | 0.00015 | 1.21 |
| 0.142 | 0.00442 | -153.99 |
| 0.682 | 0.01137 | -406.79 |

max r2 0.950

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.006 | 0.00010 | 1.97 |
| 0.062 | 0.00044 | -10.09 |
| 0.067 | 0.00093 | -27.78 |
| 0.081 | 0.00107 | -32.86 |
| 0.095 | 0.00122 | -38.37 |
| 0.094 | 0.00127 | -40.35 |
| 0.093 | 0.00134 | -42.90 |
| 0.062 | 0.00112 | -34.86 |
| 0.077 | 0.00132 | -42.16 |
| 0.071 | 0.00135 | -43.16 |
| 0.064 | 0.00137 | -43.94 |
| 0.002 | 0.00018 | -0.56 |
| 0.000 | -0.00002 | 6.54 |
| 0.000 | -0.00005 | 7.76 |
| 0.006 | 0.00041 | -9.24 |
| 0.023 | 0.00084 | -24.67 |
| 0.123 | 0.00193 | -64.18 |
| 0.135 | 0.00218 | -73.38 |
| 0.126 | 0.00224 | -75.55 |
| 0.100 | 0.00210 | -70.30 |
| 0.071 | 0.00189 | -62.75 |
| 0.034 | 0.00136 | -43.46 |
| 0.007 | 0.00060 | -16.04 |
| 0.014 | -0.00085 | 36.82 |
| 0.082 | -0.00216 | 84.33 |
| 0.053 | -0.00190 | 74.89 |
| 0.113 | -0.00311 | 118.87 |
| 0.122 | -0.00360 | 136.55 |
| 0.260 | -0.00603 | 225.02 |
| 0.536 | -0.00953 | 352.11 |
| 0.840 | -0.01388 | 510.11 |
| 0.770 | -0.01352 | 497.14 |
| 0.703 | -0.01354 | 497.72 |
| 0.950 | -0.01979 | 725.21 |

update for EV, CV:

**dZn**
**LN Analysis**
**CC285**
**dZn**

**Load**

**Load Data, EV=352 lbs/day CV=.88**

| | |
|---|---|
| **Avg:** | **366** |
| **SD:** | **299** |
| **CV:** | **0.82** |
| **Min:** | **15** |
| **Max:** | **1,382** |
| **Median:** | **274** |

**Load Data-based LN**

| u | ln dZn Load | dZn Load |
|---|---|---|
| 3 | 7.8 | 2419 |
| 0 | 5.65 | 283 |
| -3 | 3.50 | 33 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.924, EV=400.2; CV=1.08x r2=0.984**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.924 | u | lnLoad | Load |
| slope, m: | 1.136 | 3 | 8.25 | 3810 |
| intercept, b: | -6.366 | 0 | 5.60 | 272 |
| N: | 38 | -3 | 2.96 | 19 |
| E[Load]: | 400.2 | Parameter Estimates | | |
| SD[Load]: | 433 | from LN regression | | |
| CV[Load]: | 1.08 | update graph label | | |

N: 38

| Date | dZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.984 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 22-Jan-98 | **15** | 1 | 0.0163 | -2.136 | 2.721 | 0.924 |
| 16-Oct-97 | **87** | 2 | 0.0425 | -1.723 | 4.463 | 0.978 |
| 27-Oct-98 | **107** | 3 | 0.0686 | -1.486 | 4.674 | 0.976 |
| 5-Oct-91 | **133** | 4 | 0.0948 | -1.312 | 4.890 | 0.976 |
| 26-Oct-98 | **134** | 5 | 0.1209 | -1.170 | 4.899 | 0.979 |
| 24-Sep-98 | **142** | 6 | 0.1471 | -1.049 | 4.958 | 0.980 |
| 30-Aug-99 | **146** | 7 | 0.1732 | -0.942 | 4.983 | 0.981 |
| 5-Aug-99 | **157** | 8 | 0.1993 | -0.844 | 5.059 | 0.981 |
| 26-Aug-98 | **171** | 9 | 0.2255 | -0.754 | 5.139 | 0.982 |
| 26-Aug-98 | **172** | 10 | 0.2516 | -0.669 | 5.147 | 0.984 |
| 18-Nov-98 | **172** | 11 | 0.2778 | -0.589 | 5.150 | 0.984 |
| 19-Dec-97 | **193** | 12 | 0.3039 | -0.513 | 5.264 | 0.983 |
| 26-Nov-97 | **193** | 13 | 0.3301 | -0.440 | 5.265 | 0.984 |
| 14-Aug-97 | **201** | 14 | 0.3562 | -0.369 | 5.301 | 0.984 |
| 4-Sep-97 | **207** | 15 | 0.3824 | -0.299 | 5.332 | 0.983 |
| 26-Feb-98 | **207** | 16 | 0.4085 | -0.231 | 5.335 | 0.982 |
| 28-Jul-98 | **209** | 17 | 0.4346 | -0.165 | 5.343 | 0.980 |
| 23-Feb-99 | **242** | 18 | 0.4608 | -0.098 | 5.490 | 0.979 |
| 26-Jun-98 | **270** | 19 | 0.4869 | -0.033 | 5.599 | 0.977 |
| 20-Jan-99 | **278** | 20 | 0.5131 | 0.033 | 5.629 | 0.977 |
| 15-Dec-98 | **285** | 21 | 0.5392 | 0.098 | 5.653 | 0.976 |
| 8-Jul-99 | **288** | 22 | 0.5654 | 0.165 | 5.662 | 0.974 |
| 23-Jul-97 | **309** | 23 | 0.5915 | 0.231 | 5.734 | 0.971 |
| 20-Mar-98 | **311** | 24 | 0.6176 | 0.299 | 5.739 | 0.968 |
| 24-Jun-97 | **321** | 25 | 0.6438 | 0.369 | 5.770 | 0.964 |
| 9-Nov-97 | **339** | 26 | 0.6699 | 0.440 | 5.827 | 0.960 |
| 8-Mar-99 | **358** | 27 | 0.6961 | 0.513 | 5.881 | 0.958 |
| 5-May-99 | **396** | 28 | 0.7222 | 0.589 | 5.981 | 0.962 |
| 15-Jan-99 | **448** | 29 | 0.7484 | 0.669 | 6.105 | 0.968 |
| 15-Jun-99 | **570** | 30 | 0.7745 | 0.754 | 6.345 | 0.973 |
| 14-May-98 | **570** | 31 | 0.8007 | 0.844 | 6.345 | 0.973 |
| 17-May-91 | **596** | 32 | 0.8268 | 0.942 | 6.390 | 0.967 |
| 25-Nov-98 | **621** | 33 | 0.8529 | 1.049 | 6.431 | 0.957 |
| 23-Apr-98 | **760** | 34 | 0.8791 | 1.170 | 6.633 | 0.969 |
| 21-Apr-99 | **847** | 35 | 0.9052 | 1.312 | 6.741 | |
| 24-May-99 | **894** | 36 | 0.9314 | 1.486 | 6.796 | |
| 28-May-98 | **1165** | 37 | 0.9575 | 1.723 | 7.060 | |
| 23-Mar-99 | **1382** | 38 | 0.9837 | 2.136 | 7.232 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dZn** | | **CC285** | | |
| **LN Analysis** | | **dZn** | | |
| **Concentration** | | **Conc. Data, EV=1,381 ug/L CV=.58** | | |
| **Avg:** | **1,381** | **Data-based LN** | | |
| **SD:** | **804** | u | ln[dZn] | [dZn] |
| **CV:** | **0.58** | 3 | 8.7 | 6034 |
| **Min:** | **151** | 0 | 7.08 | 1194 |
| **Max:** | **3,950** | -3 | 5.46 | 236 |
| **Median:** | **1,225** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **$r^2$=0.959, EV=1463.1 ug/L CV=0.80; max r2=0.989**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.959 | u | lnConc | Conc. |
| slope, m | 1.423 | 3 | 9.15 | 9410 |
| intercept, b | -10.020 | 0 | 7.04 | 1143 |
| N | 38 | -3 | 4.93 | 139 |
| E[Conc] | 1463.1 | Parameter Estimates | | |
| SD[Conc] | 1169 | from LN regression | | |
| CV[Conc] | 0.80 | update graph label | | |

| Date | dZn Concentration ug/L Ranked | N = 38 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.989 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 22-Jan-98 | 151 | 1 | 0.0163 | -2.136 | 5.017 | 0.959 |
| 15-Jun-99 | 307 | 2 | 0.0425 | -1.723 | 5.727 | 0.977 |
| 8-Jul-99 | 457 | 3 | 0.0686 | -1.486 | 6.125 | 0.980 |
| 14-May-98 | 475 | 4 | 0.0948 | -1.312 | 6.163 | 0.978 |
| 24-Jun-97 | 505 | 5 | 0.1209 | -1.170 | 6.225 | 0.976 |
| 24-May-99 | 505 | 6 | 0.1471 | -1.049 | 6.225 | 0.976 |
| 17-May-91 | 555 | 7 | 0.1732 | -0.942 | 6.319 | 0.981 |
| 16-Oct-97 | 736 | 8 | 0.1993 | -0.844 | 6.601 | 0.988 |
| 28-May-98 | 739 | 9 | 0.2255 | -0.754 | 6.605 | 0.988 |
| 23-Jul-97 | 784 | 10 | 0.2516 | -0.669 | 6.664 | 0.988 |
| 26-Jun-98 | 810 | 11 | 0.2778 | -0.589 | 6.697 | 0.988 |
| 23-Apr-98 | 917 | 12 | 0.3039 | -0.513 | 6.821 | 0.989 |
| 5-Aug-99 | 944 | 13 | 0.3301 | -0.440 | 6.850 | 0.988 |
| 5-May-99 | 956 | 14 | 0.3562 | -0.369 | 6.863 | 0.987 |
| 26-Oct-98 | 1080 | 15 | 0.3824 | -0.299 | 6.985 | 0.987 |
| 30-Aug-99 | 1130 | 16 | 0.4085 | -0.231 | 7.030 | 0.986 |
| 28-Jul-98 | 1150 | 17 | 0.4346 | -0.165 | 7.048 | 0.985 |
| 26-Aug-98 | 1210 | 18 | 0.4608 | -0.098 | 7.098 | 0.984 |
| 26-Aug-98 | 1220 | 19 | 0.4869 | -0.033 | 7.107 | 0.983 |
| 14-Aug-97 | 1230 | 20 | 0.5131 | 0.033 | 7.115 | 0.981 |
| 24-Sep-98 | 1230 | 21 | 0.5392 | 0.098 | 7.115 | 0.980 |
| 21-Apr-99 | 1290 | 22 | 0.5654 | 0.165 | 7.162 | 0.981 |
| 4-Sep-97 | 1440 | 23 | 0.5915 | 0.231 | 7.272 | 0.982 |
| 26-Nov-97 | 1450 | 24 | 0.6176 | 0.299 | 7.279 | 0.980 |
| 9-Nov-97 | 1480 | 25 | 0.6438 | 0.369 | 7.300 | 0.979 |
| 27-Oct-98 | 1660 | 26 | 0.6699 | 0.440 | 7.415 | 0.981 |
| 5-Oct-91 | 1740 | 27 | 0.6961 | 0.513 | 7.462 | 0.978 |
| 19-Dec-97 | 1760 | 28 | 0.7222 | 0.589 | 7.473 | 0.976 |
| 20-Mar-98 | 1840 | 29 | 0.7484 | 0.669 | 7.518 | 0.971 |
| 26-Feb-98 | 1890 | 30 | 0.7745 | 0.754 | 7.544 | 0.966 |
| 23-Feb-99 | 1950 | 31 | 0.8007 | 0.844 | 7.576 | 0.959 |
| 20-Jan-99 | 2250 | 32 | 0.8268 | 0.942 | 7.719 | 0.949 |
| 8-Mar-99 | 2280 | 33 | 0.8529 | 1.049 | 7.732 | 0.964 |
| 18-Nov-98 | 2290 | 34 | 0.8791 | 1.170 | 7.736 | 0.975 |
| 15-Jan-99 | 2420 | 35 | 0.9052 | 1.312 | 7.792 | |
| 15-Dec-98 | 2790 | 36 | 0.9314 | 1.486 | 7.934 | |
| 23-Mar-99 | 2920 | 37 | 0.9575 | 1.723 | 7.979 | |
| 25-Nov-98 | 3950 | 38 | 0.9837 | 2.136 | 8.281 | |

update for EV, CV

**dZn**
**LN Analysis**
**Discharge, Q**

**CC285**
**dZn**
**Q Data, EV=70 cfs CV=1.28**
**Q Data-based LN**

| | | u | lnQ | Q |
|---|---|---|---|---|
| **Avg:** | **74** | | | |
| **SD:** | **89** | u | lnQ | Q |
| **CV:** | **1.19** | 3 | 6.7 | 803 |
| **Min:** | **12** | 0 | 3.86 | 48 |
| **Max:** | **345** | -3 | 1.04 | 3 |
| **Median:** | **30** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV **r2=0.886, EV=76.0 cfs CV=1.40; max r2=0.950**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.886 | u | lnQ | Q |
| slope, m | 0.959 | 3 | 6.91 | 1007 |
| intercept, b | -3.635 | 0 | 3.79 | 44 |
| N: 38 | | -3 | 0.66 | 2 |
| E[Q]: | 76.0 | Parameter Estimates | | |
| SD[Q]: | 107 | from LN regression | | |
| CV[Q]: | 1.40 | update graph label | | |

N: 38

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.950 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Oct-98 | 12 | 1 | 0.0163 | -2.136 | 2.485 | 0.886 |
| 18-Nov-98 | 14 | 2 | 0.0425 | -1.723 | 2.639 | 0.896 |
| 5-Oct-91 | 14.2 | 3 | 0.0686 | -1.486 | 2.653 | 0.902 |
| 22-Jan-98 | 18.7 | 4 | 0.0948 | -1.312 | 2.929 | 0.903 |
| 15-Dec-98 | 19 | 5 | 0.1209 | -1.170 | 2.944 | 0.912 |
| 19-Dec-97 | 20.4 | 6 | 0.1471 | -1.049 | 3.016 | 0.919 |
| 26-Feb-98 | 20.4 | 7 | 0.1732 | -0.942 | 3.016 | 0.926 |
| 24-Sep-98 | 21.5 | 8 | 0.1993 | -0.844 | 3.068 | 0.931 |
| 16-Oct-97 | 21.9 | 9 | 0.2255 | -0.754 | 3.086 | 0.937 |
| 20-Jan-99 | 23 | 10 | 0.2516 | -0.669 | 3.135 | 0.941 |
| 26-Oct-98 | 23.1 | 11 | 0.2778 | -0.589 | 3.140 | 0.945 |
| 23-Feb-99 | 23.1 | 12 | 0.3039 | -0.513 | 3.140 | 0.948 |
| 30-Aug-99 | 24 | 13 | 0.3301 | -0.440 | 3.178 | 0.949 |
| 26-Nov-97 | 24.8 | 14 | 0.3562 | -0.369 | 3.211 | 0.950 |
| 26-Aug-98 | 26.2 | 15 | 0.3824 | -0.299 | 3.266 | 0.950 |
| 26-Aug-98 | 26.2 | 16 | 0.4085 | -0.231 | 3.266 | 0.949 |
| 4-Sep-97 | 26.7 | 17 | 0.4346 | -0.165 | 3.285 | 0.947 |
| 25-Nov-98 | 29.2 | 18 | 0.4608 | -0.098 | 3.374 | 0.943 |
| 8-Mar-99 | 29.2 | 19 | 0.4869 | -0.033 | 3.374 | 0.939 |
| 14-Aug-97 | 30.3 | 20 | 0.5131 | 0.033 | 3.411 | 0.933 |
| 5-Aug-99 | 31 | 21 | 0.5392 | 0.098 | 3.434 | 0.926 |
| 20-Mar-98 | 31.4 | 22 | 0.5654 | 0.165 | 3.447 | 0.918 |
| 28-Jul-98 | 33.8 | 23 | 0.5915 | 0.231 | 3.520 | 0.911 |
| 15-Jan-99 | 34.4 | 24 | 0.6176 | 0.299 | 3.538 | 0.906 |
| 9-Nov-97 | 42.6 | 25 | 0.6438 | 0.369 | 3.752 | 0.915 |
| 26-Jun-98 | 62 | 26 | 0.6699 | 0.440 | 4.127 | 0.928 |
| 23-Jul-97 | 73.3 | 27 | 0.6961 | 0.513 | 4.295 | 0.921 |
| 5-May-99 | 77 | 28 | 0.7222 | 0.589 | 4.344 | 0.910 |
| 23-Mar-99 | 88 | 29 | 0.7484 | 0.669 | 4.477 | 0.901 |
| 8-Jul-99 | 117 | 30 | 0.7745 | 0.754 | 4.762 | 0.892 |
| 24-Jun-97 | 118 | 31 | 0.8007 | 0.844 | 4.771 | 0.868 |
| 21-Apr-99 | 122 | 32 | 0.8268 | 0.942 | 4.804 | 0.836 |
| 23-Apr-98 | 154 | 33 | 0.8529 | 1.049 | 5.037 | 0.829 |
| 17-May-91 | 199.5 | 34 | 0.8791 | 1.170 | 5.296 | 0.820 |
| 14-May-98 | 223 | 35 | 0.9052 | 1.312 | 5.407 | |
| 28-May-98 | 293 | 36 | 0.9314 | 1.486 | 5.680 | |
| 24-May-99 | 329 | 37 | 0.9575 | 1.723 | 5.796 | |
| 15-Jun-99 | 345 | 38 | 0.9837 | 2.136 | 5.844 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC285 **Date:** 2-Jun-00

**Chemical:** tCd **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,888 | 75 | 11 | 3 | 0.00 | 0.00 | 0.00 |
| **SD:** | 618 | 88 | 6 | 3 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.18 | 0.56 | 0.92 | | | |
| **Min:** | 33,375 | 14 | 1 | 0.1 | -0.69 | -1.68 | -1.06 |
| **Max:** | 36,402 | 345 | 28 | 12 | 3.06 | 2.97 | 3.42 |
| **Median:** | 36,019 | 31 | 10 | 2 | -0.50 | -0.09 | -0.35 |

**tCd CC285 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.205)** | update r2 | 0.21 | 0.205 | r2: | 0.000 | 0.000 | |
| r2 Q,[COC]: | 0.21 | [tCd] | Q | m: | -0.0022 | 0.00001 | |
| slope, m: | -0.03 | 12 | 14.0 | b: | 154 | 3.38 | |
| intercept, b: | 12.8 | 11 | 74.8 | | | | |
| N: 38 | | 2 | 345 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.201)** | update r2 | 0.20 | 0.201 | | | | |
| r2 lnQ,ln[COC]: | 0.20 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m | -0.34 | 2.56 | 2.64 | 13 | 14 | | |
| intercept, b | 3.46 | 1.99 | 4.32 | 7 | 75 | | |
| N: 38 | | 1.48 | 5.84 | 4 | 345 | | |

**N= 38**

| | Sampling Date | Q Discharge | tCd Concentration | tCd Load | Ln Q | Ln tCd Conc. | Ln tCd Load | for graph 0 tCd CC285 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 199.5 | 3.7 | 4.0 | 5.30 | 1.31 | 1.38 | 1.41 | -1.17 | 0.36 |
| MFG | 5-Oct-91 | 14.2 | 10.2 | 0.8 | 2.65 | 2.32 | -0.25 | -0.69 | -0.06 | -0.80 |
| IDEQ | 24-Jun-97 | 118 | 2.8 | 1.8 | 4.77 | 1.03 | 0.58 | 0.49 | -1.32 | -0.44 |
| IDEQ | 23-Jul-97 | 73.3 | 4.6 | 1.8 | 4.29 | 1.53 | 0.60 | -0.02 | -1.01 | -0.43 |
| IDEQ | 14-Aug-97 | 30.3 | 8.8 | 1.4 | 3.41 | 2.17 | 0 36 | -0.50 | -0.30 | -0.56 |
| IDEQ | 4-Sep-97 | 26.7 | 10 | 1.4 | 3.28 | 2.30 | 0.36 | -0.54 | -0.09 | -0.56 |
| IDEQ | 16-Oct-97 | 21.9 | 9.8 | 1.2 | 3.09 | 2.28 | 0.14 | -0.60 | -0.13 | -0.67 |
| URS | 9-Nov-97 | 42.6 | 9.6 | 2.2 | 3.75 | 2.26 | 0.79 | -0.36 | -0.16 | -0.28 |
| IDEQ | 26-Nov-97 | 24.8 | 11 | 1.5 | 3.21 | 2.40 | 0.38 | -0.57 | 0.08 | -0.55 |
| IDEQ | 19-Dec-97 | 20.4 | 23 | 2.5 | 3.02 | 3.14 | 0.93 | -0.62 | 2.12 | -0.17 |
| IDEQ | 22-Jan-98 | 18.7 | 0.7 | 0.1 | 2.93 | -0.36 | -2.65 | -0.64 | -1.68 | -1.06 |
| IDEQ | 26-Feb-98 | 20.4 | 13 | 1.4 | 3.02 | 2.56 | 0.36 | -0.62 | 0.42 | -0.57 |
| IDEQ | 20-Mar-98 | 31.4 | 13 | 2.2 | 3.45 | 2.56 | 0.79 | -0.49 | 0.42 | -0.29 |
| IDEQ | 23-Apr-98 | 154 | 11 | 9.1 | 5.04 | 2.40 | 2.21 | 0.90 | 0.08 | 2.23 |
| URS | 14-May-98 | 223 | 3.3 | 4.0 | 5.41 | 1.19 | 1.38 | 1.68 | -1.23 | 0.35 |
| IDEQ | 28-May-98 | 293 | 5.4 | 8.5 | 5.68 | 1.69 | 2.14 | 2.47 | -0.88 | 2.01 |
| IDEQ | 26-Jun-98 | 62 | 6.1 | 2.0 | 4.13 | 1.81 | 0.71 | -0.15 | -0.76 | -0.35 |
| IDEQ | 28-Jul-98 | 33.8 | 10 | 1.8 | 3.52 | 2.30 | 0.60 | -0.46 | -0.09 | -0.42 |
| IDEQ | 28-Jul-98 | 33.8 | 11 | 2.0 | 3.52 | 2.40 | 0.69 | -0.46 | 0.08 | -0.36 |
| IDEQ | 26-Aug-98 | 26.2 | 11 | 1.6 | 3.27 | 2.40 | 0.44 | -0.55 | 0.08 | -0.52 |
| IDEQ | 26-Aug-98 | 26.2 | 9.6 | 1.4 | 3.27 | 2.26 | 0.30 | -0.55 | -0.16 | -0.59 |
| IDEQ | 24-Sep-98 | 21.5 | 10 | 1.2 | 3.07 | 2.30 | 0.15 | -0.60 | -0.09 | -0.66 |
| IDEQ | 26-Oct-98 | 23.1 | 9.6 | 1.2 | 3.14 | 2.26 | 0.18 | -0.59 | -0.16 | -0.65 |
| USGS | 18-Nov-98 | 14 | 16 | 1.2 | 2.64 | 2.77 | 0.19 | -0.69 | 0.93 | -0.65 |
| IDEQ | 25-Nov-98 | 29.2 | 28 | 4.4 | 3.37 | 3.33 | 1.48 | -0.52 | 2.97 | 0.51 |
| USGS | 15-Dec-98 | 19 | 20 | 2.0 | 2.94 | 3.00 | 0.72 | -0.63 | 1.61 | -0.34 |
| IDEQ | 15-Jan-99 | 34.4 | 16 | 3.0 | 3.54 | 2.77 | 1.09 | -0.46 | 0.93 | -0.01 |
| USGS | 20-Jan-99 | 23 | 17 | 2.1 | 3.14 | 2.83 | 0.74 | -0.59 | 1.10 | -0.32 |
| IDEQ | 23-Feb-99 | 23.1 | 15 | 1.9 | 3.14 | 2.71 | 0.62 | -0.59 | 0.76 | -0.41 |
| IDEQ | 8-Mar-99 | 29.2 | 15 | 2.4 | 3.37 | 2.71 | 0.86 | -0.52 | 0.76 | -0.23 |
| USGS | 23-Mar-99 | 88 | 21 | 9.9 | 4.48 | 3.04 | 2.30 | 0.15 | 1.78 | 2.53 |
| USGS | 21-Apr-99 | 122 | 10 | 6.6 | 4.80 | 2.30 | 1.88 | 0.53 | -0.09 | 1.30 |
| USGS | 5-May-99 | 77 | 6 | 2.5 | 4.34 | 1.79 | 0.91 | 0.02 | -0.78 | -0.18 |
| USGS | 24-May-99 | 329 | 7 | 12.4 | 5.80 | 1.95 | 2.52 | 2.88 | -0.60 | 3.42 |
| USGS | 15-Jun-99 | 345 | 3 | 5.6 | 5.84 | 1.10 | 1.72 | 3.06 | -1.29 | 0.94 |
| USGS | 8-Jul-99 | 117 | 3.4 | 2.1 | 4.76 | 1.22 | 0.76 | 0.48 | -1.22 | -0.31 |
| USGS | 5-Aug-99 | 31 | 7.4 | 1.2 | 3.43 | 2.00 | 0.21 | -0.50 | -0.54 | -0.64 |
| USGS | 30-Aug-99 | 24 | 9 | 1.2 | 3.18 | 2.20 | 0.15 | -0.58 | -0.26 | -0.66 |

tCd

**Concentration over time analysis**

| tCd | CC285 | | r2 | Slope, m |
|---|---|---|---|---|
| | | | **Concentration over time** | |
| **LnConc.=mTime+b All data r2, m:** | | | **0.029** | **0.00019** |
| | **Time** | **Ln[COC]** | **[COC]** | |
| first | 17-May-91 | 1.68 | 5 | |
| mid | 11-Aug-98 | 2.19 | 9 | |
| last | 30-Aug-99 | 2.26 | 10 | |
| **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | |
| | 30-Aug-99 | 0.00 | 1 | |

**Load over time analysis**

| tCd | CC285 | | | |
|---|---|---|---|---|
| | | | **Load over time** | |
| **LnLoad=mTime+b All data r2, m:** | | | **0.0209** | **0.00020** |
| | **Time** | **LnLoad** | **Load** | |
| first | 17-May-91 | 0.24 | 1 | |
| mid | 11-Aug-98 | 0.78 | 2 | |
| last | 30-Aug-99 | 0.86 | 2 | |
| **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | |
| | 30-Aug-99 | 0.00 | 1 | |

| max r2 | 0.617 | | max r2 | 0.911 | |
|---|---|---|---|---|---|
| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points: delete last 4 rows | | | only on >4 data points. delete last 4 rows | | |
| 0.029 | 0.00019 | -4.74 | 0.021 | 0.00020 | -6.58 |
| 0.002 | 0.00007 | -0.40 | 0.092 | 0.00057 | -19.79 |
| 0.025 | 0.00048 | -15.21 | 0.084 | 0.00111 | -39.12 |
| 0.006 | 0.00024 | -6.57 | 0.086 | 0.00118 | -41.60 |
| 0.001 | 0.00009 | -0.85 | 0.089 | 0.00125 | -44.46 |
| 0.001 | 0.00008 | -0.55 | 0.083 | 0.00128 | -45.25 |
| 0.001 | 0.00011 | -1.62 | 0.077 | 0.00130 | -45.95 |
| 0.001 | 0.00013 | -2.59 | 0.063 | 0.00123 | -43.57 |
| 0.002 | 0.00016 | -3.51 | 0.070 | 0.00137 | -48.45 |
| 0.003 | 0.00024 | -6.58 | 0.063 | 0.00137 | -48.66 |
| 0.023 | 0.00067 | -21.99 | 0.075 | 0.00160 | -56.93 |
| 0.014 | -0.00041 | 17.02 | 0.002 | 0.00022 | -7.01 |
| 0.008 | -0.00033 | 14.24 | 0.000 | -0.00004 | 2.49 |
| 0.003 | -0.00023 | 10.52 | 0.001 | -0.00015 | 6.52 |
| 0.002 | -0.00019 | 9.09 | 0.009 | 0.00048 | -16.39 |
| 0.042 | -0.00084 | 32.62 | 0.022 | 0.00079 | -27.79 |
| 0.104 | -0.00137 | 52.07 | 0.104 | 0.00171 | -61.07 |
| 0.190 | -0.00194 | 72.55 | 0.106 | 0.00185 | -65.90 |
| 0.224 | -0.00223 | 83.23 | 0.099 | 0.00189 | -67.39 |
| 0.256 | -0.00258 | 95.81 | 0.098 | 0.00203 | -72.53 |
| 0.291 | -0.00296 | 109.59 | 0.079 | 0.00193 | -68.90 |
| 0.378 | -0.00372 | 136.99 | 0.047 | 0.00161 | -57.45 |
| 0.476 | -0.00459 | 168.83 | 0.013 | 0.00091 | -31.84 |
| 0.601 | -0.00563 | 206.53 | 0.000 | -0.00004 | 2.50 |
| 0.617 | -0.00614 | 225.09 | 0.025 | -0.00133 | 49.47 |
| 0.543 | -0.00586 | 214.91 | 0.012 | -0.00103 | 38.55 |
| 0.486 | -0.00590 | 216.14 | 0.044 | -0.00219 | 80.66 |
| 0.445 | -0.00604 | 221.28 | 0.061 | -0.00286 | 104.77 |
| 0.369 | -0.00601 | 220.38 | 0.153 | -0.00521 | 190.21 |
| 0.292 | -0.00571 | 209.36 | 0.345 | -0.00861 | 313.91 |
| 0.180 | -0.00480 | 176.45 | 0.642 | -0.01353 | 492.65 |
| 0.001 | -0.00022 | 9.94 | 0.559 | -0.01389 | 505.86 |
| 0.106 | 0.00328 | -117.53 | 0.501 | -0.01467 | 534.18 |
| 0.235 | 0.00616 | -222.17 | 0.911 | -0.02500 | 909.83 |

update for EV, CV

**tCd** **CC285**

**LN Analysis** **tCd**

**Load** **Load Data, EV=2.98 lbs/day CV=0.922**

**Load Data-based LN**

| | | u | ln tCd Load | tCd Load |
|---|---|---|---|---|
| **Avg:** | **3** | | | |
| **SD:** | **3** | u | ln tCd Load | tCd Load |
| **CV:** | **0.92** | 3 | 3.1 | 23 |
| **Min:** | **0.1** | 0 | 0.79 | 2 |
| **Max:** | **12** | -3 | -1.57 | 0.2 |
| **Median:** | **2** | | | |

| | |
|---|---|
| 3 | 2.98 |
| 0.92 | 0.922 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.844, EV=3.45lbs/day CV=1.28; max r2=0.955**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.844 | u | lnLoad | Load |
| slope, m | 1.016 | 3 | 3.71 | 41 |
| intercept, b | -0.767 | 0 | 0.75 | 2 |
| N: | 38 | -3 | -2.20 | 0.1 |
| E[Load] | 3.5 | Parameter Estimates | | |
| SD[Load] | 4 | from LN regression | | |
| CV[Load] | 1.28 | update graph label | | |

| | |
|---|---|
| | 0.844 |
| | 3.5 |
| | 1.3 |
| | max r2 |
| | 0.955 |

| Date | tCd Load lbs/day Ranked | N: 38 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 22-Jan-98 | **0.1** | 1 | 0.0163 | -2.136 | -2.653 | 0.844 |
| 5-Oct-91 | **0.8** | 2 | 0.0425 | -1.723 | -0.249 | 0.920 |
| 16-Oct-97 | **1.2** | 3 | 0.0686 | -1.486 | 0.144 | 0.916 |
| 24-Sep-98 | **1.2** | 4 | 0.0948 | -1.312 | 0.146 | 0.926 |
| 30-Aug-99 | **1.2** | 5 | 0.1209 | -1.170 | 0.150 | 0.933 |
| 26-Oct-98 | **1.2** | 6 | 0.1471 | -1 049 | 0.177 | 0.937 |
| 18-Nov-98 | **1.2** | 7 | 0.1732 | -0.942 | 0.187 | 0.939 |
| 5-Aug-99 | **1.2** | 8 | 0.1993 | -0.844 | 0.210 | 0.940 |
| 26-Aug-98 | **1.4** | 9 | 0.2255 | -0.754 | 0.302 | 0.940 |
| 26-Feb-98 | **1.4** | 10 | 0.2516 | -0.669 | 0.355 | 0.942 |
| 14-Aug-97 | **1.4** | 11 | 0.2778 | -0.589 | 0.361 | 0.945 |
| 4-Sep-97 | **1.4** | 12 | 0.3039 | -0.513 | 0.362 | 0.946 |
| 26-Nov-97 | **1.5** | 13 | 0.3301 | -0 440 | 0.384 | 0.945 |
| 26-Aug-98 | **1.6** | 14 | 0.3562 | -0.369 | 0.439 | 0.944 |
| 24-Jun-97 | **1.8** | 15 | 0.3824 | -0.299 | 0.575 | 0.942 |
| 23-Jul-97 | **1.8** | 16 | 0.4085 | -0.231 | 0.596 | 0.946 |
| 28-Jul-98 | **1.8** | 17 | 0.4346 | -0.165 | 0.598 | 0.949 |
| 23-Feb-99 | **1.9** | 18 | 0.4608 | -0.098 | 0.623 | 0.950 |
| 28-Jul-98 | **2.0** | 19 | 0.4869 | -0.033 | 0.693 | 0.951 |
| 26-Jun-98 | **2.0** | 20 | 0.5131 | 0 033 | 0.710 | 0.953 |
| 15-Dec-98 | **2.0** | 21 | 0.5392 | 0.098 | 0.715 | 0.955 |
| 20-Jan-99 | **2.1** | 22 | 0.5654 | 0.165 | 0.744 | 0.954 |
| 8-Jul-99 | **2.1** | 23 | 0.5915 | 0.231 | 0.761 | 0.952 |
| 20-Mar-98 | **2.2** | 24 | 0.6176 | 0.299 | 0.787 | 0.948 |
| 9-Nov-97 | **2.2** | 25 | 0.6438 | 0.369 | 0.789 | 0.942 |
| 8-Mar-99 | **2.4** | 26 | 0.6699 | 0.440 | 0.857 | 0.934 |
| 5-May-99 | **2.5** | 27 | 0.6961 | 0.513 | 0.910 | 0.925 |
| 19-Dec-97 | **2.5** | 28 | 0.7222 | 0.589 | 0.926 | 0.914 |
| 15-Jan-99 | **3.0** | 29 | 0.7484 | 0.669 | 1.086 | 0.914 |
| 14-May-98 | **4.0** | 30 | 0.7745 | 0.754 | 1.376 | 0.915 |
| 17-May-91 | **4.0** | 31 | 0.8007 | 0.844 | 1.379 | 0.895 |
| 25-Nov-98 | **4.4** | 32 | 0.8268 | 0.942 | 1.481 | 0.882 |
| 15-Jun-99 | **5.6** | 33 | 0.8529 | 1.049 | 1.717 | 0.902 |
| 21-Apr-99 | **6.6** | 34 | 0.8791 | 1.170 | 1.882 | 0.913 |
| 28-May-98 | **8.5** | 35 | 0.9052 | 1.312 | 2.142 | |
| 23-Apr-98 | **9.1** | 36 | 0.9314 | 1.486 | 2.210 | |
| 23-Mar-99 | **9.9** | 37 | 0.9575 | 1.723 | 2.297 | |
| 24-May-99 | **12.4** | 38 | 0.9837 | 2.136 | 2.517 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| tCd | | CC285 | | 11 | 10.6 |
| LN Analysis | | tCd | | 0.56 | 0.557 |
| **Concentration** | | Conc. Data, EV=10.6 ug/L CV=0.557 | | | |
| Avg: | 11 | Data-based LN | | | |
| SD: | 6 | u | ln[tCd] | [tCd] | |
| CV: | 0.56 | 3 | 3.8 | 44 | |
| Min: | 1 | 0 | 2.22 | 9 | |
| Max: | 28 | -3 | 0.66 | 2 | |
| Median: | 10 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.895 | 0.895 |
| | u=mLn(Conc.)+b: | | | | 11.7 | 11.7 |
| update for r2, EV, CV: | r2=0.895, EV=11.7 ug/L CV=0.893; max r2=0.980 | | | | 0.893 | 0.893 |
| | r2 u,lnConc | 0.895 | u | lnConc | Conc. | |
| | slope, m | 1.306 | 3 | 4.46 | 87 | |
| | intercept, b | -2.826 | 0 | 2.16 | 9 | |
| | N: | 38 | -3 | -0.13 | 1 | |
| 0.844 | E[Conc] | 11.7 | Parameter Estimates | | | |
| 3.45 | SD[Conc] | 10 | from LN regression | | | |
| 1.28 | CV[Conc] | 0.89 | update graph label | | | |

| Date | tCd Concentration ug/L Ranked | N: 38 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.980 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 22-Jan-98 | 0.7 | 1 | 0.0163 | -2.136 | -0.357 | 0.895 |
| 24-Jun-97 | 2.8 | 2 | 0.0425 | -1.723 | 1.030 | 0.948 |
| 15-Jun-99 | 3 | 3 | 0.0686 | -1.486 | 1.099 | 0.942 |
| 14-May-98 | 3.3 | 4 | 0.0948 | -1.312 | 1.194 | 0.939 |
| 8-Jul-99 | 3.4 | 5 | 0.1209 | -1.170 | 1.224 | 0.938 |
| 17-May-91 | 3.7 | 6 | 0.1471 | -1.049 | 1.308 | 0.944 |
| 23-Jul-97 | 4.6 | 7 | 0.1732 | -0.942 | 1.526 | 0.957 |
| 28-May-98 | 5.4 | 8 | 0.1993 | -0.844 | 1.686 | 0.963 |
| 5-May-99 | 6 | 9 | 0.2255 | -0.754 | 1.792 | 0.964 |
| 26-Jun-98 | 6.1 | 10 | 0.2516 | -0.669 | 1.808 | 0.963 |
| 24-May-99 | 7 | 11 | 0.2778 | -0.589 | 1.946 | 0.966 |
| 5-Aug-99 | 7.4 | 12 | 0.3039 | -0.513 | 2.001 | 0.964 |
| 14-Aug-97 | 8.8 | 13 | 0.3301 | -0.440 | 2.175 | 0.961 |
| 30-Aug-99 | 9 | 14 | 0.3562 | -0.369 | 2.197 | 0.961 |
| 9-Nov-97 | 9.6 | 15 | 0.3824 | -0.299 | 2.262 | 0.962 |
| 26-Aug-98 | 9.6 | 16 | 0.4085 | -0.231 | 2.262 | 0.968 |
| 26-Oct-98 | 9.6 | 17 | 0.4346 | -0.165 | 2.262 | 0.972 |
| 16-Oct-97 | 9.8 | 18 | 0.4608 | -0.098 | 2.282 | 0.974 |
| 4-Sep-97 | 10 | 19 | 0.4869 | -0.033 | 2.303 | 0.976 |
| 28-Jul-98 | 10 | 20 | 0.5131 | 0.033 | 2.303 | 0.979 |
| 24-Sep-98 | 10 | 21 | 0.5392 | 0.098 | 2.303 | 0.980 |
| 21-Apr-99 | 10 | 22 | 0.5654 | 0.165 | 2.303 | 0.979 |
| 5-Oct-91 | 10.2 | 23 | 0.5915 | 0.231 | 2.322 | 0.976 |
| 26-Nov-97 | 11 | 24 | 0.6176 | 0.299 | 2.398 | 0.973 |
| 23-Apr-98 | 11 | 25 | 0.6438 | 0.369 | 2.398 | 0.971 |
| 28-Jul-98 | 11 | 26 | 0.6699 | 0.440 | 2.398 | 0.967 |
| 26-Aug-98 | 11 | 27 | 0.6961 | 0.513 | 2.398 | 0.965 |
| 26-Feb-98 | 13 | 28 | 0.7222 | 0.589 | 2.565 | 0.980 |
| 20-Mar-98 | 13 | 29 | 0.7484 | 0.669 | 2.565 | 0.976 |
| 23-Feb-99 | 15 | 30 | 0.7745 | 0.754 | 2.708 | 0.979 |
| 8-Mar-99 | 15 | 31 | 0.8007 | 0.844 | 2.708 | 0.979 |
| 18-Nov-98 | 16 | 32 | 0.8268 | 0.942 | 2.773 | 0.974 |
| 15-Jan-99 | 16 | 33 | 0.8529 | 1.049 | 2.773 | 0.969 |
| 20-Jan-99 | 17 | 34 | 0.8791 | 1.170 | 2.833 | 0.964 |
| 15-Dec-98 | 20 | 35 | 0.9052 | 1.312 | 2.996 | |
| 23-Mar-99 | 21 | 36 | 0.9314 | 1.486 | 3.045 | |
| 19-Dec-97 | 23 | 37 | 0.9575 | 1.723 | 3.135 | |
| 25-Nov-98 | 28 | 38 | 0.9837 | 2.136 | 3.332 | |

| | | update for EV, CV: | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **CC285** | | | 75 | 74.8 |
| **LN Analysis** | | **tCd** | | | 1.18 | 1.18 |
| **Discharge, Q** | | **Q Data, EV=74.8 cfs CV=1.18** | | | | |
| **Avg:** | **75** | **Q Data-based LN** | | | | |
| **SD:** | **88** | u | lnQ | Q | | |
| **CV:** | **1.18** | 3 | 6.7 | 798 | | |
| **Min:** | **14** | 0 | 3.88 | 48 | | |
| **Max:** | **345** | -3 | 1.08 | 3 | | |
| **Median:** | **31** | | | | | |
| | | | | | 0.873 | 0.873 |
| | | | | | 76.7 | 76.7 |
| **u=mLn(Q)+b:** | | | | | 1.36 | 1.36 |

update for r2, EV, CV: **r2=0.873, EV=76.7 cfs CV=1.36; max r2=0.950**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.873 | u | lnQ | Q |
| slope, m: | 0.977 | 3 | 6.89 | 979 |
| intercept, b: | -3.726 | 0 | 3.82 | 45 |
| N: | 38 | -3 | 0.74 | 2 |
| E[Q] | 76.7 | Parameter Estimates | | |
| SD[Q] | 104 | from LN regression | | |
| CV[Q] | 1.36 | update graph label | | |

| | Q | N: 38 | | | | max r2 0.950 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| update and rank for new data | | | | | | |
| 18-Nov-98 | 14 | 1 | 0.0163 | -2.136 | 2.639 | 0.873 |
| 5-Oct-91 | 14.2 | 2 | 0.0425 | -1.723 | 2.653 | 0.888 |
| 22-Jan-98 | 18.7 | 3 | 0.0686 | -1.486 | 2.929 | 0.891 |
| 15-Dec-98 | 19 | 4 | 0.0948 | -1.312 | 2.944 | 0.903 |
| 19-Dec-97 | 20.4 | 5 | 0.1209 | -1.170 | 3.016 | 0.911 |
| 26-Feb-98 | 20.4 | 6 | 0.1471 | -1.049 | 3.016 | 0.919 |
| 24-Sep-98 | 21.5 | 7 | 0.1732 | -0.942 | 3.068 | 0.925 |
| 16-Oct-97 | 21.9 | 8 | 0.1993 | -0.844 | 3.086 | 0.932 |
| 20-Jan-99 | 23 | 9 | 0.2255 | -0.754 | 3.135 | 0.937 |
| 26-Oct-98 | 23.1 | 10 | 0.2516 | -0.669 | 3.140 | 0.942 |
| 23-Feb-99 | 23.1 | 11 | 0.2778 | -0.589 | 3.140 | 0.945 |
| 30-Aug-99 | 24 | 12 | 0.3039 | -0.513 | 3.178 | 0.947 |
| 26-Nov-97 | 24.8 | 13 | 0.3301 | -0.440 | 3.211 | 0.949 |
| 26-Aug-98 | 26.2 | 14 | 0.3562 | -0.369 | 3.266 | 0.949 |
| 26-Aug-98 | 26.2 | 15 | 0.3824 | -0.299 | 3.266 | 0.950 |
| 4-Sep-97 | 26.7 | 16 | 0.4085 | -0.231 | 3.285 | 0.949 |
| 25-Nov-98 | 29.2 | 17 | 0.4346 | -0.165 | 3.374 | 0.946 |
| 8-Mar-99 | 29.2 | 18 | 0.4608 | -0.098 | 3.374 | 0.944 |
| 14-Aug-97 | 30.3 | 19 | 0.4869 | -0.033 | 3.411 | 0.940 |
| 5-Aug-99 | 31 | 20 | 0.5131 | 0.033 | 3.434 | 0.935 |
| 20-Mar-98 | 31.4 | 21 | 0.5392 | 0.098 | 3.447 | 0.928 |
| 28-Jul-98 | 33.8 | 22 | 0.5654 | 0.165 | 3.520 | 0.920 |
| 28-Jul-98 | 33.8 | 23 | 0.5915 | 0.231 | 3.520 | 0.911 |
| 15-Jan-99 | 34.4 | 24 | 0.6176 | 0.299 | 3.538 | 0.906 |
| 9-Nov-97 | 42.6 | 25 | 0.6438 | 0.369 | 3.752 | 0.915 |
| 26-Jun-98 | 62 | 26 | 0.6699 | 0.440 | 4.127 | 0.928 |
| 23-Jul-97 | 73.3 | 27 | 0.6961 | 0.513 | 4.295 | 0.921 |
| 5-May-99 | 77 | 28 | 0.7222 | 0.589 | 4.344 | 0.910 |
| 23-Mar-99 | 88 | 29 | 0.7484 | 0.669 | 4.477 | 0.901 |
| 8-Jul-99 | 117 | 30 | 0.7745 | 0.754 | 4.762 | 0.892 |
| 24-Jun-97 | 118 | 31 | 0.8007 | 0.844 | 4.771 | 0.868 |
| 21-Apr-99 | 122 | 32 | 0.8268 | 0.942 | 4.804 | 0.836 |
| 23-Apr-98 | 154 | 33 | 0.8529 | 1.049 | 5.037 | 0.829 |
| 17-May-91 | 199.5 | 34 | 0.8791 | 1.170 | 5.296 | 0.820 |
| 14-May-98 | 223 | 35 | 0.9052 | 1.312 | 5.407 | |
| 28-May-98 | 293 | 36 | 0.9314 | 1.486 | 5.680 | |
| 24-May-99 | 329 | 37 | 0.9575 | 1.723 | 5.796 | |
| 15-Jun-99 | 345 | 38 | 0.9837 | 2.136 | 5.844 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC285 **Date:** 2-Jun-00
**Chemical:** tPb **Analyst:** J.Johnston
**Notes:** Template and Example Lognormal Analysis
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| Avg: | 35,893 | 73 | 222 | 136 | 0.00 | 0.00 | 0.00 |
| SD: | 611 | 88 | 476 | 456 | 1.00 | 1.00 | 1.00 |
| CV: | 0.02 | 1.20 | 2.15 | 3.35 | | | |
| Min: | 33,375 | 12 | 3 | 0.3 | -0.70 | -0.46 | -0.30 |
| Max: | 36,402 | 345 | 2,080 | 2,478 | 3.10 | 3.90 | 5.14 |
| Median: | 36,033 | 30 | 60 | 12 | -0.49 | -0.34 | -0.27 |

| tPb | CC285 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.0468)** | | update r2 | 0.05 | 0.0468 | r2: | 0.000 | 0.000 |
| r2 Q,[COC]: | 0.05 | [tPb] | Q | | m: | -0.0031 | -0.00001 |
| slope, m: | 1.2 | 150 | 12.0 | | b: | 184 | 4.01 |
| intercept, b: | 135.9 | 222 | 73.2 | | | | |
| N: 39 | | 541 | 345 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.0358)** | | update r2 | 0.04 | 0.0358 | | | |
| r2 lnQ,ln[COC]: | 0.04 | ln[tPb] | ln Q | [tPb] | Q | | |
| slope, m: | 0.24 | 4.07 | 2.48 | 59 | 12 | | |
| intercept, b: | 3.46 | 4.51 | 4.29 | 91 | 73 | | |
| N: 39 | | 4.89 | 5.84 | 133 | 345 | | |

N= 39

| | Sampling Date | Q Discharge cfs | tPb Concentration ug/L | tPb Load lbs/day | Ln Q | Ln tPb Conc. | Ln tPb Load | tPb CC285 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | for graph | 0 |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 199.5 | 24 | 25.8 | 5.30 | 3.18 | 3.25 | 1.44 | -0.42 | -0.24 |
| MFG | 5-Oct-91 | 14.2 | 34 | 2.6 | 2.65 | 3.53 | 0.95 | -0.67 | -0.39 | -0.29 |
| IDEQ | 24-Jun-97 | 118 | 39 | 24.8 | 4.77 | 3.66 | 3.21 | 0.51 | -0.38 | -0.24 |
| IDEQ | 23-Jul-97 | 73.3 | 50 | 19.7 | 4.29 | 3.91 | 2.98 | 0.00 | -0.36 | -0.26 |
| IDEQ | 14-Aug-97 | 30.3 | 257 | 41.9 | 3.41 | 5.55 | 3.74 | -0.49 | 0.07 | -0.21 |
| IDEQ | 4-Sep-97 | 26.7 | 60 | 8.6 | 3.28 | 4.09 | 2.15 | -0.53 | -0.34 | -0.28 |
| IDEQ | 16-Oct-97 | 21.9 | 698 | 82.2 | 3.09 | 6.55 | 4.41 | -0.58 | 1.00 | -0.12 |
| URS | 9-Nov-97 | 42.6 | 77.6 | 17.8 | 3.75 | 4.35 | 2.88 | -0.35 | -0.30 | -0.26 |
| IDEQ | 26-Nov-97 | 24.8 | 292 | 39.0 | 3.21 | 5.68 | 3.66 | -0.55 | 0.15 | -0.21 |
| IDEQ | 19-Dec-97 | 20.4 | 2080 | 228.3 | 3.02 | 7.64 | 5.43 | -0.60 | 3.90 | 0.20 |
| IDEQ | 22-Jan-98 | 18.7 | 2.5 | 0.3 | 2.93 | 0.92 | -1.38 | -0.62 | -0.46 | -0.30 |
| IDEQ | 26-Feb-98 | 20.4 | 60 | 6.6 | 3.02 | 4.09 | 1.88 | -0.60 | -0.34 | -0.28 |
| IDEQ | 20-Mar-98 | 31.4 | 89 | 15.0 | 3.45 | 4.49 | 2.71 | -0.48 | -0.28 | -0.27 |
| IDEQ | 23-Apr-98 | 154 | 1920 | 1590.8 | 5.04 | 7.56 | 7.37 | 0.92 | 3.57 | 3.19 |
| URS | 14-May-98 | 223 | 43.1 | 51.7 | 5.41 | 3.76 | 3.95 | 1.71 | -0.38 | -0.19 |
| IDEQ | 28-May-98 | 293 | 100 | 157.6 | 5.68 | 4.61 | 5.06 | 2.50 | -0.26 | 0.05 |
| IDEQ | 26-Jun-98 | 62 | 54 | 18.0 | 4.13 | 3.99 | 2.89 | -0.13 | -0.35 | -0.26 |
| IDEQ | 28-Jul-98 | 33.8 | 58 | 10.5 | 3.52 | 4.06 | 2.36 | -0.45 | -0.34 | -0.28 |
| IDEQ | 28-Jul-98 | 33.8 | 62 | 11.3 | 3.52 | 4.13 | 2.42 | -0.45 | -0.34 | -0.27 |
| IDEQ | 26-Aug-98 | 26.2 | 57 | 8.0 | 3.27 | 4.04 | 2.08 | -0.54 | -0.35 | -0.28 |
| IDEQ | 26-Aug-98 | 26.2 | 58 | 8.2 | 3.27 | 4.06 | 2.10 | -0.54 | -0.34 | -0.28 |
| IDEQ | 24-Sep-98 | 21.5 | 72 | 8.3 | 3.07 | 4.28 | 2.12 | -0.59 | -0.31 | -0.28 |
| IDEQ | 26-Oct-98 | 23.1 | 46 | 5.7 | 3.14 | 3.83 | 1.74 | -0.57 | -0.37 | -0.29 |
| USGS | 27-Oct-98 | 12 | 46 | 3.0 | 2.48 | 3.83 | 1.09 | -0.70 | -0.37 | -0.29 |
| USGS | 18-Nov-98 | 14 | 120 | 9.0 | 2.64 | 4.79 | 2.20 | -0.67 | -0.21 | -0.28 |
| IDEQ | 25-Nov-98 | 29.2 | 77 | 12.1 | 3.37 | 4.34 | 2.49 | -0.50 | -0.30 | -0.27 |
| USGS | 15-Dec-98 | 19 | 57 | 5.8 | 2.94 | 4.04 | 1.76 | -0.62 | -0.35 | -0.29 |
| IDEQ | 15-Jan-99 | 34.4 | 61 | 11.3 | 3.54 | 4.11 | 2.42 | -0.44 | -0.34 | -0.27 |
| USGS | 20-Jan-99 | 23 | 50 | 6.2 | 3.14 | 3.91 | 1.82 | -0.57 | -0.36 | -0.29 |
| IDEQ | 23-Feb-99 | 23.1 | 37 | 4.6 | 3.14 | 3.61 | 1.53 | -0.57 | -0.39 | -0.29 |
| IDEQ | 8-Mar-99 | 29.2 | 43 | 6.8 | 3.37 | 3.76 | 1.91 | -0.50 | -0.38 | -0.28 |
| USGS | 23-Mar-99 | 88 | 130 | 61.5 | 4.48 | 4.87 | 4.12 | 0.17 | -0.19 | -0.16 |
| USGS | 21-Apr-99 | 122 | 96 | 63.0 | 4.80 | 4.56 | 4.14 | 0.56 | -0.26 | -0.16 |
| USGS | 5-May-99 | 77 | 57 | 23.6 | 4.34 | 4.04 | 3.16 | 0.04 | -0.35 | -0.25 |
| USGS | 24-May-99 | 329 | 1400 | 2478.0 | 5.80 | 7.24 | 7.82 | 2.91 | 2.47 | 5.14 |
| USGS | 15-Jun-99 | 345 | 110 | 204.2 | 5.84 | 4.70 | 5.32 | 3.10 | -0.23 | 0.15 |
| USGS | 8-Jul-99 | 117 | 28.1 | 17.7 | 4.76 | 3.34 | 2.87 | 0.50 | -0.41 | -0.26 |
| USGS | 5-Aug-99 | 31 | 61.4 | 10.2 | 3.43 | 4.12 | 2.33 | -0.48 | -0.34 | -0.28 |
| USGS | 30-Aug-99 | 24 | 45.9 | 5.9 | 3.18 | 3.83 | 1.78 | -0.56 | -0.37 | -0.29 |

tPb

**Concentration over time analysis**

| | tPb | CC285 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.020** | **0.00028** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 17-May-91 | 3.69 | 40 | | |
| mid | 26-Aug-98 | 4.42 | 83 | | |
| last | 30-Aug-99 | 4.53 | 92 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

**Load over time analysis**

| | tPb | CC285 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.010** | **0.00027** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 17-May-91 | 2.26 | 10 | | |
| mid | 26-Aug-98 | 2.98 | 20 | | |
| last | 30-Aug-99 | 3.08 | 22 | | |
| | **LnLoad=mTime+b >'96 r2, m** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

max r2: 0.540

**Forward time Regression on Ln Concentration(t)**

max r2: 0.870

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept | r2 | slope | intercept |
|---|---|---|---|---|---|
| only on >4 data points. delete last 4 rows | | | only on >4 data points delete last 4 row | | |
| 0.020 | 0.00028 | -5.54 | 0.010 | 0.00027 | -6.75 |
| 0.002 | 0.00011 | 0.39 | 0.026 | 0.00059 | -18.20 |
| 0.017 | -0.00070 | 29.81 | 0.000 | -0.00013 | 7.68 |
| 0.030 | -0.00097 | 39.57 | 0.000 | -0.00009 | 6.16 |
| 0.044 | -0.00123 | 48.70 | 0.000 | -0.00010 | 6.50 |
| 0.030 | -0.00106 | 42.52 | 0.000 | 0.00011 | -1.01 |
| 0.040 | -0.00130 | 51.23 | 0.000 | -0.00013 | 7.77 |
| 0.014 | -0.00076 | 31.93 | 0.001 | 0.00032 | -8.54 |
| 0.016 | -0.00087 | 35.77 | 0.001 | 0.00033 | -9.15 |
| 0.004 | -0.00048 | 21.69 | 0.004 | 0.00066 | -20.97 |
| 0.017 | 0.00087 | -27.23 | 0.028 | 0.00184 | -63.53 |
| 0.008 | -0.00052 | 23.27 | 0.000 | 0.00017 | -3.14 |
| 0.013 | -0.00072 | 30.23 | 0.001 | -0.00033 | 14.85 |
| 0.013 | -0.00075 | 31.46 | 0.002 | -0.00053 | 22.25 |
| 0.026 | 0.00084 | -26.27 | 0.025 | 0.00169 | -58.30 |
| 0.016 | 0.00069 | -20.53 | 0.051 | 0.00253 | -88.59 |
| 0.030 | 0.00101 | -32.17 | 0.144 | 0.00432 | -153.44 |
| 0.025 | 0.00098 | -31.10 | 0.171 | 0.00501 | -178.67 |
| 0.022 | 0.00097 | -30.79 | 0.177 | 0.00538 | -191.87 |
| 0.021 | 0.00101 | -32.28 | 0.188 | 0.00595 | -212.49 |
| 0.017 | 0.00097 | -30.78 | 0.183 | 0.00623 | -222.88 |
| 0.013 | 0.00092 | -29.17 | 0.180 | 0.00668 | -239.05 |
| 0.015 | 0.00107 | -34.39 | 0.175 | 0.00707 | -253.42 |
| 0.006 | 0.00074 | -22.41 | 0.151 | 0.00693 | -248.04 |
| 0.001 | 0.00023 | -4.01 | 0.097 | 0.00582 | -208.04 |
| 0.007 | 0.00091 | -28.52 | 0.080 | 0.00572 | -204.14 |
| 0.009 | 0.00118 | -38.30 | 0.072 | 0.00601 | -214.66 |
| 0.004 | 0.00089 | -28.03 | 0.035 | 0.00460 | -163.51 |
| 0.001 | 0.00058 | -16.59 | 0.019 | 0.00376 | -133.10 |
| 0.002 | -0.00069 | 29.45 | 0.000 | 0.00012 | -0.73 |
| 0.034 | -0.00356 | 133.60 | 0.040 | -0.00646 | 238.15 |
| 0.140 | -0.00812 | 299.45 | 0.227 | -0.01684 | 615.66 |
| 0.153 | -0.01034 | 380.03 | 0.309 | -0.02400 | 875.95 |
| 0.214 | -0.01458 | 534.28 | 0.401 | -0.03253 | 1186.00 |
| 0.540 | -0.02885 | 1053.56 | 0.870 | -0.06001 | 2185.56 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tPb** | | **CC285** | | |
| **LN Analysis** | | **tPb** | | |
| **Load** | | **Load Data, EV=136 lbs/day CV=3.35** | | |
| **Avg:** | **136** | **Load Data-based LN** | | |
| **SD:** | **456** | u | ln tPb Load | tPb Load |
| **CV:** | **3.35** | 3 | 8.4 | 4480 |
| **Min:** | **0.3** | 0 | 3.66 | 39 |
| **Max:** | **2,478** | -3 | -1.08 | 0.3 |
| **Median:** | **12** | | | |
| | | 136 | 136 | |
| | | 3.35 | 3.35 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.901, EV=98.1lbs/day CV=5.08; max r2=0.957**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.901 | u | lnLoad | Load |
| slope, m | 0.551 | 3 | 8.38 | 4367 |
| intercept, b | -1.622 | 0 | 2.94 | 19 |
| N: | 39 | -3 | -2.50 | 0.1 |
| E[Load] | 98.1 | Parameter Estimates | | |
| SD[Load] | 498 | from LN regression | | |
| CV[Load] | 5.08 | update graph label | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 0.901 |
| | | | | | | | | 98.1 |
| | | | | | | | | 5.1 |
| | | | | | | | | max r2 |
| | | **tPb** | N: 39 | | | | | 0.957 |
| | | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | | **r2** |
| | **Date** | **lbs/day Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | | **forward** |
| ws | update and rank for new data | | | | | | | |
| | 22-Jan-98 | **0.3** | 1 | 0.0159 | -2.146 | -1.380 | | 0.901 |
| | 5-Oct-91 | **2.6** | 2 | 0.0414 | -1.735 | 0.955 | | 0.888 |
| | 27-Oct-98 | **3.0** | 3 | 0.0669 | -1.499 | 1.088 | | 0.889 |
| | 23-Feb-99 | **4.6** | 4 | 0.0924 | -1.326 | 1.526 | | 0.888 |
| | 26-Oct-98 | **5.7** | 5 | 0.1178 | -1.186 | 1.743 | | 0.894 |
| | 15-Dec-98 | **5.8** | 6 | 0.1433 | -1.066 | 1.762 | | 0.902 |
| | 30-Aug-99 | **5.9** | 7 | 0.1688 | -0.959 | 1.779 | | 0.909 |
| | 20-Jan-99 | **6.2** | 8 | 0.1943 | -0.862 | 1.822 | | 0.914 |
| | 26-Feb-98 | **6.6** | 9 | 0.2197 | -0.773 | 1.885 | | 0.919 |
| | 8-Mar-99 | **6.8** | 10 | 0.2452 | -0.690 | 1.910 | | 0.923 |
| | 26-Aug-98 | **8.0** | 11 | 0.2707 | -0.611 | 2.084 | | 0.926 |
| | 26-Aug-98 | **8.2** | 12 | 0.2962 | -0.535 | 2.101 | | 0.931 |
| | 24-Sep-98 | **8.3** | 13 | 0.3217 | -0.463 | 2.120 | | 0.936 |
| | 4-Sep-97 | **8.6** | 14 | 0.3471 | -0.393 | 2.154 | | 0.939 |
| | 18-Nov-98 | **9.0** | 15 | 0.3726 | -0.325 | 2.201 | | 0.942 |
| | 5-Aug-99 | **10.2** | 16 | 0.3981 | -0.258 | 2.326 | | 0.944 |
| | 28-Jul-98 | **10.5** | 17 | 0.4236 | -0.193 | 2.356 | | 0.947 |
| | 28-Jul-98 | **11.3** | 18 | 0.4490 | -0.128 | 2.423 | | 0.949 |
| | 15-Jan-99 | **11.3** | 19 | 0.4745 | -0.064 | 2.424 | | 0.951 |
| | 25-Nov-98 | **12.1** | 20 | 0.5000 | 0.000 | 2.493 | | 0.950 |
| | 20-Mar-98 | **15.0** | 21 | 0.5255 | 0.064 | 2.710 | | 0.949 |
| | 8-Jul-99 | **17.7** | 22 | 0.5510 | 0.128 | 2.873 | | 0.951 |
| | 9-Nov-97 | **17.8** | 23 | 0.5764 | 0.193 | 2.878 | | 0.955 |
| | 26-Jun-98 | **18.0** | 24 | 0.6019 | 0.258 | 2.891 | | 0.957 |
| | 23-Jul-97 | **19.7** | 25 | 0.6274 | 0.325 | 2.982 | | 0.957 |
| | 5-May-99 | **23.6** | 26 | 0.6529 | 0.393 | 3.162 | | 0.956 |
| | 24-Jun-97 | **24.8** | 27 | 0.6783 | 0.463 | 3.209 | | 0.956 |
| | 17-May-91 | **25.8** | 28 | 0.7038 | 0.535 | 3.249 | | 0.953 |
| | 26-Nov-97 | **39.0** | 29 | 0.7293 | 0.611 | 3.663 | | 0.946 |
| | 14-Aug-97 | **41.9** | 30 | 0.7548 | 0.690 | 3.735 | | 0.946 |
| | 14-May-98 | **51.7** | 31 | 0.7803 | 0.773 | 3.946 | | 0.943 |
| | 23-Mar-99 | **61.5** | 32 | 0.8057 | 0.862 | 4.120 | | 0.939 |
| | 21-Apr-99 | **63.0** | 33 | 0.8312 | 0.959 | 4.143 | | 0.934 |
| | 16-Oct-97 | **82.2** | 34 | 0.8567 | 1.066 | 4.410 | | 0.915 |
| | 28-May-98 | **157.6** | 35 | 0.8822 | 1.186 | 5.060 | | 0.883 |
| | 15-Jun-99 | **204.2** | 36 | 0.9076 | 1.326 | 5.319 | | |
| | 19-Dec-97 | **228.3** | 37 | 0.9331 | 1.499 | 5.431 | | |
| | 23-Apr-98 | **1590.8** | 38 | 0.9586 | 1.735 | 7.372 | | |
| | 24-May-99 | **2478.0** | 39 | 0.9841 | 2.146 | 7.815 | | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| tPb | | CC285 | | 222 | 222 |
| LN Analysis | | tPb | | 2.15 | 2.15 |

**Concentration** — Conc. Data, EV=222 ug/L CV=2.15

| | | Data-based LN | | |
|---|---|---|---|---|
| Avg: | 222 | u | ln[tPb] | [tPb] |
| SD: | 476 | 3 | 8.5 | 4811 |
| CV: | 2.15 | 0 | 4.54 | 94 |
| Min: | 3 | -3 | 0.60 | 2 |
| Max: | 2,080 | | | |
| Median: | 60 | | | |

0.804 0.804

**u=mLn(Conc.)+b:** 212.7 213

update for r2, EV, CV: **r2=0.804, EV=213 ug/L CV=2.45; max r2=0.925** 2.452 2.45

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.804 | u | lnConc. | Conc. |
| slope, m: | 0.716 | 3 | 8.57 | 5287 |
| intercept, b: | -3.142 | 0 | 4.39 | 80 |
| N: | 39 | -3 | 0.20 | 1 |
| E[Conc] | 212.7 | Parameter Estimates | | |
| SD[Conc] | 522 | from LN regression | | |
| CV[Conc] | 2.45 | update graph label | | |

0.901
98.1
5.08

max r2
0.925

| Date | tPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| | | N: 39 | | | | |
| update and rank for new data | | | | | | |
| 22-Jan-98 | 2.5 | 1 | 0.0159 | -2.146 | 0.916 | 0.804 |
| 17-May-91 | 24 | 2 | 0.0414 | -1.735 | 3.178 | 0.779 |
| 8-Jul-99 | 28.1 | 3 | 0.0669 | -1.499 | 3.336 | 0.779 |
| 5-Oct-91 | 34 | 4 | 0.0924 | -1.326 | 3.526 | 0.780 |
| 23-Feb-99 | 37 | 5 | 0.1178 | -1.186 | 3.611 | 0.786 |
| 24-Jun-97 | 39 | 6 | 0.1433 | -1.066 | 3.664 | 0.792 |
| 8-Mar-99 | 43 | 7 | 0.1688 | -0.959 | 3.761 | 0.799 |
| 14-May-98 | 43.1 | 8 | 0.1943 | -0.862 | 3.764 | 0.808 |
| 30-Aug-99 | 45.9 | 9 | 0.2197 | -0.773 | 3.826 | 0.815 |
| 26-Oct-98 | 46 | 10 | 0.2452 | -0.690 | 3.829 | 0.824 |
| 27-Oct-98 | 46 | 11 | 0.2707 | -0.611 | 3.829 | 0.831 |
| 23-Jul-97 | 50 | 12 | 0.2962 | -0.535 | 3.912 | 0.837 |
| 20-Jan-99 | 50 | 13 | 0.3217 | -0.463 | 3.912 | 0.846 |
| 26-Jun-98 | 54 | 14 | 0.3471 | -0.393 | 3.989 | 0.853 |
| 26-Aug-98 | 57 | 15 | 0.3726 | -0.325 | 4.043 | 0.862 |
| 15-Dec-98 | 57 | 16 | 0.3981 | -0.258 | 4.043 | 0.874 |
| 5-May-99 | 57 | 17 | 0.4236 | -0.193 | 4.043 | 0.884 |
| 28-Jul-98 | 58 | 18 | 0.4490 | -0.128 | 4.060 | 0.893 |
| 26-Aug-98 | 58 | 19 | 0.4745 | -0.064 | 4.060 | 0.901 |
| 4-Sep-97 | 60 | 20 | 0.5000 | 0.000 | 4.094 | 0.908 |
| 26-Feb-98 | 60 | 21 | 0.5255 | 0.064 | 4.094 | 0.915 |
| 15-Jan-99 | 61 | 22 | 0.5510 | 0.128 | 4.111 | 0.921 |
| 5-Aug-99 | 61.4 | 23 | 0.5764 | 0.193 | 4.117 | 0.924 |
| 28-Jul-98 | 62 | 24 | 0.6019 | 0.258 | 4.127 | 0.925 |
| 24-Sep-98 | 72 | 25 | 0.6274 | 0.325 | 4.277 | 0.924 |
| 25-Nov-98 | 77 | 26 | 0.6529 | 0.393 | 4.344 | 0.925 |
| 9-Nov-97 | 77.6 | 27 | 0.6783 | 0.463 | 4.352 | 0.925 |
| 20-Mar-98 | 89 | 28 | 0.7038 | 0.535 | 4.489 | 0.920 |
| 21-Apr-99 | 96 | 29 | 0.7293 | 0.611 | 4.564 | 0.916 |
| 28-May-98 | 100 | 30 | 0.7548 | 0.690 | 4.605 | 0.908 |
| 15-Jun-99 | 110 | 31 | 0.7803 | 0.773 | 4.700 | 0.893 |
| 18-Nov-98 | 120 | 32 | 0.8057 | 0.862 | 4.787 | 0.870 |
| 23-Mar-99 | 130 | 33 | 0.8312 | 0.959 | 4.868 | 0.837 |
| 14-Aug-97 | 257 | 34 | 0.8567 | 1.066 | 5.549 | 0.806 |
| 26-Nov-97 | 292 | 35 | 0.8822 | 1.186 | 5.677 | 0.732 |
| 16-Oct-97 | 698 | 36 | 0.9076 | 1.326 | 6.548 | |
| 24-May-99 | 1400 | 37 | 0.9331 | 1.499 | 7.244 | |
| 23-Apr-98 | 1920 | 38 | 0.9586 | 1.735 | 7.560 | |
| 19-Dec-97 | 2080 | 39 | 0.9841 | 2.146 | 7.640 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **CC285** | | | 73 | 73.2 |
| **LN Analysis** | | **tPb** | | | 1.20 | 1.2 |
| **Discharge, Q** | | **Q Data, EV=73.2 cfs CV=1.2** | | | | |
| **Avg:** | **73** | **Q Data-based LN** | | | | |
| **SD:** | **88** | u | lnQ | Q | | |
| **CV:** | **1.20** | 3 | 6.7 | 796 | | |
| **Min:** | **12** | 0 | 3.85 | 47 | | |
| **Max:** | **345** | -3 | 1.02 | 3 | | |
| **Median:** | **30** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.884 | 0.884 |
| | | | | | 74.5 | 74.5 |
| **u=mLn(Q)+b:** | | | | | 1.37 | 1.37 |

update for r2, EV, CV: **r2=0.884, EV=74.5 cfs CV=1.37; max r2=0.950**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnQ: | 0.884 | u | lnQ | Q | |
| slope, m: | 0.971 | 3 | 6.87 | 963 | |
| intercept, b: | -3.672 | 0 | 3.78 | 44 | |
| N: | 39 | -3 | 0.69 | 2 | |
| E[Q]: | 74.5 | Parameter Estimates | | | |
| SD[Q]: | 102 | from LN regression | | | |
| CV[Q]: | 1.37 | update graph label | | | |

| | Q | N: 39 | | | | max r2 0.950 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 27-Oct-98 | 12 | 1 | 0.0159 | -2.146 | 2.485 | 0.884 |
| 18-Nov-98 | 14 | 2 | 0.0414 | -1.735 | 2.639 | 0.894 |
| 5-Oct-91 | 14.2 | 3 | 0.0669 | -1.499 | 2.653 | 0.900 |
| 22-Jan-98 | 18.7 | 4 | 0.0924 | -1.326 | 2.929 | 0.901 |
| 15-Dec-98 | 19 | 5 | 0.1178 | -1.186 | 2.944 | 0.910 |
| 19-Dec-97 | 20.4 | 6 | 0.1433 | -1.066 | 3.016 | 0.916 |
| 26-Feb-98 | 20.4 | 7 | 0.1688 | -0.959 | 3.016 | 0.924 |
| 24-Sep-98 | 21.5 | 8 | 0.1943 | -0.862 | 3.068 | 0.929 |
| 16-Oct-97 | 21.9 | 9 | 0.2197 | -0.773 | 3.086 | 0.934 |
| 20-Jan-99 | 23 | 10 | 0.2452 | -0.690 | 3.135 | 0.939 |
| 26-Oct-98 | 23.1 | 11 | 0.2707 | -0.611 | 3.140 | 0.943 |
| 23-Feb-99 | 23.1 | 12 | 0.2962 | -0.535 | 3.140 | 0.946 |
| 30-Aug-99 | 24 | 13 | 0.3217 | -0.463 | 3.178 | 0.948 |
| 26-Nov-97 | 24.8 | 14 | 0.3471 | -0.393 | 3.211 | 0.949 |
| 26-Aug-98 | 26.2 | 15 | 0.3726 | -0.325 | 3.266 | 0.949 |
| 26-Aug-98 | 26.2 | 16 | 0.3981 | -0.258 | 3.266 | 0.950 |
| 4-Sep-97 | 26.7 | 17 | 0.4236 | -0.193 | 3.285 | 0.948 |
| 25-Nov-98 | 29.2 | 18 | 0.4490 | -0.128 | 3.374 | 0.946 |
| 8-Mar-99 | 29.2 | 19 | 0.4745 | -0.064 | 3.374 | 0.943 |
| 14-Aug-97 | 30.3 | 20 | 0.5000 | 0.000 | 3.411 | 0.939 |
| 5-Aug-99 | 31 | 21 | 0.5255 | 0.064 | 3.434 | 0.934 |
| 20-Mar-98 | 31.4 | 22 | 0.5510 | 0.128 | 3.447 | 0.927 |
| 28-Jul-98 | 33.8 | 23 | 0.5764 | 0.193 | 3.520 | 0.919 |
| 28-Jul-98 | 33.8 | 24 | 0.6019 | 0.258 | 3.520 | 0.910 |
| 15-Jan-99 | 34.4 | 25 | 0.6274 | 0.325 | 3.538 | 0.905 |
| 9-Nov-97 | 42.6 | 26 | 0.6529 | 0.393 | 3.752 | 0.914 |
| 26-Jun-98 | 62 | 27 | 0.6783 | 0.463 | 4.127 | 0.927 |
| 23-Jul-97 | 73.3 | 28 | 0.7038 | 0.535 | 4.295 | 0.921 |
| 5-May-99 | 77 | 29 | 0.7293 | 0.611 | 4.344 | 0.909 |
| 23-Mar-99 | 88 | 30 | 0.7548 | 0.690 | 4.477 | 0.901 |
| 8-Jul-99 | 117 | 31 | 0.7803 | 0.773 | 4.762 | 0.891 |
| 24-Jun-97 | 118 | 32 | 0.8057 | 0.862 | 4.771 | 0.868 |
| 21-Apr-99 | 122 | 33 | 0.8312 | 0.959 | 4.804 | 0.836 |
| 23-Apr-98 | 154 | 34 | 0.8567 | 1.066 | 5.037 | 0.828 |
| 17-May-91 | 199.5 | 35 | 0.8822 | 1.186 | 5.296 | 0.819 |
| 14-May-98 | 223 | 36 | 0.9076 | 1.326 | 5.407 | |
| 28-May-98 | 293 | 37 | 0.9331 | 1.499 | 5.680 | |
| 24-May-99 | 329 | 38 | 0.9586 | 1.735 | 5.796 | |
| 15-Jun-99 | 345 | 39 | 0.9841 | 2.146 | 5.844 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | CC285 | **Date:** | 2-Jun-00 |
| **Chemical:** | tZn | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,889 | 74 | 1,424 | 396 | 0.00 | 0.00 | 0.00 |
| **SD:** | 618 | 89 | 800 | 365 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.19 | 0.56 | 0.92 | | | |
| **Min:** | 33,375 | 12 | 156 | 15.7 | -0.71 | -1.59 | -1.04 |
| **Max:** | 36,402 | 345 | 3,860 | 1,664 | 3.05 | 3.05 | 3.47 |
| **Median:** | 36,019 | 31 | 1,235 | 270 | -0.49 | -0.24 | -0.35 |

| tZn | CC285 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.209)** | | update r2 | 0.21 | 0.209 | r2: | 0.000 | 0.000 |
| r2 Q,[COC]: | 0.21 | [tZn] | Q | | m: | -0.0026 | 0.00000 |
| slope, m: | -4.1 | 1,681 | 12.0 | | b: | 168 | 3.84 |
| intercept, b: | 1730.8 | 1,424 | 74.5 | | | | |
| N: | 38 | 307 | 345 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.248)** | | update r2 | 0.25 | 0.248 | | | |
| r2 lnQ,ln[COC]: | 0.25 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m: | -0.35 | 7.53 | 2.48 | 1,869 | 12 | | |
| intercept, b: | 8.40 | 6.90 | 4.31 | 990 | 74 | | |
| N: | 38 | 6.36 | 5.84 | 581 | 345 | | |

N= 38

| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | for graph 0 tZn CC285 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 17-May-91 | 199.5 | 554 | 595 | 5.30 | 6.32 | 6.39 | 1.41 | -1.09 | 0.54 |
| MFG | 5-Oct-91 | 14.2 | 1890 | 144 | 2.65 | 7.54 | 4.97 | -0.68 | 0.58 | -0.69 |
| IDEQ | 24-Jun-97 | 118 | 466 | 296 | 4.77 | 6.14 | 5.69 | 0.49 | -1.20 | -0.27 |
| IDEQ | 23-Jul-97 | 73.3 | 767 | 302 | 4.29 | 6.64 | 5.71 | -0.01 | -0.82 | -0.26 |
| IDEQ | 14-Aug-97 | 30.3 | 1250 | 204 | 3.41 | 7.13 | 5.32 | -0.50 | -0.22 | -0.53 |
| IDEQ | 4-Sep-97 | 26.7 | 1390 | 200 | 3.28 | 7.24 | 5.30 | -0.54 | -0.04 | -0.54 |
| IDEQ | 16-Oct-97 | 21.9 | 1140 | 134 | 3.09 | 7.04 | 4.90 | -0.59 | -0.35 | -0.72 |
| URS | 9-Nov-97 | 42.6 | 1550 | 355 | 3.75 | 7.35 | 5.87 | -0.36 | 0.16 | -0.11 |
| IDEQ | 26-Nov-97 | 24.8 | 1490 | 199 | 3.21 | 7.31 | 5.29 | -0.56 | 0.08 | -0.54 |
| IDEQ | 19-Dec-97 | 20.4 | 2420 | 266 | 3.02 | 7.79 | 5.58 | -0.61 | 1.25 | -0.36 |
| IDEQ | 22-Jan-98 | 18.7 | 156 | 16 | 2.93 | 5.05 | 2.75 | -0.63 | -1.59 | -1.04 |
| IDEQ | 26-Feb-98 | 20.4 | 1830 | 201 | 3.02 | 7.51 | 5.30 | -0.61 | 0.51 | -0.54 |
| IDEQ | 20-Mar-98 | 31.4 | 1840 | 311 | 3.45 | 7.52 | 5.74 | -0.49 | 0.52 | -0.23 |
| IDEQ | 23-Apr-98 | 154 | 1340 | 1110 | 5.04 | 7.20 | 7.01 | 0.90 | -0.10 | 1.96 |
| URS | 14-May-98 | 223 | 424 | 509 | 5.41 | 6.05 | 6.23 | 1.68 | -1.25 | 0.31 |
| IDEQ | 28-May-98 | 293 | 764 | 1204 | 5.68 | 6.64 | 7.09 | 2.47 | -0.82 | 2.22 |
| IDEQ | 26-Jun-98 | 62 | 786 | 262 | 4.13 | 6.67 | 5.57 | -0.14 | -0.80 | -0.37 |
| IDEQ | 28-Jul-98 | 33.8 | 1140 | 207 | 3.52 | 7.04 | 5.33 | -0.46 | -0.35 | -0.52 |
| IDEQ | 28-Jul-98 | 33.8 | 1180 | 215 | 3.52 | 7.07 | 5.37 | -0.46 | -0.30 | -0.50 |
| IDEQ | 26-Aug-98 | 26.2 | 1180 | 166 | 3.27 | 7.07 | 5.11 | -0.54 | -0.30 | -0.63 |
| IDEQ | 24-Sep-98 | 21.5 | 1220 | 141 | 3.07 | 7.11 | 4.95 | -0.60 | -0.25 | -0.70 |
| IDEQ | 26-Oct-98 | 23.1 | 1070 | 133 | 3.14 | 6.98 | 4.89 | -0.58 | -0.44 | -0.72 |
| USGS | 27-Oct-98 | 12 | 1600 | 103 | 2.48 | 7.38 | 4.64 | -0.71 | 0.22 | -0.80 |
| USGS | 18-Nov-98 | 14 | 2400 | 181 | 2.64 | 7.78 | 5.20 | -0.68 | 1.22 | -0.59 |
| IDEQ | 25-Nov-98 | 29.2 | 3860 | 606 | 3.37 | 8.26 | 6.41 | -0.51 | 3.05 | 0.58 |
| USGS | 15-Dec-98 | 19 | 2800 | 286 | 2.94 | 7.94 | 5.66 | -0.63 | 1.72 | -0.30 |
| IDEQ | 15-Jan-99 | 34.4 | 2440 | 452 | 3.54 | 7.80 | 6.11 | -0.45 | 1.27 | 0.15 |
| USGS | 20-Jan-99 | 23 | 2300 | 285 | 3.14 | 7.74 | 5.65 | -0.58 | 1.10 | -0.31 |
| IDEQ | 23-Feb-99 | 23.1 | 1960 | 244 | 3.14 | 7.58 | 5.50 | -0.58 | 0.67 | -0.42 |
| IDEQ | 8-Mar-99 | 29.2 | 2280 | 358 | 3.37 | 7.73 | 5.88 | -0.51 | 1.07 | -0.10 |
| USGS | 23-Mar-99 | 88 | 2800 | 1326 | 4.48 | 7.94 | 7.19 | 0.15 | 1.72 | 2.55 |
| USGS | 21-Apr-99 | 122 | 1300 | 853 | 4.80 | 7.17 | 6.75 | 0.54 | -0.15 | 1.25 |
| USGS | 5-May-99 | 77 | 920 | 381 | 4.34 | 6.82 | 5.94 | 0.03 | -0.63 | -0.04 |
| USGS | 24-May-99 | 329 | 940 | 1664 | 5.80 | 6.85 | 7.42 | 2.87 | -0.60 | 3.47 |
| USGS | 15-Jun-99 | 345 | 320 | 594 | 5.84 | 5.77 | 6.39 | 3.05 | -1.38 | 0.54 |
| USGS | 8-Jul-99 | 117 | 436 | 274 | 4.76 | 6.08 | 5.61 | 0.48 | -1.24 | -0.33 |
| USGS | 5-Aug-99 | 31 | 865 | 144 | 3.43 | 6.76 | 4.97 | -0.49 | -0.70 | -0.69 |
| USGS | 30-Aug-99 | 24 | 1030 | 133 | 3.18 | 6.94 | 4.89 | -0.57 | -0.49 | -0.72 |

tZn

**Concentration over time analysis**

| | tZn | CC285 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.008** | **0.00010** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 17-May-91 | 6.84 | 931 | | |
| mid | 11-Aug-98 | 7.09 | 1,199 | | |
| last | 30-Aug-99 | 7.13 | 1,244 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

**Load over time analysis**

| | tZn | CC285 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.005** | **0.00009** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 17-May-91 | 5.41 | 224 | | |
| mid | 11-Aug-98 | 5.66 | 287 | | |
| last | 30-Aug-99 | 5.70 | 297 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 30-Aug-99 | 0.00 | 1 | | |

| | max r2 | 0.664 | | max r2 | 0.914 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points delete last 4 rows | | | only on >4 data points: delete last 4 row | | |
| | 0.008 | 0.00010 | 3.64 | 0.005 | 0.00009 | 2.26 |
| | 0.003 | -0.00007 | 9.67 | 0.051 | 0.00041 | -9.09 |
| | 0.010 | 0.00029 | -3.30 | 0.055 | 0.00086 | -25.50 |
| | 0.001 | 0.00008 | 4.16 | 0.062 | 0.00097 | -29.20 |
| | 0.000 | -0.00003 | 8.38 | 0.071 | 0.00109 | -33.64 |
| | 0.000 | -0.00004 | 8.48 | 0.068 | 0.00112 | -34.72 |
| | 0.000 | -0.00001 | 7.36 | 0.063 | 0.00114 | -35.58 |
| | 0.000 | -0.00003 | 8.38 | 0.047 | 0.00103 | -31.32 |
| | 0.000 | 0.00004 | 5.69 | 0.059 | 0.00122 | -38.22 |
| | 0.001 | 0.00012 | 2.79 | 0.053 | 0.00122 | -38.50 |
| | 0.010 | 0.00044 | -8.64 | 0.056 | 0.00135 | -43.02 |
| | 0.014 | -0.00045 | 23.57 | 0.001 | 0.00016 | -0.11 |
| | 0.007 | -0.00034 | 19.61 | 0.000 | -0.00006 | 8.03 |
| | 0.002 | -0.00020 | 14.23 | 0.000 | -0.00012 | 10.05 |
| | 0.002 | -0.00019 | 13.86 | 0.009 | 0.00053 | -13.24 |
| | 0.037 | -0.00087 | 38.69 | 0.022 | 0.00087 | -25.89 |
| | 0.083 | -0.00138 | 57.31 | 0.108 | 0.00194 | -64.49 |
| | 0.156 | -0.00200 | 79.47 | 0.115 | 0.00214 | -71.85 |
| | 0.202 | -0.00242 | 94.99 | 0.104 | 0.00217 | -72.66 |
| | 0.268 | -0.00303 | 117.05 | 0.094 | 0.00223 | -75.04 |
| | 0.350 | -0.00376 | 143.39 | 0.066 | 0.00200 | -66.48 |
| | 0.441 | -0.00456 | 172.32 | 0.032 | 0.00145 | -46.71 |
| | 0.572 | -0.00551 | 207.07 | 0.007 | 0.00067 | -18.56 |
| | 0.656 | -0.00644 | 240.77 | 0.011 | -0.00085 | 36.75 |
| | 0.664 | -0.00694 | 258.88 | 0.061 | -0.00213 | 83.26 |
| | 0.603 | -0.00679 | 253.27 | 0.042 | -0.00196 | 76.91 |
| | 0.556 | -0.00695 | 259.11 | 0.093 | -0.00324 | 123.63 |
| | 0.506 | -0.00700 | 261.03 | 0.104 | -0.00382 | 144.52 |
| | 0.444 | -0.00718 | 267.60 | 0.218 | -0.00637 | 237.42 |
| | 0.382 | -0.00717 | 267.39 | 0.446 | -0.01008 | 371.94 |
| | 0.253 | -0.00608 | 227.49 | 0.712 | -0.01480 | 543.69 |
| | 0.029 | -0.00178 | 71.47 | 0.646 | -0.01545 | 567.39 |
| | 0.014 | 0.00131 | -41.17 | 0.604 | -0.01664 | 610.55 |
| | 0.154 | 0.00525 | -184.28 | 0.914 | -0.02591 | 947.72 |

update for EV, CV:

| | | |
|---|---|---|
| **tZn** | | **CC285** |
| **LN Analysis** | | **tZn** |
| **Load** | | **Load Data, EV=396 lbs/day CV=0.921** |
| **Avg:** | **396** | **Load Data-based LN** |
| **SD:** | **365** | u |
| **CV:** | **0.92** | 3 |
| **Min:** | **15.7** | 0 |
| **Max:** | **1,664** | -3 |
| **Median:** | **270** | |

| ln tZn Load | tZn Load |
|---|---|
| 8.0 | 3059 |
| 5.67 | 291 |
| 3.32 | 27.8 |
| 396 | 396 |
| 0.92 | 0.921 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.913, EV=429lbs/day CV=1.14; max r2=0.970**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.913 | u | lnLoad | Load |
| slope, m: | 1.098 | 3 | 8.38 | 4360 |
| intercept, b: | -6.198 | 0 | 5.65 | 283 |
| N: | 38 | -3 | 2.91 | 18.4 |
| E[Load] | 429.2 | Parameter Estimates | | |
| SD[Load]: | 488 | from LN regression | | |
| CV[Load]: | 1.14 | update graph label | | |

| | |
|---|---|
| | 0.913 |
| | 429.2 |
| | 1.1 |
| | max r2 |
| | 0.970 |

N: 38

| | tZn Load | i | i-3/8 / N+1/4 | u | Ln | r2 |
|---|---|---|---|---|---|---|
| | **Date** | **lbs/day Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| ws | update and rank for new data | | | | | |
| | 22-Jan-98 | **16** | 1 | 0.0163 | -2.136 | 2.753 | 0.913 |
| | 27-Oct-98 | **103** | 2 | 0.0425 | -1.723 | 4.638 | 0.954 |
| | 26-Oct-98 | **133** | 3 | 0.0686 | -1.486 | 4.890 | 0.955 |
| | 30-Aug-99 | **133** | 4 | 0.0948 | -1.312 | 4.890 | 0.962 |
| | 16-Oct-97 | **134** | 5 | 0.1209 | -1.170 | 4.900 | 0.965 |
| | 24-Sep-98 | **141** | 6 | 0.1471 | -1.049 | 4.950 | 0.966 |
| | 5-Aug-99 | **144** | 7 | 0.1732 | -0.942 | 4.972 | 0.967 |
| | 5-Oct-91 | **144** | 8 | 0.1993 | -0.844 | 4.973 | 0.966 |
| | 26-Aug-98 | **166** | 9 | 0.2255 | -0.754 | 5.114 | 0.964 |
| | 18-Nov-98 | **181** | 10 | 0.2516 | -0.669 | 5.197 | 0.964 |
| | 26-Nov-97 | **199** | 11 | 0.2778 | -0.589 | 5.292 | 0.965 |
| | 4-Sep-97 | **200** | 12 | 0.3039 | -0.513 | 5.297 | 0.968 |
| | 26-Feb-98 | **201** | 13 | 0.3301 | -0.440 | 5.303 | 0.970 |
| | 14-Aug-97 | **204** | 14 | 0.3562 | -0.369 | 5.317 | 0.970 |
| | 28-Jul-98 | **207** | 15 | 0.3824 | -0.299 | 5.334 | 0.970 |
| | 28-Jul-98 | **215** | 16 | 0.4085 | -0.231 | 5.369 | 0.968 |
| | 23-Feb-99 | **244** | 17 | 0.4346 | -0.165 | 5.495 | 0.966 |
| | 26-Jun-98 | **262** | 18 | 0.4608 | -0.098 | 5.569 | 0.966 |
| | 19-Dec-97 | **266** | 19 | 0.4869 | -0.033 | 5.582 | 0.968 |
| | 8-Jul-99 | **274** | 20 | 0.5131 | 0.033 | 5.615 | 0.968 |
| | 20-Jan-99 | **285** | 21 | 0.5392 | 0.098 | 5.651 | 0.968 |
| | 15-Dec-98 | **286** | 22 | 0.5654 | 0.165 | 5.657 | 0.968 |
| | 24-Jun-97 | **296** | 23 | 0.5915 | 0.231 | 5.690 | 0.965 |
| | 23-Jul-97 | **302** | 24 | 0.6176 | 0.299 | 5.712 | 0.962 |
| | 20-Mar-98 | **311** | 25 | 0.6438 | 0.369 | 5.739 | 0.957 |
| | 9-Nov-97 | **355** | 26 | 0.6699 | 0.440 | 5.873 | 0.951 |
| | 8-Mar-99 | **358** | 27 | 0.6961 | 0.513 | 5.881 | 0.944 |
| | 5-May-99 | **381** | 28 | 0.7222 | 0.589 | 5.943 | 0.936 |
| | 15-Jan-99 | **452** | 29 | 0.7484 | 0.669 | 6.113 | 0.931 |
| | 14-May-98 | **509** | 30 | 0.7745 | 0.754 | 6.232 | 0.918 |
| | 15-Jun-99 | **594** | 31 | 0.8007 | 0.844 | 6.387 | 0.900 |
| | 17-May-91 | **595** | 32 | 0.8268 | 0.942 | 6.388 | 0.876 |
| | 25-Nov-98 | **606** | 33 | 0.8529 | 1.049 | 6.408 | 0.842 |
| | 21-Apr-99 | **853** | 34 | 0.8791 | 1.170 | 6.749 | 0.920 |
| | 23-Apr-98 | **1110** | 35 | 0.9052 | 1.312 | 7.012 | |
| | 28-May-98 | **1204** | 36 | 0.9314 | 1.486 | 7.094 | |
| | 23-Mar-99 | **1326** | 37 | 0.9575 | 1.723 | 7.190 | |
| | 24-May-99 | **1664** | 38 | 0.9837 | 2.136 | 7.417 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **CC285** | | 1,424 | 1420 | |
| **LN Analysis** | | **tZn** | | 0.56 | 0.562 | |
| **Concentration** | | **Conc. Data, EV=1420 ug/L CV=0.562** | | | | |
| **Avg:** | **1,424** | **Data-based LN** | | | | |
| **SD:** | **800** | u | ln[tZn] | [tZn] | | |
| **CV:** | **0.56** | 3 | 8.7 | 5972 | | |
| **Min:** | **156** | 0 | 7.12 | 1241 | | |
| **Max:** | **3,860** | -3 | 5.55 | 258 | | |
| **Median:** | **1,235** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.948 | 0.948 |
| | **u=mLn(Conc.)+b:** | | | | 1516.0 | 1520 |
| update for r2, EV, CV: | **r2=0.948, EV=1520 ug/L CV=0.798; max r2=0.985** | | | | 0.798 | 0.798 |
| | r2 u,lnConc | 0.948 | u | lnConc. | Conc | |
| | slope, m: | 1.424 | 3 | 9.18 | 9741 | |
| | intercept, b | -10.078 | 0 | 7.08 | 1185 | |
| | N: | 38 | -3 | 4.97 | 144 | |
| 0.913 | E[Conc] | 1516.0 | Parameter Estimates | | | |
| 429 | SD[Conc] | 1210 | from LN regression | | | |
| 1.14 | CV[Conc] | 0.80 | update graph label | | | |

| Date | tZn Concentration ug/L Ranked | N 38 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.985 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 22-Jan-98 | 156 | 1 | 0.0163 | -2.136 | 5.050 | 0.948 |
| 15-Jun-99 | 320 | 2 | 0.0425 | -1.723 | 5.768 | 0.966 |
| 14-May-98 | 424 | 3 | 0.0686 | -1.486 | 6.050 | 0.967 |
| 8-Jul-99 | 436 | 4 | 0.0948 | -1.312 | 6.078 | 0.965 |
| 24-Jun-97 | 466 | 5 | 0.1209 | -1.170 | 6.144 | 0.968 |
| 17-May-91 | 554 | 6 | 0.1471 | -1.049 | 6.317 | 0.978 |
| 28-May-98 | 764 | 7 | 0.1732 | -0.942 | 6.639 | 0.985 |
| 23-Jul-97 | 767 | 8 | 0.1993 | -0.844 | 6.642 | 0.984 |
| 26-Jun-98 | 786 | 9 | 0.2255 | -0.754 | 6.667 | 0.983 |
| 5-Aug-99 | 865 | 10 | 0.2516 | -0.669 | 6.763 | 0.982 |
| 5-May-99 | 920 | 11 | 0.2778 | -0.589 | 6.824 | 0.981 |
| 24-May-99 | 940 | 12 | 0.3039 | -0.513 | 6.846 | 0.979 |
| 30-Aug-99 | 1030 | 13 | 0.3301 | -0.440 | 6.937 | 0.978 |
| 26-Oct-98 | 1070 | 14 | 0.3562 | -0.369 | 6.975 | 0.976 |
| 16-Oct-97 | 1140 | 15 | 0.3824 | -0.299 | 7.039 | 0.974 |
| 28-Jul-98 | 1140 | 16 | 0.4085 | -0.231 | 7.039 | 0.972 |
| 28-Jul-98 | 1180 | 17 | 0.4346 | -0.165 | 7.073 | 0.970 |
| 26-Aug-98 | 1180 | 18 | 0.4608 | -0.098 | 7.073 | 0.967 |
| 24-Sep-98 | 1220 | 19 | 0.4869 | -0.033 | 7.107 | 0.964 |
| 14-Aug-97 | 1250 | 20 | 0.5131 | 0.033 | 7.131 | 0.961 |
| 21-Apr-99 | 1300 | 21 | 0.5392 | 0.098 | 7.170 | 0.958 |
| 23-Apr-98 | 1340 | 22 | 0.5654 | 0.165 | 7.200 | 0.954 |
| 4-Sep-97 | 1390 | 23 | 0.5915 | 0.231 | 7.237 | 0.952 |
| 26-Nov-97 | 1490 | 24 | 0.6176 | 0.299 | 7.307 | 0.952 |
| 9-Nov-97 | 1550 | 25 | 0.6438 | 0.369 | 7.346 | 0.948 |
| 27-Oct-98 | 1600 | 26 | 0.6699 | 0.440 | 7.378 | 0.945 |
| 26-Feb-98 | 1830 | 27 | 0.6961 | 0.513 | 7.512 | 0.947 |
| 20-Mar-98 | 1840 | 28 | 0.7222 | 0.589 | 7.518 | 0.939 |
| 5-Oct-91 | 1890 | 29 | 0.7484 | 0.669 | 7.544 | 0.928 |
| 23-Feb-99 | 1960 | 30 | 0.7745 | 0.754 | 7.581 | 0.916 |
| 8-Mar-99 | 2280 | 31 | 0.8007 | 0.844 | 7.732 | 0.903 |
| 20-Jan-99 | 2300 | 32 | 0.8268 | 0.942 | 7.741 | 0.908 |
| 18-Nov-98 | 2400 | 33 | 0.8529 | 1.049 | 7.783 | 0.905 |
| 19-Dec-97 | 2420 | 34 | 0.8791 | 1.170 | 7.792 | 0.921 |
| 15-Jan-99 | 2440 | 35 | 0.9052 | 1.312 | 7.800 | |
| 15-Dec-98 | 2800 | 36 | 0.9314 | 1.486 | 7.937 | |
| 23-Mar-99 | 2800 | 37 | 0.9575 | 1.723 | 7.937 | |
| 25-Nov-98 | 3860 | 38 | 0.9837 | 2.136 | 8.258 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **CC285** | | | 74 | 74.5 |
| **LN Analysis** | | **tZn** | | | 1.19 | 1.19 |
| **Discharge, Q** | | **Q Data, EV=74.5 cfs CV=1.19** | | | | |
| **Avg:** | **74** | **Q Data-based LN** | | | | |
| **SD:** | **89** | u | lnQ | Q | | |
| **CV:** | **1.19** | 3 | 6.7 | 801 | | |
| **Min:** | **12** | 0 | 3.87 | 48 | | |
| **Max:** | **345** | -3 | 1.05 | 3 | | |
| **Median:** | **31** | | | | | |
| | | | | | 0.891 | 0.891 |
| | | | | | 76.1 | 76.1 |
| | **u=mLn(Q)+b:** | | | | 1.39 | 1.39 |

update for r2, EV, CV: **r2=0.891, EV=76.1 cfs CV=1.39; max r2=0.951**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.891 | u | lnQ | Q |
| slope, m: | 0.965 | 3 | 6.90 | 996 |
| intercept, b: | -3.662 | 0 | 3.79 | 44 |
| N: | 38 | -3 | 0.69 | 2 |
| E[Q] | 76.1 | Parameter Estimates | | |
| SD[Q] | 106 | from LN regression | | |
| CV[Q]: | 1.39 | update graph label | | |

N: 38

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.951 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Oct-98 | 12 | 1 | 0.0163 | -2.136 | 2.485 | 0.891 |
| 18-Nov-98 | 14 | 2 | 0.0425 | -1.723 | 2.639 | 0.901 |
| 5-Oct-91 | 14.2 | 3 | 0.0686 | -1.486 | 2.653 | 0.907 |
| 22-Jan-98 | 18.7 | 4 | 0.0948 | -1.312 | 2.929 | 0.908 |
| 15-Dec-98 | 19 | 5 | 0.1209 | -1.170 | 2.944 | 0.917 |
| 19-Dec-97 | 20.4 | 6 | 0.1471 | -1.049 | 3.016 | 0.923 |
| 26-Feb-98 | 20.4 | 7 | 0.1732 | -0.942 | 3.016 | 0.930 |
| 24-Sep-98 | 21.5 | 8 | 0.1993 | -0.844 | 3.068 | 0.935 |
| 16-Oct-97 | 21.9 | 9 | 0.2255 | -0.754 | 3.086 | 0.940 |
| 20-Jan-99 | 23 | 10 | 0.2516 | -0.669 | 3.135 | 0.944 |
| 26-Oct-98 | 23.1 | 11 | 0.2778 | -0.589 | 3.140 | 0.948 |
| 23-Feb-99 | 23.1 | 12 | 0.3039 | -0.513 | 3.140 | 0.950 |
| 30-Aug-99 | 24 | 13 | 0.3301 | -0.440 | 3.178 | 0.951 |
| 26-Nov-97 | 24.8 | 14 | 0.3562 | -0.369 | 3.211 | 0.951 |
| 26-Aug-98 | 26.2 | 15 | 0.3824 | -0.299 | 3.266 | 0.950 |
| 4-Sep-97 | 26.7 | 16 | 0.4085 | -0.231 | 3.285 | 0.949 |
| 25-Nov-98 | 29.2 | 17 | 0.4346 | -0.165 | 3.374 | 0.946 |
| 8-Mar-99 | 29.2 | 18 | 0.4608 | -0.098 | 3.374 | 0.944 |
| 14-Aug-97 | 30.3 | 19 | 0.4869 | -0.033 | 3.411 | 0.940 |
| 5-Aug-99 | 31 | 20 | 0.5131 | 0.033 | 3.434 | 0.935 |
| 20-Mar-98 | 31.4 | 21 | 0.5392 | 0.098 | 3.447 | 0.928 |
| 28-Jul-98 | 33.8 | 22 | 0.5654 | 0.165 | 3.520 | 0.920 |
| 28-Jul-98 | 33.8 | 23 | 0.5915 | 0.231 | 3.520 | 0.911 |
| 15-Jan-99 | 34.4 | 24 | 0.6176 | 0.299 | 3.538 | 0.906 |
| 9-Nov-97 | 42.6 | 25 | 0.6438 | 0.369 | 3.752 | 0.915 |
| 26-Jun-98 | 62 | 26 | 0.6699 | 0.440 | 4.127 | 0.928 |
| 23-Jul-97 | 73.3 | 27 | 0.6961 | 0.513 | 4.295 | 0.921 |
| 5-May-99 | 77 | 28 | 0.7222 | 0.589 | 4.344 | 0.910 |
| 23-Mar-99 | 88 | 29 | 0.7484 | 0.669 | 4.477 | 0.901 |
| 8-Jul-99 | 117 | 30 | 0.7745 | 0.754 | 4.762 | 0.892 |
| 24-Jun-97 | 118 | 31 | 0.8007 | 0.844 | 4.771 | 0.868 |
| 21-Apr-99 | 122 | 32 | 0.8268 | 0.942 | 4.804 | 0.836 |
| 23-Apr-98 | 154 | 33 | 0.8529 | 1.049 | 5.037 | 0.829 |
| 17-May-91 | 199.5 | 34 | 0.8791 | 1.170 | 5.296 | 0.820 |
| 14-May-98 | 223 | 35 | 0.9052 | 1.312 | 5.407 | |
| 28-May-98 | 293 | 36 | 0.9314 | 1.486 | 5.680 | |
| 24-May-99 | 329 | 37 | 0.9575 | 1.723 | 5.796 | |
| 15-Jun-99 | 345 | 38 | 0.9837 | 2.136 | 5.844 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **CC287** | **Date:** | **29-May-00** |
| **Chemical:** | **dCd** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,150 | 41 | 23 | 11 | 0.00 | 0.00 | 0.00 |
| **SD:** | 626 | 38 | 22 | 64 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.92 | 0.97 | 5.58 | | | |
| **Min:** | 33,516 | 11 | 5 | 1 | -0.79 | -0.80 | -0.16 |
| **Max:** | 36,227 | 206 | 200 | 559 | 4.36 | 7.92 | 8.58 |
| **Median:** | 35,081 | 26 | 20 | 3 | -0.40 | -0.14 | -0.13 |

**dCd CC287 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.06)** update r2

| | | | |
|---|---|---|---|
| r2 Q,[COC]: | 0.06 | [dCd] | Q |
| slope, m: | -0.1 | 27 | 11.4 |
| intercept, b: | 28.8 | 23 | 41.1 |
| N: 75 | | -0.1 | 206 |

**LnConc. = mLn(Q)+b (r2=0.32)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.32 | ln[dCd] | ln Q | [dCd] | Q |
| slope, m: | -0.43 | 3.38 | 2.43 | 29 | 11 |
| intercept, b: | 4.44 | 2.83 | 3.72 | 17 | 41 |
| N: 75 | | 2.13 | 5.33 | 8 | 206 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2: | 0.015 | 0.033 |
| m: | 0.0075 | 0.00021 |
| b: | -222 | -3.98 |

**LnQ = mTime +b**

N= 75

| | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd CC287 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | for graph 0 | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 5-Oct-91 | 14.5 | 21.6 | 2 | 2.67 | 3.07 | 0.52 | -0.70 | -0.06 | -0.15 |
| IDEQ | 27-Oct-93 | 13.28 | 26 | 2 | 2.59 | 3.26 | 0.62 | -0.74 | 0.13 | -0.15 |
| IDEQ | 30-Nov-93 | 12.62 | 26 | 2 | 2.54 | 3.26 | 0.57 | -0.75 | 0.13 | -0.15 |
| IDEQ | 17-Dec-93 | 11.7 | 31 | 2 | 2.46 | 3.43 | 0.67 | -0.78 | 0.36 | -0.15 |
| IDEQ | 17-Dec-93 | 12.03 | 31 | 2 | 2.49 | 3.43 | 0.70 | -0.77 | 0.36 | -0.15 |
| IDEQ | 20-Jan-94 | 13.28 | 33 | 2 | 2.59 | 3.50 | 0.86 | -0.74 | 0.45 | -0.14 |
| IDEQ | 20-Jan-94 | 14.66 | 33 | 3 | 2.69 | 3.50 | 0.96 | -0.70 | 0.45 | -0.14 |
| IDEQ | 18-Feb-94 | 11.41 | 28 | 2 | 2.43 | 3.33 | 0.54 | -0.78 | 0.22 | -0.15 |
| IDEQ | 8-Mar-94 | 22.26 | 27 | 3 | 3.10 | 3.30 | 1.17 | -0.50 | 0.18 | -0.13 |
| IDEQ | 24-Mar-94 | 21.13 | 27 | 3 | 3.05 | 3.30 | 1.12 | -0.53 | 0.18 | -0.13 |
| IDEQ | 7-Apr-94 | 37.82 | 17 | 3 | 3.63 | 2.83 | 1.24 | -0.09 | -0.27 | -0.12 |
| IDEQ | 4-May-94 | 111.05 | 8.3 | 5 | 4.71 | 2.12 | 1.60 | 1.85 | -0.66 | -0.10 |
| IDEQ | 19-May-94 | 102.01 | 7.5 | 4 | 4.63 | 2.01 | 1.41 | 1.61 | -0.70 | -0.11 |
| IDEQ | 7-Jun-94 | 63.45 | 11 | 4 | 4.15 | 2.40 | 1.32 | 0.59 | -0.54 | -0.12 |
| IDEQ | 23-Jun-94 | 28.96 | 13 | 2 | 3.37 | 2.56 | 0.71 | -0.32 | -0.45 | -0.15 |
| IDEQ | 25-Jul-94 | 19.04 | 16 | 2 | 2.95 | 2.77 | 0.49 | -0.58 | -0.32 | -0.15 |
| IDEQ | 16-Aug-94 | 16.3 | 20 | 2 | 2.79 | 3.00 | 0.56 | -0.66 | -0.14 | -0.15 |
| IDEQ | 16-Aug-94 | 13.57 | 20 | 1 | 2.61 | 3.00 | 0.38 | -0.73 | -0.14 | -0.16 |
| IDEQ | 13-Sep-94 | 15.89 | 20 | 2 | 2.77 | 3.00 | 0.54 | -0.67 | -0.14 | -0.15 |
| IDEQ | 16-Oct-94 | 14.34 | 20 | 2 | 2.66 | 3.00 | 0.43 | -0.71 | -0.14 | -0.15 |
| IDEQ | 16-Nov-94 | 15.89 | 32 | 3 | 2.77 | 3.47 | 1.01 | -0.67 | 0.40 | -0.14 |
| IDEQ | 13-Dec-94 | 17.17 | 41 | 4 | 2.84 | 3.71 | 1.33 | -0.63 | 0.80 | -0.12 |
| IDEQ | 10-Jan-95 | 28.21 | 38 | 6 | 3.34 | 3.64 | 1.75 | -0.34 | 0.67 | -0.09 |
| IDEQ | 9-Feb-95 | 43.28 | 19 | 4 | 3.77 | 2.94 | 1.49 | 0.06 | -0.18 | -0.11 |
| IDEQ | 8-Mar-95 | 36.82 | 15 | 3 | 3.61 | 2.71 | 1.09 | -0.11 | -0.36 | -0.13 |
| IDEQ | 22-Mar-95 | 86.16 | 21 | 10 | 4.46 | 3.04 | 2.28 | 1.19 | -0.09 | -0.03 |
| IDEQ | 12-Apr-95 | 42.13 | 15 | 3 | 3.74 | 2.71 | 1.22 | 0.03 | -0.36 | -0.13 |
| IDEQ | 25-Apr-95 | 43 | 12 | 3 | 3.76 | 2.48 | 1.02 | 0.05 | -0.49 | -0.14 |
| IDEQ | 13-Jun-95 | 96.41 | 7 | 4 | 4.57 | 1.95 | 1.29 | 1.46 | -0.72 | -0.12 |
| IDEQ | 27-Jun-95 | 34.9 | 8.4 | 2 | 3.55 | 2.13 | 0.46 | -0.16 | -0.66 | -0.15 |
| IDEQ | 11-Jul-95 | 20.05 | 11 | 1 | 3.00 | 2.40 | 0.17 | -0.56 | -0.54 | -0.16 |
| IDEQ | 25-Jul-95 | 14.71 | 14 | 1 | 2.69 | 2.64 | 0.10 | -0.70 | -0.40 | -0.16 |
| IDEQ | 14-Aug-95 | 12.6 | 17 | 1 | 2.53 | 2.83 | 0.14 | -0.75 | -0.27 | -0.16 |
| IDEQ | 13-Sep-95 | 11.4 | 20 | 1 | 2.43 | 3.00 | 0.20 | -0.79 | -0.14 | -0.16 |
| IDEQ | 18-Oct-95 | 31.4 | 200 | 34 | 3.45 | 5.30 | 3.52 | -0.26 | 7.92 | 0.35 |
| IDEQ | 21-Nov-95 | 81.5 | 11 | 5 | 4.40 | 2.40 | 1.57 | 1.07 | -0.54 | -0.10 |
| IDEQ | 27-Dec-95 | 42.1 | 18 | 4 | 3.74 | 2.89 | 1.41 | 0.03 | -0.23 | -0.12 |
| IDEQ | 17-Jan-96 | 50.9 | 26 | 7 | 3.93 | 3.26 | 1.96 | 0.26 | 0.13 | -0.07 |
| IDEQ | 29-Feb-96 | 111 | 15 | 9 | 4.71 | 2.71 | 2.19 | 1.85 | -0.36 | -0.04 |
| IDEQ | 28-Mar-96 | 65.2 | 15 | 5 | 4.18 | 2.71 | 1.66 | 0.64 | -0.36 | -0.10 |
| IDEQ | 8-May-96 | 81.5 | 11 | 5 | 4.40 | 2.40 | 1.57 | 1.07 | -0.54 | -0.10 |
| IDEQ | 19-Jun-96 | 148 | 5.8 | 5 | 5.00 | 1.76 | 1.53 | 2.83 | -0.77 | -0.11 |
| IDEQ | 24-Jul-96 | 35.8 | 14 | 3 | 3.58 | 2.64 | 0.99 | -0.14 | -0.40 | -0.14 |
| IDEQ | 21-Aug-96 | 23.342375 | 23 | 3 | 3.15 | 3.14 | 1.06 | -0.47 | 0.00 | -0.13 |
| IDEQ | 26-Sep-96 | 19.5 | 24 | 3 | 2.97 | 3.18 | 0.92 | -0.57 | 0.04 | -0.14 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 29-Oct-96 | 23.5 | 28 | 4 | 3.16 | 3.33 | 1.26 | -0.47 | 0.22 | -0.12 |
| IDEQ | 27-Nov-96 | 21.7 | 29 | 3 | 3.08 | 3.37 | 1.22 | -0.51 | 0.27 | -0.13 |
| IDEQ | 13-Dec-96 | 29.7 | 39 | 6 | 3.39 | 3.66 | 1.83 | -0.30 | 0.71 | -0.08 |
| IDEQ | 30-Jan-97 | 31.4 | 25 | 4 | 3.45 | 3.22 | 1.44 | -0.26 | 0.09 | -0.11 |
| IDEQ | 21-Feb-97 | 38.9 | 26 | 5 | 3.66 | 3.26 | 1.69 | -0.06 | 0.13 | -0.09 |
| IDEQ | 26-Mar-97 | 144 | 26 | 20 | 4.97 | 3.26 | 3.00 | 2.72 | 0.13 | 0.14 |
| IDEQ | 16-Apr-97 | 55.3 | 24 | 7 | 4.01 | 3.18 | 1.97 | 0.38 | 0.04 | -0.07 |
| IDEQ | 24-Jun-97 | 124 | 5.4 | 4 | 4.82 | 1.69 | 1.28 | 2.19 | -0.79 | -0.12 |
| IDEQ | 23-Jul-97 | 111 | 9.2 | 5 | 4.71 | 2.22 | 1.70 | 1.85 | -0.62 | -0.09 |
| IDEQ | 14-Aug-97 | 37.8 | 14 | 3 | 3.63 | 2.64 | 1.05 | -0.09 | -0.40 | -0.13 |
| IDEQ | 4-Sep-97 | 34 | 18 | 3 | 3.53 | 2.89 | 1.19 | -0.19 | -0.23 | -0.13 |
| IDEQ | 16-Oct-97 | 25.4 | 20 | 3 | 3.23 | 3.00 | 1.01 | -0.41 | -0.14 | -0.14 |
| URS | 9-Nov-97 | 32.7 | 19.8 | 3 | 3.49 | 2.99 | 1.25 | -0.22 | -0.15 | -0.12 |
| IDEQ | 26-Nov-97 | 29.7 | 18 | 3 | 3.39 | 2.89 | 1.06 | -0.30 | -0.23 | -0.13 |
| IDEQ | 19-Dec-97 | 24.1 | 27 | 4 | 3.18 | 3.30 | 1.25 | -0.45 | 0.18 | -0.12 |
| IDEQ | 22-Jan-98 | 18.1 | 26 | 3 | 2.90 | 3.26 | 0.93 | -0.61 | 0.13 | -0.14 |
| IDEQ | 26-Feb-98 | 22.3 | 25 | 3 | 3.10 | 3.22 | 1.10 | -0.50 | 0.09 | -0.13 |
| IDEQ | 20-Mar-98 | 33.1 | 21 | 4 | 3.50 | 3.04 | 1.32 | -0.21 | -0.09 | -0.12 |
| URS | 14-May-98 | 206 | 5.2 | 6 | 5.33 | 1.65 | 1.75 | 4.36 | -0.80 | -0.09 |
| IDEQ | 26-Jun-98 | 63.5 | 9.9 | 3 | 4.15 | 2.29 | 1.22 | 0.59 | -0.59 | -0.13 |
| IDEQ | 28-Jul-98 | 24.7 | 17 | 2 | 3.21 | 2.83 | 0.81 | -0.43 | -0.27 | -0.14 |
| IDEQ | 26-Aug-98 | 19.5 | 18 | 2 | 2.97 | 2.89 | 0.64 | -0.57 | -0.23 | -0.15 |
| IDEQ | 24-Sep-98 | 17.2 | 17 | 2 | 2.84 | 2.83 | 0.45 | -0.63 | -0.27 | -0.15 |
| IDEQ | 1-Oct-98 | 16.7 | 18 | 2 | 2.82 | 2.89 | 0.48 | -0.64 | -0.23 | -0.15 |
| IDEQ | 8-Oct-98 | 15.9 | 21 | 2 | 2.77 | 3.04 | 0.59 | -0.67 | -0.09 | -0.15 |
| IDEQ | 26-Oct-98 | 16.7 | 19 | 2 | 2.82 | 2.94 | 0.53 | -0.64 | -0.18 | -0.15 |
| IDEQ | 25-Nov-98 | 26 | 49 | 7 | 3.26 | 3.89 | 1.92 | -0.40 | 1.16 | -0.07 |
| IDEQ | 15-Jan-99 | 33 | 27 | 5 | 3.50 | 3.30 | 1.57 | -0.21 | 0.18 | -0.10 |
| IDEQ | 23-Feb-99 | 20 | 29 | 3 | 3.00 | 3.37 | 1.14 | -0.56 | 0.27 | -0.13 |
| IDEQ | 8-Mar-99 | 23 | 28 | 559 | 3.14 | 3.33 | 6.33 | -0.48 | 0.22 | 8.58 |

**dCd**

**Concentration over time analysis**

| | dCd | CC287 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.001** | **-0.00003** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 5-Oct-91 | 3.01 | 20 | | |
| mid | 17-Jan-96 | 2.96 | 19 | | |
| last | 8-Mar-99 | 2.92 | 19 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.055** | **0.00052** |
| | 21-Feb-97 | 2.73 | 15 | | |
| | 8-Mar-99 | 3.11 | 22 | | |

**Load over time analysis**

| | dCd | CC287 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.072** | **0.00037** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 5-Oct-91 | 0.62 | 2 | | |
| mid | 17-Jan-96 | 1.19 | 3 | | |
| last | 8-Mar-99 | 1.61 | 5 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.002** | **0.00022** |
| | 21-Feb-97 | 1.34 | 4 | | |
| | 8-Mar-99 | 1.51 | 5 | | |

| | max r2: 0.670 | | | max r2: 0.505 | | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 row | | |
| | 0.001 | -0.00003 | 4.04 | 0.072 | 0.00037 | -11.65 |
| | 0.001 | -0.00003 | 3.89 | 0.064 | 0.00036 | -11.43 |
| | 0.000 | -0.00002 | 3.54 | 0.059 | 0.00035 | -11.07 |
| | 0.000 | -0.00001 | 3.17 | 0.054 | 0.00034 | -10.62 |
| | 0.000 | 0.00001 | 2.54 | 0.049 | 0.00033 | -10.25 |
| | 0.001 | 0.00003 | 1.85 | 0.045 | 0.00032 | -9.89 |
| | 0.003 | 0.00005 | 1.04 | 0.042 | 0.00031 | -9.71 |
| | 0.006 | 0.00008 | 0.14 | 0.040 | 0.00031 | -9.66 |
| | 0.010 | 0.00010 | -0.58 | 0.035 | 0.00029 | -8.98 |
| | 0.014 | 0.00012 | -1.30 | 0.035 | 0.00030 | -9.19 |
| | 0.019 | 0.00014 | -2.08 | 0.035 | 0.00030 | -9.34 |
| | 0.019 | 0.00014 | -2.17 | 0.035 | 0.00031 | -9.68 |
| | 0.011 | 0.00011 | -1.06 | 0.040 | 0.00034 | -10.65 |
| | 0.005 | 0.00007 | 0.34 | 0.044 | 0.00036 | -11.37 |
| | 0.002 | 0.00005 | 1.18 | 0.046 | 0.00038 | -11.99 |
| | 0.001 | 0.00003 | 1.80 | 0.041 | 0.00036 | -11.50 |
| | 0.000 | 0.00002 | 2.07 | 0.034 | 0.00033 | -10.54 |
| | 0.001 | 0.00003 | 1.93 | 0.028 | 0.00031 | -9.61 |
| | 0.001 | 0.00003 | 1.76 | 0.021 | 0.00027 | -8.16 |
| | 0.001 | 0.00004 | 1.59 | 0.015 | 0.00023 | -6.89 |
| | 0.001 | 0.00004 | 1.39 | 0.009 | 0.00019 | -5.25 |
| | 0.004 | 0.00008 | 0.10 | 0.008 | 0.00017 | -4.76 |
| | 0.012 | 0.00014 | -1.92 | 0.008 | 0.00018 | -4.98 |
| | 0.024 | 0.00019 | -3.95 | 0.011 | 0.00021 | -6.26 |
| | 0.026 | 0.00021 | -4.42 | 0.012 | 0.00023 | -6.98 |
| | 0.024 | 0.00020 | -4.30 | 0.011 | 0.00023 | -6.71 |
| | 0.027 | 0.00023 | -5.10 | 0.020 | 0.00031 | -9.69 |
| | 0.025 | 0.00022 | -5.00 | 0.020 | 0.00032 | -9.98 |
| | 0.019 | 0.00020 | -4.19 | 0.017 | 0.00031 | -9.67 |
| | 0.008 | 0.00013 | -1.57 | 0.018 | 0.00032 | -10.12 |
| | 0.002 | 0.00006 | 0.85 | 0.011 | 0.00026 | -7.83 |
| | 0.000 | 0.00001 | 2.69 | 0.004 | 0.00016 | -4.14 |
| | 0.000 | -0.00003 | 3.93 | 0.000 | 0.00003 | 0.48 |
| | 0.001 | -0.00005 | 4.59 | 0.002 | -0.00012 | 5.75 |
| | 0.001 | -0.00005 | 4.64 | 0.012 | -0.00028 | 11.64 |
| | 0.033 | 0.00025 | -5.95 | 0.000 | -0.00005 | 3.14 |
| | 0.020 | 0.00020 | -4.17 | 0.000 | -0.00003 | 2.67 |
| | 0.021 | 0.00021 | -4.58 | 0.000 | -0.00004 | 2.97 |
| | 0.034 | 0.00028 | -7.10 | 0.000 | 0.00003 | 0.22 |
| | 0.029 | 0.00027 | -6.78 | 0.003 | 0.00016 | -4.35 |
| | 0.025 | 0.00026 | -6.35 | 0.005 | 0.00022 | -6.50 |
| | 0.012 | 0.00019 | -3.71 | 0.007 | 0.00027 | -8.42 |
| | 0.000 | -0.00003 | 3.89 | 0.009 | 0.00033 | -10.32 |
| | 0.003 | -0.00010 | 6.54 | 0.006 | 0.00028 | -8.57 |
| | 0.002 | -0.00008 | 5.84 | 0.004 | 0.00023 | -6.90 |

| | | | | | |
|---|---|---|---|---|---|
| 0.001 | -0.00005 | 4.61 | 0.001 | 0.00014 | -3.66 |
| 0.000 | 0.00004 | 1.71 | 0.001 | 0.00012 | -2.71 |
| 0.005 | 0.00015 | -2.24 | 0.000 | 0.00007 | -1 06 |
| 0.033 | 0.00038 | -10.61 | 0.002 | 0.00020 | -5.60 |
| 0.055 | 0.00052 | -15.55 | 0.002 | 0.00022 | -6.59 |
| 0.092 | 0.00070 | -22.38 | 0.004 | 0.00035 | -11.07 |
| 0.146 | 0.00094 | -30.91 | 0.034 | 0.00102 | -35.13 |
| 0.214 | 0.00122 | -40.99 | 0.061 | 0.00146 | -51.00 |
| 0.126 | 0.00086 | -28.11 | 0.067 | 0.00163 | -57.41 |
| 0.070 | 0.00064 | -20.14 | 0.093 | 0.00204 | -72.15 |
| 0.048 | 0.00056 | -17.24 | 0.095 | 0.00222 | -78 44 |
| 0.046 | 0.00060 | -18.52 | 0.104 | 0.00252 | -89.42 |
| 0.053 | 0.00070 | -22.09 | 0.105 | 0.00273 | -96.92 |
| 0.062 | 0.00082 | -26.40 | 0.119 | 0.00316 | -112.24 |
| 0.062 | 0.00090 | -29.37 | 0.125 | 0.00358 | -127.53 |
| 0.132 | 0.00146 | -49.55 | 0.149 | 0.00438 | -156 45 |
| 0.247 | 0.00224 | -77.82 | 0.154 | 0.00504 | -180.32 |
| 0.429 | 0.00336 | -118.14 | 0.174 | 0.00613 | -219.68 |
| 0.670 | 0.00500 | -177.50 | 0.232 | 0.00846 | -303.91 |
| 0.561 | 0.00371 | -131.03 | 0.362 | 0.01234 | -444.14 |
| 0.420 | 0.00291 | -101.94 | 0.449 | 0.01582 | -569.82 |
| 0.358 | 0.00292 | -102.25 | 0.492 | 0.01878 | -676.65 |
| 0.295 | 0.00285 | -99.63 | 0.505 | 0.02109 | -760.34 |
| 0.199 | 0.00232 | -80.74 | 0.478 | 0.02189 | -789.14 |
| 0.083 | 0.00151 | -51.10 | 0.438 | 0.02287 | -824.82 |
| 0.005 | 0.00043 | -12.25 | 0.382 | 0.02498 | -901.29 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | **CC287** | | |
| **LN Analysis** | | **dCd** | | |
| **Load** | | **Load Data, EV=11 lbs/day CV=5.58** | | |
| **Avg:** | **11** | **Load Data-based LN** | | |
| **SD:** | **64** | u | ln dCd Load | dCd Load |
| **CV:** | **5.58** | 3 | 6.3 | 539 |
| **Min:** | **1** | 0 | 0 70 | 2 |
| **Max:** | **559** | -3 | -4.89 | 0.01 |
| **Median:** | **3** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.732, EV=5.7 lbs/day CV=1.34; max r2=0.94**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.732 | u | lnLoad | Load |
| slope, m: | 0.985 | 3 | 4.26 | 71 |
| intercept, b: | -1.200 | 0 | 1.22 | 3 |
| N: | 75 | -3 | -1.83 | 0.2 |
| E[Load] | 5.7 | Parameter Estimates | | |
| SD[Load]: | 8 | from LN regression | | |
| CV[Load]: | 1.34 | update graph label | | |

| | | | N: 75 | | | max r2 0.939 |
|---|---|---|---|---|---|---|
| | **dCd Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| ws | update and rank for new data | | | | | |
| 25-Jul-95 | 1 | 1 | 0.0083 | -2.395 | 0.103 | 0.732 |
| 14-Aug-95 | 1 | 2 | 0.0216 | -2.022 | 0.142 | 0.734 |
| 11-Jul-95 | 1 | 3 | 0.0349 | -1.813 | 0.171 | 0.733 |
| 13-Sep-95 | 1 | 4 | 0.0482 | -1.663 | 0.204 | 0.730 |
| 16-Aug-94 | 1 | 5 | 0.0615 | -1.543 | 0.379 | 0.726 |
| 16-Oct-94 | 2 | 6 | 0.0748 | -1.441 | 0.434 | 0.726 |
| 24-Sep-98 | 2 | 7 | 0.0880 | -1.353 | 0.453 | 0.726 |
| 27-Jun-95 | 2 | 8 | 0.1013 | -1.274 | 0.456 | 0.725 |
| 1-Oct-98 | 2 | 9 | 0.1146 | -1.202 | 0.481 | 0.724 |
| 25-Jul-94 | 2 | 10 | 0.1279 | -1.136 | 0.494 | 0.723 |
| 5-Oct-91 | 2 | 11 | 0.1412 | -1.075 | 0.522 | 0.721 |
| 26-Oct-98 | 2 | 12 | 0.1545 | -1.017 | 0.535 | 0.719 |
| 13-Sep-94 | 2 | 13 | 0.1678 | -0.963 | 0.536 | 0.717 |
| 18-Feb-94 | 2 | 14 | 0.1811 | -0.911 | 0.542 | 0.714 |
| 16-Aug-94 | 2 | 15 | 0.1944 | -0.862 | 0.562 | 0.711 |
| 30-Nov-93 | 2 | 16 | 0.2076 | -0.815 | 0.568 | 0.707 |
| 8-Oct-98 | 2 | 17 | 0.2209 | -0.769 | 0.586 | 0.703 |
| 27-Oct-93 | 2 | 18 | 0.2342 | -0.725 | 0.619 | 0.699 |
| 26-Aug-98 | 2 | 19 | 0.2475 | -0.682 | 0.636 | 0.695 |
| 17-Dec-93 | 2 | 20 | 0.2608 | -0.641 | 0.669 | 0.691 |
| 17-Dec-93 | 2 | 21 | 0.2741 | -0.601 | 0.696 | 0.687 |
| 23-Jun-94 | 2 | 22 | 0.2874 | -0.561 | 0.706 | 0.682 |
| 28-Jul-98 | 2 | 23 | 0.3007 | -0.522 | 0.815 | 0.678 |
| 20-Jan-94 | 2 | 24 | 0.3140 | -0.485 | 0.858 | 0.676 |
| 26-Sep-96 | 3 | 25 | 0.3272 | -0.448 | 0.923 | 0.674 |
| 22-Jan-98 | 3 | 26 | 0.3405 | -0.411 | 0.929 | 0.674 |
| 20-Jan-94 | 3 | 27 | 0.3538 | -0.375 | 0.957 | 0.674 |
| 24-Jul-96 | 3 | 28 | 0.3671 | -0.340 | 0.992 | 0.674 |
| 16-Oct-97 | 3 | 29 | 0.3804 | -0.304 | 1.005 | 0.675 |
| 16-Nov-94 | 3 | 30 | 0.3937 | -0.270 | 1.006 | 0.676 |
| 25-Apr-95 | 3 | 31 | 0.4070 | -0.235 | 1.021 | 0.676 |
| 14-Aug-97 | 3 | 32 | 0.4203 | -0.201 | 1.046 | 0.677 |
| 26-Nov-97 | 3 | 33 | 0 4336 | -0.167 | 1.056 | 0.678 |
| 21-Aug-96 | 3 | 34 | 0.4468 | -0.134 | 1.061 | 0.679 |
| 8-Mar-95 | 3 | 35 | 0.4601 | -0.100 | 1.089 | 0.680 |
| 26-Feb-98 | 3 | 36 | 0.4734 | -0.067 | 1.098 | 0.681 |
| 24-Mar-94 | 3 | 37 | 0.4867 | -0.033 | 1.121 | 0.682 |
| 23-Feb-99 | 3 | 38 | 0.5000 | 0.000 | 1.138 | 0.684 |
| 8-Mar-94 | 3 | 39 | 0.5133 | 0.033 | 1.174 | 0.685 |
| 4-Sep-97 | 3 | 40 | 0.5266 | 0.067 | 1.192 | 0.688 |
| 26-Jun-98 | 3 | 41 | 0.5399 | 0.100 | 1.219 | 0.691 |
| 27-Nov-96 | 3 | 42 | 0.5532 | 0.134 | 1.220 | 0.694 |
| 12-Apr-95 | 3 | 43 | 0.5664 | 0.167 | 1.224 | 0.698 |
| 7-Apr-94 | 3 | 44 | 0.5797 | 0.201 | 1.241 | 0.701 |
| 9-Nov-97 | 3 | 45 | 0.5930 | 0.235 | 1.248 | 0.704 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19-Dec-97 | 4 | 46 | 0.6063 | 0.270 | 1.253 | 0.707 |
| 29-Oct-96 | 4 | 47 | 0.6196 | 0.304 | 1.264 | 0.710 |
| 24-Jun-97 | 4 | 48 | 0.6329 | 0.340 | 1.282 | 0.712 |
| 13-Jun-95 | 4 | 49 | 0.6462 | 0.375 | 1.289 | 0.715 |
| 20-Mar-98 | 4 | 50 | 0.6595 | 0.411 | 1.319 | 0.717 |
| 7-Jun-94 | 4 | 51 | 0.6728 | 0.448 | 1.323 | 0.720 |
| 13-Dec-94 | 4 | 52 | 0.6860 | 0.485 | 1.332 | 0.722 |
| 27-Dec-95 | 4 | 53 | 0.6993 | 0.522 | 1.405 | 0.724 |
| 19-May-94 | 4 | 54 | 0.7126 | 0.561 | 1.415 | 0.729 |
| 30-Jan-97 | 4 | 55 | 0.7259 | 0.601 | 1.441 | 0.733 |
| 9-Feb-95 | 4 | 56 | 0.7392 | 0.641 | 1.487 | 0.738 |
| 19-Jun-96 | 5 | 57 | 0.7525 | 0.682 | 1.530 | 0.745 |
| 15-Jan-99 | 5 | 58 | 0.7658 | 0.725 | 1.567 | 0.753 |
| 21-Nov-95 | 5 | 59 | 0.7791 | 0.769 | 1.573 | 0.764 |
| 8-May-96 | 5 | 60 | 0.7924 | 0.815 | 1.573 | 0.774 |
| 4-May-94 | 5 | 61 | 0.8056 | 0.862 | 1.601 | 0.783 |
| 28-Mar-96 | 5 | 62 | 0.8189 | 0.911 | 1.660 | 0.792 |
| 21-Feb-97 | 5 | 63 | 0.8322 | 0.963 | 1.694 | 0.805 |
| 23-Jul-97 | 5 | 64 | 0.8455 | 1.017 | 1.704 | 0.820 |
| 14-May-98 | 6 | 65 | 0.8588 | 1.075 | 1.751 | 0.834 |
| 10-Jan-95 | 6 | 66 | 0.8721 | 1.136 | 1.752 | 0.850 |
| 13-Dec-96 | 6 | 67 | 0.8854 | 1.202 | 1.830 | 0.863 |
| 25-Nov-98 | 7 | 68 | 0.8987 | 1.274 | 1.925 | 0.881 |
| 17-Jan-96 | 7 | 69 | 0.9120 | 1.353 | 1.963 | 0.904 |
| 16-Apr-97 | 7 | 70 | 0.9252 | 1.441 | 1.966 | 0.927 |
| 29-Feb-96 | 9 | 71 | 0.9385 | 1.543 | 2.193 | 0.939 |
| 22-Mar-95 | 10 | 72 | 0.9518 | 1.663 | 2.276 | |
| 26-Mar-97 | 20 | 73 | 0.9651 | 1.813 | 3.003 | |
| 18-Oct-95 | 34 | 74 | 0.9784 | 2.022 | 3.520 | |
| 8-Mar-99 | 559 | 75 | 0.9917 | 2.395 | 6.326 | |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| **dCd** | | **CC287** | | |
| **LN Analysis** | | **dCd** | | |
| **Concentration** | | **Conc. Data, EV=23 ug/L CV=.97** | | |
| **Avg:** | **23** | **Data-based LN** | | |
| **SD:** | **22** | u | ln[dCd] | [dCd] |
| **CV:** | **0.97** | 3 | 5.2 | 190 |
| **Min:** | **5** | 0 | 2.81 | 17 |
| **Max:** | **200** | -3 | 0.36 | 1 |
| **Median:** | **20** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **$r^2$=0.918, EV=22.8 ug/L CV=.64; max r2=0.92**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.918 | u | lnConc. | Conc. |
| slope, m: | 1.710 | 3 | 4.71 | 111 |
| intercept, b: | -5.056 | 0 | 2.96 | 19 |
| N: | 75 | -3 | 1.20 | 3 |
| E[Conc] | 22.8 | Parameter Estimates | | |
| SD[Conc]: | 15 | from LN regression | | |
| CV[Conc]: | 0.64 | update graph label | | |

| Date | dCd Concentration ug/L Ranked | N: 75 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.918 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 14-May-98 | 5.2 | 1 | 0.0083 | -2.395 | 1.649 | 0.918 |
| 24-Jun-97 | 5.4 | 2 | 0.0216 | -2.022 | 1.686 | 0.911 |
| 19-Jun-96 | 5.8 | 3 | 0.0349 | -1.813 | 1.758 | 0.906 |
| 13-Jun-95 | 7 | 4 | 0.0482 | -1.663 | 1.946 | 0.901 |
| 19-May-94 | 7.5 | 5 | 0.0615 | -1.543 | 2.015 | 0.895 |
| 4-May-94 | 8.3 | 6 | 0.0748 | -1.441 | 2.116 | 0.890 |
| 27-Jun-95 | 8.4 | 7 | 0.0880 | -1.353 | 2.128 | 0.885 |
| 23-Jul-97 | 9.2 | 8 | 0.1013 | -1.274 | 2.219 | 0.879 |
| 26-Jun-98 | 9.9 | 9 | 0.1146 | -1.202 | 2.293 | 0.873 |
| 7-Jun-94 | 11 | 10 | 0.1279 | -1.136 | 2.398 | 0.868 |
| 11-Jul-95 | 11 | 11 | 0.1412 | -1.075 | 2.398 | 0.862 |
| 21-Nov-95 | 11 | 12 | 0.1545 | -1.017 | 2.398 | 0.856 |
| 8-May-96 | 11 | 13 | 0.1678 | -0.963 | 2.398 | 0.850 |
| 25-Apr-95 | 12 | 14 | 0.1811 | -0.911 | 2.485 | 0.844 |
| 23-Jun-94 | 13 | 15 | 0.1944 | -0.862 | 2.565 | 0.837 |
| 25-Jul-95 | 14 | 16 | 0.2076 | -0.815 | 2.639 | 0.832 |
| 24-Jul-96 | 14 | 17 | 0.2209 | -0.769 | 2.639 | 0.827 |
| 14-Aug-97 | 14 | 18 | 0.2342 | -0.725 | 2.639 | 0.822 |
| 8-Mar-95 | 15 | 19 | 0.2475 | -0.682 | 2.708 | 0.816 |
| 12-Apr-95 | 15 | 20 | 0.2608 | -0.641 | 2.708 | 0.811 |
| 29-Feb-96 | 15 | 21 | 0.2741 | -0.601 | 2.708 | 0.806 |
| 28-Mar-96 | 15 | 22 | 0.2874 | -0.561 | 2.708 | 0.800 |
| 25-Jul-94 | 16 | 23 | 0.3007 | -0.522 | 2.773 | 0.794 |
| 7-Apr-94 | 17 | 24 | 0.3140 | -0.485 | 2.833 | 0.788 |
| 14-Aug-95 | 17 | 25 | 0.3272 | -0.448 | 2.833 | 0.785 |
| 28-Jul-98 | 17 | 26 | 0.3405 | -0.411 | 2.833 | 0.781 |
| 24-Sep-98 | 17 | 27 | 0.3538 | -0.375 | 2.833 | 0.777 |
| 27-Dec-95 | 18 | 28 | 0.3671 | -0.340 | 2.890 | 0.772 |
| 4-Sep-97 | 18 | 29 | 0.3804 | -0.304 | 2.890 | 0.769 |
| 26-Nov-97 | 18 | 30 | 0.3937 | -0.270 | 2.890 | 0.765 |
| 26-Aug-98 | 18 | 31 | 0.4070 | -0.235 | 2.890 | 0.760 |
| 1-Oct-98 | 18 | 32 | 0.4203 | -0.201 | 2.890 | 0.755 |
| 9-Feb-95 | 19 | 33 | 0.4336 | -0.167 | 2.944 | 0.749 |
| 26-Oct-98 | 19 | 34 | 0.4468 | -0.134 | 2.944 | 0.745 |
| 9-Nov-97 | 19.8 | 35 | 0.4601 | -0.100 | 2.986 | 0.740 |
| 16-Aug-94 | 20 | 36 | 0.4734 | -0.067 | 2.996 | 0.737 |
| 16-Aug-94 | 20 | 37 | 0.4867 | -0.033 | 2.996 | 0.734 |
| 13-Sep-94 | 20 | 38 | 0.5000 | 0.000 | 2.996 | 0.730 |
| 16-Oct-94 | 20 | 39 | 0.5133 | 0.033 | 2.996 | 0.725 |
| 13-Sep-95 | 20 | 40 | 0.5266 | 0.067 | 2.996 | 0.719 |
| 16-Oct-97 | 20 | 41 | 0.5399 | 0.100 | 2.996 | 0.712 |
| 22-Mar-95 | 21 | 42 | 0.5532 | 0.134 | 3.045 | 0.704 |
| 20-Mar-98 | 21 | 43 | 0.5664 | 0.167 | 3.045 | 0.698 |
| 8-Oct-98 | 21 | 44 | 0.5797 | 0.201 | 3.045 | 0.691 |
| 5-Oct-91 | 21.6 | 45 | 0.5930 | 0.235 | 3.073 | 0.682 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 21-Aug-96 | 23 | 46 | 0.6063 | 0.270 | 3.135 | 0.674 |
| 26-Sep-96 | 24 | 47 | 0.6196 | 0.304 | 3.178 | 0.671 |
| 16-Apr-97 | 24 | 48 | 0.6329 | 0.340 | 3.178 | 0.671 |
| 30-Jan-97 | 25 | 49 | 0.6462 | 0.375 | 3.219 | 0.669 |
| 26-Feb-98 | 25 | 50 | 0.6595 | 0.411 | 3.219 | 0.672 |
| 27-Oct-93 | 26 | 51 | 0.6728 | 0.448 | 3.258 | 0.674 |
| 30-Nov-93 | 26 | 52 | 0.6860 | 0.485 | 3.258 | 0.681 |
| 17-Jan-96 | 26 | 53 | 0.6993 | 0.522 | 3.258 | 0.687 |
| 21-Feb-97 | 26 | 54 | 0.7126 | 0.561 | 3.258 | 0.692 |
| 26-Mar-97 | 26 | 55 | 0.7259 | 0.601 | 3.258 | 0.697 |
| 22-Jan-98 | 26 | 56 | 0.7392 | 0.641 | 3.258 | 0.701 |
| 8-Mar-94 | 27 | 57 | 0.7525 | 0.682 | 3.296 | 0.704 |
| 24-Mar-94 | 27 | 58 | 0.7658 | 0.725 | 3.296 | 0.711 |
| 19-Dec-97 | 27 | 59 | 0.7791 | 0.769 | 3.296 | 0.718 |
| 15-Jan-99 | 27 | 60 | 0.7924 | 0.815 | 3.296 | 0.723 |
| 18-Feb-94 | 28 | 61 | 0.8056 | 0.862 | 3.332 | 0.726 |
| 29-Oct-96 | 28 | 62 | 0.8189 | 0.911 | 3.332 | 0.735 |
| 8-Mar-99 | 28 | 63 | 0.8322 | 0.963 | 3.332 | 0.741 |
| 27-Nov-96 | 29 | 64 | 0.8455 | 1.017 | 3.367 | 0.745 |
| 23-Feb-99 | 29 | 65 | 0.8588 | 1.075 | 3.367 | 0.752 |
| 17-Dec-93 | 31 | 66 | 0.8721 | 1.136 | 3.434 | 0.756 |
| 17-Dec-93 | 31 | 67 | 0.8854 | 1.202 | 3.434 | 0.772 |
| 16-Nov-94 | 32 | 68 | 0.8987 | 1.274 | 3.466 | 0.784 |
| 20-Jan-94 | 33 | 69 | 0.9120 | 1.353 | 3.497 | 0.800 |
| 20-Jan-94 | 33 | 70 | 0.9252 | 1.441 | 3.497 | 0.819 |
| 10-Jan-95 | 38 | 71 | 0.9385 | 1.543 | 3.638 | 0.826 |
| 13-Dec-96 | 39 | 72 | 0.9518 | 1.663 | 3.664 | |
| 13-Dec-94 | 41 | 73 | 0.9651 | 1.813 | 3.714 | |
| 25-Nov-98 | 49 | 74 | 0.9784 | 2.022 | 3.892 | |
| 18-Oct-95 | 200 | 75 | 0.9917 | 2.395 | 5.298 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | **CC287** | | |
| **LN Analysis** | | **dCd** | | |
| **Discharge, Q** | | **Q Data, EV=41 cfs CV=0.92** | | |
| **Avg:** | **41** | **Q Data-based LN** | | |
| **SD:** | **38** | u | lnQ | Q |
| **CV:** | **0.92** | 3 | 5.8 | 317 |
| **Min:** | **11** | 0 | 3.41 | 30 |
| **Max:** | **206** | -3 | 1.06 | 3 |
| **Median:** | **26** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.936, EV=40.8 cfs CV=.88; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.936 | u | lnQ | Q |
| slope, m: | 1.316 | 3 | 5.70 | 299 |
| intercept, b: | -4.498 | 0 | 3.42 | 31 |
| N: | 75 | -3 | 1.14 | 3 |
| E[Q] | 40.8 | Parameter Estimates | | |
| SD[Q]: | 36 | from LN regression | | |
| CV[Q] | 0.88 | update graph label | | |

| | Q | N 75 | | | | max r2 0.979 |
|---|---|---|---|---|---|---|
| | Discharge | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | cfs Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 13-Sep-95 | 11.4 | 1 | 0.0083 | -2.395 | 2.434 | 0.936 |
| 18-Feb-94 | 11.41 | 2 | 0.0216 | -2.022 | 2.434 | 0.950 |
| 17-Dec-93 | 11.7 | 3 | 0.0349 | -1.813 | 2.460 | 0.956 |
| 17-Dec-93 | 12.03 | 4 | 0.0482 | -1.663 | 2.487 | 0.960 |
| 14-Aug-95 | 12.6 | 5 | 0.0615 | -1.543 | 2.534 | 0.964 |
| 30-Nov-93 | 12.62 | 6 | 0.0748 | -1.441 | 2.535 | 0.966 |
| 27-Oct-93 | 13.28 | 7 | 0.0880 | -1.353 | 2.586 | 0.968 |
| 20-Jan-94 | 13.28 | 8 | 0.1013 | -1.274 | 2.586 | 0.970 |
| 16-Aug-94 | 13.57 | 9 | 0.1146 | -1.202 | 2.608 | 0.972 |
| 16-Oct-94 | 14.34 | 10 | 0.1279 | -1.136 | 2.663 | 0.973 |
| 5-Oct-91 | 14.5 | 11 | 0.1412 | -1.075 | 2.674 | 0.974 |
| 20-Jan-94 | 14.66 | 12 | 0.1545 | -1.017 | 2.685 | 0.975 |
| 25-Jul-95 | 14.71 | 13 | 0.1678 | -0.963 | 2.689 | 0.976 |
| 13-Sep-94 | 15.89 | 14 | 0.1811 | -0.911 | 2.766 | 0.977 |
| 16-Nov-94 | 15.89 | 15 | 0.1944 | -0.862 | 2.766 | 0.978 |
| 8-Oct-98 | 15.9 | 16 | 0.2076 | -0.815 | 2.766 | 0.978 |
| 16-Aug-94 | 16.3 | 17 | 0.2209 | -0.769 | 2.791 | 0.979 |
| 1-Oct-98 | 16.7 | 18 | 0.2342 | -0.725 | 2.815 | 0.979 |
| 26-Oct-98 | 16.7 | 19 | 0.2475 | -0.682 | 2.815 | 0.979 |
| 13-Dec-94 | 17.17 | 20 | 0.2608 | -0.641 | 2.843 | 0.979 |
| 24-Sep-98 | 17.2 | 21 | 0.2741 | -0.601 | 2.845 | 0.979 |
| 22-Jan-98 | 18.1 | 22 | 0.2874 | -0.561 | 2.896 | 0.978 |
| 25-Jul-94 | 19.04 | 23 | 0.3007 | -0.522 | 2.947 | 0.978 |
| 26-Sep-96 | 19.5 | 24 | 0.3140 | -0.485 | 2.970 | 0.978 |
| 26-Aug-98 | 19.5 | 25 | 0.3272 | -0.448 | 2.970 | 0.978 |
| 23-Feb-99 | 20 | 26 | 0.3405 | -0.411 | 2.996 | 0.978 |
| 11-Jul-95 | 20.05 | 27 | 0.3538 | -0.375 | 2.998 | 0.978 |
| 24-Mar-94 | 21.13 | 28 | 0.3671 | -0.340 | 3.051 | 0.977 |
| 27-Nov-96 | 21.7 | 29 | 0.3804 | -0.304 | 3.077 | 0.977 |
| 8-Mar-94 | 22.26 | 30 | 0.3937 | -0.270 | 3.103 | 0.976 |
| 26-Feb-98 | 22.3 | 31 | 0.4070 | -0.235 | 3.105 | 0.976 |
| 8-Mar-99 | 23 | 32 | 0.4203 | -0.201 | 3.135 | 0.975 |
| 21-Aug-96 | 23.342375 | 33 | 0.4336 | -0.167 | 3.150 | 0.975 |
| 29-Oct-96 | 23.5 | 34 | 0.4468 | -0.134 | 3.157 | 0.974 |
| 19-Dec-97 | 24.1 | 35 | 0.4601 | -0.100 | 3.182 | 0.973 |
| 28-Jul-98 | 24.7 | 36 | 0.4734 | -0.067 | 3.207 | 0.972 |
| 16-Oct-97 | 25.4 | 37 | 0.4867 | -0.033 | 3.235 | 0.971 |
| 25-Nov-98 | 26 | 38 | 0.5000 | 0.000 | 3.258 | 0.969 |
| 10-Jan-95 | 28.21 | 39 | 0.5133 | 0.033 | 3.340 | 0.968 |
| 23-Jun-94 | 28.96 | 40 | 0.5266 | 0.067 | 3.366 | 0.967 |
| 13-Dec-96 | 29.7 | 41 | 0.5399 | 0.100 | 3.391 | 0.966 |
| 26-Nov-97 | 29.7 | 42 | 0.5532 | 0.134 | 3.391 | 0.965 |
| 18-Oct-95 | 31.4 | 43 | 0.5664 | 0.167 | 3.447 | 0.963 |
| 30-Jan-97 | 31.4 | 44 | 0.5797 | 0.201 | 3.447 | 0.962 |
| 9-Nov-97 | 32.7 | 45 | 0.5930 | 0.235 | 3.487 | 0.960 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15-Jan-99 | 33 | 46 | 0.6063 | 0.270 | 3.497 | 0.959 |
| 20-Mar-98 | 33.1 | 47 | 0.6196 | 0.304 | 3.500 | 0.956 |
| 4-Sep-97 | 34 | 48 | 0.6329 | 0.340 | 3.526 | 0.954 |
| 27-Jun-95 | 34.9 | 49 | 0.6462 | 0.375 | 3.552 | 0.951 |
| 24-Jul-96 | 35.8 | 50 | 0.6595 | 0.411 | 3.578 | 0.948 |
| 8-Mar-95 | 36.82 | 51 | 0.6728 | 0.448 | 3.606 | 0.944 |
| 14-Aug-97 | 37.8 | 52 | 0.6860 | 0.485 | 3.632 | 0.940 |
| 7-Apr-94 | 37.82 | 53 | 0.6993 | 0.522 | 3.633 | 0.936 |
| 21-Feb-97 | 38.9 | 54 | 0.7126 | 0.561 | 3.661 | 0.932 |
| 27-Dec-95 | 42.1 | 55 | 0.7259 | 0.601 | 3.740 | 0.929 |
| 12-Apr-95 | 42.13 | 56 | 0.7392 | 0.641 | 3.741 | 0.924 |
| 25-Apr-95 | 43 | 57 | 0.7525 | 0.682 | 3.761 | 0.922 |
| 9-Feb-95 | 43.28 | 58 | 0.7658 | 0.725 | 3.768 | 0.923 |
| 17-Jan-96 | 50.9 | 59 | 0.7791 | 0.769 | 3.930 | 0.938 |
| 16-Apr-97 | 55.3 | 60 | 0.7924 | 0.815 | 4.013 | 0.943 |
| 7-Jun-94 | 63.45 | 61 | 0.8056 | 0.862 | 4.150 | 0.948 |
| 26-Jun-98 | 63.5 | 62 | 0.8189 | 0.911 | 4.151 | 0.944 |
| 28-Mar-96 | 65.2 | 63 | 0.8322 | 0.963 | 4.177 | 0.949 |
| 21-Nov-95 | 81.5 | 64 | 0.8455 | 1.017 | 4.401 | 0.973 |
| 8-May-96 | 81.5 | 65 | 0.8588 | 1.075 | 4.401 | 0.969 |
| 22-Mar-95 | 86.16 | 66 | 0.8721 | 1.136 | 4.456 | 0.968 |
| 13-Jun-95 | 96.41 | 67 | 0.8854 | 1.202 | 4.569 | 0.968 |
| 19-May-94 | 102.01 | 68 | 0.8987 | 1.274 | 4.625 | 0.962 |
| 29-Feb-96 | 111 | 69 | 0.9120 | 1.353 | 4.710 | 0.955 |
| 23-Jul-97 | 111 | 70 | 0.9252 | 1.441 | 4.710 | 0.968 |
| 4-May-94 | 111.05 | 71 | 0.9385 | 1.543 | 4.710 | 0.966 |
| 24-Jun-97 | 124 | 72 | 0.9518 | 1.663 | 4.820 | |
| 26-Mar-97 | 144 | 73 | 0.9651 | 1.813 | 4.970 | |
| 19-Jun-96 | 148 | 74 | 0.9784 | 2.022 | 4.997 | |
| 14-May-98 | 206 | 75 | 0.9917 | 2.395 | 5.328 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC287 **Date:** 30-May-00

**Chemical:** dPb **Analyst:** J.Johnston

Notes:

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 35,150 | 41 | 48 | 10 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 626 | 38 | 30 | 11 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.92 | 0.63 | 1.04 | | | | |
| **Min:** | 33,516 | 11 | 20 | 2 | | -0.79 | -0.93 | -0.81 |
| **Max:** | 36,227 | 206 | 223 | 61 | | 4.36 | 5.82 | 4.74 |
| **Median:** | 35,081 | 26 | 42 | 6 | | -0.40 | -0.20 | -0.39 |

**dPb CC287 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

**Conc. = mQ+b (r2=0.003)** update r2

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 Q,[COC]: | 0.003 | [dPb] | Q | | r2: | 0.015 | 0.033 |
| slope, m | -0.04 | 49 | 11.4 | | m: | 0.0075 | 0.00021 |
| intercept, b | 49.5 | 48 | 41.1 | | b: | -222 | -3.98 |
| N: 75 | | 41 | 206 | | | | |

**LnConc. = mLn(Q)+b (r2=0.001)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.001 | ln[dPb] | ln Q | [dPb] | Q |
| slope, m: | -0.02 | 3.78 | 2.43 | 44 | 11 |
| intercept, b: | 3.81 | 3.76 | 3.72 | 43 | 41 |
| N: 75 | | 3.73 | 5.33 | 42 | 206 |

for graph 0

**N= 75**

| update for new data | Sampling Date | Q Discharge cfs | dPb Concentration ug/L | dPb Load lbs/day | Ln Q | Ln dPb Conc. | Ln dPb Load | dPb CC287 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 5-Oct-91 | 14.5 | 20 | 2 | 2.67 | 3.00 | 0.44 | -0.70 | -0.93 | -0.81 |
| IDEQ | 27-Oct-93 | 13.28 | 55 | 4 | 2.59 | 4.01 | 1.37 | -0.74 | 0.24 | -0.59 |
| IDEQ | 30-Nov-93 | 12.62 | 34 | 2 | 2.54 | 3.53 | 0.84 | -0.75 | -0.46 | -0.74 |
| IDEQ | 17-Dec-93 | 11.7 | 46 | 3 | 2.46 | 3.83 | 1.06 | -0.78 | -0.06 | -0.69 |
| IDEQ | 17-Dec-93 | 12.03 | 46 | 3 | 2.49 | 3.83 | 1.09 | -0.77 | -0.06 | -0.68 |
| IDEQ | 20-Jan-94 | 13.28 | 38 | 3 | 2.59 | 3.64 | 1.00 | -0.74 | -0.33 | -0.70 |
| IDEQ | 20-Jan-94 | 14.66 | 38 | 3 | 2.69 | 3.64 | 1.10 | -0.70 | -0.33 | -0.68 |
| IDEQ | 18-Feb-94 | 11.41 | 36 | 2 | 2.43 | 3.58 | 0.79 | -0.78 | -0.39 | -0.75 |
| IDEQ | 8-Mar-94 | 22.26 | 38 | 5 | 3.10 | 3.64 | 1.52 | -0.50 | -0.33 | -0.53 |
| IDEQ | 24-Mar-94 | 21.13 | 37 | 4 | 3.05 | 3.61 | 1.44 | -0.53 | -0.36 | -0.57 |
| IDEQ | 7-Apr-94 | 37.82 | 35 | 7 | 3.63 | 3.56 | 1.96 | -0.09 | -0.43 | -0.29 |
| IDEQ | 4-May-94 | 111.05 | 28 | 17 | 4.71 | 3.33 | 2.82 | 1.85 | -0.66 | 0.60 |
| IDEQ | 19-May-94 | 102.01 | 26 | 14 | 4.63 | 3.26 | 2.66 | 1.61 | -0.73 | 0.37 |
| IDEQ | 7-Jun-94 | 63.45 | 29 | 10 | 4.15 | 3.37 | 2.29 | 0.59 | -0.63 | -0.03 |
| IDEQ | 23-Jun-94 | 28.96 | 34 | 5 | 3.37 | 3.53 | 1.67 | -0.32 | -0.46 | -0.46 |
| IDEQ | 25-Jul-94 | 19.04 | 42 | 4 | 2.95 | 3.74 | 1.46 | -0.58 | -0.20 | -0.56 |
| IDEQ | 16-Aug-94 | 16.3 | 46 | 4 | 2.79 | 3.83 | 1.39 | -0.66 | -0.06 | -0.58 |
| IDEQ | 16-Aug-94 | 13.57 | 46 | 3 | 2.61 | 3.83 | 1.21 | -0.73 | -0.06 | -0.64 |
| IDEQ | 13-Sep-94 | 15.89 | 36 | 3 | 2.77 | 3.58 | 1.12 | -0.67 | -0.39 | -0.67 |
| IDEQ | 16-Oct-94 | 14.34 | 31 | 2 | 2.66 | 3.43 | 0.87 | -0.71 | -0.56 | -0.73 |
| IDEQ | 16-Nov-94 | 15.89 | 40 | 3 | 2.77 | 3.69 | 1.23 | -0.67 | -0.26 | -0.64 |
| IDEQ | 13-Dec-94 | 17.17 | 39 | 4 | 2.84 | 3.66 | 1.28 | -0.63 | -0.29 | -0.62 |
| IDEQ | 10-Jan-95 | 28.21 | 40 | 6 | 3.34 | 3.69 | 1.80 | -0.34 | -0.26 | -0.39 |
| IDEQ | 9-Feb-95 | 43.28 | 26 | 6 | 3.77 | 3.26 | 1.80 | 0.06 | -0.73 | -0.39 |
| IDEQ | 8-Mar-95 | 36.82 | 22 | 4 | 3.61 | 3.09 | 1.47 | -0.11 | -0.86 | -0.55 |
| IDEQ | 22-Mar-95 | 86.16 | 34 | 16 | 4.46 | 3.53 | 2.76 | 1.19 | -0.46 | 0.51 |
| IDEQ | 12-Apr-95 | 42.13 | 27 | 6 | 3.74 | 3.30 | 1.81 | 0.03 | -0.69 | -0.39 |
| IDEQ | 25-Apr-95 | 43 | 22 | 5 | 3.76 | 3.09 | 1.63 | 0.05 | -0.86 | -0.48 |
| IDEQ | 13-Jun-95 | 96.41 | 27 | 14 | 4.57 | 3.30 | 2.64 | 1.46 | -0.69 | 0.35 |
| IDEQ | 27-Jun-95 | 34.9 | 26 | 5 | 3.55 | 3.26 | 1.59 | -0.16 | -0.73 | -0.50 |
| IDEQ | 11-Jul-95 | 20.05 | 34 | 4 | 3.00 | 3.53 | 1.30 | -0.56 | -0.46 | -0.62 |
| IDEQ | 25-Jul-95 | 14.71 | 33 | 3 | 2.69 | 3.50 | 0.96 | -0.70 | -0.49 | -0.71 |
| IDEQ | 14-Aug-95 | 12.6 | 36 | 2 | 2.53 | 3.58 | 0.89 | -0.75 | -0.39 | -0.73 |
| IDEQ | 13-Sep-95 | 11.4 | 38 | 2 | 2.43 | 3.64 | 0.85 | -0.79 | -0.33 | -0.74 |
| IDEQ | 18-Oct-95 | 31.4 | 48 | 8 | 3.45 | 3.87 | 2.09 | -0.26 | 0.00 | -0.20 |
| IDEQ | 21-Nov-95 | 81.5 | 45 | 20 | 4.40 | 3.81 | 2.98 | 1.07 | -0.10 | 0.88 |
| IDEQ | 27-Dec-95 | 42.1 | 55 | 12 | 3.74 | 4.01 | 2.52 | 0.03 | 0.24 | 0.20 |
| IDEQ | 17-Jan-96 | 50.9 | 223 | 61 | 3.93 | 5.41 | 4.11 | 0.26 | 5.82 | 4.74 |
| IDEQ | 29-Feb-96 | 111 | 45 | 27 | 4.71 | 3.81 | 3.29 | 1.85 | -0.10 | 1.55 |
| IDEQ | 28-Mar-96 | 65.2 | 53 | 19 | 4.18 | 3.97 | 2.92 | 0.64 | 0.17 | 0.78 |
| IDEQ | 8-May-96 | 81.5 | 66 | 29 | 4.40 | 4.19 | 3.37 | 1.07 | 0.60 | 1.74 |
| IDEQ | 19-Jun-96 | 148 | 36 | 29 | 5.00 | 3.58 | 3.36 | 2.83 | -0.39 | 1.72 |
| IDEQ | 24-Jul-96 | 35.8 | 66 | 13 | 3.58 | 4.19 | 2.54 | -0.14 | 0.60 | 0.23 |
| IDEQ | 21-Aug-96 | 23.342375 | 94 | 12 | 3.15 | 4.54 | 2.47 | -0.47 | 1.53 | 0.14 |
| IDEQ | 26-Sep-96 | 19.5 | 98 | 10 | 2.97 | 4.58 | 2.33 | -0.57 | 1.67 | 0.00 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 29-Oct-96 | 23.5 | 174 | 22 | 3.16 | 5.16 | 3.09 | -0.47 | 4.19 | 1.09 |
| IDEQ | 27-Nov-96 | 21.7 | 51 | 6 | 3.08 | 3.93 | 1.78 | -0.51 | 0.10 | -0.40 |
| IDEQ | 13-Dec-96 | 29.7 | 60 | 10 | 3.39 | 4.09 | 2.26 | -0.30 | 0.40 | -0.06 |
| IDEQ | 30-Jan-97 | 31.4 | 48 | 8 | 3.45 | 3.87 | 2.09 | -0.26 | 0.00 | -0.20 |
| IDEQ | 21-Feb-97 | 38.9 | 71 | 15 | 3.66 | 4.26 | 2.70 | -0.06 | 0.77 | 0.43 |
| IDEQ | 26-Mar-97 | 144 | 63 | 49 | 4.97 | 4.14 | 3.89 | 2.72 | 0.50 | 3.59 |
| IDEQ | 16-Apr-97 | 55.3 | 46 | 14 | 4.01 | 3.83 | 2.62 | 0.38 | -0.06 | 0.32 |
| IDEQ | 24-Jun-97 | 124 | 32 | 21 | 4.82 | 3.47 | 3.06 | 2.19 | -0.53 | 1.03 |
| IDEQ | 23-Jul-97 | 111 | 66 | 39 | 4.71 | 4.19 | 3.67 | 1.85 | 0.60 | 2.72 |
| IDEQ | 14-Aug-97 | 37.8 | 54 | 11 | 3.63 | 3.99 | 2.40 | -0.09 | 0.20 | 0.07 |
| IDEQ | 4-Sep-97 | 34 | 114 | 21 | 3.53 | 4.74 | 3.04 | -0.19 | 2.20 | 0.99 |
| IDEQ | 16-Oct-97 | 25.4 | 57 | 8 | 3.23 | 4.04 | 2.05 | -0.41 | 0.30 | -0.23 |
| URS | 9-Nov-97 | 32.7 | 50.8 | 9 | 3.49 | 3.93 | 2.19 | -0.22 | 0.10 | -0.12 |
| IDEQ | 26-Nov-97 | 29.7 | 49 | 8 | 3.39 | 3.89 | 2.06 | -0.30 | 0.04 | -0.23 |
| IDEQ | 19-Dec-97 | 24.1 | 43 | 6 | 3.18 | 3.76 | 1.71 | -0.45 | -0.16 | -0.44 |
| IDEQ | 22-Jan-98 | 18.1 | 44 | 4 | 2.90 | 3.78 | 1.46 | -0.61 | -0.13 | -0.56 |
| IDEQ | 26-Feb-98 | 22.3 | 42 | 5 | 3.10 | 3.74 | 1.61 | -0.50 | -0.20 | -0.49 |
| IDEQ | 20-Mar-98 | 33.1 | 45 | 8 | 3.50 | 3.81 | 2.08 | -0.21 | -0.10 | -0.21 |
| URS | 14-May-98 | 206 | 25.7 | 28 | 5.33 | 3.25 | 3.35 | 4.36 | -0.74 | 1.70 |
| IDEQ | 26-Jun-98 | 63.5 | 34 | 12 | 4.15 | 3.53 | 2.45 | 0.59 | -0.46 | 0.13 |
| IDEQ | 28-Jul-98 | 24.7 | 46 | 6 | 3.21 | 3.83 | 1.81 | -0.43 | -0.06 | -0.39 |
| IDEQ | 26-Aug-98 | 19.5 | 42 | 4 | 2.97 | 3.74 | 1.48 | -0.57 | -0.20 | -0.55 |
| IDEQ | 24-Sep-98 | 17.2 | 50 | 5 | 2.84 | 3.91 | 1.53 | -0.63 | 0.07 | -0.53 |
| IDEQ | 1-Oct-98 | 16.7 | 39 | 4 | 2.82 | 3.66 | 1.25 | -0.64 | -0.29 | -0.63 |
| IDEQ | 8-Oct-98 | 15.9 | 45 | 4 | 2.77 | 3.81 | 1.35 | -0.67 | -0.10 | -0.60 |
| IDEQ | 26-Oct-98 | 16.7 | 34 | 3 | 2.82 | 3.53 | 1.12 | -0.64 | -0.46 | -0.67 |
| IDEQ | 25-Nov-98 | 26 | 54 | 8 | 3.26 | 3.99 | 2.02 | -0.40 | 0.20 | -0.25 |
| IDEQ | 15-Jan-99 | 33 | 38 | 7 | 3.50 | 3.64 | 1.91 | -0.21 | -0.33 | -0.33 |
| IDEQ | 23-Feb-99 | 20 | 28 | 3 | 3.00 | 3.33 | 1.10 | -0.56 | -0.66 | -0.68 |
| IDEQ | 8-Mar-99 | 23 | 31 | 4 | 3.14 | 3.43 | 1.34 | -0.48 | -0.56 | -0.60 |

**dPb**

**Concentration over time analysis**

| | dPb | CC287 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.071** | **0.00018** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 5-Oct-91 | 3.47 | 32 | | |
| mid | 17-Jan-96 | 3.75 | 42 | | |
| last | 8-Mar-99 | 3.95 | 52 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.322** | **-0.00079** |
| | 21-Feb-97 | 4.12 | 62 | | |
| | 8-Mar-99 | 3.53 | 34 | | |

**Load over time analysis**

| | dPb | CC287 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.087** | **0.00039** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 5-Oct-91 | 1.32 | 4 | | |
| mid | 17-Jan-96 | 1.93 | 7 | | |
| last | 8-Mar-99 | 2.37 | 11 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.521** | **-0.00249** |
| | 21-Feb-97 | 3.09 | 22 | | |
| | 8-Mar-99 | 1.24 | 3 | | |

max r2: 0.462

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.071 | 0.00018 | -2.47 |
| 0.047 | 0.00015 | -1.42 |
| 0.054 | 0.00016 | -1.89 |
| 0.051 | 0.00016 | -1.76 |
| 0.054 | 0.00016 | -2.01 |
| 0.057 | 0.00017 | -2.29 |
| 0.056 | 0.00017 | -2.32 |
| 0.054 | 0.00017 | -2.34 |
| 0.051 | 0.00017 | -2.28 |
| 0.050 | 0.00017 | -2.30 |
| 0.048 | 0.00017 | -2.27 |
| 0.044 | 0.00017 | -2.14 |
| 0.036 | 0.00015 | -1.61 |
| 0.027 | 0.00013 | -0.91 |
| 0.020 | 0.00012 | -0.33 |
| 0.016 | 0.00011 | 0.02 |
| 0.016 | 0.00011 | -0.01 |
| 0.017 | 0.00011 | -0.21 |
| 0.018 | 0.00012 | -0.44 |
| 0.015 | 0.00011 | -0.15 |
| 0.010 | 0.00009 | 0.51 |
| 0.009 | 0.00009 | 0.66 |
| 0.007 | 0.00008 | 0.89 |
| 0.006 | 0.00008 | 1.08 |
| 0.002 | 0.00004 | 2.40 |
| 0.000 | -0.00001 | 4.31 |
| 0.001 | -0.00004 | 5.26 |
| 0.007 | -0.00009 | 7.00 |
| 0.024 | -0.00016 | 9.64 |
| 0.046 | -0.00022 | 11.87 |
| 0.081 | -0.00030 | 14.55 |
| 0.111 | -0.00036 | 16.69 |
| 0.154 | -0.00043 | 19.31 |
| 0.199 | -0.00051 | 22.00 |
| 0.250 | -0.00059 | 24.84 |
| 0.280 | -0.00065 | 26.98 |
| 0.324 | -0.00072 | 29.70 |
| 0.346 | -0.00078 | 31.72 |
| 0.286 | -0.00063 | 26.27 |
| 0.331 | -0.00070 | 29.05 |
| 0.356 | -0.00076 | 31.26 |
| 0.352 | -0.00079 | 32.23 |
| 0.455 | -0.00093 | 37.34 |
| 0.456 | -0.00097 | 38.79 |
| 0.416 | -0.00094 | 37.55 |

max r2: 0.522

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 row | | |
| 0.087 | 0.00039 | -11.67 |
| 0.061 | 0.00033 | -9.74 |
| 0.056 | 0.00032 | -9.36 |
| 0.046 | 0.00029 | -8.26 |
| 0.038 | 0.00027 | -7.37 |
| 0.030 | 0.00024 | -6.44 |
| 0.022 | 0.00021 | -5.30 |
| 0.016 | 0.00018 | -4.20 |
| 0.009 | -0.00013 | -2.56 |
| 0.006 | 0.00011 | -1.89 |
| 0.004 | 0.00009 | -1.02 |
| 0.003 | 0.00009 | -0.94 |
| 0.007 | 0.00012 | -2.27 |
| 0.011 | 0.00016 | -3.45 |
| 0.013 | 0.00017 | -4.09 |
| 0.010 | 0.00016 | -3.60 |
| 0.007 | 0.00013 | -2.67 |
| 0.004 | 0.00010 | -1.51 |
| 0.001 | 0.00005 | 0.19 |
| 0.000 | 0.00000 | 2.26 |
| 0.003 | -0.00008 | 5.10 |
| 0.008 | -0.00015 | 7.39 |
| 0.016 | -0.00021 | 9.78 |
| 0.021 | -0.00025 | 11.13 |
| 0.027 | -0.00029 | 12.60 |
| 0.040 | -0.00036 | 15.08 |
| 0.034 | -0.00034 | 14.30 |
| 0.043 | -0.00039 | 16.16 |
| 0.058 | -0.00047 | 18.86 |
| 0.053 | -0.00046 | 18.56 |
| 0.071 | -0.00055 | 21.73 |
| 0.105 | -0.00068 | 26.41 |
| 0.170 | -0.00087 | 33.19 |
| 0.271 | -0.00110 | 41.38 |
| 0.424 | -0.00137 | 51.03 |
| 0.481 | -0.00151 | 56.30 |
| 0.478 | -0.00156 | 57.89 |
| 0.504 | -0.00167 | 61.83 |
| 0.459 | -0.00155 | 57.54 |
| 0.432 | -0.00153 | 56.90 |
| 0.421 | -0.00157 | 58.17 |
| 0.384 | -0.00151 | 56.33 |
| 0.343 | -0.00144 | 53.78 |
| 0.346 | -0.00151 | 56.32 |
| 0.355 | -0.00161 | 59.67 |

| | | | | | |
|---|---|---|---|---|---|
| 0.367 | -0.00088 | 35.41 | 0.376 | -0.00174 | 64.40 |
| 0.306 | -0.00066 | 27.38 | 0.341 | -0.00170 | 62.85 |
| 0.318 | -0.00071 | 29.14 | 0.420 | -0.00198 | 73.14 |
| 0.298 | -0.00072 | 29.52 | 0.459 | -0.00220 | 81.01 |
| 0.322 | -0.00079 | 32.15 | 0.521 | -0.00249 | 91.33 |
| 0.271 | -0.00074 | 30.36 | 0.522 | -0.00263 | 96.37 |
| 0.232 | -0.00071 | 29.36 | 0.453 | -0.00231 | 84.97 |
| 0.257 | -0.00081 | 32.84 | 0.443 | -0.00243 | 89.12 |
| 0.406 | -0.00106 | 41.78 | 0.389 | -0.00229 | 84.39 |
| 0.359 | -0.00102 | 40.42 | 0.303 | -0.00180 | 66.61 |
| 0.347 | -0.00106 | 42.03 | 0.273 | -0.00180 | 66.58 |
| 0.238 | -0.00065 | 27.15 | 0.175 | -0.00138 | 51.41 |
| 0.165 | -0.00055 | 23.35 | 0.165 | -0.00143 | 53.41 |
| 0.114 | -0.00047 | 20.76 | 0.135 | -0.00138 | 51.58 |
| 0.068 | -0.00039 | 17.74 | 0.116 | -0.00141 | 52.37 |
| 0.055 | -0.00039 | 17.80 | 0.148 | -0.00178 | 65.93 |
| 0.034 | -0.00035 | 16.17 | 0.259 | -0.00266 | 97.49 |
| 0.023 | -0.00033 | 15.43 | 0.383 | -0.00370 | 135.32 |
| 0.002 | -0.00012 | 7.87 | 0.416 | -0.00455 | 165.97 |
| 0.201 | -0.00111 | 43.86 | 0.200 | -0.00229 | 84.16 |
| 0.448 | -0.00186 | 70.89 | 0.029 | -0.00073 | 27.82 |
| 0.426 | -0.00201 | 76.32 | 0.000 | -0.00002 | 2.20 |
| 0.462 | -0.00235 | 88.41 | 0.000 | 0.00006 | -0.55 |
| 0.371 | -0.00208 | 78.62 | 0.003 | 0.00030 | -9.52 |
| 0.430 | -0.00253 | 95.22 | 0.004 | -0.00039 | 15.56 |
| 0.338 | -0.00258 | 96.73 | 0.037 | -0.00147 | 54.69 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dPb** | | **CC287** | | |
| **LN Analysis** | | **dPb** | | |
| **Load** | | **Load Data, EV=10 lbs/day CV=1.04** | | |
| **Avg:** | **10** | **Load Data-based LN** | | |
| **SD:** | **11** | u | ln dPb Load | dPb Load |
| **CV:** | **1.04** | 3 | 4.5 | 93 |
| **Min:** | **2** | 0 | 1.96 | 7 |
| **Max:** | **61** | -3 | -0.61 | 1 |
| **Median:** | **6** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.965, EV=10.2 lbs/day CV=1.04; max r2=0.995**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.965 | u | lnLoad | Load |
| slope, m | 1.171 | 3 | 4.52 | 92 |
| intercept, b | -2.289 | 0 | 1.95 | 7 |
| N: | 75 | -3 | -0.61 | 0.5 |
| E[Load] | 10.2 | Parameter Estimates | | |
| SD[Load]: | 11 | from LN regression | | |
| CV[Load]: | 1.04 | update graph label | | |

N: 75

| | Date | dPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.995 r2 forward |
|---|---|---|---|---|---|---|---|
| ws | update and rank for new data | | | | | | |
| | 5-Oct-91 | 2 | 1 | 0.0083 | -2.395 | 0.445 | 0.965 |
| | 18-Feb-94 | 2 | 2 | 0.0216 | -2.022 | 0.793 | 0.968 |
| | 30-Nov-93 | 2 | 3 | 0.0349 | -1.813 | 0.837 | 0.974 |
| | 13-Sep-95 | 2 | 4 | 0.0482 | -1.663 | 0.846 | 0.978 |
| | 16-Oct-94 | 2 | 5 | 0.0615 | -1.543 | 0.872 | 0.981 |
| | 14-Aug-95 | 2 | 6 | 0.0748 | -1.441 | 0.892 | 0.983 |
| | 25-Jul-95 | 3 | 7 | 0.0880 | -1.353 | 0.960 | 0.984 |
| | 20-Jan-94 | 3 | 8 | 0.1013 | -1.274 | 0.999 | 0.985 |
| | 17-Dec-93 | 3 | 9 | 0.1146 | -1.202 | 1.063 | 0.986 |
| | 17-Dec-93 | 3 | 10 | 0.1279 | -1.136 | 1.091 | 0.988 |
| | 20-Jan-94 | 3 | 11 | 0.1412 | -1.075 | 1.098 | 0.990 |
| | 23-Feb-99 | 3 | 12 | 0.1545 | -1.017 | 1.103 | 0.991 |
| | 26-Oct-98 | 3 | 13 | 0.1678 | -0.963 | 1.117 | 0.991 |
| | 13-Sep-94 | 3 | 14 | 0.1811 | -0.911 | 1.124 | 0.992 |
| | 16-Aug-94 | 3 | 15 | 0.1944 | -0.862 | 1.211 | 0.992 |
| | 16-Nov-94 | 3 | 16 | 0.2076 | -0.815 | 1.230 | 0.993 |
| | 1-Oct-98 | 4 | 17 | 0.2209 | -0.769 | 1.254 | 0.993 |
| | 13-Dec-94 | 4 | 18 | 0.2342 | -0.725 | 1.282 | 0.994 |
| | 11-Jul-95 | 4 | 19 | 0.2475 | -0.682 | 1.300 | 0.994 |
| | 8-Mar-99 | 4 | 20 | 0.2608 | -0.641 | 1.344 | 0.994 |
| | 8-Oct-98 | 4 | 21 | 0.2741 | -0.601 | 1.348 | 0.995 |
| | 27-Oct-93 | 4 | 22 | 0.2874 | -0.561 | 1.369 | 0.995 |
| | 16-Aug-94 | 4 | 23 | 0.3007 | -0.522 | 1.395 | 0.995 |
| | 24-Mar-94 | 4 | 24 | 0.3140 | -0.485 | 1.437 | 0.995 |
| | 22-Jan-98 | 4 | 25 | 0.3272 | -0.448 | 1.455 | 0.995 |
| | 25-Jul-94 | 4 | 26 | 0.3405 | -0.411 | 1.459 | 0.995 |
| | 8-Mar-95 | 4 | 27 | 0.3538 | -0.375 | 1.472 | 0.995 |
| | 26-Aug-98 | 4 | 28 | 0.3671 | -0.340 | 1.483 | 0.995 |
| | 8-Mar-94 | 5 | 29 | 0.3804 | -0.304 | 1.515 | 0.995 |
| | 24-Sep-98 | 5 | 30 | 0.3937 | -0.270 | 1.532 | 0.995 |
| | 27-Jun-95 | 5 | 31 | 0.4070 | -0.235 | 1.586 | 0.994 |
| | 26-Feb-98 | 5 | 32 | 0.4203 | -0.201 | 1.617 | 0.994 |
| | 25-Apr-95 | 5 | 33 | 0.4336 | -0.167 | 1.627 | 0.994 |
| | 23-Jun-94 | 5 | 34 | 0.4468 | -0.134 | 1.667 | 0.994 |
| | 19-Dec-97 | 6 | 35 | 0.4601 | -0.100 | 1.718 | 0.993 |
| | 27-Nov-96 | 6 | 36 | 0.4734 | -0.067 | 1.784 | 0.993 |
| | 9-Feb-95 | 6 | 37 | 0.4867 | -0.033 | 1.801 | 0.993 |
| | 10-Jan-95 | 6 | 38 | 0.5000 | 0.000 | 1.803 | 0.992 |
| | 28-Jul-98 | 6 | 39 | 0.5133 | 0.033 | 1.810 | 0.992 |
| | 12-Apr-95 | 6 | 40 | 0.5266 | 0.067 | 1.812 | 0.992 |
| | 15-Jan-99 | 7 | 41 | 0.5399 | 0.100 | 1.909 | 0.992 |
| | 7-Apr-94 | 7 | 42 | 0.5532 | 0.134 | 1.963 | 0.992 |
| | 25-Nov-98 | 8 | 43 | 0.5664 | 0.167 | 2.022 | 0.992 |
| | 16-Oct-97 | 8 | 44 | 0.5797 | 0.201 | 2.053 | 0.991 |
| | 26-Nov-97 | 8 | 45 | 0.5930 | 0.235 | 2.058 | 0.991 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 20-Mar-98 | 8 | 46 | 0.6063 | 0.270 | 2.081 | 0.990 |
| 18-Oct-95 | 8 | 47 | 0.6196 | 0.304 | 2.093 | 0.990 |
| 30-Jan-97 | 8 | 48 | 0.6329 | 0.340 | 2.093 | 0.990 |
| 9-Nov-97 | 9 | 49 | 0.6462 | 0.375 | 2.190 | 0.991 |
| 13-Dec-96 | 10 | 50 | 0.6595 | 0.411 | 2.260 | 0.991 |
| 7-Jun-94 | 10 | 51 | 0.6728 | 0.448 | 2.292 | 0.991 |
| 26-Sep-96 | 10 | 52 | 0.6860 | 0.485 | 2.330 | 0.990 |
| 14-Aug-97 | 11 | 53 | 0.6993 | 0.522 | 2.396 | 0.990 |
| 26-Jun-98 | 12 | 54 | 0.7126 | 0.561 | 2.452 | 0.989 |
| 21-Aug-96 | 12 | 55 | 0.7259 | 0.601 | 2.468 | 0.988 |
| 27-Dec-95 | 12 | 56 | 0.7392 | 0.641 | 2.522 | 0.987 |
| 24-Jul-96 | 13 | 57 | 0.7525 | 0.682 | 2.543 | 0.986 |
| 16-Apr-97 | 14 | 58 | 0.7658 | 0.725 | 2.616 | 0.985 |
| 13-Jun-95 | 14 | 59 | 0.7791 | 0.769 | 2.639 | 0.983 |
| 19-May-94 | 14 | 60 | 0.7924 | 0.815 | 2.658 | 0.982 |
| 21-Feb-97 | 15 | 61 | 0.8056 | 0.862 | 2.699 | 0.980 |
| 22-Mar-95 | 16 | 62 | 0.8189 | 0.911 | 2.757 | 0.979 |
| 4-May-94 | 17 | 63 | 0.8322 | 0.963 | 2.817 | 0.977 |
| 28-Mar-96 | 19 | 64 | 0.8455 | 1.017 | 2.923 | 0.975 |
| 21-Nov-95 | 20 | 65 | 0.8588 | 1.075 | 2.982 | 0.971 |
| 4-Sep-97 | 21 | 66 | 0.8721 | 1.136 | 3.037 | 0.967 |
| 24-Jun-97 | 21 | 67 | 0.8854 | 1.202 | 3.061 | 0.962 |
| 29-Oct-96 | 22 | 68 | 0.8987 | 1.274 | 3.091 | 0.954 |
| 29-Feb-96 | 27 | 69 | 0.9120 | 1.353 | 3.291 | 0.946 |
| 14-May-98 | 28 | 70 | 0.9252 | 1.441 | 3.349 | 0.945 |
| 19-Jun-96 | 29 | 71 | 0.9385 | 1.543 | 3.356 | 0.946 |
| 8-May-96 | 29 | 72 | 0.9518 | 1.663 | 3.365 | |
| 23-Jul-97 | 39 | 73 | 0.9651 | 1.813 | 3.674 | |
| 26-Mar-97 | 49 | 74 | 0.9784 | 2.022 | 3.888 | |
| 17-Jan-96 | 61 | 75 | 0.9917 | 2.395 | 4.112 | |

update for EV, CV:

| dPb | | CC287 | | |
|---|---|---|---|---|
| LN Analysis | | dPb | | |
| **Concentration** | | Conc. Data, EV=48 ug/L CV=.63 | | |
| Avg: | 48 | Data-based LN | | |
| SD: | 30 | u | ln[dPb] | [dPb] |
| CV: | 0.63 | 3 | 5.4 | 229 |
| Min: | 20 | 0 | 3.70 | 41 |
| Max: | 223 | -3 | 1.97 | 7 |
| Median: | 42 | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **$r^2$=0.896, EV=47.5 ug/L CV=.47; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.896 | u | lnConc. | Conc. |
| slope, m: | 2.234 | 3 | 5.10 | 165 |
| intercept, b: | -8.401 | 0 | 3.76 | 43 |
| N: | 75 | -3 | 2.42 | 11 |
| E[Conc]: | 47.5 | Parameter Estimates | | |
| SD[Conc]: | 22 | from LN regression | | |
| CV[Conc]: | 0.47 | update graph label | | |

| Date | dPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.971 r2 forward |
|---|---|---|---|---|---|---|
| | | N 75 | | | | |
| update and rank for new data | | | | | | |
| 5-Oct-91 | 20 | 1 | 0.0083 | -2.395 | 2.996 | 0.896 |
| 8-Mar-95 | 22 | 2 | 0.0216 | -2.022 | 3.091 | 0.895 |
| 25-Apr-95 | 22 | 3 | 0.0349 | -1.813 | 3.091 | 0.893 |
| 14-May-98 | 25.7 | 4 | 0.0482 | -1.663 | 3.246 | 0.889 |
| 19-May-94 | 26 | 5 | 0.0615 | -1.543 | 3.258 | 0.889 |
| 9-Feb-95 | 26 | 6 | 0.0748 | -1.441 | 3.258 | 0.889 |
| 27-Jun-95 | 26 | 7 | 0.0880 | -1.353 | 3.258 | 0.887 |
| 12-Apr-95 | 27 | 8 | 0.1013 | -1.274 | 3.296 | 0.885 |
| 13-Jun-95 | 27 | 9 | 0.1146 | -1.202 | 3.296 | 0.883 |
| 4-May-94 | 28 | 10 | 0.1279 | -1.136 | 3.332 | 0.880 |
| 23-Feb-99 | 28 | 11 | 0.1412 | -1.075 | 3.332 | 0.877 |
| 7-Jun-94 | 29 | 12 | 0.1545 | -1.017 | 3.367 | 0.874 |
| 16-Oct-94 | 31 | 13 | 0.1678 | -0.963 | 3.434 | 0.872 |
| 8-Mar-99 | 31 | 14 | 0.1811 | -0.911 | 3.434 | 0.871 |
| 24-Jun-97 | 32 | 15 | 0.1944 | -0.862 | 3.466 | 0.870 |
| 25-Jul-95 | 33 | 16 | 0.2076 | -0.815 | 3.497 | 0.870 |
| 30-Nov-93 | 34 | 17 | 0.2209 | -0.769 | 3.526 | 0.870 |
| 23-Jun-94 | 34 | 18 | 0.2342 | -0.725 | 3.526 | 0.872 |
| 22-Mar-95 | 34 | 19 | 0.2475 | -0.682 | 3.526 | 0.873 |
| 11-Jul-95 | 34 | 20 | 0.2608 | -0.641 | 3.526 | 0.874 |
| 26-Jun-98 | 34 | 21 | 0.2741 | -0.601 | 3.526 | 0.874 |
| 26-Oct-98 | 34 | 22 | 0.2874 | -0.561 | 3.526 | 0.873 |
| 7-Apr-94 | 35 | 23 | 0.3007 | -0.522 | 3.555 | 0.872 |
| 18-Feb-94 | 36 | 24 | 0.3140 | -0.485 | 3.584 | 0.872 |
| 13-Sep-94 | 36 | 25 | 0.3272 | -0.448 | 3.584 | 0.873 |
| 14-Aug-95 | 36 | 26 | 0.3405 | -0.411 | 3.584 | 0.874 |
| 19-Jun-96 | 36 | 27 | 0.3538 | -0.375 | 3.584 | 0.874 |
| 24-Mar-94 | 37 | 28 | 0.3671 | -0.340 | 3.611 | 0.873 |
| 20-Jan-94 | 38 | 29 | 0.3804 | -0.304 | 3.638 | 0.873 |
| 20-Jan-94 | 38 | 30 | 0.3937 | -0.270 | 3.638 | 0.875 |
| 8-Mar-94 | 38 | 31 | 0.4070 | -0.235 | 3.638 | 0.875 |
| 13-Sep-95 | 38 | 32 | 0.4203 | -0.201 | 3.638 | 0.876 |
| 15-Jan-99 | 38 | 33 | 0.4336 | -0.167 | 3.638 | 0.875 |
| 13-Dec-94 | 39 | 34 | 0.4468 | -0.134 | 3.664 | 0.875 |
| 1-Oct-98 | 39 | 35 | 0.4601 | -0.100 | 3.664 | 0.875 |
| 16-Nov-94 | 40 | 36 | 0.4734 | -0.067 | 3.689 | 0.874 |
| 10-Jan-95 | 40 | 37 | 0.4867 | -0.033 | 3.689 | 0.874 |
| 25-Jul-94 | 42 | 38 | 0.5000 | 0.000 | 3.738 | 0.874 |
| 26-Feb-98 | 42 | 39 | 0.5133 | 0.033 | 3.738 | 0.877 |
| 26-Aug-98 | 42 | 40 | 0.5266 | 0.067 | 3.738 | 0.879 |
| 19-Dec-97 | 43 | 41 | 0.5399 | 0.100 | 3.761 | 0.880 |
| 22-Jan-98 | 44 | 42 | 0.5532 | 0.134 | 3.784 | 0.882 |
| 21-Nov-95 | 45 | 43 | 0.5664 | 0.167 | 3.807 | 0.886 |
| 29-Feb-96 | 45 | 44 | 0.5797 | 0.201 | 3.807 | 0.892 |
| 20-Mar-98 | 45 | 45 | 0.5930 | 0.235 | 3.807 | 0.896 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8-Oct-98 | 45 | 46 | 0.6063 | 0.270 | 3.807 | 0.901 |
| 17-Dec-93 | 46 | 47 | 0.6196 | 0.304 | 3.829 | 0.905 |
| 17-Dec-93 | 46 | 48 | 0.6329 | 0.340 | 3.829 | 0.910 |
| 16-Aug-94 | 46 | 49 | 0.6462 | 0.375 | 3.829 | 0.914 |
| 16-Aug-94 | 46 | 50 | 0.6595 | 0.411 | 3.829 | 0.918 |
| 16-Apr-97 | 46 | 51 | 0.6728 | 0.448 | 3.829 | 0.921 |
| 28-Jul-98 | 46 | 52 | 0.6860 | 0.485 | 3.829 | 0.923 |
| 18-Oct-95 | 48 | 53 | 0.6993 | 0.522 | 3.871 | 0.924 |
| 30-Jan-97 | 48 | 54 | 0.7126 | 0.561 | 3.871 | 0.928 |
| 26-Nov-97 | 49 | 55 | 0.7259 | 0.601 | 3.892 | 0.930 |
| 24-Sep-98 | 50 | 56 | 0.7392 | 0.641 | 3.912 | 0.933 |
| 9-Nov-97 | 50.8 | 57 | 0.7525 | 0.682 | 3.928 | 0.937 |
| 27-Nov-96 | 51 | 58 | 0.7658 | 0.725 | 3.932 | 0.941 |
| 28-Mar-96 | 53 | 59 | 0.7791 | 0.769 | 3.970 | 0.944 |
| 14-Aug-97 | 54 | 60 | 0.7924 | 0.815 | 3.989 | 0.949 |
| 25-Nov-98 | 54 | 61 | 0.8056 | 0.862 | 3.989 | 0.955 |
| 27-Oct-93 | 55 | 62 | 0.8189 | 0.911 | 4.007 | 0.958 |
| 27-Dec-95 | 55 | 63 | 0.8322 | 0.963 | 4.007 | 0.962 |
| 16-Oct-97 | 57 | 64 | 0.8455 | 1.017 | 4.043 | 0.962 |
| 13-Dec-96 | 60 | 65 | 0.8588 | 1.075 | 4.094 | 0.962 |
| 26-Mar-97 | 63 | 66 | 0.8721 | 1.136 | 4.143 | 0.964 |
| 8-May-96 | 66 | 67 | 0.8854 | 1.202 | 4.190 | 0.967 |
| 24-Jul-96 | 66 | 68 | 0.8987 | 1.274 | 4.190 | 0.971 |
| 23-Jul-97 | 66 | 69 | 0.9120 | 1.353 | 4.190 | 0.968 |
| 21-Feb-97 | 71 | 70 | 0.9252 | 1.441 | 4.263 | 0.960 |
| 21-Aug-96 | 94 | 71 | 0.9385 | 1.543 | 4.543 | 0.955 |
| 26-Sep-96 | 98 | 72 | 0.9518 | 1.663 | 4.585 | |
| 4-Sep-97 | 114 | 73 | 0.9651 | 1.813 | 4.736 | |
| 29-Oct-96 | 174 | 74 | 0.9784 | 2.022 | 5.159 | |
| 17-Jan-96 | 223 | 75 | 0.9917 | 2.395 | 5.407 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dPb** | | **CC287** | | |
| **LN Analysis** | | **dPb** | | |
| **Discharge, Q** | | **Q Data, EV=41 cfs CV=0.92** | | |
| **Avg:** | **41** | **Q Data-based LN** | | |
| **SD:** | **38** | u | lnQ | Q |
| **CV:** | **0.92** | 3 | 5.8 | 317 |
| **Min:** | **11** | 0 | 3.41 | 30 |
| **Max:** | **206** | -3 | 1.06 | 3 |
| **Median:** | **26** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.936, EV=40.8 cfs CV=.88; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.936 | u | lnQ | Q |
| slope, m: | 1.316 | 3 | 5.70 | 299 |
| intercept, b: | -4 498 | 0 | 3.42 | 31 |
| N: | 75 | -3 | 1.14 | 3 |
| E[Q]: | 40.8 | Parameter Estimates | | |
| SD[Q]: | 36 | from LN regression | | |
| CV[Q] | 0.88 | update graph label | | |

N: 75

max r2 0.979

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 11.4 | 1 | 0.0083 | -2.395 | 2.434 | 0.936 |
| 18-Feb-94 | 11.41 | 2 | 0.0216 | -2.022 | 2.434 | 0.950 |
| 17-Dec-93 | 11.7 | 3 | 0.0349 | -1.813 | 2.460 | 0.956 |
| 17-Dec-93 | 12.03 | 4 | 0.0482 | -1.663 | 2.487 | 0.960 |
| 14-Aug-95 | 12.6 | 5 | 0.0615 | -1.543 | 2.534 | 0.964 |
| 30-Nov-93 | 12.62 | 6 | 0.0748 | -1 441 | 2.535 | 0.966 |
| 27-Oct-93 | 13.28 | 7 | 0.0880 | -1.353 | 2.586 | 0.968 |
| 20-Jan-94 | 13.28 | 8 | 0.1013 | -1.274 | 2.586 | 0.970 |
| 16-Aug-94 | 13.57 | 9 | 0.1146 | -1.202 | 2.608 | 0.972 |
| 16-Oct-94 | 14.34 | 10 | 0.1279 | -1.136 | 2.663 | 0.973 |
| 5-Oct-91 | 14.5 | 11 | 0.1412 | -1.075 | 2.674 | 0.974 |
| 20-Jan-94 | 14.66 | 12 | 0.1545 | -1.017 | 2.685 | 0.975 |
| 25-Jul-95 | 14.71 | 13 | 0.1678 | -0.963 | 2.689 | 0.976 |
| 13-Sep-94 | 15.89 | 14 | 0.1811 | -0.911 | 2.766 | 0.977 |
| 16-Nov-94 | 15.89 | 15 | 0.1944 | -0.862 | 2.766 | 0.978 |
| 8-Oct-98 | 15.9 | 16 | 0.2076 | -0.815 | 2.766 | 0.978 |
| 16-Aug-94 | 16.3 | 17 | 0.2209 | -0.769 | 2.791 | 0.979 |
| 1-Oct-98 | 16.7 | 18 | 0.2342 | -0.725 | 2.815 | 0.979 |
| 26-Oct-98 | 16.7 | 19 | 0.2475 | -0.682 | 2.815 | 0.979 |
| 13-Dec-94 | 17.17 | 20 | 0.2608 | -0.641 | 2.843 | 0.979 |
| 24-Sep-98 | 17.2 | 21 | 0.2741 | -0.601 | 2.845 | 0.979 |
| 22-Jan-98 | 18.1 | 22 | 0.2874 | -0.561 | 2.896 | 0.978 |
| 25-Jul-94 | 19.04 | 23 | 0.3007 | -0.522 | 2.947 | 0 978 |
| 26-Sep-96 | 19.5 | 24 | 0.3140 | -0.485 | 2.970 | 0.978 |
| 26-Aug-98 | 19.5 | 25 | 0.3272 | -0.448 | 2.970 | 0.978 |
| 23-Feb-99 | 20 | 26 | 0.3405 | -0.411 | 2.996 | 0.978 |
| 11-Jul-95 | 20.05 | 27 | 0.3538 | -0.375 | 2.998 | 0.978 |
| 24-Mar-94 | 21.13 | 28 | 0.3671 | -0.340 | 3.051 | 0.977 |
| 27-Nov-96 | 21.7 | 29 | 0.3804 | -0.304 | 3.077 | 0.977 |
| 8-Mar-94 | 22.26 | 30 | 0.3937 | -0.270 | 3.103 | 0.976 |
| 26-Feb-98 | 22.3 | 31 | 0.4070 | -0.235 | 3.105 | 0.976 |
| 8-Mar-99 | 23 | 32 | 0.4203 | -0.201 | 3.135 | 0.975 |
| 21-Aug-96 | 23.342375 | 33 | 0.4336 | -0.167 | 3.150 | 0.975 |
| 29-Oct-96 | 23.5 | 34 | 0.4468 | -0.134 | 3.157 | 0.974 |
| 19-Dec-97 | 24.1 | 35 | 0.4601 | -0.100 | 3.182 | 0.973 |
| 28-Jul-98 | 24.7 | 36 | 0.4734 | -0.067 | 3.207 | 0.972 |
| 16-Oct-97 | 25.4 | 37 | 0.4867 | -0.033 | 3.235 | 0.971 |
| 25-Nov-98 | 26 | 38 | 0.5000 | 0.000 | 3.258 | 0.969 |
| 10-Jan-95 | 28.21 | 39 | 0.5133 | 0.033 | 3.340 | 0.968 |
| 23-Jun-94 | 28.96 | 40 | 0.5266 | 0.067 | 3.366 | 0.967 |
| 13-Dec-96 | 29.7 | 41 | 0.5399 | 0.100 | 3.391 | 0.966 |
| 26-Nov-97 | 29 7 | 42 | 0.5532 | 0.134 | 3.391 | 0.965 |
| 18-Oct-95 | 31.4 | 43 | 0.5664 | 0.167 | 3.447 | 0.963 |
| 30-Jan-97 | 31.4 | 44 | 0.5797 | 0.201 | 3.447 | 0.962 |
| 9-Nov-97 | 32.7 | 45 | 0.5930 | 0.235 | 3.487 | 0.960 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15-Jan-99 | 33 | 46 | 0.6063 | 0.270 | 3.497 | 0.959 |
| 20-Mar-98 | 33.1 | 47 | 0.6196 | 0.304 | 3.500 | 0.956 |
| 4-Sep-97 | 34 | 48 | 0.6329 | 0.340 | 3.526 | 0.954 |
| 27-Jun-95 | 34.9 | 49 | 0.6462 | 0.375 | 3.552 | 0.951 |
| 24-Jul-96 | 35.8 | 50 | 0.6595 | 0.411 | 3.578 | 0.948 |
| 8-Mar-95 | 36.82 | 51 | 0.6728 | 0.448 | 3.606 | 0.944 |
| 14-Aug-97 | 37.8 | 52 | 0.6860 | 0.485 | 3.632 | 0.940 |
| 7-Apr-94 | 37.82 | 53 | 0.6993 | 0.522 | 3.633 | 0.936 |
| 21-Feb-97 | 38.9 | 54 | 0.7126 | 0.561 | 3.661 | 0.932 |
| 27-Dec-95 | 42.1 | 55 | 0.7259 | 0.601 | 3.740 | 0.929 |
| 12-Apr-95 | 42.13 | 56 | 0.7392 | 0.641 | 3.741 | 0.924 |
| 25-Apr-95 | 43 | 57 | 0.7525 | 0.682 | 3.761 | 0.922 |
| 9-Feb-95 | 43.28 | 58 | 0.7658 | 0.725 | 3.768 | 0.923 |
| 17-Jan-96 | 50.9 | 59 | 0.7791 | 0.769 | 3.930 | 0.938 |
| 16-Apr-97 | 55.3 | 60 | 0.7924 | 0.815 | 4.013 | 0.943 |
| 7-Jun-94 | 63.45 | 61 | 0.8056 | 0.862 | 4.150 | 0.948 |
| 26-Jun-98 | 63.5 | 62 | 0.8189 | 0.911 | 4.151 | 0.944 |
| 28-Mar-96 | 65.2 | 63 | 0.8322 | 0.963 | 4.177 | 0.949 |
| 21-Nov-95 | 81.5 | 64 | 0.8455 | 1.017 | 4.401 | 0.973 |
| 8-May-96 | 81.5 | 65 | 0.8588 | 1.075 | 4.401 | 0.969 |
| 22-Mar-95 | 86.16 | 66 | 0.8721 | 1.136 | 4.456 | 0.968 |
| 13-Jun-95 | 96.41 | 67 | 0.8854 | 1.202 | 4.569 | 0.968 |
| 19-May-94 | 102.01 | 68 | 0.8987 | 1.274 | 4.625 | 0.962 |
| 29-Feb-96 | 111 | 69 | 0.9120 | 1.353 | 4.710 | 0.955 |
| 23-Jul-97 | 111 | 70 | 0.9252 | 1.441 | 4.710 | 0.968 |
| 4-May-94 | 111.05 | 71 | 0.9385 | 1.543 | 4.710 | 0.966 |
| 24-Jun-97 | 124 | 72 | 0.9518 | 1.663 | 4.820 | |
| 26-Mar-97 | 144 | 73 | 0.9651 | 1.813 | 4.970 | |
| 19-Jun-96 | 148 | 74 | 0.9784 | 2.022 | 4.997 | |
| 14-May-98 | 206 | 75 | 0.9917 | 2.395 | 5.328 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC287 **Date:** 29-May-00

**Chemical:** dZn **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| Avg: | 35,150 | 41 | 3,038 | 531 | | 0.00 | 0.00 | 0.00 |
| SD: | 626 | 38 | 1,433 | 401 | | 1.00 | 1.00 | 1.00 |
| CV: | 0.02 | 0.92 | 0.47 | 0.76 | | | | |
| Min: | 33,516 | 11 | 688 | 142 | | -0.79 | -1.64 | -0.97 |
| Max: | 36,227 | 206 | 7,240 | 2,998 | | 4.36 | 2.93 | 6.15 |
| Median: | 35,081 | 26 | 2,780 | 459 | | -0.40 | -0.18 | -0.18 |

**dZn CC287 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

**Conc. = mQ+b (r2=0.24)** update r2

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 Q,[COC]: | 0.24 | [dZn] | Q | r2 | 0.015 | 0.033 |
| slope, m: | -18.4 | 3,586 | 11.4 | m: | 0.0075 | 0.00021 |
| intercept, b | 3795.7 | 3,038 | 41.1 | b: | -222 | -3.98 |
| N: 75 | | -3 | 206 | | | |

**LnConc. = mLn(Q)+b (r2=0.38)** update r2

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.38 | ln[dZn] | ln Q | [dZn] | Q | |
| slope, m: | -0.44 | 8.33 | 2.43 | 4,165 | 11 | |
| intercept, b: | 9.41 | 7.77 | 3.72 | 2,361 | 41 | |
| N: 75 | | 7.05 | 5.33 | 1,156 | 206 | |

N= 75

| update for new data | Sampling Date | Q Discharge cfs | dZn Concentration ug/L | dZn Load lbs/day | Ln Q | Ln dZn Conc. | Ln dZn Load | for graph 0 dZn CC287 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 5-Oct-91 | 14.5 | 3440 | 268 | 2.67 | 8.14 | 5.59 | -0.70 | 0.28 | -0.65 |
| IDEQ | 27-Oct-93 | 13.28 | 3470 | 248 | 2.59 | 8.15 | 5.51 | -0.74 | 0.30 | -0.70 |
| IDEQ | 30-Nov-93 | 12.62 | 3980 | 270 | 2.54 | 8.29 | 5.60 | -0.75 | 0.66 | -0.65 |
| IDEQ | 17-Dec-93 | 11.7 | 5440 | 342 | 2.46 | 8.60 | 5.84 | -0.78 | 1.68 | -0.47 |
| IDEQ | 17-Dec-93 | 12.03 | 5440 | 352 | 2.49 | 8.60 | 5.86 | -0.77 | 1.68 | -0.45 |
| IDEQ | 20-Jan-94 | 13.28 | 5240 | 374 | 2.59 | 8.56 | 5.93 | -0.74 | 1.54 | -0.39 |
| IDEQ | 20-Jan-94 | 14.66 | 5240 | 413 | 2.69 | 8.56 | 6.02 | -0.70 | 1.54 | -0.29 |
| IDEQ | 18-Feb-94 | 11.41 | 4740 | 291 | 2.43 | 8.46 | 5.67 | -0.78 | 1.19 | -0.60 |
| IDEQ | 8-Mar-94 | 22.26 | 4440 | 532 | 3.10 | 8.40 | 6.28 | -0.50 | 0.98 | 0.00 |
| IDEQ | 24-Mar-94 | 21.13 | 4660 | 530 | 3.05 | 8.45 | 6.27 | -0.53 | 1.13 | 0.00 |
| IDEQ | 7-Apr-94 | 37.82 | 2440 | 496 | 3.63 | 7.80 | 6.21 | -0.09 | -0.42 | -0.09 |
| IDEQ | 4-May-94 | 111.05 | 1200 | 717 | 4.71 | 7.09 | 6.57 | 1.85 | -1.28 | 0.46 |
| IDEQ | 19-May-94 | 102.01 | 1010 | 554 | 4.63 | 6.92 | 6.32 | 1.61 | -1.42 | 0.06 |
| IDEQ | 7-Jun-94 | 63.45 | 1570 | 536 | 4.15 | 7.36 | 6.28 | 0.59 | -1.02 | 0.01 |
| IDEQ | 23-Jun-94 | 28.96 | 1720 | 268 | 3.37 | 7.45 | 5.59 | -0.32 | -0.92 | -0.65 |
| IDEQ | 25-Jul-94 | 19.04 | 2490 | 255 | 2.95 | 7.82 | 5.54 | -0.58 | -0.38 | -0.69 |
| IDEQ | 16-Aug-94 | 16.3 | 2940 | 258 | 2.79 | 7.99 | 5.55 | -0.66 | -0.07 | -0.68 |
| IDEQ | 16-Aug-94 | 13.57 | 2940 | 215 | 2.61 | 7.99 | 5.37 | -0.73 | -0.07 | -0.79 |
| IDEQ | 13-Sep-94 | 15.89 | 3020 | 258 | 2.77 | 8.01 | 5.55 | -0.67 | -0.01 | -0.68 |
| IDEQ | 16-Oct-94 | 14.34 | 3480 | 268 | 2.66 | 8.15 | 5.59 | -0.71 | 0.31 | -0.65 |
| IDEQ | 16-Nov-94 | 15.89 | 5610 | 480 | 2.77 | 8.63 | 6.17 | -0.67 | 1.79 | -0.13 |
| IDEQ | 13-Dec-94 | 17.17 | 6730 | 622 | 2.84 | 8.81 | 6.43 | -0.63 | 2.58 | 0.23 |
| IDEQ | 10-Jan-95 | 28.21 | 6370 | 967 | 3.34 | 8.76 | 6.87 | -0.34 | 2.33 | 1.09 |
| IDEQ | 9-Feb-95 | 43.28 | 3380 | 787 | 3.77 | 8.13 | 6.67 | 0.06 | 0.24 | 0.64 |
| IDEQ | 8-Mar-95 | 36.82 | 2550 | 505 | 3.61 | 7.84 | 6.22 | -0.11 | -0.34 | -0.06 |
| IDEQ | 22-Mar-95 | 86.16 | 3640 | 1687 | 4.46 | 8.20 | 7.43 | 1.19 | 0.42 | 2.88 |
| IDEQ | 12-Apr-95 | 42.13 | 2500 | 567 | 3.74 | 7.82 | 6.34 | 0.03 | -0.38 | 0.09 |
| IDEQ | 25-Apr-95 | 43 | 2100 | 486 | 3.76 | 7.65 | 6.19 | 0.05 | -0.65 | -0.11 |
| IDEQ | 13-Jun-95 | 96.41 | 906 | 470 | 4.57 | 6.81 | 6.15 | 1.46 | -1.49 | -0.15 |
| IDEQ | 27-Jun-95 | 34.9 | 1260 | 237 | 3.55 | 7.14 | 5.47 | -0.16 | -1.24 | -0.73 |
| IDEQ | 11-Jul-95 | 20.05 | 1700 | 183 | 3.00 | 7.44 | 5.21 | -0.56 | -0.93 | -0.87 |
| IDEQ | 25-Jul-95 | 14.71 | 1790 | 142 | 2.69 | 7.49 | 4.95 | -0.70 | -0.87 | -0.97 |
| IDEQ | 14-Aug-95 | 12.6 | 2580 | 175 | 2.53 | 7.86 | 5.16 | -0.75 | -0.32 | -0.89 |
| IDEQ | 13-Sep-95 | 11 4 | 2800 | 172 | 2.43 | 7.94 | 5.15 | -0.79 | -0.17 | -0.89 |
| IDEQ | 18-Oct-95 | 31.4 | 2930 | 495 | 3.45 | 7.98 | 6.20 | -0.26 | -0.08 | -0.09 |
| IDEQ | 21-Nov-95 | 81.5 | 1670 | 732 | 4 40 | 7 42 | 6.60 | 1.07 | -0.95 | 0.50 |
| IDEQ | 27-Dec-95 | 42.1 | 2580 | 584 | 3 74 | 7.86 | 6.37 | 0.03 | -0.32 | 0.13 |
| IDEQ | 17-Jan-96 | 50.9 | 3870 | 1060 | 3.93 | 8.26 | 6.97 | 0.26 | 0.58 | 1.32 |
| IDEQ | 29-Feb-96 | 111 | 2310 | 1379 | 4.71 | 7.75 | 7.23 | 1.85 | -0.51 | 2.12 |
| IDEQ | 28-Mar-96 | 65.2 | 2220 | 779 | 4.18 | 7.71 | 6.66 | 0.64 | -0.57 | 0.62 |
| IDEQ | 8-May-96 | 81.5 | 1650 | 723 | 4.40 | 7.41 | 6.58 | 1.07 | -0.97 | 0.48 |
| IDEQ | 19-Jun-96 | 148 | 843 | 671 | 5.00 | 6.74 | 6.51 | 2.83 | -1.53 | 0.35 |
| IDEQ | 24-Jul-96 | 35.8 | 1550 | 299 | 3.58 | 7.35 | 5.70 | -0.14 | -1.04 | -0.58 |
| IDEQ | 21-Aug-96 | 23.342375 | 2620 | 329 | 3.15 | 7.87 | 5.80 | -0.47 | -0.29 | -0.50 |
| IDEQ | 26-Sep-96 | 19.5 | 2640 | 277 | 2.97 | 7.88 | 5.62 | -0.57 | -0.28 | -0.63 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 29-Oct-96 | 23.5 | 3780 | 478 | 3.16 | 8.24 | 6.17 | -0.47 | 0.52 | -0.13 |
| IDEQ | 27-Nov-96 | 21.7 | 4530 | 529 | 3.08 | 8.42 | 6.27 | -0.51 | 1.04 | 0.00 |
| IDEQ | 13-Dec-96 | 29.7 | 5430 | 868 | 3.39 | 8.60 | 6.77 | -0.30 | 1.67 | 0.84 |
| IDEQ | 30-Jan-97 | 31.4 | 3590 | 606 | 3.45 | 8.19 | 6.41 | -0.26 | 0.39 | 0.19 |
| IDEQ | 21-Feb-97 | 38.9 | 4140 | 866 | 3.66 | 8.33 | 6.76 | -0.06 | 0.77 | 0.84 |
| IDEQ | 26-Mar-97 | 144 | 3870 | 2998 | 4.97 | 8.26 | 8.01 | 2.72 | 0.58 | 6.15 |
| IDEQ | 16-Apr-97 | 55.3 | 3380 | 1006 | 4.01 | 8.13 | 6.91 | 0.38 | 0.24 | 1.18 |
| IDEQ | 24-Jun-97 | 124 | 797 | 532 | 4.82 | 6.68 | 6.28 | 2.19 | -1.56 | 0.00 |
| IDEQ | 23-Jul-97 | 111 | 1260 | 752 | 4.71 | 7.14 | 6.62 | 1.85 | -1.24 | 0.55 |
| IDEQ | 14-Aug-97 | 37.8 | 2010 | 409 | 3.63 | 7.61 | 6.01 | -0.09 | -0.72 | -0.30 |
| IDEQ | 4-Sep-97 | 34 | 2390 | 437 | 3.53 | 7.78 | 6.08 | -0.19 | -0.45 | -0.21 |
| IDEQ | 16-Oct-97 | 25.4 | 2750 | 376 | 3.23 | 7.92 | 5.93 | -0.41 | -0.20 | -0.39 |
| URS | 9-Nov-97 | 32.7 | 2610 | 459 | 3.49 | 7.87 | 6.13 | -0.22 | -0.30 | -0.18 |
| IDEQ | 26-Nov-97 | 29.7 | 2840 | 454 | 3.39 | 7.95 | 6.12 | -0.30 | -0.14 | -0.19 |
| IDEQ | 19-Dec-97 | 24.1 | 3340 | 433 | 3.18 | 8.11 | 6.07 | -0.45 | 0.21 | -0.24 |
| IDEQ | 22-Jan-98 | 18.1 | 3320 | 323 | 2.90 | 8.11 | 5.78 | -0.61 | 0.20 | -0.52 |
| IDEQ | 26-Feb-98 | 22.3 | 3560 | 427 | 3.10 | 8.18 | 6.06 | -0.50 | 0.36 | -0.26 |
| IDEQ | 20-Mar-98 | 33.1 | 2780 | 495 | 3.50 | 7.93 | 6.20 | -0.21 | -0.18 | -0.09 |
| URS | 14-May-98 | 206 | 688 | 762 | 5.33 | 6.53 | 6.64 | 4.36 | -1.64 | 0.58 |
| IDEQ | 26-Jun-98 | 63.5 | 1220 | 417 | 4.15 | 7.11 | 6.03 | 0.59 | -1.27 | -0.28 |
| IDEQ | 28-Jul-98 | 24.7 | 1720 | 229 | 3.21 | 7.45 | 5.43 | -0.43 | -0.92 | -0.75 |
| IDEQ | 26-Aug-98 | 19.5 | 2110 | 221 | 2.97 | 7.65 | 5.40 | -0.57 | -0.65 | -0.77 |
| IDEQ | 24-Sep-98 | 17.2 | 2260 | 209 | 2.84 | 7.72 | 5.34 | -0.63 | -0.54 | -0.80 |
| IDEQ | 1-Oct-98 | 16.7 | 2270 | 204 | 2.82 | 7.73 | 5.32 | -0.64 | -0.54 | -0.81 |
| IDEQ | 8-Oct-98 | 15.9 | 2700 | 231 | 2.77 | 7.90 | 5.44 | -0.67 | -0.24 | -0.75 |
| IDEQ | 26-Oct-98 | 16.7 | 2270 | 204 | 2.82 | 7.73 | 5.32 | -0.64 | -0.54 | -0.81 |
| IDEQ | 25-Nov-98 | 26 | 7240 | 1013 | 3.26 | 8.89 | 6.92 | -0.40 | 2.93 | 1.20 |
| IDEQ | 15-Jan-99 | 33 | 3660 | 650 | 3.50 | 8.21 | 6.48 | -0.21 | 0.43 | 0.30 |
| IDEQ | 23-Feb-99 | 20 | 3770 | 406 | 3.00 | 8.23 | 6.01 | -0.56 | 0.51 | -0.31 |
| IDEQ | 8-Mar-99 | 23 | 3880 | 559 | 3.14 | 8.26 | 6.33 | -0.48 | 0.59 | 0.07 |

**dZn**

**Concentration over time analysis**

| | dZn | CC287 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.026** | **-0.00013** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 5-Oct-91 | 8.12 | 3,348 | | |
| mid: | 17-Jan-96 | 7.91 | 2,718 | | |
| last: | 8-Mar-99 | 7.75 | 2,333 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.019** | **0.00031** |
| | 21-Feb-97 | 7.70 | 2,213 | | |
| | 8-Mar-99 | 7.93 | 2,791 | | |

**Load over time analysis**

| | dZn | CC287 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.008** | **0.00008** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 5-Oct-91 | 5.96 | 387 | | |
| mid: | 17-Jan-96 | 6.09 | 441 | | |
| last: | 8-Mar-99 | 6.18 | 484 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.245** | **-0.00134** |
| | 21-Feb-97 | 6.66 | 781 | | |
| | 8-Mar-99 | 5.66 | 287 | | |

max r2: 0.703

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.026 | -0.00013 | 12.58 |
| 0.023 | -0.00013 | 12.52 |
| 0.021 | -0.00013 | 12.35 |
| 0.017 | -0.00012 | 11.99 |
| 0.011 | -0.00009 | 11.19 |
| 0.006 | -0 00007 | 10.31 |
| 0.003 | -0.00004 | 9.43 |
| 0.000 | -0.00002 | 8.45 |
| 0.000 | 0.00001 | 7.56 |
| 0.001 | 0.00003 | 6.69 |
| 0.004 | 0 00006 | 5.67 |
| 0.004 | 0.00006 | 5.62 |
| 0.001 | 0.00003 | 6.75 |
| 0.000 | -0.00001 | 8.29 |
| 0.002 | -0.00004 | 9 19 |
| 0.004 | -0.00006 | 10.00 |
| 0.005 | -0.00007 | 10.17 |
| 0.004 | -0.00006 | 10.03 |
| 0.003 | -0.00006 | 9.86 |
| 0.002 | -0.00005 | 9.61 |
| 0.001 | -0.00003 | 9.02 |
| 0.000 | 0.00002 | 7.27 |
| 0.006 | 0.00008 | 4.89 |
| 0.021 | 0.00015 | 2.40 |
| 0.030 | 0.00018 | 1.28 |
| 0.033 | 0.00020 | 0.79 |
| 0.046 | 0.00024 | -0.75 |
| 0.051 | 0.00026 | -1.38 |
| 0.050 | 0.00026 | -1.55 |
| 0.027 | 0.00019 | 0.95 |
| 0.015 | 0.00014 | 2.73 |
| 0.009 | 0.00011 | 3.74 |
| 0.005 | 0.00009 | 4.74 |
| 0.006 | 0.00010 | 4.40 |
| 0.008 | 0.00012 | 3.66 |
| 0.011 | 0 00015 | 2.61 |
| 0.005 | 0.00010 | 4.15 |
| 0.006 | 0.00012 | 3.73 |
| 0.015 | 0.00019 | 0.98 |
| 0.015 | 0.00020 | 0.80 |
| 0.013 | 0.00019 | 0.87 |
| 0.006 | 0.00014 | 2.97 |
| 0.001 | -0.00006 | 10 14 |
| 0.010 | -0 00018 | 14.27 |
| 0.012 | -0.00020 | 15.12 |

max r2: 0.466

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.008 | 0.00008 | 3.19 |
| 0.004 | 0.00006 | 4.00 |
| 0.002 | 0.00004 | 4.67 |
| 0.001 | 0.00002 | 5.27 |
| 0.000 | 0.00001 | 5.61 |
| 0.000 | 0.00001 | 5.94 |
| 0.000 | 0.00000 | 6.21 |
| 0.000 | -0.00001 | 6.36 |
| 0.001 | -0.00003 | 7.04 |
| 0.000 | -0.00002 | 6.86 |
| 0.000 | -0.00002 | 6.66 |
| 0.000 | -0.00001 | 6.56 |
| 0.000 | 0.00001 | 5.83 |
| 0.000 | 0.00002 | 5.48 |
| 0.001 | 0.00003 | 5.15 |
| 0.000 | 0.00000 | 6.09 |
| 0.001 | -0.00003 | 7.21 |
| 0.003 | -0.00006 | 8.42 |
| 0.009 | -0.00011 | 10.18 |
| 0.016 | -0.00016 | 11 70 |
| 0.025 | -0.00020 | 13.28 |
| 0.026 | -0.00021 | 13.65 |
| 0.024 | -0.00020 | 13 43 |
| 0.015 | -0.00017 | 12.08 |
| 0.010 | -0.00014 | 11.10 |
| 0.010 | -0.00014 | 11.17 |
| 0.001 | -0.00005 | 7.89 |
| 0.001 | -0.00003 | 7.36 |
| 0.000 | -0.00003 | 7.23 |
| 0.000 | -0.00003 | 7.19 |
| 0.004 | -0.00009 | 9 44 |
| 0.015 | -0.00019 | 12.97 |
| 0.048 | -0.00033 | 18.10 |
| 0.097 | -0.00048 | 23.24 |
| 0.179 | -0.00065 | 29.28 |
| 0.196 | -0.00070 | 31.33 |
| 0.188 | -0.00071 | 31.70 |
| 0.194 | -0.00076 | 33.17 |
| 0.164 | -0.00071 | 31.53 |
| 0.121 | -0.00061 | 27.89 |
| 0.103 | -0.00058 | 26.98 |
| 0.089 | -0.00056 | 26.22 |
| 0.078 | -0.00055 | 25.67 |
| 0.114 | -0.00069 | 30.82 |
| 0.155 | -0.00084 | 36.20 |

| | | | | | |
|---|---|---|---|---|---|
| 0.013 | -0.00023 | 16.03 | 0.227 | -0.00105 | 43.91 |
| 0.007 | -0.00017 | 13.86 | 0.253 | -0.00117 | 48.14 |
| 0.000 | -0.00004 | 9.35 | 0.271 | -0.00128 | 52.08 |
| 0.007 | 0.00018 | 1.46 | 0.244 | -0.00127 | 51.56 |
| 0.019 | 0.00031 | -3.35 | 0.245 | -0.00134 | 54.33 |
| 0.050 | 0.00053 | -11.39 | 0.213 | -0.00131 | 53.00 |
| 0.099 | 0.00079 | -20.62 | 0.106 | -0.00076 | 33.21 |
| 0.161 | 0.00107 | -30.81 | 0.044 | -0.00049 | 23.49 |
| 0.085 | 0.00075 | -18.97 | 0.031 | -0.00043 | 21.49 |
| 0.042 | 0.00053 | -11.13 | 0.006 | -0.00019 | 12.73 |
| 0.030 | 0.00048 | -9.35 | 0.005 | -0.00019 | 12.64 |
| 0.029 | 0.00051 | -10.49 | 0.002 | -0.00014 | 10.93 |
| 0.038 | 0.00063 | -14.80 | 0.003 | -0.00017 | 12.12 |
| 0.045 | 0.00075 | -19.05 | 0.000 | -0.00007 | 8.29 |
| 0.065 | 0.00099 | -27.85 | 0.001 | 0.00009 | 2.81 |
| 0.126 | 0.00153 | -47.46 | 0.004 | 0.00027 | -3.95 |
| 0.230 | 0.00233 | -76.22 | 0.001 | 0.00017 | -0.38 |
| 0.439 | 0.00364 | -123.46 | 0.007 | 0.00045 | -10.18 |
| 0.703 | 0.00548 | -190.09 | 0.041 | 0.00129 | -40.49 |
| 0.595 | 0.00447 | -153.58 | 0.277 | 0.00359 | -123.83 |
| 0.473 | 0.00384 | -130.74 | 0.466 | 0.00533 | -186.49 |
| 0.366 | 0.00347 | -117.15 | 0.456 | 0.00587 | -206.20 |
| 0.282 | 0.00321 | -107.83 | 0.416 | 0.00608 | -213.86 |
| 0.202 | 0.00278 | -92.30 | 0.343 | 0.00567 | -198.96 |
| 0.091 | 0.00190 | -60.64 | 0.222 | 0.00462 | -161.02 |
| 0.012 | 0.00080 | -20.81 | 0.062 | 0.00261 | -88.14 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dZn** | | **CC287** | | |
| **LN Analysis** | | **dZn** | | |
| **Load** | | **Load Data, EV=531 lbs/day CV=.76** | | |
| **Avg:** | **531** | **Load Data-based LN** | | |
| **SD:** | **401** | u | ln dZn Load | dZn Load |
| **CV:** | **0.76** | 3 | 8.1 | 3182 |
| **Min:** | **142** | 0 | 6.05 | 423 |
| **Max:** | **2,998** | -3 | 4.03 | 56 |
| **Median:** | **459** | | | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.974, EV=527.2 lbs/day CV=.64; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.974 | u | lnLoad | Load |
| slope, m: | 1.697 | 3 | 7.86 | 2597 |
| intercept, b: | -10.339 | 0 | 6.09 | 443 |
| N: | 75 | -3 | 4.33 | 76 |
| E[Load] | 527.2 | Parameter Estimates | | |
| SD[Load] | 340 | from LN regression | | |
| CV[Load] | 0.64 | update graph label | | |

N: 75

| Date | dZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.986 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 25-Jul-95 | **142** | 1 | 0.0083 | -2.395 | 4.953 | 0.974 |
| 13-Sep-95 | **172** | 2 | 0.0216 | -2.022 | 5.146 | 0.975 |
| 14-Aug-95 | **175** | 3 | 0.0349 | -1.813 | 5.164 | 0.977 |
| 11-Jul-95 | **183** | 4 | 0.0482 | -1.663 | 5.212 | 0.977 |
| 1-Oct-98 | **204** | 5 | 0.0615 | -1.543 | 5.318 | 0.977 |
| 26-Oct-98 | **204** | 6 | 0.0748 | -1.441 | 5.318 | 0.977 |
| 24-Sep-98 | **209** | 7 | 0.0880 | -1.353 | 5.343 | 0.977 |
| 16-Aug-94 | **215** | 8 | 0.1013 | -1.274 | 5.369 | 0.976 |
| 26-Aug-98 | **221** | 9 | 0.1146 | -1.202 | 5.400 | 0.976 |
| 28-Jul-98 | **229** | 10 | 0.1279 | -1.136 | 5.432 | 0.975 |
| 8-Oct-98 | **231** | 11 | 0.1412 | -1.075 | 5.442 | 0.974 |
| 27-Jun-95 | **237** | 12 | 0.1545 | -1.017 | 5.466 | 0.974 |
| 27-Oct-93 | **248** | 13 | 0.1678 | -0.963 | 5.513 | 0.973 |
| 25-Jul-94 | **255** | 14 | 0.1811 | -0.911 | 5.542 | 0.972 |
| 16-Aug-94 | **258** | 15 | 0.1944 | -0.862 | 5.552 | 0.971 |
| 13-Sep-94 | **258** | 16 | 0.2076 | -0.815 | 5.554 | 0.970 |
| 23-Jun-94 | **268** | 17 | 0.2209 | -0.769 | 5.591 | 0.968 |
| 5-Oct-91 | **268** | 18 | 0.2342 | -0.725 | 5.592 | 0.967 |
| 16-Oct-94 | **268** | 19 | 0.2475 | -0.682 | 5.593 | 0.966 |
| 30-Nov-93 | **270** | 20 | 0.2608 | -0.641 | 5.599 | 0.964 |
| 26-Sep-96 | **277** | 21 | 0.2741 | -0.601 | 5.624 | 0.963 |
| 18-Feb-94 | **291** | 22 | 0.2874 | -0.561 | 5.673 | 0.962 |
| 24-Jul-96 | **299** | 23 | 0.3007 | -0.522 | 5.699 | 0.960 |
| 22-Jan-98 | **323** | 24 | 0.3140 | -0.485 | 5.779 | 0.959 |
| 21-Aug-96 | **329** | 25 | 0.3272 | -0.448 | 5.796 | 0.957 |
| 17-Dec-93 | **342** | 26 | 0.3405 | -0.411 | 5.836 | 0.955 |
| 17-Dec-93 | **352** | 27 | 0.3538 | -0.375 | 5.864 | 0.953 |
| 20-Jan-94 | **374** | 28 | 0.3671 | -0.340 | 5.925 | 0.951 |
| 16-Oct-97 | **376** | 29 | 0.3804 | -0.304 | 5.929 | 0.950 |
| 23-Feb-99 | **406** | 30 | 0.3937 | -0.270 | 6.005 | 0.949 |
| 14-Aug-97 | **409** | 31 | 0.4070 | -0.235 | 6.013 | 0.949 |
| 20-Jan-94 | **413** | 32 | 0.4203 | -0.201 | 6.024 | 0.948 |
| 26-Jun-98 | **417** | 33 | 0.4336 | -0.167 | 6.033 | 0.948 |
| 26-Feb-98 | **427** | 34 | 0.4468 | -0.134 | 6.057 | 0.947 |
| 19-Dec-97 | **433** | 35 | 0.4601 | -0.100 | 6.071 | 0.947 |
| 4-Sep-97 | **437** | 36 | 0.4734 | -0.067 | 6.080 | 0.946 |
| 26-Nov-97 | **454** | 37 | 0.4867 | -0.033 | 6.118 | 0.946 |
| 9-Nov-97 | **459** | 38 | 0.5000 | 0.000 | 6.129 | 0.946 |
| 13-Jun-95 | **470** | 39 | 0.5133 | 0.033 | 6.153 | 0.946 |
| 29-Oct-96 | **478** | 40 | 0.5266 | 0.067 | 6.169 | 0.947 |
| 16-Nov-94 | **480** | 41 | 0.5399 | 0.100 | 6.173 | 0.948 |
| 25-Apr-95 | **486** | 42 | 0.5532 | 0.134 | 6.186 | 0.948 |
| 18-Oct-95 | **495** | 43 | 0.5664 | 0.167 | 6.204 | 0.949 |
| 20-Mar-98 | **495** | 44 | 0.5797 | 0.201 | 6.205 | 0.950 |
| 7-Apr-94 | **496** | 45 | 0.5930 | 0.235 | 6.208 | 0.950 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8-Mar-95 | 505 | 46 | 0.6063 | 0.270 | 6.225 | 0.949 |
| 27-Nov-96 | 529 | 47 | 0.6196 | 0.304 | 6.271 | 0.949 |
| 24-Mar-94 | 530 | 48 | 0.6329 | 0.340 | 6.272 | 0.950 |
| 24-Jun-97 | 532 | 49 | 0.6462 | 0.375 | 6.276 | 0.950 |
| 8-Mar-94 | 532 | 50 | 0.6595 | 0.411 | 6.276 | 0.950 |
| 7-Jun-94 | 536 | 51 | 0.6728 | 0.448 | 6.284 | 0.949 |
| 19-May-94 | 554 | 52 | 0.6860 | 0.485 | 6.318 | 0.947 |
| 8-Mar-99 | 559 | 53 | 0.6993 | 0.522 | 6.326 | 0.945 |
| 12-Apr-95 | 567 | 54 | 0.7126 | 0.561 | 6.340 | 0.943 |
| 27-Dec-95 | 584 | 55 | 0.7259 | 0.601 | 6.371 | 0.940 |
| 30-Jan-97 | 606 | 56 | 0.7392 | 0.641 | 6.408 | 0.937 |
| 13-Dec-94 | 622 | 57 | 0.7525 | 0.682 | 6.432 | 0.934 |
| 15-Jan-99 | 650 | 58 | 0.7658 | 0.725 | 6.477 | 0.931 |
| 19-Jun-96 | 671 | 59 | 0.7791 | 0.769 | 6.509 | 0.929 |
| 4-May-94 | 717 | 60 | 0.7924 | 0.815 | 6.575 | 0.929 |
| 8-May-96 | 723 | 61 | 0.8056 | 0.862 | 6.584 | 0.933 |
| 21-Nov-95 | 732 | 62 | 0.8189 | 0.911 | 6.596 | 0.937 |
| 23-Jul-97 | 752 | 63 | 0.8322 | 0.963 | 6.623 | 0.940 |
| 14-May-98 | 762 | 64 | 0.8455 | 1.017 | 6.637 | 0.944 |
| 28-Mar-96 | 779 | 65 | 0.8588 | 1.075 | 6.658 | 0.946 |
| 9-Feb-95 | 787 | 66 | 0.8721 | 1.136 | 6.668 | 0.947 |
| 21-Feb-97 | 866 | 67 | 0.8854 | 1.202 | 6.764 | 0.944 |
| 13-Dec-96 | 868 | 68 | 0.8987 | 1.274 | 6.766 | 0.950 |
| 10-Jan-95 | 967 | 69 | 0.9120 | 1.353 | 6.874 | 0.949 |
| 16-Apr-97 | 1006 | 70 | 0.9252 | 1.441 | 6.913 | 0.966 |
| 25-Nov-98 | 1013 | 71 | 0.9385 | 1.543 | 6.920 | 0.986 |
| 17-Jan-96 | 1060 | 72 | 0.9518 | 1.663 | 6.966 | |
| 29-Feb-96 | 1379 | 73 | 0.9651 | 1.813 | 7.229 | |
| 22-Mar-95 | 1687 | 74 | 0.9784 | 2.022 | 7.431 | |
| 26-Mar-97 | 2998 | 75 | 0.9917 | 2.395 | 8.006 | |

update for EV, CV:

**dZn** **CC287**
**LN Analysis** **dZn**

**Concentration** **Conc. Data, EV=3,038 ug/L CV=.47**

| | | **Data-based LN** | | |
|---|---|---|---|---|
| **Avg:** | **3,038** | u | ln[dZn] | [dZn] |
| **SD:** | **1,433** | 3 | 9.3 | 10541 |
| **CV:** | **0.47** | 0 | 7.92 | 2748 |
| **Min:** | **688** | -3 | 6.57 | 716 |
| **Max:** | **7,240** | | | |
| **Median:** | **2,780** | | | |

**u=mLn{Conc.}+b:**

update for r2, EV, CV: **$r^2$=0.974, EV=3102.3 ug/L CV=.57; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc. | 0.974 | u | lnConc. | Conc |
| slope, m: | 1.879 | 3 | 9.49 | 13288 |
| intercept, b: | -14.843 | 0 | 7.90 | 2693 |
| N: | 75 | -3 | 6.30 | 546 |
| E[Conc]: | 3102.3 | Parameter Estimates | | |
| SD[Conc]: | 1775 | from LN regression | | |
| CV[Conc]: | 0.57 | update graph label | | |

| | **dZn** | N: 75 | | | | max r2 0.991 |
|---|---|---|---|---|---|---|
| | **Concentration** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | r2 |
| **Date** | **ug/L** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 14-May-98 | 688 | 1 | 0.0083 | -2.395 | 6.534 | 0.974 |
| 24-Jun-97 | 797 | 2 | 0.0216 | -2.022 | 6.681 | 0.972 |
| 19-Jun-96 | 843 | 3 | 0.0349 | -1.813 | 6.737 | 0.972 |
| 13-Jun-95 | 906 | 4 | 0.0482 | -1.663 | 6.809 | 0.973 |
| 19-May-94 | 1010 | 5 | 0.0615 | -1.543 | 6.918 | 0.976 |
| 4-May-94 | 1200 | 6 | 0.0748 | -1.441 | 7.090 | 0.979 |
| 26-Jun-98 | 1220 | 7 | 0.0880 | -1.353 | 7.107 | 0.979 |
| 27-Jun-95 | 1260 | 8 | 0.1013 | -1.274 | 7.139 | 0.980 |
| 23-Jul-97 | 1260 | 9 | 0.1146 | -1.202 | 7.139 | 0.982 |
| 24-Jul-96 | 1550 | 10 | 0.1279 | -1.136 | 7.346 | 0.986 |
| 7-Jun-94 | 1570 | 11 | 0.1412 | -1.075 | 7.359 | 0.986 |
| 8-May-96 | 1650 | 12 | 0.1545 | -1.017 | 7.409 | 0.986 |
| 21-Nov-95 | 1670 | 13 | 0.1678 | -0.963 | 7.421 | 0.986 |
| 11-Jul-95 | 1700 | 14 | 0.1811 | -0.911 | 7.438 | 0.986 |
| 23-Jun-94 | 1720 | 15 | 0.1944 | -0.862 | 7.450 | 0.986 |
| 28-Jul-98 | 1720 | 16 | 0.2076 | -0.815 | 7.450 | 0.987 |
| 25-Jul-95 | 1790 | 17 | 0.2209 | -0.769 | 7.490 | 0.989 |
| 14-Aug-97 | 2010 | 18 | 0.2342 | -0.725 | 7.606 | 0.991 |
| 25-Apr-95 | 2100 | 19 | 0.2475 | -0.682 | 7.650 | 0.990 |
| 26-Aug-98 | 2110 | 20 | 0.2608 | -0.641 | 7.654 | 0.990 |
| 28-Mar-96 | 2220 | 21 | 0.2741 | -0.601 | 7.705 | 0.990 |
| 24-Sep-98 | 2260 | 22 | 0.2874 | -0.561 | 7.723 | 0.989 |
| 1-Oct-98 | 2270 | 23 | 0.3007 | -0.522 | 7.728 | 0.989 |
| 26-Oct-98 | 2270 | 24 | 0.3140 | -0.485 | 7.728 | 0.988 |
| 29-Feb-96 | 2310 | 25 | 0.3272 | -0.448 | 7.745 | 0.988 |
| 4-Sep-97 | 2390 | 26 | 0.3405 | -0.411 | 7.779 | 0.987 |
| 7-Apr-94 | 2440 | 27 | 0.3538 | -0.375 | 7.800 | 0.987 |
| 25-Jul-94 | 2490 | 28 | 0.3671 | -0.340 | 7.820 | 0.986 |
| 12-Apr-95 | 2500 | 29 | 0.3804 | -0.304 | 7.824 | 0.986 |
| 8-Mar-95 | 2550 | 30 | 0.3937 | -0.270 | 7.844 | 0.985 |
| 14-Aug-95 | 2580 | 31 | 0.4070 | -0.235 | 7.856 | 0.985 |
| 27-Dec-95 | 2580 | 32 | 0.4203 | -0.201 | 7.856 | 0.984 |
| 9-Nov-97 | 2610 | 33 | 0.4336 | -0.167 | 7.867 | 0.983 |
| 21-Aug-96 | 2620 | 34 | 0.4468 | -0.134 | 7.871 | 0.983 |
| 26-Sep-96 | 2640 | 35 | 0.4601 | -0.100 | 7.879 | 0.982 |
| 8-Oct-98 | 2700 | 36 | 0.4734 | -0.067 | 7.901 | 0.981 |
| 16-Oct-97 | 2750 | 37 | 0.4867 | -0.033 | 7.919 | 0.980 |
| 20-Mar-98 | 2780 | 38 | 0.5000 | 0.000 | 7.930 | 0.980 |
| 13-Sep-95 | 2800 | 39 | 0.5133 | 0.033 | 7.937 | 0.979 |
| 26-Nov-97 | 2840 | 40 | 0.5266 | 0.067 | 7.952 | 0.978 |
| 18-Oct-95 | 2930 | 41 | 0.5399 | 0.100 | 7.983 | 0.978 |
| 16-Aug-94 | 2940 | 42 | 0.5532 | 0.134 | 7.986 | 0.977 |
| 16-Aug-94 | 2940 | 43 | 0.5664 | 0.167 | 7.986 | 0.976 |
| 13-Sep-94 | 3020 | 44 | 0.5797 | 0.201 | 8.013 | 0.976 |
| 22-Jan-98 | 3320 | 45 | 0.5930 | 0.235 | 8.108 | 0.976 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19-Dec-97 | 3340 | 46 | 0.6063 | 0.270 | 8.114 | 0.976 |
| 9-Feb-95 | 3380 | 47 | 0.6196 | 0.304 | 8.126 | 0.975 |
| 16-Apr-97 | 3380 | 48 | 0.6329 | 0.340 | 8.126 | 0.974 |
| 5-Oct-91 | 3440 | 49 | 0.6462 | 0.375 | 8.143 | 0.972 |
| 27-Oct-93 | 3470 | 50 | 0.6595 | 0.411 | 8.152 | 0.971 |
| 16-Oct-94 | 3480 | 51 | 0.6728 | 0.448 | 8.155 | 0.969 |
| 26-Feb-98 | 3560 | 52 | 0.6860 | 0.485 | 8.178 | 0.967 |
| 30-Jan-97 | 3590 | 53 | 0.6993 | 0.522 | 8.186 | 0.965 |
| 22-Mar-95 | 3640 | 54 | 0.7126 | 0.561 | 8.200 | 0.962 |
| 15-Jan-99 | 3660 | 55 | 0.7259 | 0.601 | 8.205 | 0.959 |
| 23-Feb-99 | 3770 | 56 | 0.7392 | 0.641 | 8.235 | 0.956 |
| 29-Oct-96 | 3780 | 57 | 0.7525 | 0.682 | 8.237 | 0.952 |
| 17-Jan-96 | 3870 | 58 | 0.7658 | 0.725 | 8.261 | 0.948 |
| 26-Mar-97 | 3870 | 59 | 0.7791 | 0.769 | 8.261 | 0.943 |
| 8-Mar-99 | 3880 | 60 | 0.7924 | 0.815 | 8.264 | 0.939 |
| 30-Nov-93 | 3980 | 61 | 0.8056 | 0.862 | 8.289 | 0.941 |
| 21-Feb-97 | 4140 | 62 | 0.8189 | 0.911 | 8.328 | 0.946 |
| 8-Mar-94 | 4440 | 63 | 0.8322 | 0.963 | 8.398 | 0.953 |
| 27-Nov-96 | 4530 | 64 | 0.8455 | 1.017 | 8.418 | 0.948 |
| 24-Mar-94 | 4660 | 65 | 0.8588 | 1.075 | 8.447 | 0.944 |
| 18-Feb-94 | 4740 | 66 | 0.8721 | 1.136 | 8.464 | 0.939 |
| 20-Jan-94 | 5240 | 67 | 0.8854 | 1.202 | 8.564 | 0.940 |
| 20-Jan-94 | 5240 | 68 | 0.8987 | 1.274 | 8.564 | 0.940 |
| 13-Dec-96 | 5430 | 69 | 0.9120 | 1.353 | 8.600 | 0.931 |
| 17-Dec-93 | 5440 | 70 | 0.9252 | 1.441 | 8.602 | 0.932 |
| 17-Dec-93 | 5440 | 71 | 0.9385 | 1.543 | 8.602 | 0.917 |
| 16-Nov-94 | 5610 | 72 | 0.9518 | 1.663 | 8.632 | |
| 10-Jan-95 | 6370 | 73 | 0.9651 | 1.813 | 8.759 | |
| 13-Dec-94 | 6730 | 74 | 0.9784 | 2.022 | 8.814 | |
| 25-Nov-98 | 7240 | 75 | 0.9917 | 2.395 | 8.887 | |

update for EV, CV

**dZn** **CC287**

**LN Analysis** **dZn**

**Discharge, Q** **Q Data, EV=41 cfs CV=0.92**

**Q Data-based LN**

| | | u | lnQ | Q |
|---|---|---|---|---|
| **Avg:** | **41** | | | |
| **SD:** | **38** | u | lnQ | Q |
| **CV:** | **0.92** | 3 | 5.8 | 317 |
| **Min:** | **11** | 0 | 3.41 | 30 |
| **Max:** | **206** | -3 | 1.06 | 3 |
| **Median:** | **26** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.936, EV=40.8 cfs CV=0.88; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.936 | u | lnQ | Q |
| slope, m: | 1.316 | 3 | 5.70 | 299 |
| intercept, b: | -4.498 | 0 | 3.42 | 31 |
| N: | 75 | -3 | 1.14 | 3 |
| E[Q] | 40.8 | Parameter Estimates | | |
| SD[Q] | 36 | from LN regression | | |
| CV[Q] | 0.88 | update graph label | | |

N: 75

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.979 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 11.4 | 1 | 0.0083 | -2.395 | 2.434 | 0.936 |
| 18-Feb-94 | 11.41 | 2 | 0.0216 | -2.022 | 2.434 | 0.950 |
| 17-Dec-93 | 11.7 | 3 | 0.0349 | -1.813 | 2.460 | 0.956 |
| 17-Dec-93 | 12.03 | 4 | 0.0482 | -1.663 | 2.487 | 0.960 |
| 14-Aug-95 | 12.6 | 5 | 0.0615 | -1.543 | 2.534 | 0.964 |
| 30-Nov-93 | 12.62 | 6 | 0.0748 | -1.441 | 2.535 | 0.966 |
| 27-Oct-93 | 13.28 | 7 | 0.0880 | -1.353 | 2.586 | 0.968 |
| 20-Jan-94 | 13.28 | 8 | 0.1013 | -1.274 | 2.586 | 0.970 |
| 16-Aug-94 | 13.57 | 9 | 0.1146 | -1.202 | 2.608 | 0.972 |
| 16-Oct-94 | 14.34 | 10 | 0.1279 | -1.136 | 2.663 | 0.973 |
| 5-Oct-91 | 14.5 | 11 | 0.1412 | -1.075 | 2.674 | 0.974 |
| 20-Jan-94 | 14.66 | 12 | 0.1545 | -1.017 | 2.685 | 0.975 |
| 25-Jul-95 | 14.71 | 13 | 0.1678 | -0.963 | 2.689 | 0.976 |
| 13-Sep-94 | 15.89 | 14 | 0.1811 | -0.911 | 2.766 | 0.977 |
| 16-Nov-94 | 15.89 | 15 | 0.1944 | -0.862 | 2.766 | 0.978 |
| 8-Oct-98 | 15.9 | 16 | 0.2076 | -0.815 | 2.766 | 0.978 |
| 16-Aug-94 | 16.3 | 17 | 0.2209 | -0.769 | 2.791 | 0.979 |
| 1-Oct-98 | 16.7 | 18 | 0.2342 | -0.725 | 2.815 | 0.979 |
| 26-Oct-98 | 16.7 | 19 | 0.2475 | -0.682 | 2.815 | 0.979 |
| 13-Dec-94 | 17.17 | 20 | 0.2608 | -0.641 | 2.843 | 0.979 |
| 24-Sep-98 | 17.2 | 21 | 0.2741 | -0.601 | 2.845 | 0.979 |
| 22-Jan-98 | 18.1 | 22 | 0.2874 | -0.561 | 2.896 | 0.978 |
| 25-Jul-94 | 19.04 | 23 | 0.3007 | -0.522 | 2.947 | 0.978 |
| 26-Sep-96 | 19.5 | 24 | 0.3140 | -0.485 | 2.970 | 0.978 |
| 26-Aug-98 | 19.5 | 25 | 0.3272 | -0.448 | 2.970 | 0.978 |
| 23-Feb-99 | 20 | 26 | 0.3405 | -0.411 | 2.996 | 0.978 |
| 11-Jul-95 | 20.05 | 27 | 0.3538 | -0.375 | 2.998 | 0.978 |
| 24-Mar-94 | 21.13 | 28 | 0.3671 | -0.340 | 3.051 | 0.977 |
| 27-Nov-96 | 21.7 | 29 | 0.3804 | -0.304 | 3.077 | 0.977 |
| 8-Mar-94 | 22.26 | 30 | 0.3937 | -0.270 | 3.103 | 0.976 |
| 26-Feb-98 | 22.3 | 31 | 0.4070 | -0.235 | 3.105 | 0.976 |
| 8-Mar-99 | 23 | 32 | 0.4203 | -0.201 | 3.135 | 0.975 |
| 21-Aug-96 | 23.342375 | 33 | 0.4336 | -0.167 | 3.150 | 0.975 |
| 29-Oct-96 | 23.5 | 34 | 0.4468 | -0.134 | 3.157 | 0.974 |
| 19-Dec-97 | 24.1 | 35 | 0.4601 | -0.100 | 3.182 | 0.973 |
| 28-Jul-98 | 24.7 | 36 | 0.4734 | -0.067 | 3.207 | 0.972 |
| 16-Oct-97 | 25.4 | 37 | 0.4867 | -0.033 | 3.235 | 0.971 |
| 25-Nov-98 | 26 | 38 | 0.5000 | 0.000 | 3.258 | 0.969 |
| 10-Jan-95 | 28.21 | 39 | 0.5133 | 0.033 | 3.340 | 0.968 |
| 23-Jun-94 | 28.96 | 40 | 0.5266 | 0.067 | 3.366 | 0.967 |
| 13-Dec-96 | 29.7 | 41 | 0.5399 | 0.100 | 3.391 | 0.966 |
| 26-Nov-97 | 29.7 | 42 | 0.5532 | 0.134 | 3.391 | 0.965 |
| 18-Oct-95 | 31.4 | 43 | 0.5664 | 0.167 | 3.447 | 0.963 |
| 30-Jan-97 | 31.4 | 44 | 0.5797 | 0.201 | 3.447 | 0.962 |
| 9-Nov-97 | 32.7 | 45 | 0.5930 | 0.235 | 3.487 | 0.960 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15-Jan-99 | 33 | 46 | 0.6063 | 0.270 | 3.497 | 0.959 |
| 20-Mar-98 | 33.1 | 47 | 0.6196 | 0.304 | 3.500 | 0.956 |
| 4-Sep-97 | 34 | 48 | 0.6329 | 0.340 | 3.526 | 0.954 |
| 27-Jun-95 | 34.9 | 49 | 0.6462 | 0.375 | 3.552 | 0.951 |
| 24-Jul-96 | 35.8 | 50 | 0.6595 | 0.411 | 3.578 | 0.948 |
| 8-Mar-95 | 36.82 | 51 | 0.6728 | 0.448 | 3.606 | 0.944 |
| 14-Aug-97 | 37.8 | 52 | 0.6860 | 0.485 | 3.632 | 0.940 |
| 7-Apr-94 | 37.82 | 53 | 0.6993 | 0.522 | 3.633 | 0.936 |
| 21-Feb-97 | 38.9 | 54 | 0.7126 | 0.561 | 3.661 | 0.932 |
| 27-Dec-95 | 42.1 | 55 | 0.7259 | 0.601 | 3.740 | 0.929 |
| 12-Apr-95 | 42.13 | 56 | 0.7392 | 0.641 | 3.741 | 0.924 |
| 25-Apr-95 | 43 | 57 | 0.7525 | 0.682 | 3.761 | 0.922 |
| 9-Feb-95 | 43.28 | 58 | 0.7658 | 0.725 | 3.768 | 0.923 |
| 17-Jan-96 | 50.9 | 59 | 0.7791 | 0.769 | 3.930 | 0.938 |
| 16-Apr-97 | 55.3 | 60 | 0.7924 | 0.815 | 4.013 | 0.943 |
| 7-Jun-94 | 63.45 | 61 | 0.8056 | 0.862 | 4.150 | 0.948 |
| 26-Jun-98 | 63.5 | 62 | 0.8189 | 0.911 | 4.151 | 0.944 |
| 28-Mar-96 | 65.2 | 63 | 0.8322 | 0.963 | 4.177 | 0.949 |
| 21-Nov-95 | 81.5 | 64 | 0.8455 | 1.017 | 4.401 | 0.973 |
| 8-May-96 | 81.5 | 65 | 0.8588 | 1.075 | 4.401 | 0.969 |
| 22-Mar-95 | 86.16 | 66 | 0.8721 | 1.136 | 4.456 | 0.968 |
| 13-Jun-95 | 96.41 | 67 | 0.8854 | 1.202 | 4.569 | 0.968 |
| 19-May-94 | 102.01 | 68 | 0.8987 | 1.274 | 4.625 | 0.962 |
| 29-Feb-96 | 111 | 69 | 0.9120 | 1.353 | 4.710 | 0.955 |
| 23-Jul-97 | 111 | 70 | 0.9252 | 1.441 | 4.710 | 0.968 |
| 4-May-94 | 111.05 | 71 | 0.9385 | 1.543 | 4.710 | 0.966 |
| 24-Jun-97 | 124 | 72 | 0.9518 | 1.663 | 4.820 | |
| 26-Mar-97 | 144 | 73 | 0.9651 | 1.813 | 4.970 | |
| 19-Jun-96 | 148 | 74 | 0.9784 | 2.022 | 4.997 | |
| 14-May-98 | 206 | 75 | 0.9917 | 2.395 | 5.328 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC287 **Date:** 2-Jun-00

**Chemical:** tCd **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,345 | 55 | 20 | 4 | 0.00 | 0.00 | 0.00 |
| **SD:** | 701 | 66 | 9 | 3 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.20 | 0.47 | 0.82 | | | |
| **Min:** | 33,516 | 11 | 4 | 1.1 | -0.66 | -1.71 | -0.89 |
| **Max:** | 36,402 | 384 | 52 | 23 | 4.97 | 3.44 | 5.48 |
| **Median:** | 35,382 | 29 | 19 | 3 | -0.39 | -0.10 | -0.23 |

| tCd CC287 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.299)** | | update r2 | 0.30 | 0.299 | r2: | 0.111 | 0.112 |
| r2 Q,[COC]: | 0.30 | [tCd] | Q | | m: | 0.0314 | 0.00041 |
| slope, m: | -0.1 | 23 | 11.4 | | b: | -1055 | -11.04 |
| intercept, b: | 24.2 | 20 | 55.2 | | | | |
| N: 92 | | -5 | 384 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.506)** | | update r2 | 0.51 | 0.506 | | | |
| r2 lnQ,ln[COC]: | 0.51 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m: | -0.45 | 3.37 | 2.43 | 29 | 11 | | |
| intercept, b: | 4.47 | 2.66 | 4.01 | 14 | 55 | | |
| N: 92 | | 1.79 | 5.95 | 6 | 384 | | |

N= 92

| | | | | | | | | tCd CC287 Standardized Values = (x - Avg)/SD | for graph 0 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Sampling Date | Q Discharge cfs | tCd Concentration ug/L | tCd Load lbs/day | Ln Q | Ln tCd Conc. | Ln tCd Load | Q | Conc | Load |
| update for new data | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| **DATA:** | | | | | | | | | | |
| MFG | 5-Oct-91 | 14.5 | 20.8 | 1.6 | 2.67 | 3.03 | 0.48 | -0.62 | 0.09 | -0.73 |
| IDEQ | 27-Oct-93 | 13.28 | 22 | 1.6 | 2.59 | 3.09 | 0.45 | -0.63 | 0.22 | -0.75 |
| IDEQ | 30-Nov-93 | 12.62 | 22 | 1.5 | 2.54 | 3.09 | 0.40 | -0.64 | 0.22 | -0.77 |
| IDEQ | 17-Dec-93 | 11.7 | 33 | 2.1 | 2.46 | 3.50 | 0.73 | -0.66 | 1.40 | -0.60 |
| IDEQ | 17-Dec-93 | 12.03 | 33 | 2.1 | 2.49 | 3.50 | 0.76 | -0.65 | 1.40 | -0.58 |
| IDEQ | 20-Jan-94 | 13.28 | 38 | 2.7 | 2.59 | 3.64 | 1.00 | -0.63 | 1.94 | -0.41 |
| IDEQ | 20-Jan-94 | 14.66 | 38 | 3.0 | 2.69 | 3.64 | 1.10 | -0.61 | 1.94 | -0.33 |
| IDEQ | 18-Feb-94 | 11.41 | 30 | 1.8 | 2.43 | 3.40 | 0.61 | -0.66 | 1.08 | -0.67 |
| IDEQ | 8-Mar-94 | 22.26 | 26 | 3.1 | 3.10 | 3.26 | 1.14 | -0.50 | 0.65 | -0.30 |
| IDEQ | 24-Mar-94 | 21.13 | 26 | 3.0 | 3.05 | 3.26 | 1.08 | -0.52 | 0.65 | -0.34 |
| IDEQ | 7-Apr-94 | 37.82 | 18 | 3.7 | 3.63 | 2.89 | 1.30 | -0.26 | -0.21 | -0.13 |
| IDEQ | 4-May-94 | 111.05 | 8.2 | 4.9 | 4.71 | 2.10 | 1.59 | 0.84 | -1.26 | 0.23 |
| IDEQ | 19-May-94 | 102.01 | 7.7 | 4.2 | 4.63 | 2.04 | 1.44 | 0.71 | -1.31 | 0.03 |
| IDEQ | 7-Jun-94 | 63.45 | 12 | 4.1 | 4.15 | 2.48 | 1.41 | 0.12 | -0.85 | -0.01 |
| IDEQ | 23-Jun-94 | 28.96 | 14 | 2.2 | 3.37 | 2.64 | 0.78 | -0.40 | -0.64 | -0.57 |
| IDEQ | 25-Jul-94 | 19.04 | 18 | 1.8 | 2.95 | 2.89 | 0.61 | -0.55 | -0.21 | -0.67 |
| IDEQ | 16-Aug-94 | 16.3 | 19 | 1.7 | 2.79 | 2.94 | 0.51 | -0.59 | -0.10 | -0.72 |
| IDEQ | 16-Aug-94 | 13.57 | 19 | 1.4 | 2.61 | 2.94 | 0.33 | -0.63 | -0.10 | -0.80 |
| IDEQ | 13-Sep-94 | 15.89 | 21 | 1.8 | 2.77 | 3.04 | 0.59 | -0.60 | 0.11 | -0.68 |
| IDEQ | 16-Oct-94 | 14.34 | 21 | 1.6 | 2.66 | 3.04 | 0.48 | -0.62 | 0.11 | -0.74 |
| IDEQ | 16-Nov-94 | 15.89 | 32 | 2.7 | 2.77 | 3.47 | 1.01 | -0.60 | 1.29 | -0.41 |
| IDEQ | 13-Dec-94 | 17.17 | 38 | 3.5 | 2.84 | 3.64 | 1.26 | -0.58 | 1.94 | -0.18 |
| IDEQ | 10-Jan-95 | 28.21 | 39 | 5.9 | 3.34 | 3.66 | 1.78 | -0.41 | 2.05 | 0.53 |
| IDEQ | 9-Feb-95 | 43.28 | 19 | 4.4 | 3.77 | 2.94 | 1.49 | -0.18 | -0.10 | 0.09 |
| IDEQ | 8-Mar-95 | 36.82 | 16 | 3.2 | 3.61 | 2.77 | 1.15 | -0.28 | -0.42 | -0.28 |
| IDEQ | 22-Mar-95 | 86.16 | 24 | 11.1 | 4.46 | 3.18 | 2.41 | 0.47 | 0.44 | 2.06 |
| IDEQ | 12-Apr-95 | 42.13 | 15 | 3.4 | 3.74 | 2.71 | 1.22 | -0.20 | -0.53 | -0.21 |
| IDEQ | 25-Apr-95 | 43 | 12 | 2.8 | 3.76 | 2.48 | 1.02 | -0.19 | -0.85 | -0.39 |
| IDEQ | 13-Jun-95 | 96.41 | 6.8 | 3.5 | 4.57 | 1.92 | 1.26 | 0.62 | -1.41 | -0.17 |
| IDEQ | 27-Jun-95 | 34.9 | 8 4 | 1.6 | 3.55 | 2.13 | 0.46 | -0.31 | -1.24 | -0.75 |
| IDEQ | 11-Jul-95 | 20.05 | 12 | 1.3 | 3.00 | 2.48 | 0.26 | -0.53 | -0.85 | -0.83 |
| IDEQ | 25-Jul-95 | 14.71 | 14 | 1.1 | 2.69 | 2.64 | 0.10 | -0.61 | -0.64 | -0.89 |
| IDEQ | 14-Aug-95 | 12.6 | 18 | 1.2 | 2.53 | 2.89 | 0.20 | -0.64 | -0.21 | -0.85 |
| IDEQ | 13-Sep-95 | 11 4 | 20 | 1.2 | 2.43 | 3.00 | 0.20 | -0.66 | 0.01 | -0.85 |
| IDEQ | 18-Oct-95 | 31.4 | 21 | 3.5 | 3.45 | 3.04 | 1.27 | -0.36 | 0.11 | -0.17 |
| IDEQ | 21-Nov-95 | 81.5 | 13 | 5 7 | 4 40 | 2.56 | 1.74 | 0.40 | -0.75 | 0 47 |
| IDEQ | 27-Dec-95 | 42.1 | 18 | 4.1 | 3.74 | 2.89 | 1.41 | -0.20 | -0.21 | -0.01 |
| IDEQ | 17-Jan-96 | 50.9 | 27 | 7.4 | 3.93 | 3.30 | 2.00 | -0.07 | 0.76 | 0.97 |
| IDEQ | 29-Feb-96 | 111 | 15 | 9.0 | 4.71 | 2.71 | 2.19 | 0.84 | -0.53 | 1.43 |
| IDEQ | 28-Mar-96 | 65.2 | 16 | 5.6 | 4.18 | 2.77 | 1.72 | 0.15 | -0.42 | 0.44 |
| IDEQ | 8-May-96 | 81.5 | 12 | 5.3 | 4.40 | 2.48 | 1.66 | 0.40 | -0.85 | 0.34 |
| IDEQ | 19-Jun-96 | 148 | 5.8 | 4.6 | 5.00 | 1.76 | 1.53 | 1.40 | -1.52 | 0.15 |
| IDEQ | 24-Jul-96 | 35.8 | 14 | 2.7 | 3.58 | 2.64 | 0.99 | -0.29 | -0.64 | -0.42 |
| IDEQ | 21-Aug-96 | 23.342375 | 24 | 3.0 | 3.15 | 3.18 | 1.10 | -0.48 | 0.44 | -0.32 |
| IDEQ | 26-Sep-96 | 19.5 | 23 | 2.4 | 2.97 | 3.14 | 0.88 | -0.54 | 0.33 | -0.50 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 29-Oct-96 | 23.5 | 28 | 3.5 | 3.16 | 3.33 | 1.26 | -0.48 | 0.86 | -0.17 |
| IDEQ | 27-Nov-96 | 21.7 | 29 | 3.4 | 3.08 | 3.37 | 1.22 | -0.51 | 0.97 | -0.22 |
| IDEQ | 13-Dec-96 | 29.7 | 39 | 6.2 | 3.39 | 3.66 | 1.83 | -0.39 | 2.05 | 0.62 |
| IDEQ | 30-Jan-97 | 31.4 | 25 | 4.2 | 3.45 | 3.22 | 1.44 | -0.36 | 0.54 | 0.03 |
| IDEQ | 21-Feb-97 | 38.9 | 27 | 5.7 | 3.66 | 3.30 | 1.73 | -0.25 | 0.76 | 0.45 |
| IDEQ | 26-Mar-97 | 144 | 25 | 19.4 | 4.97 | 3.22 | 2.96 | 1.34 | 0.54 | 4.49 |
| IDEQ | 16-Apr-97 | 55.3 | 23 | 6.8 | 4.01 | 3.14 | 1.92 | 0.00 | 0.33 | 0.80 |
| IDEQ | 24-Jun-97 | 124 | 5 | 3.3 | 4.82 | 1.61 | 1.20 | 1.04 | -1.60 | -0.23 |
| IDEQ | 23-Jul-97 | 111 | 10 | 6.0 | 4.71 | 2.30 | 1.79 | 0.84 | -1.07 | 0.55 |
| IDEQ | 14-Aug-97 | 37.8 | 15 | 3.1 | 3.63 | 2.71 | 1.12 | -0.26 | -0.53 | -0.31 |
| IDEQ | 4-Sep-97 | 34 | 19 | 3.5 | 3.53 | 2.94 | 1.25 | -0.32 | -0.10 | -0.19 |
| IDEQ | 16-Oct-97 | 25.4 | 22 | 3.0 | 3.23 | 3.09 | 1.10 | -0.45 | 0.22 | -0.33 |
| URS | 9-Nov-97 | 32.7 | 17.8 | 3.1 | 3.49 | 2.88 | 1.14 | -0.34 | -0.23 | -0.29 |
| IDEQ | 26-Nov-97 | 29.7 | 19 | 3.0 | 3.39 | 2.94 | 1.11 | -0.39 | -0.10 | -0.32 |
| IDEQ | 19-Dec-97 | 24.1 | 26 | 3.4 | 3.18 | 3.26 | 1.22 | -0.47 | 0.65 | -0.22 |
| IDEQ | 22-Jan-98 | 18.1 | 25 | 2.4 | 2.90 | 3.22 | 0.89 | -0.56 | 0.54 | -0.50 |
| IDEQ | 26-Feb-98 | 22.3 | 25 | 3.0 | 3.10 | 3.22 | 1.10 | -0.50 | 0.54 | -0.33 |
| IDEQ | 20-Mar-98 | 33.1 | 21 | 3.7 | 3.50 | 3.04 | 1.32 | -0.33 | 0.11 | -0.11 |
| URS | 14-May-98 | 206 | 5.1 | 5.7 | 5.33 | 1.63 | 1.73 | 2.28 | -1.59 | 0.45 |
| IDEQ | 26-Jun-98 | 63.5 | 9.8 | 3.3 | 4.15 | 2.28 | 1.21 | 0.12 | -1.09 | -0.23 |
| IDEQ | 28-Jul-98 | 24.7 | 17 | 2.3 | 3.21 | 2.83 | 0.81 | -0.46 | -0.32 | -0.55 |
| IDEQ | 26-Aug-98 | 19.5 | 18 | 1.9 | 2.97 | 2.89 | 0.64 | -0.54 | -0.21 | -0.66 |
| IDEQ | 24-Sep-98 | 17.2 | 17 | 1.6 | 2.84 | 2.83 | 0.45 | -0.58 | -0.32 | -0.75 |
| IDEQ | 1-Oct-98 | 16.7 | 19 | 1.7 | 2.82 | 2.94 | 0.53 | -0.58 | -0.10 | -0.71 |
| IDEQ | 8-Oct-98 | 15.9 | 20 | 1.7 | 2.77 | 3.00 | 0.54 | -0.59 | 0.01 | -0.71 |
| IDEQ | 26-Oct-98 | 16.7 | 18 | 1.6 | 2.82 | 2.89 | 0.48 | -0.58 | -0.21 | -0.74 |
| IDEQ | 25-Nov-98 | 26 | 52 | 7.3 | 3.26 | 3.95 | 1.98 | -0.44 | 3.44 | 0.93 |
| IDEQ | 15-Jan-99 | 33 | 25 | 4.4 | 3.50 | 3.22 | 1.49 | -0.34 | 0.54 | 0.10 |
| IDEQ | 23-Feb-99 | 20 | 30 | 3.2 | 3.00 | 3.40 | 1.17 | -0.53 | 1.08 | -0.26 |
| IDEQ | 8-Mar-99 | 23 | 28 | 3.5 | 3.14 | 3.33 | 1.24 | -0.49 | 0.86 | -0.19 |
| URS | 9-Nov-97 | 36.6 | 18.2 | 3.6 | 3.60 | 2.90 | 1.28 | -0.28 | -0.19 | -0.16 |
| URS | 14-May-98 | 233 | 5.2 | 6.5 | 5.45 | 1.65 | 1.87 | 2.69 | -1.58 | 0.71 |
| USGS | 26-Oct-98 | 13 | 18 | 1.3 | 2.56 | 2.89 | 0.23 | -0.64 | -0.21 | -0.84 |
| USGS | 26-Oct-98 | 13 | 19 | 1.3 | 2.56 | 2.94 | 0.28 | -0.64 | -0.10 | -0.82 |
| URS | 14-Nov-98 | 22.53 | 34.2 | 4.1 | 3.11 | 3.53 | 1.42 | -0.49 | 1.53 | 0.01 |
| USGS | 15-Dec-98 | 25 | 31 | 4.2 | 3.22 | 3.43 | 1.43 | -0.46 | 1.19 | 0.02 |
| USGS | 28-Dec-98 | 27 | 32 | 4.6 | 3.30 | 3.47 | 1.54 | -0.43 | 1.29 | 0.16 |
| USGS | 23-Mar-99 | 97 | 26 | 13.6 | 4.57 | 3.26 | 2.61 | 0.63 | 0.65 | 2.78 |
| USGS | 19-Apr-99 | 138 | 15 | 11.1 | 4.93 | 2.71 | 2.41 | 1.25 | -0.53 | 2.07 |
| USGS | 5-May-99 | 84 | 9 | 4.1 | 4.43 | 2.20 | 1.40 | 0.43 | -1.17 | -0.01 |
| USGS | 24-May-99 | 384 | 11 | 22.7 | 5.95 | 2.40 | 3.12 | 4.97 | -0.96 | 5.48 |
| USGS | 27-May-99 | 261 | 5 | 7.0 | 5.56 | 1.61 | 1.95 | 3.11 | -1.60 | 0.86 |
| USGS | 2-Jun-99 | 241 | 5 | 6.5 | 5.48 | 1.61 | 1.87 | 2.81 | -1.60 | 0.70 |
| USGS | 15-Jun-99 | 263 | 4 | 5.7 | 5.57 | 1.39 | 1.73 | 3.14 | -1.71 | 0.45 |
| USGS | 8-Jul-99 | 107 | 5.4 | 3.1 | 4.67 | 1.69 | 1.13 | 0.78 | -1.56 | -0.30 |
| USGS | 5-Aug-99 | 34 | 12.6 | 2.3 | 3.53 | 2.53 | 0.83 | -0.32 | -0.79 | -0.53 |
| USGS | 30-Aug-99 | 22 | 15 | 1.8 | 3.09 | 2.71 | 0.57 | -0.50 | -0.53 | -0.49 |

tCd

**Concentration over time analysis**

| | tCd | CC287 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.045** | **-0.00017** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 5-Oct-91 | 3.17 | 24 | | |
| mid | 12-Nov-96 | 2.86 | 17 | | |
| last | 30-Aug-99 | 2.69 | 15 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.039** | **-0.00047** |
| | 21-Feb-97 | 3.01 | 20 | | |
| | 30-Aug-99 | 2.58 | 13 | | |

**Load over time analysis**

| | tCd | CC287 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.079** | **0.00025** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 5-Oct-91 | 0.75 | 2 | | |
| mid | 12-Nov-96 | 1.21 | 3 | | |
| last | 30-Aug-99 | 1.46 | 4 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.002** | **-0.00010** |
| | 21-Feb-97 | 1.40 | 4 | | |
| | 30-Aug-99 | 1.30 | 4 | | |

| | max r2: 1.000 | | | max r2: 1.000 | | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 row | | |
| | 0.045 | -0.00017 | 8.77 | 0.079 | 0.00025 | -7.50 |
| | 0.045 | -0.00017 | 8.98 | 0.068 | 0.00023 | -7.08 |
| | 0.043 | -0.00017 | 8.94 | 0.059 | 0.00022 | -6.59 |
| | 0.041 | -0.00017 | 8.89 | 0.050 | 0.00020 | -6.01 |
| | 0.035 | -0.00016 | 8.43 | 0.046 | 0.00020 | -5.73 |
| | 0.029 | -0.00014 | 7.92 | 0.041 | 0.00019 | -5.45 |
| | 0.021 | -0.00012 | 7.24 | 0.039 | 0.00019 | -5.41 |
| | 0.015 | -0.00010 | 6.48 | 0.039 | 0.00019 | -5.47 |
| | 0.010 | -0.00009 | 5.95 | 0.033 | 0.00018 | -4.98 |
| | 0.008 | -0.00008 | 5.54 | 0.033 | 0.00018 | -5.06 |
| | 0.005 | -0.00006 | 5.10 | 0.032 | 0.00018 | -5.08 |
| | 0.005 | -0.00006 | 5.08 | 0.033 | 0.00019 | -5.37 |
| | 0.010 | -0.00009 | 6.05 | 0.039 | 0.00021 | -6.04 |
| | 0.018 | -0.00012 | 7.20 | 0.043 | 0.00022 | -6.58 |
| | 0.023 | -0.00014 | 7.84 | 0.048 | 0.00024 | -7.11 |
| | 0.026 | -0.00015 | 8.31 | 0.043 | 0.00023 | -6.79 |
| | 0.027 | -0.00016 | 8.44 | 0.036 | 0.00021 | -6.19 |
| | 0.026 | -0.00016 | 8.50 | 0.028 | 0.00019 | -5.37 |
| | 0.026 | -0.00016 | 8.57 | 0.018 | 0.00015 | -4.17 |
| | 0.024 | -0.00016 | 8.47 | 0.013 | 0.00013 | -3.28 |
| | 0.022 | -0.00016 | 8.36 | 0.007 | 0.00010 | -2.13 |
| | 0.015 | -0.00013 | 7.50 | 0.005 | 0.00009 | -1.77 |
| | 0.008 | -0.00010 | 6.24 | 0.005 | 0.00009 | -1.82 |
| | 0.003 | -0.00006 | 4.82 | 0.009 | 0.00012 | -2.83 |
| | 0.002 | -0.00005 | 4.61 | 0.011 | 0.00013 | -3.38 |
| | 0.002 | -0.00005 | 4.72 | 0.010 | 0.00013 | -3.33 |
| | 0.001 | -0.00003 | 4.01 | 0.024 | 0.00020 | -5.85 |
| | 0.001 | -0.00004 | 4.23 | 0.024 | 0.00021 | -6.10 |
| | 0.003 | -0.00006 | 4.97 | 0.022 | 0.00020 | -5.91 |
| | 0.010 | -0.00012 | 7.09 | 0.023 | 0.00021 | -6.24 |
| | 0.019 | -0.00017 | 8.96 | 0.014 | 0.00017 | -4.65 |
| | 0.026 | -0.00021 | 10.18 | 0.005 | 0.00010 | -2.31 |
| | 0.031 | -0.00023 | 11.14 | 0.000 | 0.00002 | 0.80 |
| | 0.031 | -0.00024 | 11.49 | 0.003 | -0.00008 | 4.11 |
| | 0.030 | -0.00024 | 11.56 | 0.016 | -0.00018 | 7.86 |
| | 0.027 | -0.00024 | 11.44 | 0.019 | -0.00020 | 8.70 |
| | 0.035 | -0.00028 | 12.90 | 0.015 | -0.00019 | 8.04 |
| | 0.035 | -0.00030 | 13.39 | 0.015 | -0.00020 | 8.44 |
| | 0.027 | -0.00027 | 12.40 | 0.008 | -0.00015 | 6.64 |
| | 0.032 | -0.00030 | 13.54 | 0.002 | -0.00007 | 3.81 |
| | 0.035 | -0.00033 | 14.56 | 0.000 | -0.00003 | 2.45 |
| | 0.047 | -0.00039 | 16.94 | 0.000 | 0.00001 | 1.15 |
| | 0.092 | -0.00056 | 22.89 | 0.000 | 0.00003 | 0.25 |
| | 0.109 | -0.00063 | 25.51 | 0.000 | -0.00001 | 1.77 |
| | 0.103 | -0.00064 | 25.78 | 0.001 | -0.00005 | 3.00 |

| | | | | | |
|---|---|---|---|---|---|
| 0.099 | -0.00065 | 26.19 | 0.003 | -0.00012 | 5.60 |
| 0.086 | -0.00063 | 25.45 | 0.004 | -0.00014 | 6.48 |
| 0.072 | -0.00060 | 24.25 | 0.006 | -0.00018 | 7.77 |
| 0.048 | -0.00050 | 20.79 | 0.002 | -0.00011 | 5.34 |
| 0.039 | -0.00047 | 19.60 | 0.002 | -0.00010 | 5.11 |
| 0.027 | -0.00041 | 17.50 | 0.000 | -0.00004 | 2.67 |
| 0.019 | -0.00035 | 15.48 | 0.015 | 0.00031 | -9.89 |
| 0.012 | -0.00030 | 13.60 | 0.034 | 0.00049 | -16.56 |
| 0.047 | -0.00059 | 24.06 | 0.035 | 0.00053 | -17.72 |
| 0.072 | -0.00076 | 30.27 | 0.058 | 0.00070 | -24.10 |
| 0.082 | -0.00086 | 33.83 | 0.058 | 0.00074 | -25.34 |
| 0.083 | -0.00091 | 35.59 | 0.064 | 0.00081 | -28.06 |
| 0.076 | -0.00091 | 35.71 | 0.063 | 0.00085 | -29.35 |
| 0.079 | -0.00098 | 37.98 | 0.063 | 0.00090 | -31.15 |
| 0.078 | -0.00103 | 39.82 | 0.063 | 0.00094 | -32.83 |
| 0.063 | -0.00097 | 37.62 | 0.067 | 0.00103 | -36.02 |
| 0.049 | -0.00090 | 35.06 | 0.057 | 0.00100 | -34.87 |
| 0.036 | -0.00080 | 31.61 | 0.055 | 0.00103 | -35.96 |
| 0.029 | -0.00075 | 29.75 | 0.061 | 0.00115 | -40.27 |
| 0.076 | -0.00121 | 46.40 | 0.085 | 0.00140 | -49.45 |
| 0.102 | -0.00143 | 54.62 | 0.087 | 0.00146 | -51.62 |
| 0.103 | -0.00148 | 56.28 | 0.076 | 0.00139 | -48.93 |
| 0.102 | -0.00150 | 56.91 | 0.062 | 0.00126 | -44.11 |
| 0.102 | -0.00152 | 57.61 | 0.048 | 0.00108 | -37.77 |
| 0.099 | -0.00151 | 57.31 | 0.035 | 0.00091 | -31.55 |
| 0.094 | -0.00148 | 56.45 | 0.023 | 0.00072 | -24.77 |
| 0.091 | -0.00148 | 56.24 | 0.013 | 0.00053 | -17.59 |
| 0.080 | -0.00129 | 49.37 | 0.018 | 0.00061 | -20.74 |
| 0.078 | -0.00126 | 48.13 | 0.018 | 0.00062 | -20.81 |
| 0.086 | -0.00127 | 48.68 | 0.019 | 0.00062 | -21.02 |
| 0.098 | -0.00131 | 50.09 | 0.020 | 0.00064 | -21.50 |
| 0.094 | -0.00175 | 66.08 | 0.014 | 0.00075 | -25.54 |
| 0.449 | -0.00466 | 171.32 | 0.061 | 0.00195 | -69.28 |
| 0.469 | -0.00519 | 190.68 | 0.007 | 0.00067 | -22.76 |
| 0.499 | -0.00607 | 222.62 | 0.040 | -0.00158 | 59.18 |
| 0.402 | -0.00596 | 218.72 | 0.100 | -0.00297 | 109.46 |
| 0.271 | -0.00543 | 199.29 | 0.233 | -0.00554 | 202.87 |
| 0.048 | -0.00277 | 102.67 | 0.635 | -0.01323 | 482.20 |
| 0.026 | 0.00197 | -69.59 | 0.586 | -0.01410 | 513.70 |
| 0.238 | 0.00611 | -220.05 | 0.529 | -0.01444 | 526.17 |
| 0.416 | 0.00912 | -329.61 | 0.780 | -0.01995 | 726.40 |
| 0.838 | 0.01342 | -485.87 | 0.975 | -0.01521 | 554.18 |
| 0.872 | 0.01522 | -551.26 | 0.966 | -0.01511 | 550.48 |
| 0.948 | 0.01890 | -685.36 | 0.945 | -0.01465 | 533.88 |
| 0.895 | 0.01950 | -706.85 | 1.000 | -0.01057 | 385.37 |
| 1.000 | 0.00697 | -251.16 | 1.000 | -0.01044 | 380.56 |

update for EV, CV:

**tCd** **CC287**

**LN Analysis** **tCd**

**Load** **Load Data, EV=4.12 lbs/day CV=0.825**

**Load Data-based LN**

| | | u | ln tCd Load | tCd Load |
|---|---|---|---|---|
| **Avg:** | **4** | | | |
| **SD:** | **3** | u | ln tCd Load | tCd Load |
| **CV:** | **0.82** | 3 | 3.3 | 28 |
| **Min:** | **1.1** | 0 | 1.16 | 3 |
| **Max:** | **23** | -3 | -1.01 | 0.4 |
| **Median:** | **3** | | | |
| | | 4 | 4.12 | |
| | | 0.82 | 0.825 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.968, EV=4.07lbs/day CV=0.702; max r2=0.975**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.968 | u | lnLoad | Load | |
| slope, m: | 1.579 | 3 | 3.10 | 22 | |
| intercept, b: | -1.900 | 0 | 1.20 | 3 | |
| N: | 92 | -3 | -0.70 | 0.5 | |
| E[Load] | 4.1 | Parameter Estimates | | | 0.968 |
| SD[Load] | 3 | from LN regression | | | 4.1 |
| CV[Load] | 0.70 | update graph label | | | 0.7 |
| | | | | | max r2 |
| | N: 92 | | | | 0.975 |

| | Date | tCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|---|
| ws | update and rank for new data | | | | | | |
| | 25-Jul-95 | 1.1 | 1 | 0.0068 | -2.469 | 0.103 | 0.968 |
| | 14-Aug-95 | 1.2 | 2 | 0.0176 | -2.106 | 0.199 | 0.972 |
| | 13-Sep-95 | 1.2 | 3 | 0.0285 | -1.904 | 0.204 | 0.975 |
| | 30-Aug-99 | 1.3 | 4 | 0.0393 | -1.759 | 0.230 | 0.975 |
| | 11-Jul-95 | 1.3 | 5 | 0.0501 | -1.644 | 0.258 | 0.975 |
| | 5-Aug-99 | 1.3 | 6 | 0.0610 | -1.547 | 0.284 | 0.975 |
| | 16-Aug-94 | 1.4 | 7 | 0.0718 | -1.462 | 0.327 | 0.975 |
| | 30-Nov-93 | 1.5 | 8 | 0.0827 | -1.387 | 0.401 | 0.974 |
| | 27-Oct-93 | 1.6 | 9 | 0.0935 | -1.320 | 0.452 | 0.974 |
| | 24-Sep-98 | 1.6 | 10 | 0.1043 | -1.257 | 0.453 | 0.974 |
| | 27-Jun-95 | 1.6 | 11 | 0.1152 | -1.199 | 0.456 | 0.974 |
| | 26-Oct-98 | 1.6 | 12 | 0.1260 | -1.145 | 0.481 | 0.973 |
| | 16-Oct-94 | 1.6 | 13 | 0.1369 | -1.095 | 0.483 | 0.972 |
| | 5-Oct-91 | 1.6 | 14 | 0.1477 | -1.046 | 0.484 | 0.972 |
| | 16-Aug-94 | 1.7 | 15 | 0.1585 | -1.000 | 0.511 | 0.971 |
| | 1-Oct-98 | 1.7 | 16 | 0.1694 | -0.957 | 0.535 | 0.970 |
| | 8-Oct-98 | 1.7 | 17 | 0.1802 | -0.915 | 0.537 | 0.969 |
| | 24-May-99 | 1.8 | 18 | 0.1911 | -0.874 | 0.574 | 0.967 |
| | 13-Sep-94 | 1.8 | 19 | 0.2019 | -0.835 | 0.585 | 0.966 |
| | 18-Feb-94 | 1.8 | 20 | 0.2127 | -0.797 | 0.611 | 0.965 |
| | 25-Jul-94 | 1.8 | 21 | 0.2236 | -0.760 | 0.612 | 0.964 |
| | 26-Aug-98 | 1.9 | 22 | 0.2344 | -0.724 | 0.636 | 0.963 |
| | 17-Dec-93 | 2.1 | 23 | 0.2453 | -0.689 | 0.731 | 0.962 |
| | 17-Dec-93 | 2.1 | 24 | 0.2561 | -0.655 | 0.759 | 0.960 |
| | 23-Jun-94 | 2.2 | 25 | 0.2669 | -0.622 | 0.780 | 0.959 |
| | 28-Jul-98 | 2.3 | 26 | 0.2778 | -0.589 | 0.815 | 0.958 |
| | 23-Mar-99 | 2.3 | 27 | 0.2886 | -0.557 | 0.835 | 0.957 |
| | 26-Sep-96 | 2.4 | 28 | 0.2995 | -0.526 | 0.881 | 0.955 |
| | 22-Jan-98 | 2.4 | 29 | 0.3103 | -0.495 | 0.890 | 0.954 |
| | 24-Jul-96 | 2.7 | 30 | 0.3211 | -0.465 | 0.992 | 0.953 |
| | 20-Jan-94 | 2.7 | 31 | 0.3320 | -0.434 | 0.999 | 0.953 |
| | 16-Nov-94 | 2.7 | 32 | 0.3428 | -0.405 | 1.006 | 0.954 |
| | 25-Apr-95 | 2.8 | 33 | 0.3537 | -0.375 | 1.021 | 0.954 |
| | 24-Mar-94 | 3.0 | 34 | 0.3645 | -0.346 | 1.084 | 0.954 |
| | 20-Jan-94 | 3.0 | 35 | 0.3753 | -0.318 | 1.098 | 0.955 |
| | 26-Feb-98 | 3.0 | 36 | 0.3862 | -0.289 | 1.098 | 0.957 |
| | 16-Oct-97 | 3.0 | 37 | 0.3970 | -0.261 | 1.101 | 0.958 |
| | 21-Aug-96 | 3.0 | 38 | 0.4079 | -0.233 | 1.103 | 0.959 |
| | 26-Nov-97 | 3.0 | 39 | 0.4187 | -0.205 | 1.111 | 0.960 |
| | 14-Aug-97 | 3.1 | 40 | 0.4295 | -0.178 | 1.115 | 0.960 |
| | 19-Apr-99 | 3.1 | 41 | 0.4404 | -0.150 | 1.134 | 0.961 |
| | 8-Mar-94 | 3.1 | 42 | 0.4512 | -0.123 | 1.136 | 0.962 |
| | 9-Nov-97 | 3.1 | 43 | 0.4621 | -0.095 | 1.142 | 0.962 |
| | 8-Mar-95 | 3.2 | 44 | 0.4729 | -0.068 | 1.154 | 0.963 |
| | 23-Feb-99 | 3.2 | 45 | 0.4837 | -0.041 | 1.172 | 0.963 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 24-Jun-97 | 3.3 | 46 | 0.4946 | -0.014 | 1.205 | 0.964 |
| 26-Jun-98 | 3.3 | 47 | 0.5054 | 0.014 | 1.208 | 0.965 |
| 19-Dec-97 | 3.4 | 48 | 0.5163 | 0.041 | 1.215 | 0.966 |
| 27-Nov-96 | 3.4 | 49 | 0.5271 | 0.068 | 1.220 | 0.966 |
| 12-Apr-95 | 3.4 | 50 | 0.5379 | 0.095 | 1.224 | 0.967 |
| 8-Mar-99 | 3.5 | 51 | 0.5488 | 0.123 | 1.243 | 0.967 |
| 4-Sep-97 | 3.5 | 52 | 0.5596 | 0.150 | 1.246 | 0.968 |
| 13-Dec-94 | 3.5 | 53 | 0.5705 | 0.178 | 1.256 | 0.968 |
| 13-Jun-95 | 3.5 | 54 | 0.5813 | 0.205 | 1.260 | 0.968 |
| 29-Oct-96 | 3.5 | 55 | 0.5921 | 0.233 | 1.264 | 0.968 |
| 18-Oct-95 | 3.5 | 56 | 0.6030 | 0.261 | 1.266 | 0.967 |
| 26-Oct-98 | 3.6 | 57 | 0.6138 | 0.289 | 1.276 | 0.966 |
| 7-Apr-94 | 3.7 | 58 | 0.6247 | 0.318 | 1.298 | 0.965 |
| 20-Mar-98 | 3.7 | 59 | 0.6355 | 0.346 | 1.319 | 0.964 |
| 28-Dec-98 | 4.1 | 60 | 0.6463 | 0.375 | 1.403 | 0.963 |
| 27-Dec-95 | 4.1 | 61 | 0.6572 | 0.405 | 1.405 | 0.964 |
| 7-Jun-94 | 4.1 | 62 | 0.6680 | 0.434 | 1.410 | 0.964 |
| 8-Jul-99 | 4.1 | 63 | 0.6789 | 0.465 | 1.422 | 0.964 |
| 9-Nov-97 | 4.2 | 64 | 0.6897 | 0.495 | 1.428 | 0.963 |
| 30-Jan-97 | 4.2 | 65 | 0.7005 | 0.526 | 1.441 | 0.962 |
| 19-May-94 | 4.2 | 66 | 0.7114 | 0.557 | 1.441 | 0.961 |
| 9-Feb-95 | 4.4 | 67 | 0.7222 | 0.589 | 1.487 | 0.959 |
| 15-Jan-99 | 4.4 | 68 | 0.7331 | 0.622 | 1.490 | 0.958 |
| 19-Jun-96 | 4.6 | 69 | 0.7439 | 0.655 | 1.530 | 0.956 |
| 5-May-99 | 4.6 | 70 | 0.7547 | 0.689 | 1.537 | 0.954 |
| 4-May-94 | 4.9 | 71 | 0.7656 | 0.724 | 1.589 | 0.951 |
| 8-May-96 | 5.3 | 72 | 0.7764 | 0.760 | 1.660 | 0.949 |
| 28-Mar-96 | 5.6 | 73 | 0.7873 | 0.797 | 1.725 | 0.950 |
| 21-Feb-97 | 5.7 | 74 | 0.7981 | 0.835 | 1.732 | 0.955 |
| 14-May-98 | 5.7 | 75 | 0.8089 | 0.874 | 1.732 | 0.960 |
| 27-May-99 | 5.7 | 76 | 0.8198 | 0.915 | 1.733 | 0.964 |
| 21-Nov-95 | 5.7 | 77 | 0.8306 | 0.957 | 1.740 | 0.966 |
| 10-Jan-95 | 5.9 | 78 | 0.8415 | 1.000 | 1.778 | 0.966 |
| 23-Jul-97 | 6.0 | 79 | 0.8523 | 1.046 | 1.787 | 0.968 |
| 13-Dec-96 | 6.2 | 80 | 0.8631 | 1.095 | 1.830 | 0.967 |
| 14-May-98 | 6.5 | 81 | 0.8740 | 1.145 | 1.869 | 0.968 |
| 26-Oct-98 | 6.5 | 82 | 0.8848 | 1.199 | 1.875 | 0.969 |
| 16-Apr-97 | 6.8 | 83 | 0.8957 | 1.257 | 1.923 | 0.966 |
| 2-Jun-99 | 7.0 | 84 | 0.9065 | 1.320 | 1.949 | 0.963 |
| 25-Nov-98 | 7.3 | 85 | 0.9173 | 1.387 | 1.984 | 0.956 |
| 17-Jan-96 | 7.4 | 86 | 0.9282 | 1.462 | 2.001 | 0.945 |
| 29-Feb-96 | 9.0 | 87 | 0.9390 | 1.547 | 2.193 | 0.945 |
| 22-Mar-95 | 11.1 | 88 | 0.9499 | 1.644 | 2.409 | 0.930 |
| 15-Dec-98 | 11.1 | 89 | 0.9607 | 1.759 | 2.410 | 0.911 |
| 14-Nov-98 | 13.6 | 90 | 0.9715 | 1.904 | 2.608 | 0.863 |
| 26-Mar-97 | 19.4 | 91 | 0.9824 | 2.106 | 2.964 | |
| 15-Jun-99 | 22.7 | 92 | 0.9932 | 2.469 | 3.123 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tCd** | | **CC287** | 20 | 19.9 |
| **LN Analysis** | | **tCd** | 0.47 | 0.467 |

**Concentration** — **Conc. Data, EV=19.9 ug/L CV=0.467**

| | | **Data-based LN** | | |
|---|---|---|---|---|
| **Avg:** | **20** | u | ln[tCd] | [tCd] |
| **SD:** | **9** | 3 | 4.2 | 69 |
| **CV:** | **0.47** | 0 | 2.89 | 18 |
| **Min:** | **4** | -3 | 1.56 | 5 |
| **Max:** | **52** | | | |
| **Median:** | **19** | | | |

**u=mLn{Conc.}+b:** — 0.186 0.186; 40.6 40.6; 2.091 2.09

update for r2, EV, CV: **r2=0.186, EV=40.6 ug/L CV=2.09; max r2=0.999**

| | | | | |
|---|---|---|---|---|
| | r2 u,lnConc: | 0.186 | u | lnConc. | Conc. |
| | slope, m: | 0.771 | 3 | 6.75 | 857 |
| | intercept, b: | -2.208 | 0 | 2.86 | 18 |
| | N: 92 | | -3 | -1.03 | 0 |
| 0.968 | E[Conc]: | 40.6 | Parameter Estimates | | |
| 4.07 | SD[Conc]: | 85 | from LN regression | | |
| 0.702 | CV[Conc]: | 2.09 | update graph label | | |

N: 92 — max r2 0.999

| **Date** | **tCd Concentration ug/L Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | **r2 forward** |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 24-Jun-97 | 5 | 1 | 0.0068 | -2.469 | 1.609 | 0.186 |
| 14-May-98 | 5.1 | 2 | 0.0176 | -2.106 | 1.629 | 0.154 |
| 19-Jun-96 | 5.8 | 3 | 0.0285 | -1.904 | 1.758 | 0.127 |
| 13-Jun-95 | 6.8 | 4 | 0.0393 | -1.759 | 1.917 | 0.103 |
| 19-May-94 | 7.7 | 5 | 0.0501 | -1.644 | 2.041 | 0.084 |
| 4-May-94 | 8.2 | 6 | 0.0610 | -1.547 | 2.104 | 0.068 |
| 27-Jun-95 | 8.4 | 7 | 0.0718 | -1.462 | 2.128 | 0.055 |
| 26-Jun-98 | 9.8 | 8 | 0.0827 | -1.387 | 2.282 | 0.042 |
| 23-Jul-97 | 10 | 9 | 0.0935 | -1.320 | 2.303 | 0.033 |
| 7-Jun-94 | 12 | 10 | 0.1043 | -1.257 | 2.485 | 0.025 |
| 25-Apr-95 | 12 | 11 | 0.1152 | -1.199 | 2.485 | 0.020 |
| 11-Jul-95 | 12 | 12 | 0.1260 | -1.145 | 2.485 | 0.015 |
| 8-May-96 | 12 | 13 | 0.1369 | -1.095 | 2.485 | 0.011 |
| 21-Nov-95 | 13 | 14 | 0.1477 | -1.046 | 2.565 | 0.007 |
| 23-Jun-94 | 14 | 15 | 0.1585 | -1.000 | 2.639 | 0.005 |
| 25-Jul-95 | 14 | 16 | 0.1694 | -0.957 | 2.639 | 0.003 |
| 24-Jul-96 | 14 | 17 | 0.1802 | -0.915 | 2.639 | 0.002 |
| 12-Apr-95 | 15 | 18 | 0.1911 | -0.874 | 2.708 | 0.001 |
| 29-Feb-96 | 15 | 19 | 0.2019 | -0.835 | 2.708 | 0.000 |
| 14-Aug-97 | 15 | 20 | 0.2127 | -0.797 | 2.708 | 0.000 |
| 8-Mar-95 | 16 | 21 | 0.2236 | -0.760 | 2.773 | 0.000 |
| 28-Mar-96 | 16 | 22 | 0.2344 | -0.724 | 2.773 | 0.001 |
| 28-Jul-98 | 17 | 23 | 0.2453 | -0.689 | 2.833 | 0.001 |
| 24-Sep-98 | 17 | 24 | 0.2561 | -0.655 | 2.833 | 0.002 |
| 9-Nov-97 | 17.8 | 25 | 0.2669 | -0.622 | 2.879 | 0.003 |
| 7-Apr-94 | 18 | 26 | 0.2778 | -0.589 | 2.890 | 0.004 |
| 25-Jul-94 | 18 | 27 | 0.2886 | -0.557 | 2.890 | 0.005 |
| 14-Aug-95 | 18 | 28 | 0.2995 | -0.526 | 2.890 | 0.006 |
| 27-Dec-95 | 18 | 29 | 0.3103 | -0.495 | 2.890 | 0.007 |
| 26-Aug-98 | 18 | 30 | 0.3211 | -0.465 | 2.890 | 0.009 |
| 26-Oct-98 | 18 | 31 | 0.3320 | -0.434 | 2.890 | 0.010 |
| 16-Aug-94 | 19 | 32 | 0.3428 | -0.405 | 2.944 | 0.012 |
| 16-Aug-94 | 19 | 33 | 0.3537 | -0.375 | 2.944 | 0.013 |
| 9-Feb-95 | 19 | 34 | 0.3645 | -0.346 | 2.944 | 0.015 |
| 4-Sep-97 | 19 | 35 | 0.3753 | -0.318 | 2.944 | 0.017 |
| 26-Nov-97 | 19 | 36 | 0.3862 | -0.289 | 2.944 | 0.019 |
| 1-Oct-98 | 19 | 37 | 0.3970 | -0.261 | 2.944 | 0.021 |
| 13-Sep-95 | 20 | 38 | 0.4079 | -0.233 | 2.996 | 0.023 |
| 8-Oct-98 | 20 | 39 | 0.4187 | -0.205 | 2.996 | 0.024 |
| 5-Oct-91 | 20.8 | 40 | 0.4295 | -0.178 | 3.035 | 0.026 |
| 13-Sep-94 | 21 | 41 | 0.4404 | -0.150 | 3.045 | 0.028 |
| 16-Oct-94 | 21 | 42 | 0.4512 | -0.123 | 3.045 | 0.029 |
| 18-Oct-95 | 21 | 43 | 0.4621 | -0.095 | 3.045 | 0.030 |
| 20-Mar-98 | 21 | 44 | 0.4729 | -0.068 | 3.045 | 0.031 |
| 27-Oct-93 | 22 | 45 | 0.4837 | -0.041 | 3.091 | 0.033 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30-Nov-93 | 22 | 46 | 0.4946 | -0.014 | 3.091 | 0.034 |
| 16-Oct-97 | 22 | 47 | 0.5054 | 0.014 | 3.091 | 0.034 |
| 26-Sep-96 | 23 | 48 | 0.5163 | 0.041 | 3.135 | 0.035 |
| 16-Apr-97 | 23 | 49 | 0.5271 | 0.068 | 3.135 | 0.035 |
| 22-Mar-95 | 24 | 50 | 0.5379 | 0.095 | 3.178 | 0.035 |
| 21-Aug-96 | 24 | 51 | 0.5488 | 0.123 | 3.178 | 0.034 |
| 30-Jan-97 | 25 | 52 | 0.5596 | 0.150 | 3.219 | 0.033 |
| 26-Mar-97 | 25 | 53 | 0.5705 | 0.178 | 3.219 | 0.031 |
| 22-Jan-98 | 25 | 54 | 0.5813 | 0.205 | 3.219 | 0.030 |
| 26-Feb-98 | 25 | 55 | 0.5921 | 0.233 | 3.219 | 0.028 |
| 15-Jan-99 | 25 | 56 | 0.6030 | 0.261 | 3.219 | 0.026 |
| 8-Mar-94 | 26 | 57 | 0.6138 | 0.289 | 3.258 | 0.024 |
| 24-Mar-94 | 26 | 58 | 0.6247 | 0.318 | 3.258 | 0.021 |
| 19-Dec-97 | 26 | 59 | 0.6355 | 0.346 | 3.258 | 0.018 |
| 17-Jan-96 | 27 | 60 | 0.6463 | 0.375 | 3.296 | 0.016 |
| 21-Feb-97 | 27 | 61 | 0.6572 | 0.405 | 3.296 | 0.013 |
| 29-Oct-96 | 28 | 62 | 0.6680 | 0.434 | 3.332 | 0.010 |
| 8-Mar-99 | 28 | 63 | 0.6789 | 0.465 | 3.332 | 0.006 |
| 27-Nov-96 | 29 | 64 | 0.6897 | 0.495 | 3.367 | 0.004 |
| 18-Feb-94 | 30 | 65 | 0.7005 | 0.526 | 3.401 | 0.001 |
| 23-Feb-99 | 30 | 66 | 0.7114 | 0.557 | 3.401 | 0.000 |
| 16-Nov-94 | 32 | 67 | 0.7222 | 0.589 | 3.466 | 0.000 |
| 17-Dec-93 | 33 | 68 | 0.7331 | 0.622 | 3.497 | 0.003 |
| 17-Dec-93 | 33 | 69 | 0.7439 | 0.655 | 3.497 | 0.011 |
| 20-Jan-94 | 38 | 70 | 0.7547 | 0.689 | 3.638 | 0.024 |
| 20-Jan-94 | 38 | 71 | 0.7656 | 0.724 | 3.638 | 0.050 |
| 13-Dec-94 | 38 | 72 | 0.7764 | 0.760 | 3.638 | 0.093 |
| 10-Jan-95 | 39 | 73 | 0.7873 | 0.797 | 3.664 | 0.160 |
| 13-Dec-96 | 39 | 74 | 0.7981 | 0.835 | 3.664 | 0.269 |
| 25-Nov-98 | 52 | 75 | 0.8089 | 0.874 | 3.951 | 0.441 |
| 15-Jun-99 | 4 | 76 | 0.8198 | 0.915 | 1.386 | 0.842 |
| 27-May-99 | 5 | 77 | 0.8306 | 0.957 | 1.609 | 0.833 |
| 2-Jun-99 | 5 | 78 | 0.8415 | 1.000 | 1.609 | 0.817 |
| 14-May-98 | 5.2 | 79 | 0.8523 | 1.046 | 1.649 | 0.806 |
| 8-Jul-99 | 5.4 | 80 | 0.8631 | 1.095 | 1.686 | 0.810 |
| 5-May-99 | 9 | 81 | 0.8740 | 1.145 | 2.197 | 0.881 |
| 24-May-99 | 11 | 82 | 0.8848 | 1.199 | 2.398 | 0.889 |
| 5-Aug-99 | 12.6 | 83 | 0.8957 | 1.257 | 2.534 | 0.884 |
| 19-Apr-99 | 15 | 84 | 0.9065 | 1.320 | 2.708 | 0.871 |
| 30-Aug-99 | 15 | 85 | 0.9173 | 1.387 | 2.708 | 0.844 |
| 26-Oct-98 | 18 | 86 | 0.9282 | 1.462 | 2.890 | 0.814 |
| 9-Nov-97 | 18.2 | 87 | 0.9390 | 1.547 | 2.901 | 0.763 |
| 26-Oct-98 | 19 | 88 | 0.9499 | 1.644 | 2.944 | 0.680 |
| 23-Mar-99 | 26 | 89 | 0.9607 | 1.759 | 3.258 | 0.766 |
| 15-Dec-98 | 31 | 90 | 0.9715 | 1.904 | 3.434 | 0.999 |
| 28-Dec-98 | 32 | 91 | 0.9824 | 2.106 | 3.466 | |
| 14-Nov-98 | 34.2 | 92 | 0.9932 | 2.469 | 3.532 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **CC287** | | | 55 | 55.2 |
| **LN Analysis** | | **tCd** | | | 1.20 | 1.2 |
| **Discharge, Q** | | **Q Data, EV=55.2 cfs CV=1.2** | | | | |
| **Avg:** | **55** | **Q Data-based LN** | | | | |
| **SD:** | **66** | u | lnQ | Q | | |
| **CV:** | **1.20** | 3 | 6.4 | 599 | | |
| **Min:** | **11** | 0 | 3.57 | 35 | | |
| **Max:** | **384** | -3 | 0.74 | 2 | | |
| **Median:** | **29** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.683 | 0.683 |
| | | | | | 62.4 | 62.4 |
| **u=mLn(Q)+b:** | | | | | 1.45 | 1.45 |

update for r2, EV, CV: **r2=0.683, EV=62.4 cfs CV=1.45; max r2=0.895**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.683 | u | lnQ | Q |
| slope, m: | 0.938 | 3 | 6.76 | 865 |
| intercept, b: | -3.345 | 0 | 3.57 | 35 |
| N: | 92 | -3 | 0.37 | 1 |
| E[Q] | 62.4 | Parameter Estimates | | |
| SD[Q]: | 91 | from LN regression | | |
| CV[Q]: | 1.45 | update graph label | | |

N: 92 — max r2 = 0.895

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 11.4 | 1 | 0.0068 | -2.469 | 2.434 | 0.683 |
| 18-Feb-94 | 11.41 | 2 | 0.0176 | -2.106 | 2.434 | 0.684 |
| 17-Dec-93 | 11.7 | 3 | 0.0285 | -1.904 | 2.460 | 0.681 |
| 17-Dec-93 | 12.03 | 4 | 0.0393 | -1.759 | 2.487 | 0.677 |
| 14-Aug-95 | 12.6 | 5 | 0.0501 | -1.644 | 2.534 | 0.672 |
| 30-Nov-93 | 12.62 | 6 | 0.0610 | -1.547 | 2.535 | 0.667 |
| 27-Oct-93 | 13.28 | 7 | 0.0718 | -1.462 | 2.586 | 0.661 |
| 20-Jan-94 | 13.28 | 8 | 0.0827 | -1.387 | 2.586 | 0.655 |
| 16-Aug-94 | 13.57 | 9 | 0.0935 | -1.320 | 2.608 | 0.649 |
| 16-Oct-94 | 14.34 | 10 | 0.1043 | -1.257 | 2.663 | 0.642 |
| 5-Oct-91 | 14.5 | 11 | 0.1152 | -1.199 | 2.674 | 0.636 |
| 20-Jan-94 | 14.66 | 12 | 0.1260 | -1.145 | 2.685 | 0.630 |
| 25-Jul-95 | 14.71 | 13 | 0.1369 | -1.095 | 2.689 | 0.623 |
| 13-Sep-94 | 15.89 | 14 | 0.1477 | -1.046 | 2.766 | 0.615 |
| 16-Nov-94 | 15.89 | 15 | 0.1585 | -1.000 | 2.766 | 0.609 |
| 8-Oct-98 | 15.9 | 16 | 0.1694 | -0.957 | 2.766 | 0.602 |
| 16-Aug-94 | 16.3 | 17 | 0.1802 | -0.915 | 2.791 | 0.594 |
| 1-Oct-98 | 16.7 | 18 | 0.1911 | -0.874 | 2.815 | 0.586 |
| 26-Oct-98 | 16.7 | 19 | 0.2019 | -0.835 | 2.815 | 0.578 |
| 13-Dec-94 | 17.17 | 20 | 0.2127 | -0.797 | 2.843 | 0.569 |
| 24-Sep-98 | 17.2 | 21 | 0.2236 | -0.760 | 2.845 | 0.561 |
| 22-Jan-98 | 18.1 | 22 | 0.2344 | -0.724 | 2.896 | 0.552 |
| 25-Jul-94 | 19.04 | 23 | 0.2453 | -0.689 | 2.947 | 0.543 |
| 26-Sep-96 | 19.5 | 24 | 0.2561 | -0.655 | 2.970 | 0.534 |
| 26-Aug-98 | 19.5 | 25 | 0.2669 | -0.622 | 2.970 | 0.526 |
| 23-Feb-99 | 20 | 26 | 0.2778 | -0.589 | 2.996 | 0.517 |
| 11-Jul-95 | 20.05 | 27 | 0.2886 | -0.557 | 2.998 | 0.507 |
| 24-Mar-94 | 21.13 | 28 | 0.2995 | -0.526 | 3.051 | 0.498 |
| 27-Nov-96 | 21.7 | 29 | 0.3103 | -0.495 | 3.077 | 0.488 |
| 8-Mar-94 | 22.26 | 30 | 0.3211 | -0.465 | 3.103 | 0.479 |
| 26-Feb-98 | 22.3 | 31 | 0.3320 | -0.434 | 3.105 | 0.469 |
| 8-Mar-99 | 23 | 32 | 0.3428 | -0.405 | 3.135 | 0.459 |
| 21-Aug-96 | 23.342375 | 33 | 0.3537 | -0.375 | 3.150 | 0.449 |
| 29-Oct-96 | 23.5 | 34 | 0.3645 | -0.346 | 3.157 | 0.439 |
| 19-Dec-97 | 24.1 | 35 | 0.3753 | -0.318 | 3.182 | 0.428 |
| 28-Jul-98 | 24.7 | 36 | 0.3862 | -0.289 | 3.207 | 0.417 |
| 16-Oct-97 | 25.4 | 37 | 0.3970 | -0.261 | 3.235 | 0.406 |
| 25-Nov-98 | 26 | 38 | 0.4079 | -0.233 | 3.258 | 0.395 |
| 10-Jan-95 | 28.21 | 39 | 0.4187 | -0.205 | 3.340 | 0.383 |
| 23-Jun-94 | 28.96 | 40 | 0.4295 | -0.178 | 3.366 | 0.373 |
| 13-Dec-96 | 29.7 | 41 | 0.4404 | -0.150 | 3.391 | 0.363 |
| 26-Nov-97 | 29.7 | 42 | 0.4512 | -0.123 | 3.391 | 0.353 |
| 18-Oct-95 | 31.4 | 43 | 0.4621 | -0.095 | 3.447 | 0.343 |
| 30-Jan-97 | 31.4 | 44 | 0.4729 | -0.068 | 3.447 | 0.333 |
| 9-Nov-97 | 32.7 | 45 | 0.4837 | -0.041 | 3.487 | 0.322 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15-Jan-99 | 33 | 46 | 0.4946 | -0.014 | 3.497 | 0.312 |
| 20-Mar-98 | 33.1 | 47 | 0.5054 | 0.014 | 3.500 | 0.301 |
| 4-Sep-97 | 34 | 48 | 0.5163 | 0.041 | 3.526 | 0.290 |
| 27-Jun-95 | 34.9 | 49 | 0.5271 | 0.068 | 3.552 | 0.279 |
| 24-Jul-96 | 35.8 | 50 | 0.5379 | 0.095 | 3.578 | 0.268 |
| 8-Mar-95 | 36.82 | 51 | 0.5488 | 0.123 | 3.606 | 0.257 |
| 14-Aug-97 | 37.8 | 52 | 0.5596 | 0.150 | 3.632 | 0.246 |
| 7-Apr-94 | 37.82 | 53 | 0.5705 | 0.178 | 3.633 | 0.235 |
| 21-Feb-97 | 38.9 | 54 | 0.5813 | 0.205 | 3.661 | 0.223 |
| 27-Dec-95 | 42.1 | 55 | 0.5921 | 0.233 | 3.740 | 0.212 |
| 12-Apr-95 | 42.13 | 56 | 0.6030 | 0.261 | 3.741 | 0.202 |
| 25-Apr-95 | 43 | 57 | 0.6138 | 0.289 | 3.761 | 0.191 |
| 9-Feb-95 | 43.28 | 58 | 0.6247 | 0.318 | 3.768 | 0.180 |
| 17-Jan-96 | 50.9 | 59 | 0.6355 | 0.346 | 3.930 | 0.169 |
| 16-Apr-97 | 55.3 | 60 | 0.6463 | 0.375 | 4.013 | 0.162 |
| 7-Jun-94 | 63.45 | 61 | 0.6572 | 0.405 | 4.150 | 0.157 |
| 26-Jun-98 | 63.5 | 62 | 0.6680 | 0.434 | 4.151 | 0.157 |
| 28-Mar-96 | 65.2 | 63 | 0.6789 | 0.465 | 4.177 | 0.156 |
| 21-Nov-95 | 81.5 | 64 | 0.6897 | 0.495 | 4.401 | 0.156 |
| 8-May-96 | 81.5 | 65 | 0.7005 | 0.526 | 4.401 | 0.164 |
| 22-Mar-95 | 86.16 | 66 | 0.7114 | 0.557 | 4.456 | 0.173 |
| 13-Jun-95 | 96.41 | 67 | 0.7222 | 0.589 | 4.569 | 0.185 |
| 19-May-94 | 102.01 | 68 | 0.7331 | 0.622 | 4.625 | 0.204 |
| 29-Feb-96 | 111 | 69 | 0.7439 | 0.655 | 4.710 | 0.229 |
| 23-Jul-97 | 111 | 70 | 0.7547 | 0.689 | 4.710 | 0.263 |
| 4-May-94 | 111.05 | 71 | 0.7656 | 0.724 | 4.710 | 0.303 |
| 24-Jun-97 | 124 | 72 | 0.7764 | 0.760 | 4.820 | 0.350 |
| 26-Mar-97 | 144 | 73 | 0.7873 | 0.797 | 4.970 | 0.416 |
| 19-Jun-96 | 148 | 74 | 0.7981 | 0.835 | 4.997 | 0.513 |
| 14-May-98 | 206 | 75 | 0.8089 | 0.874 | 5.328 | 0.640 |
| 26-Oct-98 | 13 | 76 | 0.8198 | 0.915 | 2.565 | 0.867 |
| 26-Oct-98 | 13 | 77 | 0.8306 | 0.957 | 2.565 | 0.856 |
| 30-Aug-99 | 22 | 78 | 0.8415 | 1.000 | 3.091 | 0.849 |
| 14-Nov-98 | 22.53 | 79 | 0.8523 | 1.046 | 3.115 | 0.832 |
| 15-Dec-98 | 25 | 80 | 0.8631 | 1.095 | 3.219 | 0.813 |
| 28-Dec-98 | 27 | 81 | 0.8740 | 1.145 | 3.296 | 0.793 |
| 5-Aug-99 | 34 | 82 | 0.8848 | 1.199 | 3.526 | 0.776 |
| 9-Nov-97 | 36.6 | 83 | 0.8957 | 1.257 | 3.600 | 0.763 |
| 5-May-99 | 84 | 84 | 0.9065 | 1.320 | 4.431 | 0.833 |
| 23-Mar-99 | 97 | 85 | 0.9173 | 1.387 | 4.575 | 0.805 |
| 8-Jul-99 | 107 | 86 | 0.9282 | 1.462 | 4.673 | 0.768 |
| 19-Apr-99 | 138 | 87 | 0.9390 | 1.547 | 4.927 | 0.764 |
| 14-May-98 | 233 | 88 | 0.9499 | 1.644 | 5.451 | 0.895 |
| 2-Jun-99 | 241 | 89 | 0.9607 | 1.759 | 5.485 | 0.895 |
| 27-May-99 | 261 | 90 | 0.9715 | 1.904 | 5.565 | 0.887 |
| 15-Jun-99 | 263 | 91 | 0.9824 | 2.106 | 5.572 | |
| 24-May-99 | 384 | 92 | 0.9932 | 2.469 | 5.951 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC287 **Date:** 2-Jun-00

**Chemical:** tZn **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 35,150 | 41 | 3,023 | 529 | | | 0.00 | 0.00 | 0.00 |
| **SD:** | 626 | 38 | 1,399 | 402 | | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.92 | 0.46 | 0.76 | | | | | |
| **Min:** | 33,516 | 11 | 641 | 140.1 | | | -0.79 | -1.70 | -0.97 |
| **Max:** | 36,227 | 206 | 6,950 | 2,913 | | | 4.36 | 2.81 | 5.94 |
| **Median:** | 35,081 | 26 | 2,780 | 470 | | | -0.40 | -0.17 | -0.15 |

| tZn | CC287 | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.238)** | | update r2 | **0.24** | 0.238 | | r2: | 0.015 | 0.033 |
| r2 Q,[COC]: | 0.24 | [tZn] | Q | | | m: | 0.0075 | 0.00021 |
| slope, m: | -18.1 | 3,559 | 11.4 | | | b: | -222 | -3.98 |
| intercept, b: | 3765.1 | 3,023 | 41.1 | | | | | |
| N: | 75 | 45 | 206 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.373)** | | update r2 | | 0.37 | 0.373 | | | |
| r2 lnQ,ln[COC]: | 0.37 | ln[tZn] | ln Q | [tZn] | Q | | | |
| slope, m: | -0.44 | 8.33 | 2.43 | 4,130 | 11 | | | |
| intercept, b: | 9.39 | 7.76 | 3.72 | 2,355 | 41 | | | |
| N: | 75 | 7.06 | 5.33 | 1,162 | 206 | | | |

N= 75

| | | | | | | | | tZn | for graph 0 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | CC287 | | |
| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | Standardized Values = (x - Avg)/SD | | |
| update for new data | | cfs | ug/L | lbs/day | | | | Q | Conc | Load |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 5-Oct-91 | 14.5 | 3430 | 268 | 2.67 | 8.14 | 5.59 | -0.70 | 0.29 | -0.65 |
| IDEQ | 27-Oct-93 | 13.28 | 3420 | 244 | 2.59 | 8.14 | 5.50 | -0.74 | 0.28 | -0.71 |
| IDEQ | 30-Nov-93 | 12.62 | 4050 | 275 | 2.54 | 8.31 | 5.62 | -0.75 | 0.73 | -0.63 |
| IDEQ | 17-Dec-93 | 11.7 | 5180 | 326 | 2.46 | 8.55 | 5.79 | -0.78 | 1.54 | -0.51 |
| IDEQ | 17-Dec-93 | 12.03 | 5180 | 335 | 2.49 | 8.55 | 5.81 | -0.77 | 1.54 | -0.48 |
| IDEQ | 20-Jan-94 | 13.28 | 5050 | 361 | 2.59 | 8.53 | 5.89 | -0.74 | 1.45 | -0.42 |
| IDEQ | 20-Jan-94 | 14.66 | 5050 | 398 | 2.69 | 8.53 | 5.99 | -0.70 | 1.45 | -0.33 |
| IDEQ | 18-Feb-94 | 11.41 | 4620 | 284 | 2.43 | 8.44 | 5.65 | -0.78 | 1.14 | -0.61 |
| IDEQ | 8-Mar-94 | 22.26 | 4460 | 534 | 3.10 | 8.40 | 6.28 | -0.50 | 1.03 | 0.01 |
| IDEQ | 24-Mar-94 | 21.13 | 4600 | 523 | 3.05 | 8.43 | 6.26 | -0.53 | 1.13 | -0.02 |
| IDEQ | 7-Apr-94 | 37.82 | 2350 | 478 | 3.63 | 7.76 | 6.17 | -0.09 | -0.48 | -0.13 |
| IDEQ | 4-May-94 | 111.05 | 1160 | 693 | 4.71 | 7.06 | 6.54 | 1.85 | -1.33 | 0.41 |
| IDEQ | 19-May-94 | 102.01 | 1000 | 549 | 4.63 | 6.91 | 6.31 | 1.61 | -1.45 | 0.05 |
| IDEQ | 7-Jun-94 | 63.45 | 1520 | 519 | 4.15 | 7.33 | 6.25 | 0.59 | -1.07 | -0.03 |
| IDEQ | 23-Jun-94 | 28.96 | 1690 | 263 | 3.37 | 7.43 | 5.57 | -0.32 | -0.95 | -0.66 |
| IDEQ | 25-Jul-94 | 19.04 | 2390 | 245 | 2.95 | 7.78 | 5.50 | -0.58 | -0.45 | -0.71 |
| IDEQ | 16-Aug-94 | 16.3 | 2850 | 250 | 2.79 | 7.96 | 5.52 | -0.66 | -0.12 | -0.70 |
| IDEQ | 16-Aug-94 | 13.57 | 2850 | 208 | 2.61 | 7.96 | 5.34 | -0.73 | -0.12 | -0.80 |
| IDEQ | 13-Sep-94 | 15.89 | 2880 | 246 | 2.77 | 7.97 | 5.51 | -0.67 | -0.10 | -0.71 |
| IDEQ | 16-Oct-94 | 14.34 | 3430 | 265 | 2.66 | 8.14 | 5.58 | -0.71 | 0.29 | -0.66 |
| IDEQ | 16-Nov-94 | 15.89 | 5500 | 470 | 2.77 | 8.61 | 6.15 | -0.67 | 1.77 | -0.15 |
| IDEQ | 13-Dec-94 | 17.17 | 6640 | 613 | 2.84 | 8.80 | 6.42 | -0.63 | 2.59 | 0.21 |
| IDEQ | 10-Jan-95 | 28.21 | 6320 | 959 | 3.34 | 8.75 | 6.87 | -0.34 | 2.36 | 1.07 |
| IDEQ | 9-Feb-95 | 43.28 | 3230 | 752 | 3.77 | 8.08 | 6.62 | 0.06 | 0.15 | 0.55 |
| IDEQ | 8-Mar-95 | 36.82 | 2530 | 501 | 3.61 | 7.84 | 6.22 | -0.11 | -0.35 | -0.07 |
| IDEQ | 22-Mar-95 | 86.16 | 3970 | 1840 | 4.46 | 8.29 | 7.52 | 1.19 | 0.68 | 3.26 |
| IDEQ | 12-Apr-95 | 42.13 | 2550 | 578 | 3.74 | 7.84 | 6.36 | 0.03 | -0.34 | 0.12 |
| IDEQ | 25-Apr-95 | 43 | 2100 | 486 | 3.76 | 7.65 | 6.19 | 0.05 | -0.66 | -0.11 |
| IDEQ | 13-Jun-95 | 96.41 | 919 | 477 | 4.57 | 6.82 | 6.17 | 1.46 | -1.50 | -0.13 |
| IDEQ | 27-Jun-95 | 34.9 | 1220 | 229 | 3.55 | 7.11 | 5.43 | -0.16 | -1.29 | -0.75 |
| IDEQ | 11-Jul-95 | 20.05 | 1690 | 182 | 3.00 | 7.43 | 5.21 | -0.56 | -0.95 | -0.86 |
| IDEQ | 25-Jul-95 | 14.71 | 1770 | 140 | 2.69 | 7.48 | 4.94 | -0.70 | -0.90 | -0.97 |
| IDEQ | 14-Aug-95 | 12.6 | 2490 | 169 | 2.53 | 7.82 | 5.13 | -0.75 | -0.38 | -0.90 |
| IDEQ | 13-Sep-95 | 11.4 | 2780 | 171 | 2.43 | 7.93 | 5.14 | -0.79 | -0.17 | -0.89 |
| IDEQ | 18-Oct-95 | 31.4 | 3020 | 510 | 3.45 | 8.01 | 6.23 | -0.26 | 0.00 | -0.05 |
| IDEQ | 21-Nov-95 | 81.5 | 1960 | 859 | 4.40 | 7.58 | 6.76 | 1.07 | -0.76 | 0.82 |
| IDEQ | 27-Dec-95 | 42.1 | 2500 | 566 | 3.74 | 7.82 | 6.34 | 0.03 | -0.37 | 0.09 |
| IDEQ | 17-Jan-96 | 50.9 | 3830 | 1049 | 3.93 | 8.25 | 6.96 | 0.26 | 0.58 | 1.29 |
| IDEQ | 29-Feb-96 | 111 | 2370 | 1415 | 4.71 | 7.77 | 7.26 | 1.85 | -0.47 | 2.21 |
| IDEQ | 28-Mar-96 | 65.2 | 2230 | 782 | 4.18 | 7.71 | 6.66 | 0.64 | -0.57 | 0.63 |
| IDEQ | 8-May-96 | 81.5 | 1660 | 728 | 4.40 | 7.41 | 6.59 | 1.07 | -0.97 | 0.49 |
| IDEQ | 19-Jun-96 | 148 | 836 | 666 | 5.00 | 6.73 | 6.50 | 2.83 | -1.56 | 0.34 |
| IDEQ | 24-Jul-96 | 35.8 | 1550 | 299 | 3.58 | 7.35 | 5.70 | -0.14 | -1.05 | -0.57 |
| IDEQ | 21-Aug-96 | 23.342375 | 3730 | 468 | 3.15 | 8.22 | 6.15 | -0.47 | 0.51 | -0.15 |
| IDEQ | 26-Sep-96 | 19.5 | 2770 | 291 | 2.97 | 7.93 | 5.67 | -0.57 | -0.18 | -0.59 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 29-Oct-96 | 23.5 | 3840 | 485 | 3.16 | 8.25 | 6.19 | -0.47 | 0.58 | -0.11 |
| IDEQ | 27-Nov-96 | 21.7 | 4480 | 523 | 3.08 | 8.41 | 6.26 | -0.51 | 1.04 | -0.02 |
| IDEQ | 13-Dec-96 | 29.7 | 5500 | 879 | 3.39 | 8.61 | 6.78 | -0.30 | 1.7* | 0.8* |
| IDEQ | 30-Jan-97 | 31.4 | 3500 | 591 | 3.45 | 8.16 | 6.38 | -0.26 | 0.34 | 0.15 |
| IDEQ | 21-Feb-97 | 38.9 | 3980 | 833 | 3.66 | 8.29 | 6.72 | -0.06 | 0.68 | 0.76 |
| IDEQ | 26-Mar-97 | 144 | 3760 | 2913 | 4.97 | 8.23 | 7.98 | 2.72 | 0.53 | 5.94 |
| IDEQ | 16-Apr-97 | 55.3 | 3340 | 994 | 4.01 | 8.11 | 6.90 | 0.38 | 0.23 | 1.16 |
| IDEQ | 24-Jun-97 | 124 | 726 | 484 | 4.82 | 6.59 | 6.18 | 2.19 | -1.64 | -0.11 |
| IDEQ | 23-Jul-97 | 111 | 1330 | 794 | 4.71 | 7.19 | 6.68 | 1.85 | -1.21 | 0.66 |
| IDEQ | 14-Aug-97 | 37.8 | 1900 | 386 | 3.63 | 7.55 | 5.96 | -0.09 | -0.80 | -0.36 |
| IDEQ | 4-Sep-97 | 34 | 2540 | 465 | 3.53 | 7.84 | 6.14 | -0.19 | -0.35 | -0.16 |
| IDEQ | 16-Oct-97 | 25.4 | 2850 | 389 | 3.23 | 7.96 | 5.96 | -0.41 | -0.12 | -0.35 |
| URS | 9-Nov-97 | 32.7 | 2680 | 471 | 3.49 | 7.89 | 6.16 | -0.22 | -0.25 | -0.14 |
| IDEQ | 26-Nov-97 | 29.7 | 2750 | 439 | 3.39 | 7.92 | 6.09 | -0.30 | -0.20 | -0.22 |
| IDEQ | 19-Dec-97 | 24.1 | 3440 | 446 | 3.18 | 8.14 | 6.10 | -0.45 | 0.30 | -0.21 |
| IDEQ | 22-Jan-98 | 18.1 | 3320 | 323 | 2.90 | 8.11 | 5.78 | -0.61 | 0.21 | -0.51 |
| IDEQ | 26-Feb-98 | 22.3 | 3460 | 415 | 3.10 | 8.15 | 6.03 | -0.50 | 0.31 | -0.28 |
| IDEQ | 20-Mar-98 | 33.1 | 2730 | 486 | 3.50 | 7.91 | 6.19 | -0.21 | -0.21 | -0.11 |
| URS | 14-May-98 | 206 | 641 | 710 | 5.33 | 6.46 | 6.57 | 4.36 | -1.70 | 0.45 |
| IDEQ | 26-Jun-98 | 63.5 | 1200 | 410 | 4.15 | 7.09 | 6.02 | 0.59 | -1.30 | -0.30 |
| IDEQ | 28-Jul-98 | 24.7 | 1700 | 226 | 3.21 | 7.44 | 5.42 | -0.43 | -0.95 | -0.76 |
| IDEQ | 26-Aug-98 | 19.5 | 2080 | 218 | 2.97 | 7.64 | 5.39 | -0.57 | -0.67 | -0.77 |
| IDEQ | 24-Sep-98 | 17.2 | 2220 | 205 | 2.84 | 7.71 | 5.33 | -0.63 | -0.57 | -0.81 |
| IDEQ | 1-Oct-98 | 16.7 | 2220 | 199 | 2.82 | 7.71 | 5.30 | -0.64 | -0.57 | -0.82 |
| IDEQ | 8-Oct-98 | 15.9 | 2680 | 229 | 2.77 | 7.89 | 5.43 | -0.67 | -0.25 | -0.75 |
| IDEQ | 26-Oct-98 | 16.7 | 2290 | 206 | 2.82 | 7.74 | 5.33 | -0.64 | -0.52 | -0.81 |
| IDEQ | 25-Nov-98 | 26 | 6950 | 972 | 3.26 | 8.85 | 6.88 | -0.40 | 2.81 | 1.19 |
| IDEQ | 15-Jan-99 | 33 | 3730 | 662 | 3.50 | 8.22 | 6.50 | -0.21 | 0.51 | 0.33 |
| IDEQ | 23-Feb-99 | 20 | 3710 | 399 | 3.00 | 8.22 | 5.99 | -0.56 | 0.49 | -0.32 |
| IDEQ | 8-Mar-99 | 23 | 3870 | 479 | 3.14 | 8.26 | 6.17 | -0.48 | 0.61 | -0.13 |

**tZn**

**Concentration over time analysis**

| | tZn | CC287 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.023** | **-0.00013** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 5-Oct-91 | 8.10 | 3,297 | | |
| mid | 17-Jan-96 | 7.90 | 2,706 | | |
| last | 8-Mar-99 | 7.76 | 2,341 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.019** | **0.00032** |
| | 21-Feb-97 | 7.69 | 2,184 | | |
| | 8-Mar-99 | 7.92 | 2,764 | | |

**Load over time analysis**

| | tZn | CC287 | | |
|---|---|---|---|---|
| | | | | **Load over time** |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.008** **0.00008** |
| | **Time** | **LnLoad** | **Load** | |
| first | 5-Oct-91 | 5.95 | 384 | |
| mid | 17-Jan-96 | 6.08 | 438 | |
| last | 8-Mar-99 | 6.18 | 482 | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.264** **-0.00138** |
| | 21-Feb-97 | 6.66 | 779 | |
| | 8-Mar-99 | 5.63 | 279 | |

max r2: 0.715

**Forward time Regression on Ln Concentration(t)**

max r2: 0.438

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept | r2 | slope | intercept |
|---|---|---|---|---|---|
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.023 | -0.00013 | 12.34 | 0.008 | 0.00008 | 3.14 |
| 0.021 | -0.00012 | 12.25 | 0.004 | 0.00006 | 3.93 |
| 0.018 | -0.00012 | 12.08 | 0.002 | 0.00004 | 4.61 |
| 0.015 | -0.00011 | 11.68 | 0.001 | 0.00003 | 5.18 |
| 0.009 | -0.00009 | 10.93 | 0.000 | 0.00002 | 5.57 |
| 0.005 | -0.00006 | 10.10 | 0.000 | 0.00000 | 5.96 |
| 0.002 | -0.00004 | 9.26 | 0.000 | 0.00000 | 6.28 |
| 0.000 | -0.00001 | 8.33 | 0.000 | -0.00001 | 6.48 |
| 0.000 | 0.00001 | 7.47 | 0.001 | -0.00003 | 7.19 |
| 0.001 | 0.00003 | 6.59 | 0.001 | -0.00002 | 7.00 |
| 0.005 | 0.00006 | 5.59 | 0.000 | -0.00002 | 6.83 |
| 0.004 | 0.00006 | 5.59 | 0.000 | -0.00002 | 6.79 |
| 0.001 | 0.00003 | 6.77 | 0.000 | 0.00000 | 6.12 |
| 0.000 | -0.00001 | 8.34 | 0.000 | 0.00001 | 5.79 |
| 0.002 | -0.00004 | 9.29 | 0.000 | 0.00002 | 5.53 |
| 0.005 | -0.00006 | 10.15 | 0.000 | -0.00001 | 6.52 |
| 0.005 | -0.00007 | 10.40 | 0.001 | -0.00005 | 7.74 |
| 0.005 | -0.00007 | 10.33 | 0.004 | -0.00008 | 9.03 |
| 0.004 | -0.00007 | 10.25 | 0.012 | -0.00013 | 10.88 |
| 0.004 | -0.00006 | 10.13 | 0.021 | -0.00018 | 12.55 |
| 0.002 | -0.00005 | 9.61 | 0.032 | -0.00023 | 14.19 |
| 0.000 | 0.00000 | 7.93 | 0.034 | -0.00024 | 14.66 |
| 0.003 | 0.00006 | 5.63 | 0.031 | -0.00024 | 14.53 |
| 0.015 | 0.00013 | 3.21 | 0.022 | -0.00020 | 13.26 |
| 0.021 | 0.00016 | 2.26 | 0.017 | -0.00018 | 12.46 |
| 0.023 | 0.00017 | 1.86 | 0.017 | -0.00018 | 12.63 |
| 0.036 | 0.00021 | 0.15 | 0.004 | -0.00009 | 9.20 |
| 0.040 | 0.00023 | -0.47 | 0.003 | -0.00007 | 8.69 |
| 0.038 | 0.00023 | -0.57 | 0.002 | -0.00007 | 8.65 |
| 0.019 | 0.00016 | 1.96 | 0.002 | -0.00007 | 8.65 |
| 0.008 | 0.00011 | 3.93 | 0.008 | -0.00014 | 11.11 |
| 0.004 | 0.00008 | 5.06 | 0.025 | -0.00024 | 14.77 |
| 0.001 | 0.00005 | 6.21 | 0.065 | -0.00039 | 20.09 |
| 0.001 | 0.00005 | 6.16 | 0.127 | -0.00054 | 25.54 |
| 0.002 | 0.00006 | 5.62 | 0.224 | -0.00072 | 31.81 |
| 0.004 | 0.00009 | 4.63 | 0.242 | -0.00078 | 33.95 |
| 0.002 | 0.00006 | 5.58 | 0.225 | -0.00077 | 33.77 |
| 0.002 | 0.00007 | 5.46 | 0.235 | -0.00082 | 35.57 |
| 0.007 | 0.00014 | 2.95 | 0.205 | -0.00078 | 34.22 |
| 0.007 | 0.00014 | 2.83 | 0.159 | -0.00069 | 30.68 |
| 0.006 | 0.00013 | 3.09 | 0.140 | -0.00067 | 30.00 |
| 0.001 | 0.00007 | 5.39 | 0.124 | -0.00065 | 29.50 |
| 0.006 | -0.00014 | 12.88 | 0.113 | -0.00065 | 29.32 |
| 0.021 | -0.00026 | 17.30 | 0.160 | -0.00080 | 34.83 |
| 0.013 | -0.00022 | 15.70 | 0.176 | -0.00089 | 37.83 |

| | | | | | |
|---|---|---|---|---|---|
| 0.014 | -0.00023 | 16.21 | 0.247 | -0.00109 | 45.20 |
| 0.006 | -0.00017 | 13.82 | 0.271 | -0.00120 | 49.29 |
| 0.000 | -0.00004 | 9.31 | 0.291 | -0.00132 | 53.32 |
| 0.007 | 0.00019 | 1.16 | 0.261 | -0.00130 | 52.64 |
| 0.019 | 0.00032 | -3.53 | 0.264 | -0.00138 | 55.64 |
| 0.047 | 0.00053 | -11.24 | 0.233 | -0.00136 | 54.78 |
| 0.092 | 0.00078 | -20.19 | 0.126 | -0.00082 | 35.43 |
| 0.149 | 0.00106 | -30.27 | 0.060 | -0.00056 | 26.01 |
| 0.072 | 0.00069 | -17.03 | 0.051 | -0.00055 | 25.58 |
| 0.035 | 0.00049 | -9.93 | 0.014 | -0.00029 | 16.27 |
| 0.022 | 0.00041 | -7.03 | 0.015 | -0.00032 | 17.52 |
| 0.024 | 0.00048 | -9.26 | 0.008 | -0.00025 | 15.01 |
| 0.036 | 0.00062 | -14.42 | 0.008 | -0.00027 | 15.63 |
| 0.046 | 0.00076 | -19.64 | 0.002 | -0.00015 | 11.19 |
| 0.064 | 0.00099 | -27.98 | 0.000 | -0.00002 | 6.65 |
| 0.131 | 0.00159 | -49.33 | 0.002 | 0.00020 | -1.19 |
| 0.240 | 0.00242 | -79.39 | 0.001 | 0.00011 | 1.94 |
| 0.449 | 0.00374 | -126.98 | 0.005 | 0.00036 | -7.09 |
| 0.715 | 0.00562 | -194.94 | 0.037 | 0.00118 | -36.84 |
| 0.615 | 0.00452 | -155.40 | 0.253 | 0.00335 | -115.11 |
| 0.496 | 0.00389 | -132.63 | 0.438 | 0.00503 | -175.70 |
| 0.390 | 0.00353 | -119.49 | 0.425 | 0.00552 | -193.61 |
| 0.305 | 0.00328 | -110.36 | 0.382 | 0.00568 | -199.32 |
| 0.221 | 0.00284 | -94.49 | 0.306 | 0.00522 | -182.63 |
| 0.101 | 0.00193 | -61.44 | 0.183 | 0.00407 | -141.09 |
| 0.015 | 0.00083 | -21.80 | 0.036 | 0.00194 | -63.84 |

update for EV, CV.

**tZn** **CC287**
**LN Analysis** **tZn**

**Load** **Load Data, EV=529 lbs/day CV=0.76**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **529** | **Load Data-based LN** | | |
| **SD:** | **402** | u | ln tZn Load | tZn Load |
| **CV:** | **0.76** | 3 | 8.1 | 3187 |
| **Min:** | **140.1** | 0 | 6.04 | 422 |
| **Max:** | **2,913** | -3 | 4.02 | 55.8 |
| **Median:** | **470** | | | |
| | | 529 | 529 | |
| | | 0.76 | 0.76 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.97, EV=526lbs/day CV=0.65; max r2=0.99**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.972 | u | lnLoad | Load | |
| slope, m: | 1.679 | 3 | 7.87 | 2630 | |
| intercept, b: | ######## | 0 | 6.09 | 441 | |
| N | 75 | -3 | 4.30 | 73.8 | |
| E[Load] | 526.1 | Parameter Estimates | | | 0.970 |
| SD[Load] | 343 | from LN regression | | | 526.1 |
| CV[Load] | 0.65 | update graph label | | | 0.7 |
| | | | | | max r2 |
| | N | 75 | | | 0.990 |

| Date | tZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 25-Jul-95 | **140** | 1 | 0.0083 | -2.395 | 4.942 | 0.972 |
| 14-Aug-95 | **169** | 2 | 0.0216 | -2.022 | 5.129 | 0.973 |
| 13-Sep-95 | **171** | 3 | 0.0349 | -1.813 | 5.139 | 0.975 |
| 11-Jul-95 | **182** | 4 | 0.0482 | -1.663 | 5.206 | 0.975 |
| 1-Oct-98 | **199** | 5 | 0.0615 | -1.543 | 5.296 | 0.974 |
| 24-Sep-98 | **205** | 6 | 0.0748 | -1.441 | 5.325 | 0.975 |
| 26-Oct-98 | **206** | 7 | 0.0880 | -1.353 | 5.327 | 0.975 |
| 16-Aug-94 | **208** | 8 | 0.1013 | -1.274 | 5.338 | 0.974 |
| 26-Aug-98 | **218** | 9 | 0.1146 | -1.202 | 5.385 | 0.973 |
| 28-Jul-98 | **226** | 10 | 0.1279 | -1.136 | 5.420 | 0.972 |
| 27-Jun-95 | **229** | 11 | 0.1412 | -1.075 | 5.434 | 0.972 |
| 8-Oct-98 | **229** | 12 | 0.1545 | -1.017 | 5.435 | 0.971 |
| 27-Oct-93 | **244** | 13 | 0.1678 | -0.963 | 5.499 | 0.969 |
| 25-Jul-94 | **245** | 14 | 0.1811 | -0.911 | 5.501 | 0.968 |
| 13-Sep-94 | **246** | 15 | 0.1944 | -0.862 | 5.506 | 0.967 |
| 16-Aug-94 | **250** | 16 | 0.2076 | -0.815 | 5.521 | 0.966 |
| 23-Jun-94 | **263** | 17 | 0.2209 | -0.769 | 5.573 | 0.964 |
| 16-Oct-94 | **265** | 18 | 0.2342 | -0.725 | 5.578 | 0.963 |
| 5-Oct-91 | **268** | 19 | 0.2475 | -0.682 | 5.589 | 0.961 |
| 30-Nov-93 | **275** | 20 | 0.2608 | -0.641 | 5.617 | 0.959 |
| 18-Feb-94 | **284** | 21 | 0.2741 | -0.601 | 5.648 | 0.958 |
| 26-Sep-96 | **291** | 22 | 0.2874 | -0.561 | 5.672 | 0.956 |
| 24-Jul-96 | **299** | 23 | 0.3007 | -0.522 | 5.699 | 0.954 |
| 22-Jan-98 | **323** | 24 | 0.3140 | -0.485 | 5.779 | 0.952 |
| 17-Dec-93 | **326** | 25 | 0.3272 | -0.448 | 5.787 | 0.951 |
| 17-Dec-93 | **335** | 26 | 0.3405 | -0.411 | 5.815 | 0.948 |
| 20-Jan-94 | **361** | 27 | 0.3538 | -0.375 | 5.888 | 0.946 |
| 14-Aug-97 | **386** | 28 | 0.3671 | -0.340 | 5.957 | 0.945 |
| 16-Oct-97 | **389** | 29 | 0.3804 | -0.304 | 5.965 | 0.944 |
| 20-Jan-94 | **398** | 30 | 0.3937 | -0.270 | 5.987 | 0.943 |
| 23-Feb-99 | **399** | 31 | 0.4070 | -0.235 | 5.989 | 0.943 |
| 26-Jun-98 | **410** | 32 | 0.4203 | -0.201 | 6.016 | 0.942 |
| 26-Feb-98 | **415** | 33 | 0.4336 | -0.167 | 6.029 | 0.941 |
| 26-Nov-97 | **439** | 34 | 0.4468 | -0.134 | 6.085 | 0.940 |
| 19-Dec-97 | **446** | 35 | 0.4601 | -0.100 | 6.100 | 0.941 |
| 4-Sep-97 | **465** | 36 | 0.4734 | -0.067 | 6.141 | 0.942 |
| 21-Aug-96 | **468** | 37 | 0.4867 | -0.033 | 6.149 | 0.945 |
| 16-Nov-94 | **470** | 38 | 0.5000 | 0.000 | 6.153 | 0.947 |
| 9-Nov-97 | **471** | 39 | 0.5133 | 0.033 | 6.156 | 0.950 |
| 13-Jun-95 | **477** | 40 | 0.5266 | 0.067 | 6.167 | 0.952 |
| 7-Apr-94 | **478** | 41 | 0.5399 | 0.100 | 6.170 | 0.954 |
| 8-Mar-99 | **479** | 42 | 0.5532 | 0.134 | 6.171 | 0.955 |
| 24-Jun-97 | **484** | 43 | 0.5664 | 0.167 | 6.183 | 0.957 |
| 29-Oct-96 | **485** | 44 | 0.5797 | 0.201 | 6.185 | 0.958 |
| 25-Apr-95 | **486** | 45 | 0.5930 | 0.235 | 6.186 | 0.958 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 20-Mar-98 | 486 | 46 | 0.6063 | 0.270 | 6.187 | 0.958 |
| 8-Mar-95 | 501 | 47 | 0.6196 | 0.304 | 6.217 | 0.957 |
| 18-Oct-95 | 510 | 48 | 0.6329 | 0.340 | 6.235 | 0.957 |
| 7-Jun-94 | 519 | 49 | 0.6462 | 0.375 | 6.252 | 0.956 |
| 24-Mar-94 | 523 | 50 | 0.6595 | 0.411 | 6.259 | 0.956 |
| 27-Nov-96 | 523 | 51 | 0.6728 | 0.448 | 6.260 | 0.955 |
| 8-Mar-94 | 534 | 52 | 0.6860 | 0.485 | 6.281 | 0.952 |
| 19-May-94 | 549 | 53 | 0.6993 | 0.522 | 6.308 | 0.950 |
| 27-Dec-95 | 566 | 54 | 0.7126 | 0.561 | 6.339 | 0.948 |
| 12-Apr-95 | 578 | 55 | 0.7259 | 0.601 | 6.360 | 0.945 |
| 30-Jan-97 | 591 | 56 | 0.7392 | 0.641 | 6.382 | 0.942 |
| 13-Dec-94 | 613 | 57 | 0.7525 | 0.682 | 6.419 | 0.939 |
| 15-Jan-99 | 662 | 58 | 0.7658 | 0.725 | 6.496 | 0.935 |
| 19-Jun-96 | 666 | 59 | 0.7791 | 0.769 | 6.501 | 0.936 |
| 4-May-94 | 693 | 60 | 0.7924 | 0.815 | 6.541 | 0.934 |
| 14-May-98 | 710 | 61 | 0.8056 | 0.862 | 6.566 | 0.935 |
| 8-May-96 | 728 | 62 | 0.8189 | 0.911 | 6.590 | 0.935 |
| 9-Feb-95 | 752 | 63 | 0.8322 | 0.963 | 6.623 | 0.936 |
| 28-Mar-96 | 782 | 64 | 0.8455 | 1.017 | 6.662 | 0.938 |
| 23-Jul-97 | 794 | 65 | 0.8588 | 1.075 | 6.677 | 0.942 |
| 21-Feb-97 | 833 | 66 | 0.8721 | 1.136 | 6.725 | 0.944 |
| 21-Nov-95 | 859 | 67 | 0.8854 | 1.202 | 6.756 | 0.950 |
| 13-Dec-96 | 879 | 68 | 0.8987 | 1.274 | 6.779 | 0.957 |
| 10-Jan-95 | 959 | 69 | 0.9120 | 1.353 | 6.866 | 0.961 |
| 25-Nov-98 | 972 | 70 | 0.9252 | 1.441 | 6.880 | 0.979 |
| 16-Apr-97 | 994 | 71 | 0.9385 | 1.543 | 6.901 | 0.990 |
| 17-Jan-96 | 1049 | 72 | 0.9518 | 1.663 | 6.955 | |
| 29-Feb-96 | 1415 | 73 | 0.9651 | 1.813 | 7.255 | |
| 22-Mar-95 | 1840 | 74 | 0.9784 | 2.022 | 7.518 | |
| 26-Mar-97 | 2913 | 75 | 0.9917 | 2.395 | 7.977 | |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| **tZn** | | **CC287** | 3,023 | 3020 |
| **LN Analysis** | | **tZn** | 0.46 | 0.463 |
| **Concentration** | | **Conc. Data, EV=3020 ug/L CV=0.463** | | |
| **Avg:** | **3,023** | **Data-based LN** | | |
| **SD:** | **1,399** | u | ln[tZn] | [tZn] |
| **CV:** | **0.46** | 3 | 9.2 | 10283 |
| **Min:** | **641** | 0 | 7.92 | 2744 |
| **Max:** | **6,950** | -3 | 6.60 | 732 |
| **Median:** | **2,780** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **r2=0.968, EV=3100 ug/L CV=0.577; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| | r2 u,lnConc | 0.968 | u | lnConc. | Conc. |
| | slope, m: | 1.867 | 3 | 9.50 | 13379 |
| | intercept, b: | -14.737 | 0 | 7.89 | 2682 |
| | N: | 75 | -3 | 6.29 | 538 |
| 0.97 | E[Conc] | 3096.1 | Parameter Estimates | | |
| 526 | SD[Conc]: | 1785 | from LN regression | | |
| 0.65 | CV[Conc]: | 0.58 | update graph label | | |

| | | | | | | 0.968 | 0.968 |
|---|---|---|---|---|---|---|---|
| | | | | | | 3096.1 | 3100 |
| | | | | | | 0.577 | 0.577 |
| | | | N: 75 | | | | max r2 |
| | | | | | | | 0.990 |
| | **tZn** | | | | | | |
| | **Concentration** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | | r2 |
| **Date** | **ug/L** | **rank** | **plotting points** | **y-axis** | **x-axis** | | forward |
| | **Ranked** | | | | | | |
| update and rank for new data | | | | | | | |
| 14-May-98 | 641 | 1 | 0.0083 | -2.395 | 6.463 | | 0.968 |
| 24-Jun-97 | 726 | 2 | 0.0216 | -2.022 | 6.588 | | 0.967 |
| 19-Jun-96 | 836 | 3 | 0.0349 | -1.813 | 6.729 | | 0.968 |
| 13-Jun-95 | 919 | 4 | 0.0482 | -1.663 | 6.823 | | 0.970 |
| 19-May-94 | 1000 | 5 | 0.0615 | -1.543 | 6.908 | | 0.973 |
| 4-May-94 | 1160 | 6 | 0.0748 | -1 441 | 7.056 | | 0.976 |
| 26-Jun-98 | 1200 | 7 | 0.0880 | -1.353 | 7.090 | | 0.977 |
| 27-Jun-95 | 1220 | 8 | 0.1013 | -1.274 | 7.107 | | 0.979 |
| 23-Jul-97 | 1330 | 9 | 0.1146 | -1.202 | 7.193 | | 0.982 |
| 7-Jun-94 | 1520 | 10 | 0.1279 | -1.136 | 7.326 | | 0.985 |
| 24-Jul-96 | 1550 | 11 | 0.1412 | -1.075 | 7.346 | | 0.985 |
| 8-May-96 | 1660 | 12 | 0.1545 | -1.017 | 7.415 | | 0.985 |
| 23-Jun-94 | 1690 | 13 | 0.1678 | -0.963 | 7.432 | | 0.985 |
| 11-Jul-95 | 1690 | 14 | 0.1811 | -0.911 | 7.432 | | 0.985 |
| 28-Jul-98 | 1700 | 15 | 0.1944 | -0.862 | 7.438 | | 0.986 |
| 25-Jul-95 | 1770 | 16 | 0.2076 | -0.815 | 7 479 | | 0.988 |
| 14-Aug-97 | 1900 | 17 | 0.2209 | -0 769 | 7.550 | | 0.989 |
| 21-Nov-95 | 1960 | 18 | 0.2342 | -0.725 | 7.581 | | 0.990 |
| 26-Aug-98 | 2080 | 19 | 0.2475 | -0.682 | 7.640 | | 0.990 |
| 25-Apr-95 | 2100 | 20 | 0.2608 | -0.641 | 7.650 | | 0.990 |
| 24-Sep-98 | 2220 | 21 | 0.2741 | -0.601 | 7 705 | | 0.989 |
| 1-Oct-98 | 2220 | 22 | 0.2874 | -0.561 | 7 705 | | 0.989 |
| 28-Mar-96 | 2230 | 23 | 0.3007 | -0.522 | 7.710 | | 0.988 |
| 26-Oct-98 | 2290 | 24 | 0.3140 | -0.485 | 7.736 | | 0.988 |
| 7-Apr-94 | 2350 | 25 | 0.3272 | -0.448 | 7.762 | | 0.988 |
| 29-Feb-96 | 2370 | 26 | 0.3405 | -0.411 | 7.771 | | 0.987 |
| 25-Jul-94 | 2390 | 27 | 0.3538 | -0.375 | 7.779 | | 0.986 |
| 14-Aug-95 | 2490 | 28 | 0.3671 | -0.340 | 7.820 | | 0.986 |
| 27-Dec-95 | 2500 | 29 | 0.3804 | -0.304 | 7.824 | | 0.985 |
| 8-Mar-95 | 2530 | 30 | 0.3937 | -0.270 | 7.836 | | 0.985 |
| 4-Sep-97 | 2540 | 31 | 0 4070 | -0.235 | 7.840 | | 0.984 |
| 12-Apr-95 | 2550 | 32 | 0 4203 | -0.201 | 7.844 | | 0.983 |
| 9-Nov-97 | 2680 | 33 | 0.4336 | -0.167 | 7.894 | | 0.983 |
| 8-Oct-98 | 2680 | 34 | 0 4468 | -0.134 | 7.894 | | 0.982 |
| 20-Mar-98 | 2730 | 35 | 0.4601 | -0.100 | 7.912 | | 0.982 |
| 26-Nov-97 | 2750 | 36 | 0.4734 | -0.067 | 7.919 | | 0.981 |
| 26-Sep-96 | 2770 | 37 | 0.4867 | -0.033 | 7.927 | | 0.980 |
| 13-Sep-95 | 2780 | 38 | 0.5000 | 0.000 | 7.930 | | 0.979 |
| 16-Aug-94 | 2850 | 39 | 0.5133 | 0.033 | 7.955 | | 0.979 |
| 16-Aug-94 | 2850 | 40 | 0.5266 | 0.067 | 7.955 | | 0.978 |
| 16-Oct-97 | 2850 | 41 | 0.5399 | 0.100 | 7.955 | | 0.978 |
| 13-Sep-94 | 2880 | 42 | 0.5532 | 0.134 | 7.966 | | 0.979 |
| 18-Oct-95 | 3020 | 43 | 0.5664 | 0.167 | 8.013 | | 0.981 |
| 9-Feb-95 | 3230 | 44 | 0.5797 | 0.201 | 8.080 | | 0.981 |
| 22-Jan-98 | 3320 | 45 | 0.5930 | 0.235 | 8.108 | | 0.980 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 16-Apr-97 | 3340 | 46 | 0.6063 | 0.270 | 8.114 | 0.979 |
| 27-Oct-93 | 3420 | 47 | 0.6196 | 0.304 | 8.137 | 0.978 |
| 5-Oct-91 | 3430 | 48 | 0.6329 | 0.340 | 8.140 | 0.978 |
| 16-Oct-94 | 3430 | 49 | 0.6462 | 0.375 | 8.140 | 0.977 |
| 19-Dec-97 | 3440 | 50 | 0.6595 | 0.411 | 8.143 | 0.975 |
| 26-Feb-98 | 3460 | 51 | 0.6728 | 0.448 | 8.149 | 0.973 |
| 30-Jan-97 | 3500 | 52 | 0.6860 | 0.485 | 8.161 | 0.972 |
| 23-Feb-99 | 3710 | 53 | 0.6993 | 0.522 | 8.219 | 0.970 |
| 21-Aug-96 | 3730 | 54 | 0.7126 | 0.561 | 8.224 | 0.969 |
| 15-Jan-99 | 3730 | 55 | 0.7259 | 0.601 | 8.224 | 0.967 |
| 26-Mar-97 | 3760 | 56 | 0.7392 | 0.641 | 8.232 | 0.964 |
| 17-Jan-96 | 3830 | 57 | 0.7525 | 0.682 | 8.251 | 0.961 |
| 29-Oct-96 | 3840 | 58 | 0.7658 | 0.725 | 8.253 | 0.957 |
| 8-Mar-99 | 3870 | 59 | 0.7791 | 0.769 | 8.261 | 0.953 |
| 22-Mar-95 | 3970 | 60 | 0.7924 | 0.815 | 8.287 | 0.951 |
| 21-Feb-97 | 3980 | 61 | 0.8056 | 0.862 | 8.289 | 0.947 |
| 30-Nov-93 | 4050 | 62 | 0.8189 | 0.911 | 8.306 | 0.949 |
| 8-Mar-94 | 4460 | 63 | 0.8322 | 0.963 | 8.403 | 0.958 |
| 27-Nov-96 | 4480 | 64 | 0.8455 | 1.017 | 8.407 | 0.952 |
| 24-Mar-94 | 4600 | 65 | 0.8588 | 1.075 | 8.434 | 0.946 |
| 18-Feb-94 | 4620 | 66 | 0.8721 | 1.136 | 8.438 | 0.937 |
| 20-Jan-94 | 5050 | 67 | 0.8854 | 1.202 | 8.527 | 0.934 |
| 20-Jan-94 | 5050 | 68 | 0.8987 | 1.274 | 8.527 | 0.929 |
| 17-Dec-93 | 5180 | 69 | 0.9120 | 1.353 | 8.553 | 0.914 |
| 17-Dec-93 | 5180 | 70 | 0.9252 | 1.441 | 8.553 | 0.893 |
| 16-Nov-94 | 5500 | 71 | 0.9385 | 1.543 | 8.613 | 0.856 |
| 13-Dec-96 | 5500 | 72 | 0.9518 | 1.663 | 8.613 | |
| 10-Jan-95 | 6320 | 73 | 0.9651 | 1.813 | 8.751 | |
| 13-Dec-94 | 6640 | 74 | 0.9784 | 2.022 | 8.801 | |
| 25-Nov-98 | 6950 | 75 | 0.9917 | 2.395 | 8.846 | |

update for EV, CV.

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **CC287** | | | 41 | 41.1 |
| **LN Analysis** | | **tZn** | | | 0.92 | 0.92 |
| **Discharge, Q** | | **Q Data, EV=41.1 cfs CV=0.92** | | | | |
| **Avg:** | **41** | **Q Data-based LN** | | | | |
| **SD:** | **38** | u | lnQ | Q | | |
| **CV:** | **0.92** | 3 | 5.8 | 317 | | |
| **Min:** | **11** | 0 | 3.41 | 30 | | |
| **Max:** | **206** | -3 | 1.06 | 3 | | |
| **Median:** | **26** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.936 | 0.936 |
| | | | | | 40.8 | 40.8 |
| **u=mLn(Q)+b:** | | | | | 0.88 | 0.884 |

update for r2, EV, CV: **r2=0.936, EV=40.8 cfs CV=0.884; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.936 | u | lnQ | Q |
| slope, m | 1.316 | 3 | 5.70 | 299 |
| intercept, b | -4.498 | 0 | 3.42 | 31 |
| N | 75 | -3 | 1.14 | 3 |
| E[Q] | 40.8 | Parameter Estimates | | |
| SD[Q] | 36 | from LN regression | | |
| CV[Q] | 0.88 | update graph label | | |

N: 75

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 = 0.979 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 11.4 | 1 | 0.0083 | -2.395 | 2.434 | 0.936 |
| 18-Feb-94 | 11.41 | 2 | 0.0216 | -2.022 | 2.434 | 0.950 |
| 17-Dec-93 | 11.7 | 3 | 0.0349 | -1.813 | 2.460 | 0.956 |
| 17-Dec-93 | 12.03 | 4 | 0.0482 | -1.663 | 2.487 | 0.960 |
| 14-Aug-95 | 12.6 | 5 | 0.0615 | -1.543 | 2.534 | 0.964 |
| 30-Nov-93 | 12.62 | 6 | 0.0748 | -1.441 | 2.535 | 0.966 |
| 27-Oct-93 | 13.28 | 7 | 0.0880 | -1.353 | 2.586 | 0.968 |
| 20-Jan-94 | 13.28 | 8 | 0.1013 | -1.274 | 2.586 | 0.970 |
| 16-Aug-94 | 13.57 | 9 | 0.1146 | -1.202 | 2.608 | 0.972 |
| 16-Oct-94 | 14.34 | 10 | 0.1279 | -1.136 | 2.663 | 0.973 |
| 5-Oct-91 | 14.5 | 11 | 0.1412 | -1.075 | 2.674 | 0.974 |
| 20-Jan-94 | 14.66 | 12 | 0.1545 | -1.017 | 2.685 | 0.975 |
| 25-Jul-95 | 14.71 | 13 | 0.1678 | -0.963 | 2.689 | 0.976 |
| 13-Sep-94 | 15.89 | 14 | 0.1811 | -0.911 | 2.766 | 0.977 |
| 16-Nov-94 | 15.89 | 15 | 0.1944 | -0.862 | 2.766 | 0.978 |
| 8-Oct-98 | 15.9 | 16 | 0.2076 | -0.815 | 2.766 | 0.978 |
| 16-Aug-94 | 16.3 | 17 | 0.2209 | -0.769 | 2.791 | 0.979 |
| 1-Oct-98 | 16.7 | 18 | 0.2342 | -0.725 | 2.815 | 0.979 |
| 26-Oct-98 | 16.7 | 19 | 0.2475 | -0.682 | 2.815 | 0.979 |
| 13-Dec-94 | 17.17 | 20 | 0.2608 | -0.641 | 2.843 | 0.979 |
| 24-Sep-98 | 17.2 | 21 | 0.2741 | -0.601 | 2.845 | 0.979 |
| 22-Jan-98 | 18.1 | 22 | 0.2874 | -0.561 | 2.896 | 0.978 |
| 25-Jul-94 | 19.04 | 23 | 0.3007 | -0.522 | 2.947 | 0.978 |
| 26-Sep-96 | 19.5 | 24 | 0.3140 | -0.485 | 2.970 | 0.978 |
| 26-Aug-98 | 19.5 | 25 | 0.3272 | -0.448 | 2.970 | 0.978 |
| 23-Feb-99 | 20 | 26 | 0.3405 | -0.411 | 2.996 | 0.978 |
| 11-Jul-95 | 20.05 | 27 | 0.3538 | -0.375 | 2.998 | 0.978 |
| 24-Mar-94 | 21.13 | 28 | 0.3671 | -0.340 | 3.051 | 0.977 |
| 27-Nov-96 | 21.7 | 29 | 0.3804 | -0.304 | 3.077 | 0.977 |
| 8-Mar-94 | 22.26 | 30 | 0.3937 | -0.270 | 3.103 | 0.976 |
| 26-Feb-98 | 22.3 | 31 | 0.4070 | -0.235 | 3.105 | 0.976 |
| 8-Mar-99 | 23 | 32 | 0.4203 | -0.201 | 3.135 | 0.975 |
| 21-Aug-96 | 23.342375 | 33 | 0.4336 | -0.167 | 3.150 | 0.975 |
| 29-Oct-96 | 23.5 | 34 | 0.4468 | -0.134 | 3.157 | 0.974 |
| 19-Dec-97 | 24.1 | 35 | 0.4601 | -0.100 | 3.182 | 0.973 |
| 28-Jul-98 | 24.7 | 36 | 0.4734 | -0.067 | 3.207 | 0.972 |
| 16-Oct-97 | 25.4 | 37 | 0.4867 | -0.033 | 3.235 | 0.971 |
| 25-Nov-98 | 26 | 38 | 0.5000 | 0.000 | 3.258 | 0.969 |
| 10-Jan-95 | 28.21 | 39 | 0.5133 | 0.033 | 3.340 | 0.968 |
| 23-Jun-94 | 28.96 | 40 | 0.5266 | 0.067 | 3.366 | 0.967 |
| 13-Dec-96 | 29.7 | 41 | 0.5399 | 0.100 | 3.391 | 0.966 |
| 26-Nov-97 | 29.7 | 42 | 0.5532 | 0.134 | 3.391 | 0.965 |
| 18-Oct-95 | 31.4 | 43 | 0.5664 | 0.167 | 3.447 | 0.963 |
| 30-Jan-97 | 31.4 | 44 | 0.5797 | 0.201 | 3.447 | 0.962 |
| 9-Nov-97 | 32.7 | 45 | 0.5930 | 0.235 | 3.487 | 0.960 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15-Jan-99 | 33 | 46 | 0.6063 | 0.270 | 3.497 | 0.959 |
| 20-Mar-98 | 33.1 | 47 | 0.6196 | 0.304 | 3.500 | 0.956 |
| 4-Sep-97 | 34 | 48 | 0.6329 | 0.340 | 3.526 | 0.954 |
| 27-Jun-95 | 34.9 | 49 | 0.6462 | 0.375 | 3.552 | 0.951 |
| 24-Jul-96 | 35.8 | 50 | 0.6595 | 0.411 | 3.578 | 0.948 |
| 8-Mar-95 | 36.82 | 51 | 0.6728 | 0.448 | 3.606 | 0.944 |
| 14-Aug-97 | 37.8 | 52 | 0.6860 | 0.485 | 3.632 | 0.940 |
| 7-Apr-94 | 37.82 | 53 | 0.6993 | 0.522 | 3.633 | 0.936 |
| 21-Feb-97 | 38.9 | 54 | 0.7126 | 0.561 | 3.661 | 0.932 |
| 27-Dec-95 | 42.1 | 55 | 0.7259 | 0.601 | 3.740 | 0.929 |
| 12-Apr-95 | 42.13 | 56 | 0.7392 | 0.641 | 3.741 | 0.924 |
| 25-Apr-95 | 43 | 57 | 0.7525 | 0.682 | 3.761 | 0.922 |
| 9-Feb-95 | 43.28 | 58 | 0.7658 | 0.725 | 3.768 | 0.923 |
| 17-Jan-96 | 50.9 | 59 | 0.7791 | 0.769 | 3.930 | 0.938 |
| 16-Apr-97 | 55.3 | 60 | 0.7924 | 0.815 | 4.013 | 0.943 |
| 7-Jun-94 | 63.45 | 61 | 0.8056 | 0.862 | 4.150 | 0.948 |
| 26-Jun-98 | 63.5 | 62 | 0.8189 | 0.911 | 4.151 | 0.944 |
| 28-Mar-96 | 65.2 | 63 | 0.8322 | 0.963 | 4.177 | 0.949 |
| 21-Nov-95 | 81.5 | 64 | 0.8455 | 1.017 | 4.401 | 0.973 |
| 8-May-96 | 81.5 | 65 | 0.8588 | 1.075 | 4.401 | 0.969 |
| 22-Mar-95 | 86.16 | 66 | 0.8721 | 1.136 | 4.456 | 0.968 |
| 13-Jun-95 | 96.41 | 67 | 0.8854 | 1.202 | 4.569 | 0.968 |
| 19-May-94 | 102.01 | 68 | 0.8987 | 1.274 | 4.625 | 0.962 |
| 29-Feb-96 | 111 | 69 | 0.9120 | 1.353 | 4.710 | 0.955 |
| 23-Jul-97 | 111 | 70 | 0.9252 | 1.441 | 4.710 | 0.968 |
| 4-May-94 | 111.05 | 71 | 0.9385 | 1.543 | 4.710 | 0.966 |
| 24-Jun-97 | 124 | 72 | 0.9518 | 1.663 | 4.820 | |
| 26-Mar-97 | 144 | 73 | 0.9651 | 1.813 | 4.970 | |
| 19-Jun-96 | 148 | 74 | 0.9784 | 2.022 | 4.997 | |
| 14-May-98 | 206 | 75 | 0.9917 | 2.395 | 5.328 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC287/288 **Date:** 29-May-00
**Chemical:** dCd **Analyst:** J.Johnston
**Notes:** Template and Example Lognormal Analysis
Input Discharge and Concentration Data below (in red)

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,345 | 55 | 22 | 10 | 0.00 | 0.00 | 0.00 |
| **SD:** | 701 | 66 | 21 | 58 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.20 | 0.96 | 5.59 | | | |
| **Min:** | 33,516 | 11 | 4 | 1 | -0.66 | -0.87 | -0.16 |
| **Max:** | 36,402 | 384 | 200 | 559 | 4.97 | 8.55 | 9.51 |
| **Median:** | 35,382 | 29 | 20 | 3 | -0.39 | -0.08 | -0.12 |

**dCd CC287/288 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.06)** update r2

| | | [dCd] | Q |
|---|---|---|---|
| r2 Q,[COC]: | 0.09 | | |
| slope, m: | -0.1 | 26 | 11.4 |
| intercept, b: | 26.9 | 22 | 55.3 |
| N: 92 | | -8.9 | 384 |

**LnConc. = mLn(Q)+b (r2=0.32)** update r2

| | | ln[dCd] | ln Q | [dCd] | Q |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.48 | | | | |
| slope, m: | -0.50 | 3.44 | 2.43 | 31 | 11 |
| intercept, b: | 4.65 | 2.65 | 4.01 | 14 | 55 |
| N: 92 | | 1.69 | 5.95 | 5 | 384 |

**Q = mTime +b**

| | |
|---|---|
| r2: | 0.111 |
| m: | 0.0314 |
| b: | -1056 |

**LnQ = mTime +b**

| |
|---|
| 0.114 |
| 0.00042 |
| -11.14 |

for graph 0

**N= 92**

| update for new data | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd CC287/288 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 5-Oct-91 | 14.5 | 21.6 | 2 | 2.67 | 3.07 | 0.52 | -0.62 | -0.01 | -0.15 |
| IDEQ | 27-Oct-93 | 13.28 | 26 | 2 | 2.59 | 3.26 | 0.62 | -0.64 | 0.21 | -0.15 |
| IDEQ | 30-Nov-93 | 12.62 | 26 | 2 | 2.54 | 3.26 | 0.57 | -0.65 | 0.21 | -0.15 |
| IDEQ | 17-Dec-93 | 11.7 | 31 | 2 | 2.46 | 3.43 | 0.67 | -0.66 | 0.45 | -0.14 |
| IDEQ | 17-Dec-93 | 12.03 | 31 | 2 | 2.49 | 3.43 | 0.70 | -0.65 | 0.45 | -0.14 |
| IDEQ | 20-Jan-94 | 13.28 | 33 | 2 | 2.59 | 3.50 | 0.86 | -0.64 | 0.54 | -0.14 |
| IDEQ | 20-Jan-94 | 14.66 | 33 | 3 | 2.69 | 3.50 | 0.96 | -0.61 | 0.54 | -0.13 |
| IDEQ | 18-Feb-94 | 11.41 | 28 | 2 | 2.43 | 3.33 | 0.54 | -0.66 | 0.30 | -0.15 |
| IDEQ | 8-Mar-94 | 22.26 | 27 | 3 | 3.10 | 3.30 | 1.17 | -0.50 | 0.25 | -0.12 |
| IDEQ | 24-Mar-94 | 21.13 | 27 | 3 | 3.05 | 3.30 | 1.12 | -0.52 | 0.25 | -0.13 |
| IDEQ | 7-Apr-94 | 37.82 | 17 | 3 | 3.63 | 2.83 | 1.24 | -0.26 | -0.23 | -0.12 |
| IDEQ | 4-May-94 | 111.05 | 8.3 | 5 | 4.71 | 2.12 | 1.60 | 0.84 | -0.64 | -0.09 |
| IDEQ | 19-May-94 | 102.01 | 7.5 | 4 | 4.63 | 2.01 | 1.41 | 0.71 | -0.68 | -0.11 |
| IDEQ | 7-Jun-94 | 63.45 | 11 | 4 | 4.15 | 2.40 | 1.32 | 0.12 | -0.51 | -0.11 |
| IDEQ | 23-Jun-94 | 28.96 | 13 | 2 | 3.37 | 2.56 | 0.71 | -0.40 | -0.42 | -0.14 |
| IDEQ | 25-Jul-94 | 19.04 | 16 | 2 | 2.95 | 2.77 | 0.49 | -0.55 | -0.27 | -0.15 |
| IDEQ | 16-Aug-94 | 16.3 | 20 | 2 | 2.79 | 3.00 | 0.56 | -0.59 | -0.08 | -0.15 |
| IDEQ | 16-Aug-94 | 13.57 | 20 | 1 | 2.61 | 3.00 | 0.38 | -0.63 | -0.08 | -0.15 |
| IDEQ | 13-Sep-94 | 15.89 | 20 | 2 | 2.77 | 3.00 | 0.54 | -0.60 | -0.08 | -0.15 |
| IDEQ | 16-Oct-94 | 14.34 | 20 | 2 | 2.66 | 3.00 | 0.43 | -0.62 | -0.08 | -0.15 |
| IDEQ | 16-Nov-94 | 15.89 | 32 | 3 | 2.77 | 3.47 | 1.01 | -0.60 | 0.49 | -0.13 |
| IDEQ | 13-Dec-94 | 17.17 | 41 | 4 | 2.84 | 3.71 | 1.33 | -0.58 | 0.93 | -0.11 |
| IDEQ | 10-Jan-95 | 28.21 | 38 | 6 | 3.34 | 3.64 | 1.75 | -0.41 | 0.78 | -0.08 |
| IDEQ | 9-Feb-95 | 43.28 | 19 | 4 | 3.77 | 2.94 | 1.49 | -0.18 | -0.13 | -0.10 |
| IDEQ | 8-Mar-95 | 36.82 | 15 | 3 | 3.61 | 2.71 | 1.09 | -0.28 | -0.32 | -0.13 |
| IDEQ | 22-Mar-95 | 86.16 | 21 | 10 | 4.46 | 3.04 | 2.28 | 0.47 | -0.03 | -0.01 |
| IDEQ | 12-Apr-95 | 42.13 | 15 | 3 | 3.74 | 2.71 | 1.22 | -0.20 | -0.32 | -0.12 |
| IDEQ | 25-Apr-95 | 43 | 12 | 3 | 3.76 | 2.48 | 1.02 | -0.19 | -0.47 | -0.13 |
| IDEQ | 13-Jun-95 | 96.41 | 7 | 4 | 4.57 | 1.95 | 1.29 | 0.62 | -0.71 | -0.12 |
| IDEQ | 27-Jun-95 | 34.9 | 8.4 | 2 | 3.55 | 2.13 | 0.46 | -0.31 | -0.64 | -0.15 |
| IDEQ | 11-Jul-95 | 20.05 | 11 | 1 | 3.00 | 2.40 | 0.17 | -0.53 | -0.51 | -0.16 |
| IDEQ | 25-Jul-95 | 14.71 | 14 | 1 | 2.69 | 2.64 | 0.10 | -0.61 | -0.37 | -0.16 |
| IDEQ | 14-Aug-95 | 12.6 | 17 | 1 | 2.53 | 2.83 | 0.14 | -0.65 | -0.23 | -0.16 |
| IDEQ | 13-Sep-95 | 11.4 | 20 | 1 | 2.43 | 3.00 | 0.20 | -0.66 | -0.08 | -0.16 |
| IDEQ | 18-Oct-95 | 31.4 | 200 | 34 | 3.45 | 5.30 | 3.52 | -0.36 | 8.55 | 0.41 |
| IDEQ | 21-Nov-95 | 81.5 | 11 | 5 | 4.40 | 2.40 | 1.57 | 0.40 | -0.51 | -0.10 |
| IDEQ | 27-Dec-95 | 42.1 | 18 | 4 | 3.74 | 2.89 | 1.41 | -0.20 | -0.18 | -0.11 |
| IDEQ | 17-Jan-96 | 50.9 | 26 | 7 | 3.93 | 3.26 | 1.96 | -0.07 | 0.21 | -0.06 |
| IDEQ | 29-Feb-96 | 111 | 15 | 9 | 4.71 | 2.71 | 2.19 | 0.84 | -0.32 | -0.02 |
| IDEQ | 28-Mar-96 | 65.2 | 15 | 5 | 4.18 | 2.71 | 1.66 | 0.15 | -0.32 | -0.09 |
| IDEQ | 8-May-96 | 81.5 | 11 | 5 | 4.40 | 2.40 | 1.57 | 0.40 | -0.51 | -0.10 |
| IDEQ | 19-Jun-96 | 148 | 5.8 | 5 | 5.00 | 1.76 | 1.53 | 1.40 | -0.76 | -0.10 |
| IDEQ | 24-Jul-96 | 35.8 | 14 | 3 | 3.58 | 2.64 | 0.99 | -0.29 | -0.37 | -0.13 |
| IDEQ | 21-Aug-96 | 23.34 | 23 | 3 | 3.15 | 3.14 | 1.06 | -0.48 | 0.06 | -0.13 |
| IDEQ | 26-Sep-96 | 19.5 | 24 | 3 | 2.97 | 3.18 | 0.92 | -0.54 | 0.11 | -0.14 |
| IDEQ | 29-Oct-96 | 23.5 | 28 | 4 | 3.16 | 3.33 | 1.26 | -0.48 | 0.30 | -0.12 |
| IDEQ | 27-Nov-96 | 21.7 | 29 | 3 | 3.08 | 3.37 | 1.22 | -0.51 | 0.35 | -0.12 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 13-Dec-96 | 29.7 | 39 | 6 | 3.39 | 3.66 | 1.83 | -0.39 | 0.83 | -0.07 |
| IDEQ | 30-Jan-97 | 31.4 | 25 | 4 | 3.45 | 3.22 | 1.44 | -0.36 | 0.16 | -0.11 |
| IDEQ | 21-Feb-97 | 38.9 | 26 | 5 | 3.66 | 3.26 | 1.69 | -0.25 | 0.21 | -0.08 |
| IDEQ | 26-Mar-97 | 144 | 26 | 20 | 4.97 | 3.26 | 3.00 | 1.34 | 0.21 | 0.17 |
| IDEQ | 16-Apr-97 | 55.3 | 24 | 7 | 4.01 | 3.18 | 1.97 | 0.00 | 0.11 | -0.03 |
| IDEQ | 24-Jun-97 | 124 | 5.4 | 4 | 4.82 | 1.69 | 1.28 | 1.04 | -0.78 | -0.12 |
| IDEQ | 23-Jul-97 | 111 | 9.2 | 5 | 4.71 | 2.22 | 1.70 | 0.84 | -0.60 | -0.08 |
| IDEQ | 14-Aug-97 | 37.8 | 14 | 3 | 3.63 | 2.64 | 1.05 | -0.26 | -0.37 | -0.13 |
| IDEQ | 4-Sep-97 | 34 | 18 | 3 | 3.53 | 2.89 | 1.19 | -0.32 | -0.18 | -0.12 |
| IDEQ | 16-Oct-97 | 25.4 | 20 | 3 | 3.23 | 3.00 | 1.01 | -0.45 | -0.08 | -0.13 |
| URS | 9-Nov-97 | 32.7 | 19.8 | 3 | 3.49 | 2.99 | 1.25 | -0.34 | -0.09 | -0.12 |
| IDEQ | 26-Nov-97 | 29.7 | 18 | 3 | 3.39 | 2.89 | 1.06 | -0.39 | -0.18 | -0.13 |
| IDEQ | 19-Dec-97 | 24.1 | 27 | 4 | 3.18 | 3.30 | 1.25 | -0.47 | 0.25 | -0.12 |
| IDEQ | 22-Jan-98 | 18.1 | 26 | 3 | 2.90 | 3.26 | 0.93 | -0.56 | 0.21 | -0.13 |
| IDEQ | 26-Feb-98 | 22.3 | 25 | 3 | 3.10 | 3.22 | 1.10 | -0.50 | 0.16 | -0.13 |
| IDEQ | 20-Mar-98 | 33.1 | 21 | 4 | 3.50 | 3.04 | 1.32 | -0.34 | -0.03 | -0.11 |
| URS | 14-May-98 | 206 | 5.2 | 6 | 5.33 | 1.65 | 1.75 | 2.28 | -0.79 | -0.08 |
| IDEQ | 26-Jun-98 | 63.5 | 9.9 | 3 | 4.15 | 2.29 | 1.22 | 0.12 | -0.57 | -0.12 |
| IDEQ | 28-Jul-98 | 24.7 | 17 | 2 | 3.21 | 2.83 | 0.81 | -0.46 | -0.23 | -0.14 |
| IDEQ | 26-Aug-98 | 19.5 | 18 | 2 | 2.97 | 2.89 | 0.64 | -0.54 | -0.18 | -0.15 |
| IDEQ | 24-Sep-98 | 17.2 | 17 | 2 | 2.84 | 2.83 | 0.45 | -0.58 | -0.23 | -0.15 |
| IDEQ | 1-Oct-98 | 16.7 | 18 | 2 | 2.82 | 2.89 | 0.48 | -0.58 | -0.18 | -0.15 |
| IDEQ | 8-Oct-98 | 15.9 | 21 | 2 | 2.77 | 3.04 | 0.59 | -0.60 | -0.03 | -0.15 |
| IDEQ | 26-Oct-98 | 16.7 | 19 | 2 | 2.82 | 2.94 | 0.53 | -0.58 | -0.13 | -0.15 |
| IDEQ | 25-Nov-98 | 26 | 49 | 7 | 3.26 | 3.89 | 1.92 | -0.44 | 1.31 | -0.06 |
| IDEQ | 15-Jan-99 | 33 | 27 | 5 | 3.50 | 3.30 | 1.57 | -0.34 | 0.25 | -0.10 |
| IDEQ | 23-Feb-99 | 20 | 29 | 3 | 3.00 | 3.37 | 1.14 | -0.53 | 0.35 | -0.12 |
| IDEQ | 8-Mar-99 | 23 | 28 | 559 | 3.14 | 3.33 | 6.33 | -0.49 | 0.30 | 9.51 |
| URS | 9-Nov-97 | 36.6 | 20.2 | 4.0 | 3.60 | 3.01 | 1.38 | -0.28 | -0.07 | -0.11 |
| URS | 14-May-98 | 233 | 5.4 | 6.8 | 5.45 | 1.69 | 1.91 | 2.69 | -0.78 | -0.06 |
| USGS | 26-Oct-98 | 13 | 21 | 1.5 | 2.56 | 3.04 | 0.38 | -0.64 | -0.03 | -0.15 |
| URS | 14-Nov-98 | 22.53 | 34 | 4.1 | 3.11 | 3.53 | 1.42 | -0.50 | 0.59 | -0.11 |
| USGS | 18-Nov-98 | 16 | 31 | 2.7 | 2.77 | 3.43 | 0.98 | -0.59 | 0.45 | -0.13 |
| USGS | 15-Dec-98 | 25 | 28 | 3.8 | 3.22 | 3.33 | 1.33 | -0.46 | 0.30 | -0.11 |
| USGS | 28-Dec-98 | 27 | 30 | 4.4 | 3.30 | 3.40 | 1.47 | -0.43 | 0.40 | -0.10 |
| USGS | 23-Mar-99 | 97 | 26 | 13.6 | 4.57 | 3.26 | 2.61 | 0.63 | 0.21 | 0.06 |
| USGS | 19-Apr-99 | 138 | 14 | 10.4 | 4.93 | 2.64 | 2.34 | 1.25 | -0.37 | 0.00 |
| USGS | 5-May-99 | 84 | 9.2 | 4.2 | 4.43 | 2.22 | 1.42 | 0.43 | -0.60 | -0.11 |
| USGS | 24-May-99 | 384 | 5.8 | 12.0 | 5.95 | 1.76 | 2.48 | 4.97 | -0.76 | 0.03 |
| USGS | 27-May-99 | 261 | 4.8 | 6.7 | 5.56 | 1.57 | 1.91 | 3.11 | -0.81 | -0.06 |
| USGS | 2-Jun-99 | 241 | 4.4 | 5.7 | 5.48 | 1.48 | 1.74 | 2.81 | -0.83 | -0.08 |
| USGS | 15-Jun-99 | 263 | 3.6 | 5.1 | 5.57 | 1.28 | 1.63 | 3.14 | -0.87 | -0.09 |
| USGS | 8-Jul-99 | 107 | 5 | 2.9 | 4.67 | 1.61 | 1.06 | 0.78 | -0.80 | -0.13 |
| USGS | 5-Aug-99 | 34 | 12 | 2.2 | 3.53 | 2.48 | 0.79 | -0.32 | -0.47 | -0.14 |
| USGS | 30-Aug-99 | 22 | 15 | 1.8 | 3.09 | 2.71 | 0.57 | -0.50 | -0.32 | -0.15 |

**dCd**

**Concentration over time analysis**

| | dCd | CC287/288 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.044** | **-0.00019** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 5-Oct-91 | 3.21 | 25 | | |
| mid: | 12-Nov-96 | 2.86 | 18 | | |
| last: | 30-Aug-99 | 2.67 | 14 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.051** | **-0.00057** |
| | 21-Feb-97 | 3.05 | 21 | | |
| | 30-Aug-99 | 2.53 | 13 | | |

**Load over time analysis**

| | dCd | CC287/288 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.079** | **0.00033** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 5-Oct-91 | 0.67 | 2 | | |
| mid: | 12-Nov-96 | 1.28 | 4 | | |
| last: | 30-Aug-99 | 1.62 | 5 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.003** | **0.00019** |
| | 21-Feb-97 | 1.36 | 4 | | |
| | 30-Aug-99 | 1.53 | 5 | | |

max r2: 0.149

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.044 | -0.00019 | 9.49 |
| 0.044 | -0.00019 | 9.71 |
| 0.041 | -0.00019 | 9.54 |
| 0.038 | -0.00018 | 9.35 |
| 0.033 | -0.00017 | 8.97 |
| 0.028 | -0.00016 | 8.55 |
| 0.023 | -0.00015 | 8.04 |
| 0.018 | -0.00013 | 7.49 |
| 0.014 | -0.00012 | 7.08 |
| 0.012 | -0.00011 | 6.67 |
| 0.009 | -0.00010 | 6.24 |
| 0.009 | -0.00010 | 6.34 |
| 0.015 | -0.00013 | 7.36 |
| 0.023 | -0.00016 | 8.61 |
| 0.030 | -0.00019 | 9.43 |
| 0.034 | -0.00020 | 10.09 |
| 0.037 | -0.00022 | 10.49 |
| 0.036 | -0.00022 | 10.58 |
| 0.036 | -0.00022 | 10.69 |
| 0.035 | -0.00022 | 10.79 |
| 0.034 | -0.00023 | 10.89 |
| 0.028 | -0.00021 | 10.17 |
| 0.019 | -0.00017 | 8.94 |
| 0.012 | -0.00014 | 7.71 |
| 0.011 | -0.00014 | 7.68 |
| 0.012 | -0.00015 | 8.10 |
| 0.011 | -0.00014 | 7.87 |
| 0.012 | -0.00016 | 8.34 |
| 0.016 | -0.00018 | 9.36 |
| 0.029 | -0.00025 | 11.69 |
| 0.044 | -0.00031 | 13.88 |
| 0.056 | -0.00036 | 15.67 |
| 0.064 | -0.00040 | 17.06 |
| 0.069 | -0.00043 | 18.06 |
| 0.069 | -0.00044 | 18.66 |
| 0.027 | -0.00025 | 11.90 |
| 0.038 | -0.00031 | 13.91 |
| 0.039 | -0.00032 | 14.43 |
| 0.032 | -0.00030 | 13.62 |
| 0.036 | -0.00034 | 14.81 |
| 0.041 | -0.00037 | 16.17 |
| 0.056 | -0.00045 | 19.01 |
| 0.103 | -0.00062 | 25.09 |
| 0.120 | -0.00070 | 27.85 |
| 0.117 | -0.00071 | 28.50 |
| 0.111 | -0.00073 | 28.88 |
| 0.099 | -0.00071 | 28.34 |

max r2: 0.079

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.079 | 0.00033 | -10.32 |
| 0.071 | 0.00032 | -10.09 |
| 0.066 | 0.00031 | -9.79 |
| 0.060 | 0.00030 | -9.42 |
| 0.055 | 0.00029 | -9.11 |
| 0.051 | 0.00029 | -8.81 |
| 0.048 | 0.00028 | -8.66 |
| 0.046 | 0.00028 | -8.60 |
| 0.040 | 0.00026 | -8.05 |
| 0.040 | 0.00027 | -8.20 |
| 0.040 | 0.00027 | -8.29 |
| 0.040 | 0.00028 | -8.53 |
| 0.044 | 0.00030 | -9.25 |
| 0.047 | 0.00031 | -9.77 |
| 0.049 | 0.00032 | -10.20 |
| 0.044 | 0.00031 | -9.79 |
| 0.037 | 0.00029 | -9.03 |
| 0.031 | 0.00027 | -8.28 |
| 0.024 | 0.00024 | -7.17 |
| 0.018 | 0.00021 | -6.19 |
| 0.012 | 0.00018 | -4.95 |
| 0.011 | 0.00017 | -4.58 |
| 0.011 | 0.00017 | -4.74 |
| 0.013 | 0.00020 | -5.68 |
| 0.015 | 0.00021 | -6.19 |
| 0.013 | 0.00021 | -5.97 |
| 0.021 | 0.00027 | -8.15 |
| 0.021 | 0.00027 | -8.31 |
| 0.019 | 0.00026 | -8.03 |
| 0.019 | 0.00027 | -8.31 |
| 0.012 | 0.00022 | -6.59 |
| 0.005 | 0.00015 | -3.89 |
| 0.001 | 0.00006 | -0.58 |
| 0.000 | -0.00005 | 3.10 |
| 0.005 | -0.00016 | 7.12 |
| 0.000 | 0.00001 | 1.03 |
| 0.000 | 0.00002 | 0.62 |
| 0.000 | 0.00002 | 0.74 |
| 0.001 | 0.00007 | -1.22 |
| 0.004 | 0.00016 | -4.34 |
| 0.006 | 0.00020 | -5.76 |
| 0.008 | 0.00023 | -6.98 |
| 0.010 | 0.00027 | -8.14 |
| 0.007 | 0.00023 | -6.88 |
| 0.005 | 0.00020 | -5.72 |
| 0.002 | 0.00014 | -3.59 |
| 0.001 | 0.00012 | -2.98 |

| | | | | | |
|---|---|---|---|---|---|
| 0.085 | -0.00068 | 27.36 | 0.001 | 0.00010 | -1.97 |
| 0.061 | -0.00059 | 24.15 | 0.002 | 0.00017 | -4.71 |
| 0.051 | -0.00057 | 23.22 | 0.003 | 0.00019 | -5.21 |
| 0.041 | -0.00053 | 21.71 | 0.004 | 0.00025 | -7.65 |
| 0.030 | -0.00047 | 19.76 | 0.024 | 0.00061 | -20.73 |
| 0.022 | -0.00042 | 17.93 | 0.039 | 0.00082 | -28.04 |
| 0.058 | -0.00070 | 28.08 | 0.040 | 0.00087 | -30.01 |
| 0.089 | -0.00090 | 35.30 | 0.052 | 0.00103 | -35.86 |
| 0.104 | -0.00103 | 39.94 | 0.049 | 0.00105 | -36.53 |
| 0.109 | -0.00111 | 42.84 | 0.049 | 0.00111 | -38.62 |
| 0.108 | -0.00116 | 44.63 | 0.044 | 0.00111 | -38.62 |
| 0.107 | -0.00121 | 46.60 | 0.045 | 0.00118 | -41.04 |
| 0.111 | -0.00131 | 49.99 | 0.041 | 0.00119 | -41.46 |
| 0.095 | -0.00126 | 48.40 | 0.041 | 0.00126 | -44.25 |
| 0.079 | -0.00121 | 46.41 | 0.035 | 0.00122 | -42.51 |
| 0.065 | -0.00114 | 44.02 | 0.031 | 0.00121 | -42.25 |
| 0.057 | -0.00113 | 43.35 | 0.031 | 0.00128 | -44.86 |
| 0.115 | -0.00161 | 60.83 | 0.039 | 0.00149 | -52.51 |
| 0.146 | -0.00185 | 69.76 | 0.037 | 0.00150 | -52.92 |
| 0.149 | -0.00192 | 72.04 | 0.030 | 0.00138 | -48.27 |
| 0.148 | -0.00195 | 73.14 | 0.022 | 0.00119 | -41.51 |
| 0.148 | -0.00197 | 74.17 | 0.015 | 0.00097 | -33.34 |
| 0.146 | -0.00199 | 74.66 | 0.008 | 0.00073 | -24.66 |
| 0.140 | -0.00196 | 73.70 | 0.004 | 0.00049 | -16.12 |

update for EV, CV:

**dCd** **CC287/288**
**LN Analysis** **dCd**
**Load** **Load Data, EV=10.3 lbs/day CV=5.59**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **10.3** | **Load Data-based LN** | | |
| **SD:** | **58** | u | ln dCd Load | dCd Load |
| **CV:** | **5.59** | 3 | 6.2 | 487 |
| **Min:** | **1** | 0 | 0.60 | 2 |
| **Max:** | **559** | -3 | -5.00 | 0.01 |
| **Median:** | **3** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.783, EV=5.5 lbs/day CV=1.20; max r2=0.91**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.783 | u | lnLoad | Load |
| slope, m: | 1.061 | 3 | 4.10 | 60 |
| intercept, b: | -1.347 | 0 | 1.27 | 4 |
| N: 92 | | -3 | -1.56 | 0.2 |
| E[Load]: | 5.5 | Parameter Estimates | | |
| SD[Load]: | 7 | from LN regression | | |
| CV[Load]: | 1.20 | update graph label | | |

N: 92

| Date | dCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.910 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 25-Jul-95 | 1 | 1 | 0.0068 | -2.469 | 0.103 | 0.783 |
| 14-Aug-95 | 1 | 2 | 0.0176 | -2.106 | 0.142 | 0.785 |
| 11-Jul-95 | 1 | 3 | 0.0285 | -1.904 | 0.171 | 0.785 |
| 13-Sep-95 | 1 | 4 | 0.0393 | -1.759 | 0.204 | 0.783 |
| 16-Aug-94 | 1 | 5 | 0.0501 | -1.644 | 0.379 | 0.780 |
| 26-Oct-98 | 1.5 | 6 | 0.0610 | -1.547 | 0.384 | 0.780 |
| 16-Oct-94 | 2 | 7 | 0.0718 | -1.462 | 0.434 | 0.779 |
| 24-Sep-98 | 2 | 8 | 0.0827 | -1.387 | 0.453 | 0.778 |
| 27-Jun-95 | 2 | 9 | 0.0935 | -1.320 | 0.456 | 0.778 |
| 1-Oct-98 | 2 | 10 | 0.1043 | -1.257 | 0.481 | 0.776 |
| 25-Jul-94 | 2 | 11 | 0.1152 | -1.199 | 0.494 | 0.775 |
| 5-Oct-91 | 2 | 12 | 0.1260 | -1.145 | 0.522 | 0.773 |
| 26-Oct-98 | 2 | 13 | 0.1369 | -1.095 | 0.535 | 0.771 |
| 13-Sep-94 | 2 | 14 | 0.1477 | -1.046 | 0.536 | 0.770 |
| 18-Feb-94 | 2 | 15 | 0.1585 | -1.000 | 0.542 | 0.767 |
| 16-Aug-94 | 2 | 16 | 0.1694 | -0.957 | 0.562 | 0.764 |
| 30-Nov-93 | 2 | 17 | 0.1802 | -0.915 | 0.568 | 0.762 |
| 30-Aug-99 | 1.8 | 18 | 0.1911 | -0.874 | 0.574 | 0.758 |
| 8-Oct-98 | 2 | 19 | 0.2019 | -0.835 | 0.586 | 0.755 |
| 27-Oct-93 | 2 | 20 | 0.2127 | -0.797 | 0.619 | 0.751 |
| 26-Aug-98 | 2 | 21 | 0.2236 | -0.760 | 0.636 | 0.747 |
| 17-Dec-93 | 2 | 22 | 0.2344 | -0.724 | 0.669 | 0.744 |
| 17-Dec-93 | 2 | 23 | 0.2453 | -0.689 | 0.696 | 0.740 |
| 23-Jun-94 | 2 | 24 | 0.2561 | -0.655 | 0.706 | 0.736 |
| 5-Aug-99 | 2.2 | 25 | 0.2669 | -0.622 | 0.786 | 0.733 |
| 28-Jul-98 | 2 | 26 | 0.2778 | -0.589 | 0.815 | 0.730 |
| 20-Jan-94 | 2 | 27 | 0.2886 | -0.557 | 0.858 | 0.728 |
| 26-Sep-96 | 3 | 28 | 0.2995 | -0.526 | 0.923 | 0.726 |
| 22-Jan-98 | 3 | 29 | 0.3103 | -0.495 | 0.929 | 0.725 |
| 20-Jan-94 | 3 | 30 | 0.3211 | -0.465 | 0.957 | 0.724 |
| 18-Nov-98 | 2.7 | 31 | 0.3320 | -0.434 | 0.982 | 0.724 |
| 24-Jul-96 | 3 | 32 | 0.3428 | -0.405 | 0.992 | 0.724 |
| 16-Oct-97 | 3 | 33 | 0.3537 | -0.375 | 1.005 | 0.723 |
| 16-Nov-94 | 3 | 34 | 0.3645 | -0.346 | 1.006 | 0.723 |
| 25-Apr-95 | 3 | 35 | 0.3753 | -0.318 | 1.021 | 0.723 |
| 14-Aug-97 | 3 | 36 | 0.3862 | -0.289 | 1.046 | 0.722 |
| 26-Nov-97 | 3 | 37 | 0.3970 | -0.261 | 1.056 | 0.722 |
| 8-Jul-99 | 2.9 | 38 | 0.4079 | -0.233 | 1.057 | 0.722 |
| 21-Aug-96 | 3 | 39 | 0.4187 | -0.205 | 1.061 | 0.721 |
| 8-Mar-95 | 3 | 40 | 0.4295 | -0.178 | 1.089 | 0.721 |
| 26-Feb-98 | 3 | 41 | 0.4404 | -0.150 | 1.098 | 0.720 |
| 24-Mar-94 | 3 | 42 | 0.4512 | -0.123 | 1.121 | 0.720 |
| 23-Feb-99 | 3 | 43 | 0.4621 | -0.095 | 1.138 | 0.720 |
| 8-Mar-94 | 3 | 44 | 0.4729 | -0.068 | 1.174 | 0.720 |
| 4-Sep-97 | 3 | 45 | 0.4837 | -0.041 | 1.192 | 0.720 |
| 26-Jun-98 | 3 | 46 | 0.4946 | -0.014 | 1.219 | 0.721 |
| 27-Nov-96 | 3 | 47 | 0.5054 | 0.014 | 1.220 | 0.723 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 12-Apr-95 | 3 | 48 | 0.5163 | 0.041 | 1.224 | 0.724 |
| 7-Apr-94 | 3 | 49 | 0.5271 | 0.068 | 1.241 | 0.725 |
| 9-Nov-97 | 3 | 50 | 0.5379 | 0.095 | 1.248 | 0.726 |
| 19-Dec-97 | 4 | 51 | 0.5488 | 0.123 | 1.253 | 0.727 |
| 29-Oct-96 | 4 | 52 | 0.5596 | 0.150 | 1.264 | 0.728 |
| 24-Jun-97 | 4 | 53 | 0.5705 | 0.178 | 1.282 | 0.729 |
| 13-Jun-95 | 4 | 54 | 0.5813 | 0.205 | 1.289 | 0.730 |
| 20-Mar-98 | 4 | 55 | 0.5921 | 0.233 | 1.319 | 0.731 |
| 7-Jun-94 | 4 | 56 | 0.6030 | 0.261 | 1.323 | 0.732 |
| 15-Dec-98 | 3.8 | 57 | 0.6138 | 0.289 | 1.326 | 0.733 |
| 13-Dec-94 | 4 | 58 | 0.6247 | 0.318 | 1.332 | 0.734 |
| 9-Nov-97 | 4.0 | 59 | 0.6355 | 0.346 | 1.381 | 0.734 |
| 27-Dec-95 | 4 | 60 | 0.6463 | 0.375 | 1.405 | 0.736 |
| 19-May-94 | 4 | 61 | 0.6572 | 0.405 | 1.415 | 0.738 |
| 14-Nov-98 | 4.1 | 62 | 0.6680 | 0.434 | 1.416 | 0.740 |
| 5-May-99 | 4.2 | 63 | 0.6789 | 0.465 | 1.425 | 0.742 |
| 30-Jan-97 | 4 | 64 | 0.6897 | 0.495 | 1.441 | 0.743 |
| 28-Dec-98 | 4.4 | 65 | 0.7005 | 0.526 | 1.472 | 0.745 |
| 9-Feb-95 | 4 | 66 | 0.7114 | 0.557 | 1.487 | 0.746 |
| 19-Jun-96 | 5 | 67 | 0.7222 | 0.589 | 1.530 | 0.748 |
| 15-Jan-99 | 5 | 68 | 0.7331 | 0.622 | 1.567 | 0.752 |
| 21-Nov-95 | 5 | 69 | 0.7439 | 0.655 | 1.573 | 0.756 |
| 8-May-96 | 5 | 70 | 0.7547 | 0.689 | 1.573 | 0.760 |
| 4-May-94 | 5 | 71 | 0.7656 | 0.724 | 1.601 | 0.763 |
| 15-Jun-99 | 5.1 | 72 | 0.7764 | 0.760 | 1.628 | 0.767 |
| 28-Mar-96 | 5 | 73 | 0.7873 | 0.797 | 1.660 | 0.772 |
| 21-Feb-97 | 5 | 74 | 0.7981 | 0.835 | 1.694 | 0.777 |
| 23-Jul-97 | 5 | 75 | 0.8089 | 0.874 | 1.704 | 0.783 |
| 2-Jun-99 | 5.7 | 76 | 0.8198 | 0.915 | 1.741 | 0.789 |
| 14-May-98 | 6 | 77 | 0.8306 | 0.957 | 1.751 | 0.795 |
| 10-Jan-95 | 6 | 78 | 0.8415 | 1.000 | 1.752 | 0.802 |
| 13-Dec-96 | 6 | 79 | 0.8523 | 1.046 | 1.830 | 0.806 |
| 27-May-99 | 6.7 | 80 | 0.8631 | 1.095 | 1.908 | 0.813 |
| 14-May-98 | 6.8 | 81 | 0.8740 | 1.145 | 1.912 | 0.825 |
| 25-Nov-98 | 7 | 82 | 0.8848 | 1.199 | 1.925 | 0.836 |
| 17-Jan-96 | 7 | 83 | 0.8957 | 1.257 | 1.963 | 0.844 |
| 16-Apr-97 | 7 | 84 | 0.9065 | 1.320 | 1.966 | 0.851 |
| 29-Feb-96 | 9 | 85 | 0.9173 | 1.387 | 2.193 | 0.853 |
| 22-Mar-95 | 10 | 86 | 0.9282 | 1.462 | 2.276 | 0.869 |
| 19-Apr-99 | 10.4 | 87 | 0.9390 | 1.547 | 2.341 | 0.890 |
| 24-May-99 | 12.0 | 88 | 0.9499 | 1.644 | 2.483 | 0.910 |
| 23-Mar-99 | 13.6 | 89 | 0.9607 | 1.759 | 2.608 | |
| 26-Mar-97 | 20 | 90 | 0.9715 | 1.904 | 3.003 | |
| 18-Oct-95 | 34 | 91 | 0.9824 | 2.106 | 3.520 | |
| 8-Mar-99 | 559 | 92 | 0.9932 | 2.469 | 6.326 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | **CC287/288** | | |
| **LN Analysis** | | **dCd** | | |
| **Concentration** | | **Conc. Data, EV=21.7 ug/L CV=.96** | | |
| **Avg:** | **21.7** | **Data-based LN** | | |
| **SD:** | **21** | u | ln[dCd] | [dCd] |
| **CV:** | **0.96** | 3 | 5.2 | 177 |
| **Min:** | **4** | 0 | 2.75 | 16 |
| **Max:** | **200** | -3 | 0.33 | 1 |
| **Median:** | **20** | | | |

**u=mLn{Conc.}+b:**

update for r2, EV, CV: **$r^2$=0.927, EV=21.9 ug/L CV=.74; max r2=0.927**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.927 | u | lnConc. | Conc. |
| slope, m: | 1.520 | 3 | 4.84 | 127 |
| intercept, b: | -4.366 | 0 | 2.87 | 18 |
| N: 92 | | -3 | 0.90 | 2 |
| E[Conc]: | 21.9 | Parameter Estimates | | |
| SD[Conc]: | 16 | from LN regression | | |
| CV[Conc]: | 0.74 | update graph label | | |

| Date | dCd Concentration ug/L Ranked | i rank (N: 92) | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.927 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 15-Jun-99 | 3.6 | 1 | 0.0068 | -2.469 | 1.281 | 0.927 |
| 2-Jun-99 | 4.4 | 2 | 0.0176 | -2.106 | 1.482 | 0.921 |
| 27-May-99 | 4.8 | 3 | 0.0285 | -1.904 | 1.569 | 0.916 |
| 8-Jul-99 | 5 | 4 | 0.0393 | -1.759 | 1.609 | 0.912 |
| 14-May-98 | 5.2 | 5 | 0.0501 | -1.644 | 1.649 | 0.908 |
| 24-Jun-97 | 5.4 | 6 | 0.0610 | -1.547 | 1.686 | 0.905 |
| 14-May-98 | 5.4 | 7 | 0.0718 | -1.462 | 1.686 | 0.902 |
| 19-Jun-96 | 5.8 | 8 | 0.0827 | -1.387 | 1.758 | 0.901 |
| 24-May-99 | 5.8 | 9 | 0.0935 | -1.320 | 1.758 | 0.900 |
| 13-Jun-95 | 7 | 10 | 0.1043 | -1.257 | 1.946 | 0.900 |
| 19-May-94 | 7.5 | 11 | 0.1152 | -1.199 | 2.015 | 0.898 |
| 4-May-94 | 8.3 | 12 | 0.1260 | -1.145 | 2.116 | 0.896 |
| 27-Jun-95 | 8.4 | 13 | 0.1369 | -1.095 | 2.128 | 0.892 |
| 23-Jul-97 | 9.2 | 14 | 0.1477 | -1.046 | 2.219 | 0.889 |
| 5-May-99 | 9.2 | 15 | 0.1585 | -1.000 | 2.219 | 0.886 |
| 26-Jun-98 | 9.9 | 16 | 0.1694 | -0.957 | 2.293 | 0.882 |
| 7-Jun-94 | 11 | 17 | 0.1802 | -0.915 | 2.398 | 0.878 |
| 11-Jul-95 | 11 | 18 | 0.1911 | -0.874 | 2.398 | 0.874 |
| 21-Nov-95 | 11 | 19 | 0.2019 | -0.835 | 2.398 | 0.870 |
| 8-May-96 | 11 | 20 | 0.2127 | -0.797 | 2.398 | 0.865 |
| 25-Apr-95 | 12 | 21 | 0.2236 | -0.760 | 2.485 | 0.861 |
| 5-Aug-99 | 12 | 22 | 0.2344 | -0.724 | 2.485 | 0.856 |
| 23-Jun-94 | 13 | 23 | 0.2453 | -0.689 | 2.565 | 0.851 |
| 25-Jul-95 | 14 | 24 | 0.2561 | -0.655 | 2.639 | 0.847 |
| 24-Jul-96 | 14 | 25 | 0.2669 | -0.622 | 2.639 | 0.843 |
| 14-Aug-97 | 14 | 26 | 0.2778 | -0.589 | 2.639 | 0.838 |
| 19-Apr-99 | 14 | 27 | 0.2886 | -0.557 | 2.639 | 0.833 |
| 8-Mar-95 | 15 | 28 | 0.2995 | -0.526 | 2.708 | 0.828 |
| 12-Apr-95 | 15 | 29 | 0.3103 | -0.495 | 2.708 | 0.824 |
| 29-Feb-96 | 15 | 30 | 0.3211 | -0.465 | 2.708 | 0.819 |
| 28-Mar-96 | 15 | 31 | 0.3320 | -0.434 | 2.708 | 0.814 |
| 30-Aug-99 | 15 | 32 | 0.3428 | -0.405 | 2.708 | 0.808 |
| 25-Jul-94 | 16 | 33 | 0.3537 | -0.375 | 2.773 | 0.802 |
| 7-Apr-94 | 17 | 34 | 0.3645 | -0.346 | 2.833 | 0.797 |
| 14-Aug-95 | 17 | 35 | 0.3753 | -0.318 | 2.833 | 0.793 |
| 28-Jul-98 | 17 | 36 | 0.3862 | -0.289 | 2.833 | 0.789 |
| 24-Sep-98 | 17 | 37 | 0.3970 | -0.261 | 2.833 | 0.784 |
| 27-Dec-95 | 18 | 38 | 0.4079 | -0.233 | 2.890 | 0.778 |
| 4-Sep-97 | 18 | 39 | 0.4187 | -0.205 | 2.890 | 0.774 |
| 26-Nov-97 | 18 | 40 | 0.4295 | -0.178 | 2.890 | 0.770 |
| 26-Aug-98 | 18 | 41 | 0.4404 | -0.150 | 2.890 | 0.765 |
| 1-Oct-98 | 18 | 42 | 0.4512 | -0.123 | 2.890 | 0.760 |
| 9-Feb-95 | 19 | 43 | 0.4621 | -0.095 | 2.944 | 0.754 |
| 26-Oct-98 | 19 | 44 | 0.4729 | -0.068 | 2.944 | 0.749 |
| 9-Nov-97 | 19.8 | 45 | 0.4837 | -0.041 | 2.986 | 0.744 |
| 16-Aug-94 | 20 | 46 | 0.4946 | -0.014 | 2.996 | 0.741 |
| 16-Aug-94 | 20 | 47 | 0.5054 | 0.014 | 2.996 | 0.737 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 13-Sep-94 | 20 | 48 | 0.5163 | 0.041 | 2.996 | 0.733 |
| 16-Oct-94 | 20 | 49 | 0.5271 | 0.068 | 2.996 | 0.728 |
| 13-Sep-95 | 20 | 50 | 0.5379 | 0.095 | 2.996 | 0.723 |
| 16-Oct-97 | 20 | 51 | 0.5488 | 0.123 | 2.996 | 0.717 |
| 9-Nov-97 | 20.2 | 52 | 0.5596 | 0.150 | 3.006 | 0.710 |
| 22-Mar-95 | 21 | 53 | 0.5705 | 0.178 | 3.045 | 0.702 |
| 20-Mar-98 | 21 | 54 | 0.5813 | 0.205 | 3.045 | 0.696 |
| 8-Oct-98 | 21 | 55 | 0.5921 | 0.233 | 3.045 | 0.689 |
| 26-Oct-98 | 21 | 56 | 0.6030 | 0.261 | 3.045 | 0.681 |
| 5-Oct-91 | 21.6 | 57 | 0.6138 | 0.289 | 3.073 | 0.672 |
| 21-Aug-96 | 23 | 58 | 0.6247 | 0.318 | 3.135 | 0.664 |
| 26-Sep-96 | 24 | 59 | 0.6355 | 0.346 | 3.178 | 0.659 |
| 16-Apr-97 | 24 | 60 | 0.6463 | 0.375 | 3.178 | 0.657 |
| 30-Jan-97 | 25 | 61 | 0.6572 | 0.405 | 3.219 | 0.654 |
| 26-Feb-98 | 25 | 62 | 0.6680 | 0.434 | 3.219 | 0.655 |
| 27-Oct-93 | 26 | 63 | 0.6789 | 0.465 | 3.258 | 0.655 |
| 30-Nov-93 | 26 | 64 | 0.6897 | 0.495 | 3.258 | 0.660 |
| 17-Jan-96 | 26 | 65 | 0.7005 | 0.526 | 3.258 | 0.663 |
| 21-Feb-97 | 26 | 66 | 0.7114 | 0.557 | 3.258 | 0.667 |
| 26-Mar-97 | 26 | 67 | 0.7222 | 0.589 | 3.258 | 0.669 |
| 22-Jan-98 | 26 | 68 | 0.7331 | 0.622 | 3.258 | 0.672 |
| 23-Mar-99 | 26 | 69 | 0.7439 | 0.655 | 3.258 | 0.673 |
| 8-Mar-94 | 27 | 70 | 0.7547 | 0.689 | 3.296 | 0.673 |
| 24-Mar-94 | 27 | 71 | 0.7656 | 0.724 | 3.296 | 0.678 |
| 19-Dec-97 | 27 | 72 | 0.7764 | 0.760 | 3.296 | 0.682 |
| 15-Jan-99 | 27 | 73 | 0.7873 | 0.797 | 3.296 | 0.684 |
| 18-Feb-94 | 28 | 74 | 0.7981 | 0.835 | 3.332 | 0.686 |
| 29-Oct-96 | 28 | 75 | 0.8089 | 0.874 | 3.332 | 0.692 |
| 8-Mar-99 | 28 | 76 | 0.8198 | 0.915 | 3.332 | 0.697 |
| 15-Dec-98 | 28 | 77 | 0.8306 | 0.957 | 3.332 | 0.701 |
| 27-Nov-96 | 29 | 78 | 0.8415 | 1.000 | 3.367 | 0.703 |
| 23-Feb-99 | 29 | 79 | 0.8523 | 1.046 | 3.367 | 0.709 |
| 28-Dec-98 | 30 | 80 | 0.8631 | 1.095 | 3.401 | 0.714 |
| 17-Dec-93 | 31 | 81 | 0.8740 | 1.145 | 3.434 | 0.723 |
| 17-Dec-93 | 31 | 82 | 0.8848 | 1.199 | 3.434 | 0.738 |
| 18-Nov-98 | 31 | 83 | 0.8957 | 1.257 | 3.434 | 0.751 |
| 16-Nov-94 | 32 | 84 | 0.9065 | 1.320 | 3.466 | 0.762 |
| 20-Jan-94 | 33 | 85 | 0.9173 | 1.387 | 3.497 | 0.778 |
| 20-Jan-94 | 33 | 86 | 0.9282 | 1.462 | 3.497 | 0.798 |
| 14-Nov-98 | 34 | 87 | 0.9390 | 1.547 | 3.526 | 0.814 |
| 10-Jan-95 | 38 | 88 | 0.9499 | 1.644 | 3.638 | 0.828 |
| 13-Dec-96 | 39 | 89 | 0.9607 | 1.759 | 3.664 | |
| 13-Dec-94 | 41 | 90 | 0.9715 | 1.904 | 3.714 | |
| 25-Nov-98 | 49 | 91 | 0.9824 | 2.106 | 3.892 | |
| 18-Oct-95 | 200 | 92 | 0.9932 | 2.469 | 5.298 | |

update for EV, CV:

**dCd** **CC287/288**

**LN Analysis** **dCd**

**Discharge, Q** **Q Data, EV=41 cfs CV=0.92**

**Q Data-based LN**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **41** | u | lnQ | Q |
| **SD:** | **38** | 3 | 5.8 | 317 |
| **CV:** | **0.92** | 0 | 3.41 | 30 |
| **Min:** | **11** | -3 | 1.06 | 3 |
| **Max:** | **206** | | | |
| **Median:** | **26** | | | |

**u=mLn{Q}+b:**

update for r2, EV, CV: **r2=0.936, EV=40.8 cfs CV=.88; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.936 | u | lnQ | Q |
| slope, m: | 1.316 | 3 | 5.70 | 299 |
| intercept, b: | -4.498 | 0 | 3.42 | 31 |
| N: 75 | | -3 | 1.14 | 3 |
| E[Q]: | 40.8 | Parameter Estimates | | |
| SD[Q]: | 36 | from LN regression | | |
| CV[Q]: | 0.88 | update graph label | | |

N: 75 max r2 0.979

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 11.4 | 1 | 0.0083 | -2.395 | 2.434 | 0.936 |
| 18-Feb-94 | 11.41 | 2 | 0.0216 | -2.022 | 2.434 | 0.950 |
| 17-Dec-93 | 11.7 | 3 | 0.0349 | -1.813 | 2.460 | 0.956 |
| 17-Dec-93 | 12.03 | 4 | 0.0482 | -1.663 | 2.487 | 0.960 |
| 14-Aug-95 | 12.6 | 5 | 0.0615 | -1.543 | 2.534 | 0.964 |
| 30-Nov-93 | 12.62 | 6 | 0.0748 | -1.441 | 2.535 | 0.966 |
| 27-Oct-93 | 13.28 | 7 | 0.0880 | -1.353 | 2.586 | 0.968 |
| 20-Jan-94 | 13.28 | 8 | 0.1013 | -1.274 | 2.586 | 0.970 |
| 16-Aug-94 | 13.57 | 9 | 0.1146 | -1.202 | 2.608 | 0.972 |
| 16-Oct-94 | 14.34 | 10 | 0.1279 | -1.136 | 2.663 | 0.973 |
| 5-Oct-91 | 14.5 | 11 | 0.1412 | -1.075 | 2.674 | 0.974 |
| 20-Jan-94 | 14.66 | 12 | 0.1545 | -1.017 | 2.685 | 0.975 |
| 25-Jul-95 | 14.71 | 13 | 0.1678 | -0.963 | 2.689 | 0.976 |
| 13-Sep-94 | 15.89 | 14 | 0.1811 | -0.911 | 2.766 | 0.977 |
| 16-Nov-94 | 15.89 | 15 | 0.1944 | -0.862 | 2.766 | 0.978 |
| 8-Oct-98 | 15.9 | 16 | 0.2076 | -0.815 | 2.766 | 0.978 |
| 16-Aug-94 | 16.3 | 17 | 0.2209 | -0.769 | 2.791 | 0.979 |
| 1-Oct-98 | 16.7 | 18 | 0.2342 | -0.725 | 2.815 | 0.979 |
| 26-Oct-98 | 16.7 | 19 | 0.2475 | -0.682 | 2.815 | 0.979 |
| 13-Dec-94 | 17.17 | 20 | 0.2608 | -0.641 | 2.843 | 0.979 |
| 24-Sep-98 | 17.2 | 21 | 0.2741 | -0.601 | 2.845 | 0.979 |
| 22-Jan-98 | 18.1 | 22 | 0.2874 | -0.561 | 2.896 | 0.978 |
| 25-Jul-94 | 19.04 | 23 | 0.3007 | -0.522 | 2.947 | 0.978 |
| 26-Sep-96 | 19.5 | 24 | 0.3140 | -0.485 | 2.970 | 0.978 |
| 26-Aug-98 | 19.5 | 25 | 0.3272 | -0.448 | 2.970 | 0.978 |
| 23-Feb-99 | 20 | 26 | 0.3405 | -0.411 | 2.996 | 0.978 |
| 11-Jul-95 | 20.05 | 27 | 0.3538 | -0.375 | 2.998 | 0.978 |
| 24-Mar-94 | 21.13 | 28 | 0.3671 | -0.340 | 3.051 | 0.977 |
| 27-Nov-96 | 21.7 | 29 | 0.3804 | -0.304 | 3.077 | 0.977 |
| 8-Mar-94 | 22.26 | 30 | 0.3937 | -0.270 | 3.103 | 0.976 |
| 26-Feb-98 | 22.3 | 31 | 0.4070 | -0.235 | 3.105 | 0.976 |
| 8-Mar-99 | 23 | 32 | 0.4203 | -0.201 | 3.135 | 0.975 |
| 21-Aug-96 | 23.342375 | 33 | 0.4336 | -0.167 | 3.150 | 0.975 |
| 29-Oct-96 | 23.5 | 34 | 0.4468 | -0.134 | 3.157 | 0.974 |
| 19-Dec-97 | 24.1 | 35 | 0.4601 | -0.100 | 3.182 | 0.973 |
| 28-Jul-98 | 24.7 | 36 | 0.4734 | -0.067 | 3.207 | 0.972 |
| 16-Oct-97 | 25.4 | 37 | 0.4867 | -0.033 | 3.235 | 0.971 |
| 25-Nov-98 | 26 | 38 | 0.5000 | 0.000 | 3.258 | 0.969 |
| 10-Jan-95 | 28.21 | 39 | 0.5133 | 0.033 | 3.340 | 0.968 |
| 23-Jun-94 | 28.96 | 40 | 0.5266 | 0.067 | 3.366 | 0.967 |
| 13-Dec-96 | 29.7 | 41 | 0.5399 | 0.100 | 3.391 | 0.966 |
| 26-Nov-97 | 29.7 | 42 | 0.5532 | 0.134 | 3.391 | 0.965 |
| 18-Oct-95 | 31.4 | 43 | 0.5664 | 0.167 | 3.447 | 0.963 |
| 30-Jan-97 | 31.4 | 44 | 0.5797 | 0.201 | 3.447 | 0.962 |
| 9-Nov-97 | 32.7 | 45 | 0.5930 | 0.235 | 3.487 | 0.960 |
| 15-Jan-99 | 33 | 46 | 0.6063 | 0.270 | 3.497 | 0.959 |
| 20-Mar-98 | 33.1 | 47 | 0.6196 | 0.304 | 3.500 | 0.956 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4-Sep-97 | 34 | 48 | 0.6329 | 0.340 | 3.526 | 0.954 |
| 27-Jun-95 | 34.9 | 49 | 0.6462 | 0.375 | 3.552 | 0.951 |
| 24-Jul-96 | 35.8 | 50 | 0.6595 | 0.411 | 3.578 | 0.948 |
| 8-Mar-95 | 36.82 | 51 | 0.6728 | 0.448 | 3.606 | 0.944 |
| 14-Aug-97 | 37.8 | 52 | 0.6860 | 0.485 | 3.632 | 0.940 |
| 7-Apr-94 | 37.82 | 53 | 0.6993 | 0.522 | 3.633 | 0.936 |
| 21-Feb-97 | 38.9 | 54 | 0.7126 | 0.561 | 3.661 | 0.932 |
| 27-Dec-95 | 42.1 | 55 | 0.7259 | 0.601 | 3.740 | 0.929 |
| 12-Apr-95 | 42.13 | 56 | 0.7392 | 0.641 | 3.741 | 0.924 |
| 25-Apr-95 | 43 | 57 | 0.7525 | 0.682 | 3.761 | 0.922 |
| 9-Feb-95 | 43.28 | 58 | 0.7658 | 0.725 | 3.768 | 0.923 |
| 17-Jan-96 | 50.9 | 59 | 0.7791 | 0.769 | 3.930 | 0.938 |
| 16-Apr-97 | 55.3 | 60 | 0.7924 | 0.815 | 4.013 | 0.943 |
| 7-Jun-94 | 63.45 | 61 | 0.8056 | 0.862 | 4.150 | 0.948 |
| 26-Jun-98 | 63.5 | 62 | 0.8189 | 0.911 | 4.151 | 0.944 |
| 28-Mar-96 | 65.2 | 63 | 0.8322 | 0.963 | 4.177 | 0.949 |
| 21-Nov-95 | 81.5 | 64 | 0.8455 | 1.017 | 4.401 | 0.973 |
| 8-May-96 | 81.5 | 65 | 0.8588 | 1.075 | 4.401 | 0.969 |
| 22-Mar-95 | 86.16 | 66 | 0.8721 | 1.136 | 4.456 | 0.968 |
| 13-Jun-95 | 96.41 | 67 | 0.8854 | 1.202 | 4.569 | 0.968 |
| 19-May-94 | 102.01 | 68 | 0.8987 | 1.274 | 4.625 | 0.962 |
| 29-Feb-96 | 111 | 69 | 0.9120 | 1.353 | 4.710 | 0.955 |
| 23-Jul-97 | 111 | 70 | 0.9252 | 1.441 | 4.710 | 0.968 |
| 4-May-94 | 111.05 | 71 | 0.9385 | 1.543 | 4.710 | 0.966 |
| 24-Jun-97 | 124 | 72 | 0.9518 | 1.663 | 4.820 | |
| 26-Mar-97 | 144 | 73 | 0.9651 | 1.813 | 4.970 | |
| 19-Jun-96 | 148 | 74 | 0.9784 | 2.022 | 4.997 | |
| 14-May-98 | 206 | 75 | 0.9917 | 2.395 | 5.328 | |
| 9-Nov-97 | | | | | | |
| 14-May-98 | | | | | | |
| 26-Oct-98 | | | | | | |
| 14-Nov-98 | | | | | | |
| 18-Nov-98 | | | | | | |
| 15-Dec-98 | | | | | | |
| 28-Dec-98 | | | | | | |
| 23-Mar-99 | | | | | | |
| 19-Apr-99 | | | | | | |
| 5-May-99 | | | | | | |
| 24-May-99 | | | | | | |
| 27-May-99 | | | | | | |
| 2-Jun-99 | | | | | | |
| 15-Jun-99 | | | | | | |
| 8-Jul-99 | | | | | | |
| 5-Aug-99 | | | | | | |
| 30-Aug-99 | | | | | | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| Station: | CC287/288 | Date: | 30-May-00 |
| Chemical: | dPb | Analyst: | J.Johnston |
| Notes: | | | |

Input Discharge and Concentration Data below (in red)

| | Date | Discharge | Concentration | Lead | | | | |
|---|---|---|---|---|---|---|---|---|
| Avg: | 35,353 | 55 | 44 | 11 | | | 0.00 | 0.00 | 0.00 |
| SD: | 702 | 66 | 28 | 11 | | | 1.00 | 1.00 | 1.00 |
| CV: | 0.02 | 1.20 | 0.64 | 1.03 | | | | | |
| Min: | 33,516 | 11 | 17 | 2 | | | -0.66 | -0.96 | -0.83 |
| Max: | 36,402 | 384 | 223 | 61 | | | 5.00 | 6.33 | 4.36 |
| Median: | 35,396 | 29 | 38 | 6 | | | -0.39 | -0.22 | -0.44 |

dPb CC287/288 : Concentration v. Discharge, Q

Q = mTime +b LnQ = mTime +b

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Conc. = mQ+b (r2=0.003) | update r2 | | | | r2: | 0.105 | 0.103 |
| r2 Q,[COC]: | 0.037 | [dPb] | Q | | m: | 0.0304 | 0.00039 |
| slope, m: | -0.08 | 48 | 11.4 | | b: | -1019 | -10.40 |
| intercept, b: | 48.7 | 44 | 54.8 | | | | |
| N: 93 | | 17 | 384 | | | | |
| LnConc. = mLn(Q)+b (r2=0.001) | | update r2 | | | | | |
| r2 lnQ,ln[COC]: | 0.065 | ln[dPb] | ln Q | [dPb] | Q | | |
| slope, m: | -0.13 | 3.82 | 2.43 | 46 | 11 | | |
| intercept, b: | 4.13 | 3.62 | 4.00 | 37 | 55 | | |
| N: 93 | | 3.37 | 5.95 | 29 | 384 | | |

N= 93

| | Sampling Date | Q Discharge | dPb Concentration | dPb Lead | Ln Q | Ln dPb Conc. | Ln dPb Load | dPb CC287/288 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| DATA: | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 5-Oct-91 | 14.5 | 20 | 2 | 2.67 | 3.00 | 0.44 | -0.61 | -0.86 | -0.83 |
| IDEQ | 27-Oct-93 | 13.28 | 55 | 4 | 2.59 | 4.01 | 1.37 | -0.63 | 0.38 | -0.63 |
| IDEQ | 30-Nov-93 | 12.62 | 34 | 2 | 2.54 | 3.53 | 0.84 | -0.64 | -0.36 | -0.77 |
| IDEQ | 17-Dec-93 | 11.7 | 46 | 3 | 2.46 | 3.83 | 1.06 | -0.65 | 0.06 | -0.72 |
| IDEQ | 17-Dec-93 | 12.03 | 46 | 3 | 2.49 | 3.83 | 1.09 | -0.65 | 0.06 | -0.71 |
| IDEQ | 20-Jan-94 | 13.28 | 38 | 3 | 2.59 | 3.64 | 1.00 | -0.63 | -0.22 | -0.73 |
| IDEQ | 20-Jan-94 | 14.66 | 38 | 3 | 2.69 | 3.64 | 1.10 | -0.61 | -0.22 | -0.71 |
| IDEQ | 18-Feb-94 | 11.41 | 36 | 2 | 2.43 | 3.58 | 0.79 | -0.66 | -0.29 | -0.78 |
| IDEQ | 8-Mar-94 | 22.26 | 38 | 5 | 3.10 | 3.64 | 1.52 | -0.49 | -0.22 | -0.57 |
| IDEQ | 24-Mar-94 | 21.13 | 37 | 4 | 3.05 | 3.61 | 1.44 | -0.51 | -0.26 | -0.60 |
| IDEQ | 7-Apr-94 | 37.82 | 35 | 7 | 3.63 | 3.56 | 1.96 | -0.26 | -0.33 | -0.35 |
| IDEQ | 4-May-94 | 111.05 | 28 | 17 | 4.71 | 3.33 | 2.82 | 0.85 | -0.57 | 0.49 |
| IDEQ | 19-May-94 | 102.01 | 26 | 14 | 4.63 | 3.26 | 2.66 | 0.72 | -0.64 | 0.28 |
| IDEQ | 7-Jun-94 | 63.45 | 29 | 10 | 4.15 | 3.37 | 2.29 | 0.13 | -0.54 | -0.11 |
| IDEQ | 23-Jun-94 | 28.96 | 34 | 5 | 3.37 | 3.53 | 1.67 | -0.39 | -0.36 | -0.51 |
| IDEQ | 25-Jul-94 | 19.04 | 42 | 4 | 2.95 | 3.74 | 1.46 | -0.54 | -0.08 | -0.59 |
| IDEQ | 16-Aug-94 | 16.3 | 46 | 4 | 2.79 | 3.83 | 1.39 | -0.58 | 0.06 | -0.62 |
| IDEQ | 16-Aug-94 | 13.57 | 46 | 3 | 2.61 | 3.83 | 1.21 | -0.63 | 0.06 | -0.68 |
| IDEQ | 13-Sep-94 | 15.89 | 36 | 3 | 2.77 | 3.58 | 1.12 | -0.59 | -0.29 | -0.70 |
| IDEQ | 16-Oct-94 | 14.34 | 31 | 2 | 2.66 | 3.43 | 0.87 | -0.61 | -0.47 | -0.76 |
| IDEQ | 16-Nov-94 | 15.89 | 40 | 3 | 2.77 | 3.69 | 1.23 | -0.59 | -0.15 | -0.67 |
| IDEQ | 13-Dec-94 | 17.17 | 39 | 4 | 2.84 | 3.66 | 1.28 | -0.57 | -0.18 | -0.66 |
| IDEQ | 10-Jan-95 | 28.21 | 40 | 6 | 3.34 | 3.69 | 1.80 | -0.40 | -0.15 | -0.44 |
| IDEQ | 9-Feb-95 | 43.28 | 26 | 6 | 3.77 | 3.26 | 1.80 | -0.18 | -0.64 | -0.44 |
| IDEQ | 8-Mar-95 | 36.82 | 22 | 4 | 3.61 | 3.09 | 1.47 | -0.27 | -0.79 | -0.59 |
| IDEQ | 22-Mar-95 | 86.16 | 34 | 16 | 4.46 | 3.53 | 2.76 | 0.48 | -0.36 | 0.41 |
| IDEQ | 12-Apr-95 | 42.13 | 27 | 6 | 3.74 | 3.30 | 1.81 | -0.19 | -0.61 | -0.44 |
| IDEQ | 25-Apr-95 | 43 | 22 | 5 | 3.76 | 3.09 | 1.63 | -0.18 | -0.79 | -0.53 |
| IDEQ | 13-Jun-95 | 96.41 | 27 | 14 | 4.57 | 3.30 | 2.64 | 0.63 | -0.61 | 0.25 |
| IDEQ | 27-Jun-95 | 34.9 | 26 | 5 | 3.55 | 3.26 | 1.59 | -0.30 | -0.64 | -0.54 |
| IDEQ | 11-Jul-95 | 20.05 | 34 | 4 | 3.00 | 3.53 | 1.30 | -0.53 | -0.36 | -0.65 |
| IDEQ | 25-Jul-95 | 14.71 | 33 | 3 | 2.69 | 3.50 | 0.96 | -0.61 | -0.40 | -0.74 |
| IDEQ | 14-Aug-95 | 12.6 | 36 | 2 | 2.53 | 3.58 | 0.89 | -0.64 | -0.29 | -0.76 |
| IDEQ | 13-Sep-95 | 11.4 | 38 | 2 | 2.43 | 3.64 | 0.85 | -0.66 | -0.22 | -0.77 |
| IDEQ | 18-Oct-95 | 31.4 | 48 | 8 | 3.45 | 3.87 | 2.09 | -0.36 | 0.13 | -0.26 |
| IDEQ | 21-Nov-95 | 81.5 | 45 | 20 | 4.40 | 3.81 | 2.98 | 0.40 | 0.03 | 0.75 |
| IDEQ | 27-Dec-95 | 42.1 | 55 | 12 | 3.74 | 4.01 | 2.52 | -0.19 | 0.38 | 0.12 |
| IDEQ | 17-Jan-96 | 50.9 | 223 | 61 | 3.93 | 5.41 | 4.11 | -0.06 | 6.33 | 4.36 |
| IDEQ | 29-Feb-96 | 111 | 45 | 27 | 4.71 | 3.81 | 3.29 | 0.85 | 0.03 | 1.38 |
| IDEQ | 28-Mar-96 | 65.2 | 53 | 19 | 4.18 | 3.97 | 2.92 | 0.16 | 0.31 | 0.65 |
| IDEQ | 8-May-96 | 81.5 | 66 | 29 | 4.40 | 4.19 | 3.37 | 0.40 | 0.77 | 1.56 |
| IDEQ | 19-Jun-96 | 148 | 36 | 29 | 5.00 | 3.58 | 3.36 | 1.41 | -0.29 | 1.53 |
| IDEQ | 24-Jul-96 | 35.8 | 66 | 13 | 3.58 | 4.19 | 2.54 | -0.29 | 0.77 | 0.14 |
| IDEQ | 21-Aug-96 | 23.342375 | 94 | 12 | 3.15 | 4.54 | 2.47 | -0.48 | 1.76 | 0.06 |
| IDEQ | 26-Sep-96 | 19.5 | 98 | 10 | 2.97 | 4.58 | 2.33 | -0.54 | 1.90 | -0.07 |
| IDEQ | 29-Oct-96 | 23.5 | 174 | 22 | 3.16 | 5.16 | 3.09 | -0.48 | 4.59 | 0.95 |
| IDEQ | 27-Nov-96 | 21.7 | 51 | 6 | 3.08 | 3.93 | 1.78 | -0.50 | 0.24 | -0.45 |
| IDEQ | 13-Dec-96 | 29.7 | 60 | 10 | 3.39 | 4.09 | 2.26 | -0.38 | 0.56 | -0.13 |
| IDEQ | 30-Jan-97 | 31.4 | 48 | 8 | 3.45 | 3.87 | 2.09 | -0.36 | 0.13 | -0.26 |
| IDEQ | 21-Feb-97 | 38.9 | 71 | 15 | 3.66 | 4.26 | 2.70 | -0.24 | 0.95 | 0.33 |
| IDEQ | 26-Mar-97 | 144 | 63 | 49 | 4.97 | 4.14 | 3.89 | 1.35 | 0.67 | 3.29 |
| IDEQ | 16-Apr-97 | 55.3 | 46 | 14 | 4.01 | 3.83 | 2.62 | 0.01 | 0.06 | 0.22 |
| IDEQ | 24-Jun-97 | 124 | 32 | 21 | 4.82 | 3.47 | 3.06 | 1.05 | -0.43 | 0.89 |
| IDEQ | 23-Jul-97 | 111 | 66 | 39 | 4.71 | 4.19 | 3.67 | 0.85 | 0.77 | 2.47 |
| IDEQ | 14-Aug-97 | 37.8 | 54 | 11 | 3.63 | 3.99 | 2.40 | -0.26 | 0.35 | -0.01 |
| IDEQ | 4-Sep-97 | 34 | 114 | 21 | 3.53 | 4.74 | 3.04 | -0.32 | 2.47 | 0.85 |
| IDEQ | 16-Oct-97 | 25.4 | 57 | 8 | 3.23 | 4.04 | 2.05 | -0.45 | 0.45 | -0.29 |
| URS | 9-Nov-97 | 32.7 | 50.8 | 9 | 3.49 | 3.93 | 2.19 | -0.34 | 0.23 | -0.19 |
| IDEQ | 26-Nov-97 | 29.7 | 49 | 8 | 3.39 | 3.89 | 2.06 | -0.38 | 0.17 | -0.29 |
| IDEQ | 19-Dec-97 | 24.1 | 43 | 6 | 3.18 | 3.76 | 1.72 | -0.47 | -0.04 | -0.48 |
| IDEQ | 22-Jan-98 | 18.1 | 44 | 4 | 2.90 | 3.78 | 1.46 | -0.56 | -0.01 | -0.60 |
| IDEQ | 26-Feb-98 | 22.3 | 42 | 5 | 3.10 | 3.74 | 1.62 | -0.49 | -0.08 | -0.53 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 20-Mar-98 | 33.1 | 45 | 8 | 3.50 | 3.81 | 2.08 | -0.33 | 0.03 | -0.27 |
| URS | 14-May-98 | 206 | 25.7 | 28 | 5.33 | 3.25 | 3.35 | 2.29 | -0.65 | 1.52 |
| IDEQ | 26-Jun-98 | 63.5 | 34 | 12 | 4.15 | 3.53 | 2.45 | 0.13 | -0.36 | 0.04 |
| IDEQ | 28-Jul-98 | 24.7 | 46 | 6 | 3.21 | 3.83 | 1.81 | -0.46 | 0.06 | -0.44 |
| IDEQ | 26-Aug-98 | 19.5 | 42 | 4 | 2.97 | 3.74 | 1.48 | -0.54 | -0.08 | -0.59 |
| IDEQ | 24-Sep-98 | 17.2 | 50 | 5 | 2.84 | 3.91 | 1.53 | -0.57 | 0.20 | -0.57 |
| IDEQ | 1-Oct-98 | 16.7 | 39 | 4 | 2.82 | 3.66 | 1.25 | -0.58 | -0.18 | -0.66 |
| IDEQ | 8-Oct-98 | 15.9 | 45 | 4 | 2.77 | 3.81 | 1.35 | -0.59 | 0.03 | -0.63 |
| IDEQ | 26-Oct-98 | 16.7 | 34 | 3 | 2.82 | 3.53 | 1.12 | -0.58 | -0.36 | -0.70 |
| IDEQ | 25-Nov-98 | 26 | 54 | 8 | 3.26 | 3.99 | 2.02 | -0.44 | 0.35 | -0.31 |
| IDEQ | 15-Jan-99 | 33 | 38 | 7 | 3.50 | 3.64 | 1.91 | -0.33 | -0.22 | -0.38 |
| IDEQ | 23-Feb-99 | 20 | 28 | 3 | 3.00 | 3.33 | 1.10 | -0.53 | -0.57 | -0.71 |
| IDEQ | 8-Mar-99 | 23 | 31 | 4 | 3.14 | 3.43 | 1.34 | -0.48 | -0.47 | -0.63 |
| URS | 9-Nov-97 | 36 6 | 49.9 | 10 | 3.60 | 3.91 | 2.29 | -0.28 | 0.20 | -0.11 |
| URS | 14-May-98 | 233 | 25.3 | 32 | 5.45 | 3.23 | 3.46 | 2.70 | -0.67 | 1.80 |
| USGS | 26-Oct-98 | 13 | 31 | 2 | 2.56 | 3.43 | 0.77 | -0.63 | -0.47 | -0.78 |
| USGS | 26-Oct-98 | 13 | 32 | 2 | 2.56 | 3.47 | 0.81 | -0.63 | -0.43 | -0.77 |
| URS | 14-Nov-98 | 22.53 | 34.6 | 4 | 3.11 | 3.54 | 1.43 | -0.49 | -0.34 | -0.60 |
| USGS | 18-Nov-98 | 16 | 32 | 3 | 2.77 | 3.47 | 1.01 | -0.59 | -0.43 | -0.73 |
| USGS | 15-Dec-98 | 25 | 29 | 4 | 3.22 | 3.37 | 1.36 | -0.45 | -0.54 | -0.63 |
| USGS | 28-Dec-98 | 27 | 31 | 5 | 3.30 | 3.43 | 1.50 | -0.42 | -0.47 | -0.58 |
| USGS | 23-Mar-99 | 97 | 40 | 21 | 4.57 | 3.69 | 3.04 | 0.64 | -0.15 | 0.85 |
| USGS | 19-Apr-99 | 138 | 22 | 16 | 4.93 | 3.09 | 2.79 | 1.26 | -0.79 | 0.46 |
| USGS | 5-May-99 | 84 | 22 | 10 | 4.43 | 3.09 | 2.30 | 0.44 | -0.79 | -0.10 |
| USGS | 24-May-99 | 384 | 26 | 54 | 5.95 | 3.26 | 3.98 | 5.00 | -0.64 | 3.72 |
| USGS | 27-May-99 | 261 | 17 | 24 | 5.56 | 2.83 | 3.17 | 3.13 | -0.96 | 1.11 |
| USGS | 2-Jun-99 | 241 | 23 | 30 | 5.48 | 3.14 | 3.40 | 2.83 | -0.75 | 1.63 |
| USGS | 15-Jun-99 | 263 | 18 | 25 | 5.57 | 2.89 | 3.24 | 3.16 | -0.93 | 1.25 |
| USGS | 8-Jul-99 | 107 | 20 | 12 | 4.67 | 3.00 | 2.44 | 0.79 | -0.86 | 0.04 |
| USGS | 5-Aug-99 | 34 | 31 | 6 | 3.53 | 3.43 | 1.74 | -0.32 | -0.47 | -0.47 |
| USGS | 30-Aug-99 | 22 | 37 | 4 | 3.09 | 3.61 | 1.48 | -0.50 | -0.26 | -0.59 |

dPb

Concentration over time analysis

| | dPb | CC287/288 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | LnConc.=mTime+b All data r2, m: | | | 0.004 | -0.00004 |
| | Time | Ln[COC] | [COC] | | |
| first: | 5-Oct-91 | 3.75 | 43 | | |
| mid: | 27-Nov-96 | 3.68 | 39 | | |
| last: | 30-Aug-99 | 3.63 | 38 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.533 | -0.00108 |
| | 21-Feb-97 | 4.18 | 65 | | |
| | 30-Aug-99 | 3.18 | 24 | | |

Load over time analysis

| | dPb | CC287/288 | | Load over time | |
|---|---|---|---|---|---|
| | LnLoad=mTime+b All data r2, m: | | | 0.083 | 0.00035 |
| | Time | LnLoad | Load | | |
| first: | 5-Oct-91 | 1.36 | 4 | | |
| mid: | 27-Nov-96 | 2.02 | 8 | | |
| last: | 30-Aug-99 | 2.38 | 11 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.052 | -0.00076 |
| | 21-Feb-97 | 2.57 | 13 | | |
| | 30-Aug-99 | 1.87 | 6 | | |

| | max r2: 1.000 | | | max r2: 1.000 | | |
|---|---|---|---|---|---|---|
| | Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | | |
| | r2 | slope | intercept | r2 | slope | intercept |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.004 | -0.00004 | 5.10 | 0.083 | 0.00035 | -10.53 |
| | 0.014 | -0.00007 | 6.27 | 0.063 | 0.00031 | -9.10 |
| | 0.011 | -0.00007 | 6.04 | 0.058 | 0.00031 | -8.80 |
| | 0.013 | -0.00007 | 6.26 | 0.049 | 0.00028 | -7.96 |
| | 0.012 | -0.00007 | 6.19 | 0.042 | 0.00026 | -7.27 |
| | 0.011 | -0.00007 | 6.12 | 0.036 | 0.00024 | -6.56 |
| | 0.012 | -0.00007 | 6.24 | 0.029 | 0.00022 | -5.70 |
| | 0.012 | -0.00008 | 6.37 | 0.022 | 0.00020 | -4.87 |
| | 0.014 | -0.00008 | 6.58 | 0.015 | 0.00016 | -3.64 |
| | 0.015 | -0.00009 | 6.73 | 0.012 | 0.00015 | -3.15 |
| | 0.016 | -0.00009 | 6.92 | 0.009 | 0.00013 | -2.53 |
| | 0.018 | -0.00010 | 7.20 | 0.009 | 0.00013 | -2.50 |
| | 0.024 | -0.00012 | 7.78 | -0.013 | 0.00016 | -3.55 |
| | 0.033 | -0.00014 | 8.50 | 0.017 | 0.00019 | -4.49 |
| | 0.040 | -0.00015 | 9.14 | 0.019 | 0.00020 | -5.00 |
| | 0.046 | -0.00017 | 9.60 | 0.017 | 0.00019 | -4.67 |
| | 0.047 | -0.00017 | 9.79 | 0.013 | 0.00017 | -4.00 |
| | 0.046 | -0.00017 | 9.85 | 0.010 | 0.00015 | -3.17 |
| | 0.045 | -0.00018 | 9.93 | 0.006 | 0.00012 | -1.96 |
| | 0.050 | -0.00019 | 10.39 | 0.002 | 0.00007 | -0.49 |
| | 0.059 | -0.00021 | 11.14 | 0.000 | 0.00002 | 1.54 |
| | 0.062 | -0.00022 | 11.51 | 0.000 | -0.00003 | 3.13 |
| | 0.066 | -0.00023 | 11.95 | 0.002 | -0.00007 | 4.78 |
| | 0.069 | -0.00024 | 12.37 | 0.003 | -0.00010 | 5.63 |
| | 0.088 | -0.00028 | 13.62 | 0.005 | -0.00012 | 6.56 |
| | 0.117 | -0.00033 | 15.31 | 0.010 | -0.00017 | 8.21 |
| | 0.132 | -0.00035 | 16.31 | 0.007 | -0.00015 | 7.42 |
| | 0.160 | -0.00040 | 17.89 | 0.010 | -0.00018 | 8.57 |
| | 0.209 | -0.00046 | 20.13 | 0.015 | -0.00022 | 10.27 |
| | 0.250 | -0.00051 | 22.05 | 0.013 | -0.00021 | 9.77 |
| | 0.303 | -0.00057 | 24.30 | 0.019 | -0.00027 | 11.76 |
| | 0.340 | -0.00063 | 26.15 | 0.031 | -0.00035 | 14.75 |
| | 0.385 | -0.00069 | 28.33 | 0.055 | -0.00047 | 19.11 |
| | 0.429 | -0.00075 | 30.55 | 0.092 | -0.00061 | 24.29 |
| | 0.472 | -0.00081 | 32.85 | 0.146 | -0.00078 | 30.30 |
| | 0.496 | -0.00086 | 34.64 | 0.164 | -0.00086 | 33.06 |
| | 0.528 | -0.00092 | 36.80 | 0.155 | -0.00086 | 33.14 |
| | 0.544 | -0.00097 | 38.45 | 0.160 | -0.00090 | 34.73 |
| | 0.511 | -0.00087 | 35.03 | 0.122 | -0.00079 | 30.54 |
| | 0.543 | -0.00093 | 37.25 | 0.103 | -0.00074 | 28.82 |
| | 0.559 | -0.00098 | 39.05 | 0.092 | -0.00073 | 28.27 |
| | 0.555 | -0.00101 | 40.00 | 0.071 | -0.00065 | 25.58 |
| | 0.620 | -0.00111 | 43.64 | 0.051 | -0.00056 | 22.40 |
| | 0.618 | -0.00114 | 44.80 | 0.047 | -0.00056 | 22.49 |
| | 0.592 | -0.00113 | 44.22 | 0.045 | -0.00058 | 22.88 |
| | 0.560 | -0.00110 | 43.10 | 0.046 | -0.00061 | 23.97 |
| | 0.531 | -0.00097 | 38.36 | 0.032 | -0.00052 | 20.87 |
| | 0.536 | -0.00101 | 39.90 | 0.043 | -0.00063 | 24.89 |
| | 0.522 | -0.00103 | 40.62 | 0.045 | -0.00068 | 26.65 |
| | 0.533 | -0.00108 | 42.62 | 0.052 | -0.00076 | 29.60 |
| | 0.501 | -0.00107 | 42.03 | 0.044 | -0.00074 | 28.64 |
| | 0.474 | -0.00107 | 41.97 | 0.016 | -0.00044 | 18.01 |
| | 0.485 | -0.00113 | 44.40 | 0.010 | -0.00037 | 15.59 |
| | 0.558 | -0.00127 | 49.49 | 0.003 | -0.00019 | 8.97 |
| | 0.528 | -0.00126 | 48.84 | 0.002 | 0.00018 | -4.39 |
| | 0.513 | -0.00128 | 49.70 | 0.005 | 0.00029 | -8.47 |
| | 0.464 | -0.00109 | 42.77 | 0.022 | 0.00061 | -20.06 |
| | 0.425 | -0.00105 | 41.50 | 0.025 | 0.00069 | -22.93 |
| | 0.393 | -0.00104 | 40.98 | 0.033 | 0.00082 | -27.77 |
| | 0.362 | -0.00103 | 40.55 | 0.038 | 0.00094 | -32.02 |
| | 0.347 | -0.00105 | 41.44 | 0.035 | 0.00096 | -32.50 |
| | 0.326 | -0.00106 | 41.69 | 0.026 | 0.00086 | -28.99 |

| | | | | | |
|---|---|---|---|---|---|
| 0.308 | -0.00107 | 42.12 | 0.020 | 0.00060 | -26.73 |
| 0.278 | -0.00105 | 41.27 | 0.023 | 0.00090 | -30.63 |
| 0.347 | -0.00121 | 47.12 | 0.061 | 0.00146 | -50.97 |
| 0.357 | -0.00126 | 49.00 | 0.079 | 0.00171 | -59.85 |
| 0.332 | -0.00121 | 47.16 | 0.079 | 0.00174 | -61.13 |
| 0.313 | -0.00117 | 45.91 | 0.071 | 0.00168 | -58.71 |
| 0.296 | -0.00110 | 43.04 | 0.065 | 0.00162 | -56.49 |
| 0.282 | -0.00107 | 41.97 | 0.055 | 0.00148 | -51.69 |
| 0.264 | -0.00100 | 39.54 | 0.046 | 0.00136 | -47.23 |
| 0.256 | -0.00099 | 39.19 | 0.036 | 0.00119 | -41.00 |
| 0.269 | -0.00091 | 36.13 | 0.036 | 0.00119 | -40.94 |
| 0.277 | -0.00089 | 35.60 | 0.035 | 0.00118 | -40.58 |
| 0.277 | -0.00089 | 35.62 | 0.039 | 0.00121 | -41.65 |
| 0.283 | -0.00090 | 35.88 | 0.045 | 0.00126 | -43.50 |
| 0.068 | -0.00058 | 24.36 | 0.089 | 0.00241 | -84.96 |
| 0.172 | -0.00101 | 39.95 | 0.390 | 0.00597 | -214.28 |
| 0.156 | -0.00103 | 40.47 | 0.321 | 0.00544 | -195.07 |
| 0.126 | -0.00100 | 39.67 | 0.226 | 0.00463 | -165.43 |
| 0.069 | -0.00080 | 32.36 | 0.165 | 0.00426 | -152.11 |
| 0.028 | -0.00059 | 24.54 | 0.047 | 0.00240 | -84.72 |
| 0.010 | -0.00042 | 18.58 | 0.002 | -0.00054 | 22.16 |
| 0.014 | 0.00070 | -22.28 | 0.374 | -0.00976 | 357.25 |
| 0.413 | 0.00374 | -132.79 | 0.426 | -0.01233 | 450.50 |
| 0.480 | 0.00462 | -164.79 | 0.538 | -0.01593 | 581.42 |
| 0.548 | 0.00562 | -200.91 | 0.929 | -0.02345 | 855.09 |
| 0.789 | 0.00733 | -263.38 | 0.950 | -0.02130 | 776.66 |
| 0.724 | 0.00704 | -252.85 | 0.971 | -0.02328 | 848.89 |
| 0.961 | 0.01023 | -368.63 | 0.954 | -0.02333 | 850.62 |
| 0.957 | 0.01169 | -421.81 | 0.948 | -0.01838 | 670.41 |
| 1.000 | 0.00708 | -254.01 | 1.000 | -0.01034 | 377.71 |

update for EV, CV:

dPb
LN Analysis
**Load**

CC287/288
dPb
Load Data, EV=10 lbs/day CV=1.04
Load Data-based LN

| | | u | ln dPb Load | dPb Load |
|---|---|---|---|---|
| Avg: | 11 | | | |
| SD: | 11 | 3 | 4.6 | 99 |
| CV: | 1.03 | | | |
| Min: | 2 | 0 | 2.05 | 8 |
| Max: | 61 | -3 | -0.51 | 1 |
| Median: | 6 | | | |

u=mLn(Load)+ b:

update for r2, EV, CV: $r^2$=0.964, EV=11.1 lbs/day CV=1.10; max r2=0.994

| | | u | lnLoad | Load |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.964 | | | |
| slope, m: | 1.120 | 3 | 4.69 | 108 |
| intercept, b: | -2.250 | 0 | 2.01 | 7 |
| N: 93 | | -3 | -0.67 | 0.5 |
| E[Load]: | 11.1 | Parameter Estimates | | |
| SD[Load]: | 12 | from LN regression | | |
| CV[Load]: | 1.10 | update graph label | | |

| Date | dPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.994 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | N: 93 | | | |
| 5-Oct-91 | 2 | 1 | 0.0067 | -2.473 | 0.445 | 0.964 |
| 26-Oct-98 | 2 | 2 | 0.0174 | -2.110 | 0.774 | 0.967 |
| 18-Feb-94 | 2 | 3 | 0.0282 | -1.909 | 0.793 | 0.973 |
| 26-Oct-98 | 2 | 4 | 0.0389 | -1.764 | 0.806 | 0.977 |
| 30-Nov-93 | 2 | 5 | 0.0496 | -1.649 | 0.837 | 0.979 |
| 13-Sep-95 | 2 | 6 | 0.0603 | -1.552 | 0.846 | 0.981 |
| 16-Oct-94 | 2 | 7 | 0.0710 | -1.468 | 0.872 | 0.982 |
| 14-Aug-95 | 2 | 8 | 0.0818 | -1.393 | 0.892 | 0.983 |
| 25-Jul-95 | 3 | 9 | 0.0925 | -1.326 | 0.960 | 0.984 |
| 20-Jan-94 | 3 | 10 | 0.1032 | -1.263 | 0.999 | 0.984 |
| 18-Nov-98 | 3 | 11 | 0.1139 | -1.206 | 1.013 | 0.985 |
| 17-Dec-93 | 3 | 12 | 0.1247 | -1.152 | 1.063 | 0.986 |
| 17-Dec-93 | 3 | 13 | 0.1354 | -1.101 | 1.091 | 0.987 |
| 20-Jan-94 | 3 | 14 | 0.1461 | -1.053 | 1.098 | 0.987 |
| 23-Feb-99 | 3 | 15 | 0.1568 | -1.008 | 1.103 | 0.988 |
| 26-Oct-98 | 3 | 16 | 0.1676 | -0.964 | 1.117 | 0.988 |
| 13-Sep-94 | 3 | 17 | 0.1783 | -0.922 | 1.124 | 0.988 |
| 16-Aug-94 | 3 | 18 | 0.1890 | -0.882 | 1.211 | 0.988 |
| 16-Nov-94 | 3 | 19 | 0.1997 | -0.843 | 1.230 | 0.988 |
| 1-Oct-98 | 4 | 20 | 0.2105 | -0.805 | 1.254 | 0.988 |
| 13-Dec-94 | 4 | 21 | 0.2212 | -0.768 | 1.282 | 0.988 |
| 11-Jul-95 | 4 | 22 | 0.2319 | -0.733 | 1.300 | 0.989 |
| 8-Mar-99 | 4 | 23 | 0.2426 | -0.698 | 1.344 | 0.989 |
| 8-Oct-98 | 4 | 24 | 0.2534 | -0.664 | 1.348 | 0.989 |
| 15-Dec-98 | 4 | 25 | 0.2641 | -0.631 | 1.361 | 0.989 |
| 27-Oct-93 | 4 | 26 | 0.2748 | -0.598 | 1.369 | 0.989 |
| 16-Aug-94 | 4 | 27 | 0.2855 | -0.567 | 1.395 | 0.989 |
| 14-Nov-98 | 4 | 28 | 0.2962 | -0.535 | 1.434 | 0.989 |
| 24-Mar-94 | 4 | 29 | 0.3070 | -0.504 | 1.437 | 0.989 |
| 22-Jan-98 | 4 | 30 | 0.3177 | -0.474 | 1.455 | 0.988 |
| 25-Jul-94 | 4 | 31 | 0.3284 | -0.444 | 1.459 | 0.988 |
| 8-Mar-95 | 4 | 32 | 0.3391 | -0.415 | 1.472 | 0.988 |
| 30-Aug-99 | 4 | 33 | 0.3499 | -0.386 | 1.477 | 0.987 |
| 26-Aug-98 | 4 | 34 | 0.3606 | -0.357 | 1.483 | 0.987 |
| 28-Dec-98 | 5 | 35 | 0.3713 | -0.328 | 1.505 | 0.987 |
| 8-Mar-94 | 5 | 36 | 0.3820 | -0.300 | 1.515 | 0.986 |
| 24-Sep-98 | 5 | 37 | 0.3928 | -0.272 | 1.532 | 0.986 |
| 27-Jun-95 | 5 | 38 | 0.4035 | -0.244 | 1.586 | 0.985 |
| 26-Feb-98 | 5 | 39 | 0.4142 | -0.217 | 1.617 | 0.985 |
| 25-Apr-95 | 5 | 40 | 0.4249 | -0.189 | 1.627 | 0.985 |
| 23-Jun-94 | 5 | 41 | 0.4357 | -0.162 | 1.667 | 0.984 |
| 19-Dec-97 | 6 | 42 | 0.4464 | -0.135 | 1.718 | 0.984 |
| 5-Aug-99 | 6 | 43 | 0.4571 | -0.108 | 1.735 | 0.984 |
| 27-Nov-96 | 6 | 44 | 0.4678 | -0.081 | 1.784 | 0.983 |
| 9-Feb-95 | 6 | 45 | 0.4786 | -0.054 | 1.801 | 0.983 |
| 10-Jan-95 | 6 | 46 | 0.4893 | -0.027 | 1.803 | 0.982 |
| 28-Jul-98 | 6 | 47 | 0.5000 | 0.000 | 1.810 | 0.982 |
| 12-Apr-95 | 6 | 48 | 0.5107 | 0.027 | 1.812 | 0.982 |
| 15-Jan-99 | 7 | 49 | 0.5214 | 0.054 | 1.909 | 0.983 |
| 7-Apr-94 | 7 | 50 | 0.5322 | 0.081 | 1.963 | 0.983 |
| 25-Nov-98 | 8 | 51 | 0.5429 | 0.108 | 2.022 | 0.982 |
| 16-Oct-97 | 8 | 52 | 0.5536 | 0.135 | 2.053 | 0.982 |
| 26-Nov-97 | 8 | 53 | 0.5643 | 0.162 | 2.058 | 0.981 |
| 20-Mar-98 | 8 | 54 | 0.5751 | 0.189 | 2.081 | 0.981 |
| 18-Oct-95 | 8 | 55 | 0.5858 | 0.217 | 2.093 | 0.980 |
| 30-Jan-97 | 8 | 56 | 0.5965 | 0.244 | 2.093 | 0.980 |
| 9-Nov-97 | 9 | 57 | 0.6072 | 0.272 | 2.190 | 0.981 |
| 13-Dec-96 | 10 | 58 | 0.6180 | 0.300 | 2.260 | 0.981 |
| 9-Nov-97 | 10 | 59 | 0.6287 | 0.328 | 2.285 | 0.980 |
| 7-Jun-94 | 10 | 60 | 0.6394 | 0.357 | 2.292 | 0.979 |
| 5-May-99 | 10 | 61 | 0.6501 | 0.386 | 2.297 | 0.978 |
| 26-Sep-96 | 10 | 62 | 0.6609 | 0.415 | 2.330 | 0.978 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 14-Aug-97 | 11 | 63 | 0.6716 | 0.444 | 2.396 | 0.978 |
| 8-Jul-99 | 12 | 64 | 0.6823 | 0.474 | 2.443 | 0.978 |
| 26-Jun-98 | 12 | 65 | 0.6930 | 0.504 | 2.452 | 0.977 |
| 21-Aug-96 | 12 | 66 | 0.7038 | 0.535 | 2.468 | 0.976 |
| 23-Dec-95 | 12 | 67 | 0.7145 | 0.567 | 2.522 | 0.976 |
| 24-Jul-96 | 13 | 68 | 0.7252 | 0.598 | 2.543 | 0.975 |
| 16-Apr-97 | 14 | 69 | 0.7359 | 0.631 | 2.616 | 0.976 |
| 13-Jun-95 | 14 | 70 | 0.7466 | 0.664 | 2.639 | 0.974 |
| 19-May-94 | 14 | 71 | 0.7574 | 0.698 | 2.658 | 0.974 |
| 21-Feb-97 | 15 | 72 | 0.7681 | 0.733 | 2.699 | 0.974 |
| 22-Mar-95 | 16 | 73 | 0.7788 | 0.768 | 2.757 | 0.974 |
| 19-Apr-99 | 16 | 74 | 0.7895 | 0.805 | 2.793 | 0.973 |
| 4-May-94 | 17 | 75 | 0.8003 | 0.843 | 2.817 | 0.972 |
| 28-Mar-96 | 19 | 76 | 0.8110 | 0.882 | 2.923 | 0.973 |
| 21-Nov-95 | 20 | 77 | 0.8217 | 0.922 | 2.982 | 0.971 |
| 4-Sep-97 | 21 | 78 | 0.8324 | 0.964 | 3.037 | 0.968 |
| 23-Mar-99 | 21 | 79 | 0.8432 | 1.008 | 3.039 | 0.965 |
| 24-Jun-97 | 21 | 80 | 0.8539 | 1.053 | 3.061 | 0.963 |
| 29-Oct-96 | 22 | 81 | 0.8646 | 1.101 | 3.091 | 0.956 |
| 27-May-99 | 24 | 82 | 0.8753 | 1.152 | 3.173 | 0.951 |
| 15-Jun-99 | 25 | 83 | 0.8861 | 1.206 | 3.237 | 0.944 |
| 29-Feb-96 | 27 | 84 | 0.8968 | 1.263 | 3.291 | 0.937 |
| 14-May-98 | 28 | 85 | 0.9075 | 1.326 | 3.349 | 0.931 |
| 19-Jun-96 | 29 | 86 | 0.9182 | 1.393 | 3.356 | 0.928 |
| 8-May-96 | 29 | 87 | 0.9290 | 1.468 | 3.365 | 0.916 |
| 2-Jun-99 | 30 | 88 | 0.9397 | 1.552 | 3.395 | 0.891 |
| 14-May-98 | 32 | 89 | 0.9504 | 1.649 | 3.457 | 0.857 |
| 23-Jul-97 | 39 | 90 | 0.9611 | 1.764 | 3.674 | 0.885 |
| 26-Mar-97 | 49 | 91 | 0.9718 | 1.909 | 3.888 | 0.994 |
| 24-May-99 | 54 | 92 | 0.9826 | 2.110 | 3.984 | |
| 17-Jan-96 | 61 | 93 | 0.9933 | 2.473 | 4.112 | |

update for EV, CV:

dPb
LN Analysis
**Concentration**

CC287/288
dPb
Conc. Data, EV=48 ug/L CV=.63
Data-based LN

| | | u | ln[dPb] | [dPb] |
|---|---|---|---|---|
| Avg: | 44 | 3 | 5.4 | 216 |
| SD: | 28 | 0 | 3.62 | 37 |
| CV: | 0.64 | -3 | 1.86 | 6 |
| Min: | 17 | | | |
| Max: | 223 | | | |
| Median: | 38 | | | |

u=mLn(Conc.)+b:

update for r2, EV, CV: $r^2$=0.922, EV=43.8 ug/L CV=.48; max r2=0.971

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.922 | u | lnConc. | Conc. |
| slope, m: | 2.204 | 3 | 5.04 | 154 |
| intercept, b: | -8.106 | 0 | 3.68 | 40 |
| N: | 93 | -3 | 2.32 | 10 |
| E[Conc]: | 43.8 | Parameter Estimates | | |
| SD[Conc]: | 21 | from LN regression | | |
| CV[Conc]: | 0.48 | update graph label | | |

| Date | dPb Concentration ug/L Ranked | N: 93 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.971 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-May-99 | 17 | 1 | 0.0067 | -2.473 | 2.833 | 0.922 |
| 15-Jun-99 | 18 | 2 | 0.0174 | -2.110 | 2.890 | 0.921 |
| 5-Oct-91 | 20 | 3 | 0.0282 | -1.909 | 2.996 | 0.918 |
| 8-Jul-99 | 20 | 4 | 0.0389 | -1.764 | 2.996 | 0.917 |
| 8-Mar-95 | 22 | 5 | 0.0496 | -1.649 | 3.091 | 0.914 |
| 25-Apr-95 | 22 | 6 | 0.0603 | -1.552 | 3.091 | 0.913 |
| 19-Apr-99 | 22 | 7 | 0.0710 | -1.468 | 3.091 | 0.912 |
| 5-May-99 | 22 | 8 | 0.0818 | -1.393 | 3.091 | 0.909 |
| 2-Jun-99 | 23 | 9 | 0.0925 | -1.326 | 3.135 | 0.907 |
| 14-May-98 | 25.3 | 10 | 0.1032 | -1.263 | 3.231 | 0.904 |
| 14-May-98 | 25.7 | 11 | 0.1139 | -1.206 | 3.246 | 0.903 |
| 19-May-94 | 26 | 12 | 0.1247 | -1.152 | 3.258 | 0.903 |
| 9-Feb-95 | 26 | 13 | 0.1354 | -1.101 | 3.258 | 0.902 |
| 27-Jun-95 | 26 | 14 | 0.1461 | -1.053 | 3.258 | 0.900 |
| 24-May-99 | 26 | 15 | 0.1568 | -1.008 | 3.258 | 0.899 |
| 12-Apr-95 | 27 | 16 | 0.1676 | -0.964 | 3.296 | 0.897 |
| 13-Jun-95 | 27 | 17 | 0.1783 | -0.922 | 3.296 | 0.895 |
| 4-May-94 | 28 | 18 | 0.1890 | -0.882 | 3.332 | 0.893 |
| 23-Feb-99 | 28 | 19 | 0.1997 | -0.843 | 3.332 | 0.892 |
| 7-Jun-94 | 29 | 20 | 0.2105 | -0.805 | 3.367 | 0.890 |
| 15-Dec-98 | 29 | 21 | 0.2212 | -0.768 | 3.367 | 0.889 |
| 16-Oct-94 | 31 | 22 | 0.2319 | -0.733 | 3.434 | 0.887 |
| 8-Mar-99 | 31 | 23 | 0.2426 | -0.698 | 3.434 | 0.887 |
| 26-Oct-98 | 31 | 24 | 0.2534 | -0.664 | 3.434 | 0.887 |
| 28-Dec-98 | 31 | 25 | 0.2641 | -0.631 | 3.434 | 0.887 |
| 5-Aug-99 | 31 | 26 | 0.2748 | -0.598 | 3.434 | 0.886 |
| 24-Jun-97 | 32 | 27 | 0.2855 | -0.567 | 3.466 | 0.885 |
| 26-Oct-98 | 32 | 28 | 0.2962 | -0.535 | 3.466 | 0.885 |
| 18-Nov-98 | 32 | 29 | 0.3070 | -0.504 | 3.466 | 0.884 |
| 25-Jul-95 | 33 | 30 | 0.3177 | -0.474 | 3.497 | 0.883 |
| 30-Nov-93 | 34 | 31 | 0.3284 | -0.444 | 3.526 | 0.883 |
| 23-Jun-94 | 34 | 32 | 0.3391 | -0.415 | 3.526 | 0.884 |
| 22-Mar-95 | 34 | 33 | 0.3499 | -0.386 | 3.526 | 0.885 |
| 11-Jul-95 | 34 | 34 | 0.3606 | -0.357 | 3.526 | 0.885 |
| 26-Jun-98 | 34 | 35 | 0.3713 | -0.328 | 3.526 | 0.885 |
| 26-Oct-98 | 34 | 36 | 0.3820 | -0.300 | 3.526 | 0.884 |
| 14-Nov-98 | 34.6 | 37 | 0.3928 | -0.272 | 3.544 | 0.883 |
| 7-Apr-94 | 35 | 38 | 0.4035 | -0.244 | 3.555 | 0.883 |
| 18-Feb-94 | 36 | 39 | 0.4142 | -0.217 | 3.584 | 0.882 |
| 13-Sep-94 | 36 | 40 | 0.4249 | -0.189 | 3.584 | 0.882 |
| 14-Aug-95 | 36 | 41 | 0.4357 | -0.162 | 3.584 | 0.883 |
| 19-Jun-96 | 36 | 42 | 0.4464 | -0.135 | 3.584 | 0.882 |
| 24-Mar-94 | 37 | 43 | 0.4571 | -0.108 | 3.611 | 0.882 |
| 30-Aug-99 | 37 | 44 | 0.4678 | -0.081 | 3.611 | 0.882 |
| 20-Jan-94 | 38 | 45 | 0.4786 | -0.054 | 3.638 | 0.882 |
| 20-Jan-94 | 38 | 46 | 0.4893 | -0.027 | 3.638 | 0.882 |
| 8-Mar-94 | 38 | 47 | 0.5000 | 0.000 | 3.638 | 0.883 |
| 13-Sep-95 | 38 | 48 | 0.5107 | 0.027 | 3.638 | 0.883 |
| 15-Jan-99 | 38 | 49 | 0.5214 | 0.054 | 3.638 | 0.882 |
| 13-Dec-94 | 39 | 50 | 0.5322 | 0.081 | 3.664 | 0.881 |
| 1-Oct-98 | 39 | 51 | 0.5429 | 0.108 | 3.664 | 0.881 |
| 16-Nov-94 | 40 | 52 | 0.5536 | 0.135 | 3.689 | 0.881 |
| 10-Jan-95 | 40 | 53 | 0.5643 | 0.162 | 3.689 | 0.881 |
| 23-Mar-99 | 40 | 54 | 0.5751 | 0.189 | 3.689 | 0.881 |
| 25-Jul-94 | 42 | 55 | 0.5858 | 0.217 | 3.738 | 0.880 |
| 26-Feb-98 | 42 | 56 | 0.5965 | 0.244 | 3.738 | 0.882 |
| 26-Aug-98 | 42 | 57 | 0.6072 | 0.272 | 3.738 | 0.883 |
| 19-Dec-97 | 43 | 58 | 0.6180 | 0.300 | 3.761 | 0.884 |
| 22-Jan-98 | 44 | 59 | 0.6287 | 0.328 | 3.784 | 0.886 |
| 21-Nov-95 | 45 | 60 | 0.6394 | 0.357 | 3.807 | 0.889 |
| 29-Feb-96 | 45 | 61 | 0.6501 | 0.386 | 3.807 | 0.894 |
| 20-Mar-98 | 45 | 62 | 0.6609 | 0.415 | 3.807 | 0.898 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8-Oct-98 | 45 | 63 | 0.6716 | 0.444 | 3.807 | 0.902 |
| 17-Dec-93 | 46 | 64 | 0.6823 | 0.474 | 3.829 | 0.905 |
| 17-Dec-93 | 46 | 65 | 0.6930 | 0.504 | 3.829 | 0.910 |
| 16-Aug-94 | 46 | 66 | 0.7038 | 0.535 | 3.829 | 0.914 |
| 16-Aug-94 | 46 | 67 | 0.7145 | 0.567 | 3.829 | 0.917 |
| 16-Apr-97 | 46 | 68 | 0.7252 | 0.598 | 3.829 | 0.920 |
| 28-Jul-98 | 46 | 69 | 0.7359 | 0.631 | 3.829 | 0.922 |
| 18-Oct-95 | 48 | 70 | 0.7466 | 0.664 | 3.871 | 0.923 |
| 30-Jan-97 | 48 | 71 | 0.7574 | 0.698 | 3.871 | 0.927 |
| 26-Nov-97 | 49 | 72 | 0.7681 | 0.733 | 3.892 | 0.929 |
| 9-Nov-97 | 49.9 | 73 | 0.7788 | 0.768 | 3.910 | 0.933 |
| 24-Sep-98 | 50 | 74 | 0.7895 | 0.805 | 3.912 | 0.937 |
| 9-Nov-97 | 50.8 | 75 | 0.8003 | 0.843 | 3.928 | 0.941 |
| 27-Nov-96 | 51 | 76 | 0.8110 | 0.882 | 3.932 | 0.944 |
| 28-Mar-96 | 53 | 77 | 0.8217 | 0.922 | 3.970 | 0.947 |
| 14-Aug-97 | 54 | 78 | 0.8324 | 0.964 | 3.989 | 0.951 |
| 25-Nov-98 | 54 | 79 | 0.8432 | 1.008 | 3.989 | 0.957 |
| 27-Oct-93 | 55 | 80 | 0.8539 | 1.053 | 4.007 | 0.960 |
| 27-Dec-95 | 55 | 81 | 0.8646 | 1.101 | 4.007 | 0.963 |
| 16-Oct-97 | 57 | 82 | 0.8753 | 1.152 | 4.043 | 0.963 |
| 13-Dec-96 | 60 | 83 | 0.8861 | 1.206 | 4.094 | 0.963 |
| 26-Mar-97 | 63 | 84 | 0.8968 | 1.263 | 4.143 | 0.964 |
| 8-May-96 | 66 | 85 | 0.9075 | 1.326 | 4.190 | 0.967 |
| 24-Jul-96 | 66 | 86 | 0.9182 | 1.393 | 4.190 | 0.971 |
| 23-Jul-97 | 66 | 87 | 0.9290 | 1.468 | 4.190 | 0.968 |
| 21-Feb-97 | 71 | 88 | 0.9397 | 1.552 | 4.263 | 0.959 |
| 21-Aug-96 | 94 | 89 | 0.9504 | 1.649 | 4.543 | 0.955 |
| 26-Sep-96 | 98 | 90 | 0.9611 | 1.764 | 4.585 | 0.945 |
| 4-Sep-97 | 114 | 91 | 0.9718 | 1.909 | 4.736 | 0.905 |
| 29-Oct-96 | 174 | 92 | 0.9826 | 2.110 | 5.159 | |
| 17-Jan-96 | 223 | 93 | 0.9933 | 2.473 | 5.407 | |

update for EV, CV:

dPb
LN Analysis
**Discharge, Q**

CC287/288
dPb
Q Data, EV=41 cfs CV=0.92
Q Data-based LN

| | | u | lnQ | Q |
|---|---|---|---|---|
| Avg: | 55 | 3 | 6.4 | 598 |
| SD: | 66 | 0 | 3.56 | 35 |
| CV: | 1.20 | -3 | 0.72 | 2 |
| Min: | 11 | | | |
| Max: | 384 | | | |
| Median: | 29 | | | |

u=mLn(Q)+b:

update for r2, EV, CV: r2=0.919, EV=53.4 cfs CV=1.15; max r2=0.978

| | | u | lnQ | Q |
|---|---|---|---|---|
| r2 u,lnQ: | 0.919 | 3 | 6.31 | 550 |
| slope, m: | 1.090 | 0 | 3.56 | 35 |
| intercept, b: | -3.876 | -3 | 0.80 | 2 |
| N: 93 | | | | |

E[Q]: 53.4 Parameter Estimates
SD[Q]: 61 from LN regression
CV[Q]: 1.15 update graph label

N: 93

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.978 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 11.4 | 1 | 0.0067 | -2.473 | 2.434 | 0.919 |
| 18-Feb-94 | 11.41 | 2 | 0.0174 | -2.110 | 2.434 | 0.932 |
| 17-Dec-93 | 11.7 | 3 | 0.0282 | -1.909 | 2.460 | 0.940 |
| 17-Dec-93 | 12.03 | 4 | 0.0389 | -1.764 | 2.487 | 0.945 |
| 14-Aug-95 | 12.6 | 5 | 0.0496 | -1.649 | 2.534 | 0.949 |
| 30-Nov-93 | 12.62 | 6 | 0.0603 | -1.552 | 2.535 | 0.953 |
| 26-Oct-98 | 13 | 7 | 0.0710 | -1.468 | 2.565 | 0.956 |
| 26-Oct-98 | 13 | 8 | 0.0818 | -1.393 | 2.565 | 0.958 |
| 27-Oct-93 | 13.28 | 9 | 0.0925 | -1.326 | 2.586 | 0.960 |
| 20-Jan-94 | 13.28 | 10 | 0.1032 | -1.263 | 2.586 | 0.962 |
| 16-Aug-94 | 13.57 | 11 | 0.1139 | -1.206 | 2.608 | 0.964 |
| 16-Oct-94 | 14.34 | 12 | 0.1247 | -1.152 | 2.663 | 0.965 |
| 5-Oct-91 | 14.5 | 13 | 0.1354 | -1.101 | 2.674 | 0.966 |
| 20-Jan-94 | 14.66 | 14 | 0.1461 | -1.053 | 2.685 | 0.967 |
| 25-Jul-95 | 14.71 | 15 | 0.1568 | -1.008 | 2.689 | 0.968 |
| 13-Sep-94 | 15.89 | 16 | 0.1676 | -0.964 | 2.766 | 0.969 |
| 16-Nov-94 | 15.89 | 17 | 0.1783 | -0.922 | 2.766 | 0.971 |
| 8-Oct-98 | 15.9 | 18 | 0.1890 | -0.882 | 2.766 | 0.972 |
| 18-Nov-98 | 16 | 19 | 0.1997 | -0.843 | 2.773 | 0.972 |
| 16-Aug-94 | 16.3 | 20 | 0.2105 | -0.805 | 2.791 | 0.973 |
| 1-Oct-98 | 16.7 | 21 | 0.2212 | -0.768 | 2.815 | 0.973 |
| 26-Oct-98 | 16.7 | 22 | 0.2319 | -0.733 | 2.815 | 0.974 |
| 13-Dec-94 | 17.17 | 23 | 0.2426 | -0.698 | 2.843 | 0.974 |
| 24-Sep-98 | 17.2 | 24 | 0.2534 | -0.664 | 2.845 | 0.974 |
| 22-Jan-98 | 18.1 | 25 | 0.2641 | -0.631 | 2.896 | 0.974 |
| 25-Jul-94 | 19.04 | 26 | 0.2748 | -0.598 | 2.947 | 0.974 |
| 26-Sep-96 | 19.5 | 27 | 0.2855 | -0.567 | 2.970 | 0.975 |
| 26-Aug-98 | 19.5 | 28 | 0.2962 | -0.535 | 2.970 | 0.976 |
| 23-Feb-99 | 20 | 29 | 0.3070 | -0.504 | 2.996 | 0.976 |
| 11-Jul-95 | 20.05 | 30 | 0.3177 | -0.474 | 2.998 | 0.976 |
| 24-Mar-94 | 21.13 | 31 | 0.3284 | -0.444 | 3.051 | 0.976 |
| 27-Nov-96 | 21.7 | 32 | 0.3391 | -0.415 | 3.077 | 0.977 |
| 30-Aug-99 | 22 | 33 | 0.3499 | -0.386 | 3.091 | 0.977 |
| 8-Mar-94 | 22.26 | 34 | 0.3606 | -0.357 | 3.103 | 0.978 |
| 26-Feb-98 | 22.3 | 35 | 0.3713 | -0.328 | 3.105 | 0.978 |
| 14-Nov-98 | 22.53 | 36 | 0.3820 | -0.300 | 3.115 | 0.978 |
| 8-Mar-99 | 23 | 37 | 0.3928 | -0.272 | 3.135 | 0.978 |
| 21-Aug-96 | 23.342375 | 38 | 0.4035 | -0.244 | 3.150 | 0.978 |
| 29-Oct-96 | 23.5 | 39 | 0.4142 | -0.217 | 3.157 | 0.978 |
| 19-Dec-97 | 24.1 | 40 | 0.4249 | -0.189 | 3.182 | 0.977 |
| 28-Jul-98 | 24.7 | 41 | 0.4357 | -0.162 | 3.207 | 0.977 |
| 15-Dec-98 | 25 | 42 | 0.4464 | -0.135 | 3.219 | 0.976 |
| 16-Oct-97 | 25.4 | 43 | 0.4571 | -0.108 | 3.235 | 0.976 |
| 25-Nov-98 | 26 | 44 | 0.4678 | -0.081 | 3.258 | 0.975 |
| 28-Dec-98 | 27 | 45 | 0.4786 | -0.054 | 3.296 | 0.975 |
| 10-Jan-95 | 28.21 | 46 | 0.4893 | -0.027 | 3.340 | 0.974 |
| 23-Jun-94 | 28.96 | 47 | 0.5000 | 0.000 | 3.366 | 0.973 |
| 13-Dec-96 | 29.7 | 48 | 0.5107 | 0.027 | 3.391 | 0.973 |
| 26-Nov-97 | 29.7 | 49 | 0.5214 | 0.054 | 3.391 | 0.972 |
| 18-Oct-95 | 31.4 | 50 | 0.5322 | 0.081 | 3.447 | 0.971 |
| 30-Jan-97 | 31.4 | 51 | 0.5429 | 0.108 | 3.447 | 0.970 |
| 9-Nov-97 | 32.7 | 52 | 0.5536 | 0.135 | 3.487 | 0.969 |
| 15-Jan-99 | 33 | 53 | 0.5643 | 0.162 | 3.497 | 0.969 |
| 20-Mar-98 | 33.1 | 54 | 0.5751 | 0.189 | 3.500 | 0.967 |
| 4-Sep-97 | 34 | 55 | 0.5858 | 0.217 | 3.526 | 0.966 |
| 5-Aug-99 | 34 | 56 | 0.5965 | 0.244 | 3.526 | 0.964 |
| 27-Jun-95 | 34 9 | 57 | 0.6072 | 0.272 | 3.552 | 0.963 |
| 24-Jul-96 | 35.8 | 58 | 0.6180 | 0.300 | 3.578 | 0.961 |
| 9-Nov-97 | 36.6 | 59 | 0.6287 | 0.328 | 3.600 | 0.959 |
| 8-Mar-95 | 36.82 | 60 | 0.6394 | 0.357 | 3.606 | 0.957 |
| 14-Aug-97 | 37.8 | 61 | 0.6501 | 0.386 | 3.632 | 0.955 |
| 7-Apr-94 | 37.82 | 62 | 0.6609 | 0.415 | 3.633 | 0.954 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 21-Feb-97 | 38 9 | 63 | 0.6716 | 0 444 | 3.661 | 0.953 |
| 27-Dec-95 | 42 1 | 64 | 0.6823 | 0.474 | 3.740 | 0.952 |
| 12-Apr-95 | 42.13 | 65 | 0.6930 | 0.504 | 3.741 | 0.951 |
| 25-Apr-95 | 43 | 66 | 0.7038 | 0.535 | 3.761 | 0.952 |
| 9-Feb-95 | 43.28 | 67 | 0.7145 | 0.567 | 3.768 | 0.954 |
| 17-Jan-96 | 50.9 | 68 | 0.7252 | 0.598 | 3.930 | 0.962 |
| 16-Apr-97 | 55.3 | 69 | 0.7359 | 0.631 | 4.013 | 0.964 |
| 7-Jun-94 | 63 45 | 70 | 0.7466 | 0.664 | 4.150 | 0.966 |
| 26-Jun-98 | 63.5 | 71 | 0.7574 | 0.698 | 4.151 | 0.964 |
| 28-Mar-96 | 65.2 | 72 | 0.7681 | 0.733 | 4.177 | 0.964 |
| 21-Nov-95 | 81.5 | 73 | 0.7788 | 0.768 | 4.401 | 0.966 |
| 8-May-96 | 81.5 | 74 | 0.7895 | 0.805 | 4.401 | 0.963 |
| 5-May-99 | 84 | 75 | 0.8003 | 0.843 | 4.431 | 0.960 |
| 22-Mar-95 | 86.16 | 76 | 0.8110 | 0.882 | 4.456 | 0.957 |
| 13-Jun-95 | 96.41 | 77 | 0.8217 | 0.922 | 4.569 | 0.953 |
| 23-Mar-99 | 97 | 78 | 0.8324 | 0.964 | 4.575 | 0.949 |
| 19-May-94 | 102.01 | 79 | 0.8432 | 1.008 | 4.625 | 0.944 |
| 8-Jul-99 | 107 | 80 | 0.8539 | 1.053 | 4.673 | 0.937 |
| 29-Feb-96 | 111 | 81 | 0.8646 | 1.101 | 4.710 | 0.930 |
| 23-Jul-97 | 111 | 82 | 0.8753 | 1.152 | 4.710 | 0.922 |
| 4-May-94 | 111.05 | 83 | 0.8861 | 1.206 | 4.710 | 0.910 |
| 24-Jun-97 | 124 | 84 | 0.8968 | 1.263 | 4.820 | 0.902 |
| 19-Apr-99 | 138 | 85 | 0.9075 | 1.326 | 4.927 | 0.889 |
| 26-Mar-97 | 144 | 86 | 0.9182 | 1.393 | 4.970 | 0.868 |
| 19-Jun-96 | 148 | 87 | 0.9290 | 1.468 | 4.997 | 0.847 |
| 14-May-98 | 206 | 88 | 0.9397 | 1.552 | 5.328 | 0.923 |
| 14-May-98 | 233 | 89 | 0.9504 | 1.649 | 5.451 | 0.895 |
| 2-Jun-99 | 241 | 90 | 0.9611 | 1.764 | 5.485 | 0.895 |
| 27-May-99 | 261 | 91 | 0.9718 | 1.909 | 5.565 | 0.887 |
| 15-Jun-99 | 263 | 92 | 0.9826 | 2.110 | 5.572 | |
| 24-May-99 | 384 | 93 | 0.9933 | 2.473 | 5.951 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC287/288 **Date:** 29-May-00

**Chemical:** dZn **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,353 | 55 | 2,869 | 558 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 702 | 66 | 1,481 | 415 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.20 | 0.52 | 0.74 | | | | |
| **Min:** | 33,516 | 11 | 451 | 142 | | -0.66 | -1.63 | -1.00 |
| **Max:** | 36,402 | 384 | 7,240 | 2,998 | | 5.00 | 2.95 | 5.88 |
| **Median:** | 35,396 | 29 | 2,640 | 480 | | -0.39 | -0.15 | -0.19 |

**dZn CC287/288 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.24)** update r2

| | | | |
|---|---|---|---|
| r2 Q,[COC]: | 0.30 | [dZn] | Q |
| slope, m: | -12.3 | 3,404 | 11.4 |
| intercept, b: | 3544.6 | 2,869 | 54.8 |
| N: 93 | | -1,186 | 384 |

**LnConc. = mLn{Q}+b (r2=0.38)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.53 | ln[dZn] | ln Q | [dZn] | Q |
| slope, m: | -0.51 | 8.38 | 2.43 | 4,347 | 11 |
| intercept, b: | 9.62 | 7.57 | 4.00 | 1,944 | 55 |
| N: 93 | | 6.57 | 5.95 | 717 | 384 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2: | 0.105 | 0.103 |
| m: | 0.0304 | 0.00039 |
| b: | -1019 | -10.40 |

**LnQ = mTime +b**

**N= 93**

| | Sampling Date | Q Discharge cfs | dZn Concentration ug/L | dZn Load lbs/day | Ln Q | Ln dZn Conc. | Ln dZn Load | dZn CC287/288 Standardized Values = (x - Avg)/SD Q | for graph 0 Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 5-Oct-91 | 14.5 | 3440 | 268 | 2.67 | 8.14 | 5.59 | -0.61 | 0.39 | -0.70 |
| IDEQ | 27-Oct-93 | 13.28 | 3470 | 248 | 2.59 | 8.15 | 5.51 | -0.63 | 0.41 | -0.75 |
| IDEQ | 30-Nov-93 | 12.62 | 3980 | 270 | 2.54 | 8.29 | 5.60 | -0.64 | 0.75 | -0.69 |
| IDEQ | 17-Dec-93 | 11.7 | 5440 | 342 | 2.46 | 8.60 | 5.84 | -0.65 | 1.74 | -0.52 |
| IDEQ | 17-Dec-93 | 12.03 | 5440 | 352 | 2.49 | 8.60 | 5.86 | -0.65 | 1.74 | -0.50 |
| IDEQ | 20-Jan-94 | 13.28 | 5240 | 374 | 2.59 | 8.56 | 5.93 | -0.63 | 1.60 | -0.44 |
| IDEQ | 20-Jan-94 | 14.66 | 5240 | 413 | 2.69 | 8.56 | 6.02 | -0.61 | 1.60 | -0.35 |
| IDEQ | 18-Feb-94 | 11.41 | 4740 | 291 | 2.43 | 8.46 | 5.67 | -0.66 | 1.26 | -0.64 |
| IDEQ | 8-Mar-94 | 22.26 | 4440 | 532 | 3.10 | 8.40 | 6.28 | -0.49 | 1.06 | -0.06 |
| IDEQ | 24-Mar-94 | 21.13 | 4660 | 530 | 3.05 | 8.45 | 6.27 | -0.51 | 1.21 | -0.07 |
| IDEQ | 7-Apr-94 | 37.82 | 2440 | 496 | 3.63 | 7.80 | 6.21 | -0.26 | -0.29 | -0.15 |
| IDEQ | 4-May-94 | 111.05 | 1200 | 717 | 4.71 | 7.09 | 6.57 | 0.85 | -1.13 | 0.38 |
| IDEQ | 19-May-94 | 102.01 | 1010 | 554 | 4.63 | 6.92 | 6.32 | 0.72 | -1.26 | -0.01 |
| IDEQ | 7-Jun-94 | 63.45 | 1570 | 536 | 4.15 | 7.36 | 6.28 | 0.13 | -0.88 | -0.05 |
| IDEQ | 23-Jun-94 | 28.96 | 1720 | 268 | 3.37 | 7.45 | 5.59 | -0.39 | -0.78 | -0.70 |
| IDEQ | 25-Jul-94 | 19.04 | 2490 | 255 | 2.95 | 7.82 | 5.54 | -0.54 | -0.26 | -0.73 |
| IDEQ | 16-Aug-94 | 16.3 | 2940 | 258 | 2.79 | 7.99 | 5.55 | -0.58 | 0.05 | -0.72 |
| IDEQ | 16-Aug-94 | 13.57 | 2940 | 215 | 2.61 | 7.99 | 5.37 | -0.63 | 0.05 | -0.83 |
| IDEQ | 13-Sep-94 | 15.89 | 3020 | 258 | 2.77 | 8.01 | 5.55 | -0.59 | 0.10 | -0.72 |
| IDEQ | 16-Oct-94 | 14.34 | 3480 | 268 | 2.66 | 8.15 | 5.59 | -0.61 | 0.41 | -0.70 |
| IDEQ | 16-Nov-94 | 15.89 | 5610 | 480 | 2.77 | 8.63 | 6.17 | -0.59 | 1.85 | -0.19 |
| IDEQ | 13-Dec-94 | 17.17 | 6730 | 622 | 2.84 | 8.81 | 6.43 | -0.57 | 2.61 | 0.15 |
| IDEQ | 10-Jan-95 | 28.21 | 6370 | 967 | 3.34 | 8.76 | 6.87 | -0.40 | 2.36 | 0.98 |
| IDEQ | 9-Feb-95 | 43.28 | 3380 | 787 | 3.77 | 8.13 | 6.67 | -0.18 | 0.34 | 0.55 |
| IDEQ | 8-Mar-95 | 36.82 | 2550 | 505 | 3.61 | 7.84 | 6.22 | -0.27 | -0.22 | -0.13 |
| IDEQ | 22-Mar-95 | 86.16 | 3640 | 1687 | 4.46 | 8.20 | 7.43 | 0.48 | 0.52 | 2.72 |
| IDEQ | 12-Apr-95 | 42.13 | 2500 | 567 | 3.74 | 7.82 | 6.34 | -0.19 | -0.25 | 0.02 |
| IDEQ | 25-Apr-95 | 43 | 2100 | 486 | 3.76 | 7.65 | 6.19 | -0.18 | -0.52 | -0.17 |
| IDEQ | 13-Jun-95 | 96.41 | 906 | 470 | 4.57 | 6.81 | 6.15 | 0.63 | -1.33 | -0.21 |
| IDEQ | 27-Jun-95 | 34.9 | 1260 | 237 | 3.55 | 7.14 | 5.47 | -0.30 | -1.09 | -0.78 |
| IDEQ | 11-Jul-95 | 20.05 | 1700 | 183 | 3.00 | 7.44 | 5.21 | -0.53 | -0.79 | -0.90 |
| IDEQ | 25-Jul-95 | 14.71 | 1790 | 142 | 2.69 | 7.49 | 4.95 | -0.61 | -0.73 | -1.00 |
| IDEQ | 14-Aug-95 | 12.6 | 2580 | 175 | 2.53 | 7.86 | 5.16 | -0.64 | -0.20 | -0.92 |
| IDEQ | 13-Sep-95 | 11.4 | 2800 | 172 | 2.43 | 7.94 | 5.15 | -0.66 | -0.05 | -0.93 |
| IDEQ | 18-Oct-95 | 31.4 | 2930 | 495 | 3.45 | 7.98 | 6.20 | -0.36 | 0.04 | -0.15 |
| IDEQ | 21-Nov-95 | 81.5 | 1670 | 732 | 4.40 | 7.42 | 6.60 | 0.40 | -0.81 | 0.42 |
| IDEQ | 27-Dec-95 | 42.1 | 2580 | 584 | 3.74 | 7.86 | 6.37 | -0.19 | -0.20 | 0.06 |
| IDEQ | 17-Jan-96 | 50.9 | 3870 | 1060 | 3.93 | 8.26 | 6.97 | -0.06 | 0.68 | 1.21 |
| IDEQ | 29-Feb-96 | 111 | 2310 | 1379 | 4.71 | 7.75 | 7.23 | 0.85 | -0.38 | 1.98 |
| IDEQ | 28-Mar-96 | 65.2 | 2220 | 779 | 4.18 | 7.71 | 6.66 | 0.16 | -0.44 | 0.53 |
| IDEQ | 8-May-96 | 81.5 | 1650 | 723 | 4.40 | 7.41 | 6.58 | 0.40 | -0.82 | 0.40 |
| IDEQ | 19-Jun-96 | 148 | 843 | 671 | 5.00 | 6.74 | 6.51 | 1.41 | -1.37 | 0.27 |
| IDEQ | 24-Jul-96 | 35.8 | 1550 | 299 | 3.58 | 7.35 | 5.70 | -0.29 | -0.89 | -0.63 |
| IDEQ | 21-Aug-96 | 23.342375 | 2620 | 329 | 3.15 | 7.87 | 5.80 | -0.48 | -0.17 | -0.55 |
| IDEQ | 26-Sep-96 | 19.5 | 2640 | 277 | 2.97 | 7.88 | 5.62 | -0.54 | -0.15 | -0.68 |
| IDEQ | 29-Oct-96 | 23.5 | 3780 | 478 | 3.16 | 8.24 | 6.17 | -0.48 | 0.62 | -0.19 |
| IDEQ | 27-Nov-96 | 21.7 | 4530 | 529 | 3.08 | 8.42 | 6.27 | -0.50 | 1.12 | -0.07 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 13-Dec-96 | 29.7 | 5430 | 868 | 3.39 | 8.60 | 6.77 | -0.38 | 1.73 | 0.74 |
| IDEQ | 30-Jan-97 | 31.4 | 3590 | 606 | 3.45 | 8.19 | 6.41 | -0.36 | 0.49 | 0.12 |
| IDEQ | 21-Feb-97 | 38.9 | 4140 | 866 | 3.66 | 8.33 | 6.76 | -0.24 | 0.86 | 0.74 |
| IDEQ | 26-Mar-97 | 144 | 3870 | 2998 | 4.97 | 8.26 | 8.01 | 1.35 | 0.68 | 5.88 |
| IDEQ | 16-Apr-97 | 55.3 | 3380 | 1006 | 4.01 | 8.13 | 6.91 | 0.01 | 0.34 | 1.08 |
| IDEQ | 24-Jun-97 | 124 | 797 | 532 | 4.82 | 6.68 | 6.28 | 1.05 | -1.40 | -0.06 |
| IDEQ | 23-Jul-97 | 111 | 1260 | 752 | 4.71 | 7.14 | 6.62 | 0.85 | -1.09 | 0.47 |
| IDEQ | 14-Aug-97 | 37.8 | 2010 | 409 | 3.63 | 7.61 | 6.01 | -0.26 | -0.58 | -0.36 |
| IDEQ | 4-Sep-97 | 34 | 2390 | 437 | 3.53 | 7.78 | 6.08 | -0.32 | -0.32 | -0.29 |
| IDEQ | 16-Oct-97 | 25.4 | 2750 | 376 | 3.23 | 7.92 | 5.93 | -0.45 | -0.08 | -0.44 |
| URS | 9-Nov-97 | 32.7 | 2610 | 459 | 3.49 | 7.87 | 6.13 | -0.34 | -0.18 | -0.24 |
| IDEQ | 26-Nov-97 | 29.7 | 2840 | 454 | 3.39 | 7.95 | 6.12 | -0.38 | -0.02 | -0.25 |
| IDEQ | 19-Dec-97 | 24.1 | 3340 | 433 | 3.18 | 8.11 | 6.07 | -0.47 | 0.32 | -0.30 |
| IDEQ | 22-Jan-98 | 18.1 | 3320 | 323 | 2.90 | 8.11 | 5.78 | -0.56 | 0.30 | -0.57 |
| IDEQ | 26-Feb-98 | 22.3 | 3560 | 427 | 3.10 | 8.18 | 6.06 | -0.49 | 0.47 | -0.32 |
| IDEQ | 20-Mar-98 | 33.1 | 2780 | 495 | 3.50 | 7.93 | 6.20 | -0.33 | -0.06 | -0.15 |
| URS | 14-May-98 | 206 | 688 | 762 | 5.33 | 6.53 | 6.64 | 2.29 | -1.47 | 0.49 |
| IDEQ | 26-Jun-98 | 63.5 | 1220 | 417 | 4.15 | 7.11 | 6.03 | 0.13 | -1.11 | -0.34 |
| IDEQ | 28-Jul-98 | 24.7 | 1720 | 229 | 3.21 | 7.45 | 5.43 | -0.46 | -0.78 | -0.79 |
| IDEQ | 26-Aug-98 | 19.5 | 2110 | 221 | 2.97 | 7.65 | 5.40 | -0.54 | -0.51 | -0.81 |
| IDEQ | 24-Sep-98 | 17.2 | 2260 | 209 | 2.84 | 7.72 | 5.34 | -0.57 | -0.41 | -0.84 |
| IDEQ | 1-Oct-98 | 16.7 | 2270 | 204 | 2.82 | 7.73 | 5.32 | -0.58 | -0.40 | -0.85 |
| IDEQ | 8-Oct-98 | 15.9 | 2700 | 231 | 2.77 | 7.90 | 5.44 | -0.59 | -0.11 | -0.79 |
| IDEQ | 26-Oct-98 | 16.7 | 2270 | 204 | 2.82 | 7.73 | 5.32 | -0.58 | -0.40 | -0.85 |
| IDEQ | 25-Nov-98 | 26 | 7240 | 1013 | 3.26 | 8.89 | 6.92 | -0.44 | 2.95 | 1.09 |
| IDEQ | 15-Jan-99 | 33 | 3660 | 650 | 3.50 | 8.21 | 6.48 | -0.33 | 0.53 | 0.22 |
| IDEQ | 23-Feb-99 | 20 | 3770 | 406 | 3.00 | 8.23 | 6.01 | -0.53 | 0.61 | -0.37 |
| IDEQ | 8-Mar-99 | 23 | 3880 | 480 | 3.14 | 8.26 | 6.17 | -0.48 | 0.68 | -0.19 |
| URS | 9-Nov-97 | 36.6 | 2680 | 528 | 3.60 | 7.89 | 6.27 | -0.28 | -0.13 | -0.07 |
| URS | 14-May-98 | 233 | 673 | 844 | 5.45 | 6.51 | 6.74 | 2.70 | -1.48 | 0.69 |
| USGS | 26-Oct-98 | 13 | 2380 | 166 | 2.56 | 7.77 | 5.11 | -0.63 | -0.33 | -0.94 |
| USGS | 26-Oct-98 | 13 | 2570 | 180 | 2.56 | 7.85 | 5.19 | -0.63 | -0.20 | -0.91 |
| URS | 14-Nov-98 | 22.53 | 4610 | 559 | 3.11 | 8.44 | 6.33 | -0.49 | 1.18 | 0.00 |
| USGS | 18-Nov-98 | 16 | 4270 | 368 | 2.77 | 8.36 | 5.91 | -0.59 | 0.95 | -0.46 |
| USGS | 15-Dec-98 | 25 | 4330 | 582 | 3.22 | 8.37 | 6.37 | -0.45 | 0.99 | 0.06 |
| USGS | 28-Dec-98 | 27 | 4440 | 645 | 3.30 | 8.40 | 6.47 | -0.42 | 1.06 | 0.21 |
| USGS | 23-Mar-99 | 97 | 3630 | 1894 | 4.57 | 8.20 | 7.55 | 0.64 | 0.51 | 3.22 |
| USGS | 19-Apr-99 | 138 | 1830 | 1359 | 4.93 | 7.51 | 7.21 | 1.26 | -0.70 | 1.93 |
| USGS | 5-May-99 | 84 | 1290 | 583 | 4.43 | 7.16 | 6.37 | 0.44 | -1.07 | 0.06 |
| USGS | 24-May-99 | 384 | 671 | 1386 | 5.95 | 6.51 | 7.23 | 5.00 | -1.48 | 1.99 |
| USGS | 27-May-99 | 261 | 604 | 848 | 5.56 | 6.40 | 6.74 | 3.13 | -1.53 | 0.70 |
| USGS | 2-Jun-99 | 241 | 571 | 740 | 5.48 | 6.35 | 6.61 | 2.83 | -1.55 | 0.44 |
| USGS | 15-Jun-99 | 263 | 451 | 638 | 5.57 | 6.11 | 6.46 | 3.16 | -1.63 | 0.19 |
| USGS | 8-Jul-99 | 107 | 702 | 404 | 4.67 | 6.55 | 6.00 | 0.79 | -1.46 | -0.37 |
| USGS | 5-Aug-99 | 34 | 1480 | 271 | 3.53 | 7.30 | 5.60 | -0.32 | -0.94 | -0.69 |
| USGS | 30-Aug-99 | 22 | 1790 | 212 | 3.09 | 7.49 | 5.36 | -0.50 | -0.73 | -0.84 |

**dZn**

**Concentration over time analysis**

| | dZn | CC287/288 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.097** | **-0.00027** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 5-Oct-91 | 8.30 | 4,026 | | |
| mid: | 27-Nov-96 | 7.79 | 2,416 | | |
| last: | 30-Aug-99 | 7.52 | 1,839 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.069** | **-0.00069** |
| | 21-Feb-97 | 8.01 | 3,006 | | |
| | 30-Aug-99 | 7.38 | 1,598 | | |

**Load over time analysis**

| | dZn | CC287/288 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.021** | **0.00012** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 5-Oct-91 | 5.91 | 368 | | |
| mid: | 27-Nov-96 | 6.14 | 463 | | |
| last: | 30-Aug-99 | 6.26 | 525 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.022** | **-0.00036** |
| | 21-Feb-97 | 6.39 | 599 | | |
| | 30-Aug-99 | 6.06 | 428 | | |

max r2: 0.145 — **Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.097 | -0.00027 | 17.40 |
| 0.095 | -0.00028 | 17.65 |
| 0.091 | -0.00028 | 17.60 |
| 0.086 | -0.00027 | 17.41 |
| 0.076 | -0.00026 | 16.89 |
| 0.066 | -0.00024 | 16.32 |
| 0.057 | -0.00023 | 15.75 |
| 0.048 | -0.00021 | 15.13 |
| 0.041 | -0.00019 | 14.57 |
| 0.034 | -0.00018 | 14.05 |
| 0.027 | -0.00016 | 13.42 |
| 0.027 | -0.00016 | 13.54 |
| 0.037 | -0.00019 | 14.56 |
| 0.052 | -0.00023 | 15.90 |
| 0.061 | -0.00025 | 16.75 |
| 0.069 | -0.00028 | 17.54 |
| 0.071 | -0.00028 | 17.85 |
| 0.069 | -0.00029 | 17.92 |
| 0.067 | -0.00029 | 18.00 |
| 0.065 | -0.00029 | 18.04 |
| 0.060 | -0.00028 | 17.82 |
| 0.047 | -0.00025 | 16.75 |
| 0.033 | -0.00021 | 15.24 |
| 0.021 | -0.00017 | 13.68 |
| 0.017 | -0.00015 | 13.16 |
| 0.016 | -0.00015 | 13.12 |
| 0.011 | -0.00013 | 12.35 |
| 0.010 | -0.00013 | 12.29 |
| 0.011 | -0.00014 | 12.60 |
| 0.023 | -0.00020 | 14.86 |
| 0.034 | -0.00025 | 16.62 |
| 0.041 | -0.00028 | 17.84 |
| 0.049 | -0.00032 | 19.09 |
| 0.049 | -0.00033 | 19.44 |
| 0.047 | -0.00033 | 19.56 |
| 0.043 | -0.00033 | 19.52 |
| 0.054 | -0.00038 | 21.32 |
| 0.053 | -0.00039 | 21.81 |
| 0.043 | -0.00037 | 20.82 |
| 0.045 | -0.00039 | 21.65 |
| 0.049 | -0.00042 | 22.74 |
| 0.061 | -0.00049 | 25.21 |
| 0.103 | -0.00065 | 31.00 |
| 0.129 | -0.00075 | 34.71 |
| 0.133 | -0.00080 | 36.32 |
| 0.137 | -0.00084 | 38.01 |
| 0.126 | -0.00084 | 37.83 |

max r2: 0.061 — **Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.021 | 0.00012 | 1.78 |
| 0.015 | 0.00011 | 2.27 |
| 0.012 | 0.00010 | 2.76 |
| 0.009 | 0.00008 | 3.19 |
| 0.007 | 0.00008 | 3.42 |
| 0.006 | 0.00007 | 3.64 |
| 0.005 | 0.00007 | 3.81 |
| 0.005 | 0.00006 | 3.88 |
| 0.003 | 0.00005 | 4.36 |
| 0.003 | 0.00006 | 4.17 |
| 0.004 | 0.00006 | 3.97 |
| 0.004 | 0.00007 | 3.84 |
| 0.006 | 0.00008 | 3.23 |
| 0.008 | 0.00009 | 2.91 |
| 0.009 | 0.00010 | 2.61 |
| 0.006 | 0.00008 | 3.27 |
| 0.003 | 0.00006 | 4.05 |
| 0.001 | 0.00004 | 4.89 |
| 0.000 | 0.00000 | 6.12 |
| 0.001 | -0.00003 | 7.15 |
| 0.002 | -0.00006 | 8.21 |
| 0.003 | -0.00006 | 8.37 |
| 0.002 | -0.00005 | 8.07 |
| 0.000 | -0.00002 | 6.94 |
| 0.000 | 0.00000 | 6.09 |
| 0.000 | 0.00000 | 6.02 |
| 0.003 | 0.00008 | 3.47 |
| 0.005 | 0.00009 | 2.96 |
| 0.005 | 0.00010 | 2.74 |
| 0.005 | 0.00010 | 2.58 |
| 0.002 | 0.00006 | 4.08 |
| 0.000 | -0.00001 | 6.44 |
| 0.005 | -0.00010 | 9.86 |
| 0.018 | -0.00019 | 13.18 |
| 0.043 | -0.00030 | 17.00 |
| 0.047 | -0.00033 | 17.94 |
| 0.042 | -0.00032 | 17.66 |
| 0.042 | -0.00033 | 18.09 |
| 0.029 | -0.00028 | 16.32 |
| 0.014 | -0.00020 | 13.22 |
| 0.009 | -0.00016 | 11.95 |
| 0.005 | -0.00013 | 10.78 |
| 0.003 | -0.00010 | 9.76 |
| 0.008 | -0.00017 | 12.40 |
| 0.015 | -0.00024 | 14.99 |
| 0.029 | -0.00035 | 18.88 |
| 0.033 | -0.00039 | 20.33 |

| | | | | | |
|---|---|---|---|---|---|
| 0.107 | -0.00080 | 36.38 | 0.034 | -0.00042 | 21.37 |
| 0.081 | -0.00071 | 33.34 | 0.024 | -0.00037 | 19.37 |
| 0.069 | -0.00069 | 32.37 | 0.022 | -0.00036 | 19.34 |
| 0.052 | -0.00062 | 30.02 | 0.013 | -0.00029 | 16.63 |
| 0.038 | -0.00055 | 27.56 | 0.001 | 0.00007 | 3.60 |
| 0.028 | -0.00050 | 25.55 | 0.011 | 0.00026 | -3.26 |
| 0.063 | -0.00076 | 35.09 | 0.015 | 0.00032 | -5.43 |
| 0.091 | -0.00096 | 42.23 | 0.030 | 0.00047 | -11.01 |
| 0.103 | -0.00107 | 46.28 | 0.030 | 0.00050 | -11.89 |
| 0.107 | -0.00115 | 49.25 | 0.032 | 0.00055 | -13.57 |
| 0.105 | -0.00119 | 50.73 | 0.029 | 0.00055 | -13.70 |
| 0.104 | -0.00125 | 52.80 | 0.033 | 0.00061 | -15.95 |
| 0.099 | -0.00129 | 54.07 | 0.037 | 0.00068 | -18.50 |
| 0.086 | -0.00126 | 53.11 | 0.039 | 0.00075 | -20.83 |
| 0.072 | -0.00121 | 51.44 | 0.031 | 0.00070 | -19.24 |
| 0.056 | -0.00112 | 47.91 | 0.032 | 0.00075 | -20.94 |
| 0.049 | -0.00109 | 46.94 | 0.038 | 0.00086 | -24.96 |
| 0.099 | -0.00156 | 63.83 | 0.061 | 0.00112 | -34.26 |
| 0.128 | -0.00181 | 73.09 | 0.061 | 0.00116 | -35.76 |
| 0.141 | -0.00195 | 77.98 | 0.046 | 0.00101 | -30.31 |
| 0.144 | -0.00201 | 80.18 | 0.033 | 0.00085 | -24.44 |
| 0.145 | -0.00203 | 81.15 | 0.022 | 0.00068 | -18.38 |
| 0.145 | -0.00206 | 82.04 | 0.012 | 0.00049 | -11.61 |
| 0.140 | -0.00204 | 81.43 | 0.005 | 0.00032 | -5.34 |

update for EV, CV:

**dZn** **CC287/288**
**LN Analysis** **dZn**
**Load** **Load Data, EV=531 lbs/day CV=.76**

| | | Load Data-based LN | | |
|---|---|---|---|---|
| **Avg:** | **558** | u | ln dZn Load | dZn Load |
| **SD:** | **415** | 3 | 8.1 | 3277 |
| **CV:** | **0.74** | 0 | 6.11 | 448 |
| **Min:** | **142** | -3 | 4.12 | 61 |
| **Max:** | **2,998** | | | |
| **Median:** | **480** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.981, EV=556.01 lbs/day CV=.67; max r2=0.986**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.981 | u | lnLoad | Load |
| slope, m: | 1.634 | 3 | 7.97 | 2893 |
| intercept, b: | -10.019 | 0 | 6.13 | 461 |
| N: 93 | | -3 | 4.30 | 73 |
| E[Load]: | 556.01 | Parameter Estimates | | |
| SD[Load]: | 375 | from LN regression | | |
| CV[Load]: | 0.67 | update graph label | | |

N: 93

| Date | dZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.986 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 25-Jul-95 | 142 | 1 | 0.0067 | -2.473 | 4.953 | 0.981 |
| 26-Oct-98 | 166 | 2 | 0.0174 | -2.110 | 5.115 | 0.983 |
| 13-Sep-95 | 172 | 3 | 0.0282 | -1.909 | 5.146 | 0.985 |
| 14-Aug-95 | 175 | 4 | 0.0389 | -1.764 | 5.164 | 0.986 |
| 26-Oct-98 | 180 | 5 | 0.0496 | -1.649 | 5.192 | 0.986 |
| 11-Jul-95 | 183 | 6 | 0.0603 | -1.552 | 5.212 | 0.986 |
| 1-Oct-98 | 204 | 7 | 0.0710 | -1.468 | 5.318 | 0.986 |
| 26-Oct-98 | 204 | 8 | 0.0818 | -1.393 | 5.318 | 0.986 |
| 24-Sep-98 | 209 | 9 | 0.0925 | -1.326 | 5.343 | 0.986 |
| 30-Aug-99 | 212 | 10 | 0.1032 | -1.263 | 5.356 | 0.986 |
| 16-Aug-94 | 215 | 11 | 0.1139 | -1.206 | 5.369 | 0.985 |
| 26-Aug-98 | 221 | 12 | 0.1247 | -1.152 | 5.400 | 0.985 |
| 28-Jul-98 | 229 | 13 | 0.1354 | -1.101 | 5.432 | 0.984 |
| 8-Oct-98 | 231 | 14 | 0.1461 | -1.053 | 5.442 | 0.984 |
| 27-Jun-95 | 237 | 15 | 0.1568 | -1.008 | 5.466 | 0.983 |
| 27-Oct-93 | 248 | 16 | 0.1676 | -0.964 | 5.513 | 0.983 |
| 25-Jul-94 | 255 | 17 | 0.1783 | -0.922 | 5.542 | 0.982 |
| 16-Aug-94 | 258 | 18 | 0.1890 | -0.882 | 5.552 | 0.982 |
| 13-Sep-94 | 258 | 19 | 0.1997 | -0.843 | 5.554 | 0.981 |
| 23-Jun-94 | 268 | 20 | 0.2105 | -0.805 | 5.591 | 0.980 |
| 5-Oct-91 | 268 | 21 | 0.2212 | -0.768 | 5.592 | 0.980 |
| 16-Oct-94 | 268 | 22 | 0.2319 | -0.733 | 5.593 | 0.979 |
| 30-Nov-93 | 270 | 23 | 0.2426 | -0.698 | 5.599 | 0.978 |
| 5-Aug-99 | 271 | 24 | 0.2534 | -0.664 | 5.601 | 0.978 |
| 26-Sep-96 | 277 | 25 | 0.2641 | -0.631 | 5.624 | 0.978 |
| 18-Feb-94 | 291 | 26 | 0.2748 | -0.598 | 5.673 | 0.977 |
| 24-Jul-96 | 299 | 27 | 0.2855 | -0.567 | 5.699 | 0.977 |
| 22-Jan-98 | 323 | 28 | 0.2962 | -0.535 | 5.779 | 0.976 |
| 21-Aug-96 | 329 | 29 | 0.3070 | -0.504 | 5.796 | 0.975 |
| 17-Dec-93 | 342 | 30 | 0.3177 | -0.474 | 5.836 | 0.975 |
| 17-Dec-93 | 352 | 31 | 0.3284 | -0.444 | 5.864 | 0.974 |
| 18-Nov-98 | 368 | 32 | 0.3391 | -0.415 | 5.907 | 0.973 |
| 20-Jan-94 | 374 | 33 | 0.3499 | -0.386 | 5.925 | 0.972 |
| 16-Oct-97 | 376 | 34 | 0.3606 | -0.357 | 5.929 | 0.972 |
| 8-Jul-99 | 404 | 35 | 0.3713 | -0.328 | 6.002 | 0.971 |
| 23-Feb-99 | 406 | 36 | 0.3820 | -0.300 | 6.005 | 0.971 |
| 14-Aug-97 | 409 | 37 | 0.3928 | -0.272 | 6.013 | 0.971 |
| 20-Jan-94 | 413 | 38 | 0.4035 | -0.244 | 6.024 | 0.971 |
| 26-Jun-98 | 417 | 39 | 0.4142 | -0.217 | 6.033 | 0.970 |
| 26-Feb-98 | 427 | 40 | 0.4249 | -0.189 | 6.057 | 0.970 |
| 19-Dec-97 | 433 | 41 | 0.4357 | -0.162 | 6.071 | 0.970 |
| 4-Sep-97 | 437 | 42 | 0.4464 | -0.135 | 6.080 | 0.970 |
| 26-Nov-97 | 454 | 43 | 0.4571 | -0.108 | 6.118 | 0.969 |
| 9-Nov-97 | 459 | 44 | 0.4678 | -0.081 | 6.129 | 0.970 |
| 13-Jun-95 | 470 | 45 | 0.4786 | -0.054 | 6.153 | 0.970 |
| 29-Oct-96 | 478 | 46 | 0.4893 | -0.027 | 6.169 | 0.971 |
| 16-Nov-94 | 480 | 47 | 0.5000 | 0.000 | 6.173 | 0.972 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 8-Mar-99 | 480 | 48 | | 0.5107 | 0.027 | 6.174 | 0.972 |
| 25-Apr-95 | 486 | 49 | | 0.5214 | 0.054 | 6.186 | 0.973 |
| 18-Oct-95 | 495 | 50 | | 0.5322 | 0.081 | 6.204 | 0.973 |
| 20-Mar-98 | 495 | 51 | | 0.5429 | 0.108 | 6.205 | 0.974 |
| 7-Apr-94 | 496 | 52 | | 0.5536 | 0.135 | 6.208 | 0.974 |
| 8-Mar-95 | 505 | 53 | | 0.5643 | 0.162 | 6.225 | 0.974 |
| 9-Nov-97 | 528 | 54 | | 0.5751 | 0.189 | 6.269 | 0.974 |
| 27-Nov-96 | 529 | 55 | | 0.5858 | 0.217 | 6.271 | 0.975 |
| 24-Mar-94 | 530 | 56 | | 0.5965 | 0.244 | 6.272 | 0.976 |
| 24-Jun-97 | 532 | 57 | | 0.6072 | 0.272 | 6.276 | 0.977 |
| 8-Mar-94 | 532 | 58 | | 0.6180 | 0.300 | 6.276 | 0.977 |
| 7-Jun-94 | 536 | 59 | | 0.6287 | 0.328 | 6.284 | 0.977 |
| 19-May-94 | 554 | 60 | | 0.6394 | 0.357 | 6.318 | 0.976 |
| 14-Nov-98 | 559 | 61 | | 0.6501 | 0.386 | 6.326 | 0.976 |
| 12-Apr-95 | 567 | 62 | | 0.6609 | 0.415 | 6.340 | 0.976 |
| 15-Dec-98 | 582 | 63 | | 0.6716 | 0.444 | 6.367 | 0.976 |
| 5-May-99 | 583 | 64 | | 0.6823 | 0.474 | 6.368 | 0.976 |
| 27-Dec-95 | 584 | 65 | | 0.6930 | 0.504 | 6.371 | 0.975 |
| 30-Jan-97 | 606 | 66 | | 0.7038 | 0.535 | 6.408 | 0.974 |
| 13-Dec-94 | 622 | 67 | | 0.7145 | 0.567 | 6.432 | 0.974 |
| 15-Jun-99 | 638 | 68 | | 0.7252 | 0.598 | 6.459 | 0.973 |
| 28-Dec-98 | 645 | 69 | | 0.7359 | 0.631 | 6.469 | 0.973 |
| 15-Jan-99 | 650 | 70 | | 0.7466 | 0.664 | 6.477 | 0.973 |
| 19-Jun-96 | 671 | 71 | | 0.7574 | 0.698 | 6.509 | 0.972 |
| 4-May-94 | 717 | 72 | | 0.7681 | 0.733 | 6.575 | 0.971 |
| 8-May-96 | 723 | 73 | | 0.7788 | 0.768 | 6.584 | 0.974 |
| 21-Nov-95 | 732 | 74 | | 0.7895 | 0.805 | 6.596 | 0.976 |
| 2-Jun-99 | 740 | 75 | | 0.8003 | 0.843 | 6.607 | 0.977 |
| 23-Jul-97 | 752 | 76 | | 0.8110 | 0.882 | 6.623 | 0.978 |
| 14-May-98 | 762 | 77 | | 0.8217 | 0.922 | 6.637 | 0.979 |
| 28-Mar-96 | 779 | 78 | | 0.8324 | 0.964 | 6.658 | 0.979 |
| 9-Feb-95 | 787 | 79 | | 0.8432 | 1.008 | 6.668 | 0.979 |
| 14-May-98 | 844 | 80 | | 0.8539 | 1.053 | 6.738 | 0.978 |
| 27-May-99 | 848 | 81 | | 0.8646 | 1.101 | 6.743 | 0.979 |
| 21-Feb-97 | 866 | 82 | | 0.8753 | 1.152 | 6.764 | 0.978 |
| 13-Dec-96 | 868 | 83 | | 0.8861 | 1.206 | 6.766 | 0.975 |
| 10-Jan-95 | 967 | 84 | | 0.8968 | 1.263 | 6.874 | 0.972 |
| 16-Apr-97 | 1006 | 85 | | 0.9075 | 1.326 | 6.913 | 0.969 |
| 25-Nov-98 | 1013 | | 86 | 0.9182 | 1.393 | 6.920 | 0.964 |
| 17-Jan-96 | 1060 | | 87 | 0.9290 | 1.468 | 6.966 | 0.956 |
| 19-Apr-99 | 1359 | | 88 | 0.9397 | 1.552 | 7.214 | 0.949 |
| 29-Feb-96 | 1379 | | 89 | 0.9504 | 1.649 | 7.229 | 0.970 |
| 24-May-99 | 1386 | | 90 | 0.9611 | 1.764 | 7.234 | |
| 22-Mar-95 | 1687 | | 91 | 0.9718 | 1.909 | 7.431 | |
| 23-Mar-99 | 1894 | | 92 | 0.9826 | 2.110 | 7.547 | |
| 26-Mar-97 | 2998 | | 93 | 0.9933 | 2.473 | 8.006 | |

update for EV, CV:

**dZn** — **CC287/288**

**LN Analysis** — **dZn**

**Concentration** — **Conc. Data, EV=3,038 ug/L CV=.47**

**Data-based LN**

| | | u | ln[dZn] | [dZn] |
|---|---|---|---|---|
| **Avg:** | **2,869** | | | |
| **SD:** | **1,481** | | | |
| **CV:** | **0.52** | 3 | 9.3 | 10955 |
| **Min:** | **451** | 0 | 7.84 | 2550 |
| **Max:** | **7,240** | -3 | 6.39 | 593 |
| **Median:** | **2,640** | | | |

**u=mLn{Conc.)+b:**

update for r2, EV, CV: **$r^2$=0.951, EV=2996.4 ug/L CV=.71; max r2=0.988**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.951 | u | lnConc. | Conc. |
| slope, m: | 1.568 | 3 | 9.72 | 16571 |
| intercept, b: | -12.230 | 0 | 7.80 | 2445 |
| N: 93 | | -3 | 5.89 | 361 |
| E[Conc]: | 2996.4 | Parameter Estimates | | |
| SD[Conc]: | 2123 | from LN regression | | |
| CV[Conc]: | 0.71 | update graph label | | |

N: 93

| Date | dZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.988 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 15-Jun-99 | 451 | 1 | 0.0067 | -2.473 | 6.111 | 0.951 |
| 2-Jun-99 | 571 | 2 | 0.0174 | -2.110 | 6.347 | 0.948 |
| 27-May-99 | 604 | 3 | 0.0282 | -1.909 | 6.404 | 0.945 |
| 24-May-99 | 671 | 4 | 0.0389 | -1.764 | 6.509 | 0.944 |
| 14-May-98 | 673 | 5 | 0.0496 | -1.649 | 6.512 | 0.942 |
| 14-May-98 | 688 | 6 | 0.0603 | -1.552 | 6.534 | 0.943 |
| 8-Jul-99 | 702 | 7 | 0.0710 | -1.468 | 6.554 | 0.946 |
| 24-Jun-97 | 797 | 8 | 0.0818 | -1.393 | 6.681 | 0.951 |
| 19-Jun-96 | 843 | 9 | 0.0925 | -1.326 | 6.737 | 0.955 |
| 13-Jun-95 | 906 | 10 | 0.1032 | -1.263 | 6.809 | 0.960 |
| 19-May-94 | 1010 | 11 | 0.1139 | -1.206 | 6.918 | 0.966 |
| 4-May-94 | 1200 | 12 | 0.1247 | -1.152 | 7.090 | 0.970 |
| 26-Jun-98 | 1220 | 13 | 0.1354 | -1.101 | 7.107 | 0.970 |
| 27-Jun-95 | 1260 | 14 | 0.1461 | -1.053 | 7.139 | 0.971 |
| 23-Jul-97 | 1260 | 15 | 0.1568 | -1.008 | 7.139 | 0.973 |
| 5-May-99 | 1290 | 16 | 0.1676 | -0.964 | 7.162 | 0.975 |
| 5-Aug-99 | 1480 | 17 | 0.1783 | -0.922 | 7.300 | 0.979 |
| 24-Jul-96 | 1550 | 18 | 0.1890 | -0.882 | 7.346 | 0.979 |
| 7-Jun-94 | 1570 | 19 | 0.1997 | -0.843 | 7.359 | 0.979 |
| 8-May-96 | 1650 | 20 | 0.2105 | -0.805 | 7.409 | 0.980 |
| 21-Nov-95 | 1670 | 21 | 0.2212 | -0.768 | 7.421 | 0.980 |
| 11-Jul-95 | 1700 | 22 | 0.2319 | -0.733 | 7.438 | 0.980 |
| 23-Jun-94 | 1720 | 23 | 0.2426 | -0.698 | 7.450 | 0.981 |
| 28-Jul-98 | 1720 | 24 | 0.2534 | -0.664 | 7.450 | 0.981 |
| 25-Jul-95 | 1790 | 25 | 0.2641 | -0.631 | 7.490 | 0.983 |
| 30-Aug-99 | 1790 | 26 | 0.2748 | -0.598 | 7.490 | 0.984 |
| 19-Apr-99 | 1830 | 27 | 0.2855 | -0.567 | 7.512 | 0.986 |
| 14-Aug-97 | 2010 | 28 | 0.2962 | -0.535 | 7.606 | 0.988 |
| 25-Apr-95 | 2100 | 29 | 0.3070 | -0.504 | 7.650 | 0.988 |
| 26-Aug-98 | 2110 | 30 | 0.3177 | -0.474 | 7.654 | 0.988 |
| 28-Mar-96 | 2220 | 31 | 0.3284 | -0.444 | 7.705 | 0.988 |
| 24-Sep-98 | 2260 | 32 | 0.3391 | -0.415 | 7.723 | 0.987 |
| 1-Oct-98 | 2270 | 33 | 0.3499 | -0.386 | 7.728 | 0.987 |
| 26-Oct-98 | 2270 | 34 | 0.3606 | -0.357 | 7.728 | 0.987 |
| 29-Feb-96 | 2310 | 35 | 0.3713 | -0.328 | 7.745 | 0.986 |
| 26-Oct-98 | 2380 | 36 | 0.3820 | -0.300 | 7.775 | 0.986 |
| 4-Sep-97 | 2390 | 37 | 0.3928 | -0.272 | 7.779 | 0.985 |
| 7-Apr-94 | 2440 | 38 | 0.4035 | -0.244 | 7.800 | 0.985 |
| 25-Jul-94 | 2490 | 39 | 0.4142 | -0.217 | 7.820 | 0.984 |
| 12-Apr-95 | 2500 | 40 | 0.4249 | -0.189 | 7.824 | 0.984 |
| 8-Mar-95 | 2550 | 41 | 0.4357 | -0.162 | 7.844 | 0.983 |
| 26-Oct-98 | 2570 | 42 | 0.4464 | -0.135 | 7.852 | 0.982 |
| 14-Aug-95 | 2580 | 43 | 0.4571 | -0.108 | 7.856 | 0.982 |
| 27-Dec-95 | 2580 | 44 | 0.4678 | -0.081 | 7.856 | 0.981 |
| 9-Nov-97 | 2610 | 45 | 0.4786 | -0.054 | 7.867 | 0.981 |
| 21-Aug-96 | 2620 | 46 | 0.4893 | -0.027 | 7.871 | 0.980 |
| 26-Sep-96 | 2640 | 47 | 0.5000 | 0.000 | 7.879 | 0.980 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 9-Nov-97 | 2680 | 48 | 0.5107 | 0.027 | 7.894 | 0.980 |
| 8-Oct-98 | 2700 | 49 | 0.5214 | 0.054 | 7.901 | 0.979 |
| 16-Oct-97 | 2750 | 50 | 0.5322 | 0.081 | 7.919 | 0.980 |
| 20-Mar-98 | 2780 | 51 | 0.5429 | 0.108 | 7.930 | 0.980 |
| 13-Sep-95 | 2800 | 52 | 0.5536 | 0.135 | 7.937 | 0.980 |
| 26-Nov-97 | 2840 | 53 | 0.5643 | 0.162 | 7.952 | 0.981 |
| 18-Oct-95 | 2930 | 54 | 0.5751 | 0.189 | 7.983 | 0.982 |
| 16-Aug-94 | 2940 | 55 | 0.5858 | 0.217 | 7.986 | 0.982 |
| 16-Aug-94 | 2940 | 56 | 0.5965 | 0.244 | 7.986 | 0.983 |
| 13-Sep-94 | 3020 | 57 | 0.6072 | 0.272 | 8.013 | 0.986 |
| 22-Jan-98 | 3320 | 58 | 0.6180 | 0.300 | 8.108 | 0.988 |
| 19-Dec-97 | 3340 | 59 | 0.6287 | 0.328 | 8.114 | 0.987 |
| 9-Feb-95 | 3380 | 60 | 0.6394 | 0.357 | 8.126 | 0.987 |
| 16-Apr-97 | 3380 | 61 | 0.6501 | 0.386 | 8.126 | 0.986 |
| 5-Oct-91 | 3440 | 62 | 0.6609 | 0.415 | 8.143 | 0.985 |
| 27-Oct-93 | 3470 | 63 | 0.6716 | 0.444 | 8.152 | 0.985 |
| 16-Oct-94 | 3480 | 64 | 0.6823 | 0.474 | 8.155 | 0.984 |
| 26-Feb-98 | 3560 | 65 | 0.6930 | 0.504 | 8.178 | 0.983 |
| 30-Jan-97 | 3590 | 66 | 0.7038 | 0.535 | 8.186 | 0.982 |
| 23-Mar-99 | 3630 | 67 | 0.7145 | 0.567 | 8.197 | 0.981 |
| 22-Mar-95 | 3640 | 68 | 0.7252 | 0.598 | 8.200 | 0.980 |
| 15-Jan-99 | 3660 | 69 | 0.7359 | 0.631 | 8.205 | 0.978 |
| 23-Feb-99 | 3770 | 70 | 0.7466 | 0.664 | 8.235 | 0.977 |
| 29-Oct-96 | 3780 | 71 | 0.7574 | 0.698 | 8.237 | 0.976 |
| 17-Jan-96 | 3870 | 72 | 0.7681 | 0.733 | 8.261 | 0.974 |
| 26-Mar-97 | 3870 | 73 | 0.7788 | 0.768 | 8.261 | 0.973 |
| 8-Mar-99 | 3880 | 74 | 0.7895 | 0.805 | 8.264 | 0.971 |
| 30-Nov-93 | 3980 | 75 | 0.8003 | 0.843 | 8.289 | 0.972 |
| 21-Feb-97 | 4140 | 76 | 0.8110 | 0.882 | 8.328 | 0.972 |
| 18-Nov-98 | 4270 | 77 | 0.8217 | 0.922 | 8.359 | 0.970 |
| 15-Dec-98 | 4330 | 78 | 0.8324 | 0.964 | 8.373 | 0.967 |
| 8-Mar-94 | 4440 | 79 | 0.8432 | 1.008 | 8.398 | 0.964 |
| 28-Dec-98 | 4440 | 80 | 0.8539 | 1.053 | 8.398 | 0.960 |
| 27-Nov-96 | 4530 | 81 | 0.8646 | 1.101 | 8.418 | 0.955 |
| 14-Nov-98 | 4610 | 82 | 0.8753 | 1.152 | 8.436 | 0.950 |
| 24-Mar-94 | 4660 | 83 | 0.8861 | 1.206 | 8.447 | 0.943 |
| 18-Feb-94 | 4740 | 84 | 0.8968 | 1.263 | 8.464 | 0.938 |
| 20-Jan-94 | 5240 | 85 | 0.9075 | 1.326 | 8.564 | 0.940 |
| 20-Jan-94 | 5240 | 86 | 0.9182 | 1.393 | 8.564 | 0.940 |
| 13-Dec-96 | 5430 | 87 | 0.9290 | 1.468 | 8.600 | 0.930 |
| 17-Dec-93 | 5440 | 88 | 0.9397 | 1.552 | 8.602 | 0.932 |
| 17-Dec-93 | 5440 | 89 | 0.9504 | 1.649 | 8.602 | 0.915 |
| 16-Nov-94 | 5610 | 90 | 0.9611 | 1.764 | 8.632 | |
| 10-Jan-95 | 6370 | 91 | 0.9718 | 1.909 | 8.759 | |
| 13-Dec-94 | 6730 | 92 | 0.9826 | 2.110 | 8.814 | |
| 25-Nov-98 | 7240 | 93 | 0.9933 | 2.473 | 8.887 | |

update for EV, CV:

**dZn** CC287/288

**LN Analysis** dZn

**Discharge, Q** Q Data, EV=41 cfs CV=0.92

Q Data-based LN

| | | u | lnQ | Q |
|---|---|---|---|---|
| **Avg:** | **55** | | | |
| **SD:** | **66** | 3 | 6.4 | 598 |
| **CV:** | **1.20** | 0 | 3.56 | 35 |
| **Min:** | **11** | -3 | 0.72 | 2 |
| **Max:** | **384** | | | |
| **Median:** | **29** | | | |

**u=mLn{Q}+b:**

update for r2, EV, CV: **r2=0.919, EV=53.4 cfs CV=1.15; max r2=0.978**

| | | u | lnQ | Q |
|---|---|---|---|---|
| r2 u,lnQ: | 0.919 | 3 | 6.31 | 550 |
| slope, m: | 1.090 | 0 | 3.56 | 35 |
| intercept, b: | -3.876 | -3 | 0.80 | 2 |
| N: 93 | | | | |
| E[Q]: | 53.4 | Parameter Estimates | | |
| SD[Q]: | 61 | from LN regression | | |
| CV[Q]: | 1.15 | update graph label | | |

N: 93

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.978 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 11.4 | 1 | 0.0067 | -2.473 | 2.434 | 0.919 |
| 18-Feb-94 | 11.41 | 2 | 0.0174 | -2.110 | 2.434 | 0.932 |
| 17-Dec-93 | 11.7 | 3 | 0.0282 | -1.909 | 2.460 | 0.940 |
| 17-Dec-93 | 12.03 | 4 | 0.0389 | -1.764 | 2.487 | 0.945 |
| 14-Aug-95 | 12.6 | 5 | 0.0496 | -1.649 | 2.534 | 0.949 |
| 30-Nov-93 | 12.62 | 6 | 0.0603 | -1.552 | 2.535 | 0.953 |
| 26-Oct-98 | 13 | 7 | 0.0710 | -1.468 | 2.565 | 0.956 |
| 26-Oct-98 | 13 | 8 | 0.0818 | -1.393 | 2.565 | 0.958 |
| 27-Oct-93 | 13.28 | 9 | 0.0925 | -1.326 | 2.586 | 0.960 |
| 20-Jan-94 | 13.28 | 10 | 0.1032 | -1.263 | 2.586 | 0.962 |
| 16-Aug-94 | 13.57 | 11 | 0.1139 | -1.206 | 2.608 | 0.964 |
| 16-Oct-94 | 14.34 | 12 | 0.1247 | -1.152 | 2.663 | 0.965 |
| 5-Oct-91 | 14.5 | 13 | 0.1354 | -1.101 | 2.674 | 0.966 |
| 20-Jan-94 | 14.66 | 14 | 0.1461 | -1.053 | 2.685 | 0.967 |
| 25-Jul-95 | 14.71 | 15 | 0.1568 | -1.008 | 2.689 | 0.968 |
| 13-Sep-94 | 15.89 | 16 | 0.1676 | -0.964 | 2.766 | 0.969 |
| 16-Nov-94 | 15.89 | 17 | 0.1783 | -0.922 | 2.766 | 0.971 |
| 8-Oct-98 | 15.9 | 18 | 0.1890 | -0.882 | 2.766 | 0.972 |
| 18-Nov-98 | 16 | 19 | 0.1997 | -0.843 | 2.773 | 0.972 |
| 16-Aug-94 | 16.3 | 20 | 0.2105 | -0.805 | 2.791 | 0.973 |
| 1-Oct-98 | 16.7 | 21 | 0.2212 | -0.768 | 2.815 | 0.973 |
| 26-Oct-98 | 16.7 | 22 | 0.2319 | -0.733 | 2.815 | 0.974 |
| 13-Dec-94 | 17.17 | 23 | 0.2426 | -0.698 | 2.843 | 0.974 |
| 24-Sep-98 | 17.2 | 24 | 0.2534 | -0.664 | 2.845 | 0.974 |
| 22-Jan-98 | 18.1 | 25 | 0.2641 | -0.631 | 2.896 | 0.974 |
| 25-Jul-94 | 19.04 | 26 | 0.2748 | -0.598 | 2.947 | 0.974 |
| 26-Sep-96 | 19.5 | 27 | 0.2855 | -0.567 | 2.970 | 0.975 |
| 26-Aug-98 | 19.5 | 28 | 0.2962 | -0.535 | 2.970 | 0.976 |
| 23-Feb-99 | 20 | 29 | 0.3070 | -0.504 | 2.996 | 0.976 |
| 11-Jul-95 | 20.05 | 30 | 0.3177 | -0.474 | 2.998 | 0.976 |
| 24-Mar-94 | 21.13 | 31 | 0.3284 | -0.444 | 3.051 | 0.976 |
| 27-Nov-96 | 21.7 | 32 | 0.3391 | -0.415 | 3.077 | 0.977 |
| 30-Aug-99 | 22 | 33 | 0.3499 | -0.386 | 3.091 | 0.977 |
| 8-Mar-94 | 22.26 | 34 | 0.3606 | -0.357 | 3.103 | 0.978 |
| 26-Feb-98 | 22.3 | 35 | 0.3713 | -0.328 | 3.105 | 0.978 |
| 14-Nov-98 | 22.53 | 36 | 0.3820 | -0.300 | 3.115 | 0.978 |
| 8-Mar-99 | 23 | 37 | 0.3928 | -0.272 | 3.135 | 0.978 |
| 21-Aug-96 | 23.342375 | 38 | 0.4035 | -0.244 | 3.150 | 0.978 |
| 29-Oct-96 | 23.5 | 39 | 0.4142 | -0.217 | 3.157 | 0.978 |
| 19-Dec-97 | 24.1 | 40 | 0.4249 | -0.189 | 3.182 | 0.977 |
| 28-Jul-98 | 24.7 | 41 | 0.4357 | -0.162 | 3.207 | 0.977 |
| 15-Dec-98 | 25 | 42 | 0.4464 | -0.135 | 3.219 | 0.976 |
| 16-Oct-97 | 25.4 | 43 | 0.4571 | -0.108 | 3.235 | 0.976 |
| 25-Nov-98 | 26 | 44 | 0.4678 | -0.081 | 3.258 | 0.975 |
| 28-Dec-98 | 27 | 45 | 0.4786 | -0.054 | 3.296 | 0.975 |
| 10-Jan-95 | 28.21 | 46 | 0.4893 | -0.027 | 3.340 | 0.974 |
| 23-Jun-94 | 28.96 | 47 | 0.5000 | 0.000 | 3.366 | 0.973 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 13-Dec-96 | 29.7 | 48 | 0.5107 | 0.027 | 3.391 | 0.973 |
| 26-Nov-97 | 29.7 | 49 | 0.5214 | 0.054 | 3.391 | 0.972 |
| 18-Oct-95 | 31.4 | 50 | 0.5322 | 0.081 | 3.447 | 0.971 |
| 30-Jan-97 | 31.4 | 51 | 0.5429 | 0.108 | 3.447 | 0.970 |
| 9-Nov-97 | 32.7 | 52 | 0.5536 | 0.135 | 3.487 | 0.969 |
| 15-Jan-99 | 33 | 53 | 0.5643 | 0.162 | 3.497 | 0.969 |
| 20-Mar-98 | 33.1 | 54 | 0.5751 | 0.189 | 3.500 | 0.967 |
| 4-Sep-97 | 34 | 55 | 0.5858 | 0.217 | 3.526 | 0.966 |
| 5-Aug-99 | 34 | 56 | 0.5965 | 0.244 | 3.526 | 0.964 |
| 27-Jun-95 | 34.9 | 57 | 0.6072 | 0.272 | 3.552 | 0.963 |
| 24-Jul-96 | 35.8 | 58 | 0.6180 | 0.300 | 3.578 | 0.961 |
| 9-Nov-97 | 36.6 | 59 | 0.6287 | 0.328 | 3.600 | 0.959 |
| 8-Mar-95 | 36.82 | 60 | 0.6394 | 0.357 | 3.606 | 0.957 |
| 14-Aug-97 | 37.8 | 61 | 0.6501 | 0.386 | 3.632 | 0.955 |
| 7-Apr-94 | 37.82 | 62 | 0.6609 | 0.415 | 3.633 | 0.954 |
| 21-Feb-97 | 38.9 | 63 | 0.6716 | 0.444 | 3.661 | 0.953 |
| 27-Dec-95 | 42.1 | 64 | 0.6823 | 0.474 | 3.740 | 0.952 |
| 12-Apr-95 | 42.13 | 65 | 0.6930 | 0.504 | 3.741 | 0.951 |
| 25-Apr-95 | 43 | 66 | 0.7038 | 0.535 | 3.761 | 0.952 |
| 9-Feb-95 | 43.28 | 67 | 0.7145 | 0.567 | 3.768 | 0.954 |
| 17-Jan-96 | 50.9 | 68 | 0.7252 | 0.598 | 3.930 | 0.962 |
| 16-Apr-97 | 55.3 | 69 | 0.7359 | 0.631 | 4.013 | 0.964 |
| 7-Jun-94 | 63.45 | 70 | 0.7466 | 0.664 | 4.150 | 0.966 |
| 26-Jun-98 | 63.5 | 71 | 0.7574 | 0.698 | 4.151 | 0.964 |
| 28-Mar-96 | 65.2 | 72 | 0.7681 | 0.733 | 4.177 | 0.964 |
| 21-Nov-95 | 81.5 | 73 | 0.7788 | 0.768 | 4.401 | 0.966 |
| 8-May-96 | 81.5 | 74 | 0.7895 | 0.805 | 4.401 | 0.963 |
| 5-May-99 | 84 | 75 | 0.8003 | 0.843 | 4.431 | 0.960 |
| 22-Mar-95 | 86.16 | 76 | 0.8110 | 1 | 4.456 | 0.957 |
| 13-Jun-95 | 96.41 | 77 | 0.8217 | 0.922 | 4.569 | 0.953 |
| 23-Mar-99 | 97 | 78 | 0.8324 | 0.964 | 4.575 | 0.949 |
| 19-May-94 | 102.01 | 79 | 0.8432 | 1.008 | 4.625 | 0.944 |
| 8-Jul-99 | 107 | 80 | 0.8539 | 1.053 | 4.673 | 0.937 |
| 29-Feb-96 | 111 | 81 | 0.8646 | 1.101 | 4.710 | 0.930 |
| 23-Jul-97 | 111 | 82 | 0.8753 | 1.152 | 4.710 | 0.922 |
| 4-May-94 | 111.05 | 83 | 0.8861 | 1.206 | 4.710 | 0.910 |
| 24-Jun-97 | 124 | 84 | 0.8968 | 1.263 | 4.820 | 0.902 |
| 19-Apr-99 | 138 | 85 | 0.9075 | 1.326 | 4.927 | 0.889 |
| 26-Mar-97 | 144 | 86 | 0.9182 | 1.393 | 4.970 | 0.868 |
| 19-Jun-96 | 148 | 87 | 0.9290 | 1.468 | 4.997 | 0.847 |
| 14-May-98 | 206 | 88 | 0.9397 | 1.552 | 5.328 | 0.923 |
| 14-May-98 | 233 | 89 | 0.9504 | 1.649 | 5.451 | 0.895 |
| 2-Jun-99 | 241 | 90 | 0.9611 | 1.764 | 5.485 | |
| 27-May-99 | 261 | 91 | 0.9718 | 1.909 | 5.565 | |
| 15-Jun-99 | 263 | 92 | 0.9826 | 2.110 | 5.572 | |
| 24-May-99 | 384 | 93 | 0.9933 | 2.473 | 5.951 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC287/288 **Date:** 2-Jun-00
**Chemical:** tCd **Analyst:** J.Johnston
**Notes:** Template and Example Lognormal Analysis
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| Avg: | 35,345 | 55 | 20 | 4 | 0.00 | 0.00 | 0.00 |
| SD: | 701 | 66 | 9 | 3 | 1.00 | 1.00 | 1.00 |
| CV: | 0.02 | 1.20 | 0.47 | 0.82 | | | |
| Min: | 33,516 | 11 | 4 | 1.1 | -0.66 | -1.71 | -0.89 |
| Max: | 36,402 | 384 | 52 | 23 | 4.97 | 3.44 | 5.48 |
| Median: | 35,382 | 29 | 19 | 3 | -0.39 | -0.10 | -0.23 |

tCd CC287/288 : Concentration v. Discharge, Q

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.299)** | update r2 | 0.30 | 0.299 | | Q = mTime +b | | LnQ = mTime +b |
| r2 Q,[COC]: | 0.30 | [tCd] | Q | | r2: | 0.111 | 0.112 |
| slope, m: | -0.1 | 23 | 11.4 | | m: | 0.0314 | 0.00041 |
| intercept, b: | 24.2 | 20 | 55.2 | | b: | -1055 | -11.04 |
| N: 92 | | -5 | 384 | | | | |
| **LnConc. = mLn{Q}+b (r2=0.506)** | update r2 | | 0.51 | 0.506 | | | |
| r2 lnQ,ln[COC]: | 0.51 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m: | -0.45 | 3.37 | 2.43 | 29 | 11 | | |
| intercept, b: | 4.47 | 2.66 | 4.01 | 14 | 55 | | |
| N: 92 | | 1.79 | 5.95 | 6 | 384 | | |

N= 92

| update for new data | Sampling Date | Q Discharge cfs | tCd Concentration ug/L | tCd Load lbs/day | Ln Q | Ln tCd Conc. | Ln tCd Load | for graph 0 tCd CC287/288 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 5-Oct-91 | 14.5 | 20.8 | 1.6 | 2.67 | 3.03 | 0.48 | -0.62 | 0.09 | -0.73 |
| IDEQ | 27-Oct-93 | 13.28 | 22 | 1.6 | 2.59 | 3.09 | 0.45 | -0.63 | 0.22 | -0.75 |
| IDEQ | 30-Nov-93 | 12.62 | 22 | 1.5 | 2.54 | 3.09 | 0.40 | -0.64 | 0.22 | -0.77 |
| IDEQ | 17-Dec-93 | 11.7 | 33 | 2.1 | 2.46 | 3.50 | 0.73 | -0.66 | 1.40 | -0.60 |
| IDEQ | 17-Dec-93 | 12.03 | 33 | 2.1 | 2.49 | 3.50 | 0.76 | -0.65 | 1.40 | -0.58 |
| IDEQ | 20-Jan-94 | 13.28 | 38 | 2.7 | 2.59 | 3.64 | 1.00 | -0.63 | 1.94 | -0.41 |
| IDEQ | 20-Jan-94 | 14.66 | 38 | 3.0 | 2.69 | 3.64 | 1.10 | -0.61 | 1.94 | -0.33 |
| IDEQ | 18-Feb-94 | 11.41 | 30 | 1.8 | 2.43 | 3.40 | 0.61 | -0.66 | 1.08 | -0.67 |
| IDEQ | 8-Mar-94 | 22.26 | 26 | 3.1 | 3.10 | 3.26 | 1.14 | -0.50 | 0.65 | -0.30 |
| IDEQ | 24-Mar-94 | 21.13 | 26 | 3.0 | 3.05 | 3.26 | 1.08 | -0.52 | 0.65 | -0.34 |
| IDEQ | 7-Apr-94 | 37.82 | 18 | 3.7 | 3.63 | 2.89 | 1.30 | -0.26 | -0.21 | -0.13 |
| IDEQ | 4-May-94 | 111.05 | 8.2 | 4.9 | 4.71 | 2.10 | 1.59 | 0.84 | -1.26 | 0.23 |
| IDEQ | 19-May-94 | 102.01 | 7.7 | 4.2 | 4.63 | 2.04 | 1.44 | 0.71 | -1.31 | 0.03 |
| IDEQ | 7-Jun-94 | 63.45 | 12 | 4.1 | 4.15 | 2.48 | 1.41 | 0.12 | -0.85 | -0.01 |
| IDEQ | 23-Jun-94 | 28.96 | 14 | 2.2 | 3.37 | 2.64 | 0.78 | -0.40 | -0.64 | -0.57 |
| IDEQ | 25-Jul-94 | 19.04 | 18 | 1.8 | 2.95 | 2.89 | 0.61 | -0.55 | -0.21 | -0.67 |
| IDEQ | 16-Aug-94 | 16.3 | 19 | 1.7 | 2.79 | 2.94 | 0.51 | -0.59 | -0.10 | -0.72 |
| IDEQ | 16-Aug-94 | 13.57 | 19 | 1.4 | 2.61 | 2.94 | 0.33 | -0.63 | -0.10 | -0.80 |
| IDEQ | 13-Sep-94 | 15.89 | 21 | 1.8 | 2.77 | 3.04 | 0.59 | -0.60 | 0.11 | -0.68 |
| IDEQ | 16-Oct-94 | 14.34 | 21 | 1.6 | 2.66 | 3.04 | 0.48 | -0.62 | 0.11 | -0.74 |
| IDEQ | 16-Nov-94 | 15.89 | 32 | 2.7 | 2.77 | 3.47 | 1.01 | -0.60 | 1.29 | -0.41 |
| IDEQ | 13-Dec-94 | 17.17 | 38 | 3.5 | 2.84 | 3.64 | 1.26 | -0.58 | 1.94 | -0.18 |
| IDEQ | 10-Jan-95 | 28.21 | 39 | 5.9 | 3.34 | 3.66 | 1.78 | -0.41 | 2.05 | 0.53 |
| IDEQ | 9-Feb-95 | 43.28 | 19 | 4.4 | 3.77 | 2.94 | 1.49 | -0.18 | -0.10 | 0.09 |
| IDEQ | 8-Mar-95 | 36.82 | 16 | 3.2 | 3.61 | 2.77 | 1.15 | -0.28 | -0.42 | -0.28 |
| IDEQ | 22-Mar-95 | 86.16 | 24 | 11.1 | 4.46 | 3.18 | 2.41 | 0.47 | 0.44 | 2.06 |
| IDEQ | 12-Apr-95 | 42.13 | 15 | 3.4 | 3.74 | 2.71 | 1.22 | -0.20 | -0.53 | -0.21 |
| IDEQ | 25-Apr-95 | 43 | 12 | 2.8 | 3.76 | 2.48 | 1.02 | -0.19 | -0.85 | -0.39 |
| IDEQ | 13-Jun-95 | 96.41 | 6.8 | 3.5 | 4.57 | 1.92 | 1.26 | 0.62 | -1.41 | -0.17 |
| IDEQ | 27-Jun-95 | 34.9 | 8.4 | 1.6 | 3.55 | 2.13 | 0.46 | -0.31 | -1.24 | -0.75 |
| IDEQ | 11-Jul-95 | 20.05 | 12 | 1.3 | 3.00 | 2.48 | 0.26 | -0.53 | -0.85 | -0.83 |
| IDEQ | 25-Jul-95 | 14.71 | 14 | 1.1 | 2.69 | 2.64 | 0.10 | -0.61 | -0.64 | -0.89 |
| IDEQ | 14-Aug-95 | 12.6 | 18 | 1.2 | 2.53 | 2.89 | 0.20 | -0.64 | -0.21 | -0.85 |
| IDEQ | 13-Sep-95 | 11.4 | 20 | 1.2 | 2.43 | 3.00 | 0.20 | -0.66 | 0.01 | -0.85 |
| IDEQ | 18-Oct-95 | 31.4 | 21 | 3.5 | 3.45 | 3.04 | 1.27 | -0.36 | 0.11 | -0.17 |
| IDEQ | 21-Nov-95 | 81.5 | 13 | 5.7 | 4.40 | 2.56 | 1.74 | 0.40 | -0.75 | 0.47 |
| IDEQ | 27-Dec-95 | 42.1 | 18 | 4.1 | 3.74 | 2.89 | 1.41 | -0.20 | -0.21 | -0.01 |
| IDEQ | 17-Jan-96 | 50.9 | 27 | 7.4 | 3.93 | 3.30 | 2.00 | -0.07 | 0.76 | 0.97 |
| IDEQ | 29-Feb-96 | 111 | 15 | 9.0 | 4.71 | 2.71 | 2.19 | 0.84 | -0.53 | 1.43 |
| IDEQ | 28-Mar-96 | 65.2 | 16 | 5.6 | 4.18 | 2.77 | 1.72 | 0.15 | -0.42 | 0.44 |
| IDEQ | 8-May-96 | 81.5 | 12 | 5.3 | 4.40 | 2.48 | 1.66 | 0.40 | -0.85 | 0.34 |
| IDEQ | 19-Jun-96 | 148 | 5.8 | 4.6 | 5.00 | 1.76 | 1.53 | 1.40 | -1.52 | 0.15 |
| IDEQ | 24-Jul-96 | 35.8 | 14 | 2.7 | 3.58 | 2.64 | 0.99 | -0.29 | -0.64 | -0.42 |
| IDEQ | 21-Aug-96 | 23.342375 | 24 | 3.0 | 3.15 | 3.18 | 1.10 | -0.48 | 0.44 | -0.32 |
| IDEQ | 26-Sep-96 | 19.5 | 23 | 2.4 | 2.97 | 3.14 | 0.88 | -0.54 | 0.33 | -0.50 |
| IDEQ | 29-Oct-96 | 23.5 | 28 | 3.5 | 3.16 | 3.33 | 1.26 | -0.48 | 0.86 | -0.17 |
| IDEQ | 27-Nov-96 | 21.7 | 29 | 3.4 | 3.08 | 3.37 | 1.22 | -0.51 | 0.97 | -0.22 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 13-Dec-96 | 29.7 | 39 | 6.2 | 3.39 | 3.66 | 1.83 | -0.39 | 2.05 | 0.62 |
| IDEQ | 30-Jan-97 | 31.4 | 25 | 4.2 | 3.45 | 3.22 | 1.44 | -0.36 | 0.54 | 0.03 |
| IDEQ | 21-Feb-97 | 38.9 | 27 | 5.7 | 3.66 | 3.36 | 1.73 | -0.25 | 0.76 | 0.45 |
| IDEQ | 26-Mar-97 | 144 | 25 | 19.4 | 4.97 | 3.22 | 2.96 | 1.34 | 0.54 | 4.49 |
| IDEQ | 16-Apr-97 | 55.3 | 23 | 6.8 | 4.01 | 3.14 | 1.92 | 0.00 | 0.33 | 0.80 |
| IDEQ | 24-Jun-97 | 124 | 5 | 3.3 | 4.82 | 1.61 | 1.20 | 1.04 | -1.60 | -0.23 |
| IDEQ | 23-Jul-97 | 111 | 10 | 6.0 | 4.71 | 2.30 | 1.79 | 0.84 | -1.07 | 0.55 |
| IDEQ | 14-Aug-97 | 37.8 | 15 | 3.1 | 3.63 | 2.71 | 1.12 | -0.26 | -0.53 | -0.31 |
| IDEQ | 4-Sep-97 | 34 | 19 | 3.5 | 3.53 | 2.94 | 1.25 | -0.32 | -0.10 | -0.19 |
| IDEQ | 16-Oct-97 | 25.4 | 22 | 3.0 | 3.23 | 3.09 | 1.10 | -0.45 | 0.22 | -0.33 |
| URS | 9-Nov-97 | 32.7 | 17.8 | 3.1 | 3.49 | 2.88 | 1.14 | -0.34 | -0.23 | -0.29 |
| IDEQ | 26-Nov-97 | 29.7 | 19 | 3.0 | 3.39 | 2.94 | 1.11 | -0.39 | -0.10 | -0.32 |
| IDEQ | 19-Dec-97 | 24.1 | 26 | 3.4 | 3.18 | 3.26 | 1.22 | -0.47 | 0.65 | -0.22 |
| IDEQ | 22-Jan-98 | 18.1 | 25 | 2.4 | 2.90 | 3.22 | 0.89 | -0.56 | 0.54 | -0.50 |
| IDEQ | 26-Feb-98 | 22.3 | 25 | 3.0 | 3.10 | 3.22 | 1.10 | -0.50 | 0.54 | -0.33 |
| IDEQ | 20-Mar-98 | 33.1 | 21 | 3.7 | 3.50 | 3.04 | 1.32 | -0.33 | 0.11 | -0.11 |
| URS | 14-May-98 | 206 | 5.1 | 5.7 | 5.33 | 1.63 | 1.73 | 2.28 | -1.59 | 0.45 |
| IDEQ | 26-Jun-98 | 63.5 | 9.8 | 3.3 | 4.15 | 2.28 | 1.21 | 0.12 | -1.09 | -0.23 |
| IDEQ | 28-Jul-98 | 24.7 | 17 | 2.3 | 3.21 | 2.83 | 0.81 | -0.46 | -0.32 | -0.55 |
| IDEQ | 26-Aug-98 | 19.5 | 18 | 1.9 | 2.97 | 2.89 | 0.64 | -0.54 | -0.21 | -0.66 |
| IDEQ | 24-Sep-98 | 17.2 | 17 | 1.6 | 2.84 | 2.83 | 0.45 | -0.58 | -0.32 | -0.75 |
| IDEQ | 1-Oct-98 | 16.7 | 19 | 1.7 | 2.82 | 2.94 | 0.53 | -0.58 | -0.10 | -0.71 |
| IDEQ | 8-Oct-98 | 15.9 | 20 | 1.7 | 2.77 | 3.00 | 0.54 | -0.59 | 0.01 | -0.71 |
| IDEQ | 26-Oct-98 | 16.7 | 18 | 1.6 | 2.82 | 2.89 | 0.48 | -0.58 | -0.21 | -0.74 |
| IDEQ | 25-Nov-98 | 26 | 52 | 7.3 | 3.26 | 3.95 | 1.98 | -0.44 | 3.44 | 0.93 |
| IDEQ | 15-Jan-99 | 33 | 25 | 4.4 | 3.50 | 3.22 | 1.49 | -0.34 | 0.54 | 0.10 |
| IDEQ | 23-Feb-99 | 20 | 30 | 3.2 | 3.00 | 3.40 | 1.17 | -0.53 | 1.08 | -0.26 |
| IDEQ | 8-Mar-99 | 23 | 28 | 3.5 | 3.14 | 3.33 | 1.24 | -0.49 | 0.86 | -0.19 |
| URS | 9-Nov-97 | 36.6 | 18.2 | 3.6 | 3.60 | 2.90 | 1.28 | -0.28 | -0.19 | -0.16 |
| URS | 14-May-98 | 233 | 5.2 | 6.5 | 5.45 | 1.65 | 1.87 | 2.69 | -1.58 | 0.71 |
| USGS | 26-Oct-98 | 13 | 18 | 1.3 | 2.56 | 2.89 | 0.23 | -0.64 | -0.21 | -0.84 |
| USGS | 26-Oct-98 | 13 | 19 | 1.3 | 2.56 | 2.94 | 0.28 | -0.64 | -0.10 | -0.82 |
| URS | 14-Nov-98 | 22.53 | 34.2 | 4.1 | 3.11 | 3.53 | 1.42 | -0.49 | 1.53 | 0.01 |
| USGS | 15-Dec-98 | 25 | 31 | 4.2 | 3.22 | 3.43 | 1.43 | -0.46 | 1.19 | 0.02 |
| USGS | 28-Dec-98 | 27 | 32 | 4.6 | 3.30 | 3.47 | 1.54 | -0.43 | 1.29 | 0.16 |
| USGS | 23-Mar-99 | 97 | 26 | 13.6 | 4.57 | 3.26 | 2.61 | 0.63 | 0.65 | 2.78 |
| USGS | 19-Apr-99 | 138 | 15 | 11.1 | 4.93 | 2.71 | 2.41 | 1.25 | -0.53 | 2.07 |
| USGS | 5-May-99 | 84 | 9 | 4.1 | 4.43 | 2.20 | 1.40 | 0.43 | -1.17 | -0.01 |
| USGS | 24-May-99 | 384 | 11 | 22.7 | 5.95 | 2.40 | 3.12 | 4.97 | -0.96 | 5.48 |
| USGS | 27-May-99 | 261 | 5 | 7.0 | 5.56 | 1.61 | 1.95 | 3.11 | -1.60 | 0.86 |
| USGS | 2-Jun-99 | 241 | 5 | 6.5 | 5.48 | 1.61 | 1.87 | 2.81 | -1.60 | 0.70 |
| USGS | 15-Jun-99 | 263 | 4 | 5.7 | 5.57 | 1.39 | 1.73 | 3.14 | -1.71 | 0.45 |
| USGS | 8-Jul-99 | 107 | 5.4 | 3.1 | 4.67 | 1.69 | 1.13 | 0.78 | -1.56 | -0.30 |
| USGS | 5-Aug-99 | 34 | 12.6 | 2.3 | 3.53 | 2.53 | 0.83 | -0.32 | -0.79 | -0.53 |
| USGS | 30-Aug-99 | 22 | 15 | 1.8 | 3.09 | 2.71 | 0.57 | -0.50 | -0.53 | -0.69 |

tCd

**Concentration over time analysis**

| | tCd | CC287/288 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.045** | **-0.00017** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 5-Oct-91 | 3.17 | 24 | | |
| mid: | 12-Nov-96 | 2.86 | 17 | | |
| last: | 30-Aug-99 | 2.69 | 15 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.039** | **-0.00047** |
| | 21-Feb-97 | 3.01 | 20 | | |
| | 30-Aug-99 | 2.58 | 13 | | |

**Load over time analysis**

| | tCd | CC287/288 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.079** | **0.00025** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 5-Oct-91 | 0.75 | 2 | | |
| mid: | 12-Nov-96 | 1.21 | 3 | | |
| last: | 30-Aug-99 | 1.46 | 4 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.002** | **-0.00010** |
| | 21-Feb-97 | 1.40 | 4 | | |
| | 30-Aug-99 | 1.30 | 4 | | |

| | max r2: 1.000 | | | max r2: 1.000 | | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.045 | -0.00017 | 8.77 | 0.079 | 0.00025 | -7.50 |
| | 0.045 | -0.00017 | 8.98 | 0.068 | 0.00023 | -7.08 |
| | 0.043 | -0.00017 | 8.94 | 0.059 | 0.00022 | -6.59 |
| | 0.041 | -0.00017 | 8.89 | 0.050 | 0.00020 | -6.01 |
| | 0.035 | -0.00016 | 8.43 | 0.046 | 0.00020 | -5.73 |
| | 0.029 | -0.00014 | 7.92 | 0.041 | 0.00019 | -5.45 |
| | 0.021 | -0.00012 | 7.24 | 0.039 | 0.00019 | -5.41 |
| | 0.015 | -0.00010 | 6.48 | 0.039 | 0.00019 | -5.47 |
| | 0.010 | -0.00009 | 5.95 | 0.033 | 0.00018 | -4.98 |
| | 0.008 | -0.00008 | 5.54 | 0.033 | 0.00018 | -5.06 |
| | 0.005 | -0.00006 | 5.10 | 0.032 | 0.00018 | -5.08 |
| | 0.005 | -0.00006 | 5.08 | 0.033 | 0.00019 | -5.37 |
| | 0.010 | -0.00009 | 6.05 | 0.039 | 0.00021 | -6.04 |
| | 0.018 | -0.00012 | 7.20 | 0.043 | 0.00022 | -6.58 |
| | 0.023 | -0.00014 | 7.84 | 0.048 | 0.00024 | -7.11 |
| | 0.026 | -0.00015 | 8.31 | 0.043 | 0.00023 | -6.79 |
| | 0.027 | -0.00016 | 8.44 | 0.036 | 0.00021 | -6.19 |
| | 0.026 | -0.00016 | 8.50 | 0.028 | 0.00019 | -5.37 |
| | 0.026 | -0.00016 | 8.57 | 0.018 | 0.00015 | -4.17 |
| | 0.024 | -0.00016 | 8.47 | 0.013 | 0.00013 | -3.28 |
| | 0.022 | -0.00016 | 8.36 | 0.007 | 0.00010 | -2.13 |
| | 0.015 | -0.00013 | 7.50 | 0.005 | 0.00009 | -1.77 |
| | 0.008 | -0.00010 | 6.24 | 0.005 | 0.00009 | -1.82 |
| | 0.003 | -0.00006 | 4.82 | 0.009 | 0.00012 | -2.83 |
| | 0.002 | -0.00005 | 4.61 | 0.011 | 0.00013 | -3.38 |
| | 0.002 | -0.00005 | 4.72 | 0.010 | 0.00013 | -3.33 |
| | 0.001 | -0.00003 | 4.01 | 0.024 | 0.00020 | -5.85 |
| | 0.001 | -0.00004 | 4.23 | 0.024 | 0.00021 | -6.10 |
| | 0.003 | -0.00006 | 4.97 | 0.022 | 0.00020 | -5.91 |
| | 0.010 | -0.00012 | 7.09 | 0.023 | 0.00021 | -6.24 |
| | 0.019 | -0.00017 | 8.96 | 0.014 | 0.00017 | -4.65 |
| | 0.026 | -0.00021 | 10.18 | 0.005 | 0.00010 | -2.31 |
| | 0.031 | -0.00023 | 11.14 | 0.000 | 0.00002 | 0.80 |
| | 0.031 | -0.00024 | 11.49 | 0.003 | -0.00008 | 4.11 |
| | 0.030 | -0.00024 | 11.56 | 0.016 | -0.00018 | 7.86 |
| | 0.027 | -0.00024 | 11.44 | 0.019 | -0.00020 | 8.70 |
| | 0.035 | -0.00028 | 12.90 | 0.015 | -0.00019 | 8.04 |
| | 0.035 | -0.00030 | 13.39 | 0.015 | -0.00020 | 8.44 |
| | 0.027 | -0.00027 | 12.40 | 0.008 | -0.00015 | 6.64 |
| | 0.032 | -0.00030 | 13.54 | 0.002 | -0.00007 | 3.81 |
| | 0.035 | -0.00033 | 14.56 | 0.000 | -0.00003 | 2.45 |
| | 0.047 | -0.00039 | 16.94 | 0.000 | 0.00001 | 1.15 |
| | 0.092 | -0.00056 | 22.89 | 0.000 | 0.00003 | 0.25 |
| | 0.109 | -0.00063 | 25.51 | 0.000 | -0.00001 | 1.77 |
| | 0.103 | -0.00064 | 25.78 | 0.001 | -0.00005 | 3.00 |
| | 0.099 | -0.00065 | 26.19 | 0.003 | -0.00012 | 5.60 |
| | 0.086 | -0.00063 | 25.45 | 0.004 | -0.00014 | 6.48 |

| | | | | | |
|---|---|---|---|---|---|
| 0.072 | -0.00060 | 24.25 | 0.006 | -0.00018 | 7.77 |
| 0.048 | -0.00050 | 20.79 | 0.002 | -0.00011 | 5.34 |
| 0.039 | -0.00047 | 19.60 | 0.002 | -0.00010 | 5.11 |
| 0.027 | -0.00041 | 17.50 | 0.000 | -0.00004 | 2.67 |
| 0.019 | -0.00035 | 15.48 | 0.015 | 0.00031 | -9.89 |
| 0.012 | -0.00030 | 13.60 | 0.034 | 0.00049 | -16.56 |
| 0.047 | -0.00059 | 24.06 | 0.035 | 0.00053 | -17.72 |
| 0.072 | -0.00076 | 30.27 | 0.058 | 0.00070 | -24.10 |
| 0.082 | -0.00086 | 33.83 | 0.058 | 0.00074 | -25.34 |
| 0.083 | -0.00091 | 35.59 | 0.064 | 0.00081 | -28.06 |
| 0.076 | -0.00091 | 35.71 | 0.063 | 0.00085 | -29.35 |
| 0.079 | -0.00098 | 37.98 | 0.063 | 0.00090 | -31.15 |
| 0.078 | -0.00103 | 39.82 | 0.063 | 0.00094 | -32.83 |
| 0.063 | -0.00097 | 37.62 | 0.067 | 0.00103 | -36.02 |
| 0.049 | -0.00090 | 35.06 | 0.057 | 0.00100 | -34.87 |
| 0.036 | -0.00080 | 31.61 | 0.055 | 0.00103 | -35.96 |
| 0.029 | -0.00075 | 29.75 | 0.061 | 0.00115 | -40.27 |
| 0.076 | -0.00121 | 46.40 | 0.085 | 0.00140 | -49.45 |
| 0.102 | -0.00143 | 54.62 | 0.087 | 0.00146 | -51.62 |
| 0.103 | -0.00148 | 56.28 | 0.076 | 0.00139 | -48.93 |
| 0.102 | -0.00150 | 56.91 | 0.062 | 0.00126 | -44.11 |
| 0.102 | -0.00152 | 57.61 | 0.048 | 0.00108 | -37.77 |
| 0.099 | -0.00151 | 57.31 | 0.035 | 0.00091 | -31.55 |
| 0.094 | -0.00148 | 56.45 | 0.023 | 0.00072 | -24.77 |
| 0.091 | -0.00148 | 56.24 | 0.013 | 0.00053 | -17.59 |
| 0.080 | -0.00129 | 49.37 | 0.018 | 0.00061 | -20.74 |
| 0.078 | -0.00126 | 48.13 | 0.018 | 0.00062 | -20.81 |
| 0.086 | -0.00127 | 48.68 | 0.019 | 0.00062 | -21.02 |
| 0.098 | -0.00131 | 50.09 | 0.020 | 0.00064 | -21.50 |
| 0.094 | -0.00175 | 66.08 | 0.014 | 0.00075 | -25.54 |
| 0.449 | -0.00466 | 171.32 | 0.061 | 0.00195 | -69.28 |
| 0.469 | -0.00519 | 190.68 | 0.007 | 0.00067 | -22.76 |
| 0.499 | -0.00607 | 222.62 | 0.040 | -0.00158 | 59.18 |
| 0.402 | -0.00596 | 218.72 | 0.100 | -0.00297 | 109.46 |
| 0.271 | -0.00543 | 199.29 | 0.233 | -0.00554 | 202.87 |
| 0.048 | -0.00277 | 102.67 | 0.635 | -0.01323 | 482.20 |
| 0.026 | 0.00197 | -69.59 | 0.586 | -0.01410 | 513.70 |
| 0.238 | 0.00611 | -220.05 | 0.529 | -0.01444 | 526.17 |
| 0.416 | 0.00912 | -329.61 | 0.780 | -0.01995 | 726.40 |
| 0.838 | 0.01342 | -485.87 | 0.975 | -0.01521 | 554.18 |
| 0.872 | 0.01522 | -551.26 | 0.966 | -0.01511 | 550.48 |
| 0.948 | 0.01890 | -685.36 | 0.945 | -0.01465 | 533.88 |
| 0.895 | 0.01950 | -706.85 | 1.000 | -0.01057 | 385.37 |
| 1.000 | 0.00697 | -251.16 | 1.000 | -0.01044 | 380.56 |

update for EV, CV:

tCd — CC287/288
LN Analysis — tCd

**Load** — Load Data, EV=4.12 lbs/day CV=0.825

Load Data-based LN

| | | u | ln tCd Load | tCd Load |
|---|---|---|---|---|
| Avg: | 4 | 3 | 3.3 | 28 |
| SD: | 3 | 0 | 1.16 | 3 |
| CV: | 0.82 | -3 | -1.01 | 0.4 |
| Min: | 1.1 | | | |
| Max: | 23 | | | |
| Median: | 3 | | | |

| | |
|---|---|
| 4 | 4.12 |
| 0.82 | 0.825 |

u=mLn{Load}+ b:

update for r2, EV, CV: r2=0.968, EV=4.07lbs/day CV=0.702; max r2=0.975

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.968 | u | lnLoad | Load |
| slope, m: | 1.579 | 3 | 3.10 | 22 |
| intercept, b: | -1.900 | 0 | 1.20 | 3 |
| N: 92 | | -3 | -0.70 | 0.5 |
| E[Load]: | 4.1 | Parameter Estimates | | |
| SD[Load]: | 3 | from LN regression | | |
| CV[Load]: | 0.70 | update graph label | | |

| | | |
|---|---|---|
| | 0.968 | 0.968 |
| | 4.1 | 4.07 |
| | 0.7 | 0.702 |
| | max r2 | |
| | 0.975 | |

N: 92

| Date | tCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 25-Jul-95 | 1.1 | 1 | 0.0068 | -2.469 | 0.103 | 0.968 |
| 14-Aug-95 | 1.2 | 2 | 0.0176 | -2.106 | 0.199 | 0.972 |
| 13-Sep-95 | 1.2 | 3 | 0.0285 | -1.904 | 0.204 | 0.975 |
| 30-Aug-99 | 1.3 | 4 | 0.0393 | -1.759 | 0.230 | 0.975 |
| 11-Jul-95 | 1.3 | 5 | 0.0501 | -1.644 | 0.258 | 0.975 |
| 5-Aug-99 | 1.3 | 6 | 0.0610 | -1.547 | 0.284 | 0.975 |
| 16-Aug-94 | 1.4 | 7 | 0.0718 | -1.462 | 0.327 | 0.975 |
| 30-Nov-93 | 1.5 | 8 | 0.0827 | -1.387 | 0.401 | 0.974 |
| 27-Oct-93 | 1.6 | 9 | 0.0935 | -1.320 | 0.452 | 0.974 |
| 24-Sep-98 | 1.6 | 10 | 0.1043 | -1.257 | 0.453 | 0.974 |
| 27-Jun-95 | 1.6 | 11 | 0.1152 | -1.199 | 0.456 | 0.974 |
| 26-Oct-98 | 1.6 | 12 | 0.1260 | -1.145 | 0.481 | 0.973 |
| 16-Oct-94 | 1.6 | 13 | 0.1369 | -1.095 | 0.483 | 0.972 |
| 5-Oct-91 | 1.6 | 14 | 0.1477 | -1.046 | 0.484 | 0.972 |
| 16-Aug-94 | 1.7 | 15 | 0.1585 | -1.000 | 0.511 | 0.971 |
| 1-Oct-98 | 1.7 | 16 | 0.1694 | -0.957 | 0.535 | 0.970 |
| 8-Oct-98 | 1.7 | 17 | 0.1802 | -0.915 | 0.537 | 0.969 |
| 24-May-99 | 1.8 | 18 | 0.1911 | -0.874 | 0.574 | 0.967 |
| 13-Sep-94 | 1.8 | 19 | 0.2019 | -0.835 | 0.585 | 0.966 |
| 18-Feb-94 | 1.8 | 20 | 0.2127 | -0.797 | 0.611 | 0.965 |
| 25-Jul-94 | 1.8 | 21 | 0.2236 | -0.760 | 0.612 | 0.964 |
| 26-Aug-98 | 1.9 | 22 | 0.2344 | -0.724 | 0.636 | 0.963 |
| 17-Dec-93 | 2.1 | 23 | 0.2453 | -0.689 | 0.731 | 0.962 |
| 17-Dec-93 | 2.1 | 24 | 0.2561 | -0.655 | 0.759 | 0.960 |
| 23-Jun-94 | 2.2 | 25 | 0.2669 | -0.622 | 0.780 | 0.959 |
| 28-Jul-98 | 2.3 | 26 | 0.2778 | -0.589 | 0.815 | 0.958 |
| 23-Mar-99 | 2.3 | 27 | 0.2886 | -0.557 | 0.835 | 0.957 |
| 26-Sep-96 | 2.4 | 28 | 0.2995 | -0.526 | 0.881 | 0.955 |
| 22-Jan-98 | 2.4 | 29 | 0.3103 | -0.495 | 0.890 | 0.954 |
| 24-Jul-96 | 2.7 | 30 | 0.3211 | -0.465 | 0.992 | 0.953 |
| 20-Jan-94 | 2.7 | 31 | 0.3320 | -0.434 | 0.999 | 0.953 |
| 16-Nov-94 | 2.7 | 32 | 0.3428 | -0.405 | 1.006 | 0.954 |
| 25-Apr-95 | 2.8 | 33 | 0.3537 | -0.375 | 1.021 | 0.954 |
| 24-Mar-94 | 3.0 | 34 | 0.3645 | -0.346 | 1.084 | 0.954 |
| 20-Jan-94 | 3.0 | 35 | 0.3753 | -0.318 | 1.098 | 0.955 |
| 26-Feb-98 | 3.0 | 36 | 0.3862 | -0.289 | 1.098 | 0.957 |
| 16-Oct-97 | 3.0 | 37 | 0.3970 | -0.261 | 1.101 | 0.958 |
| 21-Aug-96 | 3.0 | 38 | 0.4079 | -0.233 | 1.103 | 0.959 |
| 26-Nov-97 | 3.0 | 39 | 0.4187 | -0.205 | 1.111 | 0.960 |
| 14-Aug-97 | 3.1 | 40 | 0.4295 | -0.178 | 1.115 | 0.960 |
| 19-Apr-99 | 3.1 | 41 | 0.4404 | -0.150 | 1.134 | 0.961 |
| 8-Mar-94 | 3.1 | 42 | 0.4512 | -0.123 | 1.136 | 0.962 |
| 9-Nov-97 | 3.1 | 43 | 0.4621 | -0.095 | 1.142 | 0.962 |
| 8-Mar-95 | 3.2 | 44 | 0.4729 | -0.068 | 1.154 | 0.963 |
| 23-Feb-99 | 3.2 | 45 | 0.4837 | -0.041 | 1.172 | 0.963 |
| 24-Jun-97 | 3.3 | 46 | 0.4946 | -0.014 | 1.205 | 0.964 |
| 26-Jun-98 | 3.3 | 47 | 0.5054 | 0.014 | 1.208 | 0.965 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19-Dec-97 | 3.4 | 48 | 0.5163 | 0.041 | 1.215 | 0.966 |
| 27-Nov-96 | 3.4 | 49 | 0.5271 | 0.068 | 1.220 | 0.966 |
| 12-Apr-95 | 3.4 | 50 | 0.5379 | 0.095 | 1.224 | 0.967 |
| 8-Mar-99 | 3.5 | 51 | 0.5488 | 0.123 | 1.243 | 0.967 |
| 4-Sep-97 | 3.5 | 52 | 0.5596 | 0.150 | 1.246 | 0.968 |
| 13-Dec-94 | 3.5 | 53 | 0.5705 | 0.178 | 1.256 | 0.968 |
| 13-Jun-95 | 3.5 | 54 | 0.5813 | 0.205 | 1.260 | 0.968 |
| 29-Oct-96 | 3.5 | 55 | 0.5921 | 0.233 | 1.264 | 0.968 |
| 18-Oct-95 | 3.5 | 56 | 0.6030 | 0.261 | 1.266 | 0.967 |
| 26-Oct-98 | 3.6 | 57 | 0.6138 | 0.289 | 1.276 | 0.966 |
| 7-Apr-94 | 3.7 | 58 | 0.6247 | 0.318 | 1.298 | 0.965 |
| 20-Mar-98 | 3.7 | 59 | 0.6355 | 0.346 | 1.319 | 0.964 |
| 28-Dec-98 | 4.1 | 60 | 0.6463 | 0.375 | 1.403 | 0.963 |
| 27-Dec-95 | 4.1 | 61 | 0.6572 | 0.405 | 1.405 | 0.964 |
| 7-Jun-94 | 4.1 | 62 | 0.6680 | 0.434 | 1.410 | 0.964 |
| 8-Jul-99 | 4.1 | 63 | 0.6789 | 0.465 | 1.422 | 0.964 |
| 9-Nov-97 | 4.2 | 64 | 0.6897 | 0.495 | 1.428 | 0.963 |
| 30-Jan-97 | 4.2 | 65 | 0.7005 | 0.526 | 1.441 | 0.962 |
| 19-May-94 | 4.2 | 66 | 0.7114 | 0.557 | 1.441 | 0.961 |
| 9-Feb-95 | 4.4 | 67 | 0.7222 | 0.589 | 1.487 | 0.959 |
| 15-Jan-99 | 4.4 | 68 | 0.7331 | 0.622 | 1.490 | 0.958 |
| 19-Jun-96 | 4.6 | 69 | 0.7439 | 0.655 | 1.530 | 0.956 |
| 5-May-99 | 4.6 | 70 | 0.7547 | 0.689 | 1.537 | 0.954 |
| 4-May-94 | 4.9 | 71 | 0.7656 | 0.724 | 1.589 | 0.951 |
| 8-May-96 | 5.3 | 72 | 0.7764 | 0.760 | 1.660 | 0.949 |
| 28-Mar-96 | 5.6 | 73 | 0.7873 | 0.797 | 1.725 | 0.950 |
| 21-Feb-97 | 5.7 | 74 | 0.7981 | 0.835 | 1.732 | 0.955 |
| 14-May-98 | 5.7 | 75 | 0.8089 | 0.874 | 1.732 | 0.960 |
| 27-May-99 | 5.7 | 76 | 0.8198 | 0.915 | 1.733 | 0.964 |
| 21-Nov-95 | 5.7 | 77 | 0.8306 | 0.957 | 1.740 | 0.966 |
| 10-Jan-95 | 5.9 | 78 | 0.8415 | 1.000 | 1.778 | 0.966 |
| 23-Jul-97 | 6.0 | 79 | 0.8523 | 1.046 | 1.787 | 0.968 |
| 13-Dec-96 | 6.2 | 80 | 0.8631 | 1.095 | 1.830 | 0.967 |
| 14-May-98 | 6.5 | 81 | 0.8740 | 1.145 | 1.869 | 0.968 |
| 26-Oct-98 | 6.5 | 82 | 0.8848 | 1.199 | 1.875 | 0.969 |
| 16-Apr-97 | 6.8 | 83 | 0.8957 | 1.257 | 1.923 | 0.966 |
| 2-Jun-99 | 7.0 | 84 | 0.9065 | 1.320 | 1.949 | 0.963 |
| 25-Nov-98 | 7.3 | 85 | 0.9173 | 1.387 | 1.984 | 0.956 |
| 17-Jan-96 | 7.4 | 86 | 0.9282 | 1.462 | 2.001 | 0.945 |
| 29-Feb-96 | 9.0 | 87 | 0.9390 | 1.547 | 2.193 | 0.945 |
| 22-Mar-95 | 11.1 | 88 | 0.9499 | 1.644 | 2.409 | 0.930 |
| 15-Dec-98 | 11.1 | 89 | 0.9607 | 1.759 | 2.410 | 0.911 |
| 14-Nov-98 | 13.6 | 90 | 0.9715 | 1.904 | 2.608 | 0.863 |
| 26-Mar-97 | 19.4 | 91 | 0.9824 | 2.106 | 2.964 | |
| 15-Jun-99 | 22.7 | 92 | 0.9932 | 2.469 | 3.123 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| tCd | | CC287/288 | 20 | 19.9 |
| LN Analysis | | tCd | 0.47 | 0.467 |

**Concentration** — Conc. Data, EV=19.9 ug/L CV=0.467

| | | Data-based LN | | |
|---|---|---|---|---|
| Avg: | 20 | u | ln[tCd] | [tCd] |
| SD: | 9 | 3 | 4.2 | 69 |
| CV: | 0.47 | 0 | 2.89 | 18 |
| Min: | 4 | -3 | 1.56 | 5 |
| Max: | 52 | | | |
| Median: | 19 | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.186 | 0.186 |
| u=mLn{Conc.}+b: | | | | 40.6 | 40.6 |
| update for r2, EV, CV: | r2=0.186, EV=40.6 ug/L CV=2.09; max r2=0.999 | | | 2.091 | 2.09 |
| r2 u,lnConc: | 0.186 | u | lnConc. | Conc. | |
| slope, m: | 0.771 | 3 | 6.75 | 857 | |
| intercept, b: | -2.208 | 0 | 2.86 | 18 | |
| N: 92 | | -3 | -1.03 | 0 | |
| E[Conc]: | 40.6 | Parameter Estimates | | | |
| SD[Conc]: | 85 | from LN regression | | | |
| CV[Conc]: | 2.09 | update graph label | | | |

| | tCd | N: 92 | | | | max r2 0.999 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 24-Jun-97 | 5 | 1 | 0.0068 | -2.469 | 1.609 | 0.186 |
| 14-May-98 | 5.1 | 2 | 0.0176 | -2.106 | 1.629 | 0.154 |
| 19-Jun-96 | 5.8 | 3 | 0.0285 | -1.904 | 1.758 | 0.127 |
| 13-Jun-95 | 6.8 | 4 | 0.0393 | -1.759 | 1.917 | 0.103 |
| 19-May-94 | 7.7 | 5 | 0.0501 | -1.644 | 2.041 | 0.084 |
| 4-May-94 | 8.2 | 6 | 0.0610 | -1.547 | 2.104 | 0.068 |
| 27-Jun-95 | 8.4 | 7 | 0.0718 | -1.462 | 2.128 | 0.055 |
| 26-Jun-98 | 9.8 | 8 | 0.0827 | -1.387 | 2.282 | 0.042 |
| 23-Jul-97 | 10 | 9 | 0.0935 | -1.320 | 2.303 | 0.033 |
| 7-Jun-94 | 12 | 10 | 0.1043 | -1.257 | 2.485 | 0.025 |
| 25-Apr-95 | 12 | 11 | 0.1152 | -1.199 | 2.485 | 0.020 |
| 11-Jul-95 | 12 | 12 | 0.1260 | -1.145 | 2.485 | 0.015 |
| 8-May-96 | 12 | 13 | 0.1369 | -1.095 | 2.485 | 0.011 |
| 21-Nov-95 | 13 | 14 | 0.1477 | -1.046 | 2.565 | 0.007 |
| 23-Jun-94 | 14 | 15 | 0.1585 | -1.000 | 2.639 | 0.005 |
| 25-Jul-95 | 14 | 16 | 0.1694 | -0.957 | 2.639 | 0.003 |
| 24-Jul-96 | 14 | 17 | 0.1802 | -0.915 | 2.639 | 0.002 |
| 12-Apr-95 | 15 | 18 | 0.1911 | -0.874 | 2.708 | 0.001 |
| 29-Feb-96 | 15 | 19 | 0.2019 | -0.835 | 2.708 | 0.000 |
| 14-Aug-97 | 15 | 20 | 0.2127 | -0.797 | 2.708 | 0.000 |
| 8-Mar-95 | 16 | 21 | 0.2236 | -0.760 | 2.773 | 0.000 |
| 28-Mar-96 | 16 | 22 | 0.2344 | -0.724 | 2.773 | 0.001 |
| 28-Jul-98 | 17 | 23 | 0.2453 | -0.689 | 2.833 | 0.001 |
| 24-Sep-98 | 17 | 24 | 0.2561 | -0.655 | 2.833 | 0.002 |
| 9-Nov-97 | 17.8 | 25 | 0.2669 | -0.622 | 2.879 | 0.003 |
| 7-Apr-94 | 18 | 26 | 0.2778 | -0.589 | 2.890 | 0.004 |
| 25-Jul-94 | 18 | 27 | 0.2886 | -0.557 | 2.890 | 0.005 |
| 14-Aug-95 | 18 | 28 | 0.2995 | -0.526 | 2.890 | 0.006 |
| 27-Dec-95 | 18 | 29 | 0.3103 | -0.495 | 2.890 | 0.007 |
| 26-Aug-98 | 18 | 30 | 0.3211 | -0.465 | 2.890 | 0.009 |
| 26-Oct-98 | 18 | 31 | 0.3320 | -0.434 | 2.890 | 0.010 |
| 16-Aug-94 | 19 | 32 | 0.3428 | -0.405 | 2.944 | 0.012 |
| 16-Aug-94 | 19 | 33 | 0.3537 | -0.375 | 2.944 | 0.013 |
| 9-Feb-95 | 19 | 34 | 0.3645 | -0.346 | 2.944 | 0.015 |
| 4-Sep-97 | 19 | 35 | 0.3753 | -0.318 | 2.944 | 0.017 |
| 26-Nov-97 | 19 | 36 | 0.3862 | -0.289 | 2.944 | 0.019 |
| 1-Oct-98 | 19 | 37 | 0.3970 | -0.261 | 2.944 | 0.021 |
| 13-Sep-95 | 20 | 38 | 0.4079 | -0.233 | 2.996 | 0.023 |
| 8-Oct-98 | 20 | 39 | 0.4187 | -0.205 | 2.996 | 0.024 |
| 5-Oct-91 | 20.8 | 40 | 0.4295 | -0.178 | 3.035 | 0.026 |
| 13-Sep-94 | 21 | 41 | 0.4404 | -0.150 | 3.045 | 0.028 |
| 16-Oct-94 | 21 | 42 | 0.4512 | -0.123 | 3.045 | 0.029 |
| 18-Oct-95 | 21 | 43 | 0.4621 | -0.095 | 3.045 | 0.030 |
| 20-Mar-98 | 21 | 44 | 0.4729 | -0.068 | 3.045 | 0.031 |
| 27-Oct-93 | 22 | 45 | 0.4837 | -0.041 | 3.091 | 0.033 |
| 30-Nov-93 | 22 | 46 | 0.4946 | -0.014 | 3.091 | 0.034 |
| 16-Oct-97 | 22 | 47 | 0.5054 | 0.014 | 3.091 | 0.034 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 26-Sep-96 | 23 | 48 | 0.5163 | 0.041 | 3.135 | 0.035 |
| 16-Apr-97 | 23 | 49 | 0.5271 | 0.068 | 3.135 | 0.035 |
| 22-Mar-95 | 24 | 50 | 0.5379 | 0.095 | 3.178 | 0.035 |
| 21-Aug-96 | 24 | 51 | 0.5488 | 0.123 | 3.178 | 0.034 |
| 30-Jan-97 | 25 | 52 | 0.5596 | 0.150 | 3.219 | 0.033 |
| 26-Mar-97 | 25 | 53 | 0.5705 | 0.178 | 3.219 | 0.031 |
| 22-Jan-98 | 25 | 54 | 0.5813 | 0.205 | 3.219 | 0.030 |
| 26-Feb-98 | 25 | 55 | 0.5921 | 0.233 | 3.219 | 0.028 |
| 15-Jan-99 | 25 | 56 | 0.6030 | 0.261 | 3.219 | 0.026 |
| 8-Mar-94 | 26 | 57 | 0.6138 | 0.289 | 3.258 | 0.024 |
| 24-Mar-94 | 26 | 58 | 0.6247 | 0.318 | 3.258 | 0.021 |
| 19-Dec-97 | 26 | 59 | 0.6355 | 0.346 | 3.258 | 0.018 |
| 17-Jan-96 | 27 | 60 | 0.6463 | 0.375 | 3.296 | 0.016 |
| 21-Feb-97 | 27 | 61 | 0.6572 | 0.405 | 3.296 | 0.013 |
| 29-Oct-96 | 28 | 62 | 0.6680 | 0.434 | 3.332 | 0.010 |
| 8-Mar-99 | 28 | 63 | 0.6789 | 0.465 | 3.332 | 0.006 |
| 27-Nov-96 | 29 | 64 | 0.6897 | 0.495 | 3.367 | 0.004 |
| 18-Feb-94 | 30 | 65 | 0.7005 | 0.526 | 3.401 | 0.001 |
| 23-Feb-99 | 30 | 66 | 0.7114 | 0.557 | 3.401 | 0.000 |
| 16-Nov-94 | 32 | 67 | 0.7222 | 0.589 | 3.466 | 0.000 |
| 17-Dec-93 | 33 | 68 | 0.7331 | 0.622 | 3.497 | 0.003 |
| 17-Dec-93 | 33 | 69 | 0.7439 | 0.655 | 3.497 | 0.011 |
| 20-Jan-94 | 38 | 70 | 0.7547 | 0.689 | 3.638 | 0.024 |
| 20-Jan-94 | 38 | 71 | 0.7656 | 0.724 | 3.638 | 0.050 |
| 13-Dec-94 | 38 | 72 | 0.7764 | 0.760 | 3.638 | 0.093 |
| 10-Jan-95 | 39 | 73 | 0.7873 | 0.797 | 3.664 | 0.160 |
| 13-Dec-96 | 39 | 74 | 0.7981 | 0.835 | 3.664 | 0.269 |
| 25-Nov-98 | 52 | 75 | 0.8089 | 0.874 | 3.951 | 0.441 |
| 15-Jun-99 | 4 | 76 | 0.8198 | 0.915 | 1.386 | 0.842 |
| 27-May-99 | 5 | 77 | 0.8306 | 0.957 | 1.609 | 0.833 |
| 2-Jun-99 | 5 | 78 | 0.8415 | 1.000 | 1.609 | 0.817 |
| 14-May-98 | 5.2 | 79 | 0.8523 | 1.046 | 1.649 | 0.806 |
| 8-Jul-99 | 5.4 | 80 | 0.8631 | 1.095 | 1.686 | 0.810 |
| 5-May-99 | 9 | 81 | 0.8740 | 1.145 | 2.197 | 0.881 |
| 24-May-99 | 11 | 82 | 0.8848 | 1.199 | 2.398 | 0.889 |
| 5-Aug-99 | 12.6 | 83 | 0.8957 | 1.257 | 2.534 | 0.884 |
| 19-Apr-99 | 15 | 84 | 0.9065 | 1.320 | 2.708 | 0.871 |
| 30-Aug-99 | 15 | 85 | 0.9173 | 1.387 | 2.708 | 0.844 |
| 26-Oct-98 | 18 | 86 | 0.9282 | 1.462 | 2.890 | 0.814 |
| 9-Nov-97 | 18.2 | 87 | 0.9390 | 1.547 | 2.901 | 0.763 |
| 26-Oct-98 | 19 | 88 | 0.9499 | 1.644 | 2.944 | 0.680 |
| 23-Mar-99 | 26 | 89 | 0.9607 | 1.759 | 3.258 | 0.766 |
| 15-Dec-98 | 31 | 90 | 0.9715 | 1.904 | 3.434 | 0.999 |
| 28-Dec-98 | 32 | 91 | 0.9824 | 2.106 | 3.466 | |
| 14-Nov-98 | 34.2 | 92 | 0.9932 | 2.469 | 3.532 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **CC287/288** | | | 55 | 55.2 |
| **LN Analysis** | | **tCd** | | | 1.20 | 1.2 |
| **Discharge, Q** | | **Q Data, EV=55.2 cfs CV=1.2** | | | | |
| **Avg:** | 55 | **Q Data-based LN** | | | | |
| **SD:** | 66 | u | lnQ | Q | | |
| **CV:** | 1.20 | 3 | 6.4 | 599 | | |
| **Min:** | 11 | 0 | 3.57 | 35 | | |
| **Max:** | 384 | -3 | 0.74 | 2 | | |
| **Median:** | 29 | | | | | |
| | | | | | 0.683 | 0.683 |
| | | | | | 62.4 | 62.4 |
| | **u=mLn(Q)+b:** | | | | 1.45 | 1.45 |

update for r2, EV, CV: **r2=0.683, EV=62.4 cfs CV=1.45; max r2=0.895**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.683 | u | lnQ | Q |
| slope, m: | 0.938 | 3 | 6.76 | 865 |
| intercept, b: | -3.345 | 0 | 3.57 | 35 |
| N: 92 | | -3 | 0.37 | 1 |
| E[Q]: | 62.4 | Parameter Estimates | | |
| SD[Q]: | 91 | from LN regression | | |
| CV[Q]: | 1.45 | update graph label | | |

N: 92

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.895 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 11.4 | 1 | 0.0068 | -2.469 | 2.434 | 0.683 |
| 18-Feb-94 | 11.41 | 2 | 0.0176 | -2.106 | 2.434 | 0.684 |
| 17-Dec-93 | 11.7 | 3 | 0.0285 | -1.904 | 2.460 | 0.681 |
| 17-Dec-93 | 12.03 | 4 | 0.0393 | -1.759 | 2.487 | 0.677 |
| 14-Aug-95 | 12.6 | 5 | 0.0501 | -1.644 | 2.534 | 0.672 |
| 30-Nov-93 | 12.62 | 6 | 0.0610 | -1.547 | 2.535 | 0.667 |
| 27-Oct-93 | 13.28 | 7 | 0.0718 | -1.462 | 2.586 | 0.661 |
| 20-Jan-94 | 13.28 | 8 | 0.0827 | -1.387 | 2.586 | 0.655 |
| 16-Aug-94 | 13.57 | 9 | 0.0935 | -1.320 | 2.608 | 0.649 |
| 16-Oct-94 | 14.34 | 10 | 0.1043 | -1.257 | 2.663 | 0.642 |
| 5-Oct-91 | 14.5 | 11 | 0.1152 | -1.199 | 2.674 | 0.636 |
| 20-Jan-94 | 14.66 | 12 | 0.1260 | -1.145 | 2.685 | 0.630 |
| 25-Jul-95 | 14.71 | 13 | 0.1369 | -1.095 | 2.689 | 0.623 |
| 13-Sep-94 | 15.89 | 14 | 0.1477 | -1.046 | 2.766 | 0.615 |
| 16-Nov-94 | 15.89 | 15 | 0.1585 | -1.000 | 2.766 | 0.609 |
| 8-Oct-98 | 15.9 | 16 | 0.1694 | -0.957 | 2.766 | 0.602 |
| 16-Aug-94 | 16.3 | 17 | 0.1802 | -0.915 | 2.791 | 0.594 |
| 1-Oct-98 | 16.7 | 18 | 0.1911 | -0.874 | 2.815 | 0.586 |
| 26-Oct-98 | 16.7 | 19 | 0.2019 | -0.835 | 2.815 | 0.578 |
| 13-Dec-94 | 17.17 | 20 | 0.2127 | -0.797 | 2.843 | 0.569 |
| 24-Sep-98 | 17.2 | 21 | 0.2236 | -0.760 | 2.845 | 0.561 |
| 22-Jan-98 | 18.1 | 22 | 0.2344 | -0.724 | 2.896 | 0.552 |
| 25-Jul-94 | 19.04 | 23 | 0.2453 | -0.689 | 2.947 | 0.543 |
| 26-Sep-96 | 19.5 | 24 | 0.2561 | -0.655 | 2.970 | 0.534 |
| 26-Aug-98 | 19.5 | 25 | 0.2669 | -0.622 | 2.970 | 0.526 |
| 23-Feb-99 | 20 | 26 | 0.2778 | -0.589 | 2.996 | 0.517 |
| 11-Jul-95 | 20.05 | 27 | 0.2886 | -0.557 | 2.998 | 0.507 |
| 24-Mar-94 | 21.13 | 28 | 0.2995 | -0.526 | 3.051 | 0.498 |
| 27-Nov-96 | 21.7 | 29 | 0.3103 | -0.495 | 3.077 | 0.488 |
| 8-Mar-94 | 22.26 | 30 | 0.3211 | -0.465 | 3.103 | 0.479 |
| 26-Feb-98 | 22.3 | 31 | 0.3320 | -0.434 | 3.105 | 0.469 |
| 8-Mar-99 | 23 | 32 | 0.3428 | -0.405 | 3.135 | 0.459 |
| 21-Aug-96 | 23.342375 | 33 | 0.3537 | -0.375 | 3.150 | 0.449 |
| 29-Oct-96 | 23.5 | 34 | 0.3645 | -0.346 | 3.157 | 0.439 |
| 19-Dec-97 | 24.1 | 35 | 0.3753 | -0.318 | 3.182 | 0.428 |
| 28-Jul-98 | 24.7 | 36 | 0.3862 | -0.289 | 3.207 | 0.417 |
| 16-Oct-97 | 25.4 | 37 | 0.3970 | -0.261 | 3.235 | 0.406 |
| 25-Nov-98 | 26 | 38 | 0.4079 | -0.233 | 3.258 | 0.395 |
| 10-Jan-95 | 28.21 | 39 | 0.4187 | -0.205 | 3.340 | 0.383 |
| 23-Jun-94 | 28.96 | 40 | 0.4295 | -0.178 | 3.366 | 0.373 |
| 13-Dec-96 | 29.7 | 41 | 0.4404 | -0.150 | 3.391 | 0.363 |
| 26-Nov-97 | 29.7 | 42 | 0.4512 | -0.123 | 3.391 | 0.353 |
| 18-Oct-95 | 31.4 | 43 | 0.4621 | -0.095 | 3.447 | 0.343 |
| 30-Jan-97 | 31.4 | 44 | 0.4729 | -0.068 | 3.447 | 0.333 |
| 9-Nov-97 | 32.7 | 45 | 0.4837 | -0.041 | 3.487 | 0.322 |
| 15-Jan-99 | 33 | 46 | 0.4946 | -0.014 | 3.497 | 0.312 |
| 20-Mar-98 | 33.1 | 47 | 0.5054 | 0.014 | 3.500 | 0.301 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4-Sep-97 | 34 | 48 | 0.5163 | 0.041 | 3.526 | 0.290 |
| 27-Jun-95 | 34.9 | 49 | 0.5271 | 0.068 | 3.552 | 0.279 |
| 24-Jul-96 | 35.8 | 50 | 0.5379 | 0.095 | 3.578 | 0.268 |
| 8-Mar-95 | 36.82 | 51 | 0.5488 | 0.123 | 3.606 | 0.257 |
| 14-Aug-97 | 37.8 | 52 | 0.5596 | 0.150 | 3.632 | 0.246 |
| 7-Apr-94 | 37.82 | 53 | 0.5705 | 0.178 | 3.633 | 0.235 |
| 21-Feb-97 | 38.9 | 54 | 0.5813 | 0.205 | 3.661 | 0.223 |
| 27-Dec-95 | 42.1 | 55 | 0.5921 | 0.233 | 3.740 | 0.212 |
| 12-Apr-95 | 42.13 | 56 | 0.6030 | 0.261 | 3.741 | 0.202 |
| 25-Apr-95 | 43 | 57 | 0.6138 | 0.289 | 3.761 | 0.191 |
| 9-Feb-95 | 43.28 | 58 | 0.6247 | 0.318 | 3.768 | 0.180 |
| 17-Jan-96 | 50.9 | 59 | 0.6355 | 0.346 | 3.930 | 0.169 |
| 16-Apr-97 | 55.3 | 60 | 0.6463 | 0.375 | 4.013 | 0.162 |
| 7-Jun-94 | 63.45 | 61 | 0.6572 | 0.405 | 4.150 | 0.157 |
| 26-Jun-98 | 63.5 | 62 | 0.6680 | 0.434 | 4.151 | 0.157 |
| 28-Mar-96 | 65.2 | 63 | 0.6789 | 0.465 | 4.177 | 0.156 |
| 21-Nov-95 | 81.5 | 64 | 0.6897 | 0.495 | 4.401 | 0.156 |
| 8-May-96 | 81.5 | 65 | 0.7005 | 0.526 | 4.401 | 0.164 |
| 22-Mar-95 | 86.16 | 66 | 0.7114 | 0.557 | 4.456 | 0.173 |
| 13-Jun-95 | 96.41 | 67 | 0.7222 | 0.589 | 4.569 | 0.185 |
| 19-May-94 | 102.01 | 68 | 0.7331 | 0.622 | 4.625 | 0.204 |
| 29-Feb-96 | 111 | 69 | 0.7439 | 0.655 | 4.710 | 0.229 |
| 23-Jul-97 | 111 | 70 | 0.7547 | 0.689 | 4.710 | 0.263 |
| 4-May-94 | 111.05 | 71 | 0.7656 | 0.724 | 4.710 | 0.303 |
| 24-Jun-97 | 124 | 72 | 0.7764 | 0.760 | 4.820 | 0.350 |
| 26-Mar-97 | 144 | 73 | 0.7873 | 0.797 | 4.970 | 0.416 |
| 19-Jun-96 | 148 | 74 | 0.7981 | 0.835 | 4.997 | 0.513 |
| 14-May-98 | 206 | 75 | 0.8089 | 0.874 | 5.328 | 0.640 |
| 26-Oct-98 | 13 | 76 | 0.8198 | 0.915 | 2.565 | 0.867 |
| 26-Oct-98 | 13 | 77 | 0.8306 | 0.957 | 2.565 | 0.856 |
| 30-Aug-99 | 22 | 78 | 0.8415 | 1.000 | 3.091 | 0.849 |
| 14-Nov-98 | 22.53 | 79 | 0.8523 | 1.046 | 3.115 | 0.832 |
| 15-Dec-98 | 25 | 80 | 0.8631 | 1.095 | 3.219 | 0.813 |
| 28-Dec-98 | 27 | 81 | 0.8740 | 1.145 | 3.296 | 0.793 |
| 5-Aug-99 | 34 | 82 | 0.8848 | 1.199 | 3.526 | 0.776 |
| 9-Nov-97 | 36.6 | 83 | 0.8957 | 1.257 | 3.600 | 0.763 |
| 5-May-99 | 84 | 84 | 0.9065 | 1.320 | 4.431 | 0.833 |
| 23-Mar-99 | 97 | 85 | 0.9173 | 1.387 | 4.575 | 0.805 |
| 8-Jul-99 | 107 | 86 | 0.9282 | 1.462 | 4.673 | 0.768 |
| 19-Apr-99 | 138 | 87 | 0.9390 | 1.547 | 4.927 | 0.764 |
| 14-May-98 | 233 | 88 | 0.9499 | 1.644 | 5.451 | 0.895 |
| 2-Jun-99 | 241 | 89 | 0.9607 | 1.759 | 5.485 | 0.895 |
| 27-May-99 | 261 | 90 | 0.9715 | 1.904 | 5.565 | 0.887 |
| 15-Jun-99 | 263 | 91 | 0.9824 | 2.106 | 5.572 | |
| 24-May-99 | 384 | 92 | 0.9932 | 2.469 | 5.951 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC287/288 **Date:** 2-Jun-00
**Chemical:** tPb **Analyst:** J.Johnston
**Notes:** Template and Example Lognormal Analysis
**Input Discharge and Concentration Data below (in red**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,353 | 55 | 135 | 80 | 0.00 | 0.00 | 0.00 |
| **SD:** | 702 | 66 | 233 | 428 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.20 | 1.73 | 5.32 | | | |
| **Min:** | 33,516 | 11 | 0 | 0.1 | -0.66 | -0.58 | -0.19 |
| **Max:** | 36,402 | 384 | 2,000 | 4,132 | 5.00 | 7.99 | 9.47 |
| **Median:** | 35,396 | 29 | 61 | 11 | -0.39 | -0.32 | -0.16 |

tPb CC287/288 : Concentration v. Discharge, Q

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.241)** | update r2 | 0.24 | 0.241 | | **Q = mTime +b** | | **LnQ = mTime +b** |
| r2 Q,[COC]: | 0.24 | [tPb] | Q | | r2: | 0.105 | 0.103 |
| slope, m: | 1.7 | 59 | 11.4 | | m: | 0.0304 | 0.00039 |
| intercept, b: | 39.4 | 135 | 54.8 | | b: | -1019 | -10.40 |
| N: 93 | | 708 | 384 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.0171)** | | update r2 | 0.02 | 0.0171 | | | |
| r2 lnQ,ln[COC]: | 0.017 | ln[tPb] | ln Q | [tPb] | Q | | |
| slope, m: | 0.16 | 4.18 | 2.43 | 65 | 11 | | |
| intercept, b: | 3.79 | 4.43 | 4.00 | 84 | 55 | | |
| N: 93 | | 4.74 | 5.95 | 114 | 384 | | |

N= 93

| update for new data | Sampling Date | Q Discharge cfs | tPb Concentration ug/L | tPb Load lbs/day | Ln Q | Ln tPb Conc. | Ln tPb Load | for graph 0 tPb CC287/288 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 5-Oct-91 | 14.5 | 55 | 4.3 | 2.67 | 4.01 | 1.46 | -0.61 | -0.34 | -0.18 |
| IDEQ | 27-Oct-93 | 13.28 | 56 | 4.0 | 2.59 | 4.03 | 1.39 | -0.63 | -0.34 | -0.18 |
| IDEQ | 30-Nov-93 | 12.62 | 62 | 4.2 | 2.54 | 4.13 | 1.44 | -0.64 | -0.31 | -0.18 |
| IDEQ | 17-Dec-93 | 11.7 | 56 | 3.5 | 2.46 | 4.03 | 1.26 | -0.65 | -0.34 | -0.18 |
| IDEQ | 17-Dec-93 | 12.03 | 56 | 3.6 | 2.49 | 4.03 | 1.29 | -0.65 | -0.34 | -0.18 |
| IDEQ | 20-Jan-94 | 13.28 | 59 | 4.2 | 2.59 | 4.08 | 1.44 | -0.63 | -0.32 | -0.18 |
| IDEQ | 20-Jan-94 | 14.66 | 59 | 4.7 | 2.69 | 4.08 | 1.54 | -0.61 | -0.32 | -0.18 |
| IDEQ | 18-Feb-94 | 11.41 | 52 | 3.2 | 2.43 | 3.95 | 1.16 | -0.66 | -0.35 | -0.18 |
| IDEQ | 8-Mar-94 | 22.26 | 55 | 6.6 | 3.10 | 4.01 | 1.89 | -0.49 | -0.34 | -0.17 |
| IDEQ | 24-Mar-94 | 21.13 | 53 | 6.0 | 3.05 | 3.97 | 1.80 | -0.51 | -0.35 | -0.17 |
| IDEQ | 7-Apr-94 | 37.82 | 47 | 9.6 | 3.63 | 3.85 | 2.26 | -0.26 | -0.38 | -0.17 |
| IDEQ | 4-May-94 | 111.05 | 42 | 25.1 | 4.71 | 3.74 | 3.22 | 0.85 | -0.40 | -0.13 |
| IDEQ | 19-May-94 | 102.01 | 34 | 18.7 | 4.63 | 3.53 | 2.93 | 0.72 | -0.43 | -0.14 |
| IDEQ | 7-Jun-94 | 63.45 | 39 | 13.3 | 4.15 | 3.66 | 2.59 | 0.13 | -0.41 | -0.16 |
| IDEQ | 23-Jun-94 | 28.96 | 49 | 7.6 | 3.37 | 3.89 | 2.03 | -0.39 | -0.37 | -0.17 |
| IDEQ | 25-Jul-94 | 19.04 | 55 | 5.6 | 2.95 | 4.01 | 1.73 | -0.54 | -0.34 | -0.17 |
| IDEQ | 16-Aug-94 | 16.3 | 62 | 5.4 | 2.79 | 4.13 | 1.69 | -0.58 | -0.31 | -0.18 |
| IDEQ | 16-Aug-94 | 13.57 | 62 | 4.5 | 2.61 | 4.13 | 1.51 | -0.63 | -0.31 | -0.18 |
| IDEQ | 13-Sep-94 | 15.89 | 53 | 4.5 | 2.77 | 3.97 | 1.51 | -0.59 | -0.35 | -0.18 |
| IDEQ | 16-Oct-94 | 14.34 | 50 | 3.9 | 2.66 | 3.91 | 1.35 | -0.61 | -0.36 | -0.18 |
| IDEQ | 16-Nov-94 | 15.89 | 59 | 5.0 | 2.77 | 4.08 | 1.62 | -0.59 | -0.32 | -0.18 |
| IDEQ | 13-Dec-94 | 17.17 | 54 | 5.0 | 2.84 | 3.99 | 1.61 | -0.57 | -0.35 | -0.18 |
| IDEQ | 10-Jan-95 | 28.21 | 137 | 20.8 | 3.34 | 4.92 | 3.03 | -0.40 | 0.01 | -0.14 |
| IDEQ | 9-Feb-95 | 43.28 | 44 | 10.2 | 3.77 | 3.78 | 2.33 | -0.18 | -0.39 | -0.16 |
| IDEQ | 8-Mar-95 | 36.82 | 31 | 6.1 | 3.61 | 3.43 | 1.81 | -0.27 | -0.44 | -0.17 |
| IDEQ | 22-Mar-95 | 86.16 | 66 | 30.6 | 4.46 | 4.19 | 3.42 | 0.48 | -0.29 | -0.12 |
| IDEQ | 12-Apr-95 | 42.13 | 46 | 10.4 | 3.74 | 3.83 | 2.34 | -0.19 | -0.38 | -0.16 |
| IDEQ | 25-Apr-95 | 43 | 36 | 8.3 | 3.76 | 3.58 | 2.12 | -0.18 | -0.42 | -0.17 |
| IDEQ | 13-Jun-95 | 96.41 | 37 | 19.2 | 4.57 | 3.61 | 2.95 | 0.63 | -0.42 | -0.14 |
| IDEQ | 27-Jun-95 | 34.9 | 36 | 6.8 | 3.55 | 3.58 | 1.91 | -0.30 | -0.42 | -0.17 |
| IDEQ | 11-Jul-95 | 20.05 | 44 | 4.7 | 3.00 | 3.78 | 1.56 | -0.53 | -0.39 | -0.18 |
| IDEQ | 25-Jul-95 | 14.71 | 45 | 3.6 | 2.69 | 3.81 | 1.27 | -0.61 | -0.38 | -0.18 |
| IDEQ | 14-Aug-95 | 12.6 | 58 | 3.9 | 2.53 | 4.06 | 1.37 | -0.64 | -0.33 | -0.18 |
| IDEQ | 13-Sep-95 | 11.4 | 52 | 3.2 | 2.43 | 3.95 | 1.16 | -0.66 | -0.35 | -0.18 |
| IDEQ | 18-Oct-95 | 31.4 | 424 | 71.6 | 3.45 | 6.05 | 4.27 | -0.36 | 1.24 | -0.02 |
| IDEQ | 21-Nov-95 | 81.5 | 680 | 298.2 | 4.40 | 6.52 | 5.70 | 0.40 | 2.33 | 0.51 |
| IDEQ | 27-Dec-95 | 42.1 | 108 | 24.5 | 3.74 | 4.68 | 3.20 | -0.19 | -0.12 | -0.13 |
| IDEQ | 17-Jan-96 | 50.9 | 254 | 69.6 | 3.93 | 5.54 | 4.24 | -0.06 | 0.51 | -0.03 |
| IDEQ | 29-Feb-96 | 111 | 282 | 168.4 | 4.71 | 5.64 | 5.13 | 0.85 | 0.63 | 0.21 |
| IDEQ | 28-Mar-96 | 65.2 | 98 | 34.4 | 4.18 | 4.58 | 3.54 | 0.16 | -0.16 | -0.11 |
| IDEQ | 8-May-96 | 81.5 | 219 | 96.0 | 4.40 | 5.39 | 4.56 | 0.40 | 0.36 | 0.04 |
| IDEQ | 19-Jun-96 | 148 | 74 | 58.9 | 5.00 | 4.30 | 4.08 | 1.41 | -0.26 | -0.05 |
| IDEQ | 24-Jul-96 | 35.8 | 132 | 25.4 | 3.58 | 4.88 | 3.24 | -0.29 | -0.01 | -0.13 |
| IDEQ | 21-Aug-96 | 23.342375 | 314 | 39.4 | 3.15 | 5.75 | 3.67 | -0.48 | 0.77 | -0.10 |
| IDEQ | 26-Sep-96 | 19.5 | 588 | 61.7 | 2.97 | 6.38 | 4.12 | -0.54 | 1.94 | -0.04 |
| IDEQ | 29-Oct-96 | 23.5 | 408 | 51.6 | 3.16 | 6.01 | 3.94 | -0.48 | 1.17 | -0.07 |
| IDEQ | 27-Nov-96 | 21.7 | 76 | 8.9 | 3.08 | 4.33 | 2.18 | -0.50 | -0.25 | -0.17 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 13-Dec-96 | 29.7 | 100 | 16.0 | 3.39 | 4.61 | 2.77 | -0.38 | -0.15 | -0.15 |
| IDEQ | 30-Jan-97 | 31.4 | 71 | 12.0 | 3.45 | 4.26 | 2.48 | -0.36 | -0.27 | -0.16 |
| IDEQ | 21-Feb-97 | 38.9 | 91 | 19.0 | 3.66 | 4.51 | 2.95 | -0.24 | -0.19 | -0.14 |
| IDEQ | 26-Mar-97 | 144 | 0.12 | 0.1 | 4.97 | -2.12 | -2.38 | 1.35 | -0.58 | -0.19 |
| IDEQ | 16-Apr-97 | 55.3 | 112 | 33.3 | 4.01 | 4.72 | 3.51 | 0.01 | -0.10 | -0.11 |
| IDEQ | 24-Jun-97 | 124 | 46 | 30.7 | 4.82 | 3.83 | 3.42 | 1.05 | -0.38 | -0.12 |
| IDEQ | 23-Jul-97 | 111 | 564 | 336.8 | 4.71 | 6.34 | 5.82 | 0.85 | 1.84 | 0.60 |
| IDEQ | 14-Aug-97 | 37.8 | 94 | 19.1 | 3.63 | 4.54 | 2.95 | -0.26 | -0.18 | -0.14 |
| IDEQ | 4-Sep-97 | 34 | 325 | 59.4 | 3.53 | 5.78 | 4.09 | -0.32 | 0.81 | -0.05 |
| IDEQ | 16-Oct-97 | 25.4 | 438 | 59.9 | 3.23 | 6.08 | 4.09 | -0.45 | 1.30 | -0.05 |
| URS | 9-Nov-97 | 32.7 | 74.7 | 13.1 | 3.49 | 4.31 | 2.58 | -0.34 | -0.26 | -0.16 |
| IDEQ | 26-Nov-97 | 29.7 | 124 | 19.8 | 3.39 | 4.82 | 2.99 | -0.38 | -0.05 | -0.14 |
| IDEQ | 19-Dec-97 | 24.1 | 288 | 37.3 | 3.18 | 5.66 | 3.62 | -0.47 | 0.66 | -0.10 |
| IDEQ | 22-Jan-98 | 18.1 | 84 | 8.2 | 2.90 | 4.43 | 2.10 | -0.56 | -0.22 | -0.17 |
| IDEQ | 26-Feb-98 | 22.3 | 62 | 7.4 | 3.10 | 4.13 | 2.01 | -0.49 | -0.31 | -0.17 |
| IDEQ | 20-Mar-98 | 33.1 | 76 | 13.5 | 3.50 | 4.33 | 2.61 | -0.33 | -0.25 | -0.16 |
| URS | 14-May-98 | 206 | 48.8 | 54.1 | 5.33 | 3.89 | 3.99 | 2.29 | -0.37 | -0.06 |
| IDEQ | 26-Jun-98 | 63.5 | 56 | 19.1 | 4.15 | 4.03 | 2.95 | 0.13 | -0.34 | -0.14 |
| IDEQ | 28-Jul-98 | 24.7 | 62 | 8.2 | 3.21 | 4.13 | 2.11 | -0.46 | -0.31 | -0.17 |
| IDEQ | 26-Aug-98 | 19.5 | 59 | 6.2 | 2.97 | 4.08 | 1.82 | -0.54 | -0.32 | -0.17 |
| IDEQ | 24-Sep-98 | 17.2 | 66 | 6.1 | 2.84 | 4.19 | 1.81 | -0.57 | -0.29 | -0.17 |
| IDEQ | 1-Oct-98 | 16.7 | 64 | 5.8 | 2.82 | 4.16 | 1.75 | -0.58 | -0.30 | -0.17 |
| IDEQ | 8-Oct-98 | 15.9 | 61 | 5.2 | 2.77 | 4.11 | 1.65 | -0.59 | -0.32 | -0.18 |
| IDEQ | 26-Oct-98 | 16.7 | 47 | 4.2 | 2.82 | 3.85 | 1.44 | -0.58 | -0.38 | -0.18 |
| IDEQ | 25-Nov-98 | 26 | 97 | 13.6 | 3.26 | 4.57 | 2.61 | -0.44 | -0.16 | -0.16 |
| IDEQ | 15-Jan-99 | 33 | 68 | 12.1 | 3.50 | 4.22 | 2.49 | -0.33 | -0.29 | -0.16 |
| IDEQ | 23-Feb-99 | 20 | 46 | 4.9 | 3.00 | 3.83 | 1.60 | -0.53 | -0.38 | -0.18 |
| IDEQ | 8-Mar-99 | 23 | 46 | 5.7 | 3.14 | 3.83 | 1.74 | -0.48 | -0.38 | -0.17 |
| URS | 9-Nov-97 | 36.6 | 77.5 | 15.3 | 3.60 | 4.35 | 2.73 | -0.28 | -0.25 | -0.15 |
| URS | 14-May-98 | 233 | 51.1 | 64.1 | 5.45 | 3.93 | 4.16 | 2.70 | -0.36 | -0.04 |
| USGS | 26-Oct-98 | 13 | 42 | 2.9 | 2.56 | 3.74 | 1.08 | -0.63 | -0.40 | -0.18 |
| USGS | 26-Oct-98 | 13 | 43 | 3.0 | 2.56 | 3.76 | 1.10 | -0.63 | -0.39 | -0.18 |
| URS | 14-Nov-98 | 22.53 | 83.5 | 10.1 | 3.11 | 4.42 | 2.31 | -0.49 | -0.22 | -0.16 |
| USGS | 18-Nov-98 | 16 | 49 | 4.2 | 2.77 | 3.89 | 1.44 | -0.59 | -0.37 | -0.18 |
| USGS | 15-Dec-98 | 25 | 52 | 7.0 | 3.22 | 3.95 | 1.95 | -0.45 | -0.35 | -0.17 |
| USGS | 28-Dec-98 | 27 | 230 | 33.4 | 3.30 | 5.44 | 3.51 | -0.42 | 0.41 | -0.11 |
| USGS | 23-Mar-99 | 97 | 120 | 62.6 | 4.57 | 4.79 | 4.14 | 0.64 | -0.06 | -0.04 |
| USGS | 19-Apr-99 | 138 | 370 | 274.7 | 4.93 | 5.91 | 5.62 | 1.26 | 1.01 | 0.45 |
| USGS | 5-May-99 | 84 | 55 | 24.9 | 4.43 | 4.01 | 3.21 | 0.44 | -0.34 | -0.13 |
| USGS | 24-May-99 | 384 | 2000 | 4131.8 | 5.95 | 7.60 | 8.33 | 5.00 | 7.99 | 9.47 |
| USGS | 27-May-99 | 261 | 250 | 351.0 | 5.56 | 5.52 | 5.86 | 3.13 | 0.49 | 0.63 |
| USGS | 2-Jun-99 | 241 | 99 | 128.4 | 5.48 | 4.60 | 4.85 | 2.83 | -0.15 | 0.11 |
| USGS | 15-Jun-99 | 263 | 150 | 212.2 | 5.57 | 5.01 | 5.36 | 3.16 | 0.06 | 0.31 |
| USGS | 8-Jul-99 | 107 | 33.2 | 19.1 | 4.67 | 3.50 | 2.95 | 0.79 | -0.44 | -0.14 |
| USGS | 5-Aug-99 | 34 | 58.9 | 10.8 | 3.53 | 4.08 | 2.38 | -0.32 | -0.33 | -0.16 |
| USGS | 30-Aug-99 | 22 | 50.5 | 6.0 | 3.09 | 3.92 | 1.79 | -0.50 | -0.36 | -0.17 |

**tPb**

**Concentration over time analysis**

| | tPb | CC287/288 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.027** | **0.00025** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 5-Oct-91 | 3.90 | 50 | | |
| mid: | 27-Nov-96 | 4.37 | 79 | | |
| last: | 30-Aug-99 | 4.62 | 101 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.022** | **0.00075** |
| | 21-Feb-97 | 3.99 | 54 | | |
| | 30-Aug-99 | 4.68 | 107 | | |

**Load over time analysis**

| | tPb | CC287/288 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.097** | **0.00064** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 5-Oct-91 | 1.51 | 5 | | |
| mid: | 27-Nov-96 | 2.72 | 15 | | |
| last: | 30-Aug-99 | 3.36 | 29 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.027** | **0.00107** |
| | 21-Feb-97 | 2.38 | 11 | | |
| | 30-Aug-99 | 3.36 | 29 | | |

max r2: 0.086

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.027 | 0.00025 | -4.39 |
| 0.026 | 0.00025 | -4.55 |
| 0.025 | 0.00025 | -4.49 |
| 0.025 | 0.00025 | -4.52 |
| 0.024 | 0.00025 | -4.45 |
| 0.022 | 0.00025 | -4.37 |
| 0.022 | 0.00025 | -4.33 |
| 0.021 | 0.00024 | -4.29 |
| 0.019 | 0.00024 | -4.10 |
| 0.018 | 0.00024 | -3.95 |
| 0.017 | 0.00023 | -3.74 |
| 0.015 | 0.00022 | -3.36 |
| 0.012 | 0.00020 | -2.80 |
| 0.009 | 0.00018 | -1.91 |
| 0.007 | 0.00016 | -1.12 |
| 0.005 | 0.00014 | -0.59 |
| 0.004 | 0.00013 | -0.17 |
| 0.004 | 0.00012 | 0.12 |
| 0.003 | 0.00011 | 0.43 |
| 0.002 | 0.00010 | 1.04 |
| 0.001 | 0.00008 | 1.80 |
| 0.001 | 0.00006 | 2.35 |
| 0.000 | 0.00004 | 3.10 |
| 0.001 | 0.00006 | 2.24 |
| 0.000 | 0.00003 | 3.43 |
| 0.000 | -0.00003 | 5.42 |
| 0.000 | -0.00004 | 6.10 |
| 0.001 | -0.00009 | 7.64 |
| 0.003 | -0.00015 | 9.92 |
| 0.007 | -0.00022 | 12.32 |
| 0.012 | -0.00029 | 15.10 |
| 0.018 | -0.00037 | 17.75 |
| 0.025 | -0.00045 | 20.72 |
| 0.032 | -0.00052 | 23.36 |
| 0.042 | -0.00062 | 26.67 |
| 0.030 | -0.00053 | 23.65 |
| 0.016 | -0.00039 | 18.54 |
| 0.016 | -0.00041 | 19.12 |
| 0.010 | -0.00034 | 16.54 |
| 0.005 | -0.00024 | 13.13 |
| 0.005 | -0.00025 | 13.51 |
| 0.002 | -0.00017 | 10.41 |
| 0.003 | -0.00020 | 11.73 |
| 0.002 | -0.00017 | 10.47 |
| 0.000 | 0.00000 | 4.59 |
| 0.004 | 0.00028 | -5.61 |
| 0.016 | 0.00055 | -15.48 |

max r2: 0.145

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.097 | 0.00064 | -20.01 |
| 0.090 | 0.00064 | -19.93 |
| 0.084 | 0.00062 | -19.33 |
| 0.078 | 0.00061 | -18.74 |
| 0.071 | 0.00058 | -17.92 |
| 0.064 | 0.00056 | -17.05 |
| 0.057 | 0.00054 | -16.28 |
| 0.052 | 0.00052 | -15.54 |
| 0.044 | 0.00048 | -14.32 |
| 0.041 | 0.00047 | -13.83 |
| 0.037 | 0.00045 | -13.19 |
| 0.035 | 0.00045 | -13.06 |
| 0.038 | 0.00048 | -14.13 |
| 0.040 | 0.00050 | -14.90 |
| 0.040 | 0.00051 | -15.26 |
| 0.037 | 0.00050 | -14.86 |
| 0.033 | 0.00047 | -13.96 |
| 0.028 | 0.00044 | -12.91 |
| 0.022 | 0.00040 | -11.45 |
| 0.017 | 0.00036 | -9.85 |
| 0.012 | 0.00030 | -7.81 |
| 0.008 | 0.00025 | -6.04 |
| 0.005 | 0.00020 | -4.06 |
| 0.005 | 0.00021 | -4.50 |
| 0.004 | 0.00019 | -3.64 |
| 0.002 | 0.00013 | -1.68 |
| 0.003 | 0.00016 | -2.78 |
| 0.002 | 0.00013 | -1.69 |
| 0.001 | 0.00008 | 0.05 |
| 0.001 | 0.00008 | 0.04 |
| 0.000 | 0.00001 | 2.57 |
| 0.001 | -0.00009 | 6.35 |
| 0.004 | -0.00023 | 11.49 |
| 0.011 | -0.00039 | 17.10 |
| 0.023 | -0.00059 | 24.12 |
| 0.018 | -0.00053 | 22.07 |
| 0.007 | -0.00033 | 14.87 |
| 0.007 | -0.00034 | 15.40 |
| 0.003 | -0.00025 | 12.04 |
| 0.000 | -0.00005 | 4.70 |
| 0.000 | 0.00001 | 2.73 |
| 0.002 | 0.00020 | -4.01 |
| 0.005 | 0.00035 | -9.51 |
| 0.007 | 0.00041 | -11.84 |
| 0.011 | 0.00055 | -16.75 |
| 0.020 | 0.00077 | -24.74 |
| 0.031 | 0.00100 | -32.98 |

| | | | | | |
|---|---|---|---|---|---|
| 0.017 | 0.00060 | -17.07 | 0.027 | 0.00097 | -32.08 |
| 0.021 | 0.00070 | -20.75 | 0.028 | 0.00105 | -34.72 |
| 0.022 | 0.00075 | -22.49 | 0.027 | 0.00107 | -35.51 |
| 0.026 | 0.00085 | -26.31 | 0.030 | 0.00118 | -39.70 |
| 0.017 | -0.00046 | 21.07 | 0.001 | 0.00017 | -2.90 |
| 0.015 | -0.00047 | 21.39 | 0.002 | 0.00029 | -7.42 |
| 0.030 | -0.00068 | 28.91 | 0.003 | 0.00041 | -11.61 |
| 0.006 | -0.00031 | 15.60 | 0.025 | 0.00113 | -37.64 |
| 0.007 | -0.00033 | 16.35 | 0.028 | 0.00124 | -41.82 |
| 0.000 | 0.00000 | 4.40 | 0.048 | 0.00170 | -58.42 |
| 0.013 | 0.00047 | -12.66 | 0.074 | 0.00222 | -77.09 |
| 0.013 | 0.00049 | -13.37 | 0.076 | 0.00236 | -82.11 |
| 0.023 | 0.00069 | -20.39 | 0.086 | 0.00265 | -92.95 |
| 0.070 | 0.00123 | -40.11 | 0.115 | 0.00324 | -114.04 |
| 0.081 | 0.00140 | -46.16 | 0.109 | 0.00331 | -116.84 |
| 0.079 | 0.00146 | -48.32 | 0.100 | 0.00332 | -117.16 |
| 0.086 | 0.00160 | -53.49 | 0.103 | 0.00355 | -125.39 |
| 0.076 | 0.00155 | -51.71 | 0.136 | 0.00422 | -149.80 |
| 0.070 | 0.00153 | -50.77 | 0.145 | 0.00449 | -159.62 |
| 0.066 | 0.00152 | -50.41 | 0.138 | 0.00447 | -158.70 |
| 0.061 | 0.00148 | -49.16 | 0.127 | 0.00433 | -153.78 |
| 0.058 | 0.00147 | -48.58 | 0.117 | 0.00418 | -148.11 |
| 0.055 | 0.00144 | -47.62 | 0.107 | 0.00399 | -141.27 |
| 0.051 | 0.00140 | -46.09 | 0.095 | 0.00376 | -132.86 |

update for EV, CV:

tPb
LN Analysis
**Load**

CC287/288
tPb
**Load Data, EV=80.4 lbs/day CV=5.32**

| | | Load Data-based LN | | |
|---|---|---|---|---|
| Avg: | 80 | u | ln tPb Load | tPb Load |
| SD: | 428 | 3 | 8.2 | 3685 |
| CV: | 5.32 | 0 | 2.70 | 15 |
| Min: | 0.1 | -3 | -2.81 | 0.1 |
| Max: | 4,132 | | | |
| Median: | 11 | | | |

| | |
|---|---|
| 80 | 80.4 |
| 5.32 | 5.32 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.905, EV=48.6lbs/day CV=3.14; max r2=0.97**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.905 | u | lnLoad | Load | | |
| slope, m: | 0.647 | 3 | 7.33 | 1519 | | |
| intercept, b: | -1.741 | 0 | 2.69 | 15 | | |
| N: 93 | | -3 | -1.95 | 0.1 | | |
| E[Load]: | 48.6 | Parameter Estimates | | | 0.905 | 0.905 |
| SD[Load]: | 153 | from LN regression | | | 48.6 | 48.6 |
| CV[Load]: | 3.14 | update graph label | | | 3.1 | 3.14 |
| | | | | | max r2 | |
| | tPb | N: 93 | | | 0.966 | |

| Date | tPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 26-Mar-97 | 0.1 | 1 | 0.0067 | -2.473 | -2.376 | 0.905 |
| 26-Oct-98 | 2.9 | 2 | 0.0174 | -2.110 | 1.078 | 0.907 |
| 26-Oct-98 | 3.0 | 3 | 0.0282 | -1.909 | 1.101 | 0.915 |
| 13-Sep-95 | 3.2 | 4 | 0.0389 | -1.764 | 1.160 | 0.921 |
| 18-Feb-94 | 3.2 | 5 | 0.0496 | -1.649 | 1.161 | 0.926 |
| 17-Dec-93 | 3.5 | 6 | 0.0603 | -1.552 | 1.260 | 0.930 |
| 25-Jul-95 | 3.6 | 7 | 0.0710 | -1.468 | 1.270 | 0.934 |
| 17-Dec-93 | 3.6 | 8 | 0.0818 | -1.393 | 1.288 | 0.937 |
| 16-Oct-94 | 3.9 | 9 | 0.0925 | -1.326 | 1.350 | 0.940 |
| 14-Aug-95 | 3.9 | 10 | 0.1032 | -1.263 | 1.369 | 0.943 |
| 27-Oct-93 | 4.0 | 11 | 0.1139 | -1.206 | 1.387 | 0.946 |
| 30-Nov-93 | 4.2 | 12 | 0.1247 | -1.152 | 1.437 | 0.948 |
| 20-Jan-94 | 4.2 | 13 | 0.1354 | -1.101 | 1.439 | 0.951 |
| 18-Nov-98 | 4.2 | 14 | 0.1461 | -1.053 | 1.439 | 0.953 |
| 26-Oct-98 | 4.2 | 15 | 0.1568 | -1.008 | 1.440 | 0.955 |
| 5-Oct-91 | 4.3 | 16 | 0.1676 | -0.964 | 1.456 | 0.956 |
| 16-Aug-94 | 4.5 | 17 | 0.1783 | -0.922 | 1.510 | 0.957 |
| 13-Sep-94 | 4.5 | 18 | 0.1890 | -0.882 | 1.511 | 0.959 |
| 20-Jan-94 | 4.7 | 19 | 0.1997 | -0.843 | 1.538 | 0.960 |
| 11-Jul-95 | 4.7 | 20 | 0.2105 | -0.805 | 1.557 | 0.961 |
| 23-Feb-99 | 4.9 | 21 | 0.2212 | -0.768 | 1.599 | 0.962 |
| 13-Dec-94 | 5.0 | 22 | 0.2319 | -0.733 | 1.607 | 0.963 |
| 16-Nov-94 | 5.0 | 23 | 0.2426 | -0.698 | 1.618 | 0.963 |
| 8-Oct-98 | 5.2 | 24 | 0.2534 | -0.664 | 1.652 | 0.964 |
| 16-Aug-94 | 5.4 | 25 | 0.2641 | -0.631 | 1.693 | 0.964 |
| 25-Jul-94 | 5.6 | 26 | 0.2748 | -0.598 | 1.729 | 0.965 |
| 8-Mar-99 | 5.7 | 27 | 0.2855 | -0.567 | 1.739 | 0.965 |
| 1-Oct-98 | 5.8 | 28 | 0.2962 | -0.535 | 1.749 | 0.966 |
| 30-Aug-99 | 6.0 | 29 | 0.3070 | -0.504 | 1.788 | 0.966 |
| 24-Mar-94 | 6.0 | 30 | 0.3177 | -0.474 | 1.796 | 0.966 |
| 24-Sep-98 | 6.1 | 31 | 0.3284 | -0.444 | 1.809 | 0.966 |
| 8-Mar-95 | 6.1 | 32 | 0.3391 | -0.415 | 1.815 | 0.966 |
| 26-Aug-98 | 6.2 | 33 | 0.3499 | -0.386 | 1.823 | 0.965 |
| 8-Mar-94 | 6.6 | 34 | 0.3606 | -0.357 | 1.885 | 0.965 |
| 27-Jun-95 | 6.8 | 35 | 0.3713 | -0.328 | 1.911 | 0.964 |
| 15-Dec-98 | 7.0 | 36 | 0.3820 | -0.300 | 1.945 | 0.964 |
| 26-Feb-98 | 7.4 | 37 | 0.3928 | -0.272 | 2.007 | 0.963 |
| 23-Jun-94 | 7.6 | 38 | 0.4035 | -0.244 | 2.033 | 0.962 |
| 22-Jan-98 | 8.2 | 39 | 0.4142 | -0.217 | 2.102 | 0.962 |
| 28-Jul-98 | 8.2 | 40 | 0.4249 | -0.189 | 2.109 | 0.961 |
| 25-Apr-95 | 8.3 | 41 | 0.4357 | -0.162 | 2.120 | 0.960 |
| 27-Nov-96 | 8.9 | 42 | 0.4464 | -0.135 | 2.183 | 0.959 |
| 7-Apr-94 | 9.6 | 43 | 0.4571 | -0.108 | 2.258 | 0.958 |
| 14-Nov-98 | 10.1 | 44 | 0.4678 | -0.081 | 2.315 | 0.958 |
| 9-Feb-95 | 10.2 | 45 | 0.4786 | -0.054 | 2.327 | 0.957 |
| 12-Apr-95 | 10.4 | 46 | 0.4893 | -0.027 | 2.344 | 0.956 |
| 5-Aug-99 | 10.8 | 47 | 0.5000 | 0.000 | 2.377 | 0.955 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30-Jan-97 | 12.0 | 48 | 0.5107 | 0.027 | 2.484 | 0.954 |
| 15-Jan-99 | 12.1 | 49 | 0.5214 | 0.054 | 2.491 | 0.953 |
| 9-Nov-97 | 13.1 | 50 | 0.5322 | 0.081 | 2.576 | 0.952 |
| 7-Jun-94 | 13.3 | 51 | 0.5429 | 0.108 | 2.589 | 0.952 |
| 20-Mar-98 | 13.5 | 52 | 0.5536 | 0.135 | 2.605 | 0.951 |
| 25-Nov-98 | 13.6 | 53 | 0.5643 | 0.162 | 2.608 | 0.950 |
| 9-Nov-97 | 15.3 | 54 | 0.5751 | 0.189 | 2.725 | 0.948 |
| 13-Dec-96 | 16.0 | 55 | 0.5858 | 0.217 | 2.771 | 0.947 |
| 19-May-94 | 18.7 | 56 | 0.5965 | 0.244 | 2.926 | 0.946 |
| 21-Feb-97 | 19.0 | 57 | 0.6072 | 0.272 | 2.947 | 0.946 |
| 8-Jul-99 | 19.1 | 58 | 0.6180 | 0.300 | 2.950 | 0.947 |
| 14-Aug-97 | 19.1 | 59 | 0.6287 | 0.328 | 2.951 | 0.946 |
| 26-Jun-98 | 19.1 | 60 | 0.6394 | 0.357 | 2.951 | 0.946 |
| 13-Jun-95 | 19.2 | 61 | 0.6501 | 0.386 | 2.954 | 0.944 |
| 26-Nov-97 | 19.8 | 62 | 0.6609 | 0.415 | 2.986 | 0.942 |
| 10-Jan-95 | 20.8 | 63 | 0.6716 | 0.444 | 3.035 | 0.940 |
| 27-Dec-95 | 24.5 | 64 | 0.6823 | 0.474 | 3.197 | 0.938 |
| 5-May-99 | 24.9 | 65 | 0.6930 | 0.504 | 3.213 | 0.937 |
| 4-May-94 | 25.1 | 66 | 0.7038 | 0.535 | 3.223 | 0.935 |
| 24-Jul-96 | 25.4 | 67 | 0.7145 | 0.567 | 3.236 | 0.932 |
| 22-Mar-95 | 30.6 | 68 | 0.7252 | 0.598 | 3.421 | 0.929 |
| 24-Jun-97 | 30.7 | 69 | 0.7359 | 0.631 | 3.424 | 0.928 |
| 16-Apr-97 | 33.3 | 70 | 0.7466 | 0.664 | 3.506 | 0.926 |
| 28-Dec-98 | 33.4 | 71 | 0.7574 | 0.698 | 3.509 | 0.924 |
| 28-Mar-96 | 34.4 | 72 | 0.7681 | 0.733 | 3.537 | 0.921 |
| 19-Dec-97 | 37.3 | 73 | 0.7788 | 0.768 | 3.620 | 0.917 |
| 21-Aug-96 | 39.4 | 74 | 0.7895 | 0.805 | 3.675 | 0.912 |
| 29-Oct-96 | 51.6 | 75 | 0.8003 | 0.843 | 3.943 | 0.908 |
| 14-May-98 | 54.1 | 76 | 0.8110 | 0.882 | 3.991 | 0.909 |
| 19-Jun-96 | 58.9 | 77 | 0.8217 | 0.922 | 4.076 | 0.910 |
| 4-Sep-97 | 59.4 | 78 | 0.8324 | 0.964 | 4.085 | 0.913 |
| 16-Oct-97 | 59.9 | 79 | 0.8432 | 1.008 | 4.092 | 0.915 |
| 26-Sep-96 | 61.7 | 80 | 0.8539 | 1.053 | 4.122 | 0.914 |
| 23-Mar-99 | 62.6 | 81 | 0.8646 | 1.101 | 4.137 | 0.912 |
| 14-May-98 | 64.1 | 82 | 0.8753 | 1.152 | 4.160 | 0.905 |
| 17-Jan-96 | 69.6 | 83 | 0.8861 | 1.206 | 4.242 | 0.895 |
| 18-Oct-95 | 71.6 | 84 | 0.8968 | 1.263 | 4.271 | 0.880 |
| 8-May-96 | 96.0 | 85 | 0.9075 | 1.326 | 4.565 | 0.859 |
| 2-Jun-99 | 128.4 | 86 | 0.9182 | 1.393 | 4.855 | 0.833 |
| 29-Feb-96 | 168.4 | 87 | 0.9290 | 1.468 | 5.126 | 0.808 |
| 15-Jun-99 | 212.2 | 88 | 0.9397 | 1.552 | 5.358 | 0.791 |
| 19-Apr-99 | 274.7 | 89 | 0.9504 | 1.649 | 5.616 | 0.787 |
| 21-Nov-95 | 298.2 | 90 | 0.9611 | 1.764 | 5.698 | |
| 23-Jul-97 | 336.8 | 91 | 0.9718 | 1.909 | 5.820 | |
| 27-May-99 | 351.0 | 92 | 0.9826 | 2.110 | 5.861 | |
| 24-May-99 | 4131.8 | 93 | 0.9933 | 2.473 | 8.326 | |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tPb** | | **CC287/288** | | 135 | 135 |
| **LN Analysis** | | **tPb** | | 1.73 | 1.73 |
| **Concentration** | | **Conc. Data, EV=135 ug/L CV=1.73** | | | |
| **Avg:** | 135 | **Data-based LN** | | | |
| **SD:** | 233 | u | ln[tPb] | [tPb] | |
| **CV:** | 1.73 | 3 | 7.7 | 2305 | |
| **Min:** | 0 | 0 | 4.21 | 67 | |
| **Max:** | 2,000 | -3 | 0.68 | 2 | |
| **Median:** | 61 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.713 | 0.713 |
| **u=mLn{Conc.}+b:** | | | | 173.9 | 174 |
| update for r2, EV, CV: | **r2=0.713, EV=174 ug/L CV=1.99; max r2=0.98** | | | 1.988 | 1.99 |
| r2 u,lnConc: | 0.713 | u | lnConc. | Conc. | |
| slope, m: | 0.791 | 3 | 8.15 | 3474 | |
| intercept, b: | -3.445 | 0 | 4.36 | 78 | |
| N: 93 | | -3 | 0.56 | 2 | |
| E[Conc]: | 173.9 | Parameter Estimates | | | |
| SD[Conc]: | 346 | from LN regression | | | |
| CV[Conc]: | 1.99 | update graph label | | | |

N: 93

| Date | tPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.976 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 26-Mar-97 | 0.12 | 1 | 0.0067 | -2.473 | -2.120 | 0.713 |
| 8-Mar-95 | 31 | 2 | 0.0174 | -2.110 | 3.434 | 0.837 |
| 8-Jul-99 | 33.2 | 3 | 0.0282 | -1.909 | 3.503 | 0.842 |
| 19-May-94 | 34 | 4 | 0.0389 | -1.764 | 3.526 | 0.846 |
| 25-Apr-95 | 36 | 5 | 0.0496 | -1.649 | 3.584 | 0.850 |
| 27-Jun-95 | 36 | 6 | 0.0603 | -1.552 | 3.584 | 0.854 |
| 13-Jun-95 | 37 | 7 | 0.0710 | -1.468 | 3.611 | 0.857 |
| 7-Jun-94 | 39 | 8 | 0.0818 | -1.393 | 3.664 | 0.859 |
| 4-May-94 | 42 | 9 | 0.0925 | -1.326 | 3.738 | 0.862 |
| 26-Oct-98 | 42 | 10 | 0.1032 | -1.263 | 3.738 | 0.867 |
| 26-Oct-98 | 43 | 11 | 0.1139 | -1.206 | 3.761 | 0.871 |
| 9-Feb-95 | 44 | 12 | 0.1247 | -1.152 | 3.784 | 0.875 |
| 11-Jul-95 | 44 | 13 | 0.1354 | -1.101 | 3.784 | 0.879 |
| 25-Jul-95 | 45 | 14 | 0.1461 | -1.053 | 3.807 | 0.882 |
| 12-Apr-95 | 46 | 15 | 0.1568 | -1.008 | 3.829 | 0.886 |
| 24-Jun-97 | 46 | 16 | 0.1676 | -0.964 | 3.829 | 0.890 |
| 23-Feb-99 | 46 | 17 | 0.1783 | -0.922 | 3.829 | 0.894 |
| 8-Mar-99 | 46 | 18 | 0.1890 | -0.882 | 3.829 | 0.897 |
| 7-Apr-94 | 47 | 19 | 0.1997 | -0.843 | 3.850 | 0.900 |
| 26-Oct-98 | 47 | 20 | 0.2105 | -0.805 | 3.850 | 0.903 |
| 14-May-98 | 48.8 | 21 | 0.2212 | -0.768 | 3.888 | 0.906 |
| 23-Jun-94 | 49 | 22 | 0.2319 | -0.733 | 3.892 | 0.910 |
| 18-Nov-98 | 49 | 23 | 0.2426 | -0.698 | 3.892 | 0.913 |
| 16-Oct-94 | 50 | 24 | 0.2534 | -0.664 | 3.912 | 0.916 |
| 30-Aug-99 | 50.5 | 25 | 0.2641 | -0.631 | 3.922 | 0.919 |
| 14-May-98 | 51.1 | 26 | 0.2748 | -0.598 | 3.934 | 0.922 |
| 18-Feb-94 | 52 | 27 | 0.2855 | -0.567 | 3.951 | 0.925 |
| 13-Sep-95 | 52 | 28 | 0.2962 | -0.535 | 3.951 | 0.929 |
| 15-Dec-98 | 52 | 29 | 0.3070 | -0.504 | 3.951 | 0.932 |
| 24-Mar-94 | 53 | 30 | 0.3177 | -0.474 | 3.970 | 0.935 |
| 13-Sep-94 | 53 | 31 | 0.3284 | -0.444 | 3.970 | 0.938 |
| 13-Dec-94 | 54 | 32 | 0.3391 | -0.415 | 3.989 | 0.941 |
| 5-Oct-91 | 55 | 33 | 0.3499 | -0.386 | 4.007 | 0.943 |
| 8-Mar-94 | 55 | 34 | 0.3606 | -0.357 | 4.007 | 0.947 |
| 25-Jul-94 | 55 | 35 | 0.3713 | -0.328 | 4.007 | 0.949 |
| 5-May-99 | 55 | 36 | 0.3820 | -0.300 | 4.007 | 0.952 |
| 27-Oct-93 | 56 | 37 | 0.3928 | -0.272 | 4.025 | 0.954 |
| 17-Dec-93 | 56 | 38 | 0.4035 | -0.244 | 4.025 | 0.957 |
| 17-Dec-93 | 56 | 39 | 0.4142 | -0.217 | 4.025 | 0.959 |
| 26-Jun-98 | 56 | 40 | 0.4249 | -0.189 | 4.025 | 0.961 |
| 14-Aug-95 | 58 | 41 | 0.4357 | -0.162 | 4.060 | 0.963 |
| 5-Aug-99 | 58.9 | 42 | 0.4464 | -0.135 | 4.076 | 0.965 |
| 20-Jan-94 | 59 | 43 | 0.4571 | -0.108 | 4.078 | 0.967 |
| 20-Jan-94 | 59 | 44 | 0.4678 | -0.081 | 4.078 | 0.969 |
| 16-Nov-94 | 59 | 45 | 0.4786 | -0.054 | 4.078 | 0.970 |
| 26-Aug-98 | 59 | 46 | 0.4893 | -0.027 | 4.078 | 0.972 |
| 8-Oct-98 | 61 | 47 | 0.5000 | 0.000 | 4.111 | 0.973 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30-Nov-93 | 62 | 48 | 0.5107 | 0.027 | 4.127 | 0.974 |
| 16-Aug-94 | 62 | 49 | 0.5214 | 0.054 | 4.127 | 0.975 |
| 16-Aug-94 | 62 | 50 | 0.5322 | 0.081 | 4.127 | 0.976 |
| 26-Feb-98 | 62 | 51 | 0.5429 | 0.108 | 4.127 | 0.976 |
| 28-Jul-98 | 62 | 52 | 0.5536 | 0.135 | 4.127 | 0.976 |
| 1-Oct-98 | 64 | 53 | 0.5643 | 0.162 | 4.159 | 0.976 |
| 22-Mar-95 | 66 | 54 | 0.5751 | 0.189 | 4.190 | 0.976 |
| 24-Sep-98 | 66 | 55 | 0.5858 | 0.217 | 4.190 | 0.976 |
| 15-Jan-99 | 68 | 56 | 0.5965 | 0.244 | 4.220 | 0.975 |
| 30-Jan-97 | 71 | 57 | 0.6072 | 0.272 | 4.263 | 0.974 |
| 19-Jun-96 | 74 | 58 | 0.6180 | 0.300 | 4.304 | 0.974 |
| 9-Nov-97 | 74.7 | 59 | 0.6287 | 0.328 | 4.313 | 0.973 |
| 27-Nov-96 | 76 | 60 | 0.6394 | 0.357 | 4.331 | 0.972 |
| 20-Mar-98 | 76 | 61 | 0.6501 | 0.386 | 4.331 | 0.971 |
| 9-Nov-97 | 77.5 | 62 | 0.6609 | 0.415 | 4.350 | 0.970 |
| 14-Nov-98 | 83.5 | 63 | 0.6716 | 0.444 | 4.425 | 0.968 |
| 22-Jan-98 | 84 | 64 | 0.6823 | 0.474 | 4.431 | 0.967 |
| 21-Feb-97 | 91 | 65 | 0.6930 | 0.504 | 4.511 | 0.965 |
| 14-Aug-97 | 94 | 66 | 0.7038 | 0.535 | 4.543 | 0.963 |
| 25-Nov-98 | 97 | 67 | 0.7145 | 0.567 | 4.575 | 0.961 |
| 28-Mar-96 | 98 | 68 | 0.7252 | 0.598 | 4.585 | 0.959 |
| 2-Jun-99 | 99 | 69 | 0.7359 | 0.631 | 4.595 | 0.956 |
| 13-Dec-96 | 100 | 70 | 0.7466 | 0.664 | 4.605 | 0.953 |
| 27-Dec-95 | 108 | 71 | 0.7574 | 0.698 | 4.682 | 0.951 |
| 16-Apr-97 | 112 | 72 | 0.7681 | 0.733 | 4.718 | 0.948 |
| 23-Mar-99 | 120 | 73 | 0.7788 | 0.768 | 4.787 | 0.945 |
| 26-Nov-97 | 124 | 74 | 0.7895 | 0.805 | 4.820 | 0.942 |
| 24-Jul-96 | 132 | 75 | 0.8003 | 0.843 | 4.883 | 0.940 |
| 10-Jan-95 | 137 | 76 | 0.8110 | 0.882 | 4.920 | 0.938 |
| 15-Jun-99 | 150 | 77 | 0.8217 | 0.922 | 5.011 | 0.940 |
| 8-May-96 | 219 | 78 | 0.8324 | 0.964 | 5.389 | 0.945 |
| 28-Dec-98 | 230 | 79 | 0.8432 | 1.008 | 5.438 | 0.940 |
| 27-May-99 | 250 | 80 | 0.8539 | 1.053 | 5.521 | 0.935 |
| 17-Jan-96 | 254 | 81 | 0.8646 | 1.101 | 5.537 | 0.931 |
| 29-Feb-96 | 282 | 82 | 0.8753 | 1.152 | 5.642 | 0.924 |
| 19-Dec-97 | 288 | 83 | 0.8861 | 1.206 | 5.663 | 0.921 |
| 21-Aug-96 | 314 | 84 | 0.8968 | 1.263 | 5.749 | 0.913 |
| 4-Sep-97 | 325 | 85 | 0.9075 | 1.326 | 5.784 | 0.907 |
| 19-Apr-99 | 370 | 86 | 0.9182 | 1.393 | 5.914 | 0.896 |
| 29-Oct-96 | 408 | 87 | 0.9290 | 1.468 | 6.011 | 0.893 |
| 18-Oct-95 | 424 | 88 | 0.9397 | 1.552 | 6.050 | 0.900 |
| 16-Oct-97 | 438 | 89 | 0.9504 | 1.649 | 6.082 | 0.902 |
| 23-Jul-97 | 564 | 90 | 0.9611 | 1.764 | 6.335 | |
| 26-Sep-96 | 588 | 91 | 0.9718 | 1.909 | 6.377 | |
| 21-Nov-95 | 680 | 92 | 0.9826 | 2.110 | 6.522 | |
| 24-May-99 | 2000 | 93 | 0.9933 | 2.473 | 7.601 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **CC287/288** | | | 41 | 41.1 |
| **LN Analysis** | | **tPb** | | | 0.92 | 0.92 |
| **Discharge, Q** | | **Q Data, EV=41.1 cfs CV=0.92** | | | | |
| **Avg:** | **41** | **Q Data-based LN** | | | | |
| **SD:** | **38** | u | lnQ | Q | | |
| **CV:** | **0.92** | 3 | 5.8 | 317 | | |
| **Min:** | **11** | 0 | 3.41 | 30 | | |
| **Max:** | **206** | -3 | 1.06 | 3 | | |
| **Median:** | **26** | | | | | |
| | | | | | 0.936 | 0.936 |
| | | | | | 40.8 | 40.8 |
| | **u=mLn(Q)+b:** | | | | 0.88 | 0.884 |

update for r2, EV, CV: **r2=0.936, EV=40.8 cfs CV=0.884; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.936 | u | lnQ | Q |
| slope, m: | 1.316 | 3 | 5.70 | 299 |
| intercept, b: | -4.498 | 0 | 3.42 | 31 |
| N: 75 | | -3 | 1.14 | 3 |
| E[Q]: | 40.8 | Parameter Estimates | | |
| SD[Q]: | 36 | from LN regression | | |
| CV[Q]: | 0.88 | update graph label | | |

N: 93

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.979 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Sep-95 | 11.4 | 1 | 0.0083 | -2.395 | 2.434 | 0.936 |
| 18-Feb-94 | 11.41 | 2 | 0.0216 | -2.022 | 2.434 | 0.950 |
| 17-Dec-93 | 11.7 | 3 | 0.0349 | -1.813 | 2.460 | 0.956 |
| 17-Dec-93 | 12.03 | 4 | 0.0482 | -1.663 | 2.487 | 0.960 |
| 14-Aug-95 | 12.6 | 5 | 0.0615 | -1.543 | 2.534 | 0.964 |
| 30-Nov-93 | 12.62 | 6 | 0.0748 | -1.441 | 2.535 | 0.966 |
| 27-Oct-93 | 13.28 | 7 | 0.0880 | -1.353 | 2.586 | 0.968 |
| 20-Jan-94 | 13.28 | 8 | 0.1013 | -1.274 | 2.586 | 0.970 |
| 16-Aug-94 | 13.57 | 9 | 0.1146 | -1.202 | 2.608 | 0.972 |
| 16-Oct-94 | 14.34 | 10 | 0.1279 | -1.136 | 2.663 | 0.973 |
| 5-Oct-91 | 14.5 | 11 | 0.1412 | -1.075 | 2.674 | 0.974 |
| 20-Jan-94 | 14.66 | 12 | 0.1545 | -1.017 | 2.685 | 0.975 |
| 25-Jul-95 | 14.71 | 13 | 0.1678 | -0.963 | 2.689 | 0.976 |
| 13-Sep-94 | 15.89 | 14 | 0.1811 | -0.911 | 2.766 | 0.977 |
| 16-Nov-94 | 15.89 | 15 | 0.1944 | -0.862 | 2.766 | 0.978 |
| 8-Oct-98 | 15.9 | 16 | 0.2076 | -0.815 | 2.766 | 0.978 |
| 16-Aug-94 | 16.3 | 17 | 0.2209 | -0.769 | 2.791 | 0.979 |
| 1-Oct-98 | 16.7 | 18 | 0.2342 | -0.725 | 2.815 | 0.979 |
| 26-Oct-98 | 16.7 | 19 | 0.2475 | -0.682 | 2.815 | 0.979 |
| 13-Dec-94 | 17.17 | 20 | 0.2608 | -0.641 | 2.843 | 0.979 |
| 24-Sep-98 | 17.2 | 21 | 0.2741 | -0.601 | 2.845 | 0.979 |
| 22-Jan-98 | 18.1 | 22 | 0.2874 | -0.561 | 2.896 | 0.978 |
| 25-Jul-94 | 19.04 | 23 | 0.3007 | -0.522 | 2.947 | 0.978 |
| 26-Sep-96 | 19.5 | 24 | 0.3140 | -0.485 | 2.970 | 0.978 |
| 26-Aug-98 | 19.5 | 25 | 0.3272 | -0.448 | 2.970 | 0.978 |
| 23-Feb-99 | 20 | 26 | 0.3405 | -0.411 | 2.996 | 0.978 |
| 11-Jul-95 | 20.05 | 27 | 0.3538 | -0.375 | 2.998 | 0.978 |
| 24-Mar-94 | 21.13 | 28 | 0.3671 | -0.340 | 3.051 | 0.977 |
| 27-Nov-96 | 21.7 | 29 | 0.3804 | -0.304 | 3.077 | 0.977 |
| 8-Mar-94 | 22.26 | 30 | 0.3937 | -0.270 | 3.103 | 0.976 |
| 26-Feb-98 | 22.3 | 31 | 0.4070 | -0.235 | 3.105 | 0.976 |
| 8-Mar-99 | 23 | 32 | 0.4203 | -0.201 | 3.135 | 0.975 |
| 21-Aug-96 | 23.342375 | 33 | 0.4336 | -0.167 | 3.150 | 0.975 |
| 29-Oct-96 | 23.5 | 34 | 0.4468 | -0.134 | 3.157 | 0.974 |
| 19-Dec-97 | 24.1 | 35 | 0.4601 | -0.100 | 3.182 | 0.973 |
| 28-Jul-98 | 24.7 | 36 | 0.4734 | -0.067 | 3.207 | 0.972 |
| 16-Oct-97 | 25.4 | 37 | 0.4867 | -0.033 | 3.235 | 0.971 |
| 25-Nov-98 | 26 | 38 | 0.5000 | 0.000 | 3.258 | 0.969 |
| 10-Jan-95 | 28.21 | 39 | 0.5133 | 0.033 | 3.340 | 0.968 |
| 23-Jun-94 | 28.96 | 40 | 0.5266 | 0.067 | 3.366 | 0.967 |
| 13-Dec-96 | 29.7 | 41 | 0.5399 | 0.100 | 3.391 | 0.966 |
| 26-Nov-97 | 29.7 | 42 | 0.5532 | 0.134 | 3.391 | 0.965 |
| 18-Oct-95 | 31.4 | 43 | 0.5664 | 0.167 | 3.447 | 0.963 |
| 30-Jan-97 | 31.4 | 44 | 0.5797 | 0.201 | 3.447 | 0.962 |
| 9-Nov-97 | 32.7 | 45 | 0.5930 | 0.235 | 3.487 | 0.960 |
| 15-Jan-99 | 33 | 46 | 0.6063 | 0.270 | 3.497 | 0.959 |
| 20-Mar-98 | 33.1 | 47 | 0.6196 | 0.304 | 3.500 | 0.956 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 4-Sep-97 | 34 | 48 | 0.6329 | 0.340 | 3.526 | 0.954 |
| | 27-Jun-95 | 34.9 | 49 | 0.6462 | 0.375 | 3.552 | 0.951 |
| | 24-Jul-96 | 35.8 | 50 | 0.6595 | 0.411 | 3.578 | 0.948 |
| | 8-Mar-95 | 36.82 | 51 | 0.6728 | 0.448 | 3.606 | 0.944 |
| | 14-Aug-97 | 37.8 | 52 | 0.6860 | 0.485 | 3.632 | 0.940 |
| | 7-Apr-94 | 37.82 | 53 | 0.6993 | 0.522 | 3.633 | 0.936 |
| | 21-Feb-97 | 38.9 | 54 | 0.7126 | 0.561 | 3.661 | 0.932 |
| | 27-Dec-95 | 42.1 | 55 | 0.7259 | 0.601 | 3.740 | 0.929 |
| | 12-Apr-95 | 42.13 | 56 | 0.7392 | 0.641 | 3.741 | 0.924 |
| | 25-Apr-95 | 43 | 57 | 0.7525 | 0.682 | 3.761 | 0.922 |
| | 9-Feb-95 | 43.28 | 58 | 0.7658 | 0.725 | 3.768 | 0.923 |
| | 17-Jan-96 | 50.9 | 59 | 0.7791 | 0.769 | 3.930 | 0.938 |
| | 16-Apr-97 | 55.3 | 60 | 0.7924 | 0.815 | 4.013 | 0.943 |
| | 7-Jun-94 | 63.45 | 61 | 0.8056 | 0.862 | 4.150 | 0.948 |
| | 26-Jun-98 | 63.5 | 62 | 0.8189 | 0.911 | 4.151 | 0.944 |
| | 28-Mar-96 | 65.2 | 63 | 0.8322 | 0.963 | 4.177 | 0.949 |
| | 21-Nov-95 | 81.5 | 64 | 0.8455 | 1.017 | 4.401 | 0.973 |
| | 8-May-96 | 81.5 | 65 | 0.8588 | 1.075 | 4.401 | 0.969 |
| | 22-Mar-95 | 86.16 | 66 | 0.8721 | 1.136 | 4.456 | 0.968 |
| | 13-Jun-95 | 96.41 | 67 | 0.8854 | 1.202 | 4.569 | 0.968 |
| | 19-May-94 | 102.01 | 68 | 0.8987 | 1.274 | 4.625 | 0.962 |
| | 29-Feb-96 | 111 | 69 | 0.9120 | 1.353 | 4.710 | 0.955 |
| | 23-Jul-97 | 111 | 70 | 0.9252 | 1.441 | 4.710 | 0.968 |
| | 4-May-94 | 111.05 | 71 | 0.9385 | 1.543 | 4.710 | 0.966 |
| | 24-Jun-97 | 124 | 72 | 0.9518 | 1.663 | 4.820 | |
| | 26-Mar-97 | 144 | 73 | 0.9651 | 1.813 | 4.970 | |
| | 19-Jun-96 | 148 | 74 | 0.9784 | 2.022 | 4.997 | |
| | 14-May-98 | 206 | 75 | 0.9917 | 2.395 | 5.328 | |
| | 9-Nov-97 | | | -0.0050 | | | |
| | 14-May-98 | | | -0.0050 | | | |
| | 26-Oct-98 | | | -0.0050 | | | |
| | 26-Oct-98 | | | -0.0050 | | | |
| | 14-Nov-98 | | | -0.0050 | | | |
| | 18-Nov-98 | | | -0.0050 | | | |
| | 15-Dec-98 | | | -0.0050 | | | |
| | 28-Dec-98 | | | -0.0050 | | | |
| | 23-Mar-99 | | | -0.0050 | | | |
| | 19-Apr-99 | | | -0.0050 | | | |
| | 5-May-99 | | | -0.0050 | | | |
| | 24-May-99 | | | -0.0050 | | | |
| | 27-May-99 | | | -0.0050 | | | |
| | 2-Jun-99 | | | -0.0050 | | | |
| | 15-Jun-99 | | | -0.0050 | | | |
| | 8-Jul-99 | | | -0.0050 | | | |
| | 5-Aug-99 | | | -0.0050 | | | |
| | 30-Aug-99 | | | -0.0050 | | | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment | | |
|---|---|---|---|---|
| **Station:** | CC287/288 | **Date:** | 2-Jun-00 | |
| **Chemical:** | tZn | **Analyst:** | J.Johnston | |
| **Notes:** | Template and Example Lognormal Analysis | | | |
| **Input Discharge and Concentration Data below (in red)** | | | | |

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 35,353 | 55 | 2,856 | 575 | | | 0.00 | 0.00 | 0.00 |
| **SD:** | 702 | 66 | 1,440 | 474 | | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.20 | 0.50 | 0.83 | | | | | |
| **Min:** | 33,516 | 11 | 470 | 140.1 | | | -0.66 | -1.66 | -0.92 |
| **Max:** | 36,402 | 384 | 6,950 | 2,913 | | | 5.00 | 2.84 | 4.93 |
| **Median:** | 35,396 | 29 | 2,730 | 478 | | | -0.39 | -0.09 | -0.20 |

| tZn | CC287/288 | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.275)** | | update r2 | 0.27 | 0.275 | | r2: | 0.105 | 0.103 |
| r2 Q,[COC]: | 0.27 | [tZn] | Q | | | m: | 0.0304 | 0.00039 |
| slope, m: | -11.5 | 3,353 | 11.4 | | | b: | -1019 | -10.40 |
| intercept, b: | 3484.0 | 2,856 | 54.8 | | | | | |
| N: 93 | | -914 | 384 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.476)** | | update r2 | | 0.48 | 0.476 | | | |
| r2 lnQ,ln[COC]: | 0.48 | ln[tZn] | ln Q | [tZn] | Q | | | |
| slope, m: | -0.48 | 8.34 | 2.43 | 4,185 | 11 | | | |
| intercept, b: | 9.50 | 7.59 | 4.00 | 1,980 | 55 | | | |
| N: 93 | | 6.66 | 5.95 | 783 | 384 | | | |

N= 93

| | Sampling Date | Q Discharge cfs | tZn Concentration ug/L | tZn Load lbs/day | Ln Q | Ln tZn Conc. | Ln tZn Load | tZn CC287/288 Standardized Values = (x - Avg)/SD Q | for graph 0 Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 5-Oct-91 | 14.5 | 3430 | 268 | 2.67 | 8.14 | 5.59 | -0.61 | 0.40 | -0.65 |
| IDEQ | 27-Oct-93 | 13.28 | 3420 | 244 | 2.59 | 8.14 | 5.50 | -0.63 | 0.39 | -0.70 |
| IDEQ | 30-Nov-93 | 12.62 | 4050 | 275 | 2.54 | 8.31 | 5.62 | -0.64 | 0.83 | -0.63 |
| IDEQ | 17-Dec-93 | 11.7 | 5180 | 326 | 2.46 | 8.55 | 5.79 | -0.65 | 1.61 | -0.52 |
| IDEQ | 17-Dec-93 | 12.03 | 5180 | 335 | 2.49 | 8.55 | 5.81 | -0.65 | 1.61 | -0.51 |
| IDEQ | 20-Jan-94 | 13.28 | 5050 | 361 | 2.59 | 8.53 | 5.89 | -0.63 | 1.52 | -0.45 |
| IDEQ | 20-Jan-94 | 14.66 | 5050 | 398 | 2.69 | 8.53 | 5.99 | -0.61 | 1.52 | -0.37 |
| IDEQ | 18-Feb-94 | 11.41 | 4620 | 284 | 2.43 | 8.44 | 5.65 | -0.66 | 1.22 | -0.61 |
| IDEQ | 8-Mar-94 | 22.26 | 4460 | 534 | 3.10 | 8.40 | 6.28 | -0.49 | 1.11 | -0.09 |
| IDEQ | 24-Mar-94 | 21.13 | 4600 | 523 | 3.05 | 8.43 | 6.26 | -0.51 | 1.21 | -0.11 |
| IDEQ | 7-Apr-94 | 37.82 | 2350 | 478 | 3.63 | 7.76 | 6.17 | -0.26 | -0.35 | -0.20 |
| IDEQ | 4-May-94 | 111.05 | 1160 | 693 | 4.71 | 7.06 | 6.54 | 0.85 | -1.18 | 0.25 |
| IDEQ | 19-May-94 | 102.01 | 1000 | 549 | 4.63 | 6.91 | 6.31 | 0.72 | -1.29 | -0.05 |
| IDEQ | 7-Jun-94 | 63.45 | 1520 | 519 | 4.15 | 7.33 | 6.25 | 0.13 | -0.93 | -0.12 |
| IDEQ | 23-Jun-94 | 28.96 | 1690 | 263 | 3.37 | 7.43 | 5.57 | -0.39 | -0.81 | -0.66 |
| IDEQ | 25-Jul-94 | 19.04 | 2390 | 245 | 2.95 | 7.78 | 5.50 | -0.54 | -0.32 | -0.70 |
| IDEQ | 16-Aug-94 | 16.3 | 2850 | 250 | 2.79 | 7.96 | 5.52 | -0.58 | 0.00 | -0.68 |
| IDEQ | 16-Aug-94 | 13.57 | 2850 | 208 | 2.61 | 7.96 | 5.34 | -0.63 | 0.00 | -0.77 |
| IDEQ | 13-Sep-94 | 15.89 | 2880 | 246 | 2.77 | 7.97 | 5.51 | -0.59 | 0.02 | -0.69 |
| IDEQ | 16-Oct-94 | 14.34 | 3430 | 265 | 2.66 | 8.14 | 5.58 | -0.61 | 0.40 | -0.65 |
| IDEQ | 16-Nov-94 | 15.89 | 5500 | 470 | 2.77 | 8.61 | 6.15 | -0.59 | 1.84 | -0.22 |
| IDEQ | 13-Dec-94 | 17.17 | 6640 | 613 | 2.84 | 8.80 | 6.42 | -0.57 | 2.63 | 0.08 |
| IDEQ | 10-Jan-95 | 28.21 | 6320 | 959 | 3.34 | 8.75 | 6.87 | -0.40 | 2.41 | 0.81 |
| IDEQ | 9-Feb-95 | 43.28 | 3230 | 752 | 3.77 | 8.08 | 6.62 | -0.18 | 0.26 | 0.37 |
| IDEQ | 8-Mar-95 | 36.82 | 2530 | 501 | 3.61 | 7.84 | 6.22 | -0.27 | -0.23 | -0.16 |
| IDEQ | 22-Mar-95 | 86.16 | 3970 | 1840 | 4.46 | 8.29 | 7.52 | 0.48 | 0.77 | 2.67 |
| IDEQ | 12-Apr-95 | 42.13 | 2550 | 578 | 3.74 | 7.84 | 6.36 | -0.19 | -0.21 | 0.01 |
| IDEQ | 25-Apr-95 | 43 | 2100 | 486 | 3.76 | 7.65 | 6.19 | -0.18 | -0.53 | -0.19 |
| IDEQ | 13-Jun-95 | 96.41 | 919 | 477 | 4.57 | 6.82 | 6.17 | 0.63 | -1.35 | -0.21 |
| IDEQ | 27-Jun-95 | 34.9 | 1220 | 229 | 3.55 | 7.11 | 5.43 | -0.30 | -1.14 | -0.73 |
| IDEQ | 11-Jul-95 | 20.05 | 1690 | 182 | 3.00 | 7.43 | 5.21 | -0.53 | -0.81 | -0.83 |
| IDEQ | 25-Jul-95 | 14.71 | 1770 | 140 | 2.69 | 7.48 | 4.94 | -0.61 | -0.75 | -0.92 |
| IDEQ | 14-Aug-95 | 12.6 | 2490 | 169 | 2.53 | 7.82 | 5.13 | -0.64 | -0.25 | -0.86 |
| IDEQ | 13-Sep-95 | 11.4 | 2780 | 171 | 2.43 | 7.93 | 5.14 | -0.66 | -0.05 | -0.85 |
| IDEQ | 18-Oct-95 | 31.4 | 3020 | 510 | 3.45 | 8.01 | 6.23 | -0.36 | 0.11 | -0.14 |
| IDEQ | 21-Nov-95 | 81.5 | 1960 | 859 | 4.40 | 7.58 | 6.76 | 0.40 | -0.62 | 0.60 |
| IDEQ | 27-Dec-95 | 42.1 | 2500 | 566 | 3.74 | 7.82 | 6.34 | -0.19 | -0.25 | -0.02 |
| IDEQ | 17-Jan-96 | 50.9 | 3830 | 1049 | 3.93 | 8.25 | 6.96 | -0.06 | 0.68 | 1.00 |
| IDEQ | 29-Feb-96 | 111 | 2370 | 1415 | 4.71 | 7.77 | 7.26 | 0.85 | -0.34 | 1.77 |
| IDEQ | 28-Mar-96 | 65.2 | 2230 | 782 | 4.18 | 7.71 | 6.66 | 0.16 | -0.43 | 0.44 |
| IDEQ | 8-May-96 | 81.5 | 1660 | 728 | 4.40 | 7.41 | 6.59 | 0.40 | -0.83 | 0.32 |
| IDEQ | 19-Jun-96 | 148 | 836 | 666 | 5.00 | 6.73 | 6.50 | 1.41 | -1.40 | 0.19 |
| IDEQ | 24-Jul-96 | 35.8 | 1550 | 299 | 3.58 | 7.35 | 5.70 | -0.29 | -0.91 | -0.58 |
| IDEQ | 21-Aug-96 | 23.342375 | 3730 | 468 | 3.15 | 8.22 | 6.15 | -0.48 | 0.61 | -0.22 |
| IDEQ | 26-Sep-96 | 19.5 | 2770 | 291 | 2.97 | 7.93 | 5.67 | -0.54 | -0.06 | -0.60 |
| IDEQ | 29-Oct-96 | 23.5 | 3840 | 485 | 3.16 | 8.25 | 6.19 | -0.48 | 0.68 | -0.19 |
| IDEQ | 27-Nov-96 | 21.7 | 4480 | 523 | 3.08 | 8.41 | 6.26 | -0.50 | 1.13 | -0.11 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 13-Dec-96 | 29.7 | 5500 | 879 | 3.39 | 8.61 | 6.78 | -0.38 | 1.84 | 0.64 |
| IDEQ | 30-Jan-97 | 31.4 | 3500 | 591 | 3.45 | 8.16 | 6.38 | -0.36 | 0.45 | 0.03 |
| IDEQ | 21-Feb-97 | 38.9 | 3980 | 833 | 3.66 | 8.29 | 6.72 | -0.24 | 0.78 | 0.54 |
| IDEQ | 26-Mar-97 | 144 | 3760 | 2913 | 4.97 | 8.23 | 7.98 | 1.35 | 0.63 | 4.93 |
| IDEQ | 16-Apr-97 | 55.3 | 3340 | 994 | 4.01 | 8.11 | 6.90 | 0.01 | 0.34 | 0.88 |
| IDEQ | 24-Jun-97 | 124 | 726 | 484 | 4.82 | 6.59 | 6.18 | 1.05 | -1.48 | -0.19 |
| IDEQ | 23-Jul-97 | 111 | 1330 | 794 | 4.71 | 7.19 | 6.68 | 0.85 | -1.06 | 0.46 |
| IDEQ | 14-Aug-97 | 37.8 | 1900 | 386 | 3.63 | 7.55 | 5.96 | -0.26 | -0.66 | -0.40 |
| IDEQ | 4-Sep-97 | 34 | 2540 | 465 | 3.53 | 7.84 | 6.14 | -0.32 | -0.22 | -0.23 |
| IDEQ | 16-Oct-97 | 25.4 | 2850 | 389 | 3.23 | 7.96 | 5.96 | -0.45 | 0.00 | -0.39 |
| URS | 9-Nov-97 | 32.7 | 2680 | 471 | 3.49 | 7.89 | 6.16 | -0.34 | -0.12 | -0.22 |
| IDEQ | 26-Nov-97 | 29.7 | 2750 | 439 | 3.39 | 7.92 | 6.09 | -0.38 | -0.07 | -0.29 |
| IDEQ | 19-Dec-97 | 24.1 | 3440 | 446 | 3.18 | 8.14 | 6.10 | -0.47 | 0.41 | -0.27 |
| IDEQ | 22-Jan-98 | 18.1 | 3320 | 323 | 2.90 | 8.11 | 5.78 | -0.56 | 0.32 | -0.53 |
| IDEQ | 26-Feb-98 | 22.3 | 3460 | 415 | 3.10 | 8.15 | 6.03 | -0.49 | 0.42 | -0.34 |
| IDEQ | 20-Mar-98 | 33.1 | 2730 | 486 | 3.50 | 7.91 | 6.19 | -0.33 | -0.09 | -0.19 |
| URS | 14-May-98 | 206 | 641 | 710 | 5.33 | 6.46 | 6.57 | 2.29 | -1.54 | 0.29 |
| IDEQ | 26-Jun-98 | 63.5 | 1200 | 410 | 4.15 | 7.09 | 6.02 | 0.13 | -1.15 | -0.35 |
| IDEQ | 28-Jul-98 | 24.7 | 1700 | 226 | 3.21 | 7.44 | 5.42 | -0.46 | -0.80 | -0.74 |
| IDEQ | 26-Aug-98 | 19.5 | 2080 | 218 | 2.97 | 7.64 | 5.39 | -0.54 | -0.54 | -0.75 |
| IDEQ | 24-Sep-98 | 17.2 | 2220 | 205 | 2.84 | 7.71 | 5.33 | -0.57 | -0.44 | -0.78 |
| IDEQ | 1-Oct-98 | 16.7 | 2220 | 199 | 2.82 | 7.71 | 5.30 | -0.58 | -0.44 | -0.79 |
| IDEQ | 8-Oct-98 | 15.9 | 2680 | 229 | 2.77 | 7.89 | 5.43 | -0.59 | -0.12 | -0.73 |
| IDEQ | 26-Oct-98 | 16.7 | 2290 | 206 | 2.82 | 7.74 | 5.33 | -0.58 | -0.39 | -0.78 |
| IDEQ | 25-Nov-98 | 26 | 6950 | 972 | 3.26 | 8.85 | 6.88 | -0.44 | 2.84 | 0.84 |
| IDEQ | 15-Jan-99 | 33 | 3730 | 662 | 3.50 | 8.22 | 6.50 | -0.33 | 0.61 | 0.18 |
| IDEQ | 23-Feb-99 | 20 | 3710 | 399 | 3.00 | 8.22 | 5.99 | -0.53 | 0.59 | -0.37 |
| IDEQ | 8-Mar-99 | 23 | 3870 | 479 | 3.14 | 8.26 | 6.17 | -0.48 | 0.70 | -0.20 |
| URS | 9-Nov-97 | 36.6 | 2750 | 541 | 3.60 | 7.92 | 6.29 | -0.28 | -0.07 | -0.07 |
| URS | 14-May-98 | 233 | 675 | 846 | 5.45 | 6.51 | 6.74 | 2.70 | -1.51 | 0.57 |
| USGS | 26-Oct-98 | 13 | 2200 | 154 | 2.56 | 7.70 | 5.04 | -0.63 | -0.46 | -0.89 |
| USGS | 26-Oct-98 | 13 | 2300 | 161 | 2.56 | 7.74 | 5.08 | -0.63 | -0.39 | -0.87 |
| URS | 14-Nov-98 | 22.53 | 4620 | 560 | 3.11 | 8.44 | 6.33 | -0.49 | 1.22 | -0.03 |
| USGS | 18-Nov-98 | 16 | 3900 | 336 | 2.77 | 8.27 | 5.82 | -0.59 | 0.72 | -0.50 |
| USGS | 15-Dec-98 | 25 | 4500 | 605 | 3.22 | 8.41 | 6.41 | -0.45 | 1.14 | 0.06 |
| USGS | 28-Dec-98 | 27 | 4200 | 610 | 3.30 | 8.34 | 6.41 | -0.42 | 0.93 | 0.07 |
| USGS | 23-Mar-99 | 97 | 3600 | 1879 | 4.57 | 8.19 | 7.54 | 0.64 | 0.52 | 2.75 |
| USGS | 19-Apr-99 | 138 | 1900 | 1411 | 4.93 | 7.55 | 7.25 | 1.26 | -0.66 | 1.76 |
| USGS | 5-May-99 | 84 | 1300 | 587 | 4.43 | 7.17 | 6.38 | 0.44 | -1.08 | 0.03 |
| USGS | 24-May-99 | 384 | 1400 | 2892 | 5.95 | 7.24 | 7.97 | 5.00 | -1.01 | 4.88 |
| USGS | 27-May-99 | 261 | 660 | 927 | 5.56 | 6.49 | 6.83 | 3.13 | -1.52 | 0.74 |
| USGS | 2-Jun-99 | 241 | 570 | 739 | 5.48 | 6.35 | 6.61 | 2.83 | -1.59 | 0.35 |
| USGS | 15-Jun-99 | 263 | 470 | 665 | 5.57 | 6.15 | 6.50 | 3.16 | -1.66 | 0.19 |
| USGS | 8-Jul-99 | 107 | 664 | 382 | 4.67 | 6.50 | 5.95 | 0.79 | -1.52 | -0.41 |
| USGS | 5-Aug-99 | 34 | 1390 | 254 | 3.53 | 7.24 | 5.54 | -0.32 | -1.02 | -0.68 |
| USGS | 30-Aug-99 | 22 | 1780 | 211 | 3.09 | 7.48 | 5.35 | -0.50 | -0.75 | -0.77 |

**tZn**

**Concentration over time analysis** r2 Slope, m

**tZn CC287/288** **Concentration over time**

**LnConc.=mTime+b All data r2, m:** **0.089** **-0.00025**

| | Time | Ln[COC] | [COC] |
|---|---|---|---|
| first: | 5-Oct-91 | 8.27 | 3,910 |
| mid: | 27-Nov-96 | 7.79 | 2,424 |
| last: | 30-Aug-99 | 7.54 | 1,877 |

**LnConc.=mTime+b >'96 r2, m:** **0.058** **-0.00061**

| | | |
|---|---|---|
| 21-Feb-97 | 7.97 | 2,897 |
| 30-Aug-99 | 7.41 | 1,658 |

**Load over time analysis**

**tZn CC287/288** **Load over time**

**LnLoad=mTime+b All data r2, m:** **0.025** **0.00014**

| | Time | LnLoad | Load |
|---|---|---|---|
| first: | 5-Oct-91 | 5.88 | 357 |
| mid: | 27-Nov-96 | 6.14 | 465 |
| last: | 30-Aug-99 | 6.28 | 535 |

**LnLoad=mTime+b >'96 r2, m:** **0.011** **-0.00028**

| | | |
|---|---|---|
| 21-Feb-97 | 6.36 | 577 |
| 30-Aug-99 | 6.10 | 444 |

max r2: 0.136 max r2: 0.068

**Forward time Regression on Ln Concentration(t)** **Forward time Regression on Ln Load(t)**

| r2 | slope | intercept | r2 | slope | intercept |
|---|---|---|---|---|---|
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.089 | -0.00025 | 16.80 | 0.025 | 0.00014 | 1.17 |
| 0.087 | -0.00026 | 17.00 | 0.019 | 0.00013 | 1.62 |
| 0.083 | -0.00026 | 16.95 | 0.015 | 0.00011 | 2.11 |
| 0.078 | -0.00025 | 16.73 | 0.012 | 0.00010 | 2.51 |
| 0.069 | -0.00024 | 16.24 | 0.010 | 0.00010 | 2.77 |
| 0.060 | -0.00022 | 15.70 | 0.008 | 0.00009 | 3.02 |
| 0.051 | -0.00021 | 15.15 | 0.007 | 0.00008 | 3.21 |
| 0.043 | -0.00019 | 14.56 | 0.007 | 0.00008 | 3.31 |
| 0.036 | -0.00018 | 14.02 | 0.004 | 0.00007 | 3.80 |
| 0.029 | -0.00016 | 13.47 | 0.005 | 0.00007 | 3.60 |
| 0.023 | -0.00014 | 12.85 | 0.006 | 0.00008 | 3.40 |
| 0.023 | -0.00015 | 13.00 | 0.006 | 0.00008 | 3.30 |
| 0.033 | -0.00018 | 14.05 | 0.008 | 0.00010 | 2.72 |
| 0.047 | -0.00022 | 15.39 | 0.009 | 0.00011 | 2.40 |
| 0.057 | -0.00024 | 16.27 | 0.010 | 0.00011 | 2.14 |
| 0.066 | -0.00026 | 17.08 | 0.007 | 0.00009 | 2.81 |
| 0.068 | -0.00027 | 17.44 | 0.004 | 0.00007 | 3.64 |
| 0.067 | -0.00028 | 17.55 | 0.002 | 0.00005 | 4.52 |
| 0.066 | -0.00028 | 17.68 | 0.000 | 0.00001 | 5.79 |
| 0.065 | -0.00028 | 17.79 | 0.000 | -0.00002 | 6.90 |
| 0.060 | -0.00028 | 17.60 | 0.002 | -0.00005 | 7.99 |
| 0.047 | -0.00025 | 16.57 | 0.002 | -0.00006 | 8.19 |
| 0.033 | -0.00021 | 15.09 | 0.001 | -0.00005 | 7.93 |
| 0.021 | -0.00016 | 13.56 | 0.000 | -0.00002 | 6.82 |
| 0.017 | -0.00015 | 13.13 | 0.000 | 0.00000 | 6.07 |
| 0.016 | -0.00015 | 13.14 | 0.000 | 0.00000 | 6.03 |
| 0.011 | -0.00013 | 12.21 | 0.004 | 0.00008 | 3.33 |
| 0.010 | -0.00012 | 12.12 | 0.005 | 0.00009 | 2.79 |
| 0.011 | -0.00013 | 12.45 | 0.005 | 0.00010 | 2.59 |
| 0.023 | -0.00020 | 14.70 | 0.005 | 0.00011 | 2.42 |
| 0.035 | -0.00025 | 16.54 | 0.002 | 0.00006 | 4.00 |
| 0.043 | -0.00028 | 17.80 | 0.000 | -0.00001 | 6.40 |
| 0.052 | -0.00032 | 19.11 | 0.005 | -0.00010 | 9.88 |
| 0.053 | -0.00033 | 19.60 | 0.017 | -0.00020 | 13.34 |
| 0.051 | -0.00034 | 19.80 | 0.040 | -0.00031 | 17.24 |
| 0.047 | -0.00034 | 19.72 | 0.043 | -0.00033 | 18.14 |
| 0.054 | -0.00037 | 21.04 | 0.036 | -0.00031 | 17.38 |
| 0.055 | -0.00039 | 21.65 | 0.037 | -0.00033 | 17.93 |
| 0.045 | -0.00036 | 20.73 | 0.025 | -0.00028 | 16.23 |
| 0.047 | -0.00038 | 21.50 | 0.012 | -0.00019 | 13.07 |
| 0.050 | -0.00042 | 22.60 | 0.007 | -0.00016 | 11.82 |
| 0.063 | -0.00048 | 25.08 | 0.004 | -0.00012 | 10.66 |
| 0.108 | -0.00065 | 30.95 | 0.002 | -0.00010 | 9.71 |
| 0.136 | -0.00075 | 34.72 | 0.007 | -0.00017 | 12.40 |
| 0.125 | -0.00075 | 34.60 | 0.008 | -0.00020 | 13.27 |
| 0.127 | -0.00078 | 35.91 | 0.017 | -0.00029 | 16.78 |
| 0.114 | -0.00077 | 35.47 | 0.020 | -0.00033 | 17.97 |

| | | | | | |
|---|---|---|---|---|---|
| 0.095 | -0.00073 | 33.89 | 0.021 | -0.00035 | 18.88 |
| 0.069 | -0.00064 | 30.54 | 0.013 | -0.00029 | 16.57 |
| 0.058 | -0.00061 | 29.48 | 0.011 | -0.00028 | 16.46 |
| 0.043 | -0.00054 | 27.15 | 0.006 | -0.00021 | 13.76 |
| 0.030 | -0.00047 | 24.65 | 0.003 | 0.00015 | 0.69 |
| 0.021 | -0.00041 | 22.46 | 0.016 | 0.00035 | -6.35 |
| 0.056 | -0.00069 | 32.53 | 0.018 | 0.00039 | -8.00 |
| 0.082 | -0.00087 | 39.01 | 0.035 | 0.00056 | -14.23 |
| 0.095 | -0.00099 | 43.33 | 0.033 | 0.00058 | -14.84 |
| 0.096 | -0.00105 | 45.45 | 0.037 | 0.00065 | -17.38 |
| 0.091 | -0.00107 | 46.24 | 0.036 | 0.00067 | -18.19 |
| 0.089 | -0.00111 | 47.61 | 0.041 | 0.00076 | -21.14 |
| 0.084 | -0.00114 | 48.76 | 0.044 | 0.00083 | -23.80 |
| 0.070 | -0.00109 | 46.88 | 0.049 | 0.00092 | -27.06 |
| 0.056 | -0.00102 | 44.59 | 0.041 | 0.00089 | -26.09 |
| 0.042 | -0.00092 | 40.83 | 0.042 | 0.00095 | -28.02 |
| 0.035 | -0.00088 | 39.49 | 0.048 | 0.00107 | -32.41 |
| 0.084 | -0.00136 | 56.86 | 0.068 | 0.00131 | -41.23 |
| 0.114 | -0.00162 | 66.04 | 0.068 | 0.00135 | -42.81 |
| 0.127 | -0.00175 | 70.87 | 0.053 | 0.00120 | -37.42 |
| 0.131 | -0.00181 | 73.09 | 0.040 | 0.00104 | -31.53 |
| 0.132 | -0.00184 | 74.16 | 0.029 | 0.00087 | -25.36 |
| 0.133 | -0.00187 | 75.21 | 0.018 | 0.00068 | -18.44 |
| 0.128 | -0.00185 | 74.64 | 0.011 | 0.00051 | -12.13 |

update for EV, CV:

**tZn** CC287/288
**LN Analysis** **tZn**

**Load** **Load Data, EV=575 lbs/day CV=0.76**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **575** | **Load Data-based LN** | | |
| **SD:** | **474** | u | ln tZn Load | tZn Load |
| **CV:** | **0.83** | 3 | 8.3 | 3853 |
| **Min:** | **140.1** | 0 | 6.09 | 443 |
| **Max:** | **2,913** | -3 | 3.93 | 51.0 |
| **Median:** | **478** | | | |
| | | 575 | 575 | |
| | | 0.83 | 0.76 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.97, EV=569lbs/day CV=0.65; max r2=0.977**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.973 | u | lnLoad | Load | | |
| slope, m: | 1.548 | 3 | 8.07 | 3208 | | |
| intercept, b: | -9.499 | 0 | 6.14 | 462 | | |
| N: | 93 | -3 | 4.20 | 66.6 | | |
| E[Load]: | 569.3 | Parameter Estimates | | | 0.970 | 0.97 |
| SD[Load]: | 410 | from LN regression | | | 569.3 | 569 |
| CV[Load]: | 0.72 | update graph label | | | 0.7 | 0.65 |
| | | | | | max r2 | |
| | tZn | N: 93 | | | 0.977 | |
| | Load | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | lbs/day Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 25-Jul-95 | **140** | 1 | 0.0067 | -2.473 | 4.942 | 0.973 |
| 26-Oct-98 | 154 | 2 | 0.0174 | -2.110 | 5.036 | 0.976 |
| 26-Oct-98 | 161 | 3 | 0.0282 | -1.909 | 5.081 | 0.977 |
| 14-Aug-95 | **169** | 4 | 0.0389 | -1.764 | 5.129 | 0.977 |
| 13-Sep-95 | **171** | 5 | 0.0496 | -1.649 | 5.139 | 0.977 |
| 11-Jul-95 | **182** | 6 | 0.0603 | -1.552 | 5.206 | 0.977 |
| 1-Oct-98 | **199** | 7 | 0.0710 | -1.468 | 5.296 | 0.976 |
| 24-Sep-98 | **205** | 8 | 0.0818 | -1.393 | 5.325 | 0.976 |
| 26-Oct-98 | **206** | 9 | 0.0925 | -1.326 | 5.327 | 0.976 |
| 16-Aug-94 | **208** | 10 | 0.1032 | -1.263 | 5.338 | 0.976 |
| 30-Aug-99 | 211 | 11 | 0.1139 | -1.206 | 5.350 | 0.975 |
| 26-Aug-98 | **218** | 12 | 0.1247 | -1.152 | 5.385 | 0.975 |
| 28-Jul-98 | **226** | 13 | 0.1354 | -1.101 | 5.420 | 0.974 |
| 27-Jun-95 | **229** | 14 | 0.1461 | -1.053 | 5.434 | 0.973 |
| 8-Oct-98 | **229** | 15 | 0.1568 | -1.008 | 5.435 | 0.972 |
| 27-Oct-93 | **244** | 16 | 0.1676 | -0.964 | 5.499 | 0.971 |
| 25-Jul-94 | **245** | 17 | 0.1783 | -0.922 | 5.501 | 0.971 |
| 13-Sep-94 | **246** | 18 | 0.1890 | -0.882 | 5.506 | 0.970 |
| 16-Aug-94 | **250** | 19 | 0.1997 | -0.843 | 5.521 | 0.969 |
| 5-Aug-99 | 254 | 20 | 0.2105 | -0.805 | 5.538 | 0.968 |
| 23-Jun-94 | **263** | 21 | 0.2212 | -0.768 | 5.573 | 0.966 |
| 16-Oct-94 | **265** | 22 | 0.2319 | -0.733 | 5.578 | 0.965 |
| 5-Oct-91 | **268** | 23 | 0.2426 | -0.698 | 5.589 | 0.964 |
| 30-Nov-93 | **275** | 24 | 0.2534 | -0.664 | 5.617 | 0.963 |
| 18-Feb-94 | **284** | 25 | 0.2641 | -0.631 | 5.648 | 0.962 |
| 26-Sep-96 | **291** | 26 | 0.2748 | -0.598 | 5.672 | 0.961 |
| 24-Jul-96 | **299** | 27 | 0.2855 | -0.567 | 5.699 | 0.959 |
| 22-Jan-98 | **323** | 28 | 0.2962 | -0.535 | 5.779 | 0.958 |
| 17-Dec-93 | **326** | 29 | 0.3070 | -0.504 | 5.787 | 0.957 |
| 17-Dec-93 | **335** | 30 | 0.3177 | -0.474 | 5.815 | 0.955 |
| 18-Nov-98 | 336 | 31 | 0.3284 | -0.444 | 5.816 | 0.954 |
| 20-Jan-94 | **361** | 32 | 0.3391 | -0.415 | 5.888 | 0.952 |
| 8-Jul-99 | 382 | 33 | 0.3499 | -0.386 | 5.946 | 0.951 |
| 14-Aug-97 | **386** | 34 | 0.3606 | -0.357 | 5.957 | 0.951 |
| 16-Oct-97 | **389** | 35 | 0.3713 | -0.328 | 5.965 | 0.950 |
| 20-Jan-94 | **398** | 36 | 0.3820 | -0.300 | 5.987 | 0.949 |
| 23-Feb-99 | **399** | 37 | 0.3928 | -0.272 | 5.989 | 0.949 |
| 26-Jun-98 | **410** | 38 | 0.4035 | -0.244 | 6.016 | 0.948 |
| 26-Feb-98 | **415** | 39 | 0.4142 | -0.217 | 6.029 | 0.947 |
| 26-Nov-97 | **439** | 40 | 0.4249 | -0.189 | 6.085 | 0.947 |
| 19-Dec-97 | **446** | 41 | 0.4357 | -0.162 | 6.100 | 0.947 |
| 4-Sep-97 | **465** | 42 | 0.4464 | -0.135 | 6.141 | 0.948 |
| 21-Aug-96 | **468** | 43 | 0.4571 | -0.108 | 6.149 | 0.949 |
| 16-Nov-94 | **470** | 44 | 0.4678 | -0.081 | 6.153 | 0.951 |
| 9-Nov-97 | **471** | 45 | 0.4786 | -0.054 | 6.156 | 0.952 |
| 13-Jun-95 | **477** | 46 | 0.4893 | -0.027 | 6.167 | 0.953 |
| 7-Apr-94 | **478** | 47 | 0.5000 | 0.000 | 6.170 | 0.955 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8-Mar-99 | 479 | 48 | 0.5107 | 0.027 | 6.171 | 0.956 |
| 24-Jun-97 | 484 | 49 | 0.5214 | 0.054 | 6.183 | 0.956 |
| 29-Oct-96 | 485 | 50 | 0.5322 | 0.081 | 6.185 | 0.957 |
| 25-Apr-95 | 486 | 51 | 0.5429 | 0.108 | 6.186 | 0.957 |
| 20-Mar-98 | 486 | 52 | 0.5536 | 0.135 | 6.187 | 0.957 |
| 8-Mar-95 | 501 | 53 | 0.5643 | 0.162 | 6.217 | 0.957 |
| 18-Oct-95 | 510 | 54 | 0.5751 | 0.189 | 6.235 | 0.957 |
| 7-Jun-94 | 519 | 55 | 0.5858 | 0.217 | 6.252 | 0.958 |
| 24-Mar-94 | 523 | 56 | 0.5965 | 0.244 | 6.259 | 0.958 |
| 27-Nov-96 | 523 | 57 | 0.6072 | 0.272 | 6.260 | 0.958 |
| 8-Mar-94 | 534 | 58 | 0.6180 | 0.300 | 6.281 | 0.958 |
| 9-Nov-97 | 541 | 59 | 0.6287 | 0.328 | 6.294 | 0.958 |
| 19-May-94 | 549 | 60 | 0.6394 | 0.357 | 6.308 | 0.958 |
| 14-Nov-98 | 560 | 61 | 0.6501 | 0.386 | 6.328 | 0.957 |
| 27-Dec-95 | 566 | 62 | 0.6609 | 0.415 | 6.339 | 0.957 |
| 12-Apr-95 | 578 | 63 | 0.6716 | 0.444 | 6.360 | 0.957 |
| 5-May-99 | 587 | 64 | 0.6823 | 0.474 | 6.376 | 0.957 |
| 30-Jan-97 | 591 | 65 | 0.6930 | 0.504 | 6.382 | 0.956 |
| 15-Dec-98 | 605 | 66 | 0.7038 | 0.535 | 6.406 | 0.956 |
| 28-Dec-98 | 610 | 67 | 0.7145 | 0.567 | 6.414 | 0.955 |
| 13-Dec-94 | 613 | 68 | 0.7252 | 0.598 | 6.419 | 0.954 |
| 15-Jan-99 | 662 | 69 | 0.7359 | 0.631 | 6.496 | 0.952 |
| 15-Jun-99 | 665 | 70 | 0.7466 | 0.664 | 6.500 | 0.953 |
| 19-Jun-96 | 666 | 71 | 0.7574 | 0.698 | 6.501 | 0.952 |
| 4-May-94 | 693 | 72 | 0.7681 | 0.733 | 6.541 | 0.951 |
| 14-May-98 | 710 | 73 | 0.7788 | 0.768 | 6.566 | 0.951 |
| 8-May-96 | 728 | 74 | 0.7895 | 0.805 | 6.590 | 0.951 |
| 2-Jun-99 | 739 | 75 | 0.8003 | 0.843 | 6.605 | 0.951 |
| 9-Feb-95 | 752 | 76 | 0.8110 | 0.882 | 6.623 | 0.950 |
| 28-Mar-96 | 782 | 77 | 0.8217 | 0.922 | 6.662 | 0.949 |
| 23-Jul-97 | 794 | 78 | 0.8324 | 0.964 | 6.677 | 0.948 |
| 21-Feb-97 | 833 | 79 | 0.8432 | 1.008 | 6.725 | 0.946 |
| 14-May-98 | 846 | 80 | 0.8539 | 1.053 | 6.741 | 0.946 |
| 21-Nov-95 | 859 | 81 | 0.8646 | 1.101 | 6.756 | 0.944 |
| 13-Dec-96 | 879 | 82 | 0.8753 | 1.152 | 6.779 | 0.940 |
| 27-May-99 | 927 | 83 | 0.8861 | 1.206 | 6.832 | 0.934 |
| 10-Jan-95 | 959 | 84 | 0.8968 | 1.263 | 6.866 | 0.927 |
| 25-Nov-98 | 972 | 85 | 0.9075 | 1.326 | 6.880 | 0.916 |
| 16-Apr-97 | 994 | 86 | 0.9182 | 1.393 | 6.901 | 0.898 |
| 17-Jan-96 | 1049 | 87 | 0.9290 | 1.468 | 6.955 | 0.877 |
| 19-Apr-99 | 1411 | 88 | 0.9397 | 1.552 | 7.252 | 0.867 |
| 29-Feb-96 | 1415 | 89 | 0.9504 | 1.649 | 7.255 | 0.823 |
| 22-Mar-95 | 1840 | 90 | 0.9611 | 1.764 | 7.518 | |
| 23-Mar-99 | 1879 | 91 | 0.9718 | 1.909 | 7.538 | |
| 24-May-99 | 2892 | 92 | 0.9826 | 2.110 | 7.970 | |
| 26-Mar-97 | 2913 | 93 | 0.9933 | 2.473 | 7.977 | |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| tZn | | CC287/288 | | 2,856 | 2860 |
| LN Analysis | | tZn | | 0.50 | 0.504 |
| **Concentration** | | **Conc. Data, EV=2860 ug/L CV=0.504** | | | |
| Avg: | 2,856 | Data-based LN | | | |
| SD: | 1,440 | u | ln[tZn] | [tZn] | |
| CV: | 0.50 | 3 | 9.3 | 10634 | |
| Min: | 470 | 0 | 7.84 | 2550 | |
| Max: | 6,950 | -3 | 6.42 | 612 | |
| Median: | 2,730 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.951 | 0.951 |
| u=mLn{Conc.}+b: | | | | 2975.8 | 2980 |
| update for r2, EV, CV: | r2=0.951, EV=2980 ug/L CV=0.689; max r2=0.988 | | | 0.689 | 0.689 |
| r2 u,lnConc: | 0.951 | u | lnConc. | Conc. | |
| slope, m: | 1.604 | 3 | 9.67 | 15896 | |
| intercept, b: | -12.521 | 0 | 7.80 | 2450 | |
| N: | 93 | -3 | 5.93 | 378 | |
| E[Conc]: | 2975.8 | Parameter Estimates | | | |
| SD[Conc]: | 2050 | from LN regression | | | |
| CV[Conc]: | 0.69 | update graph label | | | |

| Date | tZn Concentration ug/L Ranked | N: 93 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.988 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 15-Jun-99 | 470 | 1 | 0.0067 | -2.473 | 6.153 | 0.951 |
| 2-Jun-99 | 570 | 2 | 0.0174 | -2.110 | 6.346 | 0.948 |
| 14-May-98 | 641 | 3 | 0.0282 | -1.909 | 6.463 | 0.946 |
| 27-May-99 | 660 | 4 | 0.0389 | -1.764 | 6.492 | 0.944 |
| 8-Jul-99 | 664 | 5 | 0.0496 | -1.649 | 6.498 | 0.944 |
| 14-May-98 | 675 | 6 | 0.0603 | -1.552 | 6.515 | 0.946 |
| 24-Jun-97 | 726 | 7 | 0.0710 | -1.468 | 6.588 | 0.951 |
| 19-Jun-96 | 836 | 8 | 0.0818 | -1.393 | 6.729 | 0.957 |
| 13-Jun-95 | 919 | 9 | 0.0925 | -1.326 | 6.823 | 0.962 |
| 19-May-94 | 1000 | 10 | 0.1032 | -1.263 | 6.908 | 0.966 |
| 4-May-94 | 1160 | 11 | 0.1139 | -1.206 | 7.056 | 0.969 |
| 26-Jun-98 | 1200 | 12 | 0.1247 | -1.152 | 7.090 | 0.969 |
| 27-Jun-95 | 1220 | 13 | 0.1354 | -1.101 | 7.107 | 0.970 |
| 5-May-99 | 1300 | 14 | 0.1461 | -1.053 | 7.170 | 0.972 |
| 23-Jul-97 | 1330 | 15 | 0.1568 | -1.008 | 7.193 | 0.972 |
| 5-Aug-99 | 1390 | 16 | 0.1676 | -0.964 | 7.237 | 0.974 |
| 24-May-99 | 1400 | 17 | 0.1783 | -0.922 | 7.244 | 0.975 |
| 7-Jun-94 | 1520 | 18 | 0.1890 | -0.882 | 7.326 | 0.977 |
| 24-Jul-96 | 1550 | 19 | 0.1997 | -0.843 | 7.346 | 0.977 |
| 8-May-96 | 1660 | 20 | 0.2105 | -0.805 | 7.415 | 0.978 |
| 23-Jun-94 | 1690 | 21 | 0.2212 | -0.768 | 7.432 | 0.978 |
| 11-Jul-95 | 1690 | 22 | 0.2319 | -0.733 | 7.432 | 0.978 |
| 28-Jul-98 | 1700 | 23 | 0.2426 | -0.698 | 7.438 | 0.979 |
| 25-Jul-95 | 1770 | 24 | 0.2534 | -0.664 | 7.479 | 0.980 |
| 30-Aug-99 | 1780 | 25 | 0.2641 | -0.631 | 7.484 | 0.981 |
| 14-Aug-97 | 1900 | 26 | 0.2748 | -0.598 | 7.550 | 0.982 |
| 19-Apr-99 | 1900 | 27 | 0.2855 | -0.567 | 7.550 | 0.983 |
| 21-Nov-95 | 1960 | 28 | 0.2962 | -0.535 | 7.581 | 0.984 |
| 26-Aug-98 | 2080 | 29 | 0.3070 | -0.504 | 7.640 | 0.984 |
| 25-Apr-95 | 2100 | 30 | 0.3177 | -0.474 | 7.650 | 0.984 |
| 26-Oct-98 | 2200 | 31 | 0.3284 | -0.444 | 7.696 | 0.984 |
| 24-Sep-98 | 2220 | 32 | 0.3391 | -0.415 | 7.705 | 0.983 |
| 1-Oct-98 | 2220 | 33 | 0.3499 | -0.386 | 7.705 | 0.983 |
| 28-Mar-96 | 2230 | 34 | 0.3606 | -0.357 | 7.710 | 0.982 |
| 26-Oct-98 | 2290 | 35 | 0.3713 | -0.328 | 7.736 | 0.982 |
| 26-Oct-98 | 2300 | 36 | 0.3820 | -0.300 | 7.741 | 0.982 |
| 7-Apr-94 | 2350 | 37 | 0.3928 | -0.272 | 7.762 | 0.981 |
| 29-Feb-96 | 2370 | 38 | 0.4035 | -0.244 | 7.771 | 0.981 |
| 25-Jul-94 | 2390 | 39 | 0.4142 | -0.217 | 7.779 | 0.981 |
| 14-Aug-95 | 2490 | 40 | 0.4249 | -0.189 | 7.820 | 0.981 |
| 27-Dec-95 | 2500 | 41 | 0.4357 | -0.162 | 7.824 | 0.980 |
| 8-Mar-95 | 2530 | 42 | 0.4464 | -0.135 | 7.836 | 0.980 |
| 4-Sep-97 | 2540 | 43 | 0.4571 | -0.108 | 7.840 | 0.979 |
| 12-Apr-95 | 2550 | 44 | 0.4678 | -0.081 | 7.844 | 0.979 |
| 9-Nov-97 | 2680 | 45 | 0.4786 | -0.054 | 7.894 | 0.979 |
| 8-Oct-98 | 2680 | 46 | 0.4893 | -0.027 | 7.894 | 0.978 |
| 20-Mar-98 | 2730 | 47 | 0.5000 | 0.000 | 7.912 | 0.978 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 26-Nov-97 | 2750 | 48 | 0.5107 | 0.027 | 7.919 | 0.977 |
| 9-Nov-97 | 2750 | 49 | 0.5214 | 0.054 | 7.919 | 0.977 |
| 26-Sep-96 | 2770 | 50 | 0.5322 | 0.081 | 7.927 | 0.976 |
| 13-Sep-95 | 2780 | 51 | 0.5429 | 0.108 | 7.930 | 0.976 |
| 16-Aug-94 | 2850 | 52 | 0.5536 | 0.135 | 7.955 | 0.977 |
| 16-Aug-94 | 2850 | 53 | 0.5643 | 0.162 | 7.955 | 0.977 |
| 16-Oct-97 | 2850 | 54 | 0.5751 | 0.189 | 7.955 | 0.979 |
| 13-Sep-94 | 2880 | 55 | 0.5858 | 0.217 | 7.966 | 0.982 |
| 18-Oct-95 | 3020 | 56 | 0.5965 | 0.244 | 8.013 | 0.986 |
| 9-Feb-95 | 3230 | 57 | 0.6072 | 0.272 | 8.080 | 0.988 |
| 22-Jan-98 | 3320 | 58 | 0.6180 | 0.300 | 8.108 | 0.987 |
| 16-Apr-97 | 3340 | 59 | 0.6287 | 0.328 | 8.114 | 0.986 |
| 27-Oct-93 | 3420 | 60 | 0.6394 | 0.357 | 8.137 | 0.986 |
| 5-Oct-91 | 3430 | 61 | 0.6501 | 0.386 | 8.140 | 0.985 |
| 16-Oct-94 | 3430 | 62 | 0.6609 | 0.415 | 8.140 | 0.985 |
| 19-Dec-97 | 3440 | 63 | 0.6716 | 0.444 | 8.143 | 0.984 |
| 26-Feb-98 | 3460 | 64 | 0.6823 | 0.474 | 8.149 | 0.983 |
| 30-Jan-97 | 3500 | 65 | 0.6930 | 0.504 | 8.161 | 0.982 |
| 23-Mar-99 | 3600 | 66 | 0.7038 | 0.535 | 8.189 | 0.981 |
| 23-Feb-99 | 3710 | 67 | 0.7145 | 0.567 | 8.219 | 0.980 |
| 21-Aug-96 | 3730 | 68 | 0.7252 | 0.598 | 8.224 | 0.980 |
| 15-Jan-99 | 3730 | 69 | 0.7359 | 0.631 | 8.224 | 0.979 |
| 26-Mar-97 | 3760 | 70 | 0.7466 | 0.664 | 8.232 | 0.977 |
| 17-Jan-96 | 3830 | 71 | 0.7574 | 0.698 | 8.251 | 0.976 |
| 29-Oct-96 | 3840 | 72 | 0.7681 | 0.733 | 8.253 | 0.974 |
| 8-Mar-99 | 3870 | 73 | 0.7788 | 0.768 | 8.261 | 0.972 |
| 18-Nov-98 | 3900 | 74 | 0.7895 | 0.805 | 8.269 | 0.970 |
| 22-Mar-95 | 3970 | 75 | 0.8003 | 0.843 | 8.287 | 0.968 |
| 21-Feb-97 | 3980 | 76 | 0.8110 | 0.882 | 8.289 | 0.966 |
| 30-Nov-93 | 4050 | 77 | 0.8217 | 0.922 | 8.306 | 0.965 |
| 28-Dec-98 | 4200 | 78 | 0.8324 | 0.964 | 8.343 | 0.966 |
| 8-Mar-94 | 4460 | 79 | 0.8432 | 1.008 | 8.403 | 0.964 |
| 27-Nov-96 | 4480 | 80 | 0.8539 | 1.053 | 8.407 | 0.961 |
| 15-Dec-98 | 4500 | 81 | 0.8646 | 1.101 | 8.412 | 0.957 |
| 24-Mar-94 | 4600 | 82 | 0.8753 | 1.152 | 8.434 | 0.952 |
| 18-Feb-94 | 4620 | 83 | 0.8861 | 1.206 | 8.438 | 0.945 |
| 14-Nov-98 | 4620 | 84 | 0.8968 | 1.263 | 8.438 | 0.936 |
| 20-Jan-94 | 5050 | 85 | 0.9075 | 1.326 | 8.527 | 0.934 |
| 20-Jan-94 | 5050 | 86 | 0.9182 | 1.393 | 8.527 | 0.928 |
| 17-Dec-93 | 5180 | 87 | 0.9290 | 1.468 | 8.553 | 0.913 |
| 17-Dec-93 | 5180 | 88 | 0.9397 | 1.552 | 8.553 | 0.891 |
| 16-Nov-94 | 5500 | 89 | 0.9504 | 1.649 | 8.613 | 0.855 |
| 13-Dec-96 | 5500 | 90 | 0.9611 | 1.764 | 8.613 | |
| 10-Jan-95 | 6320 | 91 | 0.9718 | 1.909 | 8.751 | |
| 13-Dec-94 | 6640 | 92 | 0.9826 | 2.110 | 8.801 | |
| 25-Nov-98 | 6950 | 93 | 0.9933 | 2.473 | 8.846 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **CC287/288** | | | 41 | 41.1 |
| **LN Analysis** | | **tZn** | | | 0.92 | 0.92 |
| **Discharge, Q** | | **Q Data, EV=41.1 cfs CV=0.92** | | | | |
| **Avg:** | **41** | **Q Data-based LN** | | | | |
| **SD:** | **38** | u | lnQ | Q | | |
| **CV:** | **0.92** | 3 | 5.8 | 317 | | |
| **Min:** | **11** | 0 | 3.41 | 30 | | |
| **Max:** | **206** | -3 | 1.06 | 3 | | |
| **Median:** | **26** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.936 | 0.936 |
| | | | | | 40.8 | 40.8 |
| **u=mLn{Q}+b:** | | | | | 0.88 | 0.884 |
| update for r2, EV, CV: | **r2=0.936, EV=40.8 cfs CV=0.884; max r2=0.98** | | | | | |
| r2 u,lnQ: | 0.936 | u | lnQ | Q | | |
| slope, m: | 1.316 | 3 | 5.70 | 299 | | |
| intercept, b: | -4.498 | 0 | 3.42 | 31 | | |
| N: | 75 | -3 | 1.14 | 3 | | |
| E[Q]: | 40.8 | Parameter Estimates | | | | |
| SD[Q]: | 36 | from LN regression | | | | |
| CV[Q]: | 0.88 | update graph label | | | | |

| | Q | N: 75 | | | | max r2 0.979 |
|---|---|---|---|---|---|---|
| **Date** | **Discharge cfs Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | **r2 forward** |
| update and rank for new data | | | | | | |
| 13-Sep-95 | 11.4 | 1 | 0.0083 | -2.395 | 2.434 | 0.936 |
| 18-Feb-94 | 11.41 | 2 | 0.0216 | -2.022 | 2.434 | 0.950 |
| 17-Dec-93 | 11.7 | 3 | 0.0349 | -1.813 | 2.460 | 0.956 |
| 17-Dec-93 | 12.03 | 4 | 0.0482 | -1.663 | 2.487 | 0.960 |
| 14-Aug-95 | 12.6 | 5 | 0.0615 | -1.543 | 2.534 | 0.964 |
| 30-Nov-93 | 12.62 | 6 | 0.0748 | -1.441 | 2.535 | 0.966 |
| 27-Oct-93 | 13.28 | 7 | 0.0880 | -1.353 | 2.586 | 0.968 |
| 20-Jan-94 | 13.28 | 8 | 0.1013 | -1.274 | 2.586 | 0.970 |
| 16-Aug-94 | 13.57 | 9 | 0.1146 | -1.202 | 2.608 | 0.972 |
| 16-Oct-94 | 14.34 | 10 | 0.1279 | -1.136 | 2.663 | 0.973 |
| 5-Oct-91 | 14.5 | 11 | 0.1412 | -1.075 | 2.674 | 0.974 |
| 20-Jan-94 | 14.66 | 12 | 0.1545 | -1.017 | 2.685 | 0.975 |
| 25-Jul-95 | 14.71 | 13 | 0.1678 | -0.963 | 2.689 | 0.976 |
| 13-Sep-94 | 15.89 | 14 | 0.1811 | -0.911 | 2.766 | 0.977 |
| 16-Nov-94 | 15.89 | 15 | 0.1944 | -0.862 | 2.766 | 0.978 |
| 8-Oct-98 | 15.9 | 16 | 0.2076 | -0.815 | 2.766 | 0.978 |
| 16-Aug-94 | 16.3 | 17 | 0.2209 | -0.769 | 2.791 | 0.979 |
| 1-Oct-98 | 16.7 | 18 | 0.2342 | -0.725 | 2.815 | 0.979 |
| 26-Oct-98 | 16.7 | 19 | 0.2475 | -0.682 | 2.815 | 0.979 |
| 13-Dec-94 | 17.17 | 20 | 0.2608 | -0.641 | 2.843 | 0.979 |
| 24-Sep-98 | 17.2 | 21 | 0.2741 | -0.601 | 2.845 | 0.979 |
| 22-Jan-98 | 18.1 | 22 | 0.2874 | -0.561 | 2.896 | 0.978 |
| 25-Jul-94 | 19.04 | 23 | 0.3007 | -0.522 | 2.947 | 0.978 |
| 26-Sep-96 | 19.5 | 24 | 0.3140 | -0.485 | 2.970 | 0.978 |
| 26-Aug-98 | 19.5 | 25 | 0.3272 | -0.448 | 2.970 | 0.978 |
| 23-Feb-99 | 20 | 26 | 0.3405 | -0.411 | 2.996 | 0.978 |
| 11-Jul-95 | 20.05 | 27 | 0.3538 | -0.375 | 2.998 | 0.978 |
| 24-Mar-94 | 21.13 | 28 | 0.3671 | -0.340 | 3.051 | 0.977 |
| 27-Nov-96 | 21.7 | 29 | 0.3804 | -0.304 | 3.077 | 0.977 |
| 8-Mar-94 | 22.26 | 30 | 0.3937 | -0.270 | 3.103 | 0.976 |
| 26-Feb-98 | 22.3 | 31 | 0.4070 | -0.235 | 3.105 | 0.976 |
| 8-Mar-99 | 23 | 32 | 0.4203 | -0.201 | 3.135 | 0.975 |
| 21-Aug-96 | 23.342375 | 33 | 0.4336 | -0.167 | 3.150 | 0.975 |
| 29-Oct-96 | 23.5 | 34 | 0.4468 | -0.134 | 3.157 | 0.974 |
| 19-Dec-97 | 24.1 | 35 | 0.4601 | -0.100 | 3.182 | 0.973 |
| 28-Jul-98 | 24.7 | 36 | 0.4734 | -0.067 | 3.207 | 0.972 |
| 16-Oct-97 | 25.4 | 37 | 0.4867 | -0.033 | 3.235 | 0.971 |
| 25-Nov-98 | 26 | 38 | 0.5000 | 0.000 | 3.258 | 0.969 |
| 10-Jan-95 | 28.21 | 39 | 0.5133 | 0.033 | 3.340 | 0.968 |
| 23-Jun-94 | 28.96 | 40 | 0.5266 | 0.067 | 3.366 | 0.967 |
| 13-Dec-96 | 29.7 | 41 | 0.5399 | 0.100 | 3.391 | 0.966 |
| 26-Nov-97 | 29.7 | 42 | 0.5532 | 0.134 | 3.391 | 0.965 |
| 18-Oct-95 | 31.4 | 43 | 0.5664 | 0.167 | 3.447 | 0.963 |
| 30-Jan-97 | 31.4 | 44 | 0.5797 | 0.201 | 3.447 | 0.962 |
| 9-Nov-97 | 32.7 | 45 | 0.5930 | 0.235 | 3.487 | 0.960 |
| 15-Jan-99 | 33 | 46 | 0.6063 | 0.270 | 3.497 | 0.959 |
| 20-Mar-98 | 33.1 | 47 | 0.6196 | 0.304 | 3.500 | 0.956 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4-Sep-97 | 34 | 48 | 0.6329 | 0.340 | 3.526 | 0.954 |
| 27-Jun-95 | 34.9 | 49 | 0.6462 | 0.375 | 3.552 | 0.951 |
| 24-Jul-96 | 35.8 | 50 | 0.6595 | 0.411 | 3.578 | 0.948 |
| 8-Mar-95 | 36.82 | 51 | 0.6728 | 0.448 | 3.606 | 0.944 |
| 14-Aug-97 | 37.8 | 52 | 0.6860 | 0.485 | 3.632 | 0.940 |
| 7-Apr-94 | 37.82 | 53 | 0.6993 | 0.522 | 3.633 | 0.936 |
| 21-Feb-97 | 38.9 | 54 | 0.7126 | 0.561 | 3.661 | 0.932 |
| 27-Dec-95 | 42.1 | 55 | 0.7259 | 0.601 | 3.740 | 0.929 |
| 12-Apr-95 | 42.13 | 56 | 0.7392 | 0.641 | 3.741 | 0.924 |
| 25-Apr-95 | 43 | 57 | 0.7525 | 0.682 | 3.761 | 0.922 |
| 9-Feb-95 | 43.28 | 58 | 0.7658 | 0.725 | 3.768 | 0.923 |
| 17-Jan-96 | 50.9 | 59 | 0.7791 | 0.769 | 3.930 | 0.938 |
| 16-Apr-97 | 55.3 | 60 | 0.7924 | 0.815 | 4.013 | 0.943 |
| 7-Jun-94 | 63.45 | 61 | 0.8056 | 0.862 | 4.150 | 0.948 |
| 26-Jun-98 | 63.5 | 62 | 0.8189 | 0.911 | 4.151 | 0.944 |
| 28-Mar-96 | 65.2 | 63 | 0.8322 | 0.963 | 4.177 | 0.949 |
| 21-Nov-95 | 81.5 | 64 | 0.8455 | 1.017 | 4.401 | 0.973 |
| 8-May-96 | 81.5 | 65 | 0.8588 | 1.075 | 4.401 | 0.969 |
| 22-Mar-95 | 86.16 | 66 | 0.8721 | 1.136 | 4.456 | 0.968 |
| 13-Jun-95 | 96.41 | 67 | 0.8854 | 1.202 | 4.569 | 0.968 |
| 19-May-94 | 102.01 | 68 | 0.8987 | 1.274 | 4.625 | 0.962 |
| 29-Feb-96 | 111 | 69 | 0.9120 | 1.353 | 4.710 | 0.955 |
| 23-Jul-97 | 111 | 70 | 0.9252 | 1.441 | 4.710 | 0.968 |
| 4-May-94 | 111.05 | 71 | 0.9385 | 1.543 | 4.710 | 0.966 |
| 24-Jun-97 | 124 | 72 | 0.9518 | 1.663 | 4.820 | |
| 26-Mar-97 | 144 | 73 | 0.9651 | 1.813 | 4.970 | |
| 19-Jun-96 | 148 | 74 | 0.9784 | 2.022 | 4.997 | |
| 14-May-98 | 206 | 75 | 0.9917 | 2.395 | 5.328 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **CC291** | **Date:** | **29-May-00** |
| **Chemical:** | **dCd** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,617 | 33 | 4 | 0.5 | 0.00 | 0.00 | 0.00 |
| **SD:** | 306 | 49 | 1 | 0 4 | 1.00 | 1 00 | 1.00 |
| **CV:** | 0 01 | 1.49 | 0.37 | 0.8 | | | |
| **Min:** | 34,269 | 8 | 1 | 0.2 | -0.51 | -1 77 | -0.6e |
| **Max:** | 35,929 | 274 | 6 | 2 4 | 4.88 | 1.31 | 4.85 |
| **Median:** | 34,540 | 15 | 4 | 0.3 | -0.37 | 0.05 | -0.38 |

| dCd | CC291 | | : Concentration v. Discharge, Q | | | Q = mTime +b | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.34)** | | update r2 | | | | r2 | 0.463 | 0.277 |
| r2 Q,[COC] | 0.34 | [dCd] | Q | | | m | 0.1096 | 0.00147 |
| slope, m: | -0.02 | 4 | 8.0 | | | b | -3762 | -47.83 |
| intercept, b | 4.4 | 4 | 33 1 | | | | | |
| N: 35 | | -0.2 | 274 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.69)** | | update r2 | | | | | | |
| r2 lnQ,ln[COC] | 0.69 | ln[dCd] | ln Q | [dCd] | Q | | | |
| slope, m. | -0 42 | 1.65 | 2.08 | 5 | 8 | | | |
| intercept, b | 2.53 | 1.04 | 3.50 | 3 | 33 | | | |
| N: 35 | | 0.15 | 5.61 | 1 | 274 | | | |

**N= 35**

| | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd CC291 Standardized Values = (x - Avg)/SD Q | Conc | Load | for graph 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | | |
| IDEQ | 27-Oct-93 | 11.31 | 5.1 | 0.3 | 2.43 | 1.63 | -1.17 | -0.44 | 0.89 | -0.38 | |
| IDEQ | 30-Nov-93 | 13.26 | 5.2 | 0.4 | 2.58 | 1.65 | -0.99 | -0.40 | 0.96 | -0.23 | |
| IDEQ | 17-Dec-93 | 9.65 | 5 5 | 0.3 | 2.27 | 1 70 | -1.25 | -0 48 | 1 17 | -0 45 | |
| IDEQ | 17-Dec-93 | 8.03 | 5.5 | 0.2 | 2.08 | 1.70 | -1.44 | -0.51 | 1.17 | -0.57 | |
| IDEQ | 20-Jan-94 | 10.17 | 5.6 | 0.3 | 2.32 | 1.72 | -1.18 | -0 47 | 1.24 | -0.39 | |
| IDEQ | 20-Jan-94 | 9.74 | 5.6 | 0.3 | 2.28 | 1 72 | -1.23 | -0 47 | 1 24 | -0 43 | |
| IDEQ | 18-Feb-94 | 9.91 | 5 7 | 0.3 | 2.29 | 1.74 | -1.19 | -0.47 | 1.31 | -0.40 | |
| IDEQ | 18-Feb-94 | 9 | 5 7 | 0.3 | 2.20 | 1.74 | -1.29 | -0 49 | 1.31 | -0 47 | |
| IDEQ | 8-Mar-94 | 14 75 | 5.5 | 0 4 | 2.69 | 1 70 | -0.83 | -0.37 | 1 17 | -0.06 | |
| IDEQ | 24-Mar-94 | 15.56 | 5 | 0.4 | 2.74 | 1.61 | -0.87 | -0.36 | 0.82 | -0.11 | |
| IDEQ | 24-Mar-94 | 16.98 | 5 | 0.5 | 2.83 | 1.61 | -0.78 | -0.33 | 0.82 | -0.01 | |
| IDEQ | 7-Apr-94 | 26.08 | 3.9 | 0.5 | 3.26 | 1.36 | -0.60 | -0.14 | 0.05 | 0.22 | |
| IDEQ | 7-Apr-94 | 35.7 | 3.9 | 0 7 | 3.58 | 1.36 | -0.29 | 0.05 | 0.05 | 0 74 | |
| IDEQ | 4-May-94 | 71.93 | 1.8 | 0 7 | 4.28 | 0.59 | -0.36 | 0.79 | -1.42 | 0.60 | |
| IDEQ | 19-May-94 | 118.23 | 1.5 | 1.0 | 4.77 | 0.41 | -0.05 | 1.73 | -1.63 | 1.26 | |
| IDEQ | 7-Jun-94 | 45.54 | 2.2 | 0.5 | 3.82 | 0 79 | -0 62 | 0.25 | -1 14 | 0.20 | |
| IDEQ | 23-Jun-94 | 17.8 | 2.5 | 0.2 | 2.88 | 0.92 | -1.43 | -0.31 | -0.93 | -0 56 | |
| IDEQ | 25-Jul-94 | 12.91 | 3.4 | 0.2 | 2.56 | 1.22 | -1.44 | -0.41 | -0.30 | -0.57 | |
| IDEQ | 16-Aug-94 | 11.92 | 3.9 | 0.3 | 2.48 | 1.36 | -1.39 | -0.43 | 0.05 | -0.54 | |
| IDEQ | 13-Sep-94 | 10.45 | 4 | 0.2 | 2.35 | 1.39 | -1.49 | -0 46 | 0 12 | -0 60 | |
| IDEQ | 6-Oct-94 | 10.17 | 4.4 | 0.2 | 2.32 | 1.48 | -1.42 | -0 47 | 0.40 | -0.56 | |
| IDEQ | 16-Nov-94 | 10.17 | 5.2 | 0.3 | 2.32 | 1 65 | -1.26 | -0 47 | 0 96 | -0 45 | |
| IDEQ | 13-Dec-94 | 8 7 | 5.2 | 0.2 | 2.16 | 1.65 | -1 41 | -0.50 | 0 96 | -0.55 | |
| IDEQ | 9-Feb-95 | 33.45 | 2.6 | 0.5 | 3.51 | 0.96 | -0.76 | 0.01 | -0.86 | 0.02 | |
| IDEQ | 8-Mar-95 | 29.12 | 2.5 | 0.4 | 3.37 | 0 92 | -0.94 | -0.08 | -0 93 | -0 18 | |
| IDEQ | 22-Mar-95 | 45.54 | 4.4 | 1.1 | 3.82 | 1.48 | 0.08 | 0.25 | 0 40 | 1.58 | |
| IDEQ | 12-Apr-95 | 30 78 | 2.9 | 0.5 | 3.43 | 1.06 | -0 73 | -0.05 | -0.65 | 0 05 | |
| IDEQ | 25-Apr-95 | 31 | 2.4 | 0 4 | 3.43 | 0.88 | -0.92 | -0 04 | -1.00 | -0 15 | |
| IDEQ | 13-Jun-95 | 121.78 | 1.3 | 0.9 | 4.80 | 0.26 | -0.16 | 1.80 | -1 77 | 1.06 | |
| IDEQ | 27-Jun-95 | 34 4 | 1.8 | 0.3 | 3.54 | 0.59 | -1.10 | 0.03 | -1.42 | -0.33 | |
| IDEQ | 11-Jul-95 | 17.8 | 2.3 | 0.2 | 2.88 | 0.83 | -1.51 | -0.31 | -1.07 | -0.61 | |
| IDEQ | 25-Jul-95 | 13.61 | 3 | 0.2 | 2.61 | 1.10 | -1.52 | -0 40 | -0.58 | -0.62 | |
| IDEQ | 14-Aug-95 | 11.01 | 3.5 | 0.2 | 2.40 | 1.25 | -1.57 | -0.45 | -0 23 | -0.65 | |
| IDEQ | 13-Sep-95 | 8.93 | 4.2 | 0.2 | 2.19 | 1.44 | -1.60 | -0.49 | 0.26 | -0.66 | |
| URS | 14-May-98 | 274 | 1.6 | 2.4 | 5.61 | 0.47 | 0.86 | 4.88 | -1 56 | 4.85 | |

dCd

**Concentration over time analysis**

| | dCd | CC291 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.314** | **-0.00080** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 27-Oct-93 | 1.53 | 5 | | |
| mid | 25-Jul-94 | 1.32 | 4 | | |
| last | 14-May-98 | 0.21 | 1 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

**Concentration over time**

**Load over time analysis**

| | dCd | CC291 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.139** | **0.00067** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 27-Oct-93 | -1.20 | 0.3 | | |
| mid | 25-Jul-94 | -1.02 | 0.4 | | |
| last | 14-May-98 | -0.09 | 1 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

max r2 0.609

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points, delete last 4 rows | | |
| 0.314 | -0.00080 | 28.95 |
| 0.300 | -0.00079 | 28.57 |
| 0.285 | -0.00077 | 28.00 |
| 0.268 | -0.00075 | 27.12 |
| 0.248 | -0.00072 | 26.11 |
| 0.228 | -0.00068 | 24.90 |
| 0.206 | -0.00064 | 23.50 |
| 0.183 | -0.00060 | 21.89 |
| 0.157 | -0.00054 | 20.02 |
| 0.132 | -0.00049 | 18.09 |
| 0.110 | -0.00044 | 16.36 |
| 0.085 | -0.00038 | 14.32 |
| 0.072 | -0.00035 | 13.32 |
| 0.057 | -0.00032 | 12.11 |
| 0.096 | -0.00041 | 15.38 |
| 0.189 | -0.00055 | 20.30 |
| 0.248 | -0.00064 | 23.39 |
| 0.296 | -0.00072 | 26.07 |
| 0.296 | -0.00074 | 26.74 |
| 0.279 | -0.00072 | 26.36 |
| 0.256 | -0.00070 | 25.57 |
| 0.223 | -0.00065 | 23.75 |
| 0.182 | -0.00055 | 20.20 |
| 0.139 | -0.00043 | 15.96 |
| 0.142 | -0.00044 | 16.42 |
| 0.149 | -0.00046 | 17.14 |
| 0.114 | -0.00037 | 13.65 |
| 0.097 | -0.00034 | 12.69 |
| 0.099 | -0.00035 | 13.12 |
| 0.316 | -0.00051 | 18.95 |
| 0.609 | -0.00065 | 23.89 |

max r2 0.992

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points, delete last 4 row | | |
| 0.139 | 0.00067 | -24.10 |
| 0.136 | 0.00067 | -24.22 |
| 0.139 | 0.00069 | -24.94 |
| 0.132 | 0.00068 | -24.66 |
| 0.119 | 0.00065 | -23.57 |
| 0.114 | 0.00065 | -23.37 |
| 0.106 | 0.00064 | -22.96 |
| 0.100 | 0.00063 | -22.60 |
| 0.090 | 0.00060 | -21.74 |
| 0.097 | 0.00063 | -22.87 |
| 0.102 | 0.00066 | -23.88 |
| 0.111 | 0.00071 | -25.51 |
| 0.133 | 0.00079 | -28.29 |
| 0.186 | 0.00094 | -33.51 |
| 0.247 | 0.00109 | -38.74 |
| 0.381 | 0.00131 | -46.75 |
| 0.458 | 0.00147 | -52.07 |
| 0.447 | 0.00148 | -52.43 |
| 0.433 | 0.00148 | -52.41 |
| 0.420 | 0.00148 | -52.57 |
| 0.398 | 0.00145 | -51.61 |
| 0.377 | 0.00143 | -50.76 |
| 0.363 | 0.00143 | -50.67 |
| 0.339 | 0.00138 | -49.00 |
| 0.359 | 0.00145 | -51.38 |
| 0.362 | 0.00148 | -52.55 |
| 0.556 | 0.00173 | -61.59 |
| 0.612 | 0.00185 | -65.83 |
| 0.649 | 0.00196 | -69.57 |
| 0.941 | 0.00225 | -79.84 |
| 0.992 | 0.00237 | -84.44 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | **CC291** | | |
| **LN Analysis** | | **dCd** | | |
| **Load** | | **Load Data, EV=0.5 lbs/day CV=.8** | | |
| **Avg:** | **0.5** | **Load Data-based LN** | | |
| **SD:** | **0.4** | u | ln dCd Load | dCd Load |
| **CV:** | **0.8** | 3 | 1.2 | 3 2 |
| **Min:** | **0.2** | 0 | -1.05 | 0.4 |
| **Max:** | **2.4** | -3 | -3.26 | 0.0 |
| **Median:** | **0.3** | | | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.877, EV=0.5 #/d CV=0.67; max r2=0.962**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.877 | u | lnLoad | Load |
| slope, m. | 1.642 | 3 | 0.86 | 2 |
| intercept, b | 1 588 | 0 | -0.97 | 0 4 |
| N: | 35 | -3 | -2.79 | 0.06 |
| E[Load]: | 0.5 | Parameter Estimates | | |
| SD[Load]: | 0 | from LN regression | | |
| CV[Load]: | 0.67 | update graph label | | |

N 35

max r2 0 962

| | **dCd Load lbs/day Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | **r2 forward** |
|---|---|---|---|---|---|---|
| **Date** | | | | | | |
| ws | update and rank for new data | | | | | |
| 13-Sep-95 | **0.2** | 1 | 0 0177 | -2.103 | -1.601 | 0.877 |
| 14-Aug-95 | **0.2** | 2 | 0 0461 | -1 684 | -1.573 | 0.901 |
| 25-Jul-95 | **0.2** | 3 | 0.0745 | -1.443 | -1.516 | 0.914 |
| 11-Jul-95 | **0.2** | 4 | 0.1028 | -1.266 | -1.513 | 0.925 |
| 13-Sep-94 | **0.2** | 5 | 0.1312 | -1 121 | -1 492 | 0 933 |
| 25-Jul-94 | **0.2** | 6 | 0.1596 | -0.996 | -1 443 | 0.939 |
| 17-Dec-93 | **0.2** | 7 | 0.1879 | -0.885 | -1.437 | 0.946 |
| 23-Jun-94 | **0.2** | 8 | 0.2163 | -0.785 | -1.430 | 0.951 |
| 6-Oct-94 | **0.2** | 9 | 0.2447 | -0.691 | -1.424 | 0.954 |
| 13-Dec-94 | **0.2** | 10 | 0.2730 | -0.604 | -1 413 | 0.956 |
| 16-Aug-94 | **0.3** | 11 | 0.3014 | -0.520 | -1.386 | 0.956 |
| 18-Feb-94 | **0.3** | 12 | 0.3298 | -0 441 | -1.287 | 0.955 |
| 16-Nov-94 | **0.3** | 13 | 0.3582 | -0.363 | -1.257 | 0.958 |
| 17-Dec-93 | **0.3** | 14 | 0.3865 | -0.288 | -1.253 | 0.961 |
| 20-Jan-94 | **0.3** | 15 | 0.4149 | -0.215 | -1.226 | 0.961 |
| 18-Feb-94 | **0.3** | 16 | 0.4433 | -0.143 | -1.191 | 0.962 |
| 20-Jan-94 | **0.3** | 17 | 0.4716 | -0.071 | -1 183 | 0.962 |
| 27-Oct-93 | **0.3** | 18 | 0.5000 | 0.000 | -1.170 | 0.960 |
| 27-Jun-95 | **0.3** | 19 | 0.5284 | 0.071 | -1.099 | 0.957 |
| 30-Nov-93 | **0.4** | 20 | 0.5567 | 0.143 | -0.992 | 0.954 |
| 8-Mar-95 | **0.4** | 21 | 0.5851 | 0.215 | -0.937 | 0.954 |
| 25-Apr-95 | **0.4** | 22 | 0.6135 | 0.288 | -0.916 | 0.957 |
| 24-Mar-94 | **0.4** | 23 | 0.6418 | 0.363 | -0.871 | 0.958 |
| 8-Mar-94 | **0.4** | 24 | 0.6702 | 0.441 | -0.829 | 0.959 |
| 24-Mar-94 | **0.5** | 25 | 0.6986 | 0.520 | -0.784 | 0.960 |
| 9-Feb-95 | **0.5** | 26 | 0.7270 | 0.604 | -0.760 | 0.961 |
| 12-Apr-95 | **0.5** | 27 | 0.7553 | 0.691 | -0.733 | 0.958 |
| 7-Jun-94 | **0.5** | 28 | 0.7837 | 0 785 | -0.618 | 0.951 |
| 7-Apr-94 | **0.5** | 29 | 0.8121 | 0.885 | -0.603 | 0.943 |
| 4-May-94 | **0.7** | 30 | 0.8404 | 0.996 | -0.362 | 0.925 |
| 7-Apr-94 | **0.7** | 31 | 0.8688 | 1 121 | -0 289 | 0 925 |
| 13-Jun-95 | **0.9** | 32 | 0.8972 | 1.266 | -0.160 | |
| 19-May-94 | **1.0** | 33 | 0.9255 | 1 443 | -0.047 | |
| 22-Mar-95 | **1.1** | 34 | 0.9539 | 1 684 | 0 075 | |
| 14-May-98 | **2.4** | 35 | 0.9823 | 2 103 | 0 858 | |

update for EV, CV

**dCd**
**LN Analysis**

**Concentration**

**CC291**
**dCd**
**Conc. Data, EV=4 ug/L CV=.37**
**Data-based LN**

| | | u | ln[dCd] | [dCd] |
|---|---|---|---|---|
| **Avg:** | **4** | | | |
| **SD:** | **1** | u | ln[dCd] | [dCd] |
| **CV:** | **0.37** | 3 | 2.4 | 11 |
| **Min:** | **1** | 0 | 1.28 | 4 |
| **Max:** | **6** | -3 | 0.19 | 1 |
| **Median:** | **4** | | | |

**u=mLn{Conc.}+b:**

update for r2, EV, CV **$r^2$=0.905, EV=3.9 ug/L CV=0.51; max r2=0.905**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.905 | u | lnConc | Conc |
| slope, m | 2.093 | 3 | 2.69 | 15 |
| intercept, b. | -2.627 | 0 | 1.26 | 4 |
| N: 35 | | -3 | -0.18 | 1 |
| E[Conc] | 3.9 | Parameter Estimates | | |
| SD[Conc]. | 2 | from LN regression | | |
| CV[Conc] | 0.51 | update graph label | | |

| Date | dCd Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.905 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Jun-95 | 1.3 | 1 | 0.0177 | -2.103 | 0.262 | 0.905 |
| 19-May-94 | 1.5 | 2 | 0.0461 | -1.684 | 0.405 | 0.890 |
| 14-May-98 | 1.6 | 3 | 0.0745 | -1.443 | 0.470 | 0.876 |
| 4-May-94 | 1.8 | 4 | 0.1028 | -1.266 | 0.588 | 0.865 |
| 27-Jun-95 | 1.8 | 5 | 0.1312 | -1.121 | 0.588 | 0.853 |
| 7-Jun-94 | 2.2 | 6 | 0.1596 | -0.996 | 0.788 | 0.847 |
| 11-Jul-95 | 2.3 | 7 | 0.1879 | -0.885 | 0.833 | 0.833 |
| 25-Apr-95 | 2.4 | 8 | 0.2163 | -0.785 | 0.875 | 0.819 |
| 23-Jun-94 | 2.5 | 9 | 0.2447 | -0.691 | 0.916 | 0.805 |
| 8-Mar-95 | 2.5 | 10 | 0.2730 | -0.604 | 0.916 | 0.791 |
| 9-Feb-95 | 2.6 | 11 | 0.3014 | -0.520 | 0.956 | 0.784 |
| 12-Apr-95 | 2.9 | 12 | 0.3298 | -0.441 | 1.065 | 0.788 |
| 25-Jul-95 | 3 | 13 | 0.3582 | -0.363 | 1.099 | 0.784 |
| 25-Jul-94 | 3.4 | 14 | 0.3865 | -0.288 | 1.224 | 0.792 |
| 14-Aug-95 | 3.5 | 15 | 0.4149 | -0.215 | 1.253 | 0.781 |
| 7-Apr-94 | 3.9 | 16 | 0.4433 | -0.143 | 1.361 | 0.774 |
| 7-Apr-94 | 3.9 | 17 | 0.4716 | -0.071 | 1.361 | 0.751 |
| 16-Aug-94 | 3.9 | 18 | 0.5000 | 0.000 | 1.361 | 0.727 |
| 13-Sep-94 | 4 | 19 | 0.5284 | 0.071 | 1.386 | 0.711 |
| 13-Sep-95 | 4.2 | 20 | 0.5567 | 0.143 | 1.435 | 0.705 |
| 6-Oct-94 | 4.4 | 21 | 0.5851 | 0.215 | 1.482 | 0.699 |
| 22-Mar-95 | 4.4 | 22 | 0.6135 | 0.288 | 1.482 | 0.689 |
| 24-Mar-94 | 5 | 23 | 0.6418 | 0.363 | 1.609 | 0.835 |
| 24-Mar-94 | 5 | 24 | 0.6702 | 0.441 | 1.609 | 0.811 |
| 27-Oct-93 | 5.1 | 25 | 0.6986 | 0.520 | 1.629 | 0.794 |
| 30-Nov-93 | 5.2 | 26 | 0.7270 | 0.604 | 1.649 | 0.763 |
| 16-Nov-94 | 5.2 | 27 | 0.7553 | 0.691 | 1.649 | 0.715 |
| 13-Dec-94 | 5.2 | 28 | 0.7837 | 0.785 | 1.649 | 0.663 |
| 17-Dec-93 | 5.5 | 29 | 0.8121 | 0.885 | 1.705 | 0.867 |
| 17-Dec-93 | 5.5 | 30 | 0.8404 | 0.996 | 1.705 | 0.840 |
| 8-Mar-94 | 5.5 | 31 | 0.8688 | 1.121 | 1.705 | 0.780 |
| 20-Jan-94 | 5.6 | 32 | 0.8972 | 1.266 | 1.723 | |
| 20-Jan-94 | 5.6 | 33 | 0.9255 | 1.443 | 1.723 | |
| 18-Feb-94 | 5.7 | 34 | 0.9539 | 1.684 | 1.740 | |
| 18-Feb-94 | 5.7 | 35 | 0.9823 | 2.103 | 1.740 | |

update for EV, CV

**dCd**
**LN Analysis**

## Discharge, Q

| | |
|---|---|
| **Avg:** | **33** |
| **SD:** | **49** |
| **CV:** | **1.49** |
| **Min:** | **8** |
| **Max:** | **274** |
| **Median:** | **15** |

**CC291**
**dCd**
**Q Data, EV=33 cfs CV=1.49**
**Q Data-based LN**

| u | lnQ | Q |
|---|---|---|
| 3 | 6.2 | 473 |
| 0 | 2.92 | 18 |
| -3 | -0.33 | 1 |

**u=mLn(Q)+b:**

update for r2, EV, CV **r2=0.856, EV=31.9 cfs CV=1.23; max r2=0.970**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.856 | u | lnQ | Q |
| slope, m | 1.041 | 3 | 5.88 | 359 |
| intercept, b | -3.125 | 0 | 3.00 | 20 |
| N | 35 | -3 | 0.12 | 1 |
| E[Q] | 31.9 | Parameter Estimates | | |
| SD[Q] | 39 | from LN regression | | |
| CV[Q] | 1.23 | update graph label | | |

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.970 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 17-Dec-93 | 8.03 | 1 | 0.0177 | -2.103 | 2.083 | 0.856 |
| 13-Dec-94 | 8.7 | 2 | 0.0461 | -1.684 | 2.163 | 0.883 |
| 13-Sep-95 | 8.93 | 3 | 0.0745 | -1.443 | 2.189 | 0.901 |
| 18-Feb-94 | 9 | 4 | 0.1028 | -1.266 | 2.197 | 0.915 |
| 17-Dec-93 | 9.65 | 5 | 0.1312 | -1.121 | 2.267 | 0.925 |
| 20-Jan-94 | 9.74 | 6 | 0.1596 | -0.996 | 2.276 | 0.936 |
| 18-Feb-94 | 9.91 | 7 | 0.1879 | -0.885 | 2.294 | 0.945 |
| 20-Jan-94 | 10.17 | 8 | 0.2163 | -0.785 | 2.319 | 0.953 |
| 6-Oct-94 | 10.17 | 9 | 0.2447 | -0.691 | 2.319 | 0.959 |
| 16-Nov-94 | 10.17 | 10 | 0.2730 | -0.604 | 2.319 | 0.964 |
| 13-Sep-94 | 10.45 | 11 | 0.3014 | -0.520 | 2.347 | 0.966 |
| 14-Aug-95 | 11.01 | 12 | 0.3298 | -0.441 | 2.399 | 0.968 |
| 27-Oct-93 | 11.31 | 13 | 0.3582 | -0.363 | 2.426 | 0.969 |
| 16-Aug-94 | 11.92 | 14 | 0.3865 | -0.288 | 2.478 | 0.970 |
| 25-Jul-94 | 12.91 | 15 | 0.4149 | -0.215 | 2.558 | 0.970 |
| 30-Nov-93 | 13.26 | 16 | 0.4433 | -0.143 | 2.585 | 0.970 |
| 25-Jul-95 | 13.61 | 17 | 0.4716 | -0.071 | 2.611 | 0.970 |
| 8-Mar-94 | 14.75 | 18 | 0.5000 | 0.000 | 2.691 | 0.967 |
| 24-Mar-94 | 15.56 | 19 | 0.5284 | 0.071 | 2.745 | 0.965 |
| 24-Mar-94 | 16.98 | 20 | 0.5567 | 0.143 | 2.832 | 0.962 |
| 23-Jun-94 | 17.8 | 21 | 0.5851 | 0.215 | 2.879 | 0.958 |
| 11-Jul-95 | 17.8 | 22 | 0.6135 | 0.288 | 2.879 | 0.953 |
| 7-Apr-94 | 26.08 | 23 | 0.6418 | 0.363 | 3.261 | 0.947 |
| 8-Mar-95 | 29.12 | 24 | 0.6702 | 0.441 | 3.371 | 0.948 |
| 12-Apr-95 | 30.78 | 25 | 0.6986 | 0.520 | 3.427 | 0.955 |
| 25-Apr-95 | 31 | 26 | 0.7270 | 0.604 | 3.434 | 0.963 |
| 9-Feb-95 | 33.45 | 27 | 0.7553 | 0.691 | 3.510 | 0.966 |
| 27-Jun-95 | 34.4 | 28 | 0.7837 | 0.785 | 3.538 | 0.969 |
| 7-Apr-94 | 35.7 | 29 | 0.8121 | 0.885 | 3.575 | 0.965 |
| 7-Jun-94 | 45.54 | 30 | 0.8404 | 0.996 | 3.819 | 0.954 |
| 22-Mar-95 | 45.54 | 31 | 0.8688 | 1.121 | 3.819 | 0.940 |
| 4-May-94 | 71.93 | 32 | 0.8972 | 1.266 | 4.276 | |
| 19-May-94 | 118.23 | 33 | 0.9255 | 1.443 | 4.773 | |
| 13-Jun-95 | 121.78 | 34 | 0.9539 | 1.684 | 4.802 | |
| 14-May-98 | 274 | 35 | 0.9823 | 2.103 | 5.613 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **CC291** | **Date:** | **30-May-00** |
| **Chemical:** | **dPb** | **Analyst:** | **J.Johnston** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,617 | 33 | 11 | 2 | 0.00 | 0.00 | 0.00 |
| **SD:** | 306 | 49 | 3 | 2 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.49 | 0.29 | 1.09 | | | |
| **Min:** | 34,269 | 8 | 5 | 0.4 | -0.51 | -1.94 | -0.68 |
| **Max:** | 35,929 | 274 | 18 | 7 | 4.88 | 2.21 | 3.07 |
| **Median:** | 34,540 | 15 | 11 | 1 | -0.37 | 0.01 | -0.43 |

**dPb CC291 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

**Conc. = mQ+b (r2=0.15)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 Q,[COC] | 0.15 | [dPb] | Q | r2: | 0.463 | 0.277 |
| slope, m: | -0.02 | 12 | 8.0 | m: | 0.1096 | 0.00147 |
| intercept, b | 11.8 | 11 | 33.1 | b: | -3762 | -47.83 |
| N: 35 | | 5 | 274 | | | |

**LnConc. = mLn{Q}+b (r2=0.21)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC] | 0.21 | ln[dPb] | ln Q | [dPb] | Q |
| slope, m | -0.17 | 2.50 | 2.08 | 12 | 8 |
| intercept, b | 2.85 | 2.27 | 3.50 | 10 | 33 |
| N: 35 | | 1.91 | 5.61 | 7 | 274 |

for graph: dPb 0

**N= 35** CC291

| | Sampling Date | Q Discharge | dPb Concentration | dPb Load | Ln Q | Ln dPb Conc. | Ln dPb Load | Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 27-Oct-93 | 11.31 | 12 | 0.7 | 2.43 | 2.48 | -0.31 | -0.44 | 0.33 | -0.51 |
| IDEQ | 30-Nov-93 | 13.26 | 14 | 1.0 | 2.58 | 2.64 | 0.00 | -0.40 | 0.95 | -0.36 |
| IDEQ | 17-Dec-93 | 9.65 | 14 | 0.7 | 2.27 | 2.64 | -0.32 | -0.48 | 0.95 | -0.51 |
| IDEQ | 17-Dec-93 | 8.03 | 14 | 0.6 | 2.08 | 2.64 | -0.50 | -0.51 | 0.95 | -0.58 |
| IDEQ | 20-Jan-94 | 10.17 | 12 | 0.7 | 2.32 | 2.48 | -0.42 | -0.47 | 0.33 | -0.55 |
| IDEQ | 20-Jan-94 | 9.74 | 12 | 0.6 | 2.28 | 2.48 | -0.46 | -0.47 | 0.33 | -0.57 |
| IDEQ | 18-Feb-94 | 9.91 | 12 | 0.6 | 2.29 | 2.48 | -0.45 | -0.47 | 0.33 | -0.56 |
| IDEQ | 18-Feb-94 | 9 | 12 | 0.6 | 2.20 | 2.48 | -0.54 | -0.49 | 0.33 | -0.59 |
| IDEQ | 8-Mar-94 | 14.75 | 11 | 0.9 | 2.69 | 2.40 | -0.14 | -0.37 | 0.01 | -0.43 |
| IDEQ | 24-Mar-94 | 15.56 | 9 | 0.8 | 2.74 | 2.20 | -0.28 | -0.36 | -0.62 | -0.50 |
| IDEQ | 24-Mar-94 | 16.98 | 9 | 0.8 | 2.83 | 2.20 | -0.20 | -0.33 | -0.62 | -0.46 |
| IDEQ | 7-Apr-94 | 26.08 | 18 | 2.5 | 3.26 | 2.89 | 0.93 | -0.14 | 2.21 | 0.50 |
| IDEQ | 7-Apr-94 | 35.7 | 18 | 3.5 | 3.58 | 2.89 | 1.24 | 0.05 | 2.21 | 1.03 |
| IDEQ | 4-May-94 | 71.93 | 8 | 3.1 | 4.28 | 2.08 | 1.13 | 0.79 | -0.93 | 0.83 |
| IDEQ | 19-May-94 | 118.23 | 11 | 7.0 | 4.77 | 2.40 | 1.95 | 1.73 | 0.01 | 3.03 |
| IDEQ | 7-Jun-94 | 45.54 | 8 | 2.0 | 3.82 | 2.08 | 0.67 | 0.25 | -0.93 | 0.18 |
| IDEQ | 23-Jun-94 | 17.8 | 11 | 1.1 | 2.88 | 2.40 | 0.05 | -0.31 | 0.01 | -0.33 |
| IDEQ | 25-Jul-94 | 12.91 | 10 | 0.7 | 2.56 | 2.30 | -0.36 | -0.41 | -0.30 | -0.53 |
| IDEQ | 16-Aug-94 | 11.92 | 15 | 1.0 | 2.48 | 2.71 | -0.04 | -0.43 | 1.27 | -0.38 |
| IDEQ | 13-Sep-94 | 10.45 | 10 | 0.6 | 2.35 | 2.30 | -0.58 | -0.46 | -0.30 | -0.60 |
| IDEQ | 6-Oct-94 | 10.17 | 13 | 0.7 | 2.32 | 2.56 | -0.34 | -0.47 | 0.64 | -0.52 |
| IDEQ | 16-Nov-94 | 10.17 | 9 | 0.5 | 2.32 | 2.20 | -0.71 | -0.47 | -0.62 | -0.64 |
| IDEQ | 13-Dec-94 | 8.7 | 9 | 0.4 | 2.16 | 2.20 | -0.86 | -0.50 | -0.62 | -0.68 |
| IDEQ | 9-Feb-95 | 33.45 | 6 | 1.1 | 3.51 | 1.79 | 0.08 | 0.01 | -1.56 | -0.31 |
| IDEQ | 8-Mar-95 | 29.12 | 6 | 0.9 | 3.37 | 1.79 | -0.06 | -0.08 | -1.56 | -0.39 |
| IDEQ | 22-Mar-95 | 45.54 | 11 | 2.7 | 3.82 | 2.40 | 0.99 | 0.25 | 0.01 | 0.60 |
| IDEQ | 12-Apr-95 | 30.78 | 5 | 0.8 | 3.43 | 1.61 | -0.19 | -0.05 | -1.88 | -0.45 |
| IDEQ | 25-Apr-95 | 31 | 9 | 1.5 | 3.43 | 2.20 | 0.41 | -0.04 | -0.62 | -0.07 |
| IDEQ | 13-Jun-95 | 121.78 | 10 | 6.6 | 4.80 | 2.30 | 1.88 | 1.80 | -0.30 | 2.78 |
| IDEQ | 27-Jun-95 | 34.4 | 11 | 2.0 | 3.54 | 2.40 | 0.71 | 0.03 | 0.01 | 0.23 |
| IDEQ | 11-Jul-95 | 17.8 | 11 | 1.1 | 2.88 | 2.40 | 0.05 | -0.31 | 0.01 | -0.33 |
| IDEQ | 25-Jul-95 | 13.61 | 17 | 1.2 | 2.61 | 2.83 | 0.22 | -0.40 | 1.90 | -0.22 |
| IDEQ | 14-Aug-95 | 11.01 | 12 | 0.7 | 2.40 | 2.48 | -0.34 | -0.45 | 0.33 | -0.52 |
| IDEQ | 13-Sep-95 | 8.93 | 10 | 0.5 | 2.19 | 2.30 | -0.73 | -0.49 | -0.30 | -0.65 |
| URS | 14-May-98 | 274 | 4.8 | 7.1 | 5.61 | 1.57 | 1.96 | 4.88 | -1.94 | 3.07 |

dPb

**Concentration over time analysis**

| | dPb | CC291 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.263** | **-0.00052** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 27-Oct-93 | 2.53 | 13 | | |
| mid | 25-Jul-94 | 2.39 | 11 | | |
| last | 14-May-98 | 1.66 | 5 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

**Load over time analysis**

| | dPb | CC291 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.143** | **0.00095** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 27-Oct-93 | -0.20 | 1 | | |
| mid | 25-Jul-94 | 0.05 | 1 | | |
| last | 14-May-98 | 1.37 | 4 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | max r2 | 0.831 | | max r2 | 0.838 | |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points delete last 4 rows | | | only on >4 data points. delete last 4 row | | |
| | 0.263 | -0.00052 | 20.46 | 0.143 | 0.00095 | -32.59 |
| | 0.259 | -0.00053 | 20.64 | 0.136 | 0.00093 | -32.15 |
| | 0.244 | -0.00051 | 20.17 | 0.136 | 0.00095 | -32.77 |
| | 0.228 | -0.00050 | 19.63 | 0.128 | 0.00093 | -32.15 |
| | 0.211 | -0.00048 | 19.01 | 0.115 | 0.00089 | -30.67 |
| | 0.204 | -0.00048 | 18.92 | 0.104 | 0.00085 | -29.35 |
| | 0.196 | -0.00048 | 18.82 | 0.091 | 0.00080 | -27.64 |
| | 0.187 | -0.00047 | 18.66 | 0.079 | 0.00075 | -25.83 |
| | 0.178 | -0.00047 | 18.47 | 0.064 | -0.00068 | -23.30 |
| | 0.175 | -0.00047 | 18.62 | 0.057 | 0.00065 | -22.34 |
| | 0.192 | -0.00050 | 19.71 | 0.048 | 0.00060 | -20.53 |
| | 0.212 | -0.00054 | 20.99 | 0.039 | 0.00055 | -18.85 |
| | 0.178 | -0.00047 | 18.66 | 0.056 | 0.00067 | -22.95 |
| | 0.138 | -0.00039 | 15.86 | 0.094 | 0.00086 | -29.76 |
| | 0.168 | -0.00044 | 17.56 | 0.141 | 0.00106 | -36.56 |
| | 0.159 | -0.00044 | 17.47 | 0.309 | 0.00143 | -49.58 |
| | 0.193 | -0.00049 | 19.43 | 0.383 | 0.00161 | -56.03 |
| | 0.184 | -0.00049 | 19.44 | 0.400 | 0.00170 | -59.06 |
| | 0.186 | -0.00051 | 20.02 | 0.387 | 0.00170 | -59.12 |
| | 0.148 | -0.00044 | 17.57 | 0.394 | 0.00176 | -61.35 |
| | 0.144 | -0.00045 | 17.77 | 0.368 | 0.00171 | -59.41 |
| | 0.112 | -0.00039 | 15.81 | 0.349 | 0.00169 | -58.70 |
| | 0.116 | -0.00041 | 16.40 | 0.316 | 0.00157 | -54.48 |
| | 0.119 | -0.00042 | 16.99 | 0.279 | 0.00138 | -47.97 |
| | 0.188 | -0.00052 | 20.28 | 0.268 | 0.00137 | -47.52 |
| | 0.298 | -0.00062 | 23.92 | 0.250 | 0.00132 | -45.77 |
| | 0.285 | -0.00061 | 23.71 | 0.314 | 0.00149 | -51.54 |
| | 0.666 | -0.00078 | 29.75 | 0.288 | 0.00141 | -48.77 |
| | 0.765 | -0.00085 | 32.28 | 0.292 | 0.00145 | -50.41 |
| | 0.812 | -0.00090 | 33.92 | 0.672 | 0.00186 | -64.87 |
| | 0.831 | -0.00094 | 35.16 | 0.838 | 0.00209 | -73.17 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dPb** | | **CC291** | | |
| **LN Analysis** | | **dPb** | | |
| **Load** | | **Load Data, EV=2 lbs/day CV=1.09** | | |
| **Avg:** | **2** | **Load Data-based LN** | | |
| **SD:** | **2** | u | ln dPb Load | dPb Load |
| **CV:** | **1.09** | 3 | 2.7 | 16 |
| **Min:** | **0.4** | 0 | 0.10 | 1.1 |
| **Max:** | **7** | -3 | -2.55 | 0.1 |
| **Median:** | **1** | | | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.872, EV=1.6 lbs/day CV=1.03; max r2=0.954**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.872 | u | lnLoad | Load |
| slope, m: | 1.175 | 3 | 2.68 | 15 |
| intercept, b | -0.148 | 0 | 0.13 | 1 |
| N: | 35 | -3 | -2.43 | 0.09 |
| E[Load] | 1.6 | Parameter Estimates | | |
| SD[Load] | 2 | from LN regression | | |
| CV[Load] | 1.03 | update graph label | | |

| | Date | dPb Load lbs/day Ranked | N 35 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.954 r2 forward |
|---|---|---|---|---|---|---|---|
| ws | update and rank for new data | | | | | | |
| | 13-Dec-94 | **0.4** | 1 | 0.0177 | -2.103 | -0.865 | 0.872 |
| | 13-Sep-95 | **0.5** | 2 | 0.0461 | -1.684 | -0.733 | 0.885 |
| | 16-Nov-94 | **0.5** | 3 | 0.0745 | -1.443 | -0.708 | 0.895 |
| | 13-Sep-94 | **0.6** | 4 | 0.1028 | -1.266 | -0.576 | 0.899 |
| | 18-Feb-94 | **0.6** | 5 | 0.1312 | -1.121 | -0.543 | 0.908 |
| | 17-Dec-93 | **0.6** | 6 | 0.1596 | -0.996 | -0.503 | 0.915 |
| | 20-Jan-94 | **0.6** | 7 | 0.1879 | -0.885 | -0.464 | 0.922 |
| | 18-Feb-94 | **0.6** | 8 | 0.2163 | -0.785 | -0.447 | 0.928 |
| | 20-Jan-94 | **0.7** | 9 | 0.2447 | -0.691 | -0.421 | 0.934 |
| | 25-Jul-94 | **0.7** | 10 | 0.2730 | -0.604 | -0.364 | 0.938 |
| | 14-Aug-95 | **0.7** | 11 | 0.3014 | -0.520 | -0.341 | 0.944 |
| | 6-Oct-94 | **0.7** | 12 | 0.3298 | -0.441 | -0.341 | 0.949 |
| | 17-Dec-93 | **0.7** | 13 | 0.3582 | -0.363 | -0.319 | 0.952 |
| | 27-Oct-93 | **0.7** | 14 | 0.3865 | -0.288 | -0.314 | 0.954 |
| | 24-Mar-94 | **0.8** | 15 | 0.4149 | -0.215 | -0.283 | 0.954 |
| | 24-Mar-94 | **0.8** | 16 | 0.4433 | -0.143 | -0.196 | 0.954 |
| | 12-Apr-95 | **0.8** | 17 | 0.4716 | -0.071 | -0.189 | 0.954 |
| | 8-Mar-94 | **0.9** | 18 | 0.5000 | 0.000 | -0.136 | 0.952 |
| | 8-Mar-95 | **0.9** | 19 | 0.5284 | 0.071 | -0.062 | 0.950 |
| | 16-Aug-94 | **1.0** | 20 | 0.5567 | 0.143 | -0.039 | 0.948 |
| | 30-Nov-93 | **1.0** | 21 | 0.5851 | 0.215 | -0.001 | 0.944 |
| | 23-Jun-94 | **1.1** | 22 | 0.6135 | 0.288 | 0.052 | 0.937 |
| | 11-Jul-95 | **1.1** | 23 | 0.6418 | 0.363 | 0.052 | 0.929 |
| | 9-Feb-95 | **1.1** | 24 | 0.6702 | 0.441 | 0.077 | 0.919 |
| | 25-Jul-95 | **1.2** | 25 | 0.6986 | 0.520 | 0.219 | 0.910 |
| | 25-Apr-95 | **1.5** | 26 | 0.7270 | 0.604 | 0.406 | 0.900 |
| | 7-Jun-94 | **2.0** | 27 | 0.7553 | 0.691 | 0.673 | 0.883 |
| | 27-Jun-95 | **2.0** | 28 | 0.7837 | 0.785 | 0.711 | 0.858 |
| | 7-Apr-94 | **2.5** | 29 | 0.8121 | 0.885 | 0.926 | 0.821 |
| | 22-Mar-95 | **2.7** | 30 | 0.8404 | 0.996 | 0.991 | 0.769 |
| | 4-May-94 | **3.1** | 31 | 0.8688 | 1.121 | 1.130 | 0.681 |
| | 7-Apr-94 | **3.5** | 32 | 0.8972 | 1.266 | 1.240 | |
| | 13-Jun-95 | **6.6** | 33 | 0.9255 | 1.443 | 1.880 | |
| | 19-May-94 | **7.0** | 34 | 0.9539 | 1.684 | 1.945 | |
| | 14-May-98 | **7.1** | 35 | 0.9823 | 2.103 | 1.957 | |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| **dPb** | | **CC291** | | |
| **LN Analysis** | | **dPb** | | |
| **Concentration** | | **Conc. Data, EV=11 ug/L CV=.29** | | |
| **Avg:** | **11** | **Data-based LN** | | |
| **SD:** | **3** | u | ln[dPb] | [dPb] |
| **CV:** | **0.29** | 3 | 3.2 | 25 |
| **Min:** | **5** | 0 | 2.35 | 11 |
| **Max:** | **18** | -3 | 1.50 | 4 |
| **Median:** | **11** | | | |

**u=mLn[Conc.]+b:**

update for r2, EV, CV **$r^2$=0.941, EV=11.1 ug/L CV= 0.34; max r2=0.971**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.941 | u | lnConc | Conc |
| slope, m | 2.984 | 3 | 3.35 | 29 |
| intercept, b | -7.010 | 0 | 2.35 | 10 |
| N | 35 | -3 | 1.34 | 4 |
| E[Conc] | 11.1 | Parameter Estimates | | |
| SD[Conc] | 4 | from LN regression | | |
| CV[Conc] | 0.34 | update graph label | | |

| Date | dPb Concentration ug/L Ranked | i rank (N 35) | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.971 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 14-May-98 | 4 8 | 1 | 0.0177 | -2.103 | 1.569 | 0.941 |
| 12-Apr-95 | 5 | 2 | 0.0461 | -1.684 | 1.609 | 0.934 |
| 9-Feb-95 | 6 | 3 | 0.0745 | -1.443 | 1.792 | 0.943 |
| 8-Mar-95 | 6 | 4 | 0.1028 | -1.266 | 1.792 | 0.946 |
| 4-May-94 | 8 | 5 | 0.1312 | -1.121 | 2.079 | 0.971 |
| 7-Jun-94 | 8 | 6 | 0.1596 | -0.996 | 2.079 | 0.968 |
| 24-Mar-94 | 9 | 7 | 0.1879 | -0.885 | 2.197 | 0.966 |
| 24-Mar-94 | 9 | 8 | 0.2163 | -0.785 | 2.197 | 0.966 |
| 16-Nov-94 | 9 | 9 | 0.2447 | -0.691 | 2.197 | 0.964 |
| 13-Dec-94 | 9 | 10 | 0.2730 | -0.604 | 2.197 | 0.960 |
| 25-Apr-95 | 9 | 11 | 0.3014 | -0.520 | 2.197 | 0.957 |
| 25-Jul-94 | 10 | 12 | 0.3298 | -0 441 | 2.303 | 0.954 |
| 13-Sep-94 | 10 | 13 | 0.3582 | -0.363 | 2.303 | 0.953 |
| 13-Jun-95 | 10 | 14 | 0.3865 | -0.288 | 2.303 | 0.950 |
| 13-Sep-95 | 10 | 15 | 0.4149 | -0.215 | 2.303 | 0.945 |
| 8-Mar-94 | 11 | 16 | 0 4433 | -0 143 | 2.398 | 0.940 |
| 19-May-94 | 11 | 17 | 0.4716 | -0.071 | 2.398 | 0.944 |
| 23-Jun-94 | 11 | 18 | 0.5000 | 0.000 | 2.398 | 0.945 |
| 22-Mar-95 | 11 | 19 | 0.5284 | 0 071 | 2.398 | 0.944 |
| 27-Jun-95 | 11 | 20 | 0.5567 | 0 143 | 2.398 | 0 940 |
| 11-Jul-95 | 11 | 21 | 0.5851 | 0.215 | 2.398 | 0.933 |
| 27-Oct-93 | 12 | 22 | 0.6135 | 0.288 | 2.485 | 0.924 |
| 20-Jan-94 | 12 | 23 | 0.6418 | 0.363 | 2.485 | 0.928 |
| 20-Jan-94 | 12 | 24 | 0.6702 | 0.441 | 2.485 | 0.927 |
| 18-Feb-94 | 12 | 25 | 0 6986 | 0.520 | 2 485 | 0.921 |
| 18-Feb-94 | 12 | 26 | 0 7270 | 0.604 | 2 485 | 0.908 |
| 14-Aug-95 | 12 | 27 | 0.7553 | 0.691 | 2.485 | 0.890 |
| 6-Oct-94 | 13 | 28 | 0.7837 | 0.785 | 2.565 | 0.880 |
| 30-Nov-93 | 14 | 29 | 0.8121 | 0.885 | 2.639 | 0.849 |
| 17-Dec-93 | 14 | 30 | 0.8404 | 0.996 | 2.639 | 0.823 |
| 17-Dec-93 | 14 | 31 | 0.8688 | 1.121 | 2.639 | 0.759 |
| 16-Aug-94 | 15 | 32 | 0.8972 | 1.266 | 2.708 | |
| 25-Jul-95 | 17 | 33 | 0.9255 | 1.443 | 2.833 | |
| 7-Apr-94 | 18 | 34 | 0.9539 | 1.684 | 2.890 | |
| 7-Apr-94 | 18 | 35 | 0.9823 | 2.103 | 2.890 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dPb** | | **CC291** | | |
| **LN Analysis** | | **dPb** | | |
| **Discharge, Q** | | **Q Data, EV=33 cfs CV=1.49** | | |
| **Avg:** | **33** | **Q Data-based LN** | | |
| **SD:** | **49** | u | lnQ | Q |
| **CV:** | **1.49** | 3 | 6.2 | 473 |
| **Min:** | **8** | 0 | 2.92 | 18 |
| **Max:** | **274** | -3 | -0.33 | 1 |
| **Median:** | **15** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV **r2=0.856, EV=31.9 cfs CV=1.23; max r2=0.970**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.856 | u | lnQ | Q |
| slope, m | 1.041 | 3 | 5.88 | 359 |
| intercept, b | -3.125 | 0 | 3.00 | 20 |
| N | 35 | -3 | 0.12 | 1.1 |
| E[Q]: | 31.9 | Parameter Estimates | | |
| SD[Q]: | 39 | from LN regression | | |
| CV[Q] | 1.23 | update graph label | | |

N 35 — max r2 0.970

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 17-Dec-93 | 8.03 | 1 | 0.0177 | -2.103 | 2.083 | 0.856 |
| 13-Dec-94 | 8.7 | 2 | 0.0461 | -1.684 | 2.163 | 0.883 |
| 13-Sep-95 | 8.93 | 3 | 0.0745 | -1.443 | 2.189 | 0.901 |
| 18-Feb-94 | 9 | 4 | 0.1028 | -1.266 | 2.197 | 0.915 |
| 17-Dec-93 | 9.65 | 5 | 0.1312 | -1.121 | 2.267 | 0.925 |
| 20-Jan-94 | 9.74 | 6 | 0.1596 | -0.996 | 2.276 | 0.936 |
| 18-Feb-94 | 9.91 | 7 | 0.1879 | -0.885 | 2.294 | 0.945 |
| 20-Jan-94 | 10.17 | 8 | 0.2163 | -0.785 | 2.319 | 0.953 |
| 6-Oct-94 | 10.17 | 9 | 0.2447 | -0.691 | 2.319 | 0.959 |
| 16-Nov-94 | 10.17 | 10 | 0.2730 | -0.604 | 2.319 | 0.964 |
| 13-Sep-94 | 10.45 | 11 | 0.3014 | -0.520 | 2.347 | 0.966 |
| 14-Aug-95 | 11.01 | 12 | 0.3298 | -0.441 | 2.399 | 0.968 |
| 27-Oct-93 | 11.31 | 13 | 0.3582 | -0.363 | 2.426 | 0.969 |
| 16-Aug-94 | 11.92 | 14 | 0.3865 | -0.288 | 2.478 | 0.970 |
| 25-Jul-94 | 12.91 | 15 | 0.4149 | -0.215 | 2.558 | 0.970 |
| 30-Nov-93 | 13.26 | 16 | 0.4433 | -0.143 | 2.585 | 0.970 |
| 25-Jul-95 | 13.61 | 17 | 0.4716 | -0.071 | 2.611 | 0.970 |
| 8-Mar-94 | 14.75 | 18 | 0.5000 | 0.000 | 2.691 | 0.967 |
| 24-Mar-94 | 15.56 | 19 | 0.5284 | 0.071 | 2.745 | 0.965 |
| 24-Mar-94 | 16.98 | 20 | 0.5567 | 0.143 | 2.832 | 0.962 |
| 23-Jun-94 | 17.8 | 21 | 0.5851 | 0.215 | 2.879 | 0.958 |
| 11-Jul-95 | 17.8 | 22 | 0.6135 | 0.288 | 2.879 | 0.953 |
| 7-Apr-94 | 26.08 | 23 | 0.6418 | 0.363 | 3.261 | 0.947 |
| 8-Mar-95 | 29.12 | 24 | 0.6702 | 0.441 | 3.371 | 0.948 |
| 12-Apr-95 | 30.78 | 25 | 0.6986 | 0.520 | 3.427 | 0.955 |
| 25-Apr-95 | 31 | 26 | 0.7270 | 0.604 | 3.434 | 0.963 |
| 9-Feb-95 | 33.45 | 27 | 0.7553 | 0.691 | 3.510 | 0.966 |
| 27-Jun-95 | 34.4 | 28 | 0.7837 | 0.785 | 3.538 | 0.969 |
| 7-Apr-94 | 35.7 | 29 | 0.8121 | 0.885 | 3.575 | 0.965 |
| 7-Jun-94 | 45.54 | 30 | 0.8404 | 0.996 | 3.819 | 0.954 |
| 22-Mar-95 | 45.54 | 31 | 0.8688 | 1.121 | 3.819 | 0.940 |
| 4-May-94 | 71.93 | 32 | 0.8972 | 1.266 | 4.276 | |
| 19-May-94 | 118.23 | 33 | 0.9255 | 1.443 | 4.773 | |
| 13-Jun-95 | 121.78 | 34 | 0.9539 | 1.684 | 4.802 | |
| 14-May-98 | 274 | 35 | 0.9823 | 2.103 | 5.613 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **CC291** | **Date:** | **29-May-00** |
| **Chemical:** | **dZn** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,617 | 33 | 625 | 75 | 0.00 | 0.00 | 0.00 |
| **SD:** | 306 | 49 | 299 | 69 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.49 | 0.48 | 0.92 | | | |
| **Min:** | 34,269 | 8 | 168 | 25 | -0.51 | -1.53 | -0.73 |
| **Max:** | 35,929 | 274 | 1,280 | 370 | 4.88 | 2.19 | 4.26 |
| **Median:** | 34,540 | 15 | 598 | 48 | -0.37 | -0.09 | -0.39 |

**dZn CC291 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

**Conc. = mQ+b (r2=0.21)** update r2

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 Q,[COC]: | 0.21 | [dZn] | Q | r2 | 0.463 | 0.277 |
| slope, m: | -2.7 | 694 | 8.0 | m: | 0.1096 | 0.00147 |
| intercept, b: | 716.0 | 625 | 33.1 | b | -3762 | -47.83 |
| N: 35 | | -37 | 274 | | | |

**LnConc. = mLn(Q)+b (r2=0.46)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.46 | ln[dZn] | ln Q | [dZn] | Q |
| slope, m: | -0.44 | 6.70 | 2.08 | 816 | 8 |
| intercept, b: | 7.62 | 6.08 | 3.50 | 438 | 33 |
| N: 35 | | 5.16 | 5.61 | 174 | 274 |

for graph 0

**N= 35**

| | Sampling Date | Q Discharge cfs x-axis | dZn Concentration ug/L y-axis | dZn Load lbs/day y-axis | Ln Q x-axis | Ln dZn Conc. y-axis | Ln dZn Load y-axis | dZn CC291 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | | | | | | | | | |
| IDEQ | 27-Oct-93 | 11.31 | 759 | 46 | 2.43 | 6.63 | 3.83 | -0.44 | 0.45 | -0.42 |
| IDEQ | 30-Nov-93 | 13.26 | 861 | 61 | 2.58 | 6.76 | 4.12 | -0.40 | 0.79 | -0.20 |
| IDEQ | 17-Dec-93 | 9.65 | 907 | 47 | 2.27 | 6.81 | 3.85 | -0.48 | 0.94 | -0.41 |
| IDEQ | 17-Dec-93 | 8.03 | 907 | 39 | 2.08 | 6.81 | 3.67 | -0.51 | 0.94 | -0.52 |
| IDEQ | 20-Jan-94 | 10.17 | 920 | 50 | 2.32 | 6.82 | 3.92 | -0.47 | 0.99 | -0.36 |
| IDEQ | 20-Jan-94 | 9.74 | 920 | 48 | 2.28 | 6.82 | 3.88 | -0.47 | 0.99 | -0.39 |
| IDEQ | 18-Feb-94 | 9.91 | 897 | 48 | 2.29 | 6.80 | 3.87 | -0.47 | 0.91 | -0.40 |
| IDEQ | 18-Feb-94 | 9 | 897 | 43 | 2.20 | 6.80 | 3.77 | -0.49 | 0.91 | -0.46 |
| IDEQ | 8-Mar-94 | 14.75 | 842 | 67 | 2.69 | 6.74 | 4.20 | -0.37 | 0.73 | -0.12 |
| IDEQ | 24-Mar-94 | 15.56 | 789 | 66 | 2.74 | 6.67 | 4.19 | -0.36 | 0.55 | -0.14 |
| IDEQ | 24-Mar-94 | 16.98 | 789 | 72 | 2.83 | 6.67 | 4.28 | -0.33 | 0.55 | -0.05 |
| IDEQ | 7-Apr-94 | 26.08 | 1280 | 180 | 3.26 | 7.15 | 5.19 | -0.14 | 2.19 | 1.51 |
| IDEQ | 7-Apr-94 | 35.7 | 1280 | 246 | 3.58 | 7.15 | 5.50 | 0.05 | 2.19 | 2.47 |
| IDEQ | 4-May-94 | 71.93 | 230 | 89 | 4.28 | 5.44 | 4.49 | 0.79 | -1.32 | 0.20 |
| IDEQ | 19-May-94 | 118.23 | 191 | 121 | 4.77 | 5.25 | 4.80 | 1.73 | -1.45 | 0.67 |
| IDEQ | 7-Jun-94 | 45.54 | 301 | 74 | 3.82 | 5.71 | 4.30 | 0.25 | -1.08 | -0.02 |
| IDEQ | 23-Jun-94 | 17.8 | 311 | 30 | 2.88 | 5.74 | 3.39 | -0.31 | -1.05 | -0.66 |
| IDEQ | 25-Jul-94 | 12.91 | 451 | 31 | 2.56 | 6.11 | 3.44 | -0.41 | -0.58 | -0.64 |
| IDEQ | 16-Aug-94 | 11.92 | 562 | 36 | 2.48 | 6.33 | 3.58 | -0.43 | -0.21 | -0.57 |
| IDEQ | 13-Sep-94 | 10.45 | 571 | 32 | 2.35 | 6.35 | 3.47 | -0.46 | -0.18 | -0.63 |
| IDEQ | 6-Oct-94 | 10.17 | 660 | 36 | 2.32 | 6.49 | 3.59 | -0.47 | 0.12 | -0.57 |
| IDEQ | 16-Nov-94 | 10.17 | 856 | 47 | 2.32 | 6.75 | 3.85 | -0.47 | 0.77 | -0.41 |
| IDEQ | 13-Dec-94 | 8.7 | 915 | 43 | 2.16 | 6.82 | 3.76 | -0.50 | 0.97 | -0.47 |
| IDEQ | 9-Feb-95 | 33.45 | 453 | 82 | 3.51 | 6.12 | 4.40 | 0.01 | -0.58 | 0.09 |
| IDEQ | 8-Mar-95 | 29.12 | 398 | 62 | 3.37 | 5.99 | 4.13 | -0.08 | -0.76 | -0.19 |
| IDEQ | 22-Mar-95 | 45.54 | 696 | 171 | 3.82 | 6.55 | 5.14 | 0.25 | 0.24 | 1.38 |
| IDEQ | 12-Apr-95 | 30.78 | 452 | 75 | 3.43 | 6.11 | 4.32 | -0.05 | -0.58 | -0.01 |
| IDEQ | 25-Apr-95 | 31 | 381 | 64 | 3.43 | 5.94 | 4.15 | -0.04 | -0.82 | -0.17 |
| IDEQ | 13-Jun-95 | 121.78 | 168 | 110 | 4.80 | 5.12 | 4.70 | 1.80 | -1.53 | 0.50 |
| IDEQ | 27-Jun-95 | 34.4 | 217 | 40 | 3.54 | 5.38 | 3.69 | 0.03 | -1.37 | -0.51 |
| IDEQ | 11-Jul-95 | 17.8 | 260 | 25 | 2.88 | 5.56 | 3.21 | -0.31 | -1.22 | -0.73 |
| IDEQ | 25-Jul-95 | 13.61 | 415 | 30 | 2.61 | 6.03 | 3.41 | -0.40 | -0.70 | -0.65 |
| IDEQ | 14-Aug-95 | 11.01 | 489 | 29 | 2.40 | 6.19 | 3.37 | -0.45 | -0.46 | -0.67 |
| IDEQ | 13-Sep-95 | 8.93 | 598 | 29 | 2.19 | 6.39 | 3.36 | -0.49 | -0.09 | -0.68 |
| URS | 14-May-98 | 274 | 251 | 370 | 5.61 | 5.53 | 5.91 | 4.88 | -1.25 | 4.26 |

**dZn**

**Concentration over time analysis**

| | dZn | CC291 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.275** | **-0.00095** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 27-Oct-93 | 6.63 | 758 | | |
| mid | 25-Jul-94 | 6.37 | 587 | | |
| last | 14-May-98 | 5.06 | 157 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

**Load over time analysis**

| | dZn | CC291 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.064** | **0.00052** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 27-Oct-93 | 3.90 | 49 | | |
| mid | 25-Jul-94 | 4.04 | 57 | | |
| last | 14-May-98 | 4.76 | 117 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

| | max r2 | 0.316 | | max r2 | 0.996 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 row | | |
| | 0.275 | -0.00095 | 39.10 | 0.064 | 0.00052 | -13.95 |
| | 0.268 | -0.00095 | 39.10 | 0.060 | 0.00051 | -13.69 |
| | 0.255 | -0.00093 | 38.49 | 0.063 | 0.00054 | -14.45 |
| | 0.239 | -0.00090 | 37.57 | 0.060 | 0.00053 | -14.21 |
| | 0.222 | -0.00087 | 36.51 | 0.052 | 0.00050 | -13.17 |
| | 0.204 | -0.00084 | 35.24 | 0.049 | 0.00049 | -13.02 |
| | 0.185 | -0.00080 | 33.79 | 0.046 | 0.00048 | -12.68 |
| | 0.166 | -0.00075 | 32.27 | 0.042 | 0.00047 | -12.22 |
| | 0.146 | -0.00070 | 30.51 | 0.036 | 0.00044 | -11.25 |
| | 0.127 | -0.00065 | 28.82 | 0.039 | 0.00047 | -12.14 |
| | 0.110 | -0.00061 | 27.20 | 0.042 | 0.00049 | -13.03 |
| | 0.091 | -0.00055 | 25.29 | 0.047 | 0.00054 | -14.54 |
| | 0.058 | -0.00042 | 20.47 | 0.090 | 0.00073 | -21.14 |
| | 0.025 | -0.00025 | 14.66 | 0.200 | 0.00101 | -30.95 |
| | 0.053 | -0.00036 | 18.49 | 0.249 | 0.00114 | -35.63 |
| | 0.122 | -0.00052 | 24.09 | 0.355 | 0.00135 | -42.96 |
| | 0.168 | -0.00062 | 27.50 | 0.416 | 0.00149 | -47.96 |
| | 0.225 | -0.00072 | 31.23 | 0.395 | 0.00147 | -47.27 |
| | 0.237 | -0.00076 | 32.62 | 0.376 | 0.00145 | -46.52 |
| | 0.225 | -0.00076 | 32.47 | 0.361 | 0.00145 | -46.45 |
| | 0.209 | -0.00074 | 32.02 | 0.338 | 0.00141 | -45.17 |
| | 0.180 | -0.00069 | 30.17 | 0.318 | 0.00139 | -44.34 |
| | 0.139 | -0.00057 | 25.86 | 0.313 | 0.00141 | -45.01 |
| | 0.094 | -0.00041 | 20.19 | 0.300 | 0.00140 | -44.77 |
| | 0.082 | -0.00038 | 19.30 | 0.337 | 0.00151 | -48.51 |
| | 0.077 | -0.00038 | 19.13 | 0.350 | 0.00156 | -50.57 |
| | 0.044 | -0.00025 | 14.60 | 0.555 | 0.00185 | -60.64 |
| | 0.026 | -0.00019 | 12.50 | 0.633 | 0.00200 | -66.02 |
| | 0.017 | -0.00016 | 11.26 | 0.700 | 0.00215 | -71.43 |
| | 0.104 | -0.00032 | 17.07 | 0.965 | 0.00244 | -81.72 |
| | 0.316 | -0.00048 | 22.74 | 0.996 | 0.00255 | -85.59 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dZn** | | **CC291** | | |
| **LN Analysis** | | **dZn** | | |
| **Load** | | **Load Data, EV=75 lbs/day CV=.92** | | |
| **Avg:** | **75** | **Load Data-based LN** | | |
| **SD:** | **69** | u | ln dZn Load | dZn Load |
| **CV:** | **0.92** | 3 | 6.4 | 578 |
| **Min:** | **25** | 0 | 4.02 | 56 |
| **Max:** | **370** | -3 | 1.68 | 5 |
| **Median:** | **48** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV. **$r^2$=0.911, EV=74.7 lbs/day CV=0.77; max r2=0.987**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad. | 0.911 | u | lnLoad | Load |
| slope, m | 1.459 | 3 | 6.14 | 462 |
| intercept, b | -5.948 | 0 | 4.08 | 59 |
| N | 35 | -3 | 2.02 | 8 |
| E[Load] | 74.7 | Parameter Estimates | | |
| SD[Load] | 58 | from LN regression | | |
| CV[Load] | 0.77 | update graph label | | |

| | | | N: 35 | | | max r2 0.987 |
|---|---|---|---|---|---|---|
| | **Date** | **dZn Load lbs/day Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | **r2 forward** |
| ws | update and rank for new data | | | | | | |
| | 11-Jul-95 | **25** | 1 | 0.0177 | -2.103 | 3.215 | 0.911 |
| | 13-Sep-95 | **29** | 2 | 0.0461 | -1.684 | 3.358 | 0.924 |
| | 14-Aug-95 | **29** | 3 | 0.0745 | -1.443 | 3.366 | 0.936 |
| | 23-Jun-94 | **30** | 4 | 0.1028 | -1.266 | 3.394 | 0.942 |
| | 25-Jul-95 | **30** | 5 | 0.1312 | -1.121 | 3.414 | 0.946 |
| | 25-Jul-94 | **31** | 6 | 0.1596 | -0.996 | 3.444 | 0.948 |
| | 13-Sep-94 | **32** | 7 | 0.1879 | -0.885 | 3.469 | 0.948 |
| | 16-Aug-94 | **36** | 8 | 0.2163 | -0.785 | 3.585 | 0.947 |
| | 6-Oct-94 | **36** | 9 | 0.2447 | -0.691 | 3.587 | 0.950 |
| | 17-Dec-93 | **39** | 10 | 0.2730 | -0.604 | 3.668 | 0.950 |
| | 27-Jun-95 | **40** | 11 | 0.3014 | -0.520 | 3.693 | 0.952 |
| | 13-Dec-94 | **43** | 12 | 0.3298 | -0.441 | 3.757 | 0.954 |
| | 18-Feb-94 | **43** | 13 | 0.3582 | -0.363 | 3.771 | 0.957 |
| | 27-Oct-93 | **46** | 14 | 0.3865 | -0.288 | 3.833 | 0.959 |
| | 16-Nov-94 | **47** | 15 | 0.4149 | -0.215 | 3.847 | 0.963 |
| | 17-Dec-93 | **47** | 16 | 0.4433 | -0.143 | 3.852 | 0.966 |
| | 18-Feb-94 | **48** | 17 | 0.4716 | -0.071 | 3.868 | 0.967 |
| | 20-Jan-94 | **48** | 18 | 0.5000 | 0.000 | 3.876 | 0.967 |
| | 20-Jan-94 | **50** | 19 | 0.5284 | 0.071 | 3.919 | 0.964 |
| | 30-Nov-93 | **61** | 20 | 0.5567 | 0.143 | 4.118 | 0.961 |
| | 8-Mar-95 | **62** | 21 | 0.5851 | 0.215 | 4.133 | 0.968 |
| | 25-Apr-95 | **64** | 22 | 0.6135 | 0.288 | 4.152 | 0.974 |
| | 24-Mar-94 | **66** | 23 | 0.6418 | 0.363 | 4.190 | 0.978 |
| | 8-Mar-94 | **67** | 24 | 0.6702 | 0.441 | 4.202 | 0.982 |
| | 24-Mar-94 | **72** | 25 | 0.6986 | 0.520 | 4.278 | 0.984 |
| | 7-Jun-94 | **74** | 26 | 0.7270 | 0.604 | 4.301 | 0.987 |
| | 12-Apr-95 | **75** | 27 | 0.7553 | 0.691 | 4.315 | 0.987 |
| | 9-Feb-95 | **82** | 28 | 0.7837 | 0.785 | 4.401 | 0.984 |
| | 4-May-94 | **89** | 29 | 0.8121 | 0.885 | 4.489 | 0.980 |
| | 13-Jun-95 | **110** | 30 | 0.8404 | 0.996 | 4.701 | 0.980 |
| | 19-May-94 | **121** | 31 | 0.8688 | 1.121 | 4.800 | 0.973 |
| | 22-Mar-95 | **171** | 32 | 0.8972 | 1.266 | 5.139 | |
| | 7-Apr-94 | **180** | 33 | 0.9255 | 1.443 | 5.191 | |
| | 7-Apr-94 | **246** | 34 | 0.9539 | 1.684 | 5.505 | |
| | 14-May-98 | **370** | 35 | 0.9823 | 2.103 | 5.914 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dZn** | | **CC291** | | |
| **LN Analysis** | | **dZn** | | |
| **Concentration** | | **Conc. Data, EV=625 ug/L CV=.48** | | |
| **Avg:** | **625** | **Data-based LN** | | |
| **SD:** | **299** | u | ln[dZn] | [dZn] |
| **CV:** | **0.48** | 3 | 7.7 | 2199 |
| **Min:** | **168** | 0 | 6.33 | 564 |
| **Max:** | **1,280** | -3 | 4.97 | 145 |
| **Median:** | **598** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV **$r^2$=0.938, EV=650.2 ug/L CV=0.65; max r2=0.938**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.938 | u | lnConc | Conc. |
| slope, m | 1.685 | 3 | 8.08 | 3234 |
| intercept, b. | -10.619 | 0 | 6.30 | 545 |
| N | 35 | -3 | 4.52 | 92 |
| E[Conc] | 650.2 | Parameter Estimates | | |
| SD[Conc] | 422 | from LN regression | | |
| CV[Conc] | 0.65 | update graph label | | |

| Date | dZn Concentration ug/L Ranked | N= 35 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.938 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Jun-95 | 168 | 1 | 0.0177 | -2.103 | 5.124 | 0.938 |
| 19-May-94 | 191 | 2 | 0.0461 | -1.684 | 5.252 | 0.929 |
| 27-Jun-95 | 217 | 3 | 0.0745 | -1.443 | 5.380 | 0.920 |
| 4-May-94 | 230 | 4 | 0.1028 | -1.266 | 5.438 | 0.911 |
| 14-May-98 | 251 | 5 | 0.1312 | -1.121 | 5.525 | 0.904 |
| 11-Jul-95 | 260 | 6 | 0.1596 | -0.996 | 5.561 | 0.898 |
| 7-Jun-94 | 301 | 7 | 0.1879 | -0.885 | 5.707 | 0.897 |
| 23-Jun-94 | 311 | 8 | 0.2163 | -0.785 | 5.740 | 0.893 |
| 25-Apr-95 | 381 | 9 | 0.2447 | -0.691 | 5.943 | 0.894 |
| 8-Mar-95 | 398 | 10 | 0.2730 | -0.604 | 5.986 | 0.885 |
| 25-Jul-95 | 415 | 11 | 0.3014 | -0.520 | 6.028 | 0.877 |
| 25-Jul-94 | 451 | 12 | 0.3298 | -0.441 | 6.111 | 0.869 |
| 12-Apr-95 | 452 | 13 | 0.3582 | -0.363 | 6.114 | 0.858 |
| 9-Feb-95 | 453 | 14 | 0.3865 | -0.288 | 6.116 | 0.851 |
| 14-Aug-95 | 489 | 15 | 0.4149 | -0.215 | 6.192 | 0.856 |
| 16-Aug-94 | 562 | 16 | 0.4433 | -0.143 | 6.332 | 0.864 |
| 13-Sep-94 | 571 | 17 | 0.4716 | -0.071 | 6.347 | 0.857 |
| 13-Sep-95 | 598 | 18 | 0.5000 | 0.000 | 6.394 | 0.856 |
| 6-Oct-94 | 660 | 19 | 0.5284 | 0.071 | 6.492 | 0.861 |
| 22-Mar-95 | 696 | 20 | 0.5567 | 0.143 | 6.545 | 0.851 |
| 27-Oct-93 | 759 | 21 | 0.5851 | 0.215 | 6.632 | 0.835 |
| 24-Mar-94 | 789 | 22 | 0.6135 | 0.288 | 6.671 | 0.815 |
| 24-Mar-94 | 789 | 23 | 0.6418 | 0.363 | 6.671 | 0.797 |
| 8-Mar-94 | 842 | 24 | 0.6702 | 0.441 | 6.736 | 0.770 |
| 16-Nov-94 | 856 | 25 | 0.6986 | 0.520 | 6.752 | 0.760 |
| 30-Nov-93 | 861 | 26 | 0.7270 | 0.604 | 6.758 | 0.753 |
| 18-Feb-94 | 897 | 27 | 0.7553 | 0.691 | 6.799 | 0.740 |
| 18-Feb-94 | 897 | 28 | 0.7837 | 0.785 | 6.799 | 0.756 |
| 17-Dec-93 | 907 | 29 | 0.8121 | 0.885 | 6.810 | 0.764 |
| 17-Dec-93 | 907 | 30 | 0.8404 | 0.996 | 6.810 | 0.776 |
| 13-Dec-94 | 915 | 31 | 0.8688 | 1.121 | 6.819 | 0.771 |
| 20-Jan-94 | 920 | 32 | 0.8972 | 1.266 | 6.824 | |
| 20-Jan-94 | 920 | 33 | 0.9255 | 1.443 | 6.824 | |
| 7-Apr-94 | 1280 | 34 | 0.9539 | 1.684 | 7.155 | |
| 7-Apr-94 | 1280 | 35 | 0.9823 | 2.103 | 7.155 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dZn** | | **CC291** | | |
| **LN Analysis** | | **dZn** | | |
| **Discharge, Q** | | **Q Data, EV=33 cfs CV=1.49** | | |
| **Avg:** | **33** | **Q Data-based LN** | | |
| **SD:** | **49** | u | lnQ | Q |
| **CV:** | **1.49** | 3 | 6.2 | 473 |
| **Min:** | **8** | 0 | 2.92 | 18 |
| **Max:** | **274** | -3 | -0.33 | 1 |
| **Median:** | **15** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.856, EV=31.9 cfs CV=1.23; max r2=0.970**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.856 | u | lnQ | Q |
| slope, m: | 1.041 | 3 | 5.88 | 359 |
| intercept, b: | -3.125 | 0 | 3.00 | 20 |
| N: 35 | | -3 | 0.12 | 1 |
| E[Q] | 31.9 | Parameter Estimates | | |
| SD[Q] | 39 | from LN regression | | |
| CV[Q] | 1.23 | update graph label | | |

| Date | Q Discharge cfs Ranked | N: 35 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.970 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 17-Dec-93 | 8.03 | 1 | 0.0177 | -2.103 | 2.083 | 0.856 |
| 13-Dec-94 | 8.7 | 2 | 0.0461 | -1.684 | 2.163 | 0.883 |
| 13-Sep-95 | 8.93 | 3 | 0.0745 | -1.443 | 2.189 | 0.901 |
| 18-Feb-94 | 9 | 4 | 0.1028 | -1.266 | 2.197 | 0.915 |
| 17-Dec-93 | 9.65 | 5 | 0.1312 | -1.121 | 2.267 | 0.925 |
| 20-Jan-94 | 9.74 | 6 | 0.1596 | -0.996 | 2.276 | 0.936 |
| 18-Feb-94 | 9.91 | 7 | 0.1879 | -0.885 | 2.294 | 0.945 |
| 20-Jan-94 | 10.17 | 8 | 0.2163 | -0.785 | 2.319 | 0.953 |
| 6-Oct-94 | 10.17 | 9 | 0.2447 | -0.691 | 2.319 | 0.959 |
| 16-Nov-94 | 10.17 | 10 | 0.2730 | -0.604 | 2.319 | 0.964 |
| 13-Sep-94 | 10.45 | 11 | 0.3014 | -0.520 | 2.347 | 0.966 |
| 14-Aug-95 | 11.01 | 12 | 0.3298 | -0.441 | 2.399 | 0.968 |
| 27-Oct-93 | 11.31 | 13 | 0.3582 | -0.363 | 2.426 | 0.969 |
| 16-Aug-94 | 11.92 | 14 | 0.3865 | -0.288 | 2.478 | 0.970 |
| 25-Jul-94 | 12.91 | 15 | 0.4149 | -0.215 | 2.558 | 0.970 |
| 30-Nov-93 | 13.26 | 16 | 0.4433 | -0.143 | 2.585 | 0.970 |
| 25-Jul-95 | 13.61 | 17 | 0.4716 | -0.071 | 2.611 | 0.970 |
| 8-Mar-94 | 14.75 | 18 | 0.5000 | 0.000 | 2.691 | 0.967 |
| 24-Mar-94 | 15.56 | 19 | 0.5284 | 0.071 | 2.745 | 0.965 |
| 24-Mar-94 | 16.98 | 20 | 0.5567 | 0.143 | 2.832 | 0.962 |
| 23-Jun-94 | 17.8 | 21 | 0.5851 | 0.215 | 2.879 | 0.958 |
| 11-Jul-95 | 17.8 | 22 | 0.6135 | 0.288 | 2.879 | 0.953 |
| 7-Apr-94 | 26.08 | 23 | 0.6418 | 0.363 | 3.261 | 0.947 |
| 8-Mar-95 | 29.12 | 24 | 0.6702 | 0.441 | 3.371 | 0.948 |
| 12-Apr-95 | 30.78 | 25 | 0.6986 | 0.520 | 3.427 | 0.955 |
| 25-Apr-95 | 31 | 26 | 0.7270 | 0.604 | 3.434 | 0.963 |
| 9-Feb-95 | 33.45 | 27 | 0.7553 | 0.691 | 3.510 | 0.966 |
| 27-Jun-95 | 34.4 | 28 | 0.7837 | 0.785 | 3.538 | 0.969 |
| 7-Apr-94 | 35.7 | 29 | 0.8121 | 0.885 | 3.575 | 0.965 |
| 7-Jun-94 | 45.54 | 30 | 0.8404 | 0.996 | 3.819 | 0.954 |
| 22-Mar-95 | 45.54 | 31 | 0.8688 | 1.121 | 3.819 | 0.940 |
| 4-May-94 | 71.93 | 32 | 0.8972 | 1.266 | 4.276 | |
| 19-May-94 | 118.23 | 33 | 0.9255 | 1.443 | 4.773 | |
| 13-Jun-95 | 121.78 | 34 | 0.9539 | 1.684 | 4.802 | |
| 14-May-98 | 274 | 35 | 0.9823 | 2.103 | 5.613 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** CC291 **Date:** 2-Jun-00

**Chemical:** tCd **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 34,617 | 33 | 4 | 0.5 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 306 | 49 | 1 | 0.4 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.49 | 0.36 | 0.81 | | | | |
| **Min:** | 34,269 | 8 | 1 | 0.2 | | -0.51 | -1.75 | -0.71 |
| **Max:** | 35,929 | 274 | 6 | 2 | | 4.88 | 1 44 | 4.73 |
| **Median:** | 34,540 | 15 | 4 | 0.3 | | -0.37 | 0.14 | -0.42 |

| tCd | CC291 | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.37)** | | update r2 | **0.37** | 0.37 | | r2: | 0.463 | 0.277 |
| r2 Q,[COC]: | 0.37 | [tCd] | Q | | | m: | 0.1096 | 0.00147 |
| slope, m: | -0.02 | 4 | 8.0 | | | b: | -3762 | -47.83 |
| intercept, b: | 4.4 | 4 | 33.1 | | | | | |
| N: 35 | | -0.3 | 274 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.737)** | | update r2 | | 0.74 | 0.737 | | | |
| r2 lnQ,ln[COC]: | 0.74 | ln[tCd] | ln Q | [tCd] | Q | | | |
| slope, m | -0.43 | 1.65 | 2.08 | 5 | 8 | | | |
| intercept, b | 2.54 | 1.04 | 3.50 | 3 | 33 | | | |
| N: 35 | | 0.14 | 5.61 | 1 | 274 | | | |

**N= 35**

| | Sampling Date | Q Discharge | tCd Concentration | tCd Load | Ln Q | Ln tCd Conc. | Ln tCd Load | for graph 0 tCd CC291 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 27-Oct-93 | 11.31 | 4.8 | 0.3 | 2.43 | 1.57 | -1.23 | -0.44 | 0.72 | -0.44 |
| IDEQ | 30-Nov-93 | 13.26 | 5.2 | 0.4 | 2.58 | 1.65 | -0.99 | -0.40 | 1.01 | -0.23 |
| IDEQ | 17-Dec-93 | 9.65 | 5.8 | 0.3 | 2.27 | 1.76 | -1.20 | -0.48 | 1.44 | -0.42 |
| IDEQ | 17-Dec-93 | 8.03 | 5.8 | 0.3 | 2.08 | 1.76 | -1.38 | -0.51 | 1.44 | -0.56 |
| IDEQ | 20-Jan-94 | 10.17 | 5.5 | 0.3 | 2.32 | 1.70 | -1.20 | -0.47 | 1.22 | -0.42 |
| IDEQ | 20-Jan-94 | 9.74 | 5.5 | 0.3 | 2.28 | 1.70 | -1.24 | -0.47 | 1.22 | -0.45 |
| IDEQ | 18-Feb-94 | 9.91 | 5.6 | 0.3 | 2.29 | 1.72 | -1.21 | -0.47 | 1.29 | -0.43 |
| IDEQ | 18-Feb-94 | 9 | 5.6 | 0.3 | 2.20 | 1.72 | -1.31 | -0.49 | 1.29 | -0.50 |
| IDEQ | 8-Mar-94 | 14.75 | 5.2 | 0.4 | 2.69 | 1.65 | -0.89 | -0.37 | 1.01 | -0.12 |
| IDEQ | 24-Mar-94 | 15.56 | 4.6 | 0.4 | 2.74 | 1.53 | -0.95 | -0.36 | 0.57 | -0.19 |
| IDEQ | 24-Mar-94 | 16.98 | 4.6 | 0.4 | 2.83 | 1.53 | -0.87 | -0.33 | 0.57 | -0.10 |
| IDEQ | 7-Apr-94 | 26.08 | 3.6 | 0.5 | 3.26 | 1.28 | -0.68 | -0.14 | -0.15 | 0.13 |
| IDEQ | 7-Apr-94 | 35.7 | 3.6 | 0.7 | 3.58 | 1.28 | -0.37 | 0.05 | -0.15 | 0.63 |
| IDEQ | 4-May-94 | 71.93 | 1.8 | 0.7 | 4.28 | 0.59 | -0.36 | 0 79 | -1.46 | 0.65 |
| IDEQ | 19-May-94 | 118.23 | 1.4 | 0.9 | 4.77 | 0.34 | -0.12 | 1.73 | -1.75 | 1.17 |
| IDEQ | 7-Jun-94 | 45.54 | 2.1 | 0.5 | 3.82 | 0.74 | -0.66 | 0.25 | -1.24 | 0.16 |
| IDEQ | 23-Jun-94 | 17.8 | 3 | 0.3 | 2.88 | 1.10 | -1.25 | -0.31 | -0.59 | -0.46 |
| IDEQ | 25-Jul-94 | 12.91 | 3.7 | 0.3 | 2.56 | 1.31 | -1.36 | -0.41 | -0.08 | -0.54 |
| IDEQ | 16-Aug-94 | 11.92 | 4 | 0.3 | 2.48 | 1.39 | -1.36 | -0.43 | 0.14 | -0.54 |
| IDEQ | 13-Sep-94 | 10.45 | 4.2 | 0.2 | 2.35 | 1.44 | -1.44 | -0.46 | 0.28 | -0.59 |
| IDEQ | 6-Oct-94 | 10.17 | 4.8 | 0.3 | 2.32 | 1.57 | -1.34 | -0.47 | 0.72 | -0.52 |
| IDEQ | 16-Nov-94 | 10 17 | 5.2 | 0.3 | 2.32 | 1.65 | -1.26 | -0.47 | 1.01 | -0.46 |
| IDEQ | 13-Dec-94 | 8.7 | 5 | 0.2 | 2.16 | 1.61 | -1.45 | -0.50 | 0.86 | -0.60 |
| IDEQ | 9-Feb-95 | 33.45 | 3 | 0.5 | 3.51 | 1.10 | -0.62 | 0.01 | -0.59 | 0.23 |
| IDEQ | 8-Mar-95 | 29.12 | 2.4 | 0.4 | 3.37 | 0.88 | -0.98 | -0.08 | -1.02 | -0.22 |
| IDEQ | 22-Mar-95 | 45.54 | 4.1 | 1.0 | 3.82 | 1.41 | 0.00 | 0.25 | 0.21 | 1.48 |
| IDEQ | 12-Apr-95 | 30.78 | 3.1 | 0.5 | 3.43 | 1.13 | -0.67 | -0.05 | -0.51 | 0.15 |
| IDEQ | 25-Apr-95 | 31 | 2.5 | 0.4 | 3.43 | 0.92 | -0.87 | -0.04 | -0.95 | -0.11 |
| IDEQ | 13-Jun-95 | 121.78 | 1.6 | 1.0 | 4.80 | 0.47 | 0.05 | 1.80 | -1.60 | 1.60 |
| IDEQ | 27-Jun-95 | 34.4 | 1.6 | 0.3 | 3.54 | 0.47 | -1.22 | 0.03 | -1.60 | -0.43 |
| IDEQ | 11-Jul-95 | 17 8 | 2.4 | 0.2 | 2.88 | 0.88 | -1.47 | -0.31 | -1.02 | -0.61 |
| IDEQ | 25-Jul-95 | 13.61 | 3.2 | 0.2 | 2.61 | 1.16 | -1.45 | -0.40 | -0.44 | -0.60 |
| IDEQ | 14-Aug-95 | 11.01 | 3.4 | 0.2 | 2.40 | 1.22 | -1.60 | -0.45 | -0.30 | -0.69 |
| IDEQ | 13-Sep-95 | 8.93 | 4 | 0.2 | 2.19 | 1.39 | -1.65 | -0.49 | 0.14 | -0.71 |
| URS | 14-May-98 | 274 | 1.5 | 2.2 | 5.61 | 0.41 | 0.79 | 4.88 | -1.67 | 4.73 |

tCd

**Concentration over time analysis**

| | tCd | CC291 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.323** | **-0.00079** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 27-Oct-93 | 1.53 | 5 | | |
| mid | 25-Jul-94 | 1.32 | 4 | | |
| last | 14-May-98 | 0.22 | 1 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

**Load over time analysis**

| | tCd | CC291 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.150** | **0.00068** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 27-Oct-93 | -1.20 | 0 | | |
| mid | 25-Jul-94 | -1.02 | 0 | | |
| last | 14-May-98 | -0.08 | 1 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

| | max r2 | 0.728 | | max r2: | 0.983 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points. delete last 4 rows | | | only on >4 data points. delete last 4 row | | |
| | 0.323 | -0.00079 | 28.66 | 0.150 | 0.00068 | -24.39 |
| | 0.313 | -0.00079 | 28.52 | 0.144 | 0.00067 | -24.27 |
| | 0.298 | -0.00077 | 27.96 | 0.147 | 0.00069 | -24.98 |
| | 0.278 | -0.00074 | 26.89 | 0.142 | 0.00069 | -24.89 |
| | 0.256 | -0.00071 | 25.66 | 0.130 | 0.00067 | -24.02 |
| | 0.236 | -0.00067 | 24.50 | 0.124 | 0.00066 | -23.77 |
| | 0.214 | -0.00063 | 23.18 | 0.115 | 0.00065 | -23.29 |
| | 0.191 | -0.00059 | 21.63 | 0.108 | 0.00063 | -22.86 |
| | 0.165 | -0.00054 | 19.84 | 0.097 | 0.00061 | -21.92 |
| | 0.141 | -0.00049 | 18.17 | 0.101 | 0.00063 | -22.79 |
| | 0.122 | -0.00045 | 16.87 | 0.103 | 0.00065 | -23.37 |
| | 0.100 | -0.00041 | 15.34 | 0.108 | 0.00068 | -24.50 |
| | 0.091 | -0.00040 | 14.88 | 0.124 | 0.00074 | -26.73 |
| | 0.081 | -0.00038 | 14.33 | 0.168 | 0.00087 | -31.28 |
| | 0.130 | -0.00048 | 17.84 | 0.224 | 0.00102 | -36.28 |
| | 0.265 | -0.00064 | 23.48 | 0.336 | 0.00122 | -43.57 |
| | 0.361 | -0.00075 | 27.25 | 0.396 | 0.00136 | -48.21 |
| | 0.389 | -0.00080 | 29.09 | 0.396 | 0.00139 | -49.42 |
| | 0.383 | -0.00081 | 29.48 | 0.385 | 0.00140 | -49.66 |
| | 0.365 | -0.00081 | 29.22 | 0.371 | 0.00140 | -49.71 |
| | 0.340 | -0.00078 | 28.37 | 0.350 | 0.00137 | -48.82 |
| | 0.302 | -0.00072 | 26.14 | 0.333 | 0.00136 | -48.37 |
| | 0.265 | -0.00062 | 22.81 | 0.319 | 0.00135 | -48.06 |
| | 0.225 | -0.00052 | 19.12 | 0.291 | 0.00129 | -45.84 |
| | 0.213 | -0.00051 | 18.81 | 0.322 | 0.00138 | -48.99 |
| | 0.233 | -0.00054 | 19.95 | 0.322 | 0.00140 | -49.75 |
| | 0.201 | -0.00047 | 17.19 | 0.476 | 0.00163 | -58.05 |
| | 0.176 | -0.00043 | 15.99 | 0.534 | 0.00176 | -62.53 |
| | 0.175 | -0.00044 | 16.33 | 0.571 | 0.00187 | -66.36 |
| | 0.323 | -0.00056 | 20.52 | 0.952 | 0.00220 | -78.27 |
| | 0.728 | -0.00073 | 26.54 | 0.983 | 0.00230 | -81.78 |

update for EV, CV:

**tCd** **CC291**
**LN Analysis** **tCd**
**Load** **Load Data, EV=0.456 lbs/day CV=0.812**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **0** | **Load Data-based LN** | | |
| **SD:** | **0** | u | ln tCd Load | tCd Load |
| **CV:** | **0.81** | 3 | 1.1 | 3 |
| **Min:** | **0.2** | 0 | -1.04 | 0 |
| **Max:** | **2** | -3 | -3.17 | 0.0 |
| **Median:** | **0** | | | |

| | |
|---|---|
| 0 | 0.456 |
| 0.81 | 0.812 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.872, EV=0.455lbs/day CV=0.653; max r2=0.97**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.872 | u | lnLoad | Load | |
| slope, m: | 1.678 | 3 | 0.82 | 2 | |
| intercept, b: | 1.621 | 0 | -0.97 | 0 | |
| N: | 35 | -3 | -2.75 | 0.1 | |
| E[Load]: | 0.5 | Parameter Estmates | | | 0.872 |
| SD[Load]: | 0 | from LN regression | | | 0.5 |
| CV[Load]: | 0.65 | update graph label | | | 0.7 |
| | | | | | max r2 |
| | N: 35 | | | | 0.968 |

| Date | tCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| ws | update and rank for new data | | | | | |
| 13-Sep-95 | **0.2** | 1 | 0.0177 | -2.103 | -1.649 | 0.872 |
| 14-Aug-95 | **0.2** | 2 | 0.0461 | -1.684 | -1.602 | 0.887 |
| 11-Jul-95 | **0.2** | 3 | 0.0745 | -1.443 | -1.470 | 0.893 |
| 13-Dec-94 | **0.2** | 4 | 0.1028 | -1.266 | -1.452 | 0.906 |
| 25-Jul-95 | **0.2** | 5 | 0.1312 | -1.121 | -1.451 | 0.915 |
| 13-Sep-94 | **0.2** | 6 | 0.1596 | -0.996 | -1.443 | 0.922 |
| 17-Dec-93 | **0.3** | 7 | 0.1879 | -0.885 | -1.384 | 0.927 |
| 16-Aug-94 | **0.3** | 8 | 0.2163 | -0.785 | -1.361 | 0.933 |
| 25-Jul-94 | **0.3** | 9 | 0.2447 | -0.691 | -1.359 | 0.939 |
| 6-Oct-94 | **0.3** | 10 | 0.2730 | -0.604 | -1.337 | 0.944 |
| 18-Feb-94 | **0.3** | 11 | 0.3014 | -0.520 | -1.305 | 0.948 |
| 16-Nov-94 | **0.3** | 12 | 0.3298 | -0.441 | -1.257 | 0.952 |
| 23-Jun-94 | **0.3** | 13 | 0.3582 | -0.363 | -1.247 | 0.958 |
| 20-Jan-94 | **0.3** | 14 | 0.3865 | -0.288 | -1.244 | 0.962 |
| 27-Oct-93 | **0.3** | 15 | 0.4149 | -0.215 | -1.231 | 0.965 |
| 27-Jun-95 | **0.3** | 16 | 0.4433 | -0.143 | -1.217 | 0.967 |
| 18-Feb-94 | **0.3** | 17 | 0.4716 | -0.071 | -1.209 | 0.968 |
| 20-Jan-94 | **0.3** | 18 | 0.5000 | 0.000 | -1.201 | 0.967 |
| 17-Dec-93 | **0.3** | 19 | 0.5284 | 0.071 | -1.200 | 0.964 |
| 30-Nov-93 | **0.4** | 20 | 0.5567 | 0.143 | -0.992 | 0.959 |
| 8-Mar-95 | **0.4** | 21 | 0.5851 | 0.215 | -0.978 | 0.962 |
| 24-Mar-94 | **0.4** | 22 | 0.6135 | 0.288 | -0.954 | 0.962 |
| 8-Mar-94 | **0.4** | 23 | 0.6418 | 0.363 | -0.885 | 0.961 |
| 25-Apr-95 | **0.4** | 24 | 0.6702 | 0.441 | -0.875 | 0.962 |
| 24-Mar-94 | **0.4** | 25 | 0.6986 | 0.520 | -0.867 | 0.959 |
| 7-Apr-94 | **0.5** | 26 | 0.7270 | 0.604 | -0.683 | 0.952 |
| 12-Apr-95 | **0.5** | 27 | 0.7553 | 0.691 | -0.667 | 0.956 |
| 7-Jun-94 | **0.5** | 28 | 0.7837 | 0.785 | -0.665 | 0.955 |
| 9-Feb-95 | **0.5** | 29 | 0.8121 | 0.885 | -0.616 | 0.944 |
| 7-Apr-94 | **0.7** | 30 | 0.8404 | 0.996 | -0.369 | 0.927 |
| 4-May-94 | **0.7** | 31 | 0.8688 | 1.121 | -0.362 | 0.924 |
| 19-May-94 | **0.9** | 32 | 0.8972 | 1.266 | -0.116 | |
| 22-Mar-95 | **1.0** | 33 | 0.9255 | 1.443 | 0.005 | |
| 13-Jun-95 | **1.0** | 34 | 0.9539 | 1.684 | 0.047 | |
| 14-May-98 | **2.2** | 35 | 0.9823 | 2.103 | 0.794 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tCd** | | **CC291** | | 4 | 3.81 |
| **LN Analysis** | | **tCd** | | 0.36 | 0.362 |

**Concentration**

**Conc. Data, EV=3.81 ug/L CV=0.362**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **4** | **Data-based LN** | | |
| **SD:** | **1** | u | ln[tCd] | [tCd] |
| **CV:** | **0.36** | 3 | 2.3 | 10 |
| **Min:** | **1** | 0 | 1.28 | 4 |
| **Max:** | **6** | -3 | 0.22 | 1 |
| **Median:** | **4** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **r2=0.91, EV=3.92 ug/L CV=0.491; max r2=0.91**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.910 | 0.91 |
| | | | | | 3.9 | 3.92 |
| | | | | | 0.491 | 0.491 |
| | r2 u,lnConc | 0.910 | u | lnConc | Conc | |
| | slope, m | 2.153 | 3 | 2.65 | 14 | |
| | intercept, b | -2.706 | 0 | 1.26 | 4 | |
| | N: | 35 | -3 | -0.14 | 1 | |
| 0.872 | E[Conc]: | 3.9 | Parameter Estimates | | | |
| 0.455 | SD[Conc] | 2 | from LN regression | | | |
| 0.653 | CV[Conc] | 0.49 | update graph label | | | |

| | tCd | N: 35 | | | | max r2 0.910 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 19-May-94 | 1.4 | 1 | 0.0177 | -2.103 | 0.336 | 0.910 |
| 14-May-98 | 1.5 | 2 | 0.0461 | -1.684 | 0.405 | 0.896 |
| 13-Jun-95 | 1.6 | 3 | 0.0745 | -1.443 | 0.470 | 0.884 |
| 27-Jun-95 | 1.6 | 4 | 0.1028 | -1.266 | 0.470 | 0.874 |
| 4-May-94 | 1.8 | 5 | 0.1312 | -1.121 | 0.588 | 0.877 |
| 7-Jun-94 | 2.1 | 6 | 0.1596 | -0.996 | 0.742 | 0.882 |
| 8-Mar-95 | 2.4 | 7 | 0.1879 | -0.885 | 0.875 | 0.881 |
| 11-Jul-95 | 2.4 | 8 | 0.2163 | -0.785 | 0.875 | 0.873 |
| 25-Apr-95 | 2.5 | 9 | 0.2447 | -0.691 | 0.916 | 0.874 |
| 23-Jun-94 | 3 | 10 | 0.2730 | -0.604 | 1.099 | 0.883 |
| 9-Feb-95 | 3 | 11 | 0.3014 | -0.520 | 1.099 | 0.874 |
| 12-Apr-95 | 3.1 | 12 | 0.3298 | -0.441 | 1.131 | 0.867 |
| 25-Jul-95 | 3.2 | 13 | 0.3582 | -0.363 | 1.163 | 0.862 |
| 14-Aug-95 | 3.4 | 14 | 0.3865 | -0.288 | 1.224 | 0.860 |
| 7-Apr-94 | 3.6 | 15 | 0.4149 | -0.215 | 1.281 | 0.854 |
| 7-Apr-94 | 3.6 | 16 | 0.4433 | -0.143 | 1.281 | 0.842 |
| 25-Jul-94 | 3.7 | 17 | 0.4716 | -0.071 | 1.308 | 0.837 |
| 16-Aug-94 | 4 | 18 | 0.5000 | 0.000 | 1.386 | 0.838 |
| 13-Sep-95 | 4 | 19 | 0.5284 | 0.071 | 1.386 | 0.824 |
| 22-Mar-95 | 4.1 | 20 | 0.5567 | 0.143 | 1.411 | 0.819 |
| 13-Sep-94 | 4.2 | 21 | 0.5851 | 0.215 | 1.435 | 0.825 |
| 24-Mar-94 | 4.6 | 22 | 0.6135 | 0.288 | 1.526 | 0.859 |
| 24-Mar-94 | 4.6 | 23 | 0.6418 | 0.363 | 1.526 | 0.844 |
| 27-Oct-93 | 4.8 | 24 | 0.6702 | 0.441 | 1.569 | 0.846 |
| 6-Oct-94 | 4.8 | 25 | 0.6986 | 0.520 | 1.569 | 0.828 |
| 13-Dec-94 | 5 | 26 | 0.7270 | 0.604 | 1.609 | 0.848 |
| 30-Nov-93 | 5.2 | 27 | 0.7553 | 0.691 | 1.649 | 0.843 |
| 8-Mar-94 | 5.2 | 28 | 0.7837 | 0.785 | 1.649 | 0.807 |
| 16-Nov-94 | 5.2 | 29 | 0.8121 | 0.885 | 1.649 | 0.763 |
| 20-Jan-94 | 5.5 | 30 | 0.8404 | 0.996 | 1.705 | 0.865 |
| 20-Jan-94 | 5.5 | 31 | 0.8688 | 1.121 | 1.705 | 0.825 |
| 18-Feb-94 | 5.6 | 32 | 0.8972 | 1.266 | 1.723 | |
| 18-Feb-94 | 5.6 | 33 | 0.9255 | 1.443 | 1.723 | |
| 17-Dec-93 | 5.8 | 34 | 0.9539 | 1.684 | 1.758 | |
| 17-Dec-93 | 5.8 | 35 | 0.9823 | 2.103 | 1.758 | |

update for EV, CV.

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **CC291** | | | 33 | 33.1 |
| **LN Analysis** | | **tCd** | | | 1.49 | 1.49 |
| **Discharge, Q** | | **Q Data, EV=33.1 cfs CV=1.49** | | | | |
| **Avg:** | **33** | **Q Data-based LN** | | | | |
| **SD:** | **49** | u | lnQ | Q | | |
| **CV:** | **1.49** | 3 | 6.2 | 473 | | |
| **Min:** | **8** | 0 | 2.92 | 18 | | |
| **Max:** | **274** | -3 | -0.33 | 1 | | |
| **Median:** | **15** | | | | | |
| | | | | | 0.856 | 0.856 |
| | | | | | 31.9 | 31.9 |
| | | **u=mLn(Q)+b:** | | | 1.23 | 1.23 |

update for r2, EV, CV: **r2=0.856, EV=31.9 cfs CV=1.23; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.856 | u | lnQ | Q |
| slope, m | 1.041 | 3 | 5.88 | 359 |
| intercept, b | -3.125 | 0 | 3.00 | 20 |
| N: | 35 | -3 | 0.12 | 1 |
| E[Q] | 31.9 | Parameter Estimates | | |
| SD[Q] | 39 | from LN regression | | |
| CV[Q] | 1.23 | update graph label | | |

| | Q | N. 35 | | | | max r2 0.970 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 17-Dec-93 | 8.03 | 1 | 0.0177 | -2.103 | 2.083 | 0.856 |
| 13-Dec-94 | 8.7 | 2 | 0.0461 | -1.684 | 2.163 | 0.883 |
| 13-Sep-95 | 8.93 | 3 | 0.0745 | -1.443 | 2.189 | 0.901 |
| 18-Feb-94 | 9 | 4 | 0.1028 | -1.266 | 2.197 | 0.915 |
| 17-Dec-93 | 9.65 | 5 | 0.1312 | -1.121 | 2.267 | 0.925 |
| 20-Jan-94 | 9.74 | 6 | 0.1596 | -0.996 | 2.276 | 0.936 |
| 18-Feb-94 | 9.91 | 7 | 0.1879 | -0.885 | 2.294 | 0.945 |
| 20-Jan-94 | 10.17 | 8 | 0.2163 | -0.785 | 2.319 | 0.953 |
| 6-Oct-94 | 10.17 | 9 | 0.2447 | -0.691 | 2.319 | 0.959 |
| 16-Nov-94 | 10.17 | 10 | 0.2730 | -0.604 | 2.319 | 0.964 |
| 13-Sep-94 | 10.45 | 11 | 0.3014 | -0.520 | 2.347 | 0.966 |
| 14-Aug-95 | 11.01 | 12 | 0.3298 | -0.441 | 2.399 | 0.968 |
| 27-Oct-93 | 11.31 | 13 | 0.3582 | -0.363 | 2.426 | 0.969 |
| 16-Aug-94 | 11.92 | 14 | 0.3865 | -0.288 | 2.478 | 0.970 |
| 25-Jul-94 | 12.91 | 15 | 0.4149 | -0.215 | 2.558 | 0.970 |
| 30-Nov-93 | 13.26 | 16 | 0.4433 | -0.143 | 2.585 | 0.970 |
| 25-Jul-95 | 13.61 | 17 | 0.4716 | -0.071 | 2.611 | 0.970 |
| 8-Mar-94 | 14.75 | 18 | 0.5000 | 0.000 | 2.691 | 0.967 |
| 24-Mar-94 | 15.56 | 19 | 0.5284 | 0.071 | 2.745 | 0.965 |
| 24-Mar-94 | 16.98 | 20 | 0.5567 | 0.143 | 2.832 | 0.962 |
| 23-Jun-94 | 17.8 | 21 | 0.5851 | 0.215 | 2.879 | 0.958 |
| 11-Jul-95 | 17.8 | 22 | 0.6135 | 0.288 | 2.879 | 0.953 |
| 7-Apr-94 | 26.08 | 23 | 0.6418 | 0.363 | 3.261 | 0.947 |
| 8-Mar-95 | 29.12 | 24 | 0.6702 | 0.441 | 3.371 | 0.948 |
| 12-Apr-95 | 30.78 | 25 | 0.6986 | 0.520 | 3.427 | 0.955 |
| 25-Apr-95 | 31 | 26 | 0.7270 | 0.604 | 3.434 | 0.963 |
| 9-Feb-95 | 33.45 | 27 | 0.7553 | 0.691 | 3.510 | 0.966 |
| 27-Jun-95 | 34.4 | 28 | 0.7837 | 0.785 | 3.538 | 0.969 |
| 7-Apr-94 | 35.7 | 29 | 0.8121 | 0.885 | 3.575 | 0.965 |
| 7-Jun-94 | 45.54 | 30 | 0.8404 | 0.996 | 3.819 | 0.954 |
| 22-Mar-95 | 45.54 | 31 | 0.8688 | 1.121 | 3.819 | 0.940 |
| 4-May-94 | 71.93 | 32 | 0.8972 | 1.266 | 4.276 | |
| 19-May-94 | 118.23 | 33 | 0.9255 | 1.443 | 4.773 | |
| 13-Jun-95 | 121.78 | 34 | 0.9539 | 1.684 | 4.802 | |
| 14-May-98 | 274 | 35 | 0.9823 | 2.103 | 5.613 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **CC291** | **Date:** | **2-Jun-00** |
| **Chemical:** | **tPb** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,617 | 33 | 20 | 3 | 0.00 | 0.00 | 0.00 |
| **SD:** | 306 | 49 | 6 | 3 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.49 | 0.30 | 1.13 | | | |
| **Min:** | 34,269 | 8 | 10 | 0.7 | -0.51 | -1.66 | -0.66 |
| **Max:** | 35,929 | 274 | 33 | 16 | 4.88 | 2.07 | 3.72 |
| **Median:** | 34,540 | 15 | 21 | 1 | -0.37 | 0.12 | -0.44 |

| tPb | CC291 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.138)** | | update r2 | **0.14** | 0.138 | r2. | 0.463 | 0.277 |
| r2 Q,[COC] | 0.14 | [tPb] | Q | | m | 0.1096 | 0.00147 |
| slope, m | 0.0 | 21 | 8.0 | | b | -3762 | -47.83 |
| intercept, b | 21.8 | 20 | 33.1 | | | | |
| N. 35 | | 9 | 274 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.234)** | | update r2 | | 0.23 | 0.234 | | |
| r2 lnQ,ln[COC] | 0.23 | ln[tPb] | ln Q | [tPb] | Q | | |
| slope, m | -0.18 | 3.13 | 2.08 | 23 | 8 | | |
| intercept, b | 3.50 | 2.87 | 3.50 | 18 | 33 | | |
| N. 35 | | 2.48 | 5.61 | 12 | 274 | | |

| | | | | | | | | tPb | for graph 0 | |
|---|---|---|---|---|---|---|---|---|---|---|
| **N= 35** | | | | | | | | CC291 | | |
| | **Sampling Date** | **Q Discharge** | **tPb Concentration** | **tPb Load** | **Ln Q** | **Ln tPb Conc.** | **Ln tPb Load** | **Standardized Values = (x - Avg)/SD** | | |
| update for new data | | **cfs** | **ug/L** | **lbs/day** | | | | **Q** | **Conc** | **Load** |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 27-Oct-93 | 11.31 | 33 | 2.0 | 2.43 | 3.50 | 0.70 | -0.44 | 2.07 | -0.29 |
| IDEQ | 30-Nov-93 | 13.26 | 21 | 1.5 | 2.58 | 3.04 | 0.40 | -0.40 | 0.12 | -0.44 |
| IDEQ | 17-Dec-93 | 9.65 | 23 | 1.2 | 2.27 | 3.14 | 0.18 | -0.48 | 0.45 | -0.53 |
| IDEQ | 17-Dec-93 | 8.03 | 23 | 1.0 | 2.08 | 3.14 | -0.01 | -0.51 | 0.45 | -0.59 |
| IDEQ | 20-Jan-94 | 10.17 | 23 | 1.3 | 2.32 | 3.14 | 0.23 | -0.47 | 0.45 | -0.51 |
| IDEQ | 20-Jan-94 | 9.74 | 23 | 1.2 | 2.28 | 3.14 | 0.19 | -0.47 | 0.45 | -0.53 |
| IDEQ | 18-Feb-94 | 9.91 | 26 | 1.4 | 2.29 | 3.26 | 0.33 | -0.47 | 0.93 | -0.48 |
| IDEQ | 18-Feb-94 | 9 | 26 | 1.3 | 2.20 | 3.26 | 0.23 | -0.49 | 0.93 | -0.51 |
| IDEQ | 8-Mar-94 | 14.75 | 15 | 1.2 | 2.69 | 2.71 | 0.17 | -0.37 | -0.85 | -0.53 |
| IDEQ | 24-Mar-94 | 15.56 | 14 | 1.2 | 2.74 | 2.64 | 0.16 | -0.36 | -1.01 | -0.54 |
| IDEQ | 24-Mar-94 | 16.98 | 14 | 1.3 | 2.83 | 2.64 | 0.25 | -0.33 | -1.01 | -0.51 |
| IDEQ | 7-Apr-94 | 26.08 | 28 | 3.9 | 3.26 | 3.33 | 1.37 | -0.14 | 1.26 | 0.27 |
| IDEQ | 7-Apr-94 | 35.7 | 28 | 5.4 | 3.58 | 3.33 | 1.68 | 0.05 | 1.26 | 0.70 |
| IDEQ | 4-May-94 | 71.93 | 14 | 5.4 | 4.28 | 2.64 | 1.69 | 0.79 | -1.01 | 0.71 |
| IDEQ | 19-May-94 | 118.23 | 12 | 7.6 | 4.77 | 2.48 | 2.03 | 1.73 | -1.34 | 1.37 |
| IDEQ | 7-Jun-94 | 45.54 | 16 | 3.9 | 3.82 | 2.77 | 1.37 | 0.25 | -0.69 | 0.27 |
| IDEQ | 23-Jun-94 | 17.8 | 15 | 1.4 | 2.88 | 2.71 | 0.36 | -0.31 | -0.85 | -0.46 |
| IDEQ | 25-Jul-94 | 12.91 | 19 | 1.3 | 2.56 | 2.94 | 0.28 | -0.41 | -0.20 | -0.50 |
| IDEQ | 16-Aug-94 | 11.92 | 24 | 1.5 | 2.48 | 3.18 | 0.43 | -0.43 | 0.61 | -0.43 |
| IDEQ | 13-Sep-94 | 10.45 | 24 | 1.3 | 2.35 | 3.18 | 0.30 | -0.46 | 0.61 | -0.49 |
| IDEQ | 6-Oct-94 | 10.17 | 24 | 1.3 | 2.32 | 3.18 | 0.27 | -0.47 | 0.61 | -0.50 |
| IDEQ | 16-Nov-94 | 10.17 | 20 | 1.1 | 2.32 | 3.00 | 0.09 | -0.47 | -0.04 | -0.56 |
| IDEQ | 13-Dec-94 | 8.7 | 16 | 0.7 | 2.16 | 2.77 | -0.29 | -0.50 | -0.69 | -0.66 |
| IDEQ | 9-Feb-95 | 33.45 | 12 | 2.2 | 3.51 | 2.48 | 0.77 | 0.01 | -1.34 | -0.25 |
| IDEQ | 8-Mar-95 | 29.12 | 12 | 1.9 | 3.37 | 2.48 | 0.63 | -0.08 | -1.34 | -0.33 |
| IDEQ | 22-Mar-95 | 45.54 | 22 | 5.4 | 3.82 | 3.09 | 1.68 | 0.25 | 0.28 | 0.70 |
| IDEQ | 12-Apr-95 | 30.78 | 10 | 1.7 | 3.43 | 2.30 | 0.50 | -0.05 | -1.66 | -0.40 |
| IDEQ | 25-Apr-95 | 31 | 32 | 5.3 | 3.43 | 3.47 | 1.67 | -0.04 | 1.91 | 0.69 |
| IDEQ | 13-Jun-95 | 121.78 | 22 | 14.4 | 4.80 | 3.09 | 2.67 | 1.80 | 0.28 | 3.37 |
| IDEQ | 27-Jun-95 | 34.4 | 17 | 3.1 | 3.54 | 2.83 | 1.15 | 0.03 | -0.53 | 0.04 |
| IDEQ | 11-Jul-95 | 17.8 | 16 | 1.5 | 2.88 | 2.77 | 0.43 | -0.31 | -0.69 | -0.43 |
| IDEQ | 25-Jul-95 | 13.61 | 25 | 1.8 | 2.61 | 3.22 | 0.60 | -0.40 | 0.77 | -0.35 |
| IDEQ | 14-Aug-95 | 11.01 | 19 | 1.1 | 2.40 | 2.94 | 0.12 | -0.45 | -0.20 | -0.55 |
| IDEQ | 13-Sep-95 | 8.93 | 30 | 1.4 | 2.19 | 3.40 | 0.37 | -0.49 | 1.58 | -0.46 |
| URS | 14-May-98 | 274 | 10.6 | 15.6 | 5.61 | 2.36 | 2.75 | 4.88 | -1.57 | 3.72 |

tPb

**Concentration over time analysis**

| | tPb | CC291 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.105** | **-0.00034** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 27-Oct-93 | 3.08 | 22 | | |
| mid | 25-Jul-94 | 2.98 | 20 | | |
| last | 14-May-98 | 2.51 | 12 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

**Load over time analysis**

| | tPb | CC291 | | |
|---|---|---|---|---|
| | | | | **Load over time** |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.211** | **0.00113** |
| | **Time** | **LnLoad** | **Load** | |
| first | 27-Oct-93 | 0.34 | 1 | |
| mid | 25-Jul-94 | 0.65 | 2 | |
| last | 14-May-98 | 2.22 | 9 | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | |
| | 14-May-98 | 0.00 | 1 | |

max r2 0.601

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points, delete last 4 rows | | |
| 0.105 | -0.00034 | 14.68 |
| 0.081 | -0.00029 | 13.01 |
| 0.078 | -0.00029 | 12.99 |
| 0.070 | -0.00028 | 12.58 |
| 0.062 | -0.00027 | 12.12 |
| 0.054 | -0.00025 | 11.61 |
| 0.046 | -0.00023 | 11.02 |
| 0.034 | -0.00020 | 9.86 |
| 0.023 | -0.00016 | 8.52 |
| 0.031 | -0.00019 | 9.57 |
| 0.045 | -0.00023 | 11.05 |
| 0.065 | -0.00028 | 12.79 |
| 0.045 | -0.00023 | 11.01 |
| 0.025 | -0.00017 | 8.86 |
| 0.041 | -0.00022 | 10.62 |
| 0.081 | -0.00031 | 13.63 |
| 0.101 | -0.00035 | 15.16 |
| 0.135 | -0.00042 | 17.39 |
| 0.141 | -0.00044 | 18.13 |
| 0.121 | -0.00041 | 17.17 |
| 0.100 | -0.00037 | 15.97 |
| 0.078 | -0.00033 | 14.48 |
| 0.070 | -0.00032 | 14.15 |
| 0.084 | -0.00036 | 15.50 |
| 0.140 | -0.00045 | 18.74 |
| 0.229 | -0.00055 | 22.33 |
| 0.218 | -0.00055 | 22.05 |
| 0.529 | -0.00071 | 28.04 |
| 0.533 | -0.00064 | 25.21 |
| 0.517 | -0.00063 | 24.97 |
| 0.601 | -0.00069 | 27.28 |

max r2 0.964

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points, delete last 4 row | | |
| 0.211 | 0.00113 | -38.37 |
| 0.217 | 0.00117 | -39.78 |
| 0.213 | 0.00118 | -39.96 |
| 0.202 | 0.00115 | -39.19 |
| 0.184 | 0.00111 | -37.55 |
| 0.173 | 0.00108 | -36.66 |
| 0.159 | 0.00105 | -35.44 |
| 0.149 | 0.00102 | -34.63 |
| 0.136 | 0.00098 | -33.25 |
| 0.120 | 0.00093 | -31.39 |
| 0.104 | 0.00087 | -29.19 |
| 0.089 | 0.00081 | -27.05 |
| 0.109 | 0.00091 | -30.60 |
| 0.152 | 0.00108 | -36.76 |
| 0.210 | 0.00128 | -43.50 |
| 0.329 | 0.00156 | -53.42 |
| 0.405 | 0.00175 | -60.30 |
| 0.397 | 0.00178 | -61.11 |
| 0.383 | 0.00177 | -61.01 |
| 0.375 | 0.00180 | -61.76 |
| 0.358 | 0.00178 | -61.22 |
| 0.337 | 0.00175 | -60.03 |
| 0.307 | 0.00165 | -56.73 |
| 0.269 | 0.00145 | -49.46 |
| 0.259 | 0.00144 | -49.07 |
| 0.241 | 0.00139 | -47.37 |
| 0.299 | 0.00155 | -53.19 |
| 0.274 | 0.00148 | -50.48 |
| 0.345 | 0.00167 | -57.48 |
| 0.840 | 0.00213 | -73.82 |
| 0.964 | 0.00233 | -81.05 |

update for EV, CV

| | | |
|---|---|---|
| **tPb** | | **CC291** |
| **LN Analysis** | | **tPb** |
| **Load** | | **Load Data, EV=3 lbs/day CV=1.13** |
| **Avg:** | **3** | **Load Data-based LN** |
| **SD:** | **3** | u |
| **CV:** | **1.13** | 3 |
| **Min:** | **0.7** | 0 |
| **Max:** | **16** | -3 |
| **Median:** | **1** | |

| ln tPb Load | tPb Load |
|---|---|
| 3.4 | 30 |
| 0.69 | 2 |
| -2.03 | 0.1 |
| 3 | 3 |
| 1.13 | 1.13 |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **r2=0.838, EV=3.01lbs/day CV=1.04; max r2=0.96**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.838 | u | lnLoad | Load | |
| slope, m: | 1.168 | 3 | 3.30 | 27 | |
| intercept, b | -0.859 | 0 | 0.74 | 2 | |
| N: 35 | | -3 | -1.83 | 0.2 | |
| E[Load] | 3.0 | Parameter Estimates | | | 0.838 |
| SD[Load] | 3 | from LN regression | | | 3.0 |
| CV[Load] | 1.04 | update graph label | | | 1.0 |
| | | | | | max r2 |
| | tPb | N: 35 | | | 0.961 |

| | Date | Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|---|
| ws | update and rank for new data | | | | | | |
| | 13-Dec-94 | **0.7** | 1 | 0.0177 | -2.103 | -0.289 | 0.838 |
| | 17-Dec-93 | **1.0** | 2 | 0.0461 | -1.684 | -0.006 | 0.843 |
| | 16-Nov-94 | **1.1** | 3 | 0.0745 | -1.443 | 0.090 | 0.857 |
| | 14-Aug-95 | **1.1** | 4 | 0.1028 | -1.266 | 0.118 | 0.872 |
| | 24-Mar-94 | **1.2** | 5 | 0.1312 | -1.121 | 0.159 | 0.885 |
| | 8-Mar-94 | **1.2** | 6 | 0.1596 | -0.996 | 0.174 | 0.897 |
| | 17-Dec-93 | **1.2** | 7 | 0.1879 | -0.885 | 0.177 | 0.909 |
| | 20-Jan-94 | **1.2** | 8 | 0.2163 | -0.785 | 0.187 | 0.918 |
| | 20-Jan-94 | **1.3** | 9 | 0.2447 | -0.691 | 0.230 | 0.926 |
| | 18-Feb-94 | **1.3** | 10 | 0.2730 | -0.604 | 0.230 | 0.934 |
| | 24-Mar-94 | **1.3** | 11 | 0.3014 | -0.520 | 0.246 | 0.941 |
| | 6-Oct-94 | **1.3** | 12 | 0.3298 | -0.441 | 0.272 | 0.947 |
| | 25-Jul-94 | **1.3** | 13 | 0.3582 | -0.363 | 0.277 | 0.952 |
| | 13-Sep-94 | **1.3** | 14 | 0.3865 | -0.288 | 0.300 | 0.955 |
| | 18-Feb-94 | **1.4** | 15 | 0.4149 | -0.215 | 0.327 | 0.958 |
| | 23-Jun-94 | **1.4** | 16 | 0.4433 | -0.143 | 0.362 | 0.960 |
| | 13-Sep-95 | **1.4** | 17 | 0.4716 | -0.071 | 0.366 | 0.961 |
| | 30-Nov-93 | **1.5** | 18 | 0.5000 | 0.000 | 0.404 | 0.960 |
| | 11-Jul-95 | **1.5** | 19 | 0.5284 | 0.071 | 0.427 | 0.958 |
| | 16-Aug-94 | **1.5** | 20 | 0.5567 | 0.143 | 0.431 | 0.954 |
| | 12-Apr-95 | **1.7** | 21 | 0.5851 | 0.215 | 0.504 | 0.948 |
| | 25-Jul-95 | **1.8** | 22 | 0.6135 | 0.288 | 0.605 | 0.941 |
| | 8-Mar-95 | **1.9** | 23 | 0.6418 | 0.363 | 0.631 | 0.933 |
| | 27-Oct-93 | **2.0** | 24 | 0.6702 | 0.441 | 0.697 | 0.924 |
| | 9-Feb-95 | **2.2** | 25 | 0.6986 | 0.520 | 0.770 | 0.918 |
| | 27-Jun-95 | **3.1** | 26 | 0.7270 | 0.604 | 1.146 | 0.923 |
| | 7-Jun-94 | **3.9** | 27 | 0.7553 | 0.691 | 1.366 | 0.907 |
| | 7-Apr-94 | **3.9** | 28 | 0.7837 | 0.785 | 1.368 | 0.893 |
| | 25-Apr-95 | **5.3** | 29 | 0.8121 | 0.885 | 1.675 | 0.866 |
| | 7-Apr-94 | **5.4** | 30 | 0.8404 | 0.996 | 1.682 | 0.877 |
| | 22-Mar-95 | **5.4** | 31 | 0.8688 | 1.121 | 1.685 | 0.872 |
| | 4-May-94 | **5.4** | 32 | 0.8972 | 1.266 | 1.690 | |
| | 19-May-94 | **7.6** | 33 | 0.9255 | 1.443 | 2.032 | |
| | 13-Jun-95 | **14.4** | 34 | 0.9539 | 1.684 | 2.668 | |
| | 14-May-98 | **15.6** | 35 | 0.9823 | 2.103 | 2.749 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tPb** | | **CC291** | | 20 | 20.2 |
| **LN Analysis** | | **tPb** | | 0.30 | 0.304 |
| **Concentration** | | **Conc. Data, EV=20.2 ug/L CV=0.304** | | | |
| **Avg:** | **20** | **Data-based LN** | | | |
| **SD:** | **6** | u | ln[tPb] | [tPb] | |
| **CV:** | **0.30** | 3 | 3.9 | 47 | |
| **Min:** | **10** | 0 | 2.96 | 19 | |
| **Max:** | **33** | -3 | 2.07 | 8 | |
| **Median:** | **21** | | | | |

**u=mLn[Conc.]+b:**

update for r2, EV, CV: **r2=0.966, EV=20.4 ug/L CV=0.349; max r2=0.98**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.966 | 0.966 |
| | | | | | 20.4 | 20.4 |
| | | | | | 0.349 | 0.349 |
| | r2 u,lnConc | 0.966 | u | lnConc | Conc | |
| | slope, m | 2.949 | 3 | 3.98 | 53 | |
| | intercept, b | -8.727 | 0 | 2.96 | 19 | |
| | N | 35 | -3 | 1.94 | 7 | |
| 0.838 | E[Conc] | 20.4 | Parameter Estimates | | | |
| 3.01 | SD[Conc] | 7 | from LN regression | | | |
| 1.04 | CV[Conc] | 0.35 | update graph label | | | |

| | tPb | N | 35 | | | max r2 |
|---|---|---|---|---|---|---|
| | | | | | | 0.976 |
| | **Concentration** | **i** | **i-3/8 / N+1/4** | **u** | **La** | **r2** |
| **Date** | **ug/L** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 12-Apr-95 | 10 | 1 | 0.0177 | -2.103 | 2.303 | 0.966 |
| 14-May-98 | 10.6 | 2 | 0.0461 | -1.684 | 2.361 | 0.962 |
| 19-May-94 | 12 | 3 | 0.0745 | -1.443 | 2.485 | 0.957 |
| 9-Feb-95 | 12 | 4 | 0.1028 | -1.266 | 2.485 | 0.952 |
| 8-Mar-95 | 12 | 5 | 0.1312 | -1.121 | 2.485 | 0.948 |
| 24-Mar-94 | 14 | 6 | 0.1596 | -0.996 | 2.639 | 0.948 |
| 24-Mar-94 | 14 | 7 | 0.1879 | -0.885 | 2.639 | 0.943 |
| 4-May-94 | 14 | 8 | 0.2163 | -0.785 | 2.639 | 0.938 |
| 8-Mar-94 | 15 | 9 | 0.2447 | -0.691 | 2.708 | 0.936 |
| 23-Jun-94 | 15 | 10 | 0.2730 | -0.604 | 2.708 | 0.931 |
| 7-Jun-94 | 16 | 11 | 0.3014 | -0.520 | 2.773 | 0.930 |
| 13-Dec-94 | 16 | 12 | 0.3298 | -0.441 | 2.773 | 0.927 |
| 11-Jul-95 | 16 | 13 | 0.3582 | -0.363 | 2.773 | 0.929 |
| 27-Jun-95 | 17 | 14 | 0.3865 | -0.288 | 2.833 | 0.947 |
| 25-Jul-94 | 19 | 15 | 0.4149 | -0.215 | 2.944 | 0.967 |
| 14-Aug-95 | 19 | 16 | 0.4433 | -0.143 | 2.944 | 0.967 |
| 16-Nov-94 | 20 | 17 | 0.4716 | -0.071 | 2.996 | 0.974 |
| 30-Nov-93 | 21 | 18 | 0.5000 | 0.000 | 3.045 | 0.976 |
| 22-Mar-95 | 22 | 19 | 0.5284 | 0.071 | 3.091 | 0.974 |
| 13-Jun-95 | 22 | 20 | 0.5567 | 0.143 | 3.091 | 0.972 |
| 17-Dec-93 | 23 | 21 | 0.5851 | 0.215 | 3.135 | 0.969 |
| 17-Dec-93 | 23 | 22 | 0.6135 | 0.288 | 3.135 | 0.972 |
| 20-Jan-94 | 23 | 23 | 0.6418 | 0.363 | 3.135 | 0.972 |
| 20-Jan-94 | 23 | 24 | 0.6702 | 0.441 | 3.135 | 0.969 |
| 16-Aug-94 | 24 | 25 | 0.6986 | 0.520 | 3.178 | 0.963 |
| 13-Sep-94 | 24 | 26 | 0.7270 | 0.604 | 3.178 | 0.960 |
| 6-Oct-94 | 24 | 27 | 0.7553 | 0.691 | 3.178 | 0.952 |
| 25-Jul-95 | 25 | 28 | 0.7837 | 0.785 | 3.219 | 0.948 |
| 18-Feb-94 | 26 | 29 | 0.8121 | 0.885 | 3.258 | 0.936 |
| 18-Feb-94 | 26 | 30 | 0.8404 | 0.996 | 3.258 | 0.916 |
| 7-Apr-94 | 28 | 31 | 0.8688 | 1.121 | 3.332 | 0.913 |
| 7-Apr-94 | 28 | 32 | 0.8972 | 1.266 | 3.332 | |
| 13-Sep-95 | 30 | 33 | 0.9255 | 1.443 | 3.401 | |
| 25-Apr-95 | 32 | 34 | 0.9539 | 1.684 | 3.466 | |
| 27-Oct-93 | 33 | 35 | 0.9823 | 2.103 | 3.497 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **CC291** | | | 33 | 33.1 |
| **LN Analysis** | | **tPb** | | | 1 49 | 1 49 |
| **Discharge, Q** | | **Q Data, EV=33.1 cfs CV=1.49** | | | | |
| **Avg:** | **33** | **Q Data-based LN** | | | | |
| **SD:** | **49** | u | lnQ | Q | | |
| **CV:** | **1.49** | 3 | 6.2 | 473 | | |
| **Min:** | **8** | 0 | 2.92 | 18 | | |
| **Max:** | **274** | -3 | -0.33 | 1 | | |
| **Median:** | **15** | | | | | |

| | | | | | 0.856 | 0.856 |
|---|---|---|---|---|---|---|
| | | | | | 31.9 | 31.9 |
| **u=mLn(Q)+b:** | | | | | 1.23 | 1.23 |
| update for r2, EV, CV: | **r2=0.856, EV=31.9 cfs CV=1.23; max r2=0.97** | | | | | |
| | r2 u,lnQ | 0.856 | u | lnQ | Q | |
| | slope, m | 1.041 | 3 | 5.88 | 359 | |
| | intercept, b | -3.125 | 0 | 3.00 | 20 | |
| | N: | 35 | -3 | 0.12 | 1 | |
| | E[Q]: | 31.9 | Parameter Estimates | | | |
| | SD[Q]: | 39 | from LN regression | | | |
| | CV[Q]: | 1.23 | update graph label | | | |

| | Q | N: | 35 | | | max r2<br>0.970 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 17-Dec-93 | 8.03 | 1 | 0.0177 | -2.103 | 2.083 | 0.856 |
| 13-Dec-94 | 8.7 | 2 | 0.0461 | -1.684 | 2.163 | 0.883 |
| 13-Sep-95 | 8.93 | 3 | 0.0745 | -1.443 | 2.189 | 0.901 |
| 18-Feb-94 | 9 | 4 | 0.1028 | -1.266 | 2.197 | 0.915 |
| 17-Dec-93 | 9.65 | 5 | 0.1312 | -1.121 | 2.267 | 0.925 |
| 20-Jan-94 | 9 74 | 6 | 0.1596 | -0.996 | 2.276 | 0 936 |
| 18-Feb-94 | 9.91 | 7 | 0.1879 | -0.885 | 2.294 | 0.945 |
| 20-Jan-94 | 10.17 | 8 | 0.2163 | -0.785 | 2.319 | 0.953 |
| 6-Oct-94 | 10.17 | 9 | 0.2447 | -0.691 | 2.319 | 0.959 |
| 16-Nov-94 | 10.17 | 10 | 0.2730 | -0.604 | 2.319 | 0.964 |
| 13-Sep-94 | 10.45 | 11 | 0.3014 | -0.520 | 2.347 | 0.966 |
| 14-Aug-95 | 11.01 | 12 | 0.3298 | -0.441 | 2.399 | 0.968 |
| 27-Oct-93 | 11.31 | 13 | 0.3582 | -0.363 | 2.426 | 0.969 |
| 16-Aug-94 | 11.92 | 14 | 0.3865 | -0.288 | 2.478 | 0.970 |
| 25-Jul-94 | 12.91 | 15 | 0.4149 | -0.215 | 2.558 | 0.970 |
| 30-Nov-93 | 13.26 | 16 | 0.4433 | -0.143 | 2.585 | 0.970 |
| 25-Jul-95 | 13.61 | 17 | 0.4716 | -0.071 | 2.611 | 0.970 |
| 8-Mar-94 | 14.75 | 18 | 0.5000 | 0.000 | 2.691 | 0.967 |
| 24-Mar-94 | 15.56 | 19 | 0.5284 | 0.071 | 2.745 | 0.965 |
| 24-Mar-94 | 16.98 | 20 | 0.5567 | 0.143 | 2.832 | 0.962 |
| 23-Jun-94 | 17.8 | 21 | 0.5851 | 0.215 | 2.879 | 0 958 |
| 11-Jul-95 | 17 8 | 22 | 0.6135 | 0.288 | 2.879 | 0.953 |
| 7-Apr-94 | 26.08 | 23 | 0.6418 | 0.363 | 3.261 | 0.947 |
| 8-Mar-95 | 29.12 | 24 | 0.6702 | 0.441 | 3.371 | 0.948 |
| 12-Apr-95 | 30.78 | 25 | 0.6986 | 0.520 | 3.427 | 0.955 |
| 25-Apr-95 | 31 | 26 | 0.7270 | 0.604 | 3.434 | 0.963 |
| 9-Feb-95 | 33.45 | 27 | 0.7553 | 0.691 | 3.510 | 0.966 |
| 27-Jun-95 | 34 4 | 28 | 0.7837 | 0 785 | 3.538 | 0.969 |
| 7-Apr-94 | 35 7 | 29 | 0.8121 | 0.885 | 3.575 | 0.965 |
| 7-Jun-94 | 45.54 | 30 | 0.8404 | 0.996 | 3.819 | 0.954 |
| 22-Mar-95 | 45.54 | 31 | 0.8688 | 1.121 | 3.819 | 0.940 |
| 4-May-94 | 71.93 | 32 | 0.8972 | 1.266 | 4.276 | |
| 19-May-94 | 118.23 | 33 | 0.9255 | 1.443 | 4.773 | |
| 13-Jun-95 | 121 78 | 34 | 0.9539 | 1.684 | 4.802 | |
| 14-May-98 | 274 | 35 | 0.9823 | 2.103 | 5.613 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **CC291** | **Date:** | **2-Jun-00** |
| **Chemical:** | **tZn** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 34,617 | 33 | 630 | 76 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 306 | 49 | 296 | 70 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.49 | 0.47 | 0.92 | | | | |
| **Min:** | 34,269 | 8 | 180 | 26.8 | | -0.51 | -1.52 | -0.71 |
| **Max:** | 35,929 | 274 | 1,260 | 374 | | 4.88 | 2.13 | 4.27 |
| **Median:** | 34,540 | 15 | 619 | 50 | | -0.37 | -0.04 | -0.37 |

| tZn | CC291 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b | |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.212)** | | update r2 | **0.21** | 0.212 | r2 | 0.463 | 0.277 | |
| r2 Q,[COC]: | 0.21 | [tZn] | Q | | m | 0.1096 | 0.00147 | |
| slope, m | -2.8 | 699 | 8.0 | | b | -3762 | -47.83 | |
| intercept, b | 721.4 | 630 | 33.1 | | | | | |
| N: 35 | | -36 | 274 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.468)** | | update r2 | | 0.47 | 0.468 | | | |
| r2 lnQ,ln[COC]: | 0.47 | ln[tZn] | ln Q | [tZn] | Q | | | |
| slope, m: | -0.44 | 6.72 | 2.08 | 825 | 8 | | | |
| intercept, b | 7.63 | 6.09 | 3.50 | 443 | 33 | | | |
| N: 35 | | 5.16 | 5.61 | 175 | 274 | | | |

**N= 35**

| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | tZn CC291 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 27-Oct-93 | 11.31 | 763 | 46 | 2.43 | 6.64 | 3.84 | -0.44 | 0.45 | -0.42 |
| IDEQ | 30-Nov-93 | 13.26 | 861 | 61 | 2.58 | 6.76 | 4.12 | -0.40 | 0.78 | -0.21 |
| IDEQ | 17-Dec-93 | 9.65 | 912 | 47 | 2.27 | 6.82 | 3.86 | -0.48 | 0.95 | -0.41 |
| IDEQ | 17-Dec-93 | 8.03 | 912 | 39 | 2.08 | 6.82 | 3.67 | -0.51 | 0.95 | -0.53 |
| IDEQ | 20-Jan-94 | 10.17 | 922 | 50 | 2.32 | 6.83 | 3.92 | -0.47 | 0.99 | -0.37 |
| IDEQ | 20-Jan-94 | 9.74 | 922 | 48 | 2.28 | 6.83 | 3.88 | -0.47 | 0.99 | -0.40 |
| IDEQ | 18-Feb-94 | 9.91 | 937 | 50 | 2.29 | 6.84 | 3.91 | -0.47 | 1.04 | -0.37 |
| IDEQ | 18-Feb-94 | 9 | 937 | 45 | 2.20 | 6.84 | 3.81 | -0.49 | 1.04 | -0.44 |
| IDEQ | 8-Mar-94 | 14.75 | 813 | 65 | 2.69 | 6.70 | 4.17 | -0.37 | 0.62 | -0.17 |
| IDEQ | 24-Mar-94 | 15.56 | 754 | 63 | 2.74 | 6.63 | 4.15 | -0.36 | 0.42 | -0.19 |
| IDEQ | 24-Mar-94 | 16.98 | 754 | 69 | 2.83 | 6.63 | 4.23 | -0.33 | 0.42 | -0.10 |
| IDEQ | 7-Apr-94 | 26.08 | 1260 | 177 | 3.26 | 7.14 | 5.17 | -0.14 | 2.13 | 1.44 |
| IDEQ | 7-Apr-94 | 35.7 | 1260 | 242 | 3.58 | 7.14 | 5.49 | 0.05 | 2.13 | 2.38 |
| IDEQ | 4-May-94 | 71.93 | 228 | 88 | 4.28 | 5.43 | 4.48 | 0.79 | -1.36 | 0.17 |
| IDEQ | 19-May-94 | 118.23 | 182 | 116 | 4.77 | 5.20 | 4.75 | 1.73 | -1.51 | 0.57 |
| IDEQ | 7-Jun-94 | 45.54 | 293 | 72 | 3.82 | 5.68 | 4.27 | 0.25 | -1.14 | -0.06 |
| IDEQ | 23-Jun-94 | 17.8 | 323 | 31 | 2.88 | 5.78 | 3.43 | -0.31 | -1.04 | -0.65 |
| IDEQ | 25-Jul-94 | 12.91 | 460 | 32 | 2.56 | 6.13 | 3.46 | -0.41 | -0.57 | -0.63 |
| IDEQ | 16-Aug-94 | 11.92 | 584 | 37 | 2.48 | 6.37 | 3.62 | -0.43 | -0.16 | -0.55 |
| IDEQ | 13-Sep-94 | 10.45 | 611 | 34 | 2.35 | 6.42 | 3.54 | -0.46 | -0.06 | -0.60 |
| IDEQ | 6-Oct-94 | 10.17 | 674 | 37 | 2.32 | 6.51 | 3.61 | -0.47 | 0.15 | -0.56 |
| IDEQ | 16-Nov-94 | 10.17 | 851 | 47 | 2.32 | 6.75 | 3.84 | -0.47 | 0.75 | -0.42 |
| IDEQ | 13-Dec-94 | 8.7 | 900 | 42 | 2.16 | 6.80 | 3.74 | -0.50 | 0.91 | -0.49 |
| IDEQ | 9-Feb-95 | 33.45 | 438 | 79 | 3.51 | 6.08 | 4.37 | 0.01 | -0.65 | 0.04 |
| IDEQ | 8-Mar-95 | 29.12 | 412 | 65 | 3.37 | 6.02 | 4.17 | -0.08 | -0.74 | -0.17 |
| IDEQ | 22-Mar-95 | 45.54 | 765 | 187 | 3.82 | 6.64 | 5.23 | 0.25 | 0.46 | 1.59 |
| IDEQ | 12-Apr-95 | 30.78 | 472 | 78 | 3.43 | 6.16 | 4.36 | -0.05 | -0.53 | 0.03 |
| IDEQ | 25-Apr-95 | 31 | 404 | 67 | 3.43 | 6.00 | 4.21 | -0.04 | -0.76 | -0.12 |
| IDEQ | 13-Jun-95 | 121.78 | 180 | 118 | 4.80 | 5.19 | 4.77 | 1.80 | -1.52 | 0.60 |
| IDEQ | 27-Jun-95 | 34.4 | 209 | 39 | 3.54 | 5.34 | 3.66 | 0.03 | -1.42 | -0.54 |
| IDEQ | 11-Jul-95 | 17.8 | 280 | 27 | 2.88 | 5.63 | 3.29 | -0.31 | -1.18 | -0.71 |
| IDEQ | 25-Jul-95 | 13.61 | 419 | 31 | 2.61 | 6.04 | 3.42 | -0.40 | -0.71 | -0.65 |
| IDEQ | 14-Aug-95 | 11.01 | 480 | 28 | 2.40 | 6.17 | 3.35 | -0.45 | -0.51 | -0.68 |
| IDEQ | 13-Sep-95 | 8.93 | 619 | 30 | 2.19 | 6.43 | 3.39 | -0.49 | -0.04 | -0.66 |
| URS | 14-May-98 | 274 | 254 | 374 | 5.61 | 5.54 | 5.93 | 4.88 | -1.27 | 4.27 |

tZn

**Concentration over time analysis**

| | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | tZn | CC291 | | Concentration over time | |
| | LnConc.=mTime+b All data r2, m: | | | 0.263 | -0.00092 |
| | Time | Ln[COC] | [COC] | | |
| first | 27-Oct-93 | 6.63 | 759 | | |
| mid | 25-Jul-94 | 6.38 | 591 | | |
| last | 14-May-98 | 5.11 | 165 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

**Load over time analysis**

| | | | | | |
|---|---|---|---|---|---|
| | tZn | CC291 | | Load over time | |
| | LnLoad=mTime+b All data r2, m: | | | 0.073 | 0.00055 |
| | Time | LnLoad | Load | | |
| first | 27-Oct-93 | 3.90 | 49 | | |
| mid | 25-Jul-94 | 4.05 | 57 | | |
| last | 14-May-98 | 4.81 | 123 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

| | | | | | |
|---|---|---|---|---|---|
| max r2: | 0.358 | | max r2: | 0.997 | |
| Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | | |
| r2 | slope | intercept | r2 | slope | intercept |
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.263 | -0.00092 | 38.13 | 0.073 | 0.00055 | -14.92 |
| 0.255 | -0.00092 | 38.11 | 0.068 | 0.00054 | -14.69 |
| 0.242 | -0.00090 | 37.50 | 0.071 | 0.00056 | -15.44 |
| 0.226 | -0.00087 | 36.56 | 0.068 | 0.00056 | -15.21 |
| 0.209 | -0.00084 | 35.49 | 0.059 | 0.00053 | -14.18 |
| 0.192 | -0.00081 | 34.23 | 0.057 | 0.00052 | -14.04 |
| 0.173 | -0.00077 | 32.77 | 0.053 | 0.00051 | -13.69 |
| 0.154 | -0.00072 | 31.08 | 0.049 | 0.00051 | -13.40 |
| 0.133 | -0.00066 | 29.13 | 0.044 | 0.00048 | -12.63 |
| 0.115 | -0.00062 | 27.59 | 0.046 | 0.00050 | -13.37 |
| 0.100 | -0.00058 | 26.19 | 0.048 | 0.00052 | -14.05 |
| 0.084 | -0.00053 | 24.54 | 0.052 | 0.00056 | -15.30 |
| 0.053 | -0.00040 | 19.85 | 0.096 | 0.00074 | -21.76 |
| 0.022 | -0.00024 | 14.21 | 0.205 | 0.00102 | -31.41 |
| 0.049 | -0.00035 | 18.17 | 0.253 | 0.00115 | -35.94 |
| 0.123 | -0.00052 | 24.20 | 0.348 | 0.00135 | -42.85 |
| 0.177 | -0.00063 | 27.95 | 0.402 | 0.00148 | -47.51 |
| 0.234 | -0.00073 | 31.63 | 0.382 | 0.00146 | -46.88 |
| 0.247 | -0.00077 | 33.08 | 0.362 | 0.00144 | -46.06 |
| 0.234 | -0.00077 | 32.87 | 0.348 | 0.00144 | -46.06 |
| 0.214 | -0.00075 | 32.11 | 0.327 | 0.00141 | -45.08 |
| 0.185 | -0.00069 | 30.28 | 0.308 | 0.00139 | -44.23 |
| 0.145 | -0.00058 | 26.20 | 0.300 | 0.00140 | -44.67 |
| 0.101 | -0.00043 | 20.88 | 0.285 | 0.00138 | -44.08 |
| 0.092 | -0.00042 | 20.45 | 0.313 | 0.00147 | -47.36 |
| 0.088 | -0.00041 | 20.32 | 0.326 | 0.00153 | -49.38 |
| 0.052 | -0.00027 | 15.38 | 0.537 | 0.00183 | -59.87 |
| 0.033 | -0.00021 | 13.18 | 0.615 | 0.00198 | -65.34 |
| 0.021 | -0.00017 | 11.67 | 0.688 | 0.00214 | -71.02 |
| 0.101 | -0.00032 | 17.06 | 0.974 | 0.00244 | -81.73 |
| 0.358 | -0.00049 | 23.26 | 0.997 | 0.00253 | -85.07 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tZn** | | **CC291** | | |
| **LN Analysis** | | **tZn** | | |
| **Load** | | **Load Data, EV=76.1 lbs/day CV=0.917** | | |
| **Avg:** | **76** | **Load Data-based LN** | | |
| **SD:** | **70** | u | ln tZn Load | tZn Load |
| **CV:** | **0.92** | 3 | 6.4 | 585 |
| **Min:** | **26.8** | 0 | 4.03 | 56 |
| **Max:** | **374** | -3 | 1.68 | 5.4 |
| **Median:** | **50** | | | |
| | | 76 | 76.1 | |
| | | 0.92 | 0.917 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.901, EV=75.4lbs/day CV=0.773; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.901 | u | lnLoad | Load |
| slope, m | 1.462 | 3 | 6.14 | 465 |
| intercept, b | -5.976 | 0 | 4.09 | 60 |
| N: | 35 | -3 | 2.04 | 7.7 |
| E[Load]: | 75.4 | Parameter Estimates | | |
| SD[Load]: | 58 | from LN regression | | |
| CV[Load]: | 0.77 | update graph label | | |

0.901
75.4
0.8
max r2
0.981

| Date | tZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 11-Jul-95 | 27 | 1 | 0.0177 | -2.103 | 3.289 | 0.901 |
| 14-Aug-95 | 28 | 2 | 0.0461 | -1.684 | 3.348 | 0.918 |
| 13-Sep-95 | 30 | 3 | 0.0745 | -1.443 | 3.392 | 0.928 |
| 25-Jul-95 | 31 | 4 | 0.1028 | -1.266 | 3.424 | 0.934 |
| 23-Jun-94 | 31 | 5 | 0.1312 | -1.121 | 3.432 | 0.938 |
| 25-Jul-94 | 32 | 6 | 0.1596 | -0.996 | 3.464 | 0.940 |
| 13-Sep-94 | 34 | 7 | 0.1879 | -0.885 | 3.537 | 0.940 |
| 6-Oct-94 | 37 | 8 | 0.2163 | -0.785 | 3.608 | 0.942 |
| 16-Aug-94 | 37 | 9 | 0.2447 | -0.691 | 3.623 | 0.945 |
| 27-Jun-95 | 39 | 10 | 0.2730 | -0.604 | 3.655 | 0.947 |
| 17-Dec-93 | 39 | 11 | 0.3014 | -0.520 | 3.674 | 0.948 |
| 13-Dec-94 | 42 | 12 | 0.3298 | -0.441 | 3.741 | 0.948 |
| 18-Feb-94 | 45 | 13 | 0.3582 | -0.363 | 3.815 | 0.950 |
| 27-Oct-93 | 46 | 14 | 0.3865 | -0.288 | 3.838 | 0.954 |
| 16-Nov-94 | 47 | 15 | 0.4149 | -0.215 | 3.841 | 0.958 |
| 17-Dec-93 | 47 | 16 | 0.4433 | -0.143 | 3.858 | 0.960 |
| 20-Jan-94 | 48 | 17 | 0.4716 | -0.071 | 3.878 | 0.961 |
| 18-Feb-94 | 50 | 18 | 0.5000 | 0.000 | 3.911 | 0.961 |
| 20-Jan-94 | 50 | 19 | 0.5284 | 0.071 | 3.921 | 0.959 |
| 30-Nov-93 | 61 | 20 | 0.5567 | 0.143 | 4.118 | 0.956 |
| 24-Mar-94 | 63 | 21 | 0.5851 | 0.215 | 4.145 | 0.963 |
| 8-Mar-94 | 65 | 22 | 0.6135 | 0.288 | 4.167 | 0.970 |
| 8-Mar-95 | 65 | 23 | 0.6418 | 0.363 | 4.167 | 0.976 |
| 25-Apr-95 | 67 | 24 | 0.6702 | 0.441 | 4.210 | 0.978 |
| 24-Mar-94 | 69 | 25 | 0.6986 | 0.520 | 4.232 | 0.981 |
| 7-Jun-94 | 72 | 26 | 0.7270 | 0.604 | 4.274 | 0.980 |
| 12-Apr-95 | 78 | 27 | 0.7553 | 0.691 | 4.359 | 0.977 |
| 9-Feb-95 | 79 | 28 | 0.7837 | 0.785 | 4.367 | 0.973 |
| 4-May-94 | 88 | 29 | 0.8121 | 0.885 | 4.480 | 0.968 |
| 19-May-94 | 116 | 30 | 0.8404 | 0.996 | 4.752 | 0.968 |
| 13-Jun-95 | 118 | 31 | 0.8688 | 1.121 | 4.770 | 0.957 |
| 7-Apr-94 | 177 | 32 | 0.8972 | 1.266 | 5.175 | |
| 22-Mar-95 | 187 | 33 | 0.9255 | 1.443 | 5.233 | |
| 7-Apr-94 | 242 | 34 | 0.9539 | 1.684 | 5.489 | |
| 14-May-98 | 374 | 35 | 0.9823 | 2.103 | 5.925 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | **CC291** | | 630 | 630 |
| **LN Analysis** | | **tZn** | | 0.47 | 0.47 |
| **Concentration** | | **Conc. Data, EV=630 ug/L CV=0.47** | | | |
| **Avg:** | **630** | **Data-based LN** | | | |
| **SD:** | **296** | u | ln[tZn] | [tZn] | |
| **CV:** | **0.47** | 3 | 7.7 | 2176 | |
| **Min:** | **180** | 0 | 6.35 | 570 | |
| **Max:** | **1,260** | -3 | 5.01 | 149 | |
| **Median:** | **619** | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.934 | 0.934 |
| | **u=mLn(Conc.)+b:** | | | | 656.1 | 656 |
| update for r2, EV, CV: | **r2=0.934, EV=656 ug/L CV=0.646; max r2=0.93** | | | | 0.646 | 0.646 |
| | r2 u,lnConc. | 0.934 | u | lnConc | Conc. | |
| | slope, m | 1.693 | 3 | 8.08 | 3243 | |
| | intercept, b | -10.683 | 0 | 6.31 | 551 | |
| | N. 35 | | -3 | 4.54 | 94 | |
| 0.901 | E[Conc] | 656.1 | Parameter Estimates | | | |
| 75.4 | SD[Conc]. | 424 | from LN regression | | | |
| 0.773 | CV[Conc] | 0.65 | update graph label | | | |

| | tZn | N. 35 | | | | max r2 |
|---|---|---|---|---|---|---|
| | **Concentration** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **0.934 r2** |
| **Date** | **ug/L Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 13-Jun-95 | 180 | 1 | 0.0177 | -2.103 | 5.193 | 0.934 |
| 19-May-94 | 182 | 2 | 0.0461 | -1.684 | 5.204 | 0.925 |
| 27-Jun-95 | 209 | 3 | 0.0745 | -1.443 | 5.342 | 0.917 |
| 4-May-94 | 228 | 4 | 0.1028 | -1.266 | 5.429 | 0.909 |
| 14-May-98 | 254 | 5 | 0.1312 | -1.121 | 5.537 | 0.904 |
| 11-Jul-95 | 280 | 6 | 0.1596 | -0.996 | 5.635 | 0.899 |
| 7-Jun-94 | 293 | 7 | 0.1879 | -0.885 | 5.680 | 0.894 |
| 23-Jun-94 | 323 | 8 | 0.2163 | -0.785 | 5.778 | 0.895 |
| 25-Apr-95 | 404 | 9 | 0.2447 | -0.691 | 6.001 | 0.896 |
| 8-Mar-95 | 412 | 10 | 0.2730 | -0.604 | 6.021 | 0.887 |
| 25-Jul-95 | 419 | 11 | 0.3014 | -0.520 | 6.038 | 0.878 |
| 9-Feb-95 | 438 | 12 | 0.3298 | -0.441 | 6.082 | 0.871 |
| 25-Jul-94 | 460 | 13 | 0.3582 | -0.363 | 6.131 | 0.866 |
| 12-Apr-95 | 472 | 14 | 0.3865 | -0.288 | 6.157 | 0.862 |
| 14-Aug-95 | 480 | 15 | 0.4149 | -0.215 | 6.174 | 0.867 |
| 16-Aug-94 | 584 | 16 | 0.4433 | -0.143 | 6.370 | 0.898 |
| 13-Sep-94 | 611 | 17 | 0.4716 | -0.071 | 6.415 | 0.895 |
| 13-Sep-95 | 619 | 18 | 0.5000 | 0.000 | 6.428 | 0.890 |
| 6-Oct-94 | 674 | 19 | 0.5284 | 0.071 | 6.513 | 0.896 |
| 24-Mar-94 | 754 | 20 | 0.5567 | 0.143 | 6.625 | 0.890 |
| 24-Mar-94 | 754 | 21 | 0.5851 | 0.215 | 6.625 | 0.879 |
| 27-Oct-93 | 763 | 22 | 0.6135 | 0.288 | 6.637 | 0.865 |
| 22-Mar-95 | 765 | 23 | 0.6418 | 0.363 | 6.640 | 0.846 |
| 8-Mar-94 | 813 | 24 | 0.6702 | 0.441 | 6.701 | 0.822 |
| 16-Nov-94 | 851 | 25 | 0.6986 | 0.520 | 6.746 | 0.798 |
| 30-Nov-93 | 861 | 26 | 0.7270 | 0.604 | 6.758 | 0.783 |
| 13-Dec-94 | 900 | 27 | 0.7553 | 0.691 | 6.802 | 0.763 |
| 17-Dec-93 | 912 | 28 | 0.7837 | 0.785 | 6.816 | 0.769 |
| 17-Dec-93 | 912 | 29 | 0.8121 | 0.885 | 6.816 | 0.782 |
| 20-Jan-94 | 922 | 30 | 0.8404 | 0.996 | 6.827 | 0.784 |
| 20-Jan-94 | 922 | 31 | 0.8688 | 1.121 | 6.827 | 0.781 |
| 18-Feb-94 | 937 | 32 | 0.8972 | 1.266 | 6.843 | |
| 18-Feb-94 | 937 | 33 | 0.9255 | 1.443 | 6.843 | |
| 7-Apr-94 | 1260 | 34 | 0.9539 | 1.684 | 7.139 | |
| 7-Apr-94 | 1260 | 35 | 0.9823 | 2.103 | 7.139 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **CC291** | | | 33 | 33.1 |
| **LN Analysis** | | **tZn** | | | 1.49 | 1.49 |
| **Discharge, Q** | | **Q Data, EV=33.1 cfs CV=1.49** | | | | |
| **Avg:** | **33** | **Q Data-based LN** | | | | |
| **SD:** | **49** | u | lnQ | Q | | |
| **CV:** | **1.49** | 3 | 6.2 | 473 | | |
| **Min:** | **8** | 0 | 2.92 | 18 | | |
| **Max:** | **274** | -3 | -0.33 | 1 | | |
| **Median:** | **15** | | | | | |
| | | | | | 0.856 | 0.856 |
| | | | | | 31.9 | 31.9 |
| | **u=mLn(Q)+b:** | | | | 1.23 | 1.23 |

update for r2, EV, CV: **r2=0.856, EV=31.9 cfs CV=1.23; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.856 | u | lnQ | Q |
| slope, m: | 1.041 | 3 | 5.88 | 359 |
| intercept, b: | -3.125 | 0 | 3.00 | 20 |
| N: | 35 | -3 | 0.12 | 1 |
| E[Q]: | 31.9 | Parameter Estimates | | |
| SD[Q]: | 39 | from LN regression | | |
| CV[Q]: | 1.23 | update graph label | | |

| | Q | N: 35 | | | | max r2 0.970 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 17-Dec-93 | 8.03 | 1 | 0.0177 | -2.103 | 2.083 | 0.856 |
| 13-Dec-94 | 8.7 | 2 | 0.0461 | -1.684 | 2.163 | 0.883 |
| 13-Sep-95 | 8.93 | 3 | 0.0745 | -1.443 | 2.189 | 0.901 |
| 18-Feb-94 | 9 | 4 | 0.1028 | -1.266 | 2.197 | 0.915 |
| 17-Dec-93 | 9.65 | 5 | 0.1312 | -1.121 | 2.267 | 0.925 |
| 20-Jan-94 | 9.74 | 6 | 0.1596 | -0.996 | 2.276 | 0.936 |
| 18-Feb-94 | 9.91 | 7 | 0.1879 | -0.885 | 2.294 | 0.945 |
| 20-Jan-94 | 10.17 | 8 | 0.2163 | -0.785 | 2.319 | 0.953 |
| 6-Oct-94 | 10.17 | 9 | 0.2447 | -0.691 | 2.319 | 0.959 |
| 16-Nov-94 | 10.17 | 10 | 0.2730 | -0.604 | 2.319 | 0.964 |
| 13-Sep-94 | 10.45 | 11 | 0.3014 | -0.520 | 2.347 | 0.966 |
| 14-Aug-95 | 11.01 | 12 | 0.3298 | -0.441 | 2.399 | 0.968 |
| 27-Oct-93 | 11.31 | 13 | 0.3582 | -0.363 | 2.426 | 0.969 |
| 16-Aug-94 | 11.92 | 14 | 0.3865 | -0.288 | 2.478 | 0.970 |
| 25-Jul-94 | 12.91 | 15 | 0.4149 | -0.215 | 2.558 | 0.970 |
| 30-Nov-93 | 13.26 | 16 | 0.4433 | -0.143 | 2.585 | 0.970 |
| 25-Jul-95 | 13.61 | 17 | 0.4716 | -0.071 | 2.611 | 0.970 |
| 8-Mar-94 | 14.75 | 18 | 0.5000 | 0.000 | 2.691 | 0.967 |
| 24-Mar-94 | 15.56 | 19 | 0.5284 | 0.071 | 2.745 | 0.965 |
| 24-Mar-94 | 16.98 | 20 | 0.5567 | 0.143 | 2.832 | 0.962 |
| 23-Jun-94 | 17.8 | 21 | 0.5851 | 0.215 | 2.879 | 0.958 |
| 11-Jul-95 | 17.8 | 22 | 0.6135 | 0.288 | 2.879 | 0.953 |
| 7-Apr-94 | 26.08 | 23 | 0.6418 | 0.363 | 3.261 | 0.947 |
| 8-Mar-95 | 29.12 | 24 | 0.6702 | 0.441 | 3.371 | 0.948 |
| 12-Apr-95 | 30.78 | 25 | 0.6986 | 0.520 | 3.427 | 0.955 |
| 25-Apr-95 | 31 | 26 | 0.7270 | 0.604 | 3.434 | 0.963 |
| 9-Feb-95 | 33.45 | 27 | 0.7553 | 0.691 | 3.510 | 0.966 |
| 27-Jun-95 | 34.4 | 28 | 0.7837 | 0.785 | 3.538 | 0.969 |
| 7-Apr-94 | 35.7 | 29 | 0.8121 | 0.885 | 3.575 | 0.965 |
| 7-Jun-94 | 45.54 | 30 | 0.8404 | 0.996 | 3.819 | 0.954 |
| 22-Mar-95 | 45.54 | 31 | 0.8688 | 1.121 | 3.819 | 0.940 |
| 4-May-94 | 71.93 | 32 | 0.8972 | 1.266 | 4.276 | |
| 19-May-94 | 118.23 | 33 | 0.9255 | 1.443 | 4.773 | |
| 13-Jun-95 | 121.78 | 34 | 0.9539 | 1.684 | 4.802 | |
| 14-May-98 | 274 | 35 | 0.9823 | 2.103 | 5.613 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | **LC50** | **Date:** 12-Jul-00 |
| **Chemical:** | **dCd** | **Analyst:** B.Walthall |
| **Notes:** | | |

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,184 | 2,602 | 2 | 24 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 761 | 2,718 | 1 | 21 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.04 | 0.44 | 0.88 | | | | |
| **Min:** | 33,947 | 244 | 0 | 0.3 | | -0.87 | -2.27 | -1.12 |
| **Max:** | 36,453 | 16,000 | 6 | 107 | | 4.93 | 3.36 | 4.00 |
| **Median:** | 35,123 | 1,600 | 2 | 18 | | -0.37 | -0.17 | -0.26 |

| dCd LC50 | | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.308)** | | update r2 | 0.31 | 0.308 | | r2 | 0.006 | 0.003 |
| r2 Q,[COC] | 0.31 | [dCd] | Q | | | m | -0.2724 | -0.00008 |
| slope, m | 0.0 | 3 | 244.0 | | | b | 12184 | 10.01 |
| intercept, b | 2.8 | 2 | 2601.6 | | | | | |
| N: | 101 | 0 | 16000 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.229)** | | update r2 | 0.23 | 0.229 | | | | |
| r2 lnQ,ln[COC] | 0.23 | ln[dCd] | ln Q | [dCd] | Q | | | |
| slope, m: | -0.36 | 1.33 | 5.50 | 4 | 244 | | | |
| intercept, b: | 3.31 | 0.47 | 7.86 | 2 | 2,602 | | | |
| N: | 101 | -0.18 | 9.68 | 1 | 16,000 | | | |

**N= 101**

| update for new data | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | for graph 0 dCd LC50 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 9-Dec-92 | 485 | 3.83 | 10.0 | 6.18 | 1.34 | 2.30 | -0.78 | 1.58 | -0.66 |
| IDEQ | 20-Jan-93 | 391 | 3.83 | 8.1 | 5.97 | 1.34 | 2.09 | -0.81 | 1.58 | -0.75 |
| IDEQ | 23-Feb-93 | 625 | 2.88 | 9.7 | 6.44 | 1.06 | 2.27 | -0.73 | 0.62 | -0.67 |
| IDEQ | 9-Mar-93 | 1500 | 3.83 | 30.9 | 7.31 | 1.34 | 3.43 | -0.41 | 1.58 | 0.34 |
| IDEQ | 23-Mar-93 | 4170 | 4.79 | 107.5 | 8.34 | 1.57 | 4.68 | 0.58 | 2.54 | 4.00 |
| IDEQ | 5-Apr-93 | 10600 | 0.97 | 55.3 | 9.27 | -0.03 | 4.01 | 2.94 | -1.31 | 1.51 |
| IDEQ | 21-Apr-93 | 7300 | 0.97 | 38.1 | 8.90 | -0.03 | 3.64 | 1.73 | -1.31 | 0.69 |
| IDEQ | 3-May-93 | 9070 | 1.93 | 94.2 | 9.11 | 0.66 | 4.55 | 2.38 | -0.34 | 3.36 |
| IDEQ | 18-May-93 | 6100 | 1.93 | 63.3 | 8.72 | 0.66 | 4.15 | 1.29 | -0.34 | 1.89 |
| IDEQ | 1-Jun-93 | 2980 | 1.93 | 30.9 | 8.00 | 0.66 | 3.43 | 0.14 | -0.34 | 0.34 |
| IDEQ | 22-Jun-93 | 1400 | 2.88 | 21.7 | 7.24 | 1.06 | 3.08 | -0.44 | 0.62 | -0.10 |
| IDEQ | 20-Jul-93 | 1650 | 2.88 | 25.6 | 7.41 | 1.06 | 3.24 | -0.35 | 0.62 | 0.09 |
| IDEQ | 24-Aug-93 | 632 | 1.93 | 6.6 | 6.45 | 0.66 | 1.88 | -0.72 | -0.34 | -0.82 |
| IDEQ | 22-Sep-93 | 465 | 2.88 | 7.2 | 6.14 | 1.06 | 1.97 | -0.79 | 0.62 | -0.79 |
| IDEQ | 21-Oct-93 | 481 | 2.88 | 7.5 | 6.18 | 1.06 | 2.01 | -0.78 | 0.62 | -0.78 |
| IDEQ | 19-Nov-93 | 386 | 2.88 | 6.0 | 5.96 | 1.06 | 1.79 | -0.82 | 0.62 | -0.85 |
| IDEQ | 14-Dec-93 | 739 | 3.83 | 15.2 | 6.61 | 1.34 | 2.72 | -0.69 | 1.58 | -0.41 |
| IDEQ | 19-Jan-94 | 1360 | 3.83 | 28.0 | 7.22 | 1.34 | 3.33 | -0.46 | 1.58 | 0.21 |
| IDEQ | 15-Feb-94 | 612 | 2.88 | 9.5 | 6.42 | 1.06 | 2.25 | -0.73 | 0.62 | -0.68 |
| IDEQ | 6-Mar-94 | 4630 | 1.93 | 48.1 | 8.44 | 0.66 | 3.87 | 0.75 | -0.34 | 1.16 |
| IDEQ | 16-Mar-94 | 2490 | 1.93 | 25.9 | 7.82 | 0.66 | 3.25 | -0.04 | -0.34 | 0.10 |
| IDEQ | 5-Apr-94 | 5040 | 0.97 | 26.3 | 8.53 | -0.03 | 3.27 | 0.90 | -1.31 | 0.12 |
| IDEQ | 13-Apr-94 | 4610 | 0.02 | 0.5 | 8.44 | -3.91 | -0.70 | 0.74 | 2.27 | -1.11 |
| IDEQ | 19-Apr-94 | 8270 | 0.97 | 43.2 | 9.02 | -0.03 | 3.76 | 2.09 | -1.31 | 0.93 |
| IDEQ | 11-May-94 | 3120 | 0.02 | 0.3 | 8.05 | -3.91 | -1.09 | 0.19 | -2.27 | -1.12 |
| IDEQ | 15-Jun-94 | 1000 | 1.93 | 10.4 | 6.91 | 0.66 | 2.34 | -0.59 | -0.34 | -0.64 |
| IDEQ | 21-Jul-94 | 429 | 2.88 | 6.6 | 6.06 | 1.06 | 1.89 | -0.80 | 0.62 | -0.83 |
| IDEQ | 17-Aug-94 | 278 | 2.88 | 4.3 | 5.63 | 1.06 | 1.46 | -0.85 | 0.62 | -0.93 |
| IDEQ | 21-Sep-94 | 263 | 2.88 | 4.1 | 5.57 | 1.06 | 1.40 | -0.86 | 0.62 | -0.94 |
| IDEQ | 6-Oct-94 | 244 | 2.59 | 3.4 | 5.50 | 0.95 | 1.22 | -0.87 | 0.32 | -0.97 |
| IDEQ | 22-Nov-94 | 410 | 3.36 | 7.4 | 6.02 | 1.21 | 2.00 | -0.81 | 1.10 | -0.78 |
| IDEQ | 16-Dec-94 | 736 | 2.69 | 10.7 | 6.60 | 0.99 | 2.37 | -0.69 | 0.42 | -0.62 |
| IDEQ | 12-Jan-95 | 4960 | 2.31 | 61.6 | 8.51 | 0.84 | 4.12 | 0.87 | 0.04 | 1.81 |
| IDEQ | 16-Feb-95 | 2530 | 1.26 | 17.2 | 7.84 | 0.23 | 2.84 | -0.03 | -1.02 | -0.31 |
| IDEQ | 7-Mar-95 | 3140 | 1.26 | 21.3 | 8.05 | 0.23 | 3.06 | 0.20 | -1.02 | -0.12 |
| IDEQ | 23-Mar-95 | 8230 | 1.93 | 85.5 | 9.02 | 0.66 | 4.45 | 2.07 | -0.34 | 2.95 |
| IDEQ | 14-Apr-95 | 4680 | 1.73 | 43.6 | 8.45 | 0.55 | 3.77 | 0.76 | -0.54 | 0.95 |
| IDEQ | 25-Apr-95 | 3590 | 1.54 | 29.7 | 8.19 | 0.43 | 3.39 | 0.36 | -0.74 | 0.29 |

dCd

**Concentration over time analysis**

| | dCd | LC50 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.001** | **0.00004** |
| | **Time** | **Ln(COC)** | **(COC)** | **Concentration over time** | |
| first | 9-Dec-92 | 0.61 | 2 | | |
| mid | 28-Feb-96 | 0.65 | 2 | | |
| last | 20-Oct-99 | 0.70 | 2 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.001** | **-0.00003** |
| | 18-Jan-96 | 0.73 | 2 | | |
| | 20-Oct-99 | 0.69 | 2 | | |

**Load over time analysis**

| | dCd | LC50 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.001** | **-0.00004** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 9-Dec-92 | 2.84 | 17 | | |
| mid | 28-Feb-96 | 2.79 | 16 | | |
| last | 20-Oct-99 | 2.74 | 15 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.090** | **-0.00052** |
| | 18-Jan-96 | 3.23 | 25 | | |
| | 20-Oct-99 | 2.52 | 12 | | |

| | max r2 | 0.822 | | max r2 | 0.911 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points, delete last 4 rows | | | only on >4 data points, delete last 4 rows | | |
| | 0.001 | 0.00004 | -0.64 | 0.001 | -0.00004 | 4.15 |
| | 0.003 | 0.00005 | -1.21 | 0.002 | -0.00005 | 4.57 |
| | 0.004 | 0.00007 | -1.80 | 0.003 | -0.00007 | 5.17 |
| | 0.006 | 0.00008 | -2.20 | 0.004 | -0.00008 | 5.65 |
| | 0.008 | 0.00010 | -2.84 | 0.003 | -0.00007 | 5.22 |
| | 0.013 | 0.00012 | -3.72 | 0.000 | -0.00003 | 3.73 |
| | 0.010 | 0.00011 | -3.28 | 0.000 | 0.00000 | 2.70 |
| | 0.008 | 0.00010 | -2.82 | 0.000 | 0.00002 | 1.93 |
| | 0.008 | 0.00010 | -2.95 | 0.003 | 0.00007 | 0.29 |
| | 0.009 | 0.00011 | -3.08 | 0.007 | 0.00011 | -1.09 |
| | 0.009 | 0.00011 | -3.22 | 0.009 | 0.00013 | -1.90 |
| | 0.011 | 0.00012 | -3.76 | 0.011 | 0.00014 | -2.40 |
| | 0.014 | 0.00014 | -4.33 | 0.014 | 0.00016 | -3.10 |
| | 0.015 | 0.00015 | -4.52 | 0.011 | 0.00015 | -2.45 |
| | 0.016 | 0.00016 | -5.14 | 0.008 | 0.00013 | -1.86 |
| | 0.021 | 0.00018 | -5.78 | 0.006 | 0.00011 | -1.26 |
| | 0.025 | 0.00020 | -6.47 | 0.004 | 0.00009 | -0.38 |
| | 0.033 | 0.00023 | -7.50 | 0.004 | 0.00009 | -0.46 |
| | 0.041 | 0.00026 | -8.58 | 0.006 | 0.00011 | -1.22 |
| | 0.047 | 0.00028 | -9.40 | 0.004 | 0.00010 | -0.80 |
| | 0.049 | 0.00029 | -9.82 | 0.008 | 0.00014 | -2.22 |
| | 0.052 | 0.00031 | -10.26 | 0.011 | 0.00016 | -3.02 |
| | 0.047 | 0.00030 | -9.89 | 0.014 | 0.00019 | -3.90 |
| | 0.017 | 0.00015 | -4.52 | 0.002 | 0.00007 | 0.23 |
| | 0.013 | 0.00013 | -3.81 | 0.006 | 0.00011 | -1.22 |
| | 0.004 | -0.00005 | 2.33 | 0.001 | -0.00003 | 3.92 |
| | 0.005 | -0.00005 | 2.48 | 0.001 | -0.00005 | 4.60 |
| | 0.003 | -0.00004 | 2.06 | 0.004 | -0.00009 | 5.97 |
| | 0.001 | -0.00003 | 1.61 | 0.012 | -0.00015 | 8.07 |
| | 0.000 | -0.00001 | 1.13 | 0.025 | -0.00021 | 10.40 |
| | 0.000 | 0.00000 | 0.77 | 0.049 | -0.00029 | 13.22 |
| | 0.001 | 0.00002 | -0.02 | 0.065 | -0.00034 | 14.98 |
| | 0.002 | 0.00003 | -0.52 | 0.078 | -0.00038 | 16.29 |
| | 0.003 | 0.00004 | -0.80 | 0.062 | -0.00034 | 14.84 |
| | 0.001 | 0.00002 | -0.11 | 0.065 | -0.00035 | 15.37 |
| | 0.000 | 0.00000 | 0.65 | 0.064 | -0.00036 | 15.57 |
| | 0.000 | 0.00000 | 0.73 | 0.045 | -0.00029 | 13.32 |
| | 0.000 | -0.00001 | 1.01 | 0.035 | -0.00026 | 12.08 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | **LC50** | | |
| **LN Analysis** | | **dCd** | | |
| **Load** | | **Load Data, EV=23.7 lbs/day CV=0.883** | | |
| **Avg:** | **24** | **Load Data-based LN** | | |
| **SD:** | **21** | u | ln dCd Load | dCd Load |
| **CV:** | **0.88** | 3 | 5.2 | 174 |
| **Min:** | **0.3** | 0 | 2.88 | 18 |
| **Max:** | **107** | -3 | 0.60 | 1.8 |
| **Median:** | **18** | | | |
| | | 24 | 23.7 | |
| | | 0.88 | 0.883 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV **r2=0.936, EV=26.9lbs/day CV=1.32; max r2=0.99**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.936 | u | lnLoad | Load | |
| slope, m | 0.995 | 3 | 5.80 | 332 | |
| intercept, b | -2.774 | 0 | 2.79 | 16 | |
| N | 101 | -3 | -0.23 | 0.8 | |
| E[Load] | 26.9 | Parameter Estimates | | | 0.936 |
| SD[Load] | 36 | from LN regression | | | 26.9 |
| CV[Load] | 1.32 | update graph label | | | 1.3 |
| | | | | | max r2 |
| | N | 101 | | | 0.988 |

| Date | dCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 11-May-94 | **0.3** | 1 | 0.0062 | -2.502 | -1.092 | 0.936 |
| 13-Apr-94 | **0.5** | 2 | 0.0160 | -2.143 | -0.701 | 0.955 |
| 6-Oct-94 | **3.4** | 3 | 0.0259 | -1.944 | 1.224 | 0.988 |
| 21-Sep-94 | **4.1** | 4 | 0.0358 | -1.802 | 1.405 | 0.987 |
| 17-Aug-94 | **4.3** | 5 | 0.0457 | -1.688 | 1.460 | 0.987 |
| 26-Sep-96 | **4.7** | 6 | 0.0556 | -1.593 | 1.538 | 0.987 |
| 26-Oct-98 | **4.7** | 7 | 0.0654 | -1.511 | 1.540 | 0.987 |
| 14-Sep-95 | **5.4** | 8 | 0.0753 | -1.437 | 1.678 | 0.986 |
| 23-Sep-98 | **5.5** | 9 | 0.0852 | -1.371 | 1.708 | 0.986 |
| 20-Oct-99 | **5.9** | 10 | 0.0951 | -1.310 | 1.773 | 0.986 |
| 19-Nov-93 | **6.0** | 11 | 0.1049 | -1.254 | 1.789 | 0.986 |
| 22-Sep-99 | **6.0** | 12 | 0.1148 | -1.201 | 1.790 | 0.985 |
| 15-Aug-95 | **6.4** | 13 | 0.1247 | -1.152 | 1.853 | 0.985 |
| 22-Oct-98 | **6.5** | 14 | 0.1346 | -1.105 | 1.865 | 0.985 |
| 25-Aug-98 | **6.6** | 15 | 0.1444 | -1.061 | 1.880 | 0.984 |
| 24-Aug-93 | **6.6** | 16 | 0.1543 | -1.018 | 1.881 | 0.984 |
| 21-Jul-94 | **6.6** | 17 | 0.1642 | -0.977 | 1.894 | 0.983 |
| 21-Aug-96 | **7.0** | 18 | 0.1741 | -0.938 | 1.939 | 0.983 |
| 22-Sep-93 | **7.2** | 19 | 0.1840 | -0.900 | 1.975 | 0.982 |
| 22-Nov-94 | **7.4** | 20 | 0.1938 | -0.864 | 2.003 | 0.981 |
| 21-Oct-93 | **7.5** | 21 | 0.2037 | -0.828 | 2.009 | 0.981 |
| 26-Jul-95 | **7.6** | 22 | 0.2136 | -0.794 | 2.023 | 0.980 |
| 1-Sep-99 | **7.6** | 23 | 0.2235 | -0.761 | 2.028 | 0.980 |
| 11-Aug-99 | **7.7** | 24 | 0.2333 | -0.728 | 2.042 | 0.980 |
| 3-Sep-97 | **7.9** | 25 | 0.2432 | -0.696 | 2.065 | 0.980 |
| 20-Jan-93 | **8.1** | 26 | 0.2531 | -0.665 | 2.087 | 0.980 |
| 13-Aug-97 | **8.3** | 27 | 0.2630 | -0.634 | 2.119 | 0.980 |
| 10-May-99 | **9.2** | 28 | 0.2728 | -0.604 | 2.219 | 0.980 |
| 27-Jul-98 | **9.3** | 29 | 0.2827 | -0.575 | 2.234 | 0.980 |
| 15-Feb-94 | **9.5** | 30 | 0.2926 | -0.546 | 2.249 | 0.980 |
| 23-Feb-93 | **9.7** | 31 | 0.3025 | -0.517 | 2.270 | 0.980 |
| 23-Jul-96 | **9.7** | 32 | 0.3123 | -0.489 | 2.272 | 0.980 |
| 9-Dec-92 | **10.0** | 33 | 0.3222 | -0.461 | 2.302 | 0.980 |
| 12-Jul-95 | **10.1** | 34 | 0.3321 | -0.434 | 2.309 | 0.981 |
| 15-Jun-94 | **10.4** | 35 | 0.3420 | -0.407 | 2.340 | 0.982 |
| 16-Dec-94 | **10.7** | 36 | 0.3519 | -0.380 | 2.366 | 0.983 |
| 24-Jul-97 | **11.1** | 37 | 0.3617 | -0.354 | 2.405 | 0.984 |
| 28-Jun-95 | **12.1** | 38 | 0.3716 | -0.328 | 2.492 | 0.986 |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| dCd | | LC50 | | 2 | 2.27 |
| LN Analysis | | dCd | | 0.44 | 0.437 |

**Concentration**

Conc. Data, EV=2.27 ug/L CV=0.437

| | | | | |
|---|---|---|---|---|
| Avg: | 2 | Data-based LN | | |
| SD: | 1 | u | ln[dCd] | [dCd] |
| CV: | 0.44 | 3 | 2.0 | 7 |
| Min: | 0 | 0 | 0.73 | 2 |
| Max: | 6 | -3 | -0.52 | 1 |
| Median: | 2 | | | |

u=mLn(Conc.)+b:

update for r2, EV, CV r2=0.628, EV=3.19 ug/L CV=1.32; max r2=0.97

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.628 | 0.628 |
| | | | | 3.2 | 3.19 |
| | | | | 1.321 | 1.32 |
| | r2 u,lnConc | 0.628 | u | lnConc | Conc |
| | slope, m | 0.995 | 3 | 3.67 | 39 |
| | intercept, b | -0.653 | 0 | 0.66 | 2 |
| | N | 101 | -3 | -2.36 | 0 |
| 0.936 | E[Conc] | 3.2 | Parameter Estimates | | |
| 26.9 | SD[Conc] | 4 | from LN regression | | |
| 1.32 | CV[Conc] | 1.32 | update graph label | | |

N 101

max r2 0.972

| Date | dCd Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Apr-94 | 0.02 | 1 | 0.0062 | -2.502 | -3.912 | 0.628 |
| 11-May-94 | 0.02 | 2 | 0.0160 | -2.143 | -3.912 | 0.672 |
| 25-May-99 | 0.5 | 3 | 0.0259 | -1.944 | -0.693 | 0.952 |
| 23-Apr-98 | 0.7 | 4 | 0.0358 | -1.802 | -0.357 | 0.963 |
| 18-Apr-96 | 0.88 | 5 | 0.0457 | -1.688 | -0.128 | 0.965 |
| 5-Apr-93 | 0.97 | 6 | 0.0556 | -1.593 | -0.030 | 0.964 |
| 21-Apr-93 | 0.97 | 7 | 0.0654 | -1.511 | -0.030 | 0.963 |
| 5-Apr-94 | 0.97 | 8 | 0.0753 | -1.437 | -0.030 | 0.962 |
| 19-Apr-94 | 0.97 | 9 | 0.0852 | -1.371 | -0.030 | 0.962 |
| 10-May-99 | 1 | 10 | 0.0951 | -1.310 | 0.000 | 0.962 |
| 8-Jun-99 | 1 | 11 | 0.1049 | -1.254 | 0.000 | 0.963 |
| 16-Apr-97 | 1.1 | 12 | 0.1148 | -1.201 | 0.095 | 0.965 |
| 19-Mar-98 | 1.1 | 13 | 0.1247 | -1.152 | 0.095 | 0.966 |
| 28-May-98 | 1.2 | 14 | 0.1346 | -1.105 | 0.182 | 0.968 |
| 13-Apr-99 | 1.2 | 15 | 0.1444 | -1.061 | 0.182 | 0.968 |
| 16-Feb-95 | 1.26 | 16 | 0.1543 | -1.018 | 0.231 | 0.968 |
| 7-Mar-95 | 1.26 | 17 | 0.1642 | -0.977 | 0.231 | 0.969 |
| 24-Jun-97 | 1.3 | 18 | 0.1741 | -0.938 | 0.262 | 0.970 |
| 18-Jan-96 | 1.35 | 19 | 0.1840 | -0.900 | 0.300 | 0.970 |
| 27-Mar-96 | 1.35 | 20 | 0.1938 | -0.864 | 0.300 | 0.971 |
| 15-Dec-98 | 1.5 | 21 | 0.2037 | -0.828 | 0.405 | 0.972 |
| 25-Apr-95 | 1.54 | 22 | 0.2136 | -0.794 | 0.432 | 0.972 |
| 21-Nov-95 | 1.54 | 23 | 0.2235 | -0.761 | 0.432 | 0.971 |
| 9-May-96 | 1.54 | 24 | 0.2333 | -0.728 | 0.432 | 0.970 |
| 14-Jan-99 | 1.6 | 25 | 0.2432 | -0.696 | 0.470 | 0.970 |
| 12-Jun-95 | 1.64 | 26 | 0.2531 | -0.665 | 0.495 | 0.969 |
| 28-Jun-95 | 1.64 | 27 | 0.2630 | -0.634 | 0.495 | 0.968 |
| 26-Mar-97 | 1.7 | 28 | 0.2728 | -0.604 | 0.531 | 0.967 |
| 25-Feb-98 | 1.7 | 29 | 0.2827 | -0.575 | 0.531 | 0.966 |
| 27-Jan-99 | 1.7 | 30 | 0.2926 | -0.546 | 0.531 | 0.965 |
| 14-Apr-95 | 1.73 | 31 | 0.3025 | -0.517 | 0.548 | 0.965 |
| 24-Jun-98 | 1.8 | 32 | 0.3123 | -0.489 | 0.588 | 0.964 |
| 15-Dec-98 | 1.8 | 33 | 0.3222 | -0.461 | 0.588 | 0.963 |
| 24-May-95 | 1.83 | 34 | 0.3321 | -0.434 | 0.604 | 0.961 |
| 28-Feb-96 | 1.83 | 35 | 0.3420 | -0.407 | 0.604 | 0.960 |
| 20-Jun-96 | 1.83 | 36 | 0.3519 | -0.380 | 0.604 | 0.959 |
| 24-Nov-97 | 1.9 | 37 | 0.3617 | -0.354 | 0.642 | 0.958 |
| 3-May-93 | 1.93 | 38 | 0.3716 | -0.328 | 0.658 | 0.957 |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dCd** | | **LC50** | | | 2,602 | 2600 |
| **LN Analysis** | | **dCd** | | | 1.04 | 1.04 |
| **Discharge, Q** | | **Q Data, EV=2600 cfs CV=1.04** | | | | |
| **Avg:** | **2,602** | **Q Data-based LN** | | | | |
| **SD:** | **2,718** | u | lnQ | Q | | |
| **CV:** | **1.04** | 3 | 10.1 | 23666 | | |
| **Min:** | **244** | 0 | 7.50 | 1799 | | |
| **Max:** | **16,000** | -3 | 4.92 | 137 | | |
| **Median:** | **1,600** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.971 | 0.971 |
| | | | | | 2785.8 | 2790 |
| | **u=mLn(Q)+b:** | | | | 1.47 | 1.47 |
| update for r2, EV, CV | **r2=0.971, EV=2790 cfs CV=1.47; max r2=0.98** | | | | | |
| | r2 u,lnQ | 0.971 | u | lnQ | Q | |
| | slope, m | 0.932 | 3 | 10.58 | 39169 | |
| | intercept, b | -6.856 | 0 | 7.36 | 1567 | |
| | N | 101 | -3 | 4.14 | 63 | |
| | E[Q] | 2785.8 | Parameter Esumates | | | |
| | SD[Q] | 4097 | from LN regression | | | |
| | CV[Q] | 1.47 | update graph label | | | |

N. 101

max r2 0.981

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 6-Oct-94 | 244 | 1 | 0.0062 | -2.502 | 5.497 | 0.971 |
| 21-Sep-94 | 263 | 2 | 0.0160 | -2.143 | 5.572 | 0.976 |
| 17-Aug-94 | 278 | 3 | 0.0259 | -1.944 | 5.628 | 0.977 |
| 26-Oct-98 | 299 | 4 | 0.0358 | -1.802 | 5.700 | 0.978 |
| 23-Sep-98 | 342 | 5 | 0.0457 | -1.688 | 5.835 | 0.979 |
| 22-Oct-98 | 343 | 6 | 0.0556 | -1.593 | 5.838 | 0.979 |
| 26-Sep-96 | 346 | 7 | 0.0654 | -1.511 | 5.846 | 0.980 |
| 20-Oct-99 | 365 | 8 | 0.0753 | -1.437 | 5.900 | 0.979 |
| 22-Sep-99 | 371 | 9 | 0.0852 | -1.371 | 5.916 | 0.979 |
| 19-Nov-93 | 386 | 10 | 0.0951 | -1.310 | 5.956 | 0.979 |
| 20-Jan-93 | 391 | 11 | 0.1049 | -1.254 | 5.969 | 0.978 |
| 14-Sep-95 | 398 | 12 | 0.1148 | -1.201 | 5.986 | 0.977 |
| 22-Nov-94 | 410 | 13 | 0.1247 | -1.152 | 6.016 | 0.977 |
| 21-Jul-94 | 429 | 14 | 0.1346 | -1.105 | 6.061 | 0.976 |
| 21-Aug-96 | 435 | 15 | 0.1444 | -1.061 | 6.075 | 0.975 |
| 25-Aug-98 | 435 | 16 | 0.1543 | -1.018 | 6.075 | 0.974 |
| 22-Sep-93 | 465 | 17 | 0.1642 | -0.977 | 6.142 | 0.974 |
| 1-Sep-99 | 471 | 18 | 0.1741 | -0.938 | 6.155 | 0.973 |
| 3-Sep-97 | 473 | 19 | 0.1840 | -0.900 | 6.159 | 0.972 |
| 21-Oct-93 | 481 | 20 | 0.1938 | -0.864 | 6.176 | 0.972 |
| 9-Dec-92 | 485 | 21 | 0.2037 | -0.828 | 6.184 | 0.971 |
| 15-Aug-95 | 494 | 22 | 0.2136 | -0.794 | 6.203 | 0.971 |
| 16-Oct-97 | 550 | 23 | 0.2235 | -0.761 | 6.310 | 0.971 |
| 15-Feb-94 | 612 | 24 | 0.2333 | -0.728 | 6.417 | 0.971 |
| 13-Aug-97 | 619 | 25 | 0.2432 | -0.696 | 6.428 | 0.970 |
| 27-Jul-98 | 620 | 26 | 0.2531 | -0.665 | 6.430 | 0.969 |
| 23-Feb-93 | 625 | 27 | 0.2630 | -0.634 | 6.438 | 0.969 |
| 24-Aug-93 | 632 | 28 | 0.2728 | -0.604 | 6.449 | 0.969 |
| 26-Jul-95 | 636 | 29 | 0.2827 | -0.575 | 6.455 | 0.970 |
| 11-Aug-99 | 716 | 30 | 0.2926 | -0.546 | 6.574 | 0.971 |
| 23-Jul-96 | 721 | 31 | 0.3025 | -0.517 | 6.581 | 0.971 |
| 16-Dec-94 | 736 | 32 | 0.3123 | -0.489 | 6.601 | 0.972 |
| 14-Dec-93 | 739 | 33 | 0.3222 | -0.461 | 6.605 | 0.973 |
| 18-Nov-98 | 819 | 34 | 0.3321 | -0.434 | 6.708 | 0.975 |
| 26-Nov-96 | 828 | 35 | 0.3420 | -0.407 | 6.719 | 0.977 |
| 12-Jul-95 | 926 | 36 | 0.3519 | -0.380 | 6.831 | 0.979 |
| 15-Jun-94 | 1000 | 37 | 0.3617 | -0.354 | 6.908 | 0.980 |
| 24-Jul-97 | 1030 | 38 | 0.3716 | -0.328 | 6.937 | 0.980 |

Secondary Scale For LN graphs

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | **LC50** | **Date:** 14-Jul-00 |
| **Chemical:** | **dPb** | **Analyst:** J.Johnston |
| **Notes:** | | |
| **Input Discharge and Concentration Data below (in red)** | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,185 | 2,629 | 3 | 58 | 0.00 | 0.00 | 0.00 |
| **SD:** | 764 | 2,729 | 2 | 81 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.04 | 0.53 | 1 41 | | | |
| **Min:** | 33,947 | 244 | 0 | 1.3 | -0.87 | -1.82 | -0.69 |
| **Max:** | 36,453 | 16,000 | 10 | 432 | 4 90 | 3.55 | 4.62 |
| **Median:** | 35,123 | 1,600 | 3 | 23 | -0.38 | -0.21 | -0 43 |

| dPb LC50 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.138)** | | update r2 | **0.14** | 0.138 | r2. | 0.004 | 0.002 |
| r2 Q,[COC] | 0.14 | [dPb] | Q | | m | -0.2186 | -0.00006 |
| slope, m | 0.0 | 3 | 244.0 | | b: | 10319 | 9.44 |
| intercept, b | 2.7 | 3 | 2628.7 | | | | |
| N | 101 | 7 | 16000 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.0709)** | | update r2 | | 0.07 | 0.0709 | | |
| r2 lnQ,ln[COC] | 0 07 | ln[dPb] | ln Q | [dPb] | Q | | |
| slope, m | 0 15 | 0 78 | 5.50 | 2 | 244 | | |
| intercept, b | -0.07 | 1.14 | 7.87 | 3 | 2,629 | | |
| N | 101 | 1.42 | 9.68 | 4 | 16,000 | | |

**N= 101**

| | Sampling Date | Q Discharge cfs | dPb Concentration ug/L | dPb Load lbs/day | Ln Q | Ln dPb Conc. | Ln dPb Load | for graph 0 dPb LC50 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| **DATA:** | | | | | | | | | | |
| IDEQ | 9-Dec-92 | 485 | 2.5 | 6.5 | 6.18 | 0.92 | 1.88 | -0.79 | -0.50 | -0.63 |
| IDEQ | 20-Jan-93 | 391 | 3 | 6.3 | 5.97 | 1.10 | 1.84 | -0.82 | -0.21 | -0.63 |
| IDEQ | 23-Feb-93 | 625 | 2.5 | 8.4 | 6.44 | 0.92 | 2.13 | -0.73 | -0.50 | -0.61 |
| IDEQ | 9-Mar-93 | 1500 | 2.8 | 22.6 | 7.31 | 1.03 | 3.12 | -0.41 | -0.33 | -0.43 |
| IDEQ | 23-Mar-93 | 4170 | 8.4 | 188.5 | 8.34 | 2.13 | 5.24 | 0.56 | 2.82 | 1.62 |
| IDEQ | 5-Apr-93 | 10600 | 6.5 | 370 7 | 9.27 | 1.87 | 5.92 | 2.92 | 1.75 | 3.87 |
| IDEQ | 21-Apr-93 | 7300 | 3.9 | 153.2 | 8.90 | 1.36 | 5.03 | 1.71 | 0.29 | 1.18 |
| IDEQ | 3-May-93 | 9070 | 6.2 | 302.5 | 9.11 | 1.82 | 5.71 | 2.36 | 1.59 | 3.03 |
| IDEQ | 18-May-93 | 6100 | 6.8 | 223.2 | 8 72 | 1.92 | 5.41 | 1.27 | 1.92 | 2.05 |
| IDEQ | 1-Jun-93 | 2980 | 3.9 | 62.5 | 8.00 | 1.36 | 4.14 | 0.13 | 0.29 | 0.06 |
| IDEQ | 22-Jun-93 | 1400 | 3.9 | 29 4 | 7.24 | 1.36 | 3.38 | -0.45 | 0.29 | -0.35 |
| IDEQ | 20-Jul-93 | 1650 | 3.4 | 30.2 | 7 41 | 1.22 | 3.41 | -0.36 | 0.01 | -0.34 |
| IDEQ | 24-Aug-93 | 632 | 3.2 | 10.9 | 6.45 | 1.16 | 2.39 | -0.73 | -0.10 | -0.58 |
| IDEQ | 22-Sep-93 | 465 | 3.7 | 9.3 | 6.14 | 1.31 | 2.23 | -0.79 | 0.18 | -0.60 |
| IDEQ | 21-Oct-93 | 481 | 3 | 7.8 | 6.18 | 1.10 | 2.05 | -0.79 | -0.21 | -0.61 |
| IDEQ | 19-Nov-93 | 386 | 3.4 | 7.1 | 5.96 | 1.22 | 1.95 | -0.82 | 0.01 | -0.62 |
| IDEQ | 14-Dec-93 | 739 | 3 7 | 14 7 | 6.61 | 1.31 | 2.69 | -0.69 | 0.18 | -0.53 |
| IDEQ | 19-Jan-94 | 1360 | 3 | 22.0 | 7.22 | 1.10 | 3.09 | -0.46 | -0.21 | -0.44 |
| IDEQ | 15-Feb-94 | 612 | 2.5 | 8.2 | 6.42 | 0.92 | 2.11 | -0.74 | -0.50 | -0.61 |
| IDEQ | 6-Mar-94 | 4630 | 6.2 | 154.4 | 8.44 | 1.82 | 5.04 | 0.73 | 1.59 | 1.20 |
| IDEQ | 16-Mar-94 | 2490 | 4.2 | 56.3 | 7.82 | 1.44 | 4.03 | -0.05 | 0 46 | -0.02 |
| IDEQ | 5-Apr-94 | 5040 | 5.1 | 138.3 | 8.53 | 1.63 | 4.93 | 0.88 | 0.97 | 1.00 |
| IDEQ | 13-Apr-94 | 4610 | 4.8 | 119.0 | 8.44 | 1.57 | 4.78 | 0.73 | 0.80 | 0 76 |
| IDEQ | 19-Apr-94 | 8270 | 9 7 | 431.6 | 9.02 | 2.27 | 6.07 | 2.07 | 3.55 | 4.62 |
| IDEQ | 11-May-94 | 3120 | 3.2 | 53.7 | 8.05 | 1.16 | 3.98 | 0.18 | -0.10 | -0.05 |
| IDEQ | 15-Jun-94 | 1000 | 2.7 | 14.5 | 6.91 | 0.99 | 2.68 | -0.60 | -0.38 | -0.53 |
| IDEQ | 21-Jul-94 | 429 | 2.7 | 6.2 | 6.06 | 0.99 | 1.83 | -0.81 | -0.38 | -0.63 |
| IDEQ | 17-Aug-94 | 278 | 4.2 | 6.3 | 5.63 | 1.44 | 1.84 | -0.86 | 0.46 | -0.63 |
| IDEQ | 21-Sep-94 | 263 | 3.2 | 4.5 | 5.57 | 1.16 | 1.51 | -0.87 | -0.10 | -0.65 |
| IDEQ | 6-Oct-94 | 244 | 1.5 | 2.0 | 5.50 | 0.41 | 0.68 | -0.87 | -1.06 | -0.69 |
| IDEQ | 22-Nov-94 | 410 | 1.5 | 3.3 | 6.02 | 0.41 | 1.20 | -0.81 | -1.06 | -0.67 |
| IDEQ | 16-Dec-94 | 736 | 1.5 | 5.9 | 6.60 | 0.41 | 1.78 | -0.69 | -1.06 | -0.64 |
| IDEQ | 12-Jan-95 | 4960 | 1.5 | 40.0 | 8.51 | 0.41 | 3.69 | 0.85 | -1.06 | -0.22 |
| IDEQ | 16-Feb-95 | 2530 | 3 | 40.8 | 7.84 | 1.10 | 3.71 | -0.04 | -0.21 | -0.21 |
| IDEQ | 7-Mar-95 | 3140 | 1.5 | 25.3 | 8.05 | 0.41 | 3.23 | 0.19 | -1.06 | -0 40 |
| IDEQ | 23-Mar-95 | 8230 | 4 | 177.1 | 9.02 | 1.39 | 5.18 | 2.05 | 0.35 | 1.48 |
| IDEQ | 14-Apr-95 | 4680 | 4 | 100.7 | 8.45 | 1.39 | 4.61 | 0.75 | 0.35 | 0.53 |
| IDEQ | 25-Apr-95 | 3590 | 5 | 96.6 | 8.19 | 1.61 | 4.57 | 0.35 | 0.91 | 0.48 |

**dPb**

**Concentration over time analysis**

**dPb LC50**

**LnConc.=mTime+b All data r2, m:**

| | Time | Ln[COC] | [COC] |
|---|---|---|---|
| first | 9-Dec-92 | 1.47 | 4 |
| mid | 28-Feb-96 | 1.08 | 3 |
| last | 20-Oct-99 | 0.65 | 2 |

**LnConc.=mTime+b >'96 r2, m:**

| | | |
|---|---|---|
| 18-Jan-96 | 1.30 | 4 |
| 20-Oct-99 | 0.51 | 2 |

**Load over time analysis**

**dPb LC50**

**LnLoad=mTime+b All data r2, m:**

| | Time | LnLoad | Load |
|---|---|---|---|
| first | 9-Dec-92 | 3.68 | 40 |
| mid | 28-Feb-96 | 3.23 | 25 |
| last | 20-Oct-99 | 2.71 | 15 |

**LnLoad=mTime+b >'96 r2, m:**

| | | |
|---|---|---|
| 18-Jan-96 | 3.78 | 44 |
| 20-Oct-99 | 2.39 | 11 |

max r2 0.739

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points, delete last 4 rows | | |
| 0.172 | -0.00033 | 12.65 |
| 0.180 | -0.00034 | 13.08 |
| 0.184 | -0.00035 | 13.38 |
| 0.193 | -0.00036 | 13.82 |
| 0.199 | -0.00037 | 14.20 |
| 0.184 | -0.00036 | 13.69 |
| 0.173 | -0.00035 | 13.35 |
| 0.171 | -0.00035 | 13.44 |
| 0.161 | -0.00034 | 13.11 |
| 0.148 | -0.00033 | 12.67 |
| 0.145 | -0.00033 | 12.72 |
| 0.142 | -0.00033 | 12.77 |
| 0.142 | -0.00034 | 12.94 |
| 0.144 | -0.00034 | 13.18 |
| 0.142 | -0.00035 | 13.27 |
| 0.144 | -0.00036 | 13.58 |
| 0.144 | -0.00036 | 13.76 |
| 0.142 | -0.00036 | 13.86 |
| 0.144 | -0.00037 | 14.17 |
| 0.151 | -0.00039 | 14.70 |
| 0.139 | -0.00037 | 14.21 |
| 0.134 | -0.00037 | 14.14 |
| 0.125 | -0.00036 | 13.82 |
| 0.117 | -0.00035 | 13.55 |
| 0.097 | -0.00032 | 12.31 |
| 0.096 | -0.00032 | 12.48 |
| 0.099 | -0.00034 | 12.88 |
| 0.102 | -0.00035 | 13.29 |
| 0.095 | -0.00034 | 13.07 |
| 0.094 | -0.00035 | 13.23 |
| 0.112 | -0.00038 | 14.55 |
| 0.132 | -0.00042 | 15.93 |
| 0.154 | -0.00046 | 17.40 |
| 0.186 | -0.00051 | 18.96 |
| 0.183 | -0.00052 | 19.47 |
| 0.212 | -0.00057 | 21.19 |
| 0.208 | -0.00057 | 21.33 |
| 0.203 | -0.00057 | 21.46 |

| r2 | Slope, m |
|---|---|
| **Concentration over time** | |
| **0.172** | **-0.00033** |
| **0.125** | **-0.00057** |
| **Load over time** | |
| **0.049** | **-0.00039** |
| **0.106** | **-0.00101** |

max r2 0.997

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points delete last 4 rows | | |
| 0.049 | -0.00039 | 16.87 |
| 0.058 | -0.00043 | 18.27 |
| 0.069 | -0.00047 | 19.75 |
| 0.079 | -0.00051 | 21.05 |
| 0.082 | -0.00052 | 21.63 |
| 0.072 | -0.00049 | 20.49 |
| 0.059 | -0.00044 | 18.70 |
| 0.050 | -0.00041 | 17.55 |
| 0.039 | -0.00036 | 15.70 |
| 0.029 | -0.00031 | 14.00 |
| 0.025 | -0.00029 | 13.38 |
| 0.025 | -0.00029 | 13.45 |
| 0.024 | -0.00029 | 13.49 |
| 0.029 | -0.00032 | 14.55 |
| 0.034 | -0.00036 | 15.83 |
| 0.042 | -0.00040 | 17.36 |
| 0.051 | -0.00045 | 19.08 |
| 0.056 | -0.00048 | 20.10 |
| 0.059 | -0.00050 | 20.72 |
| 0.069 | -0.00054 | 22.46 |
| 0.058 | -0.00050 | 20.96 |
| 0.054 | -0.00049 | 20.52 |
| 0.044 | -0.00045 | 18.94 |
| 0.036 | -0.00040 | 17.41 |
| 0.022 | -0.00031 | 14.00 |
| 0.018 | -0.00029 | 13.16 |
| 0.020 | -0.00031 | 14.07 |
| 0.028 | -0.00037 | 16.22 |
| 0.038 | -0.00043 | 18.52 |
| 0.052 | -0.00052 | 21.44 |
| 0.082 | -0.00064 | 25.90 |
| 0.111 | -0.00075 | 29.77 |
| 0.137 | -0.00084 | 33.01 |
| 0.135 | -0.00085 | 33.39 |
| 0.133 | -0.00086 | 33.71 |
| 0.138 | -0.00089 | 34.84 |
| 0.119 | -0.00083 | 32.64 |
| 0.106 | -0.00079 | 31.22 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dPb** | | **LC50** | | |
| **LN Analysis** | | **dPb** | | |
| **Load** | | **Load Data, EV=57.5 lbs/day CV=1.41** | | |
| **Avg:** | **58** | **Load Data-based LN** | | |
| **SD:** | **81** | u | ln dPb Load | dPb Load |
| **CV:** | **1.41** | 3 | 6.6 | 766 |
| **Min:** | **1.3** | 0 | 3.51 | 33 |
| **Max:** | **432** | -3 | 0.37 | 1.4 |
| **Median:** | **23** | | | |
| | | 58 | 57.5 | |
| | | 1.41 | 1.41 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV **r2=0.983, EV=63.4lbs/day CV=2.37; max r2=0.99**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.983 | u | lnLoad | Load | |
| slope, m | 0.727 | 3 | 7.33 | 1523 | |
| intercept, b | -2.330 | 0 | 3.20 | 25 | |
| N: | 101 | -3 | -0.92 | 0.4 | |
| E[Load] | 63.4 | Parameter Estimates | | | 0.983 |
| SD[Load] | 150 | from LN regression | | | 63.4 |
| CV[Load] | 2.37 | update graph label | | | 2.4 |
| | | | | | max r2 |
| | | N: 101 | | | 0.987 |

| Date | dPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 29-Oct-96 | 1.3 | 1 | 0.0062 | -2.502 | 0.298 | 0.983 |
| 20-Oct-99 | 2.0 | 2 | 0.0160 | -2.143 | 0.675 | 0.984 |
| 6-Oct-94 | 2.0 | 3 | 0.0259 | -1.944 | 0.678 | 0.984 |
| 22-Nov-94 | 3.3 | 4 | 0.0358 | -1.802 | 1.197 | 0.984 |
| 21-Aug-96 | 3.5 | 5 | 0.0457 | -1.688 | 1.256 | 0.985 |
| 25-Aug-98 | 3.5 | 6 | 0.0556 | -1.593 | 1.256 | 0.986 |
| 15-Aug-95 | 4.0 | 7 | 0.0654 | -1.511 | 1.383 | 0.986 |
| 22-Sep-99 | 4.0 | 8 | 0.0753 | -1.437 | 1.384 | 0.986 |
| 16-Oct-97 | 4.4 | 9 | 0.0852 | -1.371 | 1.490 | 0.986 |
| 21-Sep-94 | 4.5 | 10 | 0.0951 | -1.310 | 1.510 | 0.987 |
| 22-Oct-98 | 4.6 | 11 | 0.1049 | -1.254 | 1.529 | 0.987 |
| 26-Oct-98 | 4.8 | 12 | 0.1148 | -1.201 | 1.574 | 0.987 |
| 18-Nov-98 | 4.8 | 13 | 0.1247 | -1.152 | 1.578 | 0.986 |
| 23-Sep-98 | 5.5 | 14 | 0.1346 | -1.105 | 1.708 | 0.986 |
| 16-Dec-94 | 5.9 | 15 | 0.1444 | -1.061 | 1.782 | 0.986 |
| 21-Jul-94 | 6.2 | 16 | 0.1543 | -1.018 | 1.830 | 0.986 |
| 17-Aug-94 | 6.3 | 17 | 0.1642 | -0.977 | 1.838 | 0.985 |
| 20-Jan-93 | 6.3 | 18 | 0.1741 | -0.938 | 1.842 | 0.985 |
| 14-Sep-95 | 6.4 | 19 | 0.1840 | -0.900 | 1.860 | 0.985 |
| 9-Dec-92 | 6.5 | 20 | 0.1938 | -0.864 | 1.875 | 0.984 |
| 19-Nov-93 | 7.1 | 21 | 0.2037 | -0.828 | 1.955 | 0.984 |
| 26-Sep-96 | 7.4 | 22 | 0.2136 | -0.794 | 2.008 | 0.983 |
| 1-Sep-99 | 7.6 | 23 | 0.2235 | -0.761 | 2.028 | 0.983 |
| 3-Sep-97 | 7.6 | 24 | 0.2333 | -0.728 | 2.033 | 0.982 |
| 21-Oct-93 | 7.8 | 25 | 0.2432 | -0.696 | 2.049 | 0.982 |
| 15-Feb-94 | 8.2 | 26 | 0.2531 | -0.665 | 2.108 | 0.981 |
| 23-Feb-93 | 8.4 | 27 | 0.2630 | -0.634 | 2.129 | 0.981 |
| 22-Sep-93 | 9.3 | 28 | 0.2728 | -0.604 | 2.225 | 0.980 |
| 27-Jul-98 | 10.0 | 29 | 0.2827 | -0.575 | 2.303 | 0.980 |
| 26-Jul-95 | 10.3 | 30 | 0.2926 | -0.546 | 2.329 | 0.979 |
| 21-Jan-98 | 10.5 | 31 | 0.3025 | -0.517 | 2.351 | 0.978 |
| 24-Aug-93 | 10.9 | 32 | 0.3123 | -0.489 | 2.387 | 0.978 |
| 10-May-99 | 11.0 | 33 | 0.3222 | -0.461 | 2.402 | 0.977 |
| 9-Feb-99 | 11.3 | 34 | 0.3321 | -0.434 | 2.425 | 0.976 |
| 11-Aug-99 | 11.6 | 35 | 0.3420 | -0.407 | 2.447 | 0.976 |
| 23-Jul-96 | 11.6 | 36 | 0.3519 | -0.380 | 2.454 | 0.975 |
| 24-Nov-98 | 12.0 | 37 | 0.3617 | -0.354 | 2.487 | 0.975 |
| 27-Jan-99 | 12.[illegible] | 38 | 0.3716 | -0.328 | 2.539 | 0.974 |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| dPb | LC50 | | 3 | 3.38 |
| LN Analysis | dPb | | 0.53 | 0.526 |

**Concentration** — **Conc. Data, EV=3.38 ug/L CV=0.526**

| | | Data-based LN | | |
|---|---|---|---|---|
| Avg: | 3 | u | ln[dPb] | [dPb] |
| SD: | 2 | 3 | 2.6 | 13 |
| CV: | 0.53 | 0 | 1.10 | 3 |
| Min: | 0 | -3 | -0.39 | 1 |
| Max. | 10 | | | |
| Median: | 3 | | | |

**u=mLn(Conc.)+b:** — update for r2, EV, CV — **r2=0.897, EV=3.58 ug/L CV=0.726; max r2=0.98**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.897 | 0.897 |
| | | | | | 3.6 | 3.58 |
| | | | | | 0.726 | 0.726 |
| | r2 u,lnConc | 0.897 | u | lnConc | Conc | |
| | slope, m | 1.537 | 3 | 3.02 | 20 | |
| | intercept, b | -1.636 | 0 | 1.06 | 3 | |
| | N | 101 | -3 | -0.89 | 0 | |
| 0.983 | E[Conc] | 3.6 | Parameter Estimates | | | |
| 63.4 | SD[Conc] | 3 | from LN regression | | | |
| 2.37 | CV[Conc] | 0.73 | update graph label | | | |

N = 101

| Date | dPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 = 0.976 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 29-Oct-96 | 0.15 | 1 | 0.0062 | -2.502 | -1.897 | 0.897 |
| 15-Dec-98 | 1 | 2 | 0.0160 | -2.143 | 0.000 | 0.950 |
| 13-Apr-99 | 1 | 3 | 0.0259 | -1.944 | 0.000 | 0.948 |
| 8-Jun-99 | 1 | 4 | 0.0358 | -1.802 | 0.000 | 0.946 |
| 20-Oct-99 | 1 | 5 | 0.0457 | -1.688 | 0.000 | 0.944 |
| 18-Nov-98 | 1.1 | 6 | 0.0556 | -1.593 | 0.095 | 0.942 |
| 27-Jan-99 | 1.1 | 7 | 0.0654 | -1.511 | 0.095 | 0.940 |
| 9-Feb-99 | 1.1 | 8 | 0.0753 | -1.437 | 0.095 | 0.938 |
| 10-May-99 | 1.2 | 9 | 0.0852 | -1.371 | 0.182 | 0.938 |
| 6-Oct-94 | 1.5 | 10 | 0.0951 | -1.310 | 0.405 | 0.936 |
| 22-Nov-94 | 1.5 | 11 | 0.1049 | -1.254 | 0.405 | 0.934 |
| 16-Dec-94 | 1.5 | 12 | 0.1148 | -1.201 | 0.405 | 0.932 |
| 12-Jan-95 | 1.5 | 13 | 0.1247 | -1.152 | 0.405 | 0.930 |
| 7-Mar-95 | 1.5 | 14 | 0.1346 | -1.105 | 0.405 | 0.927 |
| 15-Aug-95 | 1.5 | 15 | 0.1444 | -1.061 | 0.405 | 0.925 |
| 21-Aug-96 | 1.5 | 16 | 0.1543 | -1.018 | 0.405 | 0.923 |
| 16-Oct-97 | 1.5 | 17 | 0.1642 | -0.977 | 0.405 | 0.922 |
| 21-Jan-98 | 1.5 | 18 | 0.1741 | -0.938 | 0.405 | 0.921 |
| 25-Feb-98 | 1.5 | 19 | 0.1840 | -0.900 | 0.405 | 0.921 |
| 25-Aug-98 | 1.5 | 20 | 0.1938 | -0.864 | 0.405 | 0.922 |
| 24-Nov-98 | 1.5 | 21 | 0.2037 | -0.828 | 0.405 | 0.925 |
| 4-Jan-99 | 1.5 | 22 | 0.2136 | -0.794 | 0.405 | 0.930 |
| 14-Jan-99 | 1.5 | 23 | 0.2235 | -0.761 | 0.405 | 0.938 |
| 8-Jun-99 | 1.8 | 24 | 0.2333 | -0.728 | 0.588 | 0.949 |
| 22-Sep-99 | 2 | 25 | 0.2432 | -0.696 | 0.693 | 0.953 |
| 9-Dec-92 | 2.5 | 26 | 0.2531 | -0.665 | 0.916 | 0.953 |
| 23-Feb-93 | 2.5 | 27 | 0.2630 | -0.634 | 0.916 | 0.953 |
| 15-Feb-94 | 2.5 | 28 | 0.2728 | -0.604 | 0.916 | 0.952 |
| 22-Oct-98 | 2.5 | 29 | 0.2827 | -0.575 | 0.916 | 0.951 |
| 15-Jun-94 | 2.7 | 30 | 0.2926 | -0.546 | 0.993 | 0.949 |
| 21-Jul-94 | 2.7 | 31 | 0.3025 | -0.517 | 0.993 | 0.949 |
| 9-Mar-93 | 2.8 | 32 | 0.3123 | -0.489 | 1.030 | 0.949 |
| 20-Jan-93 | 3 | 33 | 0.3222 | -0.461 | 1.099 | 0.949 |
| 21-Oct-93 | 3 | 34 | 0.3321 | -0.434 | 1.099 | 0.952 |
| 19-Jan-94 | 3 | 35 | 0.3420 | -0.407 | 1.099 | 0.955 |
| 16-Feb-95 | 3 | 36 | 0.3519 | -0.380 | 1.099 | 0.958 |
| 26-Jul-95 | 3 | 37 | 0.3617 | -0.354 | 1.099 | 0.961 |
| 14-Sep-95 | 3 | 38 | 0.3716 | -0.328 | 1.099 | 0.963 |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dPb** | | **LC50** | | | 2,629 | 2630 |
| **LN Analysis** | | **dPb** | | | 1.04 | 1.04 |
| **Discharge, Q** | | **Q Data, EV=2630 cfs CV=1.04** | | | | |
| **Avg:** | **2,629** | **Q Data-based LN** | | | | |
| **SD:** | **2.729** | u | lnQ | Q | | |
| **CV:** | **1.04** | 3 | 10.1 | 23721 | | |
| **Min:** | **244** | 0 | 7.51 | 1824 | | |
| **Max:** | **16,000** | -3 | 4.94 | 140 | | |
| **Median:** | **1,600** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.969 | 0.969 |
| | | | | | 2827.5 | 2830 |
| **u=mLn(Q)+b:** | | | | | 1.49 | 1.49 |

update for r2, EV, CV: **r2=0.969, EV=2830 cfs CV=1.49; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.969 | u | lnQ | Q |
| slope, m: | 0.926 | 3 | 10.60 | 40274 |
| intercept, b | -6.820 | 0 | 7.36 | 1578 |
| N | 101 | -3 | 4.12 | 62 |
| E[Q] | 2827.5 | Parameter Estimates | | |
| SD[Q] | 4202 | from LN regression | | |
| CV[Q] | 1.49 | update graph label | | |

N: 101

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.978 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 6-Oct-94 | 244 | 1 | 0.0062 | -2.502 | 5.497 | 0.969 |
| 21-Sep-94 | 263 | 2 | 0.0160 | -2.143 | 5.572 | 0.974 |
| 17-Aug-94 | 278 | 3 | 0.0259 | -1.944 | 5.628 | 0.976 |
| 26-Oct-98 | 299 | 4 | 0.0358 | -1.802 | 5.700 | 0.977 |
| 23-Sep-98 | 342 | 5 | 0.0457 | -1.688 | 5.835 | 0.977 |
| 22-Oct-98 | 343 | 6 | 0.0556 | -1.593 | 5.838 | 0.978 |
| 26-Sep-96 | 346 | 7 | 0.0654 | -1.511 | 5.846 | 0.978 |
| 20-Oct-99 | 365 | 8 | 0.0753 | -1.437 | 5.900 | 0.978 |
| 22-Sep-99 | 371 | 9 | 0.0852 | -1.371 | 5.916 | 0.977 |
| 19-Nov-93 | 386 | 10 | 0.0951 | -1.310 | 5.956 | 0.977 |
| 20-Jan-93 | 391 | 11 | 0.1049 | -1.254 | 5.969 | 0.976 |
| 14-Sep-95 | 398 | 12 | 0.1148 | -1.201 | 5.986 | 0.976 |
| 22-Nov-94 | 410 | 13 | 0.1247 | -1.152 | 6.016 | 0.975 |
| 21-Jul-94 | 429 | 14 | 0.1346 | -1.105 | 6.061 | 0.974 |
| 21-Aug-96 | 435 | 15 | 0.1444 | -1.061 | 6.075 | 0.973 |
| 25-Aug-98 | 435 | 16 | 0.1543 | -1.018 | 6.075 | 0.972 |
| 22-Sep-93 | 465 | 17 | 0.1642 | -0.977 | 6.142 | 0.971 |
| 1-Sep-99 | 471 | 18 | 0.1741 | -0.938 | 6.155 | 0.971 |
| 3-Sep-97 | 473 | 19 | 0.1840 | -0.900 | 6.159 | 0.970 |
| 21-Oct-93 | 481 | 20 | 0.1938 | -0.864 | 6.176 | 0.969 |
| 9-Dec-92 | 485 | 21 | 0.2037 | -0.828 | 6.184 | 0.969 |
| 15-Aug-95 | 494 | 22 | 0.2136 | -0.794 | 6.203 | 0.968 |
| 16-Oct-97 | 550 | 23 | 0.2235 | -0.761 | 6.310 | 0.968 |
| 15-Feb-94 | 612 | 24 | 0.2333 | -0.728 | 6.417 | 0.968 |
| 13-Aug-97 | 619 | 25 | 0.2432 | -0.696 | 6.428 | 0.967 |
| 27-Jul-98 | 620 | 26 | 0.2531 | -0.665 | 6.430 | 0.966 |
| 23-Feb-93 | 625 | 27 | 0.2630 | -0.634 | 6.438 | 0.966 |
| 24-Aug-93 | 632 | 28 | 0.2728 | -0.604 | 6.449 | 0.966 |
| 26-Jul-95 | 636 | 29 | 0.2827 | -0.575 | 6.455 | 0.967 |
| 11-Aug-99 | 716 | 30 | 0.2926 | -0.546 | 6.574 | 0.968 |
| 23-Jul-96 | 721 | 31 | 0.3025 | -0.517 | 6.581 | 0.968 |
| 16-Dec-94 | 736 | 32 | 0.3123 | -0.489 | 6.601 | 0.968 |
| 14-Dec-93 | 739 | 33 | 0.3222 | -0.461 | 6.605 | 0.970 |
| 18-Nov-98 | 819 | 34 | 0.3321 | -0.434 | 6.708 | 0.972 |
| 26-Nov-96 | 828 | 35 | 0.3420 | -0.407 | 6.719 | 0.973 |
| 12-Jul-95 | 926 | 36 | 0.3519 | -0.380 | 6.831 | 0.975 |
| 15-Jun-94 | 1000 | 37 | 0.3617 | -0.354 | 6.908 | 0.976 |
| 24-Jul-97 | 1030 | 38 | 0.3716 | -0.328 | 6.937 | 0.976 |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | **LC50** | **Date:** 3-Jun-00 |
| **Chemical:** | **dZn** | **Analyst:** J.Johnston |
| **Notes:** | | |

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Avg:** | 35,195 | 2,626 | 370 | 3,315 | | | 0.00 | 0.00 | 0.00 |
| **SD:** | 766 | 2,716 | 187 | 2,080 | | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.03 | 0.51 | 0.63 | | | | | |
| **Min:** | 33,947 | 244 | 51 | 132.8 | | | -0.88 | -1.70 | -1.53 |
| **Max:** | 36,453 | 16,000 | 809 | 10,191 | | | 4.92 | 2.35 | 3.31 |
| **Median:** | 35,137 | 1,625 | 342 | 3,011 | | | -0.37 | -0.15 | -0.15 |

| dZn | LC50 | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.489)** | | update r2 | 0.49 | 0.489 | | r2: | 0.004 | 0.001 |
| r2 Q,[COC] | 0.49 | [dZn] | Q | | | m: | -0.2190 | -0.00005 |
| slope, m | 0.0 | 485 | 244.0 | | | b: | 10335 | 9.18 |
| intercept, b | 496.4 | 370 | 2626.4 | | | | | |
| N: | 102 | -274 | 16000 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.64)** | | update r2 | 0.64 | | 0.64 | | | |
| r2 lnQ,ln[COC] | 0.64 | ln[dZn] | ln Q | [dZn] | Q | | | |
| slope, m | -0.45 | 6.60 | 5.50 | 736 | 244 | | | |
| intercept, b | 9.06 | 5.54 | 7.87 | 254 | 2,626 | | | |
| N: | 102 | 4.73 | 9.68 | 113 | 16,000 | | | |

**N= 102**

| update for new data | Sampling Date | Q Discharge cfs | dZn Concentration ug/L | dZn Load lbs/day | Ln Q | Ln dZn Conc. | Ln dZn Load | dZn LC50 Standardized Values = (x - Avg)/SD Q | Conc | Load | for graph dZn 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | | |
| IDEQ | 9-Dec-92 | 485 | 669.5 | 1746.9 | 6.18 | 6.51 | 7.47 | -0.79 | 1.60 | -0.75 | |
| IDEQ | 20-Jan-93 | 391 | 809 | 1701.8 | 5.97 | 6.70 | 7.44 | -0.82 | 2.35 | -0.78 | |
| IDEQ | 23-Feb-93 | 625 | 539.9 | 1815.4 | 6.44 | 6.29 | 7.50 | -0.74 | 0.91 | -0.72 | |
| IDEQ | 9-Mar-93 | 1500 | 380.3 | 3069.0 | 7.31 | 5.94 | 8.03 | -0.41 | 0.06 | -0.12 | |
| IDEQ | 23-Mar-93 | 4170 | 290.6 | 6519.5 | 8.34 | 5.67 | 8.78 | 0.57 | -0.42 | 1.54 | |
| IDEQ | 5-Apr-93 | 10600 | 141.1 | 8046.7 | 9.27 | 4.95 | 8.99 | 2.94 | -1.22 | 2.27 | |
| IDEQ | 21-Apr-93 | 7300 | 131.1 | 5148.8 | 8.90 | 4.88 | 8.55 | 1.72 | -1.28 | 0.88 | |
| IDEQ | 3-May-93 | 9070 | 141.1 | 6885.2 | 9.11 | 4.95 | 8.84 | 2.37 | -1.22 | 1.72 | |
| IDEQ | 18-May-93 | 6100 | 200.9 | 6593.1 | 8.72 | 5.30 | 8.79 | 1.28 | -0.90 | 1.58 | |
| IDEQ | 1-Jun-93 | 2980 | 270.7 | 4340.0 | 8.00 | 5.60 | 8.38 | 0.13 | -0.53 | 0.49 | |
| IDEQ | 22-Jun-93 | 1400 | 420.2 | 3164.9 | 7.24 | 6.04 | 8.06 | -0.45 | 0.27 | -0.07 | |
| IDEQ | 20-Jul-93 | 1650 | 340.5 | 3022.6 | 7.41 | 5.83 | 8.01 | -0.36 | -0.16 | -0.14 | |
| IDEQ | 24-Aug-93 | 632 | 430.2 | 1462.7 | 6.45 | 6.06 | 7.29 | -0.73 | 0.32 | -0.89 | |
| IDEQ | 22-Sep-93 | 465 | 589.7 | 1475.3 | 6.14 | 6.38 | 7.30 | -0.80 | 1.17 | -0.88 | |
| IDEQ | 21-Oct-93 | 481 | 51.3 | 132.8 | 6.18 | 3.94 | 4.89 | -0.79 | -1.70 | -1.53 | |
| IDEQ | 19-Nov-93 | 386 | 639.6 | 1328.2 | 5.96 | 6.46 | 7.19 | -0.82 | 1.44 | -0.96 | |
| IDEQ | 14-Dec-93 | 739 | 589.7 | 2344.5 | 6.61 | 6.38 | 7.76 | -0.69 | 1.17 | -0.47 | |
| IDEQ | 19-Jan-94 | 1360 | 340.5 | 2491.4 | 7.22 | 5.83 | 7.82 | -0.47 | -0.16 | -0.40 | |
| IDEQ | 15-Feb-94 | 612 | 500 | 1646.3 | 6.42 | 6.21 | 7.41 | -0.74 | 0.70 | -0.80 | |
| IDEQ | 6-Mar-94 | 4630 | 200.9 | 5004.3 | 8.44 | 5.30 | 8.52 | 0.74 | -0.90 | 0.81 | |
| IDEQ | 16-Mar-94 | 2490 | 250.7 | 3358.4 | 7.82 | 5.52 | 8.12 | -0.05 | -0.64 | 0.02 | |
| IDEQ | 5-Apr-94 | 5040 | 131.1 | 3554.8 | 8.53 | 4.88 | 8.18 | 0.89 | -1.28 | 0.12 | |
| IDEQ | 13-Apr-94 | 4610 | 131.1 | 3251.5 | 8.44 | 4.88 | 8.09 | 0.73 | -1.28 | -0.03 | |
| IDEQ | 19-Apr-94 | 8270 | 171 | 7608.2 | 9.02 | 5.14 | 8.94 | 2.08 | -1.06 | 2.06 | |
| IDEQ | 11-May-94 | 3120 | 101.2 | 1698.7 | 8.05 | 4.62 | 7.44 | 0.18 | -1.44 | -0.78 | |
| IDEQ | 15-Jun-94 | 1000 | 380.3 | 2046.0 | 6.91 | 5.94 | 7.62 | -0.60 | 0.06 | -0.61 | |
| IDEQ | 21-Jul-94 | 429 | 629.6 | 1453.1 | 6.06 | 6.45 | 7.28 | -0.81 | 1.39 | -0.90 | |
| IDEQ | 17-Aug-94 | 278 | 589.7 | 882.0 | 5.63 | 6.38 | 6.78 | -0.86 | 1.17 | -1.17 | |
| IDEQ | 21-Sep-94 | 263 | 669.5 | 947.3 | 5.57 | 6.51 | 6.85 | -0.87 | 1.60 | -1.14 | |
| IDEQ | 6-Oct-94 | 244 | 641.5 | 842.1 | 5.50 | 6.46 | 6.74 | -0.88 | 1.45 | -1.19 | |
| IDEQ | 22-Nov-94 | 410 | 595.7 | 1314.0 | 6.02 | 6.39 | 7.18 | -0.82 | 1.21 | -0.96 | |
| IDEQ | 16-Dec-94 | 736 | 507.9 | 2011.1 | 6.60 | 6.23 | 7.61 | -0.70 | 0.74 | -0.63 | |
| IDEQ | 12-Jan-95 | 4960 | 207.8 | 5545.1 | 8.51 | 5.34 | 8.62 | 0.86 | -0.87 | 1.07 | |
| IDEQ | 16-Feb-95 | 2530 | 245.7 | 3344.3 | 7.84 | 5.50 | 8.12 | -0.04 | -0.66 | 0.01 | |
| IDEQ | 7-Mar-95 | 3140 | 253.7 | 4285.8 | 8.05 | 5.54 | 8.36 | 0.19 | -0.62 | 0.47 | |
| IDEQ | 23-Mar-95 | 8230 | 199.9 | 8851.1 | 9.02 | 5.30 | 9.09 | 2.06 | -0.91 | 2.66 | |
| IDEQ | 14-Apr-95 | 4680 | 189.9 | 4781.4 | 8.45 | 5.25 | 8.47 | 0.76 | -0.96 | 0.70 | |
| IDEQ | 25-Apr-95 | 3590 | 175.9 | 3397.4 | 8.19 | 5.17 | 8.13 | 0.35 | -1.04 | 0.04 | |

dZn

**Concentration over time analysis**

| | dZn | LC50 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.000** | **-0.00001** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 9-Dec-92 | 5.78 | 323 | | |
| mid | 13-Mar-96 | 5.76 | 318 | | |
| last | 20-Oct-99 | 5.75 | 313 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.064** | **-0.00035** |
| | 18-Jan-96 | 6.06 | 426 | | |
| | 20-Oct-99 | 5.58 | 265 | | |

**Load over time analysis**

| | dZn | LC50 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.005** | **-0.00006** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 9-Dec-92 | 7.99 | 2,938 | | |
| mid | 13-Mar-96 | 7.91 | 2,722 | | |
| last | 20-Oct-99 | 7.82 | 2,502 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.264** | **-0.00076** |
| | 18-Jan-96 | 8.53 | 5,048 | | |
| | 20-Oct-99 | 7.48 | 1,771 | | |

| | max r2 | 0.908 | | max r2 | 0.922 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points, delete last 4 rows | | | only on >4 data points, delete last 4 rows | | |
| | 0.000 | -0.00001 | 6.20 | 0.005 | -0.00006 | 10.16 |
| | 0.000 | 0.00000 | 5.64 | 0.007 | -0.00008 | 10.56 |
| | 0.001 | 0.00002 | 4.91 | 0.009 | -0.00009 | 11.00 |
| | 0.002 | 0.00004 | 4.46 | 0.012 | -0.00010 | 11.40 |
| | 0.003 | 0.00004 | 4.27 | 0.012 | -0.00010 | 11.41 |
| | 0.003 | 0.00004 | 4.28 | 0.008 | -0.00008 | 10.79 |
| | 0.001 | 0.00002 | 4.91 | 0.004 | -0.00006 | 9.96 |
| | 0.000 | 0.00000 | 5.63 | 0.002 | -0.00004 | 9.46 |
| | 0.000 | -0.00002 | 6.35 | 0.001 | -0.00002 | 8.66 |
| | 0.001 | -0.00003 | 6.79 | 0.000 | 0.00000 | 7.85 |
| | 0.002 | -0.00003 | 6.98 | 0.000 | 0.00001 | 7.37 |
| | 0.001 | -0.00003 | 6.76 | 0.000 | 0.00002 | 7.17 |
| | 0.001 | -0.00003 | 6.73 | 0.001 | 0.00002 | 7.00 |
| | 0.001 | -0.00002 | 6.47 | 0.000 | 0.00001 | 7.54 |
| | 0.000 | 0.00000 | 5.86 | 0.000 | -0.00001 | 8.11 |
| | 0.004 | -0.00006 | 7.75 | 0.011 | -0.00009 | 11.21 |
| | 0.002 | -0.00004 | 7.10 | 0.017 | -0.00012 | 12.08 |
| | 0.001 | -0.00002 | 6.49 | 0.019 | -0.00013 | 12.38 |
| | 0.000 | -0.00002 | 6.44 | 0.020 | -0.00013 | 12.63 |
| | 0.000 | -0.00001 | 5.96 | 0.026 | -0.00015 | 13.35 |
| | 0.001 | -0.00002 | 6.48 | 0.021 | -0.00014 | 12.86 |
| | 0.001 | -0.00003 | 6.79 | 0.020 | -0.00014 | 12.80 |
| | 0.004 | -0.00006 | 7.90 | 0.018 | -0.00013 | 12.65 |
| | 0.011 | -0.00009 | 9.12 | 0.017 | -0.00013 | 12.61 |
| | 0.018 | -0.00012 | 10.10 | 0.010 | -0.00010 | 11.44 |
| | 0.037 | -0.00017 | 11.87 | 0.014 | -0.00012 | 12.20 |
| | 0.036 | -0.00017 | 11.93 | 0.017 | -0.00014 | 12.76 |
| | 0.028 | -0.00015 | 11.28 | 0.025 | -0.00017 | 13.83 |
| | 0.022 | -0.00014 | 10.66 | 0.043 | -0.00022 | 15.70 |
| | 0.015 | -0.00011 | 9.81 | 0.067 | -0.00027 | 17.59 |
| | 0.009 | -0.00009 | 8.94 | 0.103 | -0.00033 | 19.83 |
| | 0.005 | -0.00007 | 8.12 | 0.132 | -0.00038 | 21.49 |
| | 0.003 | -0.00005 | 7.48 | 0.150 | -0.00041 | 22.61 |
| | 0.005 | -0.00007 | 8.23 | 0.138 | -0.00040 | 22.16 |
| | 0.007 | -0.00008 | 8.76 | 0.139 | -0.00041 | 22.49 |
| | 0.009 | -0.00010 | 9.27 | 0.133 | -0.00041 | 22.42 |
| | 0.015 | -0.00013 | 10.25 | 0.111 | -0.00037 | 21.06 |
| | 0.023 | -0.00016 | 11.41 | 0.102 | -0.00036 | 20.67 |

update for EV, CV:

**dZn** **LC50**

**LN Analysis** **dZn**

**Load** **Load Data, EV=3320 lbs/day CV=0.623**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **3,324** | **Load Data-based LN** | | |
| **SD:** | **2,071** | u | ln dZn Load | dZn Load |
| **CV:** | **0.62** | 3 | 9.7 | 15728 |
| **Min:** | **132.8** | 0 | 7.94 | 2821 |
| **Max:** | **10,191** | -3 | 6.23 | 506.1 |
| **Median:** | **3,011** | | | |
| | | 3,324 | 3320 | |
| | | 0.62 | 0.623 | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **r2=0.937, EV=3220lbs/day CV=0.725; max r2=0.98**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.937 | u | lnLoad | Load | | |
| slope, m: | 1.539 | 3 | 9.81 | 18295 | | |
| intercept, b: | ####### | 0 | 7.87 | 2605 | | |
| N: | 102 | -3 | 5.92 | 370.9 | | |
| E[Load] | 3217.0 | Parameter Estimates | | | 0.937 | 0.937 |
| SD[Load] | 2332 | from LN regression | | | 3217.0 | 3220 |
| CV[Load]: | 0.72 | update graph label | | | 0.7 | 0.725 |
| | | | | | max r2 | |

| Date | dZn Load lbs/day Ranked | N: 102 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | 0.984 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 21-Oct-93 | **132.8** | 1 | 0.0063 | -2.495 | 4.888 | 0.937 |
| 6-Oct-94 | **842.1** | 2 | 0.0164 | -2.135 | 6.736 | 0.984 |
| 17-Aug-94 | **882.0** | 3 | 0.0264 | -1.936 | 6.782 | 0.984 |
| 21-Sep-94 | **947.3** | 4 | 0.0365 | -1.793 | 6.854 | 0.983 |
| 26-Oct-98 | **949.1** | 5 | 0.0466 | -1.679 | 6.855 | 0.982 |
| 10-May-99 | **1021.2** | 6 | 0.0567 | -1.583 | 6.929 | 0.982 |
| 23-Sep-98 | **1115.0** | 7 | 0.0668 | -1.500 | 7.017 | 0.981 |
| 26-Sep-96 | **1173.8** | 8 | 0.0768 | -1.427 | 7.068 | 0.980 |
| 22-Oct-98 | **1206.9** | 9 | 0.0869 | -1.360 | 7.096 | 0.980 |
| 25-Aug-98 | **1252.1** | 10 | 0.0970 | -1.299 | 7.133 | 0.979 |
| 22-Nov-94 | **1314.0** | 11 | 0.1071 | -1.242 | 7.181 | 0.978 |
| 19-Nov-93 | **1328.2** | 12 | 0.1171 | -1.189 | 7.192 | 0.978 |
| 14-Sep-95 | **1352.4** | 13 | 0.1272 | -1.140 | 7.210 | 0.977 |
| 11-Aug-99 | **1413.7** | 14 | 0.1373 | -1.093 | 7.254 | 0.977 |
| 11-Aug-99 | **1413.7** | 15 | 0.1474 | -1.048 | 7.254 | 0.976 |
| 11-Aug-99 | **1413.7** | 16 | 0.1574 | -1.005 | 7.254 | 0.975 |
| 11-Aug-99 | **1413.7** | 17 | 0.1675 | -0.964 | 7.254 | 0.974 |
| 21-Jul-94 | **1453.1** | 18 | 0.1776 | -0.925 | 7.281 | 0.974 |
| 24-Aug-93 | **1462.7** | 19 | 0.1877 | -0.887 | 7.288 | 0.973 |
| 15-Aug-95 | **1469.2** | 20 | 0.1977 | -0.850 | 7.292 | 0.973 |
| 22-Sep-93 | **1475.3** | 21 | 0.2078 | -0.814 | 7.297 | 0.973 |
| 16-Oct-97 | **1624.5** | 22 | 0.2179 | -0.779 | 7.393 | 0.973 |
| 15-Feb-94 | **1646.3** | 23 | 0.2280 | -0.746 | 7.406 | 0.973 |
| 3-Sep-97 | **1679.5** | 24 | 0.2380 | -0.713 | 7.426 | 0.972 |
| 26-Jul-95 | **1690.3** | 25 | 0.2481 | -0.680 | 7.433 | 0.972 |
| 11-May-94 | **1698.7** | 26 | 0.2582 | -0.649 | 7.438 | 0.971 |
| 27-Jul-98 | **1701.2** | 27 | 0.2683 | -0.618 | 7.439 | 0.971 |
| 20-Jan-93 | **1701.8** | 28 | 0.2783 | -0.588 | 7.439 | 0.971 |
| 9-Dec-92 | **1746.9** | 29 | 0.2884 | -0.558 | 7.466 | 0.972 |
| 23-Feb-93 | **1815.4** | 30 | 0.2985 | -0.529 | 7.504 | 0.972 |
| 21-Aug-96 | **1865.5** | 31 | 0.3086 | -0.500 | 7.531 | 0.973 |
| 13-Jul-99 | **1952.3** | 32 | 0.3186 | -0.472 | 7.577 | 0.973 |
| 12-Jul-95 | **1999.2** | 33 | 0.3287 | -0.443 | 7.601 | 0.973 |
| 16-Dec-94 | **2011.1** | 34 | 0.3388 | -0.416 | 7.606 | 0.973 |
| 18-Nov-98 | **2022.5** | 35 | 0.3489 | -0.388 | 7.612 | 0.973 |
| 15-Jun-94 | **2046.0** | 36 | 0.3589 | -0.361 | 7.624 | 0.974 |
| 13-Aug-97 | **2111.4** | 37 | 0.3690 | -0.334 | 7.655 | 0.975 |
| 23-Feb-99 | **2269.8** | 38 | 0.3791 | -0.308 | 7.727 | 0.975 |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **dZn** | | LC50 | | 366 | 366 |
| **LN Analysis** | | dZn | | 0.51 | 0.507 |

## Concentration

| | | | | |
|---|---|---|---|---|
| | | **Conc. Data, EV=366 ug/L CV=0.507** | | |
| **Avg:** | **366** | **Data-based LN** | | |
| **SD:** | **185** | u | ln[dZn] | [dZn] |
| **CV:** | **0.51** | 3 | 7.2 | 1370 |
| **Min:** | **51** | 0 | 5.79 | 326 |
| **Max:** | **809** | -3 | 4.35 | 78 |
| **Median:** | **342** | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.941 | 0.941 |
| | **u=mLn(Conc.)+b:** | | | | 354.3 | 354 |
| update for r2, EV, CV | **r2=0.941, EV=354 ug/L CV=0.612; max r2=0.94** | | | | 0.612 | 0.612 |
| | r2 u,lnConc | 0.941 | u | lnConc | Conc | |
| | slope, m | 1 773 | 3 | 7 40 | 1641 | |
| | intercept, b | -10.125 | 0 | 5.71 | 302 | |
| | N. 102 | | -3 | 4.02 | 56 | |
| | E[Conc] | 354.3 | Parameter Estimates | | | |
| | SD[Conc] | 217 | from LN regression | | | |
| | CV[Conc] | 0.61 | update graph label | | | |

| | **dZn** | N: 102 | | | | max r2 0.943 |
|---|---|---|---|---|---|---|
| | **Concentration** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **ug/L** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 21-Oct-93 | 51.3 | 1 | 0.0063 | -2.495 | 3.938 | 0.941 |
| 25-May-99 | 6? | 2 | 0.0164 | -2.135 | 4.205 | 0.942 |
| 11-May-94 | 101.2 | 3 | 0.0264 | -1.936 | 4.617 | 0.943 |
| 10-May-99 | 111 | 4 | 0.0365 | -1 793 | 4.710 | 0.940 |
| 8-Jun-99 | 111 | 5 | 0.0466 | -1.679 | 4.710 | 0.938 |
| 23-Apr-98 | 126 | 6 | 0.0567 | -1.583 | 4.836 | 0.936 |
| 8-Jun-99 | 128 | 7 | 0.0668 | -1.500 | 4.852 | 0.934 |
| 21-Apr-93 | 131.1 | 8 | 0.0768 | -1.427 | 4.876 | 0.932 |
| 5-Apr-94 | 131.1 | 9 | 0.0869 | -1.360 | 4.876 | 0.930 |
| 13-Apr-94 | 131.1 | 10 | 0.0970 | -1.299 | 4.876 | 0.928 |
| 5-Apr-93 | 141.1 | 11 | 0.1071 | -1.242 | 4.949 | 0.927 |
| 3-May-93 | 141.1 | 12 | 0.1171 | -1.189 | 4.949 | 0.926 |
| 28-May-98 | 145 | 13 | 0.1272 | -1.140 | 4.977 | 0.925 |
| 11-May-95 | 165 | 14 | 0.1373 | -1.093 | 5.106 | 0.924 |
| 18-Jan-96 | 169 | 15 | 0.1474 | -1.048 | 5.130 | 0.922 |
| 19-Apr-94 | 171 | 16 | 0.1574 | -1.005 | 5.142 | 0.921 |
| 19-Mar-98 | 174 | 17 | 0 1675 | -0.964 | 5.159 | 0.919 |
| 25-Apr-95 | 175.9 | 18 | 0.1776 | -0.925 | 5.170 | 0.917 |
| 14-Apr-95 | 189 9 | 19 | 0.1877 | -0.887 | 5.246 | 0.916 |
| 13-Apr-99 | 191 | 20 | 0.1977 | -0.850 | 5.252 | 0.914 |
| 16-Apr-97 | 192 | 21 | 0.2078 | -0.814 | 5.257 | 0.912 |
| 18-Apr-96 | 192.9 | 22 | 0.2179 | -0.779 | 5.262 | 0.910 |
| 23-Mar-95 | 199 9 | 23 | 0.2280 | -0 746 | 5.298 | 0.908 |
| 18-May-93 | 200.9 | 24 | 0.2380 | -0.713 | 5.303 | 0.906 |
| 6-Mar-94 | 200.9 | 25 | 0.2481 | -0.680 | 5.303 | 0.905 |
| 12-Jan-95 | 207.8 | 26 | 0.2582 | -0.649 | 5.337 | 0.904 |
| 4-Jan-99 | 222 | 27 | 0.2683 | -0.618 | 5.403 | 0.902 |
| 21-Nov-95 | 226.8 | 28 | 0.2783 | -0.588 | 5.424 | 0.900 |
| 24-May-95 | 230.8 | 29 | 0.2884 | -0.558 | 5.442 | 0.898 |
| 14-Jan-99 | 234 | 30 | 0.2985 | -0.529 | 5.455 | 0.896 |
| 15-Dec-98 | 237 | 31 | 0.3086 | -0.500 | 5 468 | 0.893 |
| 26-Mar-97 | 241 | 32 | 0.3186 | -0.472 | 5 485 | 0.891 |
| 16-Feb-95 | 245.7 | 33 | 0.3287 | -0.443 | 5.504 | 0.889 |
| 15-Dec-98 | 249 | 34 | 0.3388 | -0.416 | 5.517 | 0.887 |
| 16-Mar-94 | 250 ? | 35 | 0.3489 | -0.388 | 5.524 | 0.884 |
| 13-Jul-99 | 252 | 36 | 0.3589 | -0.361 | 5.529 | 0.882 |
| 7-Mar-95 | 253 ? | 37 | 0.3690 | -0.334 | 5.536 | 0.880 |
| 27-Mar-96 | 255 ? | 38 | 0.3791 | -0.308 | 5.544 | 0.879 |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dZn** | | **LC50** | | | 2,636 | 2640 |
| **LN Analysis** | | **dZn** | | | 1.03 | 1.03 |
| **Discharge, Q** | | **Q Data, EV=2640 cfs CV=1.03** | | | | |
| **Avg:** | **2,636** | **Q Data-based LN** | | | | |
| **SD:** | **2,709** | u | lnQ | Q | | |
| **CV:** | **1.03** | 3 | 10.1 | 23472 | | |
| **Min:** | **244** | 0 | 7.52 | 1838 | | |
| **Max:** | **16,000** | -3 | 4.97 | 144 | | |
| **Median:** | **1,625** | | | | | |
| | | | | | 0.966 | 0.966 |
| | | | | | 2436.8 | 2440 |
| | **u=mLn(Q)+b:** | | | | 1.28 | 1.28 |

update for r2, EV, CV **r2=0.966, EV=2440 cfs CV=1.28; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.966 | u | lnQ | Q |
| slope, m | 1.015 | 3 | 10.27 | 28818 |
| intercept, b | -2.423 | 0 | 7.31 | 1500 |
| N | 102 | -3 | 4.36 | 78 |
| E[Q] | 2436.8 | Parameter Estimates | | |
| SD[Q] | 3120 | from LN regression | | |
| CV[Q] | 1.28 | update graph label | | |

N: 102

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.968 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 6-Oct-94 | 244 | 1 | 0.0063 | -2.495 | 5.497 | 0.966 |
| 21-Sep-94 | 263 | 2 | 0.0164 | -2.135 | 5.572 | 0.968 |
| 17-Aug-94 | 278 | 3 | 0.0264 | -1.936 | 5.628 | 0.968 |
| 26-Oct-98 | 299 | 4 | 0.0365 | -1.793 | 5.700 | 0.968 |
| 23-Sep-98 | 342 | 5 | 0.0466 | -1.679 | 5.835 | 0.967 |
| 22-Oct-98 | 343 | 6 | 0.0567 | -1.583 | 5.838 | 0.966 |
| 26-Sep-96 | 346 | 7 | 0.0668 | -1.500 | 5.846 | 0.965 |
| 19-Nov-93 | 386 | 8 | 0.0768 | -1.427 | 5.956 | 0.964 |
| 20-Jan-93 | 391 | 9 | 0.0869 | -1.360 | 5.969 | 0.963 |
| 14-Sep-95 | 398 | 10 | 0.0970 | -1.299 | 5.986 | 0.962 |
| 22-Nov-94 | 410 | 11 | 0.1071 | -1.242 | 6.016 | 0.961 |
| 21-Jul-94 | 429 | 12 | 0.1171 | -1.189 | 6.061 | 0.960 |
| 21-Aug-96 | 435 | 13 | 0.1272 | -1.140 | 6.075 | 0.959 |
| 25-Aug-98 | 435 | 14 | 0.1373 | -1.093 | 6.075 | 0.957 |
| 22-Sep-93 | 465 | 15 | 0.1474 | -1.048 | 6.142 | 0.956 |
| 3-Sep-97 | 473 | 16 | 0.1574 | -1.005 | 6.159 | 0.955 |
| 21-Oct-93 | 481 | 17 | 0.1675 | -0.964 | 6.176 | 0.954 |
| 9-Dec-92 | 485 | 18 | 0.1776 | -0.925 | 6.184 | 0.953 |
| 15-Aug-95 | 494 | 19 | 0.1877 | -0.887 | 6.203 | 0.952 |
| 16-Oct-97 | 550 | 20 | 0.1977 | -0.850 | 6.310 | 0.951 |
| 15-Feb-94 | 612 | 21 | 0.2078 | -0.814 | 6.417 | 0.950 |
| 13-Aug-97 | 619 | 22 | 0.2179 | -0.779 | 6.428 | 0.949 |
| 27-Jul-98 | 620 | 23 | 0.2280 | -0.746 | 6.430 | 0.948 |
| 23-Feb-93 | 625 | 24 | 0.2380 | -0.713 | 6.438 | 0.947 |
| 24-Aug-93 | 632 | 25 | 0.2481 | -0.680 | 6.449 | 0.946 |
| 26-Jul-95 | 636 | 26 | 0.2582 | -0.649 | 6.455 | 0.945 |
| 11-Aug-99 | 716 | 27 | 0.2683 | -0.618 | 6.574 | 0.945 |
| 11-Aug-99 | 716 | 28 | 0.2783 | -0.588 | 6.574 | 0.944 |
| 11-Aug-99 | 716 | 29 | 0.2884 | -0.558 | 6.574 | 0.943 |
| 11-Aug-99 | 716 | 30 | 0.2985 | -0.529 | 6.574 | 0.942 |
| 23-Jul-96 | 721 | 31 | 0.3086 | -0.500 | 6.581 | 0.943 |
| 16-Dec-94 | 736 | 32 | 0.3186 | -0.472 | 6.601 | 0.943 |
| 14-Dec-93 | 739 | 33 | 0.3287 | -0.443 | 6.605 | 0.945 |
| 18-Nov-98 | 819 | 34 | 0.3388 | -0.416 | 6.708 | 0.947 |
| 26-Nov-96 | 828 | 35 | 0.3489 | -0.388 | 6.719 | 0.948 |
| 12-Jul-95 | 926 | 36 | 0.3589 | -0.361 | 6.831 | 0.950 |
| 15-Jun-94 | 1000 | 37 | 0.3690 | -0.334 | 6.908 | 0.951 |
| 24-Jul-97 | 1030 | 38 | 0.3791 | -0.308 | 6.937 | 0.952 |

**Secondary Scale For LN graphs**

| n | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** LC50 **Date:** 14-Jul-00
**Chemical:** tCd **Analyst:** B.Walthall
**Notes:**
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,947 | 2,885 | 2 | 29 | 0.00 | 0.00 | 0.00 |
| **SD:** | 320 | 4,179 | 1 | 40 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.45 | 0.38 | 1.36 | | | |
| **Min:** | 35,367 | 299 | 1 | 4.8 | -0.62 | -1.54 | -0.61 |
| **Max:** | 36,453 | 22,900 | 5 | 209 | 4.79 | 3.23 | 4.49 |
| **Median:** | 36,003 | 1,590 | 3 | 18 | -0.31 | 0.12 | -0.28 |

| tCd | LC50 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.137)** | | update r2 | **0.14** | 0.137 | r2 | 0.020 | 0.049 |
| r2 Q,[COC] | 0.14 | [tCd] | Q | | m | -1.8513 | -0.00072 |
| slope, m | 0.0 | 3 | 299.0 | | b | 69435 | 33.22 |
| intercept, b | 2.6 | 2 | 2885.4 | | | | |
| N: 41 | | 1 | 22900 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.355)** | | update r2 | 0.36 | 0.355 | | | |
| r2 lnQ,ln[COC] | 0.36 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m | -0.22 | 1.16 | 5.70 | 3 | 299 | | |
| intercept, b | 2.44 | 0.65 | 7.97 | 2 | 2,885 | | |
| N: 41 | | 0.19 | 10.04 | 1 | 22,900 | | |

**N= 43**

| update for new data | Sampling Date | Q Discharge cfs x-axis | tCd Concentration ug/L y-axis | tCd Load lbs/day y-axis | Ln Q x-axis | Ln tCd Conc. y-axis | Ln tCd Load y-axis | tCd LC50 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | | | | | | | | | |
| IDEQ | 29-Oct-96 | 1670 | 3 | 27.0 | 7.42 | 1.10 | 3.29 | -0.29 | 0.68 | -0.06 |
| IDEQ | 26-Nov-96 | 828 | 4.1 | 18.3 | 6.72 | 1.41 | 2.90 | -0.49 | 1.89 | -0.28 |
| IDEQ | 13-Dec-96 | 2400 | 5.3 | 68.4 | 7.78 | 1.67 | 4.23 | -0.12 | 3.23 | 0.97 |
| IDEQ | 29-Jan-97 | 1600 | 2.2 | 18.9 | 7.38 | 0.79 | 2.94 | -0.31 | -0.21 | -0.26 |
| IDEQ | 21-Feb-97 | 3910 | 2.7 | 56.8 | 8.27 | 0.99 | 4.04 | 0.25 | 0.34 | 0.68 |
| IDEQ | 26-Mar-97 | 7860 | 1.7 | 71.9 | 8.97 | 0.53 | 4.28 | 1.19 | -0.77 | 1.06 |
| IDEQ | 16-Apr-97 | 5050 | 1.2 | 32.6 | 8.53 | 0.18 | 3.48 | 0.52 | -1.32 | 0.08 |
| IDEQ | 16-May-97 | 22900 | 1.7 | 209.4 | 10.04 | 0.53 | 5.34 | 4.79 | -0.77 | 4.49 |
| IDEQ | 24-Jun-97 | 2310 | 1.3 | 16.2 | 7.75 | 0.26 | 2.78 | -0.14 | -1.21 | -0.33 |
| IDEQ | 24-Jul-97 | 1030 | 2.1 | 11.6 | 6.94 | 0.74 | 2.45 | -0.44 | -0.32 | -0.44 |
| IDEQ | 13-Aug-97 | 619 | 2.5 | 8.3 | 6.43 | 0.92 | 2.12 | -0.54 | 0.12 | -0.53 |
| IDEQ | 3-Sep-97 | 473 | 3.1 | 7.9 | 6.16 | 1.13 | 2.07 | -0.58 | 0.79 | -0.54 |
| IDEQ | 16-Oct-97 | 550 | 3.1 | 9.2 | 6.31 | 1.13 | 2.22 | -0.56 | 0.79 | -0.50 |
| IDEQ | 24-Nov-97 | 1420 | 2.1 | 16.0 | 7.26 | 0.74 | 2.78 | -0.35 | -0.32 | -0.33 |
| IDEQ | 17-Dec-97 | 1390 | 3.7 | 27.7 | 7.24 | 1.31 | 3.32 | -0.36 | 1.45 | -0.04 |
| IDEQ | 21-Jan-98 | 1300 | 2.6 | 18.2 | 7.17 | 0.96 | 2.90 | -0.38 | 0.23 | -0.28 |
| IDEQ | 25-Feb-98 | 2090 | 1.8 | 20.2 | 7.64 | 0.59 | 3.01 | -0.19 | -0.65 | -0.23 |
| IDEQ | 19-Mar-98 | 4160 | 1.2 | 26.9 | 8.33 | 0.18 | 3.29 | 0.31 | -1.32 | -0.06 |
| IDEQ | 23-Apr-98 | 6310 | 1.1 | 37.3 | 8.75 | 0.10 | 3.62 | 0.82 | -1.43 | 0.20 |
| IDEQ | 28-May-98 | 7760 | 1.2 | 50.1 | 8.96 | 0.18 | 3.91 | 1.17 | -1.32 | 0.52 |
| IDEQ | 24-Jun-98 | 1590 | 1.8 | 15.4 | 7.37 | 0.59 | 2.73 | -0.31 | -0.65 | -0.35 |
| IDEQ | 27-Jul-98 | 620 | 2.8 | 9.3 | 6.43 | 1.03 | 2.23 | -0.54 | 0.45 | -0.50 |
| IDEQ | 25-Aug-98 | 435 | 2.8 | 6.6 | 6.08 | 1.03 | 1.88 | -0.59 | 0.45 | -0.57 |
| IDEQ | 23-Sep-98 | 342 | 3 | 5.5 | 5.83 | 1.10 | 1.71 | -0.61 | 0.68 | -0.60 |
| USGS | 22-Oct-98 | 343 | 3 | 5.5 | 5.84 | 1.10 | 1.71 | -0.61 | 0.68 | -0.60 |
| IDEQ | 26-Oct-98 | 299 | 3 | 4.8 | 5.70 | 1.10 | 1.57 | -0.62 | 0.68 | -0.61 |
| USGS | 18-Nov-98 | 819 | 3 | 13.2 | 6.71 | 1.10 | 2.58 | -0.49 | 0.68 | -0.40 |
| IDEQ | 24-Nov-98 | 1490 | 3.3 | 26.5 | 7.31 | 1.19 | 3.28 | -0.33 | 1.01 | -0.07 |
| USGS | 15-Dec-98 | 2390 | | | 7.78 | | | -0.12 | | |
| IDEQ | 4-Jan-99 | 2430 | 1.8 | 23.5 | 7.80 | 0.59 | 3.16 | -0.11 | -0.65 | -0.15 |
| IDEQ | 14-Jan-99 | 2820 | 1.4 | 21.2 | 7.94 | 0.34 | 3.06 | -0.02 | -1.10 | -0.20 |
| USGS | 27-Jan-99 | 2140 | 2 | 23.0 | 7.67 | 0.69 | 3.14 | -0.18 | -0.43 | -0.16 |
| USGS | 9-Feb-99 | 1910 | 3 | 30.8 | 7.55 | 1.10 | 3.43 | -0.23 | 0.68 | 0.04 |
| IDEQ | 23-Feb-99 | 1230 | 2.7 | 17.9 | 7.11 | 0.99 | 2.88 | -0.40 | 0.34 | -0.29 |
| USGS | 13-Apr-99 | 3380 | | | 8.13 | | | 0.12 | | |
| USGS | 10-May-99 | 1710 | 1 | 9.2 | 7.44 | 0.00 | 2.22 | -0.28 | -1.54 | -0.50 |
| USGS | 25-May-99 | 16000 | 2 | 172.2 | 9.68 | 0.69 | 5.15 | 3.14 | -0.43 | 3.56 |
| USGS | 8-Jun-99 | 5130 | 1 | 27.6 | 8.54 | 0.00 | 3.32 | 0.54 | -1.54 | -0.05 |

tCd

**Concentration over time analysis**

| | tCd | LC50 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.017** | **-0.00016** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 29-Oct-96 | 0.89 | 2 | | |
| mid | 27-Jul-98 | 0.79 | 2 | | |
| last | 20-Oct-99 | 0.71 | 2 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **#REF!** | **#REF!** |
| | #REF! | #REF! | #REF! | | |
| | 20-Oct-99 | #REF! | #REF! | | |

**Load over time analysis**

| | tCd | LC50 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.129** | **-0.00098** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 29-Oct-96 | 3.47 | 32 | | |
| mid | 27-Jul-98 | 2.84 | 17 | | |
| last | 20-Oct-99 | 2.40 | 11 | | |
| | **LnLoad=mTime+b >'96 r2, m.** | | | **#REF!** | **#REF!** |
| | #REF! | #REF! | #REF! | | |
| | 20-Oct-99 | #REF! | #REF! | | |

| | | | | | |
|---|---|---|---|---|---|
| max r2 | 0.851 | | max r2 | 0.918 | |
| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.017 | -0.00016 | 6.60 | 0.129 | -0.00098 | 38.28 |
| 0.010 | -0.00013 | 5.47 | 0.126 | -0.00101 | 39.21 |
| 0.001 | -0.00004 | 2.34 | 0.137 | -0.00110 | 42.37 |
| 0.007 | 0.00011 | -3.07 | 0.104 | -0.00097 | 37.89 |
| 0.009 | 0.00012 | -3.67 | 0.111 | -0.00105 | 40.62 |
| 0.018 | 0.00018 | -5.79 | 0.083 | -0.00093 | 36.20 |
| 0.012 | 0.00016 | -4.90 | 0.050 | -0.00073 | 28.97 |
| 0.001 | 0.00005 | -1.01 | 0.037 | -0.00065 | 26.23 |
| 0.000 | 0.00000 | 0.79 | 0.001 | -0.00011 | 6.78 |
| 0.007 | -0.00013 | 5.38 | 0.001 | -0.00010 | 6.40 |
| 0.009 | -0.00015 | 6.34 | 0.003 | -0.00018 | 9.08 |
| 0.006 | -0.00014 | 5.66 | 0.011 | -0.00037 | 16.07 |
| 0.000 | -0.00004 | 2.15 | 0.029 | -0.00064 | 25.72 |
| 0.002 | 0.00008 | -2.24 | 0.052 | -0.00091 | 35.47 |
| 0.002 | 0.00009 | -2.42 | 0.058 | -0.00102 | 39.59 |
| 0.025 | 0.00033 | -11.17 | 0.043 | -0.00093 | 36.43 |
| 0.045 | 0.00048 | -16.47 | 0.043 | -0.00099 | 38.67 |
| 0.040 | 0.00048 | -16.53 | 0.038 | -0.00101 | 39.07 |
| 0.011 | 0.00025 | -8.39 | 0.024 | -0.00085 | 33.57 |
| 0.002 | -0.00010 | 4.28 | 0.006 | -0.00044 | 18.74 |
| 0.039 | -0.00049 | 18.63 | 0.002 | 0.00028 | -7.48 |
| 0.076 | -0.00073 | 27.30 | 0.005 | 0.00043 | -12.82 |
| 0.061 | -0.00070 | 26.23 | 0.001 | 0.00024 | -6.18 |
| 0.036 | -0.00065 | 24.28 | 0.001 | -0.00027 | 12.51 |
| 0.026 | -0.00051 | 19.23 | 0.021 | -0.00106 | 41.11 |
| 0.010 | -0.00032 | 12.51 | 0.071 | -0.00201 | 75.60 |
| 0.000 | -0.00005 | 2.61 | 0.215 | -0.00353 | 130.95 |
| 0.008 | 0.00032 | -10.99 | 0.289 | -0.00442 | 163.11 |
| 0.077 | 0.00105 | -37.53 | 0.286 | -0.00482 | 177.91 |
| 0.077 | 0.00105 | -37.53 | 0.286 | -0.00482 | 177.91 |
| 0.072 | 0.00111 | -39.48 | 0.289 | -0.00524 | 193.10 |
| 0.028 | 0.00074 | -26.15 | 0.309 | -0.00600 | 220.66 |
| 0.031 | 0.00088 | -31.18 | 0.326 | -0.00697 | 256.07 |
| 0.184 | 0.00247 | -89.06 | 0.295 | -0.00775 | 284.43 |
| 0.720 | 0.00640 | -231.93 | 0.441 | -0.01281 | 468.42 |
| 0.720 | 0.00640 | -231.93 | 0.441 | -0.01281 | 468.42 |
| 0.616 | 0.00558 | -202.17 | 0.763 | -0.01955 | 713.95 |
| 0.851 | 0.00807 | -292.97 | 0.918 | -0.01197 | 437.80 |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| **tCd** | | **LC50** | | |
| **LN Analysis** | | **tCd** | | |
| **Load** | | **Load Data, EV=29.4 lbs/day CV=1.36** | | |
| **Avg:** | **29** | **Load Data-based LN** | | |
| **SD:** | **40** | u | ln tCd Load | tCd Load |
| **CV:** | **1.36** | 3 | 5.9 | 376 |
| **Min:** | **4.8** | 0 | 2.86 | 17 |
| **Max:** | **209** | -3 | -0.22 | 0.8 |
| **Median:** | **18** | | | |
| | | 29 | 29.4 | |
| | | 1.36 | 1.36 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV **r2=0.946, EV=27.8lbs/day CV=1.17; max r2=0.97**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.946 | u | lnLoad | Load | |
| slope, m | 1.077 | 3 | 5.68 | 292 | |
| intercept, b | -3.116 | 0 | 2.89 | 18 | |
| N | 39 | -3 | 0.11 | 1.1 | |
| E[Load] | 27.8 | Parameter Estimates | | | 0.946 |
| SD[Load] | 32 | from LN regression | | | 27.8 |
| CV[Load] | 1.17 | update graph label | | | 1.2 |
| | | | | | max r2 |
| | tCd | N: 43 | | | 0.966 |
| | Load | i | i-3/8 / N+1/4 | u | Ln | r2 |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 26-Oct-98 | **4.8** | 1 | 0.0145 | -2.185 | 1.574 | 0.946 |
| 23-Sep-98 | **5.5** | 2 | 0.0376 | -1.780 | 1.708 | 0.957 |
| 22-Oct-98 | **5.5** | 3 | 0.0607 | -1.549 | 1.711 | 0.963 |
| 20-Oct-99 | **5.7** | 4 | 0.0838 | -1.380 | 1.740 | 0.965 |
| 22-Sep-99 | **5.8** | 5 | 0.1069 | -1.243 | 1.756 | 0.966 |
| 25-Aug-98 | **6.6** | 6 | 0.1301 | -1.126 | 1.880 | 0.964 |
| 1-Sep-99 | **7.1** | 7 | 0.1532 | -1.023 | 1.959 | 0.963 |
| 3-Sep-97 | **7.9** | 8 | 0.1763 | -0.930 | 2.065 | 0.962 |
| 13-Aug-97 | **8.3** | 9 | 0.1994 | -0.844 | 2.119 | 0.962 |
| 13-Apr-99 | | 10 | 0.2225 | -0.764 | | |
| 16-Oct-97 | **9.2** | 11 | 0.2457 | -0.688 | 2.216 | 0.961 |
| 10-May-99 | **9.2** | 12 | 0.2688 | -0.616 | 2.219 | 0.960 |
| 11-Aug-99 | **9.2** | 13 | 0.2919 | -0.548 | 2.224 | 0.958 |
| 27-Jul-98 | **9.3** | 14 | 0.3150 | -0.482 | 2.234 | 0.955 |
| 24-Jul-97 | **11.6** | 15 | 0.3382 | -0.418 | 2.454 | 0.951 |
| 15-Dec-98 | | 16 | 0.3613 | -0.355 | | |
| 13-Jul-99 | **13.2** | 17 | 0.3844 | -0.294 | 2.578 | 0.949 |
| 18-Nov-98 | **13.2** | 18 | 0.4075 | -0.234 | 2.582 | 0.947 |
| 24-Jun-98 | **15.4** | 19 | 0.4306 | -0.175 | 2.734 | 0.944 |
| 24-Nov-97 | **16.0** | 20 | 0.4538 | -0.116 | 2.775 | 0.945 |
| 24-Jun-97 | **16.2** | 21 | 0.4769 | -0.058 | 2.782 | 0.945 |
| 23-Feb-99 | **17.9** | 22 | 0.5000 | 0.000 | 2.883 | 0.944 |
| 21-Jan-98 | **18.2** | 23 | 0.5231 | 0.058 | 2.901 | 0.946 |
| 26-Nov-96 | **18.3** | 24 | 0.5462 | 0.116 | 2.905 | 0.947 |
| 29-Jan-97 | **18.9** | 25 | 0.5694 | 0.175 | 2.941 | 0.946 |
| 25-Feb-98 | **20.2** | 26 | 0.5925 | 0.234 | 3.008 | 0.945 |
| 14-Jan-99 | **21.2** | 27 | 0.6156 | 0.294 | 3.056 | 0.945 |
| 27-Jan-99 | **23.0** | 28 | 0.6387 | 0.355 | 3.137 | 0.945 |
| 4-Jan-99 | **23.5** | 29 | 0.6618 | 0.418 | | |
| 24-Nov-98 | **26.5** | 30 | 0.6850 | 0.482 | 3.275 | 0.948 |
| 19-Mar-98 | **26.9** | 31 | 0.7081 | 0.548 | 3.291 | 0.954 |
| 29-Oct-96 | **27.0** | 32 | 0.7312 | 0.616 | 3.294 | 0.959 |
| 8-Jun-99 | **27.6** | 33 | 0.7543 | 0.688 | 3.318 | 0.960 |
| 17-Dec-97 | **27.7** | 34 | 0.7775 | 0.764 | 3.320 | 0.957 |
| 9-Feb-99 | **30.8** | 35 | 0.8006 | 0.844 | | |
| 16-Apr-97 | **32.6** | 36 | 0.8237 | 0.930 | 3.484 | 0.947 |
| 23-Apr-98 | **37.3** | 37 | 0.8468 | 1.023 | 3.620 | 0.934 |
| 28-May-98 | **50.1** | 38 | 0.8699 | 1.126 | 3.914 | 0.914 |

update for EV, CV.

| | | | | | |
|---|---|---|---|---|---|
| tCd | | LC50 | | 2 | 2.39 |
| LN Analysis | | tCd | | 0.38 | 0.377 |
| **Concentration** | | Conc. Data, EV=2.39 ug/L CV=0.377 | | | |
| Avg: | 2 | Data-based LN | | | |
| SD: | 1 | u | ln[tCd] | [tCd] | |
| CV: | 0.38 | 3 | 1.9 | 7 | |
| Min: | 1 | 0 | 0.80 | 2 | |
| Max: | 5 | -3 | -0.29 | 1 | |
| Median: | 3 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.935 | 0.935 |
| | u=mLn{Conc.}+b: | | | | 2.4 | 2.36 |
| update for r2, EV, CV | r2=0.935, EV=2.36 ug/L CV=0.494; max r2=0.997 | | | | 0.494 | 0.494 |
| | r2 u,lnConc | 0.935 | u | lnConc | Conc. | |
| | slope, m | 2.141 | 3 | 2.15 | 9 | |
| | intercept, b | -1.608 | 0 | 0.75 | 2 | |
| | N | 41 | -3 | -0.65 | 1 | |
| 0.946 | E[Conc] | 2.4 | Parameter Estimates | | | |
| 27.8 | SD[Conc] | 1 | from LN regression | | | |
| 1.17 | CV[Conc] | 0.49 | update graph label | | | |

| | tCd | N | 43 | | | max r2 0.997 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 13-Apr-99 | | 1 | 0.0145 | -2.185 | | |
| 15-Dec-98 | | 2 | 0.0376 | -1.780 | | |
| 10-May-99 | 1 | 3 | 0.0607 | -1.549 | 0.000 | 0.935 |
| 8-Jun-99 | 1 | 4 | 0.0838 | -1.380 | 0.000 | 0.929 |
| 23-Apr-98 | 1.1 | 5 | 0.1069 | -1.243 | 0.095 | 0.925 |
| 16-Apr-97 | 1.2 | 6 | 0.1301 | -1.126 | 0.182 | 0.921 |
| 19-Mar-98 | 1.2 | 7 | 0.1532 | -1.023 | 0.182 | 0.916 |
| 28-May-98 | 1.2 | 8 | 0.1763 | -0.930 | 0.182 | 0.914 |
| 24-Jun-97 | 1.3 | 9 | 0.1994 | -0.844 | 0.262 | 0.918 |
| 14-Jan-99 | 1.4 | 10 | 0.2225 | -0.764 | 0.336 | 0.922 |
| 26-Mar-97 | 1.5 | 11 | 0.2457 | -0.688 | 0.531 | 0.926 |
| 16-May-97 | 1.5 | 12 | 0.2688 | -0.616 | 0.531 | 0.921 |
| 13-Jul-99 | 1.5 | 13 | 0.2919 | -0.548 | 0.531 | 0.915 |
| 25-Feb-98 | 1.8 | 14 | 0.3150 | -0.482 | 0.588 | 0.911 |
| 24-Jun-98 | 1.8 | 15 | 0.3382 | -0.418 | 0.588 | 0.905 |
| 4-Jan-99 | 1.8 | 16 | 0.3613 | -0.355 | 0.588 | 0.902 |
| 27-Jan-99 | 2 | 17 | 0.3844 | -0.294 | 0.693 | 0.903 |
| 25-May-99 | 2 | 18 | 0.4075 | -0.234 | 0.693 | 0.897 |
| 24-Jul-97 | 2.1 | 19 | 0.4306 | -0.175 | 0.742 | 0.893 |
| 24-Nov-97 | 2.1 | 20 | 0.4538 | -0.116 | 0.742 | 0.886 |
| 29-Jan-97 | 2.2 | 21 | 0.4769 | -0.058 | 0.788 | 0.883 |
| 11-Aug-99 | 2.4 | 22 | 0.5000 | 0.000 | 0.875 | 0.878 |
| 13-Aug-97 | 2.5 | 23 | 0.5231 | 0.058 | 0.916 | 0.867 |
| 21-Jan-98 | 2.6 | 24 | 0.5462 | 0.116 | 0.956 | 0.856 |
| 21-Feb-97 | 2.7 | 25 | 0.5694 | 0.175 | 0.993 | 0.847 |
| 23-Feb-99 | 2.7 | 26 | 0.5925 | 0.234 | 0.993 | 0.845 |
| 27-Jul-98 | 2.8 | 27 | 0.6156 | 0.294 | 1.030 | 0.839 |
| 25-Aug-98 | 2.8 | 28 | 0.6387 | 0.355 | 1.030 | 0.843 |
| 1-Sep-99 | 2.8 | 29 | 0.6618 | 0.418 | 1.030 | 0.844 |
| 22-Sep-99 | 2.9 | 30 | 0.6850 | 0.482 | 1.065 | 0.842 |
| 20-Oct-99 | 2.9 | 31 | 0.7081 | 0.548 | 1.065 | 0.852 |
| 29-Oct-96 | 3 | 32 | 0.7312 | 0.616 | 1.099 | 0.859 |
| 23-Sep-98 | 3 | 33 | 0.7543 | 0.688 | 1.099 | 0.884 |
| 22-Oct-98 | 3 | 34 | 0.7775 | 0.764 | 1.099 | 0.909 |
| 26-Oct-98 | 3 | 35 | 0.8006 | 0.844 | 1.099 | 0.934 |
| 18-Nov-98 | 3 | 36 | 0.8237 | 0.930 | 1.099 | 0.956 |
| 9-Feb-99 | 3 | 37 | 0.8468 | 1.023 | 1.099 | 0.973 |
| 3-Sep-97 | 3.1 | 38 | 0.8699 | 1.126 | 1.131 | 0.982 |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **LC50** | | | 2,885 | 2890 |
| **LN Analysis** | | **tCd** | | | 1.45 | 1.45 |
| **Discharge, Q** | | **Q Data, EV=2890 cfs CV=1.45** | | | | |
| **Avg:** | **2,885** | **Q Data-based LN** | | | | |
| **SD:** | **4,179** | u | lnQ | Q | | |
| **CV:** | **1.45** | 3 | 10.6 | 39812 | | |
| **Min:** | **299** | 0 | 7.40 | 1640 | | |
| **Max:** | **22,900** | -3 | 4.21 | 68 | | |
| **Median:** | **1,590** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.972 | 0.972 |
| | | | | | 2876.3 | 2880 |
| | **u=mLn(Q)+b:** | | | | 1.52 | 1.52 |
| update for r2, EV, CV. | **r2=0.972, EV=2880 cfs CV=1.52; max r2=0.99** | | | | | |
| | r2 u,lnQ | 0.972 | u | lnQ | Q | |
| | slope, m: | 0.915 | 3 | 10.65 | 42039 | |
| | intercept, b | -6.739 | 0 | 7.37 | 1582 | |
| | N: 43 | | -3 | 4.09 | 60 | |
| | E[Q]: | 2876.3 | Parameter Estimates | | | |
| | SD[Q]: | 4366 | from LN regression | | | |
| | CV[Q]: | 1.52 | update graph label | | | |

| | Q | N: 43 | | | | max r2 0.987 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 26-Oct-98 | 299 | 1 | 0.0145 | -2.185 | 5.700 | 0.972 |
| 23-Sep-98 | 342 | 2 | 0.0376 | -1.780 | 5.835 | 0.981 |
| 22-Oct-98 | 343 | 3 | 0.0607 | -1.549 | 5.838 | 0.986 |
| 20-Oct-99 | 365 | 4 | 0.0838 | -1.380 | 5.900 | 0.987 |
| 22-Sep-99 | 371 | 5 | 0.1069 | -1.243 | 5.916 | 0.986 |
| 25-Aug-98 | 435 | 6 | 0.1301 | -1.126 | 6.075 | 0.985 |
| 1-Sep-99 | 471 | 7 | 0.1532 | -1.023 | 6.155 | 0.984 |
| 3-Sep-97 | 473 | 8 | 0.1763 | -0.930 | 6.159 | 0.983 |
| 16-Oct-97 | 550 | 9 | 0.1994 | -0.844 | 6.310 | 0.982 |
| 13-Aug-97 | 619 | 10 | 0.2225 | -0.764 | 6.428 | 0.981 |
| 27-Jul-98 | 620 | 11 | 0.2457 | -0.688 | 6.430 | 0.979 |
| 11-Aug-99 | 716 | 12 | 0.2688 | -0.616 | 6.574 | 0.978 |
| 18-Nov-98 | 819 | 13 | 0.2919 | -0.548 | 6.708 | 0.976 |
| 26-Nov-96 | 828 | 14 | 0.3150 | -0.482 | 6.719 | 0.975 |
| 24-Jul-97 | 1030 | 15 | 0.3382 | -0.418 | 6.937 | 0.973 |
| 23-Feb-99 | 1230 | 16 | 0.3613 | -0.355 | 7.115 | 0.971 |
| 21-Jan-98 | 1300 | 17 | 0.3844 | -0.294 | 7.170 | 0.973 |
| 17-Dec-97 | 1390 | 18 | 0.4075 | -0.234 | 7.237 | 0.974 |
| 24-Nov-97 | 1420 | 19 | 0.4306 | -0.175 | 7.258 | 0.977 |
| 13-Jul-99 | 1440 | 20 | 0.4538 | -0.116 | 7.272 | 0.979 |
| 24-Nov-98 | 1490 | 21 | 0.4769 | -0.058 | 7.307 | 0.980 |
| 24-Jun-98 | 1590 | 22 | 0.5000 | 0.000 | 7.371 | 0.981 |
| 29-Jan-97 | 1600 | 23 | 0.5231 | 0.058 | 7.378 | 0.982 |
| 29-Oct-96 | 1670 | 24 | 0.5462 | 0.116 | 7.421 | 0.982 |
| 10-May-99 | 1710 | 25 | 0.5694 | 0.175 | 7.444 | 0.982 |
| 9-Feb-99 | 1910 | 26 | 0.5925 | 0.234 | 7.555 | 0.981 |
| 25-Feb-98 | 2090 | 27 | 0.6156 | 0.294 | 7.645 | 0.981 |
| 27-Jan-99 | 2140 | 28 | 0.6387 | 0.355 | 7.669 | 0.982 |
| 24-Jun-97 | 2310 | 29 | 0.6618 | 0.418 | 7.745 | 0.982 |
| 15-Dec-98 | 2390 | 30 | 0.6850 | 0.482 | 7.779 | 0.983 |
| 13-Dec-96 | 2400 | 31 | 0.7081 | 0.548 | 7.783 | 0.982 |
| 4-Jan-99 | 2430 | 32 | 0.7312 | 0.616 | 7.796 | 0.980 |
| 14-Jan-99 | 2820 | 33 | 0.7543 | 0.688 | 7.944 | 0.977 |
| 13-Apr-99 | 3380 | 34 | 0.7775 | 0.764 | 8.126 | 0.974 |
| 21-Feb-97 | 3910 | 35 | 0.8006 | 0.844 | 8.271 | 0.969 |
| 19-Mar-98 | 4160 | 36 | 0.8237 | 0.930 | 8.333 | 0.965 |
| 16-Apr-97 | 5050 | 37 | 0.8468 | 1.023 | 8.527 | 0.957 |
| 8-Jun-99 | 5130 | 38 | 0.8699 | 1.126 | 8.543 | 0.955 |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **LC50** | **Date:** | **14-Jul-00** |
| **Chemical:** | **tPb** | **Analyst:** | **B.Walthall** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 35,951 | 2,874 | 25 | 1,639 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 317 | 4,131 | 61 | 7,061 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.44 | 2.39 | 4.31 | | | | |
| **Min:** | 35,367 | 299 | 4 | 9.6 | | -0.62 | -0.35 | -0.23 |
| **Max:** | 36,453 | 22,900 | 355 | 43,737 | | 4.85 | 5.44 | 5.96 |
| **Median:** | 36,018 | 1,595 | 9 | 75 | | -0.31 | -0.27 | -0.22 |

| tPb LC50 | | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.86)** | | update r2 | **0.86** | 0.86 | | r2: | 0.020 | 0.046 |
| r2 Q,[COC]: | 0.86 | [tPb] | Q | | | m: | -1.8570 | -0.00070 |
| slope, m: | 0.0 | -10 | 299.0 | | | b: | 69636 | 32.37 |
| intercept, b: | -13.8 | 25 | 2874.1 | | | | | |
| N: 44 | | 298 | 22900 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.494)** | | update r2 | 0.49 | 0.494 | | | | |
| r2 lnQ,ln[COC]: | 0.49 | ln[tPb] | ln Q | [tPb] | Q | | | |
| slope, m: | 0.61 | 1.47 | 5.70 | 4 | 299 | | | |
| intercept, b: | -1.98 | 2.84 | 7.96 | 17 | 2,874 | | | |
| N: 44 | | 4.10 | 10.04 | 60 | 22,900 | | | |

| | | | | | | | | | | for graph 0 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | tPb LC50 | |
| N= 44 | | | | | | | | | Standardized Values | |
| | Sampling Date | Q Discharge | tPb Concentration | tPb Load | Ln Q | Ln tPb Conc. | Ln tPb Load | = (x - Avg)/SD Q | Conc | Load |
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 29-Oct-96 | 1670 | 9 | 80.9 | 7.42 | 2.20 | 4.39 | -0.29 | -0.27 | -0.22 |
| IDEQ | 26-Nov-96 | 828 | 9 | 40.1 | 6.72 | 2.20 | 3.69 | -0.50 | -0.27 | -0.23 |
| IDEQ | 13-Dec-96 | 2400 | 15 | 193.7 | 7.78 | 2.71 | 5.27 | -0.11 | -0.17 | -0.20 |
| IDEQ | 29-Jan-97 | 1600 | 8 | 68.9 | 7.38 | 2.08 | 4.23 | -0.31 | -0.29 | -0.22 |
| IDEQ | 21-Feb-97 | 3910 | 21 | 441.8 | 8.27 | 3.04 | 6.09 | 0.25 | -0.07 | -0.17 |
| IDEQ | 26-Mar-97 | 7860 | 27 | 1141.7 | 8.97 | 3.30 | 7.04 | 1.21 | 0.03 | -0.07 |
| IDEQ | 16-Apr-97 | 5050 | 20 | 543.4 | 8.53 | 3.00 | 6.30 | 0.53 | -0.09 | -0.16 |
| IDEQ | 16-May-97 | 22900 | 355 | 43736.7 | 10.04 | 5.87 | 10.69 | 4.85 | 5.44 | 5.96 |
| IDEQ | 24-Jun-97 | 2310 | 22 | 273.4 | 7.75 | 3.09 | 5.61 | -0.14 | -0.05 | -0.19 |
| IDEQ | 24-Jul-97 | 1030 | 13 | 72.0 | 6.94 | 2.56 | 4.28 | -0.45 | -0.20 | -0.22 |
| IDEQ | 13-Aug-97 | 619 | 9 | 30.0 | 6.43 | 2.20 | 3.40 | -0.55 | -0.27 | -0.23 |
| IDEQ | 3-Sep-97 | 473 | 14 | 35.6 | 6.16 | 2.64 | 3.57 | -0.58 | -0.19 | -0.23 |
| IDEQ | 16-Oct-97 | 550 | 8 | 23.7 | 6.31 | 2.08 | 3.16 | -0.56 | -0.29 | -0.23 |
| IDEQ | 24-Nov-97 | 1420 | 11 | 84.0 | 7.26 | 2.40 | 4.43 | -0.35 | -0.24 | -0.22 |
| IDEQ | 17-Dec-97 | 1390 | 46 | 344.0 | 7.24 | 3.83 | 5.84 | -0.36 | 0.34 | -0.18 |
| IDEQ | 21-Jan-98 | 1300 | 10 | 69.9 | 7.17 | 2.30 | 4.25 | -0.38 | -0.25 | -0.22 |
| IDEQ | 25-Feb-98 | 2090 | 7 | 78.7 | 7.64 | 1.95 | 4.37 | -0.19 | -0.30 | -0.22 |
| IDEQ | 19-Mar-98 | 4160 | 15 | 335.7 | 8.33 | 2.71 | 5.82 | 0.31 | -0.17 | -0.18 |
| IDEQ | 23-Apr-98 | 6310 | 46 | 1561.6 | 8.75 | 3.83 | 7.35 | 0.83 | 0.34 | -0.01 |
| IDEQ | 28-May-98 | 7760 | 37 | 1544.7 | 8.96 | 3.61 | 7.34 | 1.18 | 0.19 | -0.01 |
| IDEQ | 24-Jun-98 | 1590 | 7 | 59.9 | 7.37 | 1.95 | 4.09 | -0.31 | -0.30 | -0.22 |
| IDEQ | 27-Jul-98 | 620 | 7 | 23.3 | 6.43 | 1.95 | 3.15 | -0.55 | -0.30 | -0.23 |
| IDEQ | 25-Aug-98 | 435 | 8 | 18.7 | 6.08 | 2.08 | 2.93 | -0.59 | -0.29 | -0.23 |
| IDEQ | 23-Sep-98 | 342 | 7 | 12.9 | 5.83 | 1.95 | 2.56 | -0.61 | -0.30 | -0.23 |
| USGS | 22-Oct-98 | 343 | 6 | 11.1 | 5.84 | 1.79 | 2.40 | -0.61 | -0.32 | -0.23 |
| IDEQ | 26-Oct-98 | 299 | 9 | 14.5 | 5.70 | 2.20 | 2.67 | -0.62 | -0.27 | -0.23 |
| USGS | 18-Nov-98 | 819 | 9 | 39.7 | 6.71 | 2.20 | 3.68 | -0.50 | -0.27 | -0.23 |
| IDEQ | 24-Nov-98 | 1490 | 12 | 96.2 | 7.31 | 2.48 | 4.57 | -0.34 | -0.22 | -0.22 |
| USGS | 15-Dec-98 | 2390 | 8 | 102.9 | 7.78 | 2.08 | 4.63 | -0.12 | -0.29 | -0.22 |
| USGS | 15-Dec-98 | 2390 | 9 | 115.7 | 7.78 | 2.20 | 4.75 | -0.12 | -0.27 | -0.22 |
| IDEQ | 4-Jan-99 | 2430 | 7 | 91.5 | 7.80 | 1.95 | 4.52 | -0.11 | -0.30 | -0.22 |
| IDEQ | 14-Jan-99 | 2820 | 7 | 106.2 | 7.94 | 1.95 | 4.67 | -0.01 | -0.30 | -0.22 |
| USGS | 27-Jan-99 | 2140 | 4 | 46.1 | 7.67 | 1.39 | 3.83 | -0.18 | -0.35 | -0.23 |
| USGS | 9-Feb-99 | 1910 | 5 | 51.4 | 7.55 | 1.61 | 3.94 | -0.23 | -0.34 | -0.22 |
| IDEQ | 23-Feb-99 | 1230 | 10 | 66.2 | 7.11 | 2.30 | 4.19 | -0.40 | -0.25 | -0.22 |
| USGS | 13-Apr-99 | 3380 | 6 | 109.1 | 8.13 | 1.79 | 4.69 | 0.12 | -0.32 | -0.22 |
| USGS | 10-May-99 | 1710 | 10 | 92.0 | 7.44 | 2.30 | 4.52 | -0.28 | -0.25 | -0.22 |
| USGS | 25-May-99 | 16000 | 230 | 19798.4 | 9.68 | 5.44 | 9.89 | 3.18 | 3.38 | 2.57 |

tPb

**Concentration over time analysis**

| | tPb | LC50 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | Concentration over time | |
| | LnConc.=mTime+b All data r2, m: | | | 0.091 | -0.00085 |
| | Time | Ln[COC] | [COC] | | |
| first | 29-Oct-96 | 2.98 | 20 | | |
| mid | 10-Aug-98 | 2.43 | 11 | | |
| last | 20-Oct-99 | 2.06 | 8 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | #REF! | #REF! |
| | #REF! | #REF! | #REF! | | |
| | 20-Oct-99 | #REF! | #REF! | | |

**Load over time analysis**

| | tPb | LC50 | | Load over time | |
|---|---|---|---|---|---|
| | LnLoad=mTime+b All data r2, m: | | | 0.076 | -0.00154 |
| | Time | LnLoad | Load | | |
| first | 29-Oct-96 | 5.54 | 254 | | |
| mid | 10-Aug-98 | 4.54 | 93 | | |
| last | 20-Oct-99 | 3.86 | 48 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | #REF! | #REF! |
| | #REF! | #REF! | #REF! | | |
| | 20-Oct-99 | #REF! | #REF! | | |

| | max r2: 0.966 | | | max r2: 0.930 | | |
|---|---|---|---|---|---|---|
| | Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | | |
| | r2 | slope | intercept | r2 | slope | intercept |
| | only on >4 data points, delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| | 0.091 | -0.00085 | 32.93 | 0.076 | -0.00154 | 60.08 |
| | 0.109 | -0.00096 | 37.09 | 0.086 | -0.00171 | 66.15 |
| | 0.129 | -0.00109 | 41.84 | 0.110 | -0.00201 | 76.98 |
| | 0.134 | -0.00116 | 44.36 | 0.110 | -0.00210 | 80.29 |
| | 0.164 | -0.00134 | 50.91 | 0.128 | -0.00237 | 90.02 |
| | 0.158 | -0.00138 | 52.04 | 0.115 | -0.00234 | 88.74 |
| | 0.142 | -0.00135 | 51.24 | 0.087 | -0.00209 | 79.79 |
| | 0.135 | -0.00139 | 52.40 | 0.069 | -0.00193 | 74.26 |
| | 0.054 | -0.00074 | 28.99 | 0.012 | -0.00070 | 29.63 |
| | 0.037 | -0.00064 | 25.45 | 0.005 | -0.00047 | 21.11 |
| | 0.035 | -0.00066 | 25.99 | 0.006 | -0.00053 | 23.36 |
| | 0.044 | -0.00078 | 30.48 | 0.013 | -0.00086 | 35.53 |
| | 0.040 | -0.00079 | 30.82 | 0.024 | -0.00124 | 49.06 |
| | 0.055 | -0.00099 | 37.93 | 0.047 | -0.00183 | 70.42 |
| | 0.060 | -0.00110 | 41.97 | 0.053 | -0.00206 | 78.99 |
| | 0.020 | -0.00064 | 25.37 | 0.035 | -0.00177 | 68.30 |
| | 0.022 | -0.00072 | 28.50 | 0.042 | -0.00208 | 79.43 |
| | 0.037 | -0.00099 | 38.21 | 0.047 | -0.00238 | 90.28 |
| | 0.028 | -0.00093 | 35.96 | 0.029 | -0.00197 | 75.57 |
| | 0.001 | -0.00019 | 9.11 | 0.002 | -0.00053 | 23.30 |
| | 0.013 | 0.00062 | -20.31 | 0.013 | 0.00130 | -43.14 |
| | 0.009 | 0.00058 | -18.71 | 0.015 | 0.00154 | -51.61 |
| | 0.006 | 0.00051 | -16.25 | 0.008 | 0.00116 | -37.95 |
| | 0.006 | 0.00051 | -16.22 | 0.001 | 0.00052 | -14.69 |
| | 0.003 | 0.00040 | -12.41 | 0.001 | -0.00052 | 23.01 |
| | 0.001 | 0.00017 | -3.94 | 0.016 | -0.00180 | 69.70 |
| | 0.000 | 0.00018 | -4.14 | 0.049 | -0.00331 | 124.54 |
| | 0.000 | 0.00018 | -4.27 | 0.074 | -0.00426 | 159.05 |
| | 0.003 | 0.00045 | -14.08 | 0.080 | -0.00471 | 175.44 |
| | 0.002 | 0.00039 | -11.86 | 0.084 | -0.00512 | 190.13 |
| | 0.002 | 0.00044 | -13.68 | 0.086 | -0.00559 | 207.13 |
| | 0.000 | 0.00016 | -3.69 | 0.096 | -0.00639 | 236.42 |
| | 0.000 | -0.00026 | 11.81 | 0.103 | -0.00729 | 269.10 |
| | 0.026 | -0.00208 | 77.93 | 0.163 | -0.01025 | 376.92 |
| | 0.105 | -0.00477 | 175.61 | 0.263 | -0.01508 | 552.48 |
| | 0.180 | -0.00770 | 282.27 | 0.440 | -0.02407 | 879.61 |
| | 0.404 | -0.01332 | 486.89 | 0.579 | -0.03252 | 1187.23 |
| | 0.617 | -0.01926 | 703.13 | 0.785 | -0.04439 | 1619.25 |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| **tPb** | | **LC50** | | |
| **LN Analysis** | | **tPb** | | |
| **Load** | | **Load Data, EV=1640 lbs/day CV=4.31** | | |
| **Avg:** | **1,639** | **Load Data-based LN** | | |
| **SD:** | **7,061** | u | ln tPb Load | tPb Load |
| **CV:** | **4.31** | 3 | 11.1 | 65404 |
| **Min:** | **9.6** | 0 | 5.92 | 371 |
| **Max:** | **43,737** | -3 | 0.74 | 2.1 |
| **Median:** | **75** | | | |
| | | 1,639 | 1640 | |
| | | 4.31 | 4.31 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV **r2=0.872, EV=708lbs/day CV=6.78; max r2=0.95**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.872 | u | lnLoad | Load | |
| slope, m | 0.510 | 3 | 10.52 | 37195 | |
| intercept, b | -2.364 | 0 | 4.64 | 103 | |
| N | 44 | -3 | -1.25 | 0.3 | |
| E[Load] | 708.1 | Parameter Estimates | | | 0.872 |
| SD[Load] | 4802 | from LN regression | | | 708.1 |
| CV[Load] | 6.78 | update graph label | | | 6.8 |
| | | | | | max r2 |
| | N: 44 | | | | 0.946 |

| Date | tPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 20-Oct-99 | **9.6** | 1 | 0.0141 | -2.194 | 2.264 | 0.872 |
| 22-Oct-98 | **11.1** | 2 | 0.0367 | -1.790 | 2.404 | 0.884 |
| 22-Sep-99 | **11.4** | 3 | 0.0593 | -1.560 | 2.432 | 0.888 |
| 23-Sep-98 | **12.9** | 4 | 0.0819 | -1.392 | 2.556 | 0.888 |
| 26-Oct-98 | **14.5** | 5 | 0.1045 | -1.256 | 2.673 | 0.887 |
| 1-Sep-99 | **17.7** | 6 | 0.1271 | -1.140 | 2.876 | 0.886 |
| 25-Aug-98 | **18.7** | 7 | 0.1497 | -1.038 | 2.930 | 0.885 |
| 27-Jul-98 | **23.3** | 8 | 0.1723 | -0.945 | 3.151 | 0.883 |
| 16-Oct-97 | **23.7** | 9 | 0.1949 | -0.860 | 3.164 | 0.883 |
| 11-Aug-99 | **27.3** | 10 | 0.2175 | -0.781 | 3.309 | 0.882 |
| 13-Aug-97 | **30.0** | 11 | 0.2401 | -0.706 | 3.400 | 0.881 |
| 3-Sep-97 | **35.6** | 12 | 0.2627 | -0.635 | 3.573 | 0.881 |
| 18-Nov-98 | **39.7** | 13 | 0.2853 | -0.567 | 3.680 | 0.882 |
| 26-Nov-96 | **40.1** | 14 | 0.3079 | -0.502 | 3.691 | 0.883 |
| 27-Jan-99 | **46.1** | 15 | 0.3305 | -0.439 | 3.830 | 0.884 |
| 9-Feb-99 | **51.4** | 16 | 0.3531 | -0.377 | 3.939 | 0.886 |
| 24-Jun-98 | **59.9** | 17 | 0.3757 | -0.317 | 4.092 | 0.889 |
| 23-Feb-99 | **66.2** | 18 | 0.3983 | -0.258 | 4.192 | 0.894 |
| 29-Jan-97 | **68.9** | 19 | 0.4209 | -0.200 | 4.232 | 0.901 |
| 21-Jan-98 | **69.9** | 20 | 0.4435 | -0.142 | 4.248 | 0.908 |
| 24-Jul-97 | **72.0** | 21 | 0.4661 | -0.085 | 4.277 | 0.914 |
| 13-Jul-99 | **72.0** | 22 | 0.4887 | -0.028 | 4.277 | 0.920 |
| 25-Feb-98 | **78.7** | 23 | 0.5113 | 0.028 | 4.366 | 0.925 |
| 29-Oct-96 | **80.9** | 24 | 0.5339 | 0.085 | 4.393 | 0.930 |
| 24-Nov-97 | **84.0** | 25 | 0.5565 | 0.142 | 4.431 | 0.935 |
| 4-Jan-99 | **91.5** | 26 | 0.5791 | 0.200 | 4.516 | 0.939 |
| 10-May-99 | **92.0** | 27 | 0.6017 | 0.258 | 4.522 | 0.943 |
| 24-Nov-98 | **96.2** | 28 | 0.6243 | 0.317 | 4.566 | 0.945 |
| 15-Dec-98 | **102.9** | 29 | 0.6469 | 0.377 | 4.633 | 0.946 |
| 14-Jan-99 | **106.2** | 30 | 0.6695 | 0.439 | 4.665 | 0.946 |
| 13-Apr-99 | **109.1** | 31 | 0.6921 | 0.502 | 4.692 | 0.943 |
| 15-Dec-98 | **115.7** | 32 | 0.7147 | 0.567 | 4.751 | 0.937 |
| 13-Dec-96 | **193.7** | 33 | 0.7373 | 0.635 | 5.266 | 0.928 |
| 24-Jun-97 | **273.4** | 34 | 0.7599 | 0.706 | 5.611 | 0.924 |
| 19-Mar-98 | **335.7** | 35 | 0.7825 | 0.781 | 5.816 | 0.925 |
| 17-Dec-97 | **344.0** | 36 | 0.8051 | 0.860 | 5.841 | 0.930 |
| 8-Jun-99 | **441.6** | 37 | 0.8277 | 0.945 | 6.090 | 0.929 |
| 21-Feb-97 | **441.8** | 38 | 0.8503 | 1.038 | 6.091 | 0.930 |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tPb** | | **LC50** | | 25 | 25.3 |
| **LN Analysis** | | **tPb** | | 2.39 | 2.39 |
| **Concentration** | | **Conc. Data, EV=25.3 ug/L CV=2.39** | | | |
| **Avg:** | **25** | **Data-based LN** | | | |
| **SD:** | **61** | u | ln[tPb] | [tPb] | |
| **CV:** | **2.39** | 3 | 6.4 | 614 | |
| **Min:** | **4** | 0 | 2.28 | 10 | |
| **Max:** | **355** | -3 | -1.87 | 0 | |
| **Median:** | **9** | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | 0.760 | 0.76 |
| | **u=mLn{Conc.}+b:** | | | | | 20.9 | 20.9 |
| update for r2, EV, CV: | **r2=0.76, EV=20.9 ug/L CV=1.43; max r2=0.93** | | | | | 1.426 | 1.43 |
| | r2 u,lnConc: | 0.760 | u | lnConc | Conc | | |
| | slope, m | 0.949 | 3 | 5.65 | 283 | | |
| | intercept, b | -2.361 | 0 | 2.49 | 12 | | |
| | N | 44 | -3 | -0.67 | 1 | | |
| 0.872 | E{Conc} | 20.9 | Parameter Estimates | | | | |
| 708 | SD{Conc} | 30 | from LN regression | | | | |
| 6.78 | CV{Conc} | 1.43 | update graph label | | | | |

| | | | | | | max r2 |
|---|---|---|---|---|---|---|
| | **tPb** | N | 44 | | | 0.929 |
| | **Concentration** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **ug/L** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 27-Jan-99 | 4 | 1 | 0.0141 | -2.194 | 1.386 | 0.760 |
| 20-Oct-99 | 4.9 | 2 | 0.0367 | -1.790 | 1.589 | 0.766 |
| 9-Feb-99 | 5 | 3 | 0.0593 | -1.560 | 1.609 | 0.774 |
| 22-Sep-99 | 5.7 | 4 | 0.0819 | -1.392 | 1.740 | 0.777 |
| 22-Oct-98 | 6 | 5 | 0.1045 | -1.256 | 1.792 | 0.784 |
| 13-Apr-99 | 6 | 6 | 0.1271 | -1.140 | 1.792 | 0.791 |
| 25-Feb-98 | 7 | 7 | 0.1497 | -1.038 | 1.946 | 0.796 |
| 24-Jun-98 | 7 | 8 | 0.1723 | -0.945 | 1.946 | 0.806 |
| 27-Jul-98 | 7 | 9 | 0.1949 | -0.860 | 1.946 | 0.816 |
| 23-Sep-98 | 7 | 10 | 0.2175 | -0.781 | 1.946 | 0.824 |
| 4-Jan-99 | 7 | 11 | 0.2401 | -0.706 | 1.946 | 0.832 |
| 14-Jan-99 | 7 | 12 | 0.2627 | -0.635 | 1.946 | 0.838 |
| 1-Sep-99 | 7 | 13 | 0.2853 | -0.567 | 1.946 | 0.843 |
| 11-Aug-99 | 7.1 | 14 | 0.3079 | -0.502 | 1.960 | 0.847 |
| 29-Jan-97 | 8 | 15 | 0.3305 | -0.439 | 2.079 | 0.850 |
| 16-Oct-97 | 8 | 16 | 0.3531 | -0.377 | 2.079 | 0.857 |
| 25-Aug-98 | 8 | 17 | 0.3757 | -0.317 | 2.079 | 0.864 |
| 15-Dec-98 | 8 | 18 | 0.3983 | -0.258 | 2.079 | 0.869 |
| 29-Oct-96 | 9 | 19 | 0.4209 | -0.200 | 2.197 | 0.874 |
| 26-Nov-96 | 9 | 20 | 0.4435 | -0.142 | 2.197 | 0.883 |
| 13-Aug-97 | 9 | 21 | 0.4661 | -0.085 | 2.197 | 0.891 |
| 26-Oct-98 | 9 | 22 | 0.4887 | -0.028 | 2.197 | 0.898 |
| 18-Nov-98 | 9 | 23 | 0.5113 | 0.028 | 2.197 | 0.904 |
| 15-Dec-98 | 9 | 24 | 0.5339 | 0.085 | 2.197 | 0.908 |
| 13-Jul-99 | 9.3 | 25 | 0.5565 | 0.142 | 2.230 | 0.911 |
| 21-Jan-98 | 10 | 26 | 0.5791 | 0.200 | 2.303 | 0.913 |
| 23-Feb-99 | 10 | 27 | 0.6017 | 0.258 | 2.303 | 0.917 |
| 10-May-99 | 10 | 28 | 0.6243 | 0.317 | 2.303 | 0.919 |
| 24-Nov-97 | 11 | 29 | 0.6469 | 0.377 | 2.398 | 0.918 |
| 24-Nov-98 | 12 | 30 | 0.6695 | 0.439 | 2.485 | 0.918 |
| 24-Jul-97 | 13 | 31 | 0.6921 | 0.502 | 2.565 | 0.919 |
| 3-Sep-97 | 14 | 32 | 0.7147 | 0.567 | 2.639 | 0.922 |
| 13-Dec-96 | 15 | 33 | 0.7373 | 0.635 | 2.708 | 0.925 |
| 19-Mar-98 | 15 | 34 | 0.7599 | 0.706 | 2.708 | 0.929 |
| 8-Jun-99 | 16 | 35 | 0.7825 | 0.781 | 2.773 | 0.927 |
| 16-Apr-97 | 20 | 36 | 0.8051 | 0.860 | 2.996 | 0.922 |
| 21-Feb-97 | 21 | 37 | 0.8277 | 0.945 | 3.045 | 0.925 |
| 24-Jun-97 | 22 | 38 | 0.8503 | 1.038 | 3.091 | 0.921 |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **LC50** | | | 2,874 | 2870 |
| **LN Analysis** | | **tPb** | | | 1.44 | 1.44 |
| **Discharge, Q** | | **Q Data, EV=2870 cfs CV=1.44** | | | | |
| **Avg:** | **2,874** | **Q Data-based LN** | | | | |
| **SD:** | **4,131** | u | lnQ | Q | | |
| **CV:** | **1.44** | 3 | 10.6 | 39295 | | |
| **Min:** | **299** | 0 | 7.40 | 1641 | | |
| **Max:** | **22,900** | -3 | 4.23 | 69 | | |
| **Median:** | **1,595** | | | | | |
| | | | | | 0.972 | 0.972 |
| | | | | | 2867.4 | 2870 |
| | **u=mLn(Q)+b:** | | | | 1.49 | 1.49 |

update for r2, EV, CV: **r2=0.972, EV=2870 cfs CV=1.49; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.972 | u | lnQ | Q |
| slope, m. | 0.924 | 3 | 10.62 | 40998 |
| intercept, b. | -6.819 | 0 | 7.38 | 1597 |
| N: 44 | | -3 | 4.13 | 62 |
| E[Q] | 2867.4 | Parameter Estimates | | |
| SD[Q]. | 4275 | from LN regression | | |
| CV[Q] | 1.49 | update graph label | | |

| | Q | N: 44 | | | | max r2 0.985 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 26-Oct-98 | 299 | 1 | 0.0141 | -2.194 | 5.700 | 0.972 |
| 23-Sep-98 | 342 | 2 | 0.0367 | -1.790 | 5.835 | 0.981 |
| 22-Oct-98 | 343 | 3 | 0.0593 | -1.560 | 5.838 | 0.985 |
| 20-Oct-99 | 365 | 4 | 0.0819 | -1.392 | 5.900 | 0.985 |
| 22-Sep-99 | 371 | 5 | 0.1045 | -1.256 | 5.916 | 0.985 |
| 25-Aug-98 | 435 | 6 | 0.1271 | -1.140 | 6.075 | 0.983 |
| 1-Sep-99 | 471 | 7 | 0.1497 | -1.038 | 6.155 | 0.982 |
| 3-Sep-97 | 473 | 8 | 0.1723 | -0.945 | 6.159 | 0.981 |
| 16-Oct-97 | 550 | 9 | 0.1949 | -0.860 | 6.310 | 0.980 |
| 13-Aug-97 | 619 | 10 | 0.2175 | -0.781 | 6.428 | 0.978 |
| 27-Jul-98 | 620 | 11 | 0.2401 | -0.706 | 6.430 | 0.977 |
| 11-Aug-99 | 716 | 12 | 0.2627 | -0.635 | 6.574 | 0.975 |
| 18-Nov-98 | 819 | 13 | 0.2853 | -0.567 | 6.708 | 0.974 |
| 26-Nov-96 | 828 | 14 | 0.3079 | -0.502 | 6.719 | 0.972 |
| 24-Jul-97 | 1030 | 15 | 0.3305 | -0.439 | 6.937 | 0.970 |
| 23-Feb-99 | 1230 | 16 | 0.3531 | -0.377 | 7.115 | 0.968 |
| 21-Jan-98 | 1300 | 17 | 0.3757 | -0.317 | 7.170 | 0.969 |
| 17-Dec-97 | 1390 | 18 | 0.3983 | -0.258 | 7.237 | 0.970 |
| 24-Nov-97 | 1420 | 19 | 0.4209 | -0.200 | 7.258 | 0.972 |
| 13-Jul-99 | 1440 | 20 | 0.4435 | -0.142 | 7.272 | 0.974 |
| 24-Nov-98 | 1490 | 21 | 0.4661 | -0.085 | 7.307 | 0.975 |
| 24-Jun-98 | 1590 | 22 | 0.4887 | -0.028 | 7.371 | 0.975 |
| 29-Jan-97 | 1600 | 23 | 0.5113 | 0.028 | 7.378 | 0.976 |
| 29-Oct-96 | 1670 | 24 | 0.5339 | 0.085 | 7.421 | 0.976 |
| 10-May-99 | 1710 | 25 | 0.5565 | 0.142 | 7.444 | 0.976 |
| 9-Feb-99 | 1910 | 26 | 0.5791 | 0.200 | 7.555 | 0.975 |
| 25-Feb-98 | 2090 | 27 | 0.6017 | 0.258 | 7.645 | 0.975 |
| 27-Jan-99 | 2140 | 28 | 0.6243 | 0.317 | 7.669 | 0.977 |
| 24-Jun-97 | 2310 | 29 | 0.6469 | 0.377 | 7.745 | 0.979 |
| 15-Dec-98 | 2390 | 30 | 0.6695 | 0.439 | 7.779 | 0.981 |
| 15-Dec-98 | 2390 | 31 | 0.6921 | 0.502 | 7.779 | 0.983 |
| 13-Dec-96 | 2400 | 32 | 0.7147 | 0.567 | 7.783 | 0.982 |
| 4-Jan-99 | 2430 | 33 | 0.7373 | 0.635 | 7.796 | 0.979 |
| 14-Jan-99 | 2820 | 34 | 0.7599 | 0.706 | 7.944 | 0.978 |
| 13-Apr-99 | 3380 | 35 | 0.7825 | 0.781 | 8.126 | 0.974 |
| 21-Feb-97 | 3910 | 36 | 0.8051 | 0.860 | 8.271 | 0.969 |
| 19-Mar-98 | 4160 | 37 | 0.8277 | 0.945 | 8.333 | 0.965 |
| 16-Apr-97 | 5050 | 38 | 0.8503 | 1.038 | 8.527 | 0.957 |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | **LC50** | **Date:** **14-Jul-00** |
| **Chemical:** | **tZn** | **Analyst:** **B.Walthall** |
| **Notes:** | | |
| **Input Discharge and Concentration Data below (in red)** | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,947 | 2,885 | 380 | 4,310 | 0.00 | 0.00 | 0.00 |
| **SD:** | 320 | 4,179 | 160 | 6,064 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.45 | 0.42 | 1.41 | | | |
| **Min:** | 35,367 | 299 | 110 | 977 9 | -0.62 | -1.68 | -0.55 |
| **Max:** | 36,453 | 22,900 | 668 | 38,562 | 4 79 | 1.80 | 5.65 |
| **Median:** | 36,003 | 1,590 | 354 | 2,976 | -0.31 | -0 16 | -0.22 |

| tZn | LC50 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.192)** | | update r2 | **0.19** | 0.192 | r2: | 0.020 | 0.049 |
| r2 Q,[COC]: | 0.19 | [tZn] | Q | | m: | -1.8513 | -0.00072 |
| slope, m: | 0.0 | 423 | 299.0 | | b: | 69435 | 33.22 |
| intercept, b | 428.2 | 380 | 2885.4 | | | | |
| N: | 43 | 42 | 22900 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.544)** | | update r2 | 0.54 | 0.544 | | | |
| r2 lnQ,ln[COC]: | 0.54 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m: | -0.33 | 6.39 | 5.70 | 596 | 299 | | |
| intercept, b: | 8.28 | 5.64 | 7.97 | 281 | 2,885 | | |
| N: | 43 | 4.95 | 10.04 | 141 | 22,900 | | |

**N= 43**

| update for new data | Sampling Date | Q Discharge cfs | tZn Concentration ug/L | tZn Load lbs/day | Ln Q | Ln tZn Conc. | Ln tZn Load | for graph 0 tZn LC50 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 29-Oct-96 | 1670 | 593 | 5327.9 | 7.42 | 6.39 | 8.58 | -0.29 | 1.33 | 0.17 |
| IDEQ | 26-Nov-96 | 828 | 668 | 2975.7 | 6.72 | 6.50 | 8.00 | -0.49 | 1.80 | -0.22 |
| IDEQ | 13-Dec-96 | 2400 | 538 | 6946.7 | 7.78 | 6.29 | 8.85 | -0.12 | 0.99 | 0.43 |
| IDEQ | 29-Jan-97 | 1600 | 427 | 3675.6 | 7.38 | 6.06 | 8.21 | -0.31 | 0.30 | -0.10 |
| IDEQ | 21-Feb-97 | 3910 | 338 | 7110.1 | 8.27 | 5.82 | 8.87 | 0.25 | -0.26 | 0.46 |
| IDEQ | 26-Mar-97 | 7860 | 243 | 10275.7 | 8.97 | 5.49 | 9.24 | 1.19 | -0.85 | 0.98 |
| IDEQ | 16-Apr-97 | 5050 | 219 | 5950.0 | 8.53 | 5.39 | 8.69 | 0.52 | -1.00 | 0.27 |
| IDEQ | 16-May-97 | 22900 | 313 | 38562.2 | 10.04 | 5.75 | 10.56 | 4.79 | -0.41 | 5.65 |
| IDEQ | 24-Jun-97 | 2310 | 260 | 3231.2 | 7.75 | 5.56 | 8.08 | -0.14 | -0.75 | -0.18 |
| IDEQ | 24-Jul-97 | 1030 | 441 | 2443.8 | 6.94 | 6.09 | 7.80 | -0.44 | 0.38 | -0.31 |
| IDEQ | 13-Aug-97 | 619 | 624 | 2078.1 | 6.43 | 6.44 | 7.64 | -0.54 | 1.52 | -0.37 |
| IDEQ | 3-Sep-97 | 473 | 652 | 1659.2 | 6.16 | 6.48 | 7.41 | -0.58 | 1.70 | -0.44 |
| IDEQ | 16-Oct-97 | 550 | 554 | 1639.3 | 6.31 | 6.32 | 7.40 | -0.56 | 1.09 | -0.44 |
| IDEQ | 24-Nov-97 | 1420 | 354 | 2704.4 | 7.26 | 5.87 | 7.90 | -0.35 | -0.16 | -0.26 |
| IDEQ | 17-Dec-97 | 1390 | 430 | 3215.6 | 7.24 | 6.06 | 8.08 | -0.36 | 0.31 | -0.18 |
| IDEQ | 21-Jan-98 | 1300 | 410 | 2867.5 | 7.17 | 6.02 | 7.96 | -0.38 | 0.19 | -0.24 |
| IDEQ | 25-Feb-98 | 2090 | 274 | 3080.9 | 7.64 | 5.61 | 8.03 | -0.19 | -0.66 | -0.20 |
| IDEQ | 19-Mar-98 | 4160 | 196 | 4386.6 | 8.33 | 5.28 | 8.39 | 0.31 | -1.14 | 0.01 |
| IDEQ | 23-Apr-98 | 6310 | 151 | 5126.1 | 8.75 | 5.02 | 8.54 | 0.82 | -1.42 | 0 13 |
| IDEQ | 28-May-98 | 7760 | 162 | 6763.3 | 8.96 | 5.09 | 8.82 | 1.17 | -1.36 | 0.40 |
| IDEQ | 24-Jun-98 | 1590 | 309 | 2643.2 | 7.37 | 5.73 | 7.88 | -0.31 | -0.44 | -0.27 |
| IDEQ | 27-Jul-98 | 620 | 518 | 1727.8 | 6.43 | 6.25 | 7.45 | -0.54 | 0.86 | -0.43 |
| IDEQ | 25-Aug-98 | 435 | 549 | 1284.8 | 6.08 | 6.31 | 7.16 | -0.59 | 1.06 | -0.50 |
| IDEQ | 23-Sep-98 | 342 | 619 | 1138.9 | 5.83 | 6.43 | 7.04 | -0.61 | 1.49 | -0.52 |
| USGS | 22-Oct-98 | 343 | 630 | 1162.6 | 5.84 | 6.45 | 7.06 | -0.61 | 1.56 | -0.52 |
| IDEQ | 26-Oct-98 | 299 | 612 | 984.5 | 5.70 | 6.42 | 6.89 | -0.62 | 1.45 | -0.55 |
| USGS | 18-Nov-98 | 819 | 450 | 1982.8 | 6.71 | 6.11 | 7.59 | -0.49 | 0.44 | -0.38 |
| IDEQ | 24-Nov-98 | 1490 | 375 | 3006.1 | 7.31 | 5.93 | 8.01 | -0.33 | -0.03 | -0.21 |
| USGS | 15-Dec-98 | 2390 | 250 | 3214.6 | 7.78 | 5.52 | 8.08 | -0.12 | -0.81 | -0.18 |
| IDEQ | 4-Jan-99 | 2430 | 218 | 2850.0 | 7.80 | 5.38 | 7.96 | -0.11 | -1.01 | -0.24 |
| IDEQ | 14-Jan-99 | 2820 | 239 | 3626.0 | 7.94 | 5.48 | 8.20 | -0.02 | -0.88 | -0.11 |
| USGS | 27-Jan-99 | 2140 | 270 | 3108.6 | 7.67 | 5.60 | 8.04 | -0.18 | -0.68 | -0.20 |
| USGS | 9-Feb-99 | 1910 | 330 | 3391.0 | 7.55 | 5.80 | 8.13 | -0.23 | -0.31 | -0.15 |
| IDEQ | 23-Feb-99 | 1230 | 353 | 2335.9 | 7.11 | 5.87 | 7.76 | -0.40 | -0.17 | -0.33 |
| USGS | 13-Apr-99 | 3380 | 200 | 3636.9 | 8.13 | 5.30 | 8.20 | 0.12 | -1.12 | -0.11 |
| USGS | 10-May-99 | 1710 | 110 | 1012.0 | 7.44 | 4.70 | 6.92 | -0.28 | -1.68 | -0.54 |
| USGS | 25-May-99 | 16000 | 210 | 18076.8 | 9.68 | 5.35 | 9.80 | 3.14 | -1.06 | 2.27 |
| USGS | 8-Jun-99 | 5130 | 130 | 3587.9 | 8.54 | 4.87 | 8.19 | 0.54 | -1.56 | -0.12 |

tZn

**Concentration over time analysis**

| | tZn | LC50 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.068** | **-0.00038** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 29-Oct-96 | 6.06 | 428 | | |
| mid | 27-Jul-98 | 5.82 | 336 | | |
| last | 20-Oct-99 | 5.64 | 283 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **#REF!** | **#REF!** |
| | #REF! | #REF! | #REF! | | |
| | 20-Oct-99 | #REF! | #REF! | | |

**Load over time analysis**

| | tZn | LC50 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.212** | **-0.00110** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 29-Oct-96 | 8.62 | 5,533 | | |
| mid | 27-Jul-98 | 7.92 | 2,745 | | |
| last | 20-Oct-99 | 7.42 | 1,672 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **#REF!** | **#REF!** |
| | #REF! | #REF! | #REF! | | |
| | 20-Oct-99 | #REF! | #REF! | | |

| | max r2: 0.881 | | | max r2: 0.914 | | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.068 | -0.00038 | 19.60 | 0.212 | -0.00110 | 47.60 |
| | 0.050 | -0.00034 | 17.87 | 0.200 | -0.00111 | 47.79 |
| | 0.029 | -0.00026 | 15.12 | 0.216 | -0.00120 | 51.13 |
| | 0.016 | -0.00020 | 13.06 | 0.192 | -0.00116 | 49.87 |
| | 0.011 | -0.00018 | 12.09 | 0.195 | -0.00123 | 52.07 |
| | 0.012 | -0.00019 | 12.48 | 0.168 | -0.00117 | 50.05 |
| | 0.022 | -0.00026 | 15.29 | 0.126 | -0.00102 | 44.70 |
| | 0.041 | -0.00038 | 19.53 | 0.103 | -0.00095 | 42.23 |
| | 0.049 | -0.00044 | 21.60 | 0.029 | -0.00042 | 23.08 |
| | 0.070 | -0.00055 | 25.60 | 0.023 | -0.00040 | 22.06 |
| | 0.061 | -0.00054 | 25.28 | 0.024 | -0.00043 | 23.38 |
| | 0.035 | -0.00042 | 21.04 | 0.032 | -0.00052 | 26.70 |
| | 0.012 | -0.00025 | 14.88 | 0.052 | -0.00071 | 33.59 |
| | 0.002 | -0.00009 | 9.14 | 0.082 | -0.00095 | 41.94 |
| | 0.003 | -0.00006 | 7.97 | 0.086 | -0.00103 | 45.11 |
| | 0.001 | 0.00006 | 3.49 | 0.080 | -0.00107 | 46.31 |
| | 0.005 | 0.00020 | -1.44 | 0.080 | -0.00114 | 49.10 |
| | 0.003 | 0.00018 | -0.62 | 0.076 | -0.00119 | 50.72 |
| | 0.000 | -0.00004 | 7.14 | 0.052 | -0.00104 | 45.45 |
| | 0.019 | -0.00047 | 22.64 | 0.024 | -0.00074 | 34.59 |
| | 0.075 | -0.00096 | 40.58 | 0.001 | -0.00017 | 13.91 |
| | 0.094 | -0.00116 | 47.83 | 0.000 | -0.00005 | 9.44 |
| | 0.067 | -0.00103 | 42.95 | 0.001 | -0.00019 | 14.52 |
| | 0.037 | -0.00079 | 34.47 | 0.010 | -0.00058 | 28.62 |
| | 0.009 | -0.00040 | 20.15 | 0.035 | -0.00113 | 48.80 |
| | 0.000 | 0.00009 | 2.35 | 0.078 | -0.00175 | 71.31 |
| | 0.034 | 0.00075 | -21.50 | 0.184 | -0.00276 | 107.76 |
| | 0.094 | 0.00128 | -40.85 | 0.237 | -0.00332 | 128.38 |
| | 0.173 | 0.00184 | -61.24 | 0.248 | -0.00366 | 140.76 |
| | 0.187 | 0.00207 | -69.53 | 0.250 | -0.00395 | 151.28 |
| | 0.174 | 0.00215 | -72.37 | 0.265 | -0.00441 | 167.73 |
| | 0.178 | 0.00238 | -80.88 | 0.250 | -0.00464 | 176.42 |
| | 0.217 | 0.00295 | -101.49 | 0.254 | -0.00522 | 197.51 |
| | 0.368 | 0.00444 | -155.60 | 0.245 | -0.00588 | 221.27 |
| | 0.771 | 0.00782 | -278.72 | 0.341 | -0.00855 | 318.63 |
| | 0.876 | 0.00966 | -345.61 | 0.322 | -0.00955 | 354.73 |
| | 0.835 | 0.00879 | -314.17 | 0.737 | -0.01634 | 601.95 |
| | 0.881 | 0.01050 | -376.24 | 0.902 | -0.00954 | 354.53 |

update for EV, CV

**tZn** **LC50**

**LN Analysis** **tZn**

**Load** **Load Data, EV=4310 lbs/day CV=1.41**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **4,310** | **Load Data-based LN** | | |
| **SD:** | **6,064** | u | ln tZn Load | tZn Load |
| **CV:** | **1.41** | 3 | 11.0 | 57381 |
| **Min:** | **977.9** | 0 | 7.82 | 2496 |
| **Max:** | **38,562** | -3 | 4.69 | 108.6 |
| **Median:** | **2,976** | | | |
| | | 4,310 | 4310 | |
| | | 1.41 | 1.41 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.923, EV=4100lbs/day CV=0.985; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.923 | u | lnLoad | Load |
| slope, m | 1.214 | 3 | 10.45 | 34524 |
| intercept, b | -9.691 | 0 | 7.98 | 2920 |
| N: 43 | | -3 | 5.51 | 246.9 |
| E[Load] | 4097.8 | Parameter Estimates | | |
| SD[Load] | 4036 | from LN regression | | |
| CV[Load] | 0.98 | update graph label | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | 0.923 |
| | | | | | | | 4097.8 |
| | | | | | | | 1.0 |
| | | | | | | | max r2 |
| | **tZn** | N: 43 | | | | | 0.982 |
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| update and rank for new data | | | | | | |
| 20-Oct-99 | **977.9** | 1 | 0.0145 | -2.185 | 6.885 | 0.923 |
| 26-Oct-98 | **984.5** | 2 | 0.0376 | -1.780 | 6.892 | 0.935 |
| 10-May-99 | **1012.0** | 3 | 0.0607 | -1.549 | 6.920 | 0.937 |
| 22-Sep-99 | **1081.8** | 4 | 0.0838 | -1.380 | 6.986 | 0.936 |
| 23-Sep-98 | **1138.9** | 5 | 0.1069 | -1.243 | 7.038 | 0.934 |
| 1-Sep-99 | **1158.0** | 6 | 0.1301 | -1.126 | 7.054 | 0.931 |
| 22-Oct-98 | **1162.6** | 7 | 0.1532 | -1.023 | 7.058 | 0.927 |
| 25-Aug-98 | **1284.8** | 8 | 0.1763 | -0.930 | 7.158 | 0.922 |
| 11-Aug-99 | **1371.3** | 9 | 0.1994 | -0.844 | 7.224 | 0.917 |
| 16-Oct-97 | **1639.3** | 10 | 0.2225 | -0.764 | 7.402 | 0.911 |
| 3-Sep-97 | **1659.2** | 11 | 0.2457 | -0.688 | 7.414 | 0.908 |
| 27-Jul-98 | **1727.8** | 12 | 0.2688 | -0.616 | 7.455 | 0.904 |
| 13-Jul-99 | **1929.1** | 13 | 0.2919 | -0.548 | 7.565 | 0.899 |
| 18-Nov-98 | **1982.8** | 14 | 0.3150 | -0.482 | 7.592 | 0.895 |
| 13-Aug-97 | **2078.1** | 15 | 0.3382 | -0.418 | 7.639 | 0.892 |
| 23-Feb-99 | **2335.9** | 16 | 0.3613 | -0.355 | 7.756 | 0.888 |
| 24-Jul-97 | **2443.8** | 17 | 0.3844 | -0.294 | 7.801 | 0.887 |
| 24-Jun-98 | **2643.2** | 18 | 0.4075 | -0.234 | 7.880 | 0.888 |
| 24-Nov-97 | **2704.4** | 19 | 0.4306 | -0.175 | 7.903 | 0.891 |
| 4-Jan-99 | **2850.0** | 20 | 0.4538 | -0.116 | 7.955 | 0.895 |
| 21-Jan-98 | **2867.5** | 21 | 0.4769 | -0.058 | 7.961 | 0.901 |
| 26-Nov-96 | **2975.7** | 22 | 0.5000 | 0.000 | 7.998 | 0.907 |
| 24-Nov-98 | **3006.1** | 23 | 0.5231 | 0.058 | 8.008 | 0.914 |
| 25-Feb-98 | **3080.9** | 24 | 0.5462 | 0.116 | 8.033 | 0.920 |
| 27-Jan-99 | **3108.6** | 25 | 0.5694 | 0.175 | 8.042 | 0.926 |
| 15-Dec-98 | **3214.6** | 26 | 0.5925 | 0.234 | 8.075 | 0.932 |
| 17-Dec-97 | **3215.6** | 27 | 0.6156 | 0.294 | 8.076 | 0.938 |
| 24-Jun-97 | **3231.2** | 28 | 0.6387 | 0.355 | 8.081 | 0.943 |
| 9-Feb-99 | **3391.0** | 29 | 0.6618 | 0.418 | 8.129 | 0.945 |
| 8-Jun-99 | **3587.9** | 30 | 0.6850 | 0.482 | 8.185 | 0.948 |
| 14-Jan-99 | **3626.0** | 31 | 0.7081 | 0.548 | 8.196 | 0.952 |
| 13-Apr-99 | **3636.9** | 32 | 0.7312 | 0.616 | 8.199 | 0.953 |
| 29-Jan-97 | **3675.6** | 33 | 0.7543 | 0.688 | 8.209 | 0.950 |
| 19-Mar-98 | **4386.6** | 34 | 0.7775 | 0.764 | 8.386 | 0.943 |
| 23-Apr-98 | **5126.1** | 35 | 0.8006 | 0.844 | 8.542 | 0.940 |
| 29-Oct-96 | **5327.9** | 36 | 0.8237 | 0.930 | 8.581 | 0.946 |
| 16-Apr-97 | **5950.0** | 37 | 0.8468 | 1.023 | 8.691 | 0.949 |
| 28-May-98 | **6763.3** | 38 | 0.8699 | 1.126 | 8.819 | 0.958 |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | **LC50** | | 380 | 380 |
| **LN Analysis** | | **tZn** | | 0.42 | 0.423 |
| **Concentration** | | **Conc. Data, *EV=380 ug/L CV=0.423*** | | | |
| **Avg:** | **380** | **Data-based LN** | | | |
| **SD:** | **160** | u | ln{tZn} | {tZn} | |
| **CV:** | **0.42** | 3 | 7.1 | 1180 | |
| **Min:** | **110** | 0 | 5.86 | 350 | |
| **Max:** | **668** | -3 | 4.64 | 104 | |
| **Median:** | **354** | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.961 | 0.961 |
| | **u=mLn{Conc.}+b:** | | | | 387.6 | 388 |
| update for r2, EV, CV: | **r2=0.961, EV=388 ug/L CV=0.527; max r2=0.99** | | | | 0.527 | 0.527 |
| | r2 u,lnConc: | *0.961* | u | lnConc. | Conc. | |
| | slope, m. | 2.020 | 3 | 7.32 | 1514 | |
| | intercept, b. | -11.793 | 0 | 5.84 | 343 | |
| | N | 43 | -3 | 4.35 | 78 | |
| 0.923 | E{Conc} | 387.6 | Parameter Estimates | | | |
| 4100 | SD{Conc} | 204 | from LN regression | | | |
| 0.985 | CV{Conc} | 0.53 | update graph label | | | |

| | tZn | N | 43 | | | max r2 0.979 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| **Date** | **ug/L** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | ***Ranked*** | | | | | |
| update and rank for new data | | | | | | |
| 10-May-99 | 110 | 1 | 0.0145 | -2.185 | 4.700 | 0.961 |
| 8-Jun-99 | 130 | 2 | 0.0376 | -1.780 | 4.868 | 0.956 |
| 23-Apr-98 | 151 | 3 | 0.0607 | -1.549 | 5.017 | 0.952 |
| 28-May-98 | 162 | 4 | 0.0838 | -1.380 | 5.088 | 0.949 |
| 19-Mar-98 | 196 | 5 | 0.1069 | -1.243 | 5.278 | 0.946 |
| 13-Apr-99 | 200 | 6 | 0.1301 | -1.126 | 5.298 | 0.942 |
| 25-May-99 | 210 | 7 | 0.1532 | -1.023 | 5.347 | 0.937 |
| 4-Jan-99 | 218 | 8 | 0.1763 | -0.930 | 5.384 | 0.932 |
| 16-Apr-97 | 219 | 9 | 0.1994 | -0.844 | 5.389 | 0.927 |
| 14-Jan-99 | 239 | 10 | 0.2225 | -0.764 | 5.476 | 0.923 |
| 26-Mar-97 | 243 | 11 | 0.2457 | -0.688 | 5.493 | 0.917 |
| 13-Jul-99 | 249 | 12 | 0.2688 | -0.616 | 5.517 | 0.911 |
| 15-Dec-98 | 250 | 13 | 0.2919 | -0.548 | 5.521 | 0.906 |
| 24-Jun-97 | 260 | 14 | 0.3150 | -0.482 | 5.561 | 0.902 |
| 27-Jan-99 | 270 | 15 | 0.3382 | -0.418 | 5.598 | 0.899 |
| 25-Feb-98 | 274 | 16 | 0.3613 | -0.355 | 5.613 | 0.897 |
| 24-Jun-98 | 309 | 17 | 0.3844 | -0.294 | 5.733 | 0.899 |
| 16-May-97 | 313 | 18 | 0.4075 | -0.234 | 5.746 | 0.892 |
| 9-Feb-99 | 330 | 19 | 0.4306 | -0.175 | 5.799 | 0.888 |
| 21-Feb-97 | 338 | 20 | 0.4538 | -0.116 | 5.823 | 0.881 |
| 23-Feb-99 | 353 | 21 | 0.4769 | -0.058 | 5.866 | 0.874 |
| 24-Nov-97 | 354 | 22 | 0.5000 | 0.000 | 5.869 | 0.866 |
| 11-Aug-99 | 356 | 23 | 0.5231 | 0.058 | 5.875 | 0.861 |
| 24-Nov-98 | 375 | 24 | 0.5462 | 0.116 | 5.927 | 0.867 |
| 21-Jan-98 | 410 | 25 | 0.5694 | 0.175 | 6.016 | 0.873 |
| 29-Jan-97 | 427 | 26 | 0.5925 | 0.234 | 6.057 | 0.865 |
| 17-Dec-97 | 430 | 27 | 0.6156 | 0.294 | 6.064 | 0.853 |
| 24-Jul-97 | 441 | 28 | 0.6387 | 0.355 | 6.089 | 0.844 |
| 18-Nov-98 | 450 | 29 | 0.6618 | 0.418 | 6.109 | 0.838 |
| 1-Sep-99 | 457 | 30 | 0.6850 | 0.482 | 6.125 | 0.840 |
| 20-Oct-99 | 498 | 31 | 0.7081 | 0.548 | 6.211 | 0.880 |
| 27-Jul-98 | 518 | 32 | 0.7312 | 0.616 | 6.250 | 0.882 |
| 13-Dec-96 | 538 | 33 | 0.7543 | 0.688 | 6.288 | 0.874 |
| 22-Sep-99 | 542 | 34 | 0.7775 | 0.764 | 6.295 | 0.852 |
| 25-Aug-98 | 549 | 35 | 0.8006 | 0.844 | 6.308 | 0.831 |
| 16-Oct-97 | 554 | 36 | 0.8237 | 0.930 | 6.317 | 0.817 |
| 29-Oct-96 | 593 | 37 | 0.8468 | 1.023 | 6.385 | 0.953 |
| 26-Oct-98 | 612 | 38 | 0.8699 | 1.126 | 6.417 | 0.979 |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **LC50** | | | 2,885 | 2890 |
| **LN Analysis** | | **tZn** | | | 1.45 | 1.45 |
| **Discharge, Q** | | **Q Data, EV=2890 cfs CV=1.45** | | | | |
| **Avg:** | **2,885** | **Q Data-based LN** | | | | |
| **SD:** | **4,179** | u | lnQ | Q | | |
| **CV:** | **1.45** | 3 | 10.6 | 39812 | | |
| **Min:** | **299** | 0 | 7 40 | 1640 | | |
| **Max:** | **22,900** | -3 | 4.21 | 68 | | |
| **Median:** | **1,590** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.972 | 0.972 |
| | | | | | 2876.3 | 2880 |
| **u=mLn(Q)+b:** | | | | | 1.52 | 1.52 |

update for r2, EV, CV: **r2=0.972, EV=2880 cfs CV=1.52; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.972 | u | lnQ | Q |
| slope, m | 0.915 | 3 | 10.65 | 42039 |
| intercept, b | -6.739 | 0 | 7.37 | 1582 |
| N | 43 | -3 | 4.09 | 60 |
| E[Q] | 2876.3 | Parameter Estimates | | |
| SD[Q] | 4366 | from LN regression | | |
| CV[Q] | 1.52 | update graph label | | |

N: 43

max r2 0.987

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 26-Oct-98 | 299 | 1 | 0.0145 | -2.185 | 5.700 | 0.972 |
| 23-Sep-98 | 342 | 2 | 0.0376 | -1.780 | 5.835 | 0.981 |
| 22-Oct-98 | 343 | 3 | 0.0607 | -1.549 | 5.838 | 0.986 |
| 20-Oct-99 | 365 | 4 | 0.0838 | -1.380 | 5.900 | 0.987 |
| 22-Sep-99 | 371 | 5 | 0.1069 | -1.243 | 5.916 | 0.986 |
| 25-Aug-98 | 435 | 6 | 0.1301 | -1.126 | 6.075 | 0.985 |
| 1-Sep-99 | 471 | 7 | 0.1532 | -1.023 | 6.155 | 0.984 |
| 3-Sep-97 | 473 | 8 | 0.1763 | -0.930 | 6.159 | 0.983 |
| 16-Oct-97 | 550 | 9 | 0.1994 | -0.844 | 6.310 | 0.982 |
| 13-Aug-97 | 619 | 10 | 0.2225 | -0.764 | 6.428 | 0.981 |
| 27-Jul-98 | 620 | 11 | 0.2457 | -0.688 | 6.430 | 0.979 |
| 11-Aug-99 | 716 | 12 | 0.2688 | -0.616 | 6.574 | 0.978 |
| 18-Nov-98 | 819 | 13 | 0.2919 | -0.548 | 6.708 | 0.976 |
| 26-Nov-96 | 828 | 14 | 0.3150 | -0.482 | 6.719 | 0.975 |
| 24-Jul-97 | 1030 | 15 | 0.3382 | -0.418 | 6.937 | 0.973 |
| 23-Feb-99 | 1230 | 16 | 0.3613 | -0.355 | 7.115 | 0.971 |
| 21-Jan-98 | 1300 | 17 | 0.3844 | -0.294 | 7.170 | 0.973 |
| 17-Dec-97 | 1390 | 18 | 0.4075 | -0.234 | 7.237 | 0.974 |
| 24-Nov-97 | 1420 | 19 | 0.4306 | -0.175 | 7.258 | 0.977 |
| 13-Jul-99 | 1440 | 20 | 0.4538 | -0.116 | 7.272 | 0.979 |
| 24-Nov-98 | 1490 | 21 | 0.4769 | -0.058 | 7.307 | 0.980 |
| 24-Jun-98 | 1590 | 22 | 0.5000 | 0.000 | 7.371 | 0.981 |
| 29-Jan-97 | 1600 | 23 | 0.5231 | 0.058 | 7.378 | 0.982 |
| 29-Oct-96 | 1670 | 24 | 0.5462 | 0.116 | 7.421 | 0.982 |
| 10-May-99 | 1710 | 25 | 0.5694 | 0.175 | 7.444 | 0.982 |
| 9-Feb-99 | 1910 | 26 | 0.5925 | 0.234 | 7.555 | 0.981 |
| 25-Feb-98 | 2090 | 27 | 0.6156 | 0.294 | 7.645 | 0.981 |
| 27-Jan-99 | 2140 | 28 | 0.6387 | 0.355 | 7.669 | 0.982 |
| 24-Jun-97 | 2310 | 29 | 0.6618 | 0.418 | 7.745 | 0.982 |
| 15-Dec-98 | 2390 | 30 | 0.6850 | 0.482 | 7.779 | 0.983 |
| 13-Dec-96 | 2400 | 31 | 0.7081 | 0.548 | 7.783 | 0.982 |
| 4-Jan-99 | 2430 | 32 | 0.7312 | 0.616 | 7.796 | 0.980 |
| 14-Jan-99 | 2820 | 33 | 0.7543 | 0.688 | 7.944 | 0.977 |
| 13-Apr-99 | 3380 | 34 | 0.7775 | 0.764 | 8.126 | 0.974 |
| 21-Feb-97 | 3910 | 35 | 0.8006 | 0.844 | 8.271 | 0.969 |
| 19-Mar-98 | 4160 | 36 | 0.8237 | 0.930 | 8.333 | 0.965 |
| 16-Apr-97 | 5050 | 37 | 0.8468 | 1.023 | 8.527 | 0.957 |
| 8-Jun-99 | 5130 | 38 | 0.8699 | 1.126 | 8.543 | 0.955 |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** LC55 **Date:** 3-Jun-00
**Chemical:** dCd **Analyst:** J.Johnston
**Notes:**
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| Avg: | 35,332 | 3,204 | 2 | 25 | | | 0.00 | 0.00 | 0.00 |
| SD: | 614 | 3,136 | 1 | 22 | | | 1.00 | 1.00 | 1.00 |
| CV: | 0.02 | 0.98 | 0.41 | 0.87 | | | | | |
| Min: | 34,398 | 253 | 0 | 0.5 | | | -0.94 | -2.42 | -1.13 |
| Max: | 36,405 | 15,600 | 5 | 85 | | | 3.95 | 3.95 | 2.74 |
| Median: | 35,269 | 2,100 | 2 | 19 | | | -0.35 | 0.09 | -0.29 |

| dCd | LC55 | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| Conc. = mQ+b (r2=0.262) | | update r2 | 0.26 | 0.262 | | r2 | 0.036 | 0.012 |
| r2 Q,[COC]: | 0.26 | | [dCd] | Q | | m: | 0.9667 | 0.00019 |
| slope, m. | 0.0 | | 2 | 253.0 | | b | -30950 | 0.90 |
| intercept, b. | 2.2 | | 2 | 3204.1 | | | | |
| N: 71 | | | 0 | 15600 | | | | |
| LnConc. = mLn(Q)+b (r2=0.2) | | | update r2 | 0.20 | | 0.2 | | |
| r2 lnQ,ln[COC]: | 0.20 | | ln[dCd] | ln Q | [dCd] | Q | | |
| slope, m | -0.27 | | 1.03 | 5.53 | 3 | 253 | | |
| intercept, b. | 2.52 | | 0.35 | 8.07 | 1 | 3,204 | | |
| N: 71 | | | -0.07 | 9.66 | 1 | 15,600 | | |

N= 71

| | Sampling Date | Q Discharge | dCd Concentration | dCd Load | Ln Q | Ln dCd Conc. | Ln dCd Load | for graph 0 dCd LC55 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| DATA: | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 5-Mar-94 | 5240 | 2.88 | 81.2 | 8.56 | 1.06 | 4.40 | 0.65 | 1.39 | 2.58 |
| IDEQ | 17-Mar-94 | 3800 | 0.97 | 19.8 | 8.24 | -0.03 | 2.99 | 0.19 | -1.15 | -0.24 |
| IDEQ | 7-Apr-94 | 4800 | 0.02 | 0.5 | 8.48 | -3.91 | -0.66 | 0.51 | -2.42 | -1.13 |
| IDEQ | 12-Apr-94 | 3840 | 0.97 | 20.0 | 8.25 | -0.03 | 3.00 | 0.20 | -1.15 | -0.23 |
| IDEQ | 19-Apr-94 | 8170 | 1.93 | 84.8 | 9.01 | 0.66 | 4.44 | 1.58 | 0.13 | 2.74 |
| IDEQ | 10-May-94 | 3820 | 0.97 | 19.9 | 8.25 | -0.03 | 2.99 | 0.20 | -1.15 | -0.24 |
| IDEQ | 16-Jun-94 | 990 | 1.93 | 10.3 | 6.90 | 0.66 | 2.33 | -0.71 | 0.13 | -0.68 |
| IDEQ | 20-Jul-94 | 538 | 1.93 | 5.6 | 6.29 | 0.66 | 1.72 | -0.85 | 0.13 | -0.90 |
| IDEQ | 16-Aug-94 | 373 | 1.93 | 3.9 | 5.92 | 0.66 | 1.35 | -0.90 | 0.13 | -0.98 |
| IDEQ | 19-Sep-94 | 253 | 1.93 | 2.6 | 5.53 | 0.66 | 0.97 | -0.94 | 0.13 | -1.03 |
| IDEQ | 6-Oct-94 | 264 | 2.21 | 3.1 | 5.58 | 0.79 | 1.14 | -0.94 | 0.50 | -1.01 |
| IDEQ | 22-Nov-94 | 430 | 3.36 | 7.8 | 6.06 | 1.21 | 2.05 | -0.88 | 2.03 | -0.80 |
| IDEQ | 16-Dec-94 | 754 | 2.5 | 10.1 | 6.63 | 0.92 | 2.32 | -0.78 | 0.89 | -0.69 |
| IDEQ | 12-Jan-95 | 4897 | 2.02 | 53.2 | 8.50 | 0.70 | 3.97 | 0.54 | 0.25 | 1.29 |
| IDEQ | 7-Mar-95 | 3243 | 1.16 | 20.2 | 8.08 | 0.15 | 3.01 | 0.01 | -0.90 | -0.23 |
| IDEQ | 23-Mar-95 | 8310 | 1.26 | 56.3 | 9.03 | 0.23 | 4.03 | 1.63 | -0.77 | 1.43 |
| IDEQ | 14-Apr-95 | 4363 | 1.35 | 31.7 | 8.38 | 0.30 | 3.46 | 0.37 | -0.65 | 0.30 |
| IDEQ | 25-Apr-95 | 3570 | 1.35 | 25.9 | 8.18 | 0.30 | 3.26 | 0.12 | -0.65 | 0.04 |
| IDEQ | 11-May-95 | 5484 | 1.45 | 42.8 | 8.61 | 0.37 | 3.76 | 0.73 | -0.51 | 0.81 |
| IDEQ | 24-May-95 | 3085 | 1.54 | 25.6 | 8.03 | 0.43 | 3.24 | -0.04 | -0.39 | 0.02 |
| IDEQ | 12-Jun-95 | 1878 | 1.54 | 15.6 | 7.54 | 0.43 | 2.74 | -0.42 | -0.39 | -0.44 |
| IDEQ | 28-Jun-95 | 1371 | 1.73 | 12.8 | 7.22 | 0.55 | 2.55 | -0.58 | -0.14 | -0.57 |
| IDEQ | 12-Jul-95 | 930 | 1.93 | 9.7 | 6.84 | 0.66 | 2.27 | -0.73 | 0.13 | -0.71 |
| IDEQ | 26-Jul-95 | 634 | 2.5 | 8.5 | 6.45 | 0.92 | 2.14 | -0.82 | 0.89 | -0.76 |
| IDEQ | 15-Aug-95 | 500 | 2.21 | 5.9 | 6.21 | 0.79 | 1.78 | -0.86 | 0.50 | -0.88 |
| IDEQ | 14-Sep-95 | 406 | 1.93 | 4.2 | 6.01 | 0.66 | 1.44 | -0.89 | 0.13 | -0.96 |
| IDEQ | 18-Oct-95 | 1377 | 2.78 | 20.6 | 7.23 | 1.02 | 3.03 | -0.58 | 1.26 | -0.21 |
| IDEQ | 21-Nov-95 | 3135 | 1.54 | 26.0 | 8.05 | 0.43 | 3.26 | -0.02 | -0.39 | 0.04 |
| IDEQ | 28-Dec-95 | 2330 | 1.83 | 22.9 | 7.75 | 0.60 | 3.13 | -0.28 | -0.01 | -0.10 |
| IDEQ | 18-Jan-96 | 8518 | 1.35 | 61.9 | 9.05 | 0.30 | 4.12 | 1.69 | -0.65 | 1.69 |
| IDEQ | 28-Feb-96 | 3943 | 1.83 | 38.8 | 8.28 | 0.60 | 3.66 | 0.24 | -0.01 | 0.63 |
| IDEQ | 27-Mar-96 | 2960 | 1.45 | 23.1 | 7.99 | 0.37 | 3.14 | -0.08 | -0.51 | -0.09 |
| IDEQ | 18-Apr-96 | 7292 | 0.97 | 38.1 | 8.89 | -0.03 | 3.64 | 1.30 | -1.15 | 0.59 |
| IDEQ | 9-May-96 | 3435 | 1.45 | 26.8 | 8.14 | 0.37 | 3.29 | 0.07 | -0.51 | 0.08 |
| IDEQ | 20-Jun-96 | 1734 | 1.73 | 16.1 | 7.46 | 0.55 | 2.78 | -0.47 | -0.14 | -0.41 |
| IDEQ | 23-Jul-96 | 716 | 2.5 | 9.6 | 6.57 | 0.92 | 2.26 | -0.79 | 0.89 | -0.71 |
| IDEQ | 21-Aug-96 | 430 | 2.5 | 5.8 | 6.06 | 0.92 | 1.76 | -0.88 | 0.89 | -0.89 |
| IDEQ | 26-Sep-96 | 358 | 2.21 | 4.3 | 5.88 | 0.79 | 1.45 | -0.91 | 0.50 | -0.96 |

dCd

Concentration over time analysis

| | dCd | LC55 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | Concentration over time | |
| | LnConc.=mTime+b All data r2, m: | | | 0.003 | 0.00006 |
| | Time | Ln[COC] | [COC] | | |
| first | 5-Mar-94 | 0.43 | 2 | | |
| mid | 23-Jul-96 | 0.48 | 2 | | |
| last | 2-Sep-99 | 0.55 | 2 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.125 | -0.00062 |
| | 24-Nov-97 | 0.62 | 2 | | |
| | 2-Sep-99 | 0.22 | 1 | | |

Load over time analysis

| | dCd | LC55 | | Load over time | |
|---|---|---|---|---|---|
| | LnLoad=mTime+b All data r2, m: | | | 0.025 | 0.00025 |
| | Time | LnLoad | Load | | |
| first | 5-Mar-94 | 2.59 | 13 | | |
| mid | 23-Jul-96 | 2.81 | 17 | | |
| last | 2-Sep-99 | 3.09 | 22 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.032 | 0.00071 |
| | 24-Nov-97 | 2.73 | 15 | | |
| | 2-Sep-99 | 3.19 | 24 | | |

| | max r2 | 0.893 | | max r2 | 0.910 | |
|---|---|---|---|---|---|---|
| | Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | | |
| | r2 | slope | intercept | r2 | slope | intercept |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.003 | 0.00006 | -1.69 | 0.025 | 0.00025 | -6.02 |
| | 0.006 | 0.00008 | -2.51 | 0.040 | 0.00032 | -8.38 |
| | 0.004 | 0.00007 | -1.93 | 0.043 | 0.00033 | -9.03 |
| | 0.026 | -0.00010 | 4.11 | 0.021 | 0.00021 | -4.64 |
| | 0.043 | -0.00013 | 5.10 | 0.023 | 0.00023 | -5.15 |
| | 0.042 | -0.00013 | 5.14 | 0.041 | 0.00030 | -7.92 |
| | 0.065 | -0.00016 | 6.26 | 0.045 | 0.00032 | -8.63 |
| | 0.064 | -0.00016 | 6.35 | 0.041 | 0.00031 | -8.32 |
| | 0.064 | -0.00017 | 6.44 | 0.031 | 0.00028 | -6.96 |
| | 0.063 | -0.00017 | 6.53 | 0.019 | 0.00022 | -4.85 |
| | 0.062 | -0.00017 | 6.62 | 0.008 | 0.00014 | -1.90 |
| | 0.057 | -0.00017 | 6.47 | 0.001 | 0.00005 | 1.03 |
| | 0.041 | -0.00014 | 5.54 | 0.000 | 0.00001 | 2.53 |
| | 0.033 | -0.00013 | 5.07 | 0.000 | -0.00002 | 3.67 |
| | 0.030 | -0.00012 | 4.96 | 0.000 | 0.00003 | 1.77 |
| | 0.043 | -0.00015 | 5.86 | 0.001 | 0.00004 | 1.60 |
| | 0.056 | -0.00017 | 6.69 | 0.004 | 0.00010 | -0.59 |
| | 0.068 | -0.00019 | 7.46 | 0.007 | 0.00013 | -1.82 |
| | 0.083 | -0.00022 | 8.30 | 0.009 | 0.00016 | -2.76 |
| | 0.096 | -0.00024 | 9.08 | 0.017 | 0.00022 | -4.91 |
| | 0.108 | -0.00026 | 9.80 | 0.022 | 0.00025 | -6.11 |
| | 0.121 | -0.00028 | 10.59 | 0.022 | 0.00026 | -6.25 |
| | 0.129 | -0.00030 | 11.18 | 0.019 | 0.00025 | -5.89 |
| | 0.131 | -0.00031 | 11.54 | 0.014 | 0.00021 | -4.72 |
| | 0.118 | -0.00030 | 11.21 | 0.008 | 0.00017 | -3.01 |
| | 0.111 | -0.00030 | 11.17 | 0.002 | 0.00008 | 0.04 |
| | 0.112 | -0.00031 | 11.54 | 0.001 | -0.00005 | 4.61 |
| | 0.093 | -0.00028 | 10.72 | 0.001 | -0.00004 | 4.55 |
| | 0.106 | -0.00031 | 11.78 | 0.000 | -0.00002 | 3.68 |
| | 0.109 | -0.00033 | 12.33 | 0.000 | 0.00000 | 3.14 |
| | 0.136 | -0.00038 | 14.09 | 0.003 | 0.00012 | -1.26 |
| | 0.141 | -0.00040 | 14.83 | 0.009 | 0.00020 | -4.39 |
| | 0.167 | -0.00045 | 16.61 | 0.012 | 0.00024 | -5.85 |
| | 0.249 | -0.00055 | 20.43 | 0.024 | 0.00035 | -9.75 |
| | 0.295 | -0.00063 | 23.01 | 0.034 | 0.00043 | -12.70 |
| | 0.323 | -0.00068 | 25.00 | 0.035 | 0.00046 | -13.50 |
| | 0.311 | -0.00069 | 25.29 | 0.026 | 0.00041 | -11.67 |
| | 0.297 | -0.00070 | 25.53 | 0.011 | 0.00027 | -6.59 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | **LC55** | | |
| **LN Analysis** | | **dCd** | | |
| **Load** | | **Load Data, EV=25.1 lbs/day CV=0.866** | | |
| **Avg:** | **25** | **Load Data-based LN** | | |
| **SD:** | **22** | u | ln dCd Load | dCd Load |
| **CV:** | **0.87** | 3 | 5.2 | 179 |
| **Min:** | **0.5** | 0 | 2.94 | 19 |
| **Max:** | **85** | -3 | 0.70 | 2.0 |
| **Median:** | **19** | | | |
| | | 25 | 25.1 | |
| | | 0.87 | 0.866 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.965, EV=28.1lbs/day CV=1.34; max r2=0.99**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.965 | u | lnLoad | Load | |
| slope, m | 0.987 | 3 | 5.86 | 352 | |
| intercept, b | -2.789 | 0 | 2.82 | 17 | |
| N | 71 | -3 | -0.21 | 0.8 | |
| E[Load] | 28.1 | Parameter Estimates | | | 0.965 |
| SD[Load] | 38 | from LN regression | | | 28.1 |
| CV[Load] | 1.34 | update graph label | | | 1.3 |
| | | | | | max r2 |
| | | N. 71 | | | 0.985 |

| Date | dCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 7-Apr-94 | **0.5** | 1 | 0.0088 | -2.375 | -0.661 | 0.965 |
| 19-Sep-94 | **2.6** | 2 | 0.0228 | -1.999 | 0.966 | 0.985 |
| 6-Oct-94 | **3.1** | 3 | 0.0368 | -1.789 | 1.144 | 0.984 |
| 16-Aug-94 | **3.9** | 4 | 0.0509 | -1.636 | 1.354 | 0.983 |
| 14-Sep-95 | **4.2** | 5 | 0.0649 | -1.515 | 1.439 | 0.982 |
| 23-Sep-98 | **4.2** | 6 | 0.0789 | -1.412 | 1.441 | 0.981 |
| 26-Sep-96 | **4.3** | 7 | 0.0930 | -1.323 | 1.448 | 0.980 |
| 25-Aug-98 | **4.4** | 8 | 0.1070 | -1.243 | 1.492 | 0.980 |
| 20-Jul-94 | **5.6** | 9 | 0.1211 | -1.170 | 1.720 | 0.979 |
| 21-Aug-96 | **5.8** | 10 | 0.1351 | -1.103 | 1.755 | 0.979 |
| 15-Aug-95 | **5.9** | 11 | 0.1491 | -1.040 | 1.783 | 0.978 |
| 2-Sep-99 | **6.8** | 12 | 0.1632 | -0.982 | 1.922 | 0.977 |
| 29-Oct-96 | **7.1** | 13 | 0.1772 | -0.926 | 1.964 | 0.976 |
| 27-Jul-98 | **7.4** | 14 | 0.1912 | -0.873 | 1.996 | 0.975 |
| 13-Aug-97 | **7.6** | 15 | 0.2053 | -0.823 | 2.025 | 0.974 |
| 22-Nov-94 | **7.8** | 16 | 0.2193 | -0.775 | 2.051 | 0.973 |
| 16-Oct-97 | **8.0** | 17 | 0.2333 | -0.728 | 2.081 | 0.972 |
| 26-Jul-95 | **8.5** | 18 | 0.2474 | -0.683 | 2.143 | 0.971 |
| 11-Aug-99 | **8.6** | 19 | 0.2614 | -0.639 | 2.146 | 0.970 |
| 23-Jul-96 | **9.6** | 20 | 0.2754 | -0.596 | 2.265 | 0.970 |
| 12-Jul-95 | **9.7** | 21 | 0.2895 | -0.555 | 2.268 | 0.969 |
| 16-Dec-94 | **10.1** | 22 | 0.3035 | -0.514 | 2.317 | 0.969 |
| 16-Jun-94 | **10.3** | 23 | 0.3175 | -0.475 | 2.330 | 0.968 |
| 24-Jul-97 | **10.5** | 24 | 0.3316 | -0.436 | 2.354 | 0.968 |
| 24-Nov-97 | **12.1** | 25 | 0.3456 | -0.397 | 2.496 | 0.968 |
| 16-Nov-98 | **12.3** | 26 | 0.3596 | -0.359 | 2.510 | 0.967 |
| 28-Jun-95 | **12.8** | 27 | 0.3737 | -0.322 | 2.546 | 0.966 |
| 7-Jul-99 | **12.9** | 28 | 0.3877 | -0.285 | 2.558 | 0.965 |
| 17-Dec-97 | **15.0** | 29 | 0.4018 | -0.249 | 2.710 | 0.964 |
| 12-Jun-95 | **15.6** | 30 | 0.4158 | -0.213 | 2.745 | 0.963 |
| 26-Nov-96 | **15.9** | 31 | 0.4298 | -0.177 | 2.763 | 0.961 |
| 20-Jun-96 | **16.1** | 32 | 0.4439 | -0.141 | 2.781 | 0.959 |
| 21-Jan-98 | **17.4** | 33 | 0.4579 | -0.106 | 2.854 | 0.957 |
| 25-Feb-98 | **18.1** | 34 | 0.4719 | -0.070 | 2.895 | 0.955 |
| 24-Jun-97 | **18.7** | 35 | 0.4860 | -0.035 | 2.930 | 0.953 |
| 24-Jun-98 | **18.8** | 36 | 0.5000 | 0.000 | 2.935 | 0.950 |
| 29-Jan-97 | **19.4** | 37 | 0.5140 | 0.035 | 2.966 | 0.948 |
| 17-Mar-94 | **19.8** | 38 | 0.5281 | 0.070 | 2.987 | 0.945 |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **dCd** | | **LC55** | | 2 | 1.83 |
| **LN Analysis** | | **dCd** | | 0.41 | 0.409 |
| **Concentration** | | **Conc. Data, EV=1.83 ug/L CV=0.409** | | | |
| **Avg:** | 2 | **Data-based LN** | | | |
| **SD:** | 1 | u | ln[dCd] | [dCd] | |
| **CV:** | 0.41 | 3 | 1.7 | 6 | |
| **Min:** | 0 | 0 | 0.53 | 2 | |
| **Max:** | 5 | -3 | -0.65 | 1 | |
| **Median:** | 2 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.610 | 0.61 |
| | ***u=mLn(Conc.)+b:*** | | | | 2.3 | 2.32 |
| update for r2, EV, CV: | **r2=0.61, EV=2.32 ug/L CV=1.02; max *r2*=0.97** | | | | 1.018 | 1.02 |
| | r2 u,lnConc | 0.610 | u | lnConc | Conc | |
| | *slope, m:* | 1.186 | 3 | 3.02 | 20 | |
| | intercept, b: | -0.578 | 0 | 0.49 | 2 | |
| | N: 71 | | -3 | -2.04 | 0 | |
| 0.965 | E[Conc] | 2.3 | Parameter Estimates | | | |
| 28.1 | SD[Conc] | 2 | from LN regression | | | |
| 1.34 | CV[Conc] | 1.02 | update graph label | | | |

| | | | N: 71 | | | max r2 0.971 |
|---|---|---|---|---|---|---|
| | **dCd Concentration** | i | i-3/8 / N+1/4 | u | Ln | r2 |
| **Date** | **ug/L Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 7-Apr-94 | 0.02 | 1 | 0.0088 | -2.375 | -3.912 | 0.610 |
| 23-Apr-98 | 0.9 | 2 | 0.0228 | -1.999 | -0.105 | 0.967 |
| 17-Mar-94 | 0.97 | 3 | 0.0368 | -1.789 | -0.030 | 0.968 |
| 12-Apr-94 | 0.97 | 4 | 0.0509 | -1.636 | -0.030 | 0.969 |
| 10-May-94 | 0.97 | 5 | 0.0649 | -1.515 | -0.030 | 0.969 |
| 18-Apr-96 | 0.97 | 6 | 0.0789 | -1.412 | -0.030 | 0.968 |
| 16-Apr-97 | 1 | 7 | 0.0930 | -1.323 | 0.000 | 0.966 |
| 23-Mar-99 | 1 | 8 | 0.1070 | -1.243 | 0.000 | 0.964 |
| 21-Apr-99 | 1 | 9 | 0.1211 | -1.170 | 0.000 | 0.963 |
| 6-May-99 | 1 | 10 | 0.1351 | -1.103 | 0.000 | 0.961 |
| 26-May-99 | 1 | 11 | 0.1491 | -1.040 | 0.000 | 0.960 |
| 17-Jun-99 | 1 | 12 | 0.1632 | -0.982 | 0.000 | 0.959 |
| 17-Jun-99 | 1 | 13 | 0.1772 | -0.926 | 0.000 | 0.960 |
| 7-Jul-99 | 1 | 14 | 0.1912 | -0.873 | 0.000 | 0.963 |
| 7-Mar-95 | 1.16 | 15 | 0.2053 | -0.823 | 0.148 | 0.970 |
| 19-Mar-98 | 1.2 | 16 | 0.2193 | -0.775 | 0.182 | 0.970 |
| 28-May-98 | 1.2 | 17 | 0.2333 | -0.728 | 0.182 | 0.970 |
| 23-Mar-95 | 1.26 | 18 | 0.2474 | -0.683 | 0.231 | 0.970 |
| 14-Apr-95 | 1.35 | 19 | 0.2614 | -0.639 | 0.300 | 0.970 |
| 25-Apr-95 | 1.35 | 20 | 0.2754 | -0.596 | 0.300 | 0.969 |
| 18-Jan-96 | 1.35 | 21 | 0.2895 | -0.555 | 0.300 | 0.968 |
| 11-May-95 | 1.45 | 22 | 0.3035 | -0.514 | 0.372 | 0.968 |
| 27-Mar-96 | 1.45 | 23 | 0.3175 | -0.475 | 0.372 | 0.966 |
| 9-May-96 | 1.45 | 24 | 0.3316 | -0.436 | 0.372 | 0.965 |
| 24-Jun-97 | 1.5 | 25 | 0.3456 | -0.397 | 0.405 | 0.964 |
| 24-May-95 | 1.54 | 26 | 0.3596 | -0.359 | 0.432 | 0.962 |
| 12-Jun-95 | 1.54 | 27 | 0.3737 | -0.322 | 0.432 | 0.960 |
| 21-Nov-95 | 1.54 | 28 | 0.3877 | -0.285 | 0.432 | 0.959 |
| 26-Mar-97 | 1.6 | 29 | 0.4018 | -0.249 | 0.470 | 0.957 |
| 24-Nov-97 | 1.6 | 30 | 0.4158 | -0.213 | 0.470 | 0.955 |
| 25-Feb-98 | 1.6 | 31 | 0.4298 | -0.177 | 0.470 | 0.953 |
| 28-Jun-95 | 1.73 | 32 | 0.4439 | -0.141 | 0.548 | 0.952 |
| 20-Jun-96 | 1.73 | 33 | 0.4579 | -0.106 | 0.548 | 0.950 |
| 28-Dec-95 | 1.83 | 34 | 0.4719 | -0.070 | 0.604 | 0.947 |
| 28-Feb-96 | 1.83 | 35 | 0.4860 | -0.035 | 0.604 | 0.947 |
| 24-Jul-97 | 1.9 | 36 | 0.5000 | 0.000 | 0.642 | 0.946 |
| 25-Aug-98 | 1.9 | 37 | 0.5140 | 0.035 | 0.642 | 0.947 |
| 19-Apr-94 | 1.93 | 38 | 0.5281 | 0.070 | 0.658 | 0.947 |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dCd** | | **LC55** | | | 3,204 | 3200 |
| **LN Analysis** | | **dCd** | | | 0.98 | 0.979 |
| **Discharge, Q** | | **Q Data, EV=3200 cfs CV=0.979** | | | | |
| **Avg:** | **3,204** | **Q Data-based LN** | | | | |
| **SD:** | **3,136** | u | lnQ | Q | | |
| **CV:** | **0.98** | 3 | 10.2 | 26778 | | |
| **Min:** | **253** | 0 | 7.74 | 2290 | | |
| **Max:** | **15,600** | -3 | 5.28 | 196 | | |
| **Median:** | **2,100** | | | | | |
| | | | | | 0.968 | 0.968 |
| | | | | | 3579.5 | 3580 |
| **u=mLn(Q)+b:** | | | | | 1.57 | 1.57 |

update for r2, EV, CV: **r2=0.968, EV=3580 cfs CV=1.57; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.968 | u | lnQ | Q |
| slope, m: | 0.897 | 3 | 10.91 | 54457 |
| intercept, b: | -6.786 | 0 | 7.56 | 1924 |
| N: 71 | | -3 | 4.22 | 68 |
| E[Q]: | 3579.5 | Parameter Estimates | | |
| SD[Q] | 5616 | from LN regression | | |
| CV[Q] | 1.57 | update graph label | | |

N: 71 — max r2: 0.972

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 19-Sep-94 | 253 | 1 | 0.0088 | -2.375 | 5.533 | 0.968 |
| 6-Oct-94 | 264 | 2 | 0.0228 | -1.999 | 5.576 | 0.971 |
| 23-Sep-98 | 357 | 3 | 0.0368 | -1.789 | 5.878 | 0.970 |
| 26-Sep-96 | 358 | 4 | 0.0509 | -1.636 | 5.881 | 0.970 |
| 16-Aug-94 | 373 | 5 | 0.0649 | -1.515 | 5.922 | 0.969 |
| 14-Sep-95 | 406 | 6 | 0.0789 | -1.412 | 6.006 | 0.968 |
| 22-Nov-94 | 430 | 7 | 0.0930 | -1.323 | 6.064 | 0.966 |
| 21-Aug-96 | 430 | 8 | 0.1070 | -1.243 | 6.064 | 0.964 |
| 25-Aug-98 | 435 | 9 | 0.1211 | -1.170 | 6.075 | 0.963 |
| 15-Aug-95 | 500 | 10 | 0.1351 | -1.103 | 6.215 | 0.961 |
| 20-Jul-94 | 538 | 11 | 0.1491 | -1.040 | 6.288 | 0.959 |
| 16-Oct-97 | 573 | 12 | 0.1632 | -0.982 | 6.351 | 0.957 |
| 29-Oct-96 | 576 | 13 | 0.1772 | -0.926 | 6.356 | 0.955 |
| 13-Aug-97 | 612 | 14 | 0.1912 | -0.873 | 6.417 | 0.954 |
| 27-Jul-98 | 622 | 15 | 0.2053 | -0.823 | 6.433 | 0.952 |
| 26-Jul-95 | 634 | 16 | 0.2193 | -0.775 | 6.452 | 0.950 |
| 2-Sep-99 | 635 | 17 | 0.2333 | -0.728 | 6.454 | 0.949 |
| 23-Jul-96 | 716 | 18 | 0.2474 | -0.683 | 6.574 | 0.949 |
| 16-Dec-94 | 754 | 19 | 0.2614 | -0.639 | 6.625 | 0.949 |
| 11-Aug-99 | 795 | 20 | 0.2754 | -0.596 | 6.678 | 0.949 |
| 26-Nov-96 | 842 | 21 | 0.2895 | -0.555 | 6.736 | 0.949 |
| 12-Jul-95 | 930 | 22 | 0.3035 | -0.514 | 6.835 | 0.949 |
| 16-Jun-94 | 990 | 23 | 0.3175 | -0.475 | 6.898 | 0.949 |
| 16-Nov-98 | 994 | 24 | 0.3316 | -0.436 | 6.902 | 0.949 |
| 24-Jul-97 | 1030 | 25 | 0.3456 | -0.397 | 6.937 | 0.950 |
| 21-Jan-98 | 1290 | 26 | 0.3596 | -0.359 | 7.162 | 0.953 |
| 17-Dec-97 | 1330 | 27 | 0.3737 | -0.322 | 7.193 | 0.952 |
| 28-Jun-95 | 1371 | 28 | 0.3877 | -0.285 | 7.223 | 0.951 |
| 18-Oct-95 | 1377 | 29 | 0.4018 | -0.249 | 7.228 | 0.951 |
| 24-Nov-97 | 1410 | 30 | 0.4158 | -0.213 | 7.251 | 0.952 |
| 24-Jun-98 | 1590 | 31 | 0.4298 | -0.177 | 7.371 | 0.955 |
| 29-Jan-97 | 1640 | 32 | 0.4439 | -0.141 | 7.402 | 0.956 |
| 20-Jun-96 | 1734 | 33 | 0.4579 | -0.106 | 7.458 | 0.959 |
| 12-Jun-95 | 1878 | 34 | 0.4719 | -0.070 | 7.538 | 0.961 |
| 14-Dec-98 | 2080 | 35 | 0.4860 | -0.035 | 7.640 | 0.963 |
| 25-Feb-98 | 2100 | 36 | 0.5000 | 0.000 | 7.650 | 0.963 |
| 24-Jun-97 | 2320 | 37 | 0.5140 | 0.035 | 7.749 | 0.964 |
| 28-Dec-95 | 2330 | 38 | 0.5281 | 0.070 | 7.754 | 0.964 |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | **LC55** | **Date:** **14-Jul-00** |
| **Chemical:** | **dPb** | **Analyst:** **J.Johnston** |
| **Notes:** | | |
| **Input Discharge and Concentration Data below (in red)** | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 36,273 | 5,581 | 3 | 96 | 0.00 | 0.00 | 0.00 |
| **SD:** | 96 | 4,909 | 1 | 105 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.00 | 0.88 | 0.41 | 1.09 | | | |
| **Min:** | 36,115 | 635 | 2 | 11.8 | -1.01 | -1.34 | -0.81 |
| **Max:** | 36,405 | 15,600 | 6 | 394 | 2.04 | 1.99 | 2.85 |
| **Median:** | 36,296 | 4,635 | 3 | 64 | -0.19 | -0.27 | -0.31 |

| **dPb** | **LC55** | | **: Concentration v. Discharge, Q** | | **Q = mTime +b** | **LnQ = mTime +b** |
|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.00848)** | | update r2 | **0.01** | 0.00848 | r2 | 0.023 | 0.014 |
| r2 Q,[COC] | 0.01 | [dPb] | Q | | m | 7.8141 | 0.00136 |
| slope, m: | 0.0 | 3 | 635.0 | | b | -277856 | -41.17 |
| intercept, b | 3.4 | 3 | 5580.7 | | | | |
| N: 12 | | 3 | 15600 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.0428)** | | | update r2 | 0.04 | 0.0428 | | |
| r2 lnQ,ln[COC]: | 0.04 | ln[dPb] | ln Q | [dPb] | Q | | |
| slope, m: | -0.08 | 1.24 | 6.45 | 3 | 635 | | |
| intercept, b. | 1.73 | 1.07 | 8.63 | 3 | 5,581 | | |
| N: 12 | | 0.99 | 9.66 | 3 | 15,600 | | |

| **N= 12** | | | | | | | | dPb | for graph 0 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Sampling Date** | **Q Discharge** | **dPb Concentration** | **dPb Load** | **Ln Q** | **Ln dPb Conc.** | **Ln dPb Load** | LC55 **Standardized Values = (x - Avg)/SD** | | |
| update for new data | | **cfs** | **ug/L** | **lbs/day** | | | | **Q** | **Conc** | **Load** |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| USGS | 16-Nov-98 | 994 | 2.2 | 11.8 | 6.90 | 0.79 | 2.47 | -0.93 | -0.82 | -0.81 |
| USGS | 16-Nov-98 | 994 | 2.9 | 15.5 | 6.90 | 1.06 | 2.74 | -0.93 | -0.30 | -0.77 |
| USGS | 14-Dec-98 | 2080 | 1.5 | 16.8 | 7.64 | 0.41 | 2.82 | -0.71 | -1.34 | -0.76 |
| USGS | 23-Mar-99 | 9040 | 2.2 | 107.0 | 9.11 | 0.79 | 4.67 | 0.70 | -0.82 | 0.10 |
| USGS | 21-Apr-99 | 13200 | 2 | 142.0 | 9.49 | 0.69 | 4.96 | 1.55 | -0.97 | 0.44 |
| USGS | 6-May-99 | 7490 | 2.2 | 88.7 | 8.92 | 0.79 | 4.48 | 0.39 | -0.82 | -0.07 |
| USGS | 26-May-99 | 15600 | 4.7 | 394.5 | 9.66 | 1.55 | 5.98 | 2.04 | 1.03 | 2.85 |
| USGS | 17-Jun-99 | 6870 | 4 | 147.8 | 8.83 | 1.39 | 5.00 | 0.26 | 0.51 | 0.50 |
| USGS | 17-Jun-99 | 6870 | 4 | 147.8 | 8.83 | 1.39 | 5.00 | 0.26 | 0.51 | 0.50 |
| USGS | 7-Jul-99 | 2400 | 3 | 38.7 | 7.78 | 1.10 | 3.66 | -0.65 | -0.23 | -0.55 |
| USGS | 11-Aug-99 | 795 | 5 | 21.4 | 6.68 | 1.61 | 3.06 | -0.97 | 1.25 | -0.71 |
| USGS | 2-Sep-99 | 635 | 6 | 20.5 | 6.45 | 1.79 | 3.02 | -1.01 | 1.99 | -0.72 |

dPb

**Concentration over time analysis**

| | dPb | LC55 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.529** | **0.00313** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 16-Nov-98 | 0.62 | 2 | | |
| mid | 16-May-99 | 1.19 | 3 | | |
| last | 2-Sep-99 | 1.53 | 5 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 2-Sep-99 | 0.00 | 1 | | |

**Load over time analysis**

| | dPb | LC55 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.150** | **0.00449** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 16-Nov-98 | 3.28 | 27 | | |
| mid | 16-May-99 | 4.09 | 60 | | |
| last | 2-Sep-99 | 4.58 | 98 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 2-Sep-99 | 0.00 | 1 | | |

max r2 #DIV/0!

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.529 | 0.00313 | -112.43 |
| 0.523 | 0.00348 | -125.11 |
| 0.776 | 0.00542 | -195.62 |
| 0.703 | 0.00647 | -233.75 |
| 0.650 | 0.00692 | -249.96 |
| 0.514 | 0.00576 | -208.12 |
| 0.275 | 0.00332 | -119.21 |
| 0.578 | 0.00578 | -208.84 |
| 0.641 | 0.00693 | -250.44 |
| 0.982 | 0.01238 | -449.01 |
| 1.000 | 0.00829 | -299.91 |
| #DIV/0! | #DIV/0! | #DIV/0! |

max r2 #DIV/0!

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.150 | 0.00449 | -158.82 |
| 0.053 | 0.00280 | -97.63 |
| 0.002 | -0.00056 | 24.61 |
| 0.479 | -0.01309 | 479.70 |
| 0.612 | -0.01795 | 656.55 |
| 0.654 | -0.02147 | 784.40 |
| 0.889 | -0.03054 | 1114.23 |
| 0.850 | -0.02656 | 969.57 |
| 0.808 | -0.02398 | 875.91 |
| 0.893 | -0.01170 | 428.83 |
| 1.000 | -0.00193 | 73.18 |
| #DIV/0! | #DIV/0! | #DIV/0! |

update for EV, CV.

**dPb** **LC55**
**LN Analysis** **dPb**

**Load** **Load Data, EV=96 lbs/day CV=1.09**

| | | **Load Data-based LN** | | |
|---|---|---|---|---|
| **Avg:** | **96** | u | ln dPb Load | dPb Load |
| **SD:** | **105** | 3 | 6.8 | 922 |
| **CV:** | **1.09** | 0 | 4.1 | 65 |
| **Min:** | **11.8** | -3 | 1.52 | 4.6 |
| **Max:** | **394** | | | |
| **Median:** | **64** | | | |

| | |
|---|---|
| 96 | 96 |
| 1.09 | 1.09 |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **r2=0.922, EV=121lbs/day CV=2.02; max r2=0.99**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.922 | u | lnLoad | Load | |
| slope, m | 0.785 | 3 | 7.81 | 2465 | |
| intercept, b | -3.130 | 0 | 3.99 | 54 | |
| N | 12 | -3 | 0.17 | 1.2 | |
| E[Load] | 121.4 | Parameter Estimates | | | 0.922 |
| SD[Load] | 245 | from LN regression | | | 121.4 |
| CV[Load] | 2.02 | update graph label | | | 2.0 |
| | | | | | max r2 |
| | | | | | #DIV/0! |

| Date | **dPb Load lbs/day Ranked** | N 12 **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | **r2 forward** |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-Nov-98 | **11.8** | 1 | 0.0510 | -1.635 | 2.465 | 0.922 |
| 16-Nov-98 | **15.5** | 2 | 0.1327 | -1.114 | 2.741 | 0.926 |
| 14-Dec-98 | **16.8** | 3 | 0.2143 | -0.792 | 2.821 | 0.919 |
| 2-Sep-99 | **20.5** | 4 | 0.2959 | -0.536 | 3.020 | 0.895 |
| 11-Aug-99 | **21.4** | 5 | 0.3776 | -0.312 | 3.063 | 0.860 |
| 7-Jul-99 | **38.7** | 6 | 0.4592 | -0.102 | 3.657 | 0.858 |
| 6-May-99 | **88.7** | 7 | 0.5408 | 0.102 | 4.485 | 0.871 |
| 23-Mar-99 | **107.0** | 8 | 0.6224 | 0.312 | 4.673 | 0.829 |
| 21-Apr-99 | **142.0** | 9 | 0.7041 | 0.536 | 4.956 | 0.777 |
| 17-Jun-99 | **147.8** | 10 | 0.7857 | 0.792 | 4.996 | 0.857 |
| 17-Jun-99 | **147.8** | 11 | 0.8673 | 1.114 | 4.996 | 1.000 |
| 26-May-99 | **394.5** | 12 | 0.9490 | 1.635 | 5.978 | #DIV/0! |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **dPb** | | **LC55** | | 3 | 3.31 |
| **LN Analysis** | | *dPb* | | 0.41 | 0.409 |
| **Concentration** | | **Conc. Data, EV=3.31 ug/L CV=0.409** | | | |
| **Avg:** | 3 | **Data-based LN** | | | |
| **SD:** | 1 | u | ln[dPb] | [dPb] | |
| **CV:** | 0.41 | 3 | 2.3 | 10 | |
| **Min:** | 2 | 0 | 1.12 | 3 | |
| **Max:** | 6 | -3 | -0.06 | 1 | |
| **Median:** | 3 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.960 | 0.96 |
| | **u=mLn{Conc.}+b:** | | | | 3.4 | 3.39 |
| update for r2, EV, CV | **r2=0.96, EV=3.39 ug/L CV=0.49; max r2=0.99** | | | | 0.490 | 0.49 |
| | r2 u,lnConc | 0.960 | u | lnConc | Conc | |
| | slope, m | 2.155 | 3 | 2.50 | 12 | |
| | intercept, b | -2.398 | 0 | 1.11 | 3 | |
| | N | 12 | -3 | -0.28 | 1 | |
| 0.922 | E[Conc] | 3.4 | Parameter Estimates | | | |
| 121 | SD[Conc] | 2 | from LN regression | | | |
| 2.02 | CV[Conc] | 0.49 | update graph label | | | |

| Date | dPb Concentration ug/L Ranked | N. 12 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 14-Dec-98 | 1.5 | 1 | 0.0510 | -1.635 | 0.405 | 0.960 |
| 21-Apr-99 | 2 | 2 | 0.1327 | -1.114 | 0.693 | 0.946 |
| 16-Nov-98 | 2.2 | 3 | 0.2143 | -0.792 | 0.788 | 0.944 |
| 23-Mar-99 | 2.2 | 4 | 0.2959 | -0.536 | 0.788 | 0.939 |
| 6-May-99 | 2.2 | 5 | 0.3776 | -0.312 | 0.788 | 0.920 |
| 16-Nov-98 | 2.9 | 6 | 0.4592 | -0.102 | 1.065 | 0.933 |
| 7-Jul-99 | 3 | 7 | 0.5408 | 0.102 | 1.099 | 0.908 |
| 17-Jun-99 | 4 | 8 | 0.6224 | 0.312 | 1.386 | 0.965 |
| 17-Jun-99 | 4 | 9 | 0.7041 | 0.536 | 1.386 | 0.967 |
| 26-May-99 | 4.7 | 10 | 0.7857 | 0.792 | 1.548 | 0.980 |
| 11-Aug-99 | 5 | 11 | 0.8673 | 1.114 | 1.609 | 1.000 |
| 2-Sep-99 | 6 | 12 | 0.9490 | 1.635 | 1.792 | #DIV/0! |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dPb** | | **LC55** | | | 5,581 | 5580 |
| **LN Analysis** | | **dPb** | | | 0.88 | 0.88 |
| **Discharge, Q** | | **Q Data, EV=5580 cfs CV=0.88** | | | | |
| **Avg:** | **5,581** | **Q Data-based LN** | | | | |
| **SD:** | **4,909** | u | lnQ | Q | | |
| **CV:** | **0.88** | 3 | 10.6 | 40605 | | |
| **Min:** | **635** | 0 | 8.34 | 4190 | | |
| **Max:** | **15,600** | -3 | 6.07 | 432 | | |
| **Median:** | **4,635** | | | | | |
| | | | | | 0.918 | 0.918 |
| | | | | | 7549.3 | 7550 |
| | **u=mLn(Q)+b:** | | | | 2.06 | 2.06 |

update for r2, EV, CV: **r2=0.918, EV=7550 cfs CV=2.06; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.918 | u | lnQ | Q |
| slope, m | 0.777 | 3 | 11.96 | 156862 |
| intercept, b | -6.291 | 0 | 8.10 | 3295 |
| N: | 12 | -3 | 4.24 | 69 |
| E[Q]: | 7549.3 | Parameter Estimates | | |
| SD[Q]: | 15561 | from LN regression | | |
| CV[Q]: | 2.06 | update graph label | | |

N 12

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 2-Sep-99 | 635 | 1 | 0.0510 | -1.635 | 6.454 | 0.918 |
| 11-Aug-99 | 795 | 2 | 0.1327 | -1.114 | 6.678 | 0.909 |
| 16-Nov-98 | 994 | 3 | 0.2143 | -0.792 | 6.902 | 0.883 |
| 16-Nov-98 | 994 | 4 | 0.2959 | -0.536 | 6.902 | 0.845 |
| 14-Dec-98 | 2080 | 5 | 0.3776 | -0.312 | 7.640 | 0.834 |
| 7-Jul-99 | 2400 | 6 | 0.4592 | -0.102 | 7.783 | 0.787 |
| 17-Jun-99 | 6870 | 7 | 0.5408 | 0.102 | 8.835 | 0.941 |
| 17-Jun-99 | 6870 | 8 | 0.6224 | 0.312 | 8.835 | 0.954 |
| 6-May-99 | 7490 | 9 | 0.7041 | 0.536 | 8.921 | 0.933 |
| 23-Mar-99 | 9040 | 10 | 0.7857 | 0.792 | 9.109 | 0.879 |
| 21-Apr-99 | 13200 | 11 | 0.8673 | 1.114 | 9.488 | 1.000 |
| 26-May-99 | 15600 | 12 | 0.9490 | 1.635 | 9.655 | #DIV/0! |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **LC55** | **Date:** | **14-Jul-00** |
| **Chemical:** | **dZn** | **Analyst:** | **J.Johnston** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 36,273 | 5,581 | 241 | 4,016 | 0.00 | 0.00 | 0.00 |
| **SD:** | 96 | 4,909 | 142 | 1,944 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.00 | 0.88 | 0.59 | 0.48 | | | |
| **Min:** | 36,115 | 635 | 78 | 1,360.1 | -1.01 | -1.15 | -1.37 |
| **Max:** | 36,405 | 15,600 | 455 | 7,198 | 2.04 | 1.50 | 1.64 |
| **Median:** | 36,296 | 4,635 | 196 | 4,029 | -0.19 | -0.32 | 0.01 |

| **dZn** | **LC55** | | **: Concentration v. Discharge, Q** | | | **Q = mTime +b** | | **LnQ = mTime +b** |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.736)** | | update r2 | **0.74** | 0.736 | | r2 | 0.023 | 0.014 |
| r2 Q,[COC]: | 0.74 | [dZn] | Q | | | m | 7.8141 | 0.00136 |
| slope, m | 0.0 | 364 | 635.0 | | | b | -277856 | -41.17 |
| intercept, b | 379.8 | 241 | 5580.7 | | | | | |
| N: | 12 | -8 | 15600 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.898)** | | update r2 | | 0.90 | 0.898 | | | |
| r2 lnQ,ln[COC]: | 0.90 | ln[dZn] | ln Q | [dZn] | Q | | | |
| slope, m | -0.55 | 6.19 | 6.45 | 487 | 635 | | | |
| intercept, b | 9.72 | 5.00 | 8.63 | 148 | 5,581 | | | |
| N: | 12 | 4.44 | 9.66 | 84 | 15,600 | | | |

**N= 12**

| | Sampling Date | Q Discharge cfs | dZn Concentration ug/L | dZn Load lbs/day | Ln Q | Ln dZn Conc. | Ln dZn Load | dZn LC55 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | for graph | 0 |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| USGS | 16-Nov-98 | 994 | 428 | 2288.8 | 6.90 | 6.06 | 7.74 | -0.93 | 1.31 | -0.89 |
| USGS | 16-Nov-98 | 994 | 455 | 2433.2 | 6.90 | 6.12 | 7.80 | -0.93 | 1.50 | -0.81 |
| USGS | 14-Dec-98 | 2080 | 387 | 4330.7 | 7.64 | 5.96 | 8.37 | -0.71 | 1.03 | 0.16 |
| USGS | 23-Mar-99 | 9040 | 148 | 7198.0 | 9.11 | 5.00 | 8.88 | 0.70 | -0.65 | 1.64 |
| USGS | 21-Apr-99 | 13200 | 97 | 6888.6 | 9.49 | 4.57 | 8.84 | 1.55 | -1.01 | 1.48 |
| USGS | 6-May-99 | 7490 | 113 | 4553.5 | 8.92 | 4.73 | 8.42 | 0.39 | -0.90 | 0.28 |
| USGS | 26-May-99 | 15600 | 78 | 6546.4 | 9.66 | 4.36 | 8.79 | 2.04 | -1.15 | 1.30 |
| USGS | 17-Jun-99 | 6870 | 109 | 4028.7 | 8.83 | 4.69 | 8.30 | 0.26 | -0.93 | 0.01 |
| USGS | 17-Jun-99 | 6870 | 109 | 4028.7 | 8.83 | 4.69 | 8.30 | 0.26 | -0.93 | 0.01 |
| USGS | 7-Jul-99 | 2400 | 244 | 3150.5 | 7.78 | 5.50 | 8.06 | -0.65 | 0.02 | -0.45 |
| USGS | 11-Aug-99 | 795 | 318 | 1360.1 | 6.68 | 5.76 | 7.22 | -0.97 | 0.54 | -1.37 |
| USGS | 2-Sep-99 | 635 | 407 | 1390.4 | 6.45 | 6.01 | 7.24 | -1.01 | 1.17 | -1.35 |

dZn

**Concentration over time analysis**

| | dZn | LC55 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.133** | **-0.00246** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 16-Nov-98 | 5.67 | 291 | | |
| mid | 16-May-99 | 5.23 | 187 | | |
| last | 2-Sep-99 | 4.96 | 143 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 2-Sep-99 | 0.00 | 1 | | |

**Load over time analysis**

| | dZn | LC55 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.037** | **-0.00110** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 16-Nov-98 | 8.34 | 4,167 | | |
| mid | 16-May-99 | 8.14 | 3,417 | | |
| last | 2-Sep-99 | 8.02 | 3,031 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 2-Sep-99 | 0.00 | 1 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | *max* r2 | 0.927 | | max r2 | 0.956 | |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points. delete last 4 rows | | | only on >4 data points. delete last 4 rows | | |
| | 0.133 | -0.00246 | 94.36 | 0.037 | -0.00110 | 47.97 |
| | 0.053 | -0.00166 | 65.45 | 0.134 | -0.00234 | 92.94 |
| | 0.006 | 0.00064 | -18.26 | 0.449 | -0.00534 | 201.96 |
| | 0.558 | 0.00828 | -295.83 | 0.871 | -0.01127 | 417.62 |
| | 0.800 | 0.01210 | -434.42 | 0.885 | -0.01277 | 472.08 |
| | 0.829 | 0.01390 | -500.06 | 0.861 | -0.01333 | 492.46 |
| | 0.927 | 0.01736 | -625.70 | 0.956 | -0.01650 | 607.74 |
| | 0.892 | 0.01677 | -604.22 | 0.939 | -0.01558 | 574.18 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dZn** | | **LC55** | | |
| **LN Analysis** | | **dZn** | | |
| **Load** | | **Load Data, EV=4020 lbs/day CV=0.484** | | |
| **Avg:** | **4,016** | **Load Data-based LN** | | |
| **SD:** | **1,944** | u | ln dZn Load | dZn Load |
| **CV:** | **0.48** | 3 | 9.6 | 14318 |
| **Min:** | **1,360.1** | 0 | 8.19 | 3615 |
| **Max:** | **7,198** | -3 | 6.82 | 912.8 |
| **Median:** | **4,029** | | | |
| | | 4,016 | 4020 | |
| | | 0.48 | 0.484 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.94, EV=4260lbs/day CV=0.688; max r2=0.94**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.940 | u | lnLoad | Load |
| slope, m | 1.607 | 3 | 10.03 | 22683 |
| intercept, b. | ###### | 0 | 8.16 | 3506 |
| N: | 12 | -3 | 6.29 | 541.8 |
| E[Load] | 4255.1 | Parameter Estimates | | |
| SD[Load]: | 2927 | from LN regression | | |
| CV[Load]: | 0.69 | update graph label | | |

0.940
4255.1
0.7
max r2
0.940

N: 12

| Date | dZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 11-Aug-99 | **1360.1** | 1 | 0.0510 | -1.635 | 7.215 | 0.940 |
| 2-Sep-99 | **1390.4** | 2 | 0.1327 | -1.114 | 7.237 | 0.917 |
| 16-Nov-98 | **2288.8** | 3 | 0.2143 | -0.792 | 7.736 | 0.926 |
| 16-Nov-98 | **2433.2** | 4 | 0.2959 | -0.536 | 7.797 | 0.903 |
| 7-Jul-99 | **3150.5** | 5 | 0.3776 | -0.312 | 8.055 | 0.897 |
| 17-Jun-99 | **4028.7** | 6 | 0.4592 | -0.102 | 8.301 | 0.865 |
| 17-Jun-99 | **4028.7** | 7 | 0.5408 | 0.102 | 8.301 | 0.843 |
| 14-Dec-98 | **4330.7** | 8 | 0.6224 | 0.312 | 8.373 | 0.774 |
| 6-May-99 | **4553.5** | 9 | 0.7041 | 0.536 | 8.424 | |
| 26-May-99 | **6546.4** | 10 | 0.7857 | 0.792 | 8.787 | |
| 21-Apr-99 | **6888.6** | 11 | 0.8673 | 1.114 | 8.838 | |
| 23-Mar-99 | **7198.0** | 12 | 0.9490 | 1.635 | 8.882 | |

| | | update for EV, CV | | | | |
|---|---|---|---|---|---|---|
| **dZn** | | **LC55** | | | 241 | 241 |
| **LN Analysis** | | ***dZn*** | | | 0.59 | 0.59 |
| **Concentration** | | ***Conc. Data, EV=241 ug/L CV=0.59*** | | | | |
| **Avg:** | **241** | **Data-based LN** | | | | |
| **SD:** | **142** | u | ln[dZn] | [dZn] | | |
| **CV:** | **0.59** | 3 | 7.0 | 1070 | | |
| **Min:** | **78** | 0 | 5.34 | 208 | | |
| **Max:** | **455** | -3 | 3.70 | 40 | | |
| **Median:** | **196** | | | | | |

| | | | | | | 0.889 | 0.889 |
|---|---|---|---|---|---|---|---|
| | **u=mLn(Conc.)+b:** | | | | | 263.1 | 263 |
| update for r2, EV, CV | **r2=0.889, EV=263 ug/L CV=0.877; max r2=0.89** | | | | | 0.877 | 0.877 |
| | r2 u,lnConc | 0.889 | u | lnConc | Conc | | |
| | slope, m | 1.324 | 3 | 7.55 | 1908 | | |
| | intercept, b | -6.998 | 0 | 5.29 | 198 | | |
| | N | 12 | -3 | 3.02 | 21 | | |
| 0.94 | E[Conc] | 263.1 | Parameter Estimates | | | | |
| 4260 | SD[Conc] | 231 | from LN regression | | | | |
| 0.688 | CV[Conc] | 0.88 | update graph label | | | | |

| | **dZn** | N | 12 | | | max r2 0.889 |
|---|---|---|---|---|---|---|
| | **Concentration** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **ug/L** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | ***Ranked*** | | | | | |
| update and rank for new data | | | | | | |
| 26-May-99 | 78 | 1 | 0.0510 | -1.635 | 4.357 | 0.889 |
| 21-Apr-99 | 97 | 2 | 0.1327 | -1.114 | 4.575 | 0.874 |
| 17-Jun-99 | 109 | 3 | 0.2143 | -0.792 | 4.691 | 0.853 |
| 17-Jun-99 | 109 | 4 | 0.2959 | -0.536 | 4.691 | 0.819 |
| 6-May-99 | 113 | 5 | 0.3776 | -0.312 | 4.727 | 0.760 |
| 23-Mar-99 | 148 | 6 | 0.4592 | -0.102 | 4.997 | 0.705 |
| 7-Jul-99 | 244 | 7 | 0.5408 | 0.102 | 5.497 | 0.753 |
| 11-Aug-99 | 318 | 8 | 0.6224 | 0.312 | 5.762 | 0.799 |
| 14-Dec-98 | 387 | 9 | 0.7041 | 0.536 | 5.958 | |
| 2-Sep-99 | 407 | 10 | 0.7857 | 0.792 | 6.009 | |
| 16-Nov-98 | 428 | 11 | 0.8673 | 1.114 | 6.059 | |
| 16-Nov-98 | 455 | 12 | 0.9490 | 1.635 | 6.120 | |

update for EV CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dZn** | | **LC55** | | | 5.581 | 5580 |
| **LN Analysis** | | **dZn** | | | 0.88 | 0.88 |

## Discharge, Q

**Q Data, EV=5580 cfs CV=0.88**

| | |
|---|---|
| **Avg:** | **5,581** |
| **SD:** | **4,909** |
| **CV:** | **0.88** |
| **Min:** | **635** |
| **Max:** | **15,600** |
| **Median:** | **4,635** |

**Q Data-based LN**

| u | lnQ | Q |
|---|---|---|
| 3 | 10.6 | 40605 |
| 0 | 8.34 | 4190 |
| -3 | 6.07 | 432 |

| | | |
|---|---|---|
| | 0.918 | 0.918 |
| | 7549.3 | 7550 |
| | 2.06 | 2.06 |

**u=mLn(Q)+b:**

update for r2, EV, CV **r2=0.918, EV=7550 cfs CV=2.06; max r2=0.95**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnQ: | 0.918 | u | lnQ | Q | |
| slope, m | 0.777 | 3 | 11.96 | 156862 | |
| intercept, b | -6.291 | 0 | 8.10 | 3295 | |
| N: 12 | | -3 | 4.24 | 69 | |
| E[Q]: | 7549.3 | Parameter Estimates | | | |
| SD[Q] | 15561 | from LN regression | | | |
| CV[Q] | 2.06 | update graph label | | | |

N: 12

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.954 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 2-Sep-99 | 635 | 1 | 0.0510 | -1.635 | 6.454 | 0.918 |
| 11-Aug-99 | 795 | 2 | 0.1327 | -1.114 | 6.678 | 0.909 |
| 16-Nov-98 | 994 | 3 | 0.2143 | -0.792 | 6.902 | 0.883 |
| 16-Nov-98 | 994 | 4 | 0.2959 | -0.536 | 6.902 | 0.845 |
| 14-Dec-98 | 2080 | 5 | 0.3776 | -0.312 | 7.640 | 0.834 |
| 7-Jul-99 | 2400 | 6 | 0.4592 | -0.102 | 7.783 | 0.787 |
| 17-Jun-99 | 6870 | 7 | 0.5408 | 0.102 | 8.835 | 0.941 |
| 17-Jun-99 | 6870 | 8 | 0.6224 | 0.312 | 8.835 | 0.954 |
| 6-May-99 | 7490 | 9 | 0.7041 | 0.536 | 8.921 | |
| 23-Mar-99 | 9040 | 10 | 0.7857 | 0.792 | 9.109 | |
| 21-Apr-99 | 13200 | 11 | 0.8673 | 1.114 | 9.488 | |
| 26-May-99 | 15600 | 12 | 0.9490 | 1.635 | 9.655 | |

**Secondary Scale For LN graphs**

| *u* | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| *-4.00* | *0.00003* | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** LC55 **Date:** 3-Jun-00
**Chemical:** tCd **Analyst:** J.Johnston
**Notes:**
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| Avg: | 35,897 | 4,180 | 2 | 35 | 0.00 | 0.00 | 0.00 |
| SD: | 326 | 4,925 | 1 | 42 | 1.00 | 1.00 | 1.00 |
| CV: | 0.01 | 1.18 | 0.39 | 1.20 | | | |
| Min: | 35,367 | 357 | 1 | 5.1 | -0.78 | -1.45 | -0.71 |
| Max: | 36,405 | 22,800 | 5 | 196 | 3.78 | 3.07 | 3.87 |
| Median: | 35,891 | 2,090 | 2 | 19 | -0.42 | 0.07 | -0.38 |

**tCd LC55 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.166)** | update r2 | 0.17 | 0.166 | r2: | 0.022 | 0.024 | |
| r2 Q,[COC]: | 0.17 | [tCd] | Q | m: | 2.2601 | 0.00053 | |
| slope, m: | 0.0 | 2 | 357.0 | b: | -76952 | -11.15 | |
| intercept, b: | 2.3 | 2 | 4180.0 | | | | |
| N: 33 | | 1 | 22800 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.363)** | update r2 | 0.36 | 0.363 | | | | |
| r2 lnQ,ln[COC] | 0.36 | ln[tCd] | ln Q | ]tCd] | Q | | |
| slope, m | -0.22 | 1.04 | 5.88 | 3 | 357 | | |
| intercept, b | 2.35 | 0.49 | 8.34 | 2 | 4,180 | | |
| N: 33 | | 0.11 | 10.03 | 1 | 22,800 | | |

for graph: 0

**N= 34**

| update for new data | Sampling Date | Q Discharge cfs | tCd Concentration ug/L | tCd Load lbs/day | Ln Q | Ln tCd Conc. | Ln tCd Load | tCd LC55 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 29-Oct-96 | 576 | 2.3 | 7.1 | 6.36 | 0.83 | 1.96 | -0.73 | 0.32 | -0.66 |
| IDEQ | 26-Nov-96 | 842 | 3.3 | 14.9 | 6.74 | 1.19 | 2.70 | -0.68 | 1.57 | -0.47 |
| IDEQ | 13-Dec-96 | 2470 | 4.5 | 59.8 | 7.81 | 1.50 | 4.09 | -0.35 | 3.07 | 0.60 |
| IDEQ | 29-Jan-97 | 1640 | 2.4 | 21.2 | 7.40 | 0.88 | 3.05 | -0.52 | 0.44 | -0.32 |
| IDEQ | 21-Feb-97 | 4120 | 2.9 | 64.3 | 8.32 | 1.06 | 4.16 | -0.01 | 1.07 | 0.71 |
| IDEQ | 26-Mar-97 | 7500 | 1.7 | 68.6 | 8.92 | 0.53 | 4.23 | 0.67 | -0.44 | 0.81 |
| IDEQ | 16-Apr-97 | 4730 | 1 | 25.4 | 8.46 | 0.00 | 3.24 | 0.11 | -1.31 | -0.22 |
| IDEQ | 16-May-97 | 22800 | 1.6 | 196.3 | 10.03 | 0.47 | 5.28 | 3.78 | -0.56 | 3.87 |
| IDEQ | 24-Jun-97 | 2320 | 1.4 | 17.5 | 7.75 | 0.34 | 2.86 | -0.38 | -0.81 | -0.41 |
| IDEQ | 24-Jul-97 | 1030 | 1.8 | 10.0 | 6.94 | 0.59 | 2.30 | -0.64 | -0.31 | -0.59 |
| IDEQ | 13-Aug-97 | 612 | 2.3 | 7.6 | 6.42 | 0.83 | 2.02 | -0.72 | 0.32 | -0.65 |
| IDEQ | 16-Oct-97 | 573 | 2.6 | 8.0 | 6.35 | 0.96 | 2.08 | -0.73 | 0.69 | -0.64 |
| IDEQ | 24-Nov-97 | 1410 | 1.8 | 13.7 | 7.25 | 0.59 | 2.61 | -0.56 | -0.31 | -0.51 |
| IDEQ | 17-Dec-97 | 1330 | 2.3 | 16.5 | 7.19 | 0.83 | 2.80 | -0.58 | 0.32 | -0.44 |
| IDEQ | 21-Jan-98 | 1290 | 2.7 | 18.7 | 7.16 | 0.99 | 2.93 | -0.59 | 0.82 | -0.38 |
| IDEQ | 25-Feb-98 | 2100 | 1.6 | 18.1 | 7.65 | 0.47 | 2.89 | -0.42 | -0.56 | -0.40 |
| IDEQ | 19-Mar-98 | 4190 | 1.3 | 29.3 | 8.34 | 0.26 | 3.38 | 0.00 | -0.94 | -0.13 |
| IDEQ | 23-Apr-98 | 6000 | 1.2 | 38.7 | 8.70 | 0.18 | 3.66 | 0.37 | -1.06 | 0.10 |
| IDEQ | 28-May-98 | 7610 | 1.6 | 65.5 | 8.94 | 0.47 | 4.18 | 0.70 | -0.56 | 0.74 |
| IDEQ | 24-Jun-98 | 1590 | 2.1 | 18.0 | 7.37 | 0.74 | 2.89 | -0.53 | 0.07 | -0.40 |
| IDEQ | 27-Jul-98 | 622 | 2.2 | 7.4 | 6.43 | 0.79 | 2.00 | -0.72 | 0.19 | -0.66 |
| IDEQ | 25-Aug-98 | 435 | 2.2 | 5.1 | 6.08 | 0.79 | 1.64 | -0.76 | 0.19 | -0.71 |
| IDEQ | 23-Sep-98 | 357 | 3 | 5.8 | 5.88 | 1.10 | 1.75 | -0.78 | 1.19 | -0.69 |
| USGS | 16-Nov-98 | 994 | 3 | 16.0 | 6.90 | 1.10 | 2.78 | -0.65 | 1.19 | -0.45 |
| USGS | 14-Dec-98 | 2080 | 3 | 33.6 | 7.64 | 1.10 | 3.51 | -0.43 | 1.19 | -0.03 |
| USGS | 23-Mar-99 | 9040 | 1 | 48.6 | 9.11 | 0.00 | 3.88 | 0.99 | -1.31 | 0.33 |
| USGS | 21-Apr-99 | 13200 | | | 9.49 | | | 1.83 | | |
| USGS | 6-May-99 | 7490 | 1 | 40.3 | 8.92 | 0.00 | 3.70 | 0.67 | -1.31 | 0.13 |
| USGS | 26-May-99 | 15600 | 2 | 167.9 | 9.66 | 0.69 | 5.12 | 2.32 | -0.06 | 3.19 |
| USGS | 17-Jun-99 | 6870 | 0.89 | 32.9 | 8.83 | -0.12 | 3.49 | 0.55 | -1.45 | -0.04 |
| USGS | 17-Jun-99 | 6870 | 0.89 | 32.9 | 8.83 | -0.12 | 3.49 | 0.55 | -1.45 | -0.04 |
| USGS | 7-Jul-99 | 2400 | 1.5 | 19.4 | 7.78 | 0.41 | 2.96 | -0.36 | -0.69 | -0.37 |
| USGS | 11-Aug-99 | 795 | 2.1 | 9.0 | 6.68 | 0.74 | 2.20 | -0.69 | 0.07 | -0.62 |
| USGS | 2-Sep-99 | 635 | 2.4 | 8.2 | 6.45 | 0.88 | 2.10 | -0.72 | 0.44 | -0.64 |

**tCd**

**Concentration over time analysis**

| tCd | LC55 | | r2 | Slope, m |
|---|---|---|---|---|
| | | | **Concentration over time** | |
| **LnConc.=mTime+b All data r2, m:** | | | **0.120** | **-0.00043** |
| | **Time** | **Ln(COC)** | **(COC)** | |
| first | 29-Oct-96 | 0.86 | 2 | |
| mid | 5-Apr-98 | 0.64 | 2 | |
| last | 2-Sep-99 | 0.42 | 2 | |
| **LnConc.=mTime+b >'96 r2, m:** | | | **#REF!** | **#REF!** |
| | #REF! | #REF! | #REF! | |
| | 2-Sep-99 | #REF! | #REF! | |

**Load over time analysis**

| tCd | LC55 | | Load over time | |
|---|---|---|---|---|
| **LnLoad=mTime+b All data r2, m:** | | | **0.001** | **-0.00008** |
| | **Time** | **LnLoad** | **Load** | |
| first | 29-Oct-96 | 3.13 | 23 | |
| mid | 5-Apr-98 | 3.09 | 22 | |
| last | 2-Sep-99 | 3.05 | 21 | |
| **LnLoad=mTime+b >'96 r2, m:** | | | **#REF!** | **#REF!** |
| | #REF! | #REF! | #REF! | |
| | 2-Sep-99 | #REF! | #REF! | |

| max r2: | 0.933 | | max r2: | 0.962 | |
|---|---|---|---|---|---|
| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.120 | -0.00043 | 16.07 | 0.001 | -0.00008 | 5.86 |
| 0.114 | -0.00043 | 16.24 | 0.009 | -0.00027 | 12.89 |
| 0.082 | -0.00037 | 14.05 | 0.016 | -0.00037 | 16.48 |
| 0.036 | -0.00024 | 9.10 | 0.005 | -0.00022 | 11.07 |
| 0.024 | -0.00020 | 7.81 | 0.006 | -0.00025 | 12.24 |
| 0.007 | -0.00011 | 4.66 | 0.000 | -0.00005 | 4.80 |
| 0.009 | -0.00013 | 5.33 | 0.004 | 0.00022 | -4.87 |
| 0.044 | -0.00029 | 11.16 | 0.007 | 0.00030 | -7.77 |
| 0.059 | -0.00036 | 13.63 | 0.091 | -0.00098 | -32.46 |
| 0.096 | -0.00048 | 18.04 | 0.099 | 0.00109 | -36.22 |
| 0.110 | -0.00055 | 20.51 | 0.079 | 0.00102 | -33.82 |
| 0.095 | -0.00055 | 20.26 | 0.046 | 0.00081 | -26.39 |
| 0.066 | -0.00048 | 17.72 | 0.021 | 0.00057 | -17.38 |
| 0.073 | -0.00053 | 19.80 | 0.012 | 0.00046 | -13.65 |
| 0.054 | -0.00049 | 18.17 | 0.008 | 0.00041 | -11.63 |
| 0.023 | -0.00033 | 12.60 | 0.007 | 0.00039 | -11.13 |
| 0.032 | -0.00042 | 15.83 | 0.004 | 0.00035 | -9.40 |
| 0.073 | -0.00069 | 25.45 | 0.011 | 0.00060 | -18.68 |
| 0.167 | -0.00112 | 40.95 | 0.036 | 0.00117 | -39.39 |
| 0.233 | -0.00146 | 53.31 | 0.144 | 0.00245 | -85.86 |
| 0.242 | -0.00166 | 60.76 | 0.173 | 0.00302 | -106.30 |
| 0.240 | -0.00187 | 68.30 | 0.109 | 0.00262 | -91.89 |
| 0.236 | -0.00216 | 79.02 | 0.016 | 0.00108 | -36.01 |
| 0.124 | -0.00182 | 66.49 | 0.059 | -0.00223 | 84.19 |
| 0.010 | -0.00059 | 21.92 | 0.257 | -0.00587 | 216.47 |
| 0.436 | 0.00529 | -191.79 | 0.565 | -0.01404 | 513.42 |
| 0.420 | 0.00666 | -241.54 | 0.703 | -0.02057 | 750.97 |
| 0.420 | 0.00666 | -241.54 | 0.703 | -0.02057 | 750.97 |
| 0.331 | 0.00673 | -244.36 | 0.842 | -0.02712 | 989.09 |
| 0.933 | 0.01308 | -475.26 | 0.962 | -0.01926 | 703.14 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tCd** | | **LC55** | | |
| **LN Analysis** | | **tCd** | | |
| **Load** | | **Load Data, EV=34.7 lbs/day CV=1.2** | | |
| **Avg:** | **35** | **Load Data-based LN** | | |
| **SD:** | **42** | u | ln tCd Load | tCd Load |
| **CV:** | **1.20** | 3 | 5.9 | 379 |
| **Min:** | **5.1** | 0 | 3.10 | 22 |
| **Max:** | **196** | -3 | 0.26 | 1.3 |
| **Median:** | **19** | | | |
| | | 35 | 34.7 | |
| | | 1.20 | 1.2 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.967, EV=35.1lbs/day CV=1.21; max r2=0.98**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.967 | u | lnLoad | Load | |
| slope, m: | 1.052 | 3 | 5.96 | 387 | |
| intercept, b | -3.267 | 0 | 3.11 | 22 | |
| N: | 33 | -3 | 0.25 | 1.3 | |
| E[Load]: | 35.1 | Parameter Estimates | | | 0.967 |
| SD[Load]: | 43 | from LN regression | | | 35.1 |
| CV[Load]: | 1.21 | update graph label | | | 1.2 |
| | | | | | max r2 |
| | **tCd** | N: 34 | | | 0.978 |
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 25-Aug-98 | **5.1** | 1 | 0.0182 | -2.091 | 1.639 | 0.967 |
| 23-Sep-98 | **5.8** | 2 | 0.0474 | -1.670 | 1.751 | 0.975 |
| 29-Oct-96 | **7.1** | 3 | 0.0766 | -1.428 | 1.964 | 0.976 |
| 27-Jul-98 | **7.4** | 4 | 0.1058 | -1.249 | 1.996 | 0.978 |
| 13-Aug-97 | **7.6** | 5 | 0.1350 | -1.103 | 2.025 | 0.978 |
| 16-Oct-97 | **8.0** | 6 | 0.1642 | -0.977 | 2.081 | 0.977 |
| 2-Sep-99 | **8.2** | 7 | 0.1934 | -0.865 | 2.104 | 0.975 |
| 11-Aug-99 | **9.0** | 8 | 0.2226 | -0.763 | 2.195 | 0.972 |
| 24-Jul-97 | **10.0** | 9 | 0.2518 | -0.669 | 2.300 | 0.970 |
| 24-Nov-97 | **13.7** | 10 | 0.2810 | -0.580 | 2.614 | 0.967 |
| 26-Nov-96 | **14.9** | 11 | 0.3102 | -0.495 | 2.705 | 0.967 |
| 16-Nov-98 | **16.0** | 12 | 0.3394 | -0.414 | 2.775 | 0.966 |
| 17-Dec-97 | **16.5** | 13 | 0.3686 | -0.336 | 2.801 | 0.967 |
| 24-Jun-97 | **17.5** | 14 | 0.3978 | -0.259 | 2.861 | 0.966 |
| 24-Jun-98 | **18.0** | 15 | 0.4270 | -0.184 | 2.888 | 0.966 |
| 25-Feb-98 | **18.1** | 16 | 0.4562 | -0.110 | 2.895 | 0.964 |
| 21-Jan-98 | **18.7** | 17 | 0.4854 | -0.037 | 2.931 | 0.960 |
| 7-Jul-99 | **19.4** | 18 | 0.5146 | 0.037 | 2.964 | 0.955 |
| 29-Jan-97 | **21.2** | 19 | 0.5438 | 0.110 | 3.053 | 0.950 |
| 16-Apr-97 | **25.4** | 20 | 0.5730 | 0.184 | 3.237 | 0.943 |
| 19-Mar-98 | **29.3** | 21 | 0.6022 | 0.259 | 3.378 | 0.936 |
| 17-Jun-99 | **32.9** | 22 | 0.6314 | 0.336 | 3.493 | 0.932 |
| 17-Jun-99 | **32.9** | 23 | 0.6606 | 0.414 | 3.493 | 0.933 |
| 14-Dec-98 | **33.6** | 24 | 0.6898 | 0.495 | 3.514 | 0.929 |
| 21-Apr-99 | | 25 | 0.7190 | 0.580 | | |
| 23-Apr-98 | **38.7** | 26 | 0.7482 | 0.669 | 3.657 | 0.918 |
| 6-May-99 | **40.3** | 27 | 0.7774 | 0.763 | 3.696 | 0.904 |
| 23-Mar-99 | **48.6** | 28 | 0.8066 | 0.865 | 3.884 | 0.880 |
| 13-Dec-96 | **59.8** | 29 | 0.8358 | 0.977 | 4.091 | 0.853 |
| 21-Feb-97 | **64.3** | 30 | 0.8650 | 1.103 | 4.163 | 0.847 |
| 28-May-98 | **65.5** | 31 | 0.8942 | 1.249 | 4.182 | |
| 26-Mar-97 | **68.6** | 32 | 0.9234 | 1.428 | 4.228 | |
| 26-May-99 | **167.9** | 33 | 0.9526 | 1.670 | 5.123 | |
| 16-May-97 | **196.3** | 34 | 0.9818 | 2.091 | 5.279 | |

| | | | | | |
|---|---|---|---|---|---|
| | | update for EV, CV: | | | |
| tCd | | LC55 | | 2 | 2.05 |
| LN Analysis | | tCd | | 0.39 | 0.39 |
| **Concentration** | | **Conc. Data, EV=2.05 ug/L CV=0.39** | | | |
| **Avg:** | 2 | **Data-based LN** | | | |
| **SD:** | 1 | u | ln[tCd] | [tCd] | |
| **CV:** | 0.39 | 3 | 1.8 | 6 | |
| **Min:** | 1 | 0 | 0.65 | 2 | |
| **Max:** | 5 | -3 | -0.48 | 1 | |
| **Median:** | 2 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | 0.966 | 0.966 | |
| | **u=mLn(Conc.)+b:** | | | | 2.0 | 2.04 | |
| | update for r2, EV, CV. **r2=0.966, EV=2.04 ug/L CV=0.479; max r2=0.97** | | | | 0.479 | 0.479 | |
| | r2 u,lnConc. | 0.966 | u | lnConc. | Conc. | | |
| | slope, m | 2.202 | 3 | 1.97 | 7 | | |
| | intercept, b | -1.343 | 0 | 0.61 | 2 | | |
| | N. 33 | | -3 | -0.75 | 0 | | |
| 0.967 | E[Conc] | 2.0 | Parameter Estimates | | | | |
| 35.1 | SD[Conc] | 1 | from LN regression | | | | |
| 1.21 | CV[Conc] | 0.48 | update graph label | | | | |

| Date | tCd Concentration ug/L Ranked | i rank (N. 34) | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.972 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 21-Apr-99 | | 1 | 0.0182 | -2.091 | | |
| 17-Jun-99 | 0.89 | 2 | 0.0474 | -1.670 | -0.117 | 0.966 |
| 17-Jun-99 | 0.89 | 3 | 0.0766 | -1.428 | -0.117 | 0.962 |
| 16-Apr-97 | 1 | 4 | 0.1058 | -1.249 | 0.000 | 0.959 |
| 23-Mar-99 | 1 | 5 | 0.1350 | -1.103 | 0.000 | 0.956 |
| 6-May-99 | 1 | 6 | 0.1642 | -0.977 | 0.000 | 0.957 |
| 23-Apr-98 | 1.2 | 7 | 0.1934 | -0.865 | 0.182 | 0.969 |
| 19-Mar-98 | 1.3 | 8 | 0.2226 | -0.763 | 0.262 | 0.971 |
| 24-Jun-97 | 1.4 | 9 | 0.2518 | -0.669 | 0.336 | 0.972 |
| 7-Jul-99 | 1.5 | 10 | 0.2810 | -0.580 | 0.405 | 0.971 |
| 16-May-97 | 1.6 | 11 | 0.3102 | -0.495 | 0.470 | 0.968 |
| 25-Feb-98 | 1.6 | 12 | 0.3394 | -0.414 | 0.470 | 0.965 |
| 28-May-98 | 1.6 | 13 | 0.3686 | -0.336 | 0.470 | 0.963 |
| 26-Mar-97 | 1.7 | 14 | 0.3978 | -0.259 | 0.531 | 0.963 |
| 24-Jul-97 | 1.8 | 15 | 0.4270 | -0.184 | 0.588 | 0.961 |
| 24-Nov-97 | 1.8 | 16 | 0.4562 | -0.110 | 0.588 | 0.958 |
| 26-May-99 | 2 | 17 | 0.4854 | -0.037 | 0.693 | 0.958 |
| 24-Jun-98 | 2.1 | 18 | 0.5146 | 0.037 | 0.742 | 0.953 |
| 11-Aug-99 | 2.1 | 19 | 0.5438 | 0.110 | 0.742 | 0.951 |
| 27-Jul-98 | 2.2 | 20 | 0.5730 | 0.184 | 0.788 | 0.946 |
| 25-Aug-98 | 2.2 | 21 | 0.6022 | 0.259 | 0.788 | 0.944 |
| 29-Oct-96 | 2.3 | 22 | 0.6314 | 0.336 | 0.833 | 0.939 |
| 13-Aug-97 | 2.3 | 23 | 0.6606 | 0.414 | 0.833 | 0.938 |
| 17-Dec-97 | 2.3 | 24 | 0.6898 | 0.495 | 0.833 | 0.931 |
| 29-Jan-97 | 2.4 | 25 | 0.7190 | 0.580 | 0.875 | 0.919 |
| 2-Sep-99 | 2.4 | 26 | 0.7482 | 0.669 | 0.875 | 0.905 |
| 16-Oct-97 | 2.6 | 27 | 0.7774 | 0.763 | 0.956 | 0.883 |
| 21-Jan-98 | 2.7 | 28 | 0.8066 | 0.865 | 0.993 | 0.861 |
| 21-Feb-97 | 2.9 | 29 | 0.8358 | 0.977 | 1.065 | 0.834 |
| 23-Sep-98 | 3 | 30 | 0.8650 | 1.103 | 1.099 | 0.851 |
| 16-Nov-98 | 3 | 31 | 0.8942 | 1.249 | 1.099 | |
| 14-Dec-98 | 3 | 32 | 0.9234 | 1.428 | 1.099 | |
| 26-Nov-96 | 3.3 | 33 | 0.9526 | 1.670 | 1.194 | |
| 13-Dec-96 | 4.5 | 34 | 0.9818 | 2.091 | 1.504 | |

update for EV, CV.

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **LC55** | | | 4,180 | 4180 |
| **LN Analysis** | | **tCd** | | | 1.18 | 1.18 |
| **Discharge, Q** | | **Q Data, EV=4180 cfs CV=1.18** | | | | |
| **Avg:** | **4,180** | **Q Data-based LN** | | | | |
| **SD:** | **4,925** | u | lnQ | Q | | |
| **CV:** | **1.18** | 3 | 10.7 | 44443 | | |
| **Min:** | **357** | 0 | 7.90 | 2705 | | |
| **Max:** | **22,800** | -3 | 5.10 | 165 | | |
| **Median:** | **2,090** | | | | | |

| | | |
|---|---|---|
| | 0.968 | 0.968 |
| | 4573.3 | 4570 |
| **u=mLn(Q)+b:** | 1.74 | 1.74 |

update for r2, EV, CV: **r2=0.968, EV=4570 cfs CV=1.74; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.968 | u | lnQ | Q |
| slope, m | 0.846 | 3 | 11.28 | 78882 |
| intercept, b | -6.538 | 0 | 7.73 | 2274 |
| N: 34 | | -3 | 4.18 | 66 |
| E[Q] | 4573.3 | Parameter Estimates | | |
| SD[Q] | 7980 | from LN regression | | |
| CV[Q] | 1.74 | update graph label | | |

N: 34

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.980 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 23-Sep-98 | 357 | 1 | 0.0182 | -2.091 | 5.878 | 0.968 |
| 25-Aug-98 | 435 | 2 | 0.0474 | -1.670 | 6.075 | 0.974 |
| 16-Oct-97 | 573 | 3 | 0.0766 | -1.428 | 6.351 | 0.976 |
| 29-Oct-96 | 576 | 4 | 0.1058 | -1.249 | 6.356 | 0.979 |
| 13-Aug-97 | 612 | 5 | 0.1350 | -1.103 | 6.417 | 0.980 |
| 27-Jul-98 | 622 | 6 | 0.1642 | -0.977 | 6.433 | 0.979 |
| 2-Sep-99 | 635 | 7 | 0.1934 | -0.865 | 6.454 | 0.977 |
| 11-Aug-99 | 795 | 8 | 0.2226 | -0.763 | 6.678 | 0.975 |
| 26-Nov-96 | 842 | 9 | 0.2518 | -0.669 | 6.736 | 0.972 |
| 16-Nov-98 | 994 | 10 | 0.2810 | -0.580 | 6.902 | 0.970 |
| 24-Jul-97 | 1030 | 11 | 0.3102 | -0.495 | 6.937 | 0.967 |
| 21-Jan-98 | 1290 | 12 | 0.3394 | -0.414 | 7.162 | 0.964 |
| 17-Dec-97 | 1330 | 13 | 0.3686 | -0.336 | 7.193 | 0.960 |
| 24-Nov-97 | 1410 | 14 | 0.3978 | -0.259 | 7.251 | 0.957 |
| 24-Jun-98 | 1590 | 15 | 0.4270 | -0.184 | 7.371 | 0.953 |
| 29-Jan-97 | 1640 | 16 | 0.4562 | -0.110 | 7.402 | 0.948 |
| 14-Dec-98 | 2080 | 17 | 0.4854 | -0.037 | 7.640 | 0.945 |
| 25-Feb-98 | 2100 | 18 | 0.5146 | 0.037 | 7.650 | 0.939 |
| 24-Jun-97 | 2320 | 19 | 0.5438 | 0.110 | 7.749 | 0.934 |
| 7-Jul-99 | 2400 | 20 | 0.5730 | 0.184 | 7.783 | 0.930 |
| 13-Dec-96 | 2470 | 21 | 0.6022 | 0.259 | 7.812 | 0.933 |
| 21-Feb-97 | 4120 | 22 | 0.6314 | 0.336 | 8.324 | 0.966 |
| 19-Mar-98 | 4190 | 23 | 0.6606 | 0.414 | 8.340 | 0.961 |
| 16-Apr-97 | 4730 | 24 | 0.6898 | 0.495 | 8.462 | 0.958 |
| 23-Apr-98 | 6000 | 25 | 0.7190 | 0.580 | 8.700 | 0.953 |
| 17-Jun-99 | 6870 | 26 | 0.7482 | 0.669 | 8.835 | 0.948 |
| 17-Jun-99 | 6870 | 27 | 0.7774 | 0.763 | 8.835 | 0.959 |
| 6-May-99 | 7490 | 28 | 0.8066 | 0.865 | 8.921 | 0.960 |
| 26-Mar-97 | 7500 | 29 | 0.8358 | 0.977 | 8.923 | 0.970 |
| 28-May-98 | 7610 | 30 | 0.8650 | 1.103 | 8.937 | 0.964 |
| 23-Mar-99 | 9040 | 31 | 0.8942 | 1.249 | 9.109 | |
| 21-Apr-99 | 13200 | 32 | 0.9234 | 1.428 | 9.488 | |
| 26-May-99 | 15600 | 33 | 0.9526 | 1.670 | 9.655 | |
| 16-May-97 | 22800 | 34 | 0.9818 | 2.091 | 10.035 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **LC55** | **Date:** | **15-Jul-00** |
| **Chemical:** | **tPb** | **Analyst:** | **B.Walthall** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,903 | 4,089 | 37 | 2,152 | 0.00 | 0.00 | 0.00 |
| **SD:** | 324 | 4,883 | 59 | 6,835 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.19 | 1.61 | 3.18 | | | |
| **Min:** | 35,367 | 357 | 3 | 15.4 | -0.76 | -0.58 | -0.31 |
| **Max:** | 36,405 | 22,800 | 303 | 37,167 | 3.83 | 4.49 | 5.12 |
| **Median:** | 35,908 | 2,080 | 21 | 134 | -0.41 | -0.27 | -0.30 |

| tPb LC55 | | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.74)** | | update r2 | **0.74** | 0.74 | | r2: | 0.018 | 0.019 |
| r2 Q,[COC] | 0.74 | [tPb] | Q | | | m: | 2.0478 | 0.00047 |
| slope, m | 0.0 | -2 | 357.0 | | | b: | -69432 | -9.22 |
| intercept, b | -5.8 | 37 | 4089.0 | | | | | |
| N: | 35 | 232 | 22800 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.3)** | | update r2 | | 0.30 | 0.3 | | | |
| r2 lnQ,ln[COC] | 0.30 | ln[tPb] | ln Q | [tPb] | Q | | | |
| slope, m | 0.46 | 2.20 | 5.88 | 9 | 357 | | | |
| intercept, b | -0.52 | 3.33 | 8.32 | 28 | 4,089 | | | |
| N: | 35 | 4.12 | 10.03 | 62 | 22,800 | | | |

**N= 35**

| update for new data | Sampling Date | Q Discharge cfs | tPb Concentration ug/L | tPb Load lbs/day | Ln Q | Ln tPb Conc. | Ln tPb Load | tPb LC55 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 29-Oct-96 | 576 | 10 | 31.0 | 6.36 | 2.30 | 3.43 | -0.72 | -0.45 | -0.31 |
| IDEQ | 26-Nov-96 | 842 | 10 | 45.3 | 6.74 | 2.30 | 3.81 | -0.66 | -0.45 | -0.31 |
| IDEQ | 13-Dec-96 | 2470 | 21 | 279.1 | 7.81 | 3.04 | 5.63 | -0.33 | -0.27 | -0.27 |
| IDEQ | 29-Jan-97 | 1640 | 11 | 97.1 | 7.40 | 2.40 | 4.58 | -0.50 | -0.44 | -0.30 |
| IDEQ | 21-Feb-97 | 4120 | 46 | 1019.6 | 8.32 | 3.83 | 6.93 | 0.01 | 0.15 | -0.17 |
| IDEQ | 26-Mar-97 | 7500 | 24 | 968.4 | 8.92 | 3.18 | 6.88 | 0.70 | -0.22 | -0.17 |
| IDEQ | 16-Apr-97 | 4730 | 8 | 203.6 | 8.46 | 2.08 | 5.32 | 0.13 | -0.49 | -0.29 |
| IDEQ | 16-May-97 | 22800 | 303 | 37167.2 | 10.03 | 5.71 | 10.52 | 3.83 | 4.49 | 5.12 |
| IDEQ | 24-Jun-97 | 2320 | 17 | 212.2 | 7.75 | 2.83 | 5.36 | -0.36 | -0.34 | -0.28 |
| IDEQ | 24-Jul-97 | 1030 | 20 | 110.8 | 6.94 | 3.00 | 4.71 | -0.63 | -0.28 | -0.30 |
| IDEQ | 13-Aug-97 | 612 | 23 | 75.7 | 6.42 | 3.14 | 4.33 | -0.71 | -0.23 | -0.30 |
| IDEQ | 16-Oct-97 | 573 | 10 | 30.8 | 6.35 | 2.30 | 3.43 | -0.72 | -0.45 | -0.31 |
| IDEQ | 24-Nov-97 | 1410 | 9 | 68.3 | 7.25 | 2.20 | 4.22 | -0.55 | -0.47 | -0.30 |
| IDEQ | 17-Dec-97 | 1330 | 40 | 286.2 | 7.19 | 3.69 | 5.66 | -0.56 | 0.05 | -0.27 |
| IDEQ | 21-Jan-98 | 1290 | 10 | 69.4 | 7.16 | 2.30 | 4.24 | -0.57 | -0.45 | -0.30 |
| IDEQ | 25-Feb-98 | 2100 | 9 | 101.7 | 7.65 | 2.20 | 4.62 | -0.41 | -0.47 | -0.30 |
| IDEQ | 19-Mar-98 | 4190 | 2.5 | 56.4 | 8.34 | 0.92 | 4.03 | 0.02 | -0.58 | -0.31 |
| IDEQ | 23-Apr-98 | 6000 | 42 | 1355.8 | 8.70 | 3.74 | 7.21 | 0.39 | 0.09 | -0.12 |
| IDEQ | 28-May-98 | 7610 | 64 | 2620.3 | 8.94 | 4.16 | 7.87 | 0.72 | 0.46 | 0.07 |
| IDEQ | 24-Jun-98 | 1590 | 11 | 94.1 | 7.37 | 2.40 | 4.54 | -0.51 | -0.44 | -0.30 |
| IDEQ | 27-Jul-98 | 622 | 26 | 87.0 | 6.43 | 3.26 | 4.47 | -0.71 | -0.18 | -0.30 |
| IDEQ | 25-Aug-98 | 435 | 21 | 49.1 | 6.08 | 3.04 | 3.89 | -0.75 | -0.27 | -0.31 |
| IDEQ | 23-Sep-98 | 357 | 8 | 15.4 | 5.88 | 2.08 | 2.73 | -0.76 | -0.49 | -0.31 |
| USGS | 16-Nov-98 | 994 | 25 | 133.7 | 6.90 | 3.22 | 4.90 | -0.63 | -0.20 | -0.30 |
| USGS | 16-Nov-98 | 994 | 26 | 139.0 | 6.90 | 3.26 | 4.93 | -0.63 | -0.18 | -0.29 |
| USGS | 14-Dec-98 | 2080 | 14 | 156.7 | 7.64 | 2.64 | 5.05 | -0.41 | -0.39 | -0.29 |
| USGS | 23-Mar-99 | 9040 | 49 | 2383.1 | 9.11 | 3.89 | 7.78 | 1.01 | 0.20 | 0.03 |
| USGS | 21-Apr-99 | 13200 | 67 | 4758.1 | 9.49 | 4.20 | 8.47 | 1.87 | 0.51 | 0.38 |
| USGS | 6-May-99 | 7490 | 11 | 443.3 | 8.92 | 2.40 | 6.09 | 0.70 | -0.44 | -0.25 |
| USGS | 26-May-99 | 15600 | 230 | 19303.4 | 9.66 | 5.44 | 9.87 | 2.36 | 3.26 | 2.51 |
| USGS | 17-Jun-99 | 6870 | 36.1 | 1334.3 | 8.83 | 3.59 | 7.20 | 0.57 | -0.01 | -0.12 |
| USGS | 17-Jun-99 | 6870 | 36.1 | 1334.3 | 8.83 | 3.59 | 7.20 | 0.57 | -0.01 | -0.12 |
| USGS | 7-Jul-99 | 2400 | 8.5 | 109.8 | 7.78 | 2.14 | 4.70 | -0.35 | -0.48 | -0.30 |
| USGS | 11-Aug-99 | 795 | 24.4 | 104.4 | 6.68 | 3.19 | 4.65 | -0.67 | -0.21 | -0.30 |
| USGS | 2-Sep-99 | 635 | 18 | 61.5 | 6.45 | 2.89 | 4.12 | -0.71 | -0.32 | -0.31 |

tPb

**Concentration over time analysis**

| | tPb | LC55 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.031** | **0.00051** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 29-Oct-96 | 2.77 | 16 | | |
| mid | 23-Apr-98 | 3.05 | 21 | | |
| last | 2-Sep-99 | 3.30 | 27 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **#REF!** | **#REF!** |
| | #REF! | #REF! | #REF! | | |
| | 2-Sep-99 | #REF! | #REF! | | |

**Load over time analysis**

| | tPb | LC55 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.031** | **0.00098** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 29-Oct-96 | 5.00 | 148 | | |
| mid | 23-Apr-98 | 5.53 | 252 | | |
| last | 2-Sep-99 | 6.02 | 411 | | |
| | **LnLoad=mTime+b >'96 r2, m.** | | | **#REF!** | **#REF!** |
| | #REF! | #REF! | #REF! | | |
| | 2-Sep-99 | #REF! | #REF! | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | max r2 | 0.396 | | max r2 | 0.790 | |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.031 | 0.00051 | -15.39 | 0.031 | 0.00098 | -29.83 |
| | 0.021 | 0.00044 | -12.63 | 0.016 | 0.00073 | -20.60 |
| | 0.012 | 0.00034 | -9.26 | 0.007 | 0.00049 | -11.83 |
| | 0.013 | 0.00037 | -10.20 | 0.008 | 0.00053 | -13.53 |
| | 0.006 | 0.00027 | -6.54 | 0.003 | 0.00037 | -7.78 |
| | 0.017 | 0.00045 | -13.16 | 0.011 | 0.00068 | -19.00 |
| | 0.020 | 0.00052 | -15.68 | 0.023 | 0.00105 | -32.11 |
| | 0.007 | 0.00032 | -8.57 | 0.022 | 0.00110 | -34.08 |
| | 0.097 | 0.00110 | -36.47 | 0.150 | -0.00263 | -89.30 |
| | 0.100 | 0.00118 | -39.50 | 0.167 | 0.00295 | -100.96 |
| | 0.111 | 0.00133 | -44.96 | 0.165 | 0.00312 | -107.13 |
| | 0.135 | 0.00158 | -53.97 | 0.151 | 0.00318 | -109.37 |
| | 0.113 | 0.00152 | -51.81 | 0.111 | 0.00283 | -96.56 |
| | 0.084 | 0.00138 | -46.56 | 0.089 | 0.00266 | -90.55 |
| | 0.137 | 0.00187 | -64.49 | 0.103 | 0.00309 | -105.95 |
| | 0.110 | 0.00177 | -61.03 | 0.078 | 0.00286 | -97.72 |
| | 0.075 | 0.00155 | -52.90 | 0.062 | 0.00272 | -92.50 |
| | 0.005 | 0.00035 | -9.30 | 0.032 | 0.00208 | -69.23 |
| | 0.019 | 0.00076 | -24.25 | 0.078 | 0.00351 | -121.21 |
| | 0.082 | 0.00169 | -57.99 | 0.205 | 0.00603 | -212.66 |
| | 0.040 | 0.00128 | -43.24 | 0.188 | 0.00635 | -224.47 |
| | 0.051 | 0.00163 | -55.71 | 0.162 | 0.00652 | -230.41 |
| | 0.049 | 0.00182 | -62.61 | 0.101 | 0.00567 | -199.54 |
| | 0.001 | 0.00021 | -4.29 | 0.007 | 0.00157 | -50.68 |
| | 0.000 | -0.00003 | 4.59 | 0.001 | -0.00071 | 32.08 |
| | 0.002 | -0.00052 | 22.45 | 0.066 | -0.00651 | 242.68 |
| | 0.151 | -0.00740 | 272.34 | 0.530 | -0.02696 | 985.80 |
| | 0.137 | -0.00850 | 312.41 | 0.572 | -0.03337 | 1218.91 |
| | 0.069 | -0.00680 | 250.42 | 0.498 | -0.03403 | 1242.93 |
| | 0.396 | -0.01852 | 676.57 | 0.790 | -0.05237 | 1910.01 |
| | 0.107 | -0.00571 | 210.68 | 0.761 | -0.03805 | 1389.08 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tPb** | | **LC55** | | |
| **LN Analysis** | | **tPb** | | |
| **Load** | | **Load Data, EV=2150 lbs/day CV=3.18** | | |
| **Avg:** | **2,152** | **Load Data-based LN** | | |
| **SD:** | **6,835** | u | ln tPb Load | tPb Load |
| **CV:** | **3.18** | 3 | 11.1 | 67809 |
| **Min:** | **15.4** | 0 | 6.47 | 646 |
| **Max:** | **37,167** | -3 | 1.82 | 6.2 |
| **Median:** | **134** | | | |
| | | 2,152 | 2150 | |
| | | 3.18 | 3.18 | |

**u=mLn(Load)+ b:**

update for r2, EV, CV **r2=0.906, EV=1750lbs/day CV=6.89; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.906 | u | lnLoad | Load |
| slope, m | 0.508 | 3 | 11 43 | 92435 |
| intercept, b | -2.804 | 0 | 5.52 | 251 |
| N | 35 | -3 | -0.39 | 0 7 |
| E[Load] | 1745.5 | Parameter Estimates | | |
| SD[Load] | 12024 | from LN regression | | |
| CV[Load] | 6.89 | update graph label | | |

0.906
1745.5
6.9
max r2
0.978

N: 35

| Date | tPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 23-Sep-98 | **15.4** | 1 | 0.0177 | -2.103 | 2.732 | 0.906 |
| 16-Oct-97 | **30.8** | 2 | 0.0461 | -1.684 | 3.428 | 0.909 |
| 29-Oct-96 | **31.0** | 3 | 0.0745 | -1.443 | 3 434 | 0.917 |
| 26-Nov-96 | **45.3** | 4 | 0.1028 | -1.266 | 3.813 | 0.920 |
| 25-Aug-98 | **49.1** | 5 | 0.1312 | -1.121 | 3.895 | 0.927 |
| 19-Mar-98 | **56.4** | 6 | 0.1596 | -0.996 | 4.032 | 0.933 |
| 2-Sep-99 | **61.5** | 7 | 0.1879 | -0.885 | 4.119 | 0.939 |
| 24-Nov-97 | **68.3** | 8 | 0.2163 | -0 785 | 4.224 | 0.945 |
| 21-Jan-98 | **69.4** | 9 | 0.2447 | -0.691 | 4.240 | 0.951 |
| 13-Aug-97 | **75.7** | 10 | 0.2730 | -0.604 | 4.327 | 0.956 |
| 27-Jul-98 | **87.0** | 11 | 0.3014 | -0.520 | 4.466 | 0.960 |
| 24-Jun-98 | **94.1** | 12 | 0.3298 | -0.441 | 4.544 | 0.965 |
| 29-Jan-97 | **97.1** | 13 | 0.3582 | -0.363 | 4.575 | 0.970 |
| 25-Feb-98 | **101.7** | 14 | 0.3865 | -0.288 | 4.622 | 0.974 |
| 11-Aug-99 | **104.4** | 15 | 0.4149 | -0.215 | 4.648 | 0.977 |
| 7-Jul-99 | **109.8** | 16 | 0.4433 | -0.143 | 4.698 | 0.978 |
| 24-Jul-97 | **110.8** | 17 | 0.4716 | -0.071 | 4 708 | 0.978 |
| 16-Nov-98 | **133.7** | 18 | 0.5000 | 0.000 | 4.896 | 0.977 |
| 16-Nov-98 | **139.0** | 19 | 0.5284 | 0.071 | 4.935 | 0.976 |
| 14-Dec-98 | **156.7** | 20 | 0.5567 | 0.143 | 5.054 | 0.973 |
| 16-Apr-97 | **203.6** | 21 | 0.5851 | 0.215 | 5.316 | 0.970 |
| 24-Jun-97 | **212.2** | 22 | 0.6135 | 0.288 | 5.357 | 0.966 |
| 13-Dec-96 | **279.1** | 23 | 0.6418 | 0.363 | 5.631 | 0.961 |
| 17-Dec-97 | **286.2** | 24 | 0.6702 | 0 441 | 5.657 | 0.955 |
| 6-May-99 | **443.3** | 25 | 0.6986 | 0.520 | 6.094 | 0.952 |
| 26-Mar-97 | **968.4** | 26 | 0.7270 | 0.604 | 6.876 | 0.944 |
| 21-Feb-97 | **1019.6** | 27 | 0.7553 | 0.691 | 6.927 | 0.949 |
| 17-Jun-99 | **1334.3** | 28 | 0.7837 | 0.785 | 7.196 | 0.949 |
| 17-Jun-99 | **1334.3** | 29 | 0.8121 | 0 885 | 7.196 | 0.959 |
| 23-Apr-98 | **1355.8** | 30 | 0.8404 | 0.996 | 7.212 | 0.958 |
| 23-Mar-99 | **2383.1** | 31 | 0.8688 | 1.121 | 7.776 | 0.942 |
| 28-May-98 | **2620.3** | 32 | 0.8972 | 1.266 | 7.871 | |
| 21-Apr-99 | **4758.1** | 33 | 0.9255 | 1 443 | 8.468 | |
| 26-May-99 | **19303.4** | 34 | 0.9539 | 1.684 | 9.868 | |
| 16-May-97 | **37167.2** | 35 | 0.9823 | 2.103 | 10.523 | |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tPb** | | **LC55** | | 37 | 36.9 |
| **LN Analysis** | | **tPb** | | 1.61 | 1.61 |
| **Concentration** | | **Conc. Data, EV=36.9 ug/L CV=1.61** | | | |
| **Avg:** | **37** | **Data-based LN** | | | |
| **SD:** | **59** | u | ln[tPb] | [tPb] | |
| **CV:** | **1.61** | 3 | 6.4 | 578 | |
| **Min:** | 3 | 0 | 2.97 | 19 | |
| **Max:** | 303 | -3 | -0.42 | 1 | |
| **Median:** | **21** | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.923 | 0.923 |
| | **u=mLn(Conc.)+b:** | | | | 35.1 | 35.1 |
| update for r2, EV, CV: | **r2=0.923, EV=35.1 ug/L CV=1.34; max r2=0.94** | | | | 1.342 | 1.34 |
| | r2 u,lnConc: | 0.923 | u | lnConc. | Conc | |
| | slope, m: | 0.985 | 3 | 6.09 | 441 | |
| | intercept, b: | -2.999 | 0 | 3.04 | 21 | |
| | N: | 35 | -3 | 0.00 | 1 | |
| 0.906 | E[Conc] | 35.1 | Parameter Estimates | | | |
| 1750 | SD[Conc] | 47 | from LN regression | | | |
| 6.89 | CV[Conc] | 1.34 | update graph label | | | |

| | tPb | N: 35 | | | | max r2 0.939 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L | rank | plotting points | y-axis | x-axis | forward |
| | Ranked | | | | | |
| update and rank for new data | | | | | | |
| 19-Mar-98 | 2.5 | 1 | 0.0177 | -2.103 | 0.916 | 0.923 |
| 16-Apr-97 | 8 | 2 | 0.0461 | -1.684 | 2.079 | 0.910 |
| 23-Sep-98 | 8 | 3 | 0.0745 | -1.443 | 2.079 | 0.922 |
| 7-Jul-99 | 8.5 | 4 | 0.1028 | -1.266 | 2.140 | 0.928 |
| 24-Nov-97 | 9 | 5 | 0.1312 | -1.121 | 2.197 | 0.932 |
| 25-Feb-98 | 9 | 6 | 0.1596 | -0.996 | 2.197 | 0.936 |
| 29-Oct-96 | 10 | 7 | 0.1879 | -0.885 | 2.303 | 0.937 |
| 26-Nov-96 | 10 | 8 | 0.2163 | -0.785 | 2.303 | 0.939 |
| 16-Oct-97 | 10 | 9 | 0.2447 | -0.691 | 2.303 | 0.939 |
| 21-Jan-98 | 10 | 10 | 0.2730 | -0.604 | 2.303 | 0.936 |
| 29-Jan-97 | 11 | 11 | 0.3014 | -0.520 | 2.398 | 0.932 |
| 24-Jun-98 | 11 | 12 | 0.3298 | -0.441 | 2.398 | 0.928 |
| 6-May-99 | 11 | 13 | 0.3582 | -0.363 | 2.398 | 0.921 |
| 14-Dec-98 | 14 | 14 | 0.3865 | -0.288 | 2.639 | 0.914 |
| 24-Jun-97 | 17 | 15 | 0.4149 | -0.215 | 2.833 | 0.907 |
| 2-Sep-99 | 18 | 16 | 0.4433 | -0.143 | 2.890 | 0.906 |
| 24-Jul-97 | 20 | 17 | 0.4716 | -0.071 | 2.996 | 0.905 |
| 13-Dec-96 | 21 | 18 | 0.5000 | 0.000 | 3.045 | 0.907 |
| 25-Aug-98 | 21 | 19 | 0.5284 | 0.071 | 3.045 | 0.910 |
| 13-Aug-97 | 23 | 20 | 0.5567 | 0.143 | 3.135 | 0.910 |
| 26-Mar-97 | 24 | 21 | 0.5851 | 0.215 | 3.178 | 0.912 |
| 11-Aug-99 | 24.4 | 22 | 0.6135 | 0.288 | 3.195 | 0.915 |
| 16-Nov-98 | 25 | 23 | 0.6418 | 0.363 | 3.219 | 0.915 |
| 27-Jul-98 | 26 | 24 | 0.6702 | 0.441 | 3.258 | 0.912 |
| 16-Nov-98 | 26 | 25 | 0.6986 | 0.520 | 3.258 | 0.906 |
| 17-Jun-99 | 36.1 | 26 | 0.7270 | 0.604 | 3.586 | 0.893 |
| 17-Jun-99 | 36.1 | 27 | 0.7553 | 0.691 | 3.586 | 0.901 |
| 17-Dec-97 | 40 | 28 | 0.7837 | 0.785 | 3.689 | 0.901 |
| 23-Apr-98 | 42 | 29 | 0.8121 | 0.885 | 3.738 | 0.904 |
| 21-Feb-97 | 46 | 30 | 0.8404 | 0.996 | 3.829 | 0.901 |
| 23-Mar-99 | 49 | 31 | 0.8688 | 1.121 | 3.892 | 0.889 |
| 28-May-98 | 64 | 32 | 0.8972 | 1.266 | 4.159 | |
| 21-Apr-99 | 67 | 33 | 0.9255 | 1.443 | 4.205 | |
| 26-May-99 | 230 | 34 | 0.9539 | 1.684 | 5.438 | |
| 16-May-97 | 303 | 35 | 0.9823 | 2.103 | 5.714 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **LC55** | | | 4,089 | 4090 |
| **LN Analysis** | | **tPb** | | | 1.19 | 1.19 |
| **Discharge, Q** | | **Q Data, EV=4090 cfs CV=1.19** | | | | |
| **Avg:** | **4,089** | **Q Data-based LN** | | | | |
| **SD:** | **4,883** | u | lnQ | Q | | |
| **CV:** | **1.19** | 3 | 10.7 | 44235 | | |
| **Min:** | **357** | 0 | 7.87 | 2625 | | |
| **Max:** | **22,800** | -3 | 5.05 | 156 | | |
| **Median:** | **2,080** | | | | | |
| | | | | | 0.966 | 0.966 |
| | | | | | 4425.7 | 4430 |
| | | **u=mLn{Q}+b:** | | | 1.72 | 1.72 |

update for r2, EV, CV: **r2=0.966, EV=4430 cfs CV=1.72; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.966 | u | lnQ | Q |
| slope, m: | 0.852 | 3 | 11.23 | 75262 |
| intercept, b: | -6.561 | 0 | 7.71 | 2221 |
| N: 35 | | -3 | 4.18 | 66 |
| E[Q] | 4425.7 | Parameter Estimates | | |
| SD[Q] | 7629 | from LN regression | | |
| CV[Q] | 1.72 | update graph label | | |

N: 35

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.980 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 23-Sep-98 | 357 | 1 | 0.0177 | -2.103 | 5.878 | 0.966 |
| 25-Aug-98 | 435 | 2 | 0.0461 | -1.684 | 6.075 | 0.972 |
| 16-Oct-97 | 573 | 3 | 0.0745 | -1.443 | 6.351 | 0.974 |
| 29-Oct-96 | 576 | 4 | 0.1028 | -1.266 | 6.356 | 0.979 |
| 13-Aug-97 | 612 | 5 | 0.1312 | -1.121 | 6.417 | 0.980 |
| 27-Jul-98 | 622 | 6 | 0.1596 | -0.996 | 6.433 | 0.979 |
| 2-Sep-99 | 635 | 7 | 0.1879 | -0.885 | 6.454 | 0.978 |
| 11-Aug-99 | 795 | 8 | 0.2163 | -0.785 | 6.678 | 0.975 |
| 26-Nov-96 | 842 | 9 | 0.2447 | -0.691 | 6.736 | 0.973 |
| 16-Nov-98 | 994 | 10 | 0.2730 | -0.604 | 6.902 | 0.971 |
| 16-Nov-98 | 994 | 11 | 0.3014 | -0.520 | 6.902 | 0.969 |
| 24-Jul-97 | 1030 | 12 | 0.3298 | -0.441 | 6.937 | 0.966 |
| 21-Jan-98 | 1290 | 13 | 0.3582 | -0.363 | 7.162 | 0.963 |
| 17-Dec-97 | 1330 | 14 | 0.3865 | -0.288 | 7.193 | 0.959 |
| 24-Nov-97 | 1410 | 15 | 0.4149 | -0.215 | 7.251 | 0.955 |
| 24-Jun-98 | 1590 | 16 | 0.4433 | -0.143 | 7.371 | 0.952 |
| 29-Jan-97 | 1640 | 17 | 0.4716 | -0.071 | 7.402 | 0.947 |
| 14-Dec-98 | 2080 | 18 | 0.5000 | 0.000 | 7.640 | 0.944 |
| 25-Feb-98 | 2100 | 19 | 0.5284 | 0.071 | 7.650 | 0.938 |
| 24-Jun-97 | 2320 | 20 | 0.5567 | 0.143 | 7.749 | 0.933 |
| 7-Jul-99 | 2400 | 21 | 0.5851 | 0.215 | 7.783 | 0.929 |
| 13-Dec-96 | 2470 | 22 | 0.6135 | 0.288 | 7.812 | 0.932 |
| 21-Feb-97 | 4120 | 23 | 0.6418 | 0.363 | 8.324 | 0.966 |
| 19-Mar-98 | 4190 | 24 | 0.6702 | 0.441 | 8.340 | 0.961 |
| 16-Apr-97 | 4730 | 25 | 0.6986 | 0.520 | 8.462 | 0.958 |
| 23-Apr-98 | 6000 | 26 | 0.7270 | 0.604 | 8.700 | 0.953 |
| 17-Jun-99 | 6870 | 27 | 0.7553 | 0.691 | 8.835 | 0.948 |
| 17-Jun-99 | 6870 | 28 | 0.7837 | 0.785 | 8.835 | 0.959 |
| 6-May-99 | 7490 | 29 | 0.8121 | 0.885 | 8.921 | 0.960 |
| 26-Mar-97 | 7500 | 30 | 0.8404 | 0.996 | 8.923 | 0.970 |
| 28-May-98 | 7610 | 31 | 0.8688 | 1.121 | 8.937 | 0.964 |
| 23-Mar-99 | 9040 | 32 | 0.8972 | 1.266 | 9.109 | |
| 21-Apr-99 | 13200 | 33 | 0.9255 | 1.443 | 9.488 | |
| 26-May-99 | 15600 | 34 | 0.9539 | 1.684 | 9.655 | |
| 16-May-97 | 22800 | 35 | 0.9823 | 2.103 | 10.035 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **LC55** | **Date:** | **3-Jun-00** |
| **Chemical:** | **tZn** | **Analyst:** | **J.Johnston** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,885 | 3,834 | 339 | 5,069 | 0.00 | 0.00 | 0.00 |
| **SD:** | 323 | 4,574 | 145 | 6,178 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.19 | 0.43 | 1.22 | | | |
| **Min:** | 35,367 | 357 | 120 | 1,000.7 | -0.76 | -1.51 | -0.66 |
| **Max:** | 36,405 | 22,800 | 690 | 36,799 | 4.15 | 2.41 | 5.14 |
| **Median:** | 35,873 | 2,080 | 328 | 3,406 | -0.38 | -0.08 | -0.27 |

| tZn LC55 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.29)** | | update r2 | 0.29 | 0.29 | r2 | 0.005 | 0.009 |
| r2 Q,[COC] | 0.29 | [tZn] | Q | | m | 0.9783 | 0.00032 |
| slope, m | 0.0 | 399 | 357.0 | | b | -31270 | -3.70 |
| intercept, b | 404.9 | 339 | 3834.0 | | | | |
| N: | 33 | 14 | 22800 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.577)** | | update r2 | 0.58 | 0.577 | | | |
| r2 lnQ,ln[COC] | 0.58 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m | -0.33 | 6.32 | 5.88 | 555 | 357 | | |
| intercept, b | 8.27 | 5.53 | 8.25 | 252 | 3,834 | | |
| N: | 33 | 4.94 | 10.03 | 139 | 22,800 | | |

**N= 33**

| | Sampling Date | Q Discharge cfs | tZn Concentration ug/L | tZn Load lbs/day | Ln Q | Ln tZn Conc. | Ln tZn Load | tZn LC55 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | for grapn 0 | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 29-Oct-96 | 576 | 454 | 1406.9 | 6.36 | 6.12 | 7.25 | -0.71 | 0.79 | -0.59 |
| IDEQ | 26-Nov-96 | 842 | 613 | 2776.9 | 6.74 | 6.42 | 7.93 | -0.65 | 1.88 | -0.37 |
| IDEQ | 13-Dec-96 | 2470 | 489 | 6498.1 | 7.81 | 6.19 | 8.78 | -0.30 | 1.03 | 0.23 |
| IDEQ | 29-Jan-97 | 1640 | 434 | 3829.3 | 7.40 | 6.07 | 8.25 | -0.48 | 0.65 | -0.20 |
| IDEQ | 21-Feb-97 | 4120 | 328 | 7270.3 | 8.32 | 5.79 | 8.89 | 0.06 | -0.08 | 0.36 |
| IDEQ | 26-Mar-97 | 7500 | 247 | 9966.5 | 8.92 | 5.51 | 9.21 | 0.80 | -0.63 | 0.79 |
| IDEQ | 16-Apr-97 | 4730 | 196 | 4987.7 | 8.46 | 5.28 | 8.51 | 0.20 | -0.98 | -0.01 |
| IDEQ | 16-May-97 | 22800 | 300 | 36799.2 | 10.03 | 5.70 | 10.51 | 4.15 | -0.27 | 5.14 |
| IDEQ | 24-Jun-97 | 2320 | 278 | 3469.9 | 7.75 | 5.63 | 8.15 | -0.33 | -0.42 | -0.26 |
| IDEQ | 24-Jul-97 | 1030 | 368 | 2039.2 | 6.94 | 5.91 | 7.62 | -0.61 | 0.20 | -0.49 |
| IDEQ | 13-Aug-97 | 612 | 513 | 1689.1 | 6.42 | 6.24 | 7.43 | -0.70 | 1.20 | -0.55 |
| IDEQ | 16-Oct-97 | 573 | 516 | 1590.7 | 6.35 | 6.25 | 7.37 | -0.71 | 1.22 | -0.56 |
| IDEQ | 24-Nov-97 | 1410 | 336 | 2548.8 | 7.25 | 5.82 | 7.84 | -0.53 | -0.02 | -0.41 |
| IDEQ | 17-Dec-97 | 1330 | 476 | 3406.0 | 7.19 | 6.17 | 8.13 | -0.55 | 0.94 | -0.27 |
| IDEQ | 21-Jan-98 | 1290 | 396 | 2748.3 | 7.16 | 5.98 | 7.92 | -0.56 | 0.39 | -0.38 |
| IDEQ | 25-Feb-98 | 2100 | 262 | 2960.1 | 7.65 | 5.57 | 7.99 | -0.38 | -0.53 | -0.34 |
| IDEQ | 19-Mar-98 | 4190 | 209 | 4711.3 | 8.34 | 5.34 | 8.46 | 0.08 | -0.90 | -0.06 |
| IDEQ | 23-Apr-98 | 6000 | 179 | 5778.1 | 8.70 | 5.19 | 8.66 | 0.47 | -1.10 | 0.11 |
| IDEQ | 28-May-98 | 7610 | 202 | 8270.2 | 8.94 | 5.31 | 9.02 | 0.83 | -0.94 | 0.52 |
| IDEQ | 24-Jun-98 | 1590 | 320 | 2737.3 | 7.37 | 5.77 | 7.91 | -0.49 | -0.13 | -0.38 |
| IDEQ | 27-Jul-98 | 622 | 369 | 1234.8 | 6.43 | 5.91 | 7.12 | -0.70 | 0.20 | -0.62 |
| IDEQ | 25-Aug-98 | 435 | 440 | 1029.7 | 6.08 | 6.09 | 6.94 | -0.74 | 0.69 | -0.65 |
| IDEQ | 23-Sep-98 | 357 | 521 | 1000.7 | 5.88 | 6.26 | 6.91 | -0.76 | 1.25 | -0.66 |
| USGS | 16-Nov-98 | 994 | 420 | 2246.0 | 6.90 | 6.04 | 7.72 | -0.62 | 0.56 | -0.46 |
| USGS | 14-Dec-98 | 2080 | 690 | 7721.4 | 7.64 | 6.54 | 8.95 | -0.38 | 2.41 | 0.43 |
| USGS | 23-Mar-99 | 9040 | 180 | 8754.3 | 9.11 | 5.19 | 9.08 | 1.14 | -1.09 | 0.60 |
| USGS | 21-Apr-99 | 13200 | 139 | 9871.2 | 9.49 | 4.93 | 9.20 | 2.05 | -1.38 | 0.78 |
| USGS | 6-May-99 | 7490 | 120 | 4835.5 | 8.92 | 4.79 | 8.48 | 0.80 | -1.51 | -0.04 |
| USGS | 17-Jun-99 | 6870 | 126 | 4657.0 | 8.83 | 4.84 | 8.45 | 0.66 | -1.47 | -0.07 |
| USGS | 17-Jun-99 | 6870 | 126 | 4657.0 | 8.83 | 4.84 | 8.45 | 0.66 | -1.47 | -0.07 |
| USGS | 7-Jul-99 | 2400 | 239 | 3086.0 | 7.78 | 5.48 | 8.03 | -0.31 | -0.69 | -0.32 |
| USGS | 11-Aug-99 | 795 | 313 | 1338.7 | 6.68 | 5.75 | 7.20 | -0.66 | -0.18 | -0.60 |
| USGS | 2-Sep-99 | 635 | 395 | 1349.4 | 6.45 | 5.98 | 7.21 | -0.70 | 0.38 | -0.60 |

tZn

**Concentration over time analysis**

| | tZn | LC55 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.189** | **-0.00064** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 29-Oct-96 | 6.05 | 425 | | |
| mid | 19-Mar-98 | 5.73 | 308 | | |
| last | 2-Sep-99 | 5.39 | 220 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **#REF!** | **#REF!** |
| | #REF! | #REF! | #REF! | | |
| | 2-Sep-99 | #REF! | #REF! | | |

**Load over time analysis**

| | tZn | LC55 | | |
|---|---|---|---|---|
| | | | | **Load over time** |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.017** **-0.00032** |
| | **Time** | **LnLoad** | **Load** | |
| first | 29-Oct-96 | 8.33 | 4,167 | |
| mid | 19-Mar-98 | 8.17 | 3,543 | |
| last | 2-Sep-99 | 8.00 | 2,988 | |
| | **LnLoad=mTime+b >'96 r2, m** | | | **#REF!** **#REF!** |
| | #REF! | #REF! | #REF! | |
| | 2-Sep-99 | #REF! | #REF! | |

max r2: 0.919

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.189 | -0.00064 | 28.60 |
| 0.172 | -0.00063 | 28.21 |
| 0.134 | -0.00056 | 25.68 |
| 0.107 | -0.00051 | 24.09 |
| 0.088 | -0.00048 | 22.92 |
| 0.087 | -0.00050 | 23.64 |
| 0.109 | -0.00059 | 26.81 |
| 0.166 | -0.00076 | 32.92 |
| 0.182 | -0.00084 | 36.03 |
| 0.212 | -0.00096 | 40.42 |
| 0.209 | -0.00102 | 42.29 |
| 0.167 | -0.00095 | 39.82 |
| 0.123 | -0.00084 | 35.85 |
| 0.116 | -0.00087 | 36.88 |
| 0.076 | -0.00073 | 31.84 |
| 0.050 | -0.00062 | 28.13 |
| 0.056 | -0.00072 | 31.44 |
| 0.091 | -0.00099 | 41.53 |
| 0.175 | -0.00149 | 59.56 |
| 0.281 | -0.00207 | 80.59 |
| 0.308 | -0.00243 | 93.59 |
| 0.305 | -0.00273 | 104.39 |
| 0.254 | -0.00282 | 107.90 |
| 0.135 | -0.00236 | 91.21 |
| 0.044 | -0.00161 | 63.88 |
| 0.522 | 0.00598 | -212.10 |
| 0.774 | 0.00906 | -323.95 |
| 0.867 | 0.01147 | -411.67 |
| 0.919 | 0.01457 | -524.43 |

max r2: 0.946

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.017 | -0.00032 | 19.67 |
| 0.041 | -0.00050 | 26.26 |
| 0.053 | -0.00060 | 29.65 |
| 0.041 | -0.00054 | 27.72 |
| 0.043 | -0.00058 | 29.15 |
| 0.028 | -0.00049 | 25.68 |
| 0.010 | -0.00029 | 18.59 |
| 0.005 | -0.00022 | 16.08 |
| 0.028 | 0.00044 | -8.00 |
| 0.037 | 0.00055 | -11.65 |
| 0.027 | 0.00049 | -9.61 |
| 0.011 | 0.00033 | -4.00 |
| 0.001 | 0.00011 | 4.02 |
| 0.000 | 0.00003 | 7.08 |
| 0.000 | 0.00005 | 6.19 |
| 0.000 | -0.00003 | 9.16 |
| 0.000 | -0.00010 | 11.59 |
| 0.001 | 0.00013 | 3.42 |
| 0.014 | 0.00061 | -14.10 |
| 0.091 | 0.00163 | -51.13 |
| 0.108 | 0.00200 | -64.34 |
| 0.047 | 0.00143 | -43.89 |
| 0.000 | -0.00003 | 9.28 |
| 0.204 | -0.00341 | 132.04 |
| 0.679 | -0.00765 | 286.07 |
| 0.898 | -0.01281 | 473.42 |
| 0.904 | -0.01436 | 530.10 |
| 0.853 | -0.01333 | 492.53 |
| 0.946 | -0.01777 | 653.97 |

update for EV, CV

**tZn** **LC55**

**LN Analysis** **tZn**

**Load** **Load Data, EV=5070 lbs/day CV=1.22**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **5,069** | **Load Data-based LN** | | |
| **SD:** | **6,178** | u | ln tZn Load | tZn Load |
| **CV:** | **1.22** | 3 | 10.9 | 56291 |
| **Min:** | **1,000.7** | 0 | 8.08 | 3215 |
| **Max:** | **36,799** | -3 | 5.21 | 183.6 |
| **Median:** | **3,406** | | | |

| | |
|---|---|
| 5.069 | 5070 |
| 1.22 | 1.22 |

**u=mLn{Load}+ b:**

update for r2, EV, CV **r2=0.958, EV=5010lbs/day CV=1.01; max r2=0.96**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.958 | u | lnLoad | Load | |
| slope, m: | 1.196 | 3 | 10.68 | 43333 | |
| intercept, b | -9.773 | 0 | 8.17 | 3530 | |
| N | 33 | -3 | 5.66 | 287.6 | |
| E[Load]: | 5006.0 | Parameter Estimates | | | 0.958 |
| SD[Load] | 5034 | from LN regression | | | 5006.0 |
| CV[Load]. | 1.01 | update graph label | | | 1.0 |
| | | | | | max r2 |
| | | N: 33 | | | 0.964 |

| Date | tZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 23-Sep-98 | **1000.7** | 1 | 0.0188 | -2.079 | 6.908 | 0.958 |
| 25-Aug-98 | **1029.7** | 2 | 0.0489 | -1.656 | 6.937 | 0.964 |
| 27-Jul-98 | **1234.8** | 3 | 0.0789 | -1.412 | 7.119 | 0.963 |
| 11-Aug-99 | **1338.7** | 4 | 0.1090 | -1.232 | 7.199 | 0.962 |
| 2-Sep-99 | **1349.4** | 5 | 0.1391 | -1.084 | 7.207 | 0.960 |
| 29-Oct-96 | **1406.9** | 6 | 0.1692 | -0.957 | 7.249 | 0.956 |
| 16-Oct-97 | **1590.7** | 7 | 0.1992 | -0.844 | 7.372 | 0.951 |
| 13-Aug-97 | **1689.1** | 8 | 0.2293 | -0.741 | 7.432 | 0.946 |
| 24-Jul-97 | **2039.2** | 9 | 0.2594 | -0.645 | 7.620 | 0.941 |
| 16-Nov-98 | **2246.0** | 10 | 0.2895 | -0.555 | 7.717 | 0.936 |
| 24-Nov-97 | **2548.8** | 11 | 0.3195 | -0.469 | 7.843 | 0.931 |
| 24-Jun-98 | **2737.3** | 12 | 0.3496 | -0.386 | 7.915 | 0.928 |
| 21-Jan-98 | **2748.3** | 13 | 0.3797 | -0.306 | 7.919 | 0.926 |
| 26-Nov-96 | **2776.9** | 14 | 0.4098 | -0.228 | 7.929 | 0.921 |
| 25-Feb-98 | **2960.1** | 15 | 0.4398 | -0.151 | 7.993 | 0.915 |
| 7-Jul-99 | **3086.0** | 16 | 0.4699 | -0.075 | 8.035 | 0.907 |
| 17-Dec-97 | **3406.0** | 17 | 0.5000 | 0.000 | 8.133 | 0.898 |
| 24-Jun-97 | **3469.9** | 18 | 0.5301 | 0.075 | 8.152 | 0.889 |
| 29-Jan-97 | **3829.3** | 19 | 0.5602 | 0.151 | 8.250 | 0.876 |
| 17-Jun-99 | **4657.0** | 20 | 0.5902 | 0.228 | 8.446 | 0.864 |
| 17-Jun-99 | **4657.0** | 21 | 0.6203 | 0.306 | 8.446 | 0.865 |
| 19-Mar-98 | **4711.3** | 22 | 0.6504 | 0.386 | 8.458 | 0.860 |
| 6-May-99 | **4835.5** | 23 | 0.6805 | 0.469 | 8.484 | 0.851 |
| 16-Apr-97 | **4987.7** | 24 | 0.7105 | 0.555 | 8.515 | 0.835 |
| 23-Apr-98 | **5778.1** | 25 | 0.7406 | 0.645 | 8.662 | 0.810 |
| 13-Dec-96 | **6498.1** | 26 | 0.7707 | 0.741 | 8.779 | 0.791 |
| 21-Feb-97 | **7270.3** | 27 | 0.8008 | 0.844 | 8.892 | 0.780 |
| 14-Dec-98 | **7721.4** | 28 | 0.8308 | 0.957 | 8.952 | 0.788 |
| 28-May-98 | **8270.2** | 29 | 0.8609 | 1.084 | 9.020 | 0.803 |
| 23-Mar-99 | **8754.3** | 30 | 0.8910 | 1.232 | 9.077 | |
| 21-Apr-99 | **9871.2** | 31 | 0.9211 | 1.412 | 9.197 | |
| 26-Mar-97 | **9966.5** | 32 | 0.9511 | 1.656 | 9.207 | |
| 16-May-97 | **36799.2** | 33 | 0.9812 | 2.079 | 10.513 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | **LC55** | | 339 | 339 |
| **LN Analysis** | | ***tZn*** | | 0.43 | 0.429 |
| **Concentration** | | **Conc. Data, EV=339 ug/L CV=0.429** | | | |
| **Avg:** | **339** | ***Data-based LN*** | | | |
| **SD:** | **145** | u | ln[tZn] | [tZn] | |
| **CV:** | **0.43** | 3 | 7.0 | 1069 | |
| **Min:** | **120** | 0 | 5.74 | 312 | |
| **Max:** | **690** | -3 | 4.51 | 91 | |
| **Median:** | **328** | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | 0.963 | 0.963 |
| | **u=mLn(Conc.)+b:** | | | | | 347.1 | 347 |
| update for r2, EV, CV | **r2=0.963, EV=347 ug/L CV=0.537; max r2=0.98** | | | | | 0.537 | 0.537 |
| | r2 u,lnConc | 0.963 | u | lnConc | Conc. | | |
| | slope, m | 1.988 | 3 | 7.23 | 1383 | | |
| | intercept, b | -11.378 | 0 | 5.72 | 306 | | |
| | N | 33 | -3 | 4.21 | 68 | | |
| 0.958 | E[Conc] | 347.1 | Parameter Estimates | | | | |
| 5010 | SD[Conc] | 186 | from LN regression | | | | |
| 1.01 | CV[Conc] | 0.54 | *update graph label* | | | | |

| | **tZn** | N. 33 | | | | max r2 0.980 |
|---|---|---|---|---|---|---|
| | **Concentration** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **ug/L** | ***rank*** | ***plotting points*** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 6-May-99 | 120 | 1 | 0.0188 | -2.079 | 4.787 | 0.963 |
| 17-Jun-99 | 126 | 2 | 0.0489 | -1.656 | 4.836 | 0.959 |
| 17-Jun-99 | 126 | 3 | 0.0789 | -1.412 | 4.836 | 0.954 |
| 21-Apr-99 | 139 | 4 | 0.1090 | -1.232 | 4.934 | 0.955 |
| 23-Apr-98 | 179 | 5 | 0.1391 | -1.084 | 5.187 | 0.960 |
| 23-Mar-99 | 180 | 6 | 0.1692 | -0.957 | 5.193 | 0.956 |
| 16-Apr-97 | 196 | 7 | 0.1992 | -0.844 | 5.278 | 0.956 |
| 28-May-98 | 202 | 8 | 0.2293 | -0.741 | 5.308 | 0.954 |
| 19-Mar-98 | 209 | 9 | 0.2594 | -0.645 | 5.342 | 0.956 |
| 7-Jul-99 | 239 | 10 | 0.2895 | -0.555 | 5.476 | 0.965 |
| 26-Mar-97 | 247 | 11 | 0.3195 | -0.469 | 5.509 | 0.965 |
| 25-Feb-98 | 262 | 12 | 0.3496 | -0.386 | 5.568 | 0.969 |
| 24-Jun-97 | 278 | 13 | 0.3797 | -0.306 | 5.628 | 0.973 |
| 16-May-97 | 300 | 14 | 0.4098 | -0.228 | 5.704 | 0.975 |
| 11-Aug-99 | 313 | 15 | 0.4398 | -0.151 | 5.746 | 0.974 |
| 24-Jun-98 | 320 | 16 | 0.4699 | -0.075 | 5.768 | 0.973 |
| 21-Feb-97 | 328 | 17 | 0.5000 | 0.000 | 5.793 | 0.972 |
| 24-Nov-97 | 336 | 18 | 0.5301 | 0.075 | 5.817 | 0.974 |
| 24-Jul-97 | 368 | 19 | 0.5602 | 0.151 | 5.908 | 0.980 |
| 27-Jul-98 | 369 | 20 | 0.5902 | 0.228 | 5.911 | 0.977 |
| 2-Sep-99 | 395 | 21 | 0.6203 | 0.306 | 5.979 | 0.978 |
| 21-Jan-98 | 396 | 22 | 0.6504 | 0.386 | 5.981 | 0.975 |
| 16-Nov-98 | 420 | 23 | 0.6805 | 0.469 | 6.040 | 0.973 |
| 29-Jan-97 | 434 | 24 | 0.7105 | 0.555 | 6.073 | 0.968 |
| 25-Aug-98 | 440 | 25 | 0.7406 | 0.645 | 6.087 | 0.963 |
| 29-Oct-96 | 454 | 26 | 0.7707 | 0.741 | 6.118 | 0.955 |
| 17-Dec-97 | 476 | 27 | 0.8008 | 0.844 | 6.165 | 0.943 |
| 13-Dec-96 | 489 | 28 | 0.8308 | 0.957 | 6.192 | 0.936 |
| 13-Aug-97 | 513 | 29 | 0.8609 | 1.084 | 6.240 | 0.926 |
| 16-Oct-97 | 516 | 30 | 0.8910 | 1.232 | 6.246 | |
| 23-Sep-98 | 521 | 31 | 0.9211 | 1.412 | 6.256 | |
| 26-Nov-96 | 613 | 32 | 0.9511 | 1.656 | 6.418 | |
| 14-Dec-98 | 690 | 33 | 0.9812 | 2.079 | 6.537 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **LC55** | | | 3,834 | 3830 |
| **LN Analysis** | | **tZn** | | | 1.19 | 1.19 |
| **Discharge, Q** | | **Q Data, EV=3830 cfs CV=1.19** | | | | |
| **Avg:** | **3,834** | **Q Data-based LN** | | | | |
| **SD:** | **4,574** | u | lnQ | Q | | |
| **CV:** | **1.19** | 3 | 10.6 | 41421 | | |
| **Min:** | **357** | 0 | 7.81 | 2463 | | |
| **Max:** | **22,800** | -3 | 4.99 | 146 | | |
| **Median:** | **2,080** | | | | | |
| | | | | | 0.967 | 0.967 |
| | | | | | 4137.6 | 4140 |
| | **u=mLn(Q)+b:** | | | | 1.65 | 1.65 |

update for r2, EV, CV: **r2=0.967, EV=4140 cfs CV=1.65; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.967 | u | lnQ | Q |
| slope, m: | 0.872 | 3 | 11.11 | 66817 |
| intercept, b: | -6.692 | 0 | 7.67 | 2145 |
| N: | 33 | -3 | 4.23 | 69 |
| E[Q] | 4137.6 | Parameter Estimates | | |
| SD[Q] | 6825 | from LN regression | | |
| CV[Q] | 1.65 | update graph label | | |

| | Q | N | 33 | | | max r2 0.979 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 23-Sep-98 | 357 | 1 | 0.0188 | -2.079 | 5.878 | 0.967 |
| 25-Aug-98 | 435 | 2 | 0.0489 | -1.656 | 6.075 | 0.973 |
| 16-Oct-97 | 573 | 3 | 0.0789 | -1.412 | 6.351 | 0.975 |
| 29-Oct-96 | 576 | 4 | 0.1090 | -1.232 | 6.356 | 0.978 |
| 13-Aug-97 | 612 | 5 | 0.1391 | -1.084 | 6.417 | 0.979 |
| 27-Jul-98 | 622 | 6 | 0.1692 | -0.957 | 6.433 | 0.977 |
| 2-Sep-99 | 635 | 7 | 0.1992 | -0.844 | 6.454 | 0.975 |
| 11-Aug-99 | 795 | 8 | 0.2293 | -0.741 | 6.678 | 0.973 |
| 26-Nov-96 | 842 | 9 | 0.2594 | -0.645 | 6.736 | 0.970 |
| 16-Nov-98 | 994 | 10 | 0.2895 | -0.555 | 6.902 | 0.967 |
| 24-Jul-97 | 1030 | 11 | 0.3195 | -0.469 | 6.937 | 0.964 |
| 21-Jan-98 | 1290 | 12 | 0.3496 | -0.386 | 7.162 | 0.961 |
| 17-Dec-97 | 1330 | 13 | 0.3797 | -0.306 | 7.193 | 0.957 |
| 24-Nov-97 | 1410 | 14 | 0.4098 | -0.228 | 7.251 | 0.952 |
| 24-Jun-98 | 1590 | 15 | 0.4398 | -0.151 | 7.371 | 0.948 |
| 29-Jan-97 | 1640 | 16 | 0.4699 | -0.075 | 7.402 | 0.942 |
| 14-Dec-98 | 2080 | 17 | 0.5000 | 0.000 | 7.640 | 0.938 |
| 25-Feb-98 | 2100 | 18 | 0.5301 | 0.075 | 7.650 | 0.931 |
| 24-Jun-97 | 2320 | 19 | 0.5602 | 0.151 | 7.749 | 0.923 |
| 7-Jul-99 | 2400 | 20 | 0.5902 | 0.228 | 7.783 | 0.916 |
| 13-Dec-96 | 2470 | 21 | 0.6203 | 0.306 | 7.812 | 0.915 |
| 21-Feb-97 | 4120 | 22 | 0.6504 | 0.386 | 8.324 | 0.944 |
| 19-Mar-98 | 4190 | 23 | 0.6805 | 0.469 | 8.340 | 0.934 |
| 16-Apr-97 | 4730 | 24 | 0.7105 | 0.555 | 8.462 | 0.924 |
| 23-Apr-98 | 6000 | 25 | 0.7406 | 0.645 | 8.700 | 0.909 |
| 17-Jun-99 | 6870 | 26 | 0.7707 | 0.741 | 8.835 | 0.902 |
| 17-Jun-99 | 6870 | 27 | 0.8008 | 0.844 | 8.835 | 0.923 |
| 6-May-99 | 7490 | 28 | 0.8308 | 0.957 | 8.921 | 0.936 |
| 26-Mar-97 | 7500 | 29 | 0.8609 | 1.084 | 8.923 | 0.972 |
| 28-May-98 | 7610 | 30 | 0.8910 | 1.232 | 8.937 | |
| 23-Mar-99 | 9040 | 31 | 0.9211 | 1.412 | 9.109 | |
| 21-Apr-99 | 13200 | 32 | 0.9511 | 1.656 | 9.488 | |
| 16-May-97 | 22800 | 33 | 0.9812 | 2.079 | 10.035 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **LC60** | **Date:** | **14-Jul-00** |
| **Chemical:** | **dCd** | **Analyst:** | **J.Johnston** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,038 | 3,031 | 2 | 28 | 0.00 | 0.00 | 0.00 |
| **SD:** | 735 | 3,048 | 1 | 29 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.01 | 0.37 | 1.04 | | | |
| **Min:** | 33,883 | 202 | 1 | 1.8 | -0.93 | -1.33 | -0.90 |
| **Max:** | 36,412 | 12,400 | 5 | 165 | 3.07 | 4.09 | 4.82 |
| **Median:** | 34,926 | 1,800 | 2 | 18 | -0.40 | 0.03 | -0.34 |

| dCd | LC60 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.0993)** | | update r2 | **0.10** | 0.0993 | r2 | 0.004 | 0.004 |
| r2 Q,[COC]: | 0.10 | [dCd] | Q | | m: | 0.2674 | 0.00010 |
| slope, m: | 0.0 | 2 | 202.0 | | b: | -6339 | 4.00 |
| intercept, b: | 2.1 | 2 | 3031.4 | | | | |
| N: 91 | | 1 | 12400 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.147)** | | update r2 | 0.15 | 0.147 | | | |
| r2 lnQ,ln[COC]: | 0.15 | ln[dCd] | ln Q | [dCd] | Q | | |
| slope, m: | -0.12 | 0.85 | 5.31 | 2 | 202 | | |
| intercept, b: | 1.49 | 0.52 | 8.02 | 2 | 3,031 | | |
| N: 91 | | 0.35 | 9.43 | 1 | 12,400 | | |

**N= 91**

| | Sampling Date | Q Discharge | dCd Concentration | dCd Load | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd LC60 Standardized Values = (x - Avg)/SD | | for graph 0 |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | Q | Conc | Load |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 6-Oct-92 | 202 | 2.88 | 3.1 | 5.31 | 1.06 | 1.14 | -0.93 | 1.37 | -0.85 |
| IDEQ | 20-Oct-92 | 507 | 1.93 | 5.3 | 6.23 | 0.66 | 1.66 | -0.83 | 0.03 | -0.78 |
| IDEQ | 17-Nov-92 | 776 | 1.93 | 8.1 | 6.65 | 0.66 | 2.09 | -0.74 | 0.03 | -0.68 |
| IDEQ | 9-Dec-92 | 704 | 1.93 | 7.3 | 6.56 | 0.66 | 1.99 | -0.76 | 0.03 | -0.71 |
| IDEQ | 16-Feb-93 | 789 | 2.88 | 12.2 | 6.67 | 1.06 | 2.50 | -0.74 | 1.37 | -0.53 |
| IDEQ | 10-Mar-93 | 1970 | 2.88 | 30.5 | 7.59 | 1.06 | 3.42 | -0.35 | 1.37 | 0.11 |
| IDEQ | 24-Mar-93 | 8030 | 3.83 | 165.5 | 8.99 | 1.34 | 5.11 | 1.64 | 2.72 | 4.82 |
| IDEQ | 26-Mar-93 | 9040 | 1.93 | 93.9 | 9.11 | 0.66 | 4.54 | 1.97 | 0.03 | 2.32 |
| IDEQ | 12-Apr-93 | 9680 | 1.93 | 100.5 | 9.18 | 0.66 | 4.61 | 2.18 | 0.03 | 2.55 |
| IDEQ | 20-Apr-93 | 9100 | 0.97 | 47.5 | 9.12 | -0.03 | 3.86 | 1.99 | -1.33 | 0.70 |
| IDEQ | 5-May-93 | 8720 | 1.93 | 90.5 | 9.07 | 0.66 | 4.51 | 1.87 | 0.03 | 2.20 |
| IDEQ | 17-May-93 | 8590 | 1.93 | 89.2 | 9.06 | 0.66 | 4.49 | 1.82 | 0.03 | 2.15 |
| IDEQ | 2-Jun-93 | 3250 | 1.93 | 33.7 | 8.09 | 0.66 | 3.52 | 0.07 | 0.03 | 0.22 |
| IDEQ | 21-Jun-93 | 1400 | 1.93 | 14.5 | 7.24 | 0.66 | 2.68 | -0.54 | 0.03 | -0.45 |
| IDEQ | 22-Jul-93 | 1900 | 1.93 | 19.7 | 7.55 | 0.66 | 2.98 | -0.37 | 0.03 | -0.27 |
| IDEQ | 17-Aug-93 | 1010 | 1.93 | 10.5 | 6.92 | 0.66 | 2.35 | -0.66 | 0.03 | -0.59 |
| IDEQ | 20-Sep-93 | 626 | 1.93 | 6.5 | 6.44 | 0.66 | 1.87 | -0.79 | 0.03 | -0.73 |
| IDEQ | 20-Oct-93 | 674 | 1.93 | 7.0 | 6.51 | 0.66 | 1.95 | -0.77 | 0.03 | -0.72 |
| IDEQ | 16-Nov-93 | 465 | 1.93 | 4.8 | 6.14 | 0.66 | 1.57 | -0.84 | 0.03 | -0.79 |
| IDEQ | 13-Dec-93 | 877 | 3.83 | 18.1 | 6.78 | 1.34 | 2.89 | -0.71 | 2.72 | -0.33 |
| IDEQ | 18-Jan-94 | 1800 | 1.93 | 18.7 | 7.50 | 0.66 | 2.93 | -0.40 | 0.03 | -0.31 |
| IDEQ | 23-Feb-94 | 820 | 1.93 | 8.5 | 6.71 | 0.66 | 2.14 | -0.73 | 0.03 | -0.66 |
| IDEQ | 14-Mar-94 | 2080 | 1.93 | 21.6 | 7.64 | 0.66 | 3.07 | -0.31 | 0.03 | -0.21 |
| IDEQ | 6-Apr-94 | 4750 | 0.97 | 24.8 | 8.47 | -0.03 | 3.21 | 0.56 | -1.33 | -0.10 |
| IDEQ | 20-Apr-94 | 7780 | 1.93 | 80.8 | 8.96 | 0.66 | 4.39 | 1.56 | 0.03 | 1.86 |
| IDEQ | 11-May-94 | 2760 | 0.97 | 14.4 | 7.92 | -0.03 | 2.67 | -0.09 | -1.33 | -0.46 |
| IDEQ | 14-Jun-94 | 1280 | 2.88 | 19.8 | 7.15 | 1.06 | 2.99 | -0.57 | 1.37 | -0.27 |
| IDEQ | 20-Jul-94 | 648 | 1.93 | 6.7 | 6.47 | 0.66 | 1.91 | -0.78 | 0.03 | -0.73 |
| IDEQ | 15-Aug-94 | 346 | 0.97 | 1.8 | 5.85 | -0.03 | 0.59 | -0.88 | -1.33 | -0.90 |
| IDEQ | 20-Sep-94 | 221 | 1.93 | 2.3 | 5.40 | 0.66 | 0.83 | -0.92 | 0.03 | -0.88 |
| IDEQ | 6-Oct-94 | 281 | 1.64 | 2.5 | 5.64 | 0.49 | 0.91 | -0.90 | -0.38 | -0.87 |
| IDEQ | 22-Nov-94 | 444 | 2.88 | 6.9 | 6.10 | 1.06 | 1.93 | -0.85 | 1.37 | -0.72 |
| IDEQ | 16-Dec-94 | 774 | 2.12 | 8.8 | 6.65 | 0.75 | 2.18 | -0.74 | 0.30 | -0.65 |
| IDEQ | 12-Jan-95 | 4822 | 3.74 | 97.0 | 8.48 | 1.32 | 4.57 | 0.59 | 2.59 | 2.43 |
| IDEQ | 16-Feb-95 | 2626 | 1.16 | 16.4 | 7.87 | 0.15 | 2.80 | -0.13 | -1.06 | -0.39 |
| IDEQ | 7-Mar-95 | 3326 | 0.97 | 17.4 | 8.11 | -0.03 | 2.85 | 0.10 | -1.33 | -0.35 |
| IDEQ | 23-Mar-95 | 8328 | 1.35 | 60.5 | 9.03 | 0.30 | 4.10 | 1.74 | -0.79 | 1.15 |
| IDEQ | 14-Apr-95 | 4631 | 1.64 | 40.9 | 8.44 | 0.49 | 3.71 | 0.52 | -0.38 | 0.47 |

dCd

**Concentration over time analysis**

| | dCd | LC60 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.073** | **-0.00013** |
| | **Time** | **LnJCOCJ** | **JCOCJ** | | |
| first | 6-Oct-92 | 0.73 | 2 | | |
| mid | 15-Aug-95 | 0.60 | 2 | | |
| last | 9-Sep-99 | 0.41 | 2 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.105** | **-0.00028** |
| | 28-Dec-95 | 0.71 | 2 | | |
| | 9-Sep-99 | 0.34 | 1 | | |

**Load over time analysis**

| | dCd | LC60 | | | |
|---|---|---|---|---|---|
| | | | | ***Load over time*** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.000** | **-0.00003** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 6-Oct-92 | 2.86 | 18 | | |
| mid | 15-Aug-95 | 2.84 | 17 | | |
| last | 9-Sep-99 | 2.79 | 16 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.008** | **-0.00020** |
| | 28-Dec-95 | 3.00 | 20 | | |
| | 9-Sep-99 | 2.73 | 15 | | |

up

| | max r2. 0.776 | | | max r2. 0.958 | | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.073 | -0.00013 | 5.02 | 0.000 | -0.00003 | 3.80 |
| | 0.064 | -0.00012 | 4.74 | 0.003 | -0.00007 | 5.29 |
| | 0.063 | -0.00012 | 4.79 | 0.005 | -0.00010 | 6.43 |
| | 0.063 | -0.00012 | 4.85 | 0.008 | -0.00012 | 7.24 |
| | 0.063 | -0.00012 | 4.90 | 0.011 | -0.00015 | 8.18 |
| | 0.054 | -0.00011 | 4.59 | 0.013 | -0.00016 | 8.68 |
| | 0.045 | -0.00010 | 4.25 | 0.012 | -0.00016 | 8.35 |
| | 0.033 | -0.00009 | 3.63 | 0.005 | -0.00010 | 6.39 |
| | 0.032 | -0.00009 | 3.62 | 0.002 | -0.00006 | 4.84 |
| | 0.030 | -0.00009 | 3.61 | 0.000 | -0.00001 | 3.10 |
| | 0.046 | -0.00011 | 4.33 | 0.000 | 0.00002 | 2.01 |
| | 0.046 | -0.00011 | 4.35 | 0.003 | 0.00008 | 0.14 |
| | 0.045 | -0.00011 | 4.37 | 0.009 | 0.00013 | -1.87 |
| | 0.044 | -0.00011 | 4.40 | 0.013 | 0.00016 | -2.92 |
| | 0.043 | -0.00011 | 4.42 | 0.013 | 0.00016 | -3.04 |
| | 0.042 | -0.00011 | 4.44 | 0.014 | 0.00018 | -3.53 |
| | 0.041 | -0.00011 | 4.45 | 0.013 | 0.00017 | -3.27 |
| | 0.040 | -0.00011 | 4.47 | 0.009 | 0.00015 | -2.38 |
| | 0.038 | -0.00011 | 4.48 | 0.006 | 0.00012 | -1.51 |
| | 0.037 | -0.00011 | 4.49 | 0.003 | 0.00008 | -0.08 |
| | 0.023 | -0.00009 | 3.56 | 0.003 | 0.00009 | -0.33 |
| | 0.021 | -0.00008 | 3.51 | 0.004 | 0.00010 | -0.64 |
| | 0.020 | -0.00008 | 3.46 | 0.002 | 0.00008 | 0.13 |
| | 0.018 | -0.00008 | 3.39 | 0.003 | 0.00009 | -0.36 |
| | 0.032 | -0.00011 | 4.34 | 0.004 | 0.00011 | -1.10 |
| | 0.031 | -0.00011 | 4.31 | 0.012 | 0.00018 | -3.72 |
| | 0.050 | -0.00014 | 5.37 | 0.012 | 0.00019 | -3.83 |
| | 0.038 | -0.00012 | 4.75 | 0.013 | 0.00020 | -4.46 |
| | 0.036 | -0.00012 | 4.73 | 0.009 | 0.00017 | -3.36 |
| | 0.059 | -0.00015 | 5.86 | 0.002 | 0.00008 | 0.05 |
| | 0.057 | -0.00015 | 5.89 | 0.000 | -0.00001 | 3.30 |
| | 0.062 | -0.00016 | 6.20 | 0.004 | -0.00011 | 6.72 |
| | 0.048 | -0.00014 | 5.53 | 0.009 | -0.00016 | 8.53 |
| | 0.043 | -0.00014 | 5.35 | 0.014 | -0.00020 | 10.04 |
| | 0.025 | -0.00010 | 4.10 | 0.005 | -0.00012 | 7.24 |
| | 0.038 | -0.00012 | 4.94 | 0.006 | -0.00013 | 7.55 |
| | 0.063 | -0.00016 | 6.20 | 0.006 | -0.00014 | 7.77 |
| | 0.078 | -0.00018 | 6.91 | 0.002 | -0.00008 | 5.52 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | **LC60** | | |
| **LN Analysis** | | **dCd** | | |
| **Load** | | **Load Data, EV=27.5 lbs/day CV=1.04** | | |
| **Avg:** | **28** | **Load Data-based LN** | | |
| **SD:** | **29** | u | ln dCd Load | dCd Load |
| **CV:** | **1.04** | 3 | 5.5 | 249 |
| **Min:** | **1.8** | 0 | 2.95 | 19 |
| **Max:** | **165** | -3 | 0.38 | 1.5 |
| **Median:** | **18** | | | |
| | | 28 | 27.5 | |
| | | 1.04 | 1.04 | |

**u=m*ln(Load)+ b:**

update for r2, EV, CV: **r2=0.99, EV=29lbs/day CV=1.39; max r2=0.99**

| | | | | | | update |
|---|---|---|---|---|---|---|
| r2 u,lnLoad | 0.990 | u | lnLoad | Load | | |
| slope, m. | 0.965 | 3 | 5.94 | 380 | | |
| intercept, b | -2.734 | 0 | 2.83 | 17 | | |
| N | 91 | -3 | -0.28 | 0.8 | | |
| E[Load] | 29.0 | Parameter Estimates | | | 0.990 | 0.99 |
| SD[Load] | 40 | from LN regression | | | 29 0 | 29 |
| CV[Load] | 1.39 | update graph label | | | 1.4 | 1.39 |
| | | | | | max r2 | |
| | **dCd** | N: 91 | | | 0.990 | |
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 15-Aug-94 | **1.8** | 1 | 0.0068 | -2.465 | 0.591 | 0.990 |
| 20-Sep-94 | **2.3** | 2 | 0.0178 | -2.101 | 0.831 | 0.990 |
| 6-Oct-94 | **2.5** | 3 | 0.0288 | -1.899 | 0.908 | 0.990 |
| 23-Sep-98 | **2.8** | 4 | 0.0397 | -1.754 | 1.017 | 0.989 |
| 25-Aug-98 | **3.0** | 5 | 0.0507 | -1.638 | 1.110 | 0.989 |
| 6-Oct-92 | **3.1** | 6 | 0.0616 | -1.541 | 1.141 | 0.988 |
| 9-Sep-99 | **3.9** | 7 | 0.0726 | -1.457 | 1.360 | 0.988 |
| 26-Sep-96 | **4.4** | 8 | 0.0836 | -1.382 | 1.476 | 0.987 |
| 14-Sep-95 | **4.5** | 9 | 0.0945 | -1.313 | 1.504 | 0.987 |
| 16-Nov-93 | **4.8** | 10 | 0.1055 | -1.251 | 1.574 | 0.987 |
| 20-Oct-92 | **5.3** | 11 | 0.1164 | -1.193 | 1.661 | 0.986 |
| 3-Sep-97 | **5.5** | 12 | 0.1274 | -1.139 | 1.697 | 0.986 |
| 21-Aug-96 | **5.5** | 13 | 0.1384 | -1.088 | 1.707 | 0.986 |
| 29-Oct-96 | **6.0** | 14 | 0.1493 | -1.039 | 1.795 | 0.985 |
| 15-Aug-95 | **6.3** | 15 | 0.1603 | -0.993 | 1.835 | 0.985 |
| 27-Jul-98 | **6.4** | 16 | 0.1712 | -0.949 | 1.853 | 0.984 |
| 16-Oct-97 | **6.4** | 17 | 0.1822 | -0.907 | 1.855 | 0.984 |
| 20-Sep-93 | **6.5** | 18 | 0.1932 | -0.866 | 1.872 | 0.983 |
| 13-Aug-97 | **6.5** | 19 | 0.2041 | -0.827 | 1.877 | 0.983 |
| 20-Jul-94 | **6.7** | 20 | 0.2151 | -0.789 | 1.906 | 0.982 |
| 11-Aug-99 | **6.7** | 21 | 0.2260 | -0.752 | 1.909 | 0.982 |
| 22-Nov-94 | **6.9** | 22 | 0.2370 | -0.716 | 1.929 | 0.981 |
| 20-Oct-93 | **7.0** | 23 | 0.2479 | -0.681 | 1.946 | 0.981 |
| 26-Jul-95 | **7.2** | 24 | 0.2589 | -0.647 | 1.978 | 0.981 |
| 9-Dec-92 | **7.3** | 25 | 0.2699 | -0.613 | 1.989 | 0.981 |
| 17-Nov-92 | **8.1** | 26 | 0.2808 | -0.580 | 2.087 | 0.982 |
| 23-Feb-94 | **8.5** | 27 | 0.2918 | -0.548 | 2.142 | 0.982 |
| 16-Dec-94 | **8.8** | 28 | 0.3027 | -0.517 | 2.178 | 0.982 |
| 12-Jul-95 | **9.2** | 29 | 0.3137 | -0.485 | 2.219 | 0.982 |
| 23-Jul-96 | **9.6** | 30 | 0.3247 | -0.455 | 2.258 | 0.982 |
| 14-Jul-99 | **10.2** | 31 | 0.3356 | -0.424 | 2.319 | 0.982 |
| 17-Aug-93 | **10.5** | 32 | 0.3466 | -0.395 | 2.350 | 0.981 |
| 24-Jul-97 | **10.6** | 33 | 0.3575 | -0.365 | 2.364 | 0.981 |
| 17-Dec-97 | **11.3** | 34 | 0.3685 | -0.336 | 2.423 | 0.982 |
| 28-Jun-95 | **12.1** | 35 | 0.3795 | -0.307 | 2.491 | 0.982 |
| 16-Feb-93 | **12.2** | 36 | 0.3904 | -0.278 | 2.503 | 0.981 |
| 11-May-94 | **14.4** | 37 | 0.4014 | -0.250 | 2.667 | 0.981 |
| 21-Jun-93 | **14.5** | 38 | 0.4123 | -0.222 | 2.677 | 0.980 |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **dCd** | | **LC60** | | 2 | 1.91 |
| **LN Analysis** | | ***dCd*** | | 0.37 | 0.37 |
| **Concentration** | | **Conc. Data, EV=1.91 ug/L CV=0.37** | | | |
| **Avg:** | **2** | **Data-based LN** | | | |
| **SD:** | **1** | u | ln[dCd] | {dCd} | |
| **CV:** | **0.37** | 3 | 1.7 | 5 | |
| **Min:** | **1** | 0 | 0.58 | 2 | |
| **Max:** | **5** | -3 | -0.49 | 1 | |
| **Median:** | **2** | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.951 | 0.951 |
| | **u=mLn(Conc.)+b:** | | | 1.9 | 1.92 |
| for r2, EV, CV: | **r2=0.951, EV=1.92 ug/L CV=0.371; max r2=0.76** | | | 0.371 | 0.371 |
| | r2 u,lnConc: | 0.951 | u | lnConc. | Conc |
| | slope, m | 2.785 | 3 | 1.66 | 5 |
| | intercept, b | -1.634 | 0 | 0.59 | 2 |
| | N: 91 | | -3 | -0.49 | 1 |
| | E[Conc] | 1.9 | Parameter Estimates | | |
| | SD[Conc]: | 1 | from LN regression | | |
| | CV[Conc]: | 0.37 | update graph label | | |

| Date | dCd Concentration ug/L Ranked | i rank (N: 91) | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.970 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 20-Apr-93 | 0.97 | 1 | 0.0068 | -2.465 | -0.030 | 0.951 |
| 6-Apr-94 | 0.97 | 2 | 0.0178 | -2.101 | -0.030 | 0.955 |
| 11-May-94 | 0.97 | 3 | 0.0288 | -1.899 | -0.030 | 0.955 |
| 15-Aug-94 | 0.97 | 4 | 0.0397 | -1.754 | -0.030 | 0.953 |
| 7-Mar-95 | 0.97 | 5 | 0.0507 | -1.638 | -0.030 | 0.951 |
| 21-Apr-99 | 1 | 6 | 0.0616 | -1.541 | 0.000 | 0.949 |
| 6-May-99 | 1 | 7 | 0.0726 | -1.457 | 0.000 | 0.947 |
| 27-May-99 | 1 | 8 | 0.0836 | -1.382 | 0.000 | 0.945 |
| 17-Jun-99 | 1 | 9 | 0.0945 | -1.313 | 0.000 | 0.943 |
| 14-Jul-99 | 1 | 10 | 0.1055 | -1.251 | 0.000 | 0.942 |
| 16-Feb-95 | 1.16 | 11 | 0.1164 | -1.193 | 0.148 | 0.942 |
| 16-Apr-97 | 1.2 | 12 | 0.1274 | -1.139 | 0.182 | 0.940 |
| 19-Mar-98 | 1.2 | 13 | 0.1384 | -1.088 | 0.182 | 0.938 |
| 23-Mar-99 | 1.2 | 14 | 0.1493 | -1.039 | 0.182 | 0.936 |
| 18-Apr-96 | 1.26 | 15 | 0.1603 | -0.993 | 0.231 | 0.934 |
| 9-May-96 | 1.26 | 16 | 0.1712 | -0.949 | 0.231 | 0.931 |
| 23-Apr-98 | 1.3 | 17 | 0.1822 | -0.907 | 0.262 | 0.929 |
| 25-Aug-98 | 1.3 | 18 | 0.1932 | -0.866 | 0.262 | 0.926 |
| 23-Mar-95 | 1.35 | 19 | 0.2041 | -0.827 | 0.300 | 0.924 |
| 21-Nov-95 | 1.35 | 20 | 0.2151 | -0.789 | 0.300 | 0.921 |
| 27-Mar-97 | 1.4 | 21 | 0.2260 | -0.752 | 0.336 | 0.918 |
| 24-Jun-97 | 1.4 | 22 | 0.2370 | -0.716 | 0.336 | 0.916 |
| 23-Sep-98 | 1.4 | 23 | 0.2479 | -0.681 | 0.336 | 0.913 |
| 11-May-95 | 1.45 | 24 | 0.2589 | -0.647 | 0.372 | 0.910 |
| 28-Feb-96 | 1.45 | 25 | 0.2699 | -0.613 | 0.372 | 0.907 |
| 27-Mar-96 | 1.45 | 26 | 0.2808 | -0.580 | 0.372 | 0.904 |
| 28-May-98 | 1.5 | 27 | 0.2918 | -0.548 | 0.405 | 0.900 |
| 18-Jan-96 | 1.54 | 28 | 0.3027 | -0.517 | 0.432 | 0.897 |
| 17-Dec-97 | 1.6 | 29 | 0.3137 | -0.485 | 0.470 | 0.893 |
| 6-Oct-94 | 1.64 | 30 | 0.3247 | -0.455 | 0.495 | 0.891 |
| 14-Apr-95 | 1.64 | 31 | 0.3356 | -0.424 | 0.495 | 0.889 |
| 28-Jun-95 | 1.64 | 32 | 0.3466 | -0.395 | 0.495 | 0.886 |
| 25-Feb-98 | 1.7 | 33 | 0.3575 | -0.365 | 0.531 | 0.883 |
| 24-May-95 | 1.73 | 34 | 0.3685 | -0.336 | 0.548 | 0.881 |
| 30-Jan-97 | 1.8 | 35 | 0.3795 | -0.307 | 0.588 | 0.880 |
| 27-Apr-95 | 1.83 | 36 | 0.3904 | -0.278 | 0.604 | 0.882 |
| 14-Jun-95 | 1.83 | 37 | 0.4014 | -0.250 | 0.604 | 0.884 |
| 12-Jul-95 | 1.83 | 38 | 0.4123 | -0.222 | 0.604 | 0.886 |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dCd** | | **LC60** | | | 3,031 | 3030 |
| **LN Analysis** | | **dCd** | | | 1.01 | 1.01 |
| **Discharge, Q** | | **Q Data, EV=3030 cfs CV=1.01** | | | | |
| **Avg:** | **3,031** | **Q Data-based LN** | | | | |
| **SD:** | **3,048** | u | lnQ | Q | | |
| **CV:** | **1.01** | 3 | 10.2 | 26234 | | |
| **Min:** | **202** | 0 | 7.67 | 2138 | | |
| **Max:** | **12,400** | -3 | 5.16 | 174 | | |
| **Median:** | **1,800** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.964 | 0.964 |
| | | | | | 3335.8 | 3340 |
| **u=mLn(Q)+b:** | | | | | 1.62 | 1.62 |
| te for r2, EV, CV: | **r2=0.964, EV=3340 cfs CV=1.62; max r2=0.99** | | | | | |
| | r2 u,lnQ | 0.964 | u | lnQ | Q | |
| | slope, m. | 0.882 | 3 | 10.87 | 52596 | |
| | intercept, b. | -6.591 | 0 | 7.47 | 1755 | |
| | N: 91 | | -3 | 4.07 | 59 | |
| | E[Q]: | 3335.8 | Parameter Estimates | | | |
| | SD[Q]: | 5393 | from LN regression | | | |
| | CV[Q]: | 1.62 | update graph label | | | |

N: 91

| | Q | | | | | max r2 0.985 |
|---|---|---|---|---|---|---|
| | Discharge | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | cfs | rank | plotting points | y-axis | x-axis | forward |
| | Ranked | | | | | |
| update and rank for new data | | | | | | |
| ## | 202 | 1 | 0.0068 | -2.465 | 5.308 | 0.964 |
| ## | 221 | 2 | 0.0178 | -2.101 | 5.398 | 0.965 |
| ## | 281 | 3 | 0.0288 | -1.899 | 5.638 | 0.964 |
| ## | 346 | 4 | 0.0397 | -1.754 | 5.846 | 0.964 |
| ## | 362 | 5 | 0.0507 | -1.638 | 5.892 | 0.964 |
| ## | 367 | 6 | 0.0616 | -1.541 | 5.905 | 0.964 |
| ## | 368 | 7 | 0.0726 | -1.457 | 5.908 | 0.964 |
| ## | 414 | 8 | 0.0836 | -1.382 | 6.026 | 0.963 |
| ## | 427 | 9 | 0.0945 | -1.313 | 6.057 | 0.962 |
| ## | 434 | 10 | 0.1055 | -1.251 | 6.073 | 0.961 |
| ## | 444 | 11 | 0.1164 | -1.193 | 6.096 | 0.960 |
| ## | 461 | 12 | 0.1274 | -1.139 | 6.133 | 0.959 |
| ## | 465 | 13 | 0.1384 | -1.088 | 6.142 | 0.957 |
| ## | 504 | 14 | 0.1493 | -1.039 | 6.223 | 0.956 |
| ## | 507 | 15 | 0.1603 | -0.993 | 6.229 | 0.954 |
| ## | 589 | 16 | 0.1712 | -0.949 | 6.378 | 0.952 |
| ## | 594 | 17 | 0.1822 | -0.907 | 6.387 | 0.951 |
| ## | 607 | 18 | 0.1932 | -0.866 | 6.409 | 0.949 |
| ## | 624 | 19 | 0.2041 | -0.827 | 6.436 | 0.948 |
| ## | 626 | 20 | 0.2151 | -0.789 | 6.439 | 0.946 |
| ## | 627 | 21 | 0.2260 | -0.752 | 6.441 | 0.944 |
| ## | 634 | 22 | 0.2370 | -0.716 | 6.452 | 0.942 |
| ## | 648 | 23 | 0.2479 | -0.681 | 6.474 | 0.940 |
| ## | 674 | 24 | 0.2589 | -0.647 | 6.513 | 0.938 |
| ## | 704 | 25 | 0.2699 | -0.613 | 6.557 | 0.937 |
| ## | 711 | 26 | 0.2808 | -0.580 | 6.567 | 0.935 |
| ## | 774 | 27 | 0.2918 | -0.548 | 6.652 | 0.933 |
| ## | 776 | 28 | 0.3027 | -0.517 | 6.654 | 0.931 |
| ## | 789 | 29 | 0.3137 | -0.485 | 6.671 | 0.929 |
| ## | 820 | 30 | 0.3247 | -0.455 | 6.709 | 0.928 |
| ## | 851 | 31 | 0.3356 | -0.424 | 6.746 | 0.927 |
| ## | 877 | 32 | 0.3466 | -0.395 | 6.777 | 0.925 |
| ## | 934 | 33 | 0.3575 | -0.365 | 6.839 | 0.924 |
| ## | 1010 | 34 | 0.3685 | -0.336 | 6.918 | 0.923 |
| ## | 1040 | 35 | 0.3795 | -0.307 | 6.947 | 0.922 |
| ## | 1100 | 36 | 0.3904 | -0.278 | 7.003 | 0.920 |
| ## | 1280 | 37 | 0.4014 | -0.250 | 7.155 | 0.919 |
| ## | 1280 | 38 | 0.4123 | -0.222 | 7.155 | 0.916 |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **LC60** | **Date:** | **14-Jul-00** |
| **Chemical:** | **dPb** | **Analyst:** | **J.Johnston** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 35,038 | 3,031 | 8 | 150 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 735 | 3,048 | 4 | 184 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.01 | 0.48 | 1.23 | | | | |
| **Min:** | 33,883 | 202 | 2 | 2.3 | | -0.93 | -1.67 | -0.80 |
| **Max:** | 36,412 | 12,400 | 22 | 934 | | 3.07 | 3.79 | 4.25 |
| **Median:** | 34,926 | 1,800 | 7 | 67 | | -0.40 | -0.21 | -0.45 |

| dPb | LC60 | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.142)** | | update r2 | **0.14** | 0.142 | | r2: | 0.004 | 0.004 |
| r2 Q,[COC]: | 0.14 | [dPb] | Q | | | m: | 0.2674 | 0.00010 |
| slope, m: | 0.0 | 6 | 202.0 | | | b: | -6339 | 4.00 |
| intercept, b: | 6.4 | 8 | 3031.4 | | | | | |
| N: 91 | | 12 | 12400 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.269)** | | update r2 | | 0.27 | 0.269 | | | |
| r2 lnQ,ln[COC]: | 0.27 | ln[dPb] | ln Q | [dPb] | Q | | | |
| slope, m | 0.24 | 1.40 | 5.31 | 4 | 202 | | | |
| intercept, b | 0.11 | 2.06 | 8.02 | 8 | 3,031 | | | |
| N: 91 | | 2.40 | 9.43 | 11 | 12,400 | | | |

N= 91

| | Sampling Date | Q Discharge cfs | dPb Concentration ug/L | dPb Load lbs/day | Ln Q | Ln dPb Conc. | Ln dPb Load | for graph: 0 dPb LC60 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 6-Oct-92 | 202 | 5.3 | 5.8 | 5.31 | 1.67 | 1.75 | -0.93 | -0.66 | -0.78 |
| IDEQ | 20-Oct-92 | 507 | 5.7 | 15.5 | 6.23 | 1.74 | 2.74 | -0.83 | -0.55 | -0.73 |
| IDEQ | 17-Nov-92 | 776 | 4.2 | 17.5 | 6.65 | 1.44 | 2.86 | -0.74 | -0.95 | -0.72 |
| IDEQ | 9-Dec-92 | 704 | 5.7 | 21.6 | 6.56 | 1.74 | 3.07 | -0.76 | -0.55 | -0.70 |
| IDEQ | 16-Feb-93 | 789 | 9.7 | 41.2 | 6.67 | 2.27 | 3.72 | -0.74 | 0.51 | -0.59 |
| IDEQ | 10-Mar-93 | 1970 | 5.9 | 62.5 | 7.59 | 1.77 | 4.14 | -0.35 | -0.50 | -0.47 |
| IDEQ | 24-Mar-93 | 8030 | 4.9 | 211.7 | 8.99 | 1.59 | 5.36 | 1.64 | -0.77 | 0.33 |
| IDEQ | 26-Mar-93 | 9040 | 13.1 | 637.1 | 9.11 | 2.57 | 6.46 | 1.97 | 1.42 | 2.64 |
| IDEQ | 12-Apr-93 | 9680 | 9.8 | 510.4 | 9.18 | 2.28 | 6.24 | 2.18 | 0.54 | 1.95 |
| IDEQ | 20-Apr-93 | 9100 | 9.9 | 484.7 | 9.12 | 2.29 | 6.18 | 1.99 | 0.57 | 1.82 |
| IDEQ | 5-May-93 | 8720 | 9 | 422.2 | 9.07 | 2.20 | 6.05 | 1.87 | 0.33 | 1.48 |
| IDEQ | 17-May-93 | 8590 | 8.6 | 397.4 | 9.06 | 2.15 | 5.99 | 1.82 | 0.22 | 1.34 |
| IDEQ | 2-Jun-93 | 3250 | 5.2 | 90.9 | 8.09 | 1.65 | 4.51 | 0.07 | -0.69 | -0.32 |
| IDEQ | 21-Jun-93 | 1400 | 6.1 | 45.9 | 7.24 | 1.81 | 3.83 | -0.54 | -0.45 | -0.56 |
| IDEQ | 22-Jul-93 | 1900 | 4.8 | 49.1 | 7.55 | 1.57 | 3.89 | -0.37 | -0.79 | -0.55 |
| IDEQ | 17-Aug-93 | 1010 | 5.8 | 31.5 | 6.92 | 1.76 | 3.45 | -0.66 | -0.53 | -0.64 |
| IDEQ | 20-Sep-93 | 626 | 5.2 | 17.5 | 6.44 | 1.65 | 2.86 | -0.79 | -0.69 | -0.72 |
| IDEQ | 20-Oct-93 | 674 | 4.9 | 17.8 | 6.51 | 1.59 | 2.88 | -0.77 | -0.77 | -0.72 |
| IDEQ | 16-Nov-93 | 465 | 5.6 | 14.0 | 6.14 | 1.72 | 2.64 | -0.84 | -0.58 | -0.74 |
| IDEQ | 13-Dec-93 | 877 | 6.6 | 31.1 | 6.78 | 1.89 | 3.44 | -0.71 | -0.31 | -0.65 |
| IDEQ | 18-Jan-94 | 1800 | 4.5 | 43.6 | 7.50 | 1.50 | 3.77 | -0.40 | -0.87 | -0.58 |
| IDEQ | 23-Feb-94 | 820 | 7.6 | 33.5 | 6.71 | 2.03 | 3.51 | -0.73 | -0.05 | -0.63 |
| IDEQ | 14-Mar-94 | 2080 | 5.1 | 57.1 | 7.64 | 1.63 | 4.04 | -0.31 | -0.71 | -0.50 |
| IDEQ | 6-Apr-94 | 4750 | 7.8 | 199.3 | 8.47 | 2.05 | 5.29 | 0.56 | 0.01 | 0.27 |
| IDEQ | 20-Apr-94 | 7780 | 4.5 | 188.4 | 8.96 | 1.50 | 5.24 | 1.56 | -0.87 | 0.21 |
| IDEQ | 11-May-94 | 2760 | 4.9 | 72.8 | 7.92 | 1.59 | 4.29 | -0.09 | -0.77 | -0.42 |
| IDEQ | 14-Jun-94 | 1280 | 5.1 | 35.1 | 7.15 | 1.63 | 3.56 | -0.57 | -0.71 | -0.62 |
| IDEQ | 20-Jul-94 | 648 | 5.7 | 19.9 | 6.47 | 1.74 | 2.99 | -0.78 | -0.55 | -0.71 |
| IDEQ | 15-Aug-94 | 346 | 5.5 | 10.2 | 5.85 | 1.70 | 2.33 | -0.88 | -0.61 | -0.76 |
| IDEQ | 20-Sep-94 | 221 | 5.6 | 6.7 | 5.40 | 1.72 | 1.90 | -0.92 | -0.58 | -0.78 |
| IDEQ | 6-Oct-94 | 281 | 1.5 | 2.3 | 5.64 | 0.41 | 0.82 | -0.90 | -1.67 | -0.80 |
| IDEQ | 22-Nov-94 | 444 | 5 | 11.9 | 6.10 | 1.61 | 2.48 | -0.85 | -0.74 | -0.75 |
| IDEQ | 16-Dec-94 | 774 | 7 | 29.1 | 6.65 | 1.95 | 3.37 | -0.74 | -0.21 | -0.66 |
| IDEQ | 12-Jan-95 | 4822 | 7 | 181.6 | 8.48 | 1.95 | 5.20 | 0.59 | -0.21 | 0.17 |
| IDEQ | 16-Feb-95 | 2626 | 5 | 70.6 | 7.87 | 1.61 | 4.26 | -0.13 | -0.74 | -0.43 |
| IDEQ | 7-Mar-95 | 3326 | 22 | 393.7 | 8.11 | 3.09 | 5.98 | 0.10 | 3.79 | 1.32 |
| IDEQ | 23-Mar-95 | 8328 | 12 | 537.7 | 9.03 | 2.48 | 6.29 | 1.74 | 1.13 | 2.10 |
| IDEQ | 14-Apr-95 | 4631 | 10 | 249.1 | 8.44 | 2.30 | 5.52 | 0.52 | 0.59 | 0.54 |

dPb

**Concentration over time analysis**

| | dPb | LC60 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.000** | **0.00001** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 6-Oct-92 | 1.92 | 7 | | |
| mid | 15-Aug-95 | 1.93 | 7 | | |
| last | 9-Sep-99 | 1.94 | 7 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.101** | **-0.00044** |
| | 28-Dec-95 | 2.27 | 10 | | |
| | 9-Sep-99 | 1.68 | 5 | | |

**Load over time analysis**

| | dPb | LC60 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.003** | **0.00011** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 6-Oct-92 | 4.05 | 57 | | |
| mid | 15-Aug-95 | 4.16 | 64 | | |
| last | 9-Sep-99 | 4.33 | 76 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.010** | **-0.00036** |
| | 28-Dec-95 | 4.55 | 95 | | |
| | 9-Sep-99 | 4.07 | 59 | | |

| | max r2 | 0.542 | | max r2 | 0.954 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points, delete last 4 rows | | | only on >4 data points, delete last 4 rows | | |
| | 0.000 | 0.00001 | 1.54 | 0.003 | 0.00011 | 0.32 |
| | 0.000 | 0.00000 | 1.76 | 0.001 | 0.00005 | 2.32 |
| | 0.000 | 0.00000 | 1.93 | 0.000 | 0.00002 | 3.56 |
| | 0.000 | -0.00001 | 2.38 | 0.000 | -0.00002 | 4.77 |
| | 0.001 | -0.00002 | 2.58 | 0.001 | -0.00005 | 5.86 |
| | 0.000 | -0.00001 | 2.30 | 0.001 | -0.00006 | 6.38 |
| | 0.000 | -0.00001 | 2.46 | 0.001 | -0.00007 | 6.55 |
| | 0.001 | -0.00002 | 2.81 | 0.000 | -0.00004 | 5.58 |
| | 0.000 | -0.00001 | 2.21 | 0.000 | 0.00002 | 3.43 |
| | 0.000 | 0.00000 | 1.87 | 0.002 | 0.00008 | 1.36 |
| | 0.000 | 0.00001 | 1.50 | 0.005 | 0.00014 | -0.82 |
| | 0.001 | 0.00002 | 1.19 | 0.009 | 0.00020 | -3.02 |
| | 0.001 | 0.00003 | 0.91 | 0.016 | 0.00027 | -5.33 |
| | 0.001 | 0.00002 | 1.19 | 0.018 | 0.00029 | -6.12 |
| | 0.000 | 0.00002 | 1.31 | 0.018 | 0.00029 | -6.15 |
| | 0.000 | 0.00001 | 1.72 | 0.018 | 0.00029 | -6.25 |
| | 0.000 | 0.00000 | 1.93 | 0.016 | 0.00028 | -5.79 |
| | 0.000 | -0.00001 | 2.29 | 0.012 | 0.00025 | -4.55 |
| | 0.001 | -0.00002 | 2.76 | 0.008 | 0.00021 | -3.23 |
| | 0.001 | -0.00003 | 3.08 | 0.005 | 0.00016 | -1.49 |
| | 0.002 | -0.00004 | 3.20 | 0.003 | 0.00014 | -0.69 |
| | 0.003 | -0.00005 | 3.86 | 0.003 | 0.00013 | -0.29 |
| | 0.003 | -0.00005 | 3.83 | 0.002 | 0.00010 | 0.50 |
| | 0.005 | -0.00007 | 4.36 | 0.002 | 0.00010 | 0.60 |
| | 0.005 | -0.00007 | 4.31 | 0.004 | 0.00015 | -1.13 |
| | 0.008 | -0.00009 | 5.09 | 0.006 | 0.00020 | -2.94 |
| | 0.012 | -0.00011 | 5.81 | 0.007 | 0.00021 | -3.39 |
| | 0.016 | -0.00013 | 6.51 | 0.005 | 0.00019 | -2.70 |
| | 0.019 | -0.00014 | 7.07 | 0.003 | 0.00015 | -1.01 |
| | 0.023 | -0.00016 | 7.74 | 0.001 | 0.00007 | 1.93 |
| | 0.028 | -0.00018 | 8.41 | 0.000 | -0.00004 | 5.82 |
| | 0.066 | -0.00027 | 11.45 | 0.007 | -0.00022 | 11.97 |
| | 0.079 | -0.00030 | 12.54 | 0.014 | -0.00031 | 15.54 |
| | 0.084 | -0.00031 | 13.09 | 0.020 | -0.00038 | 17.78 |
| | 0.090 | -0.00033 | 13.67 | 0.016 | -0.00035 | 16.81 |
| | 0.106 | -0.00036 | 14.90 | 0.018 | -0.00037 | 17.51 |
| | 0.085 | -0.00032 | 13.37 | 0.011 | -0.00030 | 14.95 |
| | 0.076 | -0.00031 | 12.90 | 0.005 | -0.00020 | 11.50 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dPb** | | **LC60** | | |
| **LN Analysis** | | **dPb** | | |
| **Load** | | **Load Data, EV=150 lbs/day CV=1.23** | | |
| **Avg:** | **150** | **Load Data-based LN** | | |
| **SD:** | **184** | u | ln dPb Load | dPb Load |
| **CV:** | **1.23** | 3 | 7.4 | 1683 |
| **Min:** | **2.3** | 0 | 4.55 | 95 |
| **Max:** | **934** | -3 | 1.67 | 5.3 |
| **Median:** | **67** | | | |
| | | 150 | 150 | |
| | | 1.23 | 1.23 | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **r2=0.98, EV=191lbs/day CV=2.76; max r2=0.98**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.980 | u | lnLoad | Load | |
| slope, m | 0.681 | 3 | 8.58 | 5318 | |
| intercept, b | -2.844 | 0 | 4.17 | 65 | |
| N: | 91 | -3 | -0.23 | 0.8 | |
| E[Load]: | 191.0 | Parameter Estimates | | | 0.980 |
| SD[Load]: | 528 | from LN regression | | | 191.0 |
| CV[Load] | 2.76 | update graph label | | | 2.8 |
| | | | | | max r2 |
| | | N: 91 | | | 0.981 |

| Date | dPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 6-Oct-94 | **2.3** | 1 | 0.0068 | -2.465 | 0.819 | 0.980 |
| 21-Aug-96 | **3.4** | 2 | 0.0178 | -2.101 | 1.237 | 0.979 |
| 6-Oct-92 | **5.8** | 3 | 0.0288 | -1.899 | 1.751 | 0.978 |
| 9-Sep-99 | **5.8** | 4 | 0.0397 | -1.754 | 1.765 | 0.978 |
| 23-Sep-98 | **5.9** | 5 | 0.0507 | -1.638 | 1.779 | 0.977 |
| 20-Sep-94 | **6.7** | 6 | 0.0616 | -1.541 | 1.896 | 0.976 |
| 14-Sep-95 | **6.7** | 7 | 0.0726 | -1.457 | 1.899 | 0.975 |
| 25-Aug-98 | **7.0** | 8 | 0.0836 | -1.382 | 1.947 | 0.974 |
| 3-Sep-97 | **7.4** | 9 | 0.0945 | -1.313 | 2.007 | 0.973 |
| 26-Sep-96 | **7.9** | 10 | 0.1055 | -1.251 | 2.069 | 0.972 |
| 15-Aug-94 | **10.2** | 11 | 0.1164 | -1.193 | 2.326 | 0.972 |
| 15-Aug-95 | **10.8** | 12 | 0.1274 | -1.139 | 2.384 | 0.971 |
| 22-Nov-94 | **11.9** | 13 | 0.1384 | -1.088 | 2.480 | 0.970 |
| 11-Aug-99 | **13.5** | 14 | 0.1493 | -1.039 | 2.602 | 0.969 |
| 16-Nov-93 | **14.0** | 15 | 0.1603 | -0.993 | 2.640 | 0.968 |
| 20-Oct-92 | **15.5** | 16 | 0.1712 | -0.949 | 2.744 | 0.967 |
| 27-Jul-98 | **16.8** | 17 | 0.1822 | -0.907 | 2.821 | 0.965 |
| 20-Sep-93 | **17.5** | 18 | 0.1932 | -0.866 | 2.863 | 0.964 |
| 17-Nov-92 | **17.5** | 19 | 0.2041 | -0.827 | 2.864 | 0.963 |
| 20-Oct-93 | **17.8** | 20 | 0.2151 | -0.789 | 2.877 | 0.962 |
| 29-Oct-96 | **19.0** | 21 | 0.2260 | -0.752 | 2.945 | 0.961 |
| 20-Jul-94 | **19.9** | 22 | 0.2370 | -0.716 | 2.989 | 0.960 |
| 26-Jul-95 | **20.5** | 23 | 0.2479 | -0.681 | 3.019 | 0.959 |
| 9-Dec-92 | **21.6** | 24 | 0.2589 | -0.647 | 3.072 | 0.958 |
| 23-Jul-96 | **23.0** | 25 | 0.2699 | -0.613 | 3.133 | 0.957 |
| 16-Oct-97 | **25.6** | 26 | 0.2808 | -0.580 | 3.241 | 0.956 |
| 16-Dec-94 | **29.1** | 27 | 0.2918 | -0.548 | 3.372 | 0.955 |
| 13-Aug-97 | **29.4** | 28 | 0.3027 | -0.517 | 3.381 | 0.954 |
| 13-Dec-93 | **31.1** | 29 | 0.3137 | -0.485 | 3.439 | 0.953 |
| 17-Aug-93 | **31.5** | 30 | 0.3247 | -0.455 | 3.450 | 0.951 |
| 16-Nov-98 | **32.5** | 31 | 0.3356 | -0.424 | 3.483 | 0.950 |
| 14-Dec-98 | **32.8** | 32 | 0.3466 | -0.395 | 3.491 | 0.949 |
| 23-Feb-94 | **33.5** | 33 | 0.3575 | -0.365 | 3.512 | 0.948 |
| 14-Jun-94 | **35.1** | 34 | 0.3685 | -0.336 | 3.559 | 0.947 |
| 26-Nov-96 | **36.6** | 35 | 0.3795 | -0.307 | 3.601 | 0.947 |
| 16-Feb-93 | **41.2** | 36 | 0.3904 | -0.278 | 3.718 | 0.947 |
| 18-Jan-94 | **43.6** | 37 | 0.4014 | -0.250 | 3.775 | 0.946 |
| 24-Nov-97 | **45.5** | 38 | 0.4123 | -0.222 | 3.818 | 0.945 |

update for EV CV

| | | | | | |
|---|---|---|---|---|---|
| **dPb** | | **LC60** | | 8 | 7.78 |
| **LN Analysis** | | **dPb** | | 0.48 | 0.482 |

**Concentration**

**Conc. Data, EV=7.78 ug/L CV=0.482**

| | | **Data-based LN** | | |
|---|---|---|---|---|
| **Avg:** | **8** | u | ln[dPb] | [dPb] |
| **SD:** | **4** | 3 | 3.3 | 28 |
| **CV:** | **0.48** | 0 | 1.95 | 7 |
| **Min:** | **2** | -3 | 0.58 | 2 |
| **Max:** | **22** | | | |
| **Median:** | **7** | | | |

**u=mLn(Conc.)+b:** 0.971 0.971

update for r2, EV, CV: **r2=0.971, EV=7.92 ug/L CV=0.569; max r2=0.98** 7.9 7.92 0.569 0.569

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.971 | u | lnConc. | Conc |
| slope, m | 1.889 | 3 | 3.52 | 34 |
| intercept, b | -3.646 | 0 | 1.93 | 7 |
| N | 91 | -3 | 0.34 | 1 |
| E[Conc] | 7.9 | Parameter Estimates | | |
| SD[Conc] | 5 | from LN regression | | |
| CV[Conc] | 0.57 | update graph label | | |

0.98
191
2.76

N= 91

| Date | dPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.980 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 6-Oct-94 | 1.5 | 1 | 0.0068 | -2.465 | 0.405 | 0.971 |
| 21-Aug-96 | 1.5 | 2 | 0.0178 | -2.101 | 0.405 | 0.972 |
| 14-Dec-98 | 2.5 | 3 | 0.0288 | -1.899 | 0.916 | 0.980 |
| 14-Sep-95 | 3 | 4 | 0.0397 | -1.754 | 1.099 | 0.979 |
| 3-Sep-97 | 3 | 5 | 0.0507 | -1.638 | 1.099 | 0.978 |
| 25-Aug-98 | 3 | 6 | 0.0616 | -1.541 | 1.099 | 0.977 |
| 23-Sep-98 | 3 | 7 | 0.0726 | -1.457 | 1.099 | 0.977 |
| 9-Sep-99 | 3 | 8 | 0.0836 | -1.382 | 1.099 | 0.977 |
| 6-May-99 | 3.7 | 9 | 0.0945 | -1.313 | 1.308 | 0.977 |
| 15-Aug-95 | 4 | 10 | 0.1055 | -1.251 | 1.386 | 0.977 |
| 21-Nov-95 | 4 | 11 | 0.1164 | -1.193 | 1.386 | 0.976 |
| 26-Sep-96 | 4 | 12 | 0.1274 | -1.139 | 1.386 | 0.975 |
| 11-Aug-99 | 4 | 13 | 0.1384 | -1.088 | 1.386 | 0.974 |
| 17-Nov-92 | 4.2 | 14 | 0.1493 | -1.039 | 1.435 | 0.973 |
| 17-Jun-99 | 4.2 | 15 | 0.1603 | -0.993 | 1.435 | 0.972 |
| 18-Jan-94 | 4.5 | 16 | 0.1712 | -0.949 | 1.504 | 0.971 |
| 20-Apr-94 | 4.5 | 17 | 0.1822 | -0.907 | 1.504 | 0.970 |
| 22-Jul-93 | 4.8 | 18 | 0.1932 | -0.866 | 1.569 | 0.969 |
| 24-Mar-93 | 4.9 | 19 | 0.2041 | -0.827 | 1.589 | 0.969 |
| 20-Oct-93 | 4.9 | 20 | 0.2151 | -0.789 | 1.589 | 0.968 |
| 11-May-94 | 4.9 | 21 | 0.2260 | -0.752 | 1.589 | 0.967 |
| 22-Nov-94 | 5 | 22 | 0.2370 | -0.716 | 1.609 | 0.966 |
| 16-Feb-95 | 5 | 23 | 0.2479 | -0.681 | 1.609 | 0.965 |
| 27-Jul-98 | 5 | 24 | 0.2589 | -0.647 | 1.609 | 0.964 |
| 14-Mar-94 | 5.1 | 25 | 0.2699 | -0.613 | 1.629 | 0.962 |
| 14-Jun-94 | 5.1 | 26 | 0.2808 | -0.580 | 1.629 | 0.961 |
| 2-Jun-93 | 5.2 | 27 | 0.2918 | -0.548 | 1.649 | 0.960 |
| 20-Sep-93 | 5.2 | 28 | 0.3027 | -0.517 | 1.649 | 0.959 |
| 6-Oct-92 | 5.3 | 29 | 0.3137 | -0.485 | 1.668 | 0.957 |
| 15-Aug-94 | 5.5 | 30 | 0.3247 | -0.455 | 1.705 | 0.956 |
| 16-Nov-98 | 5.5 | 31 | 0.3356 | -0.424 | 1.705 | 0.954 |
| 16-Nov-93 | 5.6 | 32 | 0.3466 | -0.395 | 1.723 | 0.953 |
| 20-Sep-94 | 5.6 | 33 | 0.3575 | -0.365 | 1.723 | 0.951 |
| 20-Oct-92 | 5.7 | 34 | 0.3685 | -0.336 | 1.740 | 0.950 |
| 9-Dec-92 | 5.7 | 35 | 0.3795 | -0.307 | 1.740 | 0.948 |
| 20-Jul-94 | 5.7 | 36 | 0.3904 | -0.278 | 1.740 | 0.947 |
| 17-Aug-93 | 5.8 | 37 | 0.4014 | -0.250 | 1.758 | 0.946 |
| 10-Mar-93 | 5.9 | 38 | 0.4123 | -0.222 | 1.775 | 0.945 |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dPb** | | **LC60** | | | 3,031 | 3030 |
| **LN Analysis** | | **dPb** | | | 1.01 | 1.01 |
| **Discharge, Q** | | **Q Data, EV=3030 cfs CV=1.01** | | | | |
| **Avg:** | **3,031** | **Q Data-based LN** | | | | |
| **SD:** | **3,048** | u | lnQ | Q | | |
| **CV:** | **1.01** | 3 | 10.2 | 26234 | | |
| **Min:** | **202** | 0 | 7.67 | 2138 | | |
| **Max:** | **12,400** | -3 | 5.16 | 174 | | |
| **Median:** | **1,800** | | | | | |
| | | | | | 0.964 | 0.964 |
| | | | | | 3335.8 | 3340 |
| | **u=mLn(Q)+b:** | | | | 1.62 | 1.62 |

update for r2, EV, CV: **r2=0.964, EV=3340 cfs CV=1.62; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.964 | u | lnQ | Q |
| slope, m. | 0.882 | 3 | 10.87 | 52596 |
| intercept, b | -6.591 | 0 | 7.47 | 1755 |
| N | 91 | -3 | 4.07 | 59 |
| E[Q] | 3335.8 | Parameter Estimates | | |
| SD[Q] | 5393 | from LN regression | | |
| CV[Q] | 1.62 | update graph label | | |

| | | | N 91 | | | max r2 0.985 |
|---|---|---|---|---|---|---|
| | **Q Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 6-Oct-92 | 202 | 1 | 0.0068 | -2.465 | 5.308 | 0.964 |
| 20-Sep-94 | 221 | 2 | 0.0178 | -2.101 | 5.398 | 0.965 |
| 6-Oct-94 | 281 | 3 | 0.0288 | -1.899 | 5.638 | 0.964 |
| 15-Aug-94 | 346 | 4 | 0.0397 | -1.754 | 5.846 | 0.964 |
| 9-Sep-99 | 362 | 5 | 0.0507 | -1.638 | 5.892 | 0.964 |
| 23-Sep-98 | 367 | 6 | 0.0616 | -1.541 | 5.905 | 0.964 |
| 26-Sep-96 | 368 | 7 | 0.0726 | -1.457 | 5.908 | 0.964 |
| 14-Sep-95 | 414 | 8 | 0.0836 | -1.382 | 6.026 | 0.963 |
| 21-Aug-96 | 427 | 9 | 0.0945 | -1.313 | 6.057 | 0.962 |
| 25-Aug-98 | 434 | 10 | 0.1055 | -1.251 | 6.073 | 0.961 |
| 22-Nov-94 | 444 | 11 | 0.1164 | -1.193 | 6.096 | 0.960 |
| 3-Sep-97 | 461 | 12 | 0.1274 | -1.139 | 6.133 | 0.959 |
| 16-Nov-93 | 465 | 13 | 0.1384 | -1.088 | 6.142 | 0.957 |
| 15-Aug-95 | 504 | 14 | 0.1493 | -1.039 | 6.223 | 0.956 |
| 20-Oct-92 | 507 | 15 | 0.1603 | -0.993 | 6.229 | 0.954 |
| 29-Oct-96 | 589 | 16 | 0.1712 | -0.949 | 6.378 | 0.952 |
| 16-Oct-97 | 594 | 17 | 0.1822 | -0.907 | 6.387 | 0.951 |
| 13-Aug-97 | 607 | 18 | 0.1932 | -0.866 | 6.409 | 0.949 |
| 27-Jul-98 | 624 | 19 | 0.2041 | -0.827 | 6.436 | 0.948 |
| 20-Sep-93 | 626 | 20 | 0.2151 | -0.789 | 6.439 | 0.946 |
| 11-Aug-99 | 627 | 21 | 0.2260 | -0.752 | 6.441 | 0.944 |
| 26-Jul-95 | 634 | 22 | 0.2370 | -0.716 | 6.452 | 0.942 |
| 20-Jul-94 | 648 | 23 | 0.2479 | -0.681 | 6.474 | 0.940 |
| 20-Oct-93 | 674 | 24 | 0.2589 | -0.647 | 6.513 | 0.938 |
| 9-Dec-92 | 704 | 25 | 0.2699 | -0.613 | 6.557 | 0.937 |
| 23-Jul-96 | 711 | 26 | 0.2808 | -0.580 | 6.567 | 0.935 |
| 16-Dec-94 | 774 | 27 | 0.2918 | -0.548 | 6.652 | 0.933 |
| 17-Nov-92 | 776 | 28 | 0.3027 | -0.517 | 6.654 | 0.931 |
| 16-Feb-93 | 789 | 29 | 0.3137 | -0.485 | 6.671 | 0.929 |
| 23-Feb-94 | 820 | 30 | 0.3247 | -0.455 | 6.709 | 0.928 |
| 26-Nov-96 | 851 | 31 | 0.3356 | -0.424 | 6.746 | 0.927 |
| 13-Dec-93 | 877 | 32 | 0.3466 | -0.395 | 6.777 | 0.925 |
| 12-Jul-95 | 934 | 33 | 0.3575 | -0.365 | 6.839 | 0.924 |
| 17-Aug-93 | 1010 | 34 | 0.3685 | -0.336 | 6.918 | 0.923 |
| 24-Jul-97 | 1040 | 35 | 0.3795 | -0.307 | 6.947 | 0.922 |
| 16-Nov-98 | 1100 | 36 | 0.3904 | -0.278 | 7.003 | 0.920 |
| 14-Jun-94 | 1280 | 37 | 0.4014 | -0.250 | 7.155 | 0.919 |
| 21-Jan-98 | 1280 | 38 | 0.4123 | -0.222 | 7.155 | 0.916 |

**Secondary Scale For LN graphs**

| u | *Cumulative* Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | ***0.15866*** | 10000 | 1000 |
| ***0.00*** | ***0.50000*** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **LC60** | **Date:** | **12-Jul-00** |
| **Chemical:** | **dZn** | **Analyst:** | **B.Walthall** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,038 | 3,031 | 342 | 4,028 | 0.00 | 0.00 | 0.00 |
| **SD:** | 735 | 3,048 | 148 | 3,263 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.01 | 0.43 | 0.81 | | | |
| **Min:** | 33,883 | 202 | 90 | 499.6 | -0.93 | -1.70 | -1.08 |
| **Max:** | 36,412 | 12,400 | 920 | 18,153 | 3.07 | 3.92 | 4.33 |
| **Median:** | 34,926 | 1,800 | 322 | 2,868 | -0.40 | -0.14 | -0.36 |

| dZn LC60 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.406)** | | update r2 | **0.41** | 0.406 | r2 | 0.004 | 0.004 |
| r2 Q,[COC] | 0.41 | [tCd] | Q | | m | 0.2674 | 0.00010 |
| slope, m | 0.0 | 429 | 202.0 | | b | -6339 | 4.00 |
| intercept, b | 435.1 | 342 | 3031.4 | | | | |
| N: 91 | | 52 | 12400 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.544)** | | update r2 | 0.54 | 0.544 | | | |
| r2 lnQ,ln[COC] | 0.54 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m | -0.30 | 6.38 | 5.31 | 592 | 202 | | |
| intercept, b | 7.96 | 5.58 | 8.02 | 264 | 3,031 | | |
| N: 91 | | 5.16 | 9.43 | 174 | 12,400 | | |

**N= 91**

| | Sampling Date | Q Discharge cfs | dZn Concentration ug/L | dZn Load lbs/day | Ln Q | Ln dZn Conc. | Ln dZn Load | dZn LC60 for graph 0 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 6-Oct-92 | 202 | 659.5 | 716.7 | 5.31 | 6.49 | 6.57 | -0.93 | 2.15 | -1.01 |
| IDEQ | 20-Oct-92 | 507 | 450.1 | 1227.7 | 6.23 | 6.11 | 7.11 | -0.83 | 0.74 | -0.86 |
| IDEQ | 17-Nov-92 | 776 | 380.3 | 1587.7 | 6.65 | 5.94 | 7.37 | -0.74 | 0.26 | -0.75 |
| IDEQ | 9-Dec-92 | 704 | 509.9 | 1931.3 | 6.56 | 6.23 | 7.57 | -0.76 | 1.14 | -0.64 |
| IDEQ | 16-Feb-93 | 789 | 509.9 | 2164.4 | 6.67 | 6.23 | 7.68 | -0.74 | 1.14 | -0.57 |
| IDEQ | 10-Mar-93 | 1970 | 440.2 | 4665.5 | 7.59 | 6.09 | 8.45 | -0.35 | 0.67 | 0.20 |
| IDEQ | 24-Mar-93 | 8030 | 420.2 | 18153.2 | 8.99 | 6.04 | 9.81 | 1.64 | 0.53 | 4.33 |
| IDEQ | 26-Mar-93 | 9040 | 240.8 | 11711.4 | 9.11 | 5.48 | 9.37 | 1.97 | -0.68 | 2.35 |
| IDEQ | 12-Apr-93 | 9680 | 161 | 8384.6 | 9.18 | 5.08 | 9.03 | 2.18 | -1.22 | 1.34 |
| IDEQ | 20-Apr-93 | 9100 | 161 | 7882.2 | 9.12 | 5.08 | 8.97 | 1.99 | -1.22 | 1.18 |
| IDEQ | 5-May-93 | 8720 | 171 | 8022.2 | 9.07 | 5.14 | 8.99 | 1.87 | -1.15 | 1.22 |
| IDEQ | 17-May-93 | 8590 | 190.9 | 8822.3 | 9.06 | 5.25 | 9.09 | 1.82 | -1.02 | 1.47 |
| IDEQ | 2-Jun-93 | 3250 | 280.6 | 4906.3 | 8.09 | 5.64 | 8.50 | 0.07 | -0.41 | 0.27 |
| IDEQ | 21-Jun-93 | 1400 | 350.4 | 2639.2 | 7.24 | 5.86 | 7.88 | -0.54 | 0.06 | -0.43 |
| IDEQ | 22-Jul-93 | 1900 | 280.6 | 2868.3 | 7.55 | 5.64 | 7.96 | -0.37 | -0.41 | -0.36 |
| IDEQ | 17-Aug-93 | 1010 | 370.4 | 2012.7 | 6.92 | 5.91 | 7.61 | -0.66 | 0.20 | -0.62 |
| IDEQ | 20-Sep-93 | 626 | 430.2 | 1448.9 | 6.44 | 6.06 | 7.28 | -0.79 | 0.60 | -0.79 |
| IDEQ | 20-Oct-93 | 674 | 500 | 1813.1 | 6.51 | 6.21 | 7.50 | -0.77 | 1.07 | -0.68 |
| IDEQ | 16-Nov-93 | 465 | 569.8 | 1425.5 | 6.14 | 6.35 | 7.26 | -0.84 | 1.55 | -0.80 |
| IDEQ | 13-Dec-93 | 877 | 599.7 | 2829.5 | 6.78 | 6.40 | 7.95 | -0.71 | 1.75 | -0.37 |
| IDEQ | 18-Jan-94 | 1800 | 280.6 | 2717.3 | 7.50 | 5.64 | 7.91 | -0.40 | -0.41 | -0.40 |
| IDEQ | 23-Feb-94 | 820 | 480 | 2117.6 | 6.71 | 6.17 | 7.66 | -0.73 | 0.94 | -0.59 |
| IDEQ | 14-Mar-94 | 2080 | 280.6 | 3140.0 | 7.64 | 5.64 | 8.05 | -0.31 | -0.41 | -0.27 |
| IDEQ | 6-Apr-94 | 4750 | 180.9 | 4622.9 | 8.47 | 5.20 | 8.44 | 0.56 | -1.09 | 0.18 |
| IDEQ | 20-Apr-94 | 7780 | 190.9 | 7990.4 | 8.96 | 5.25 | 8.99 | 1.56 | -1.02 | 1.21 |
| IDEQ | 11-May-94 | 2760 | 190.9 | 2834.6 | 7.92 | 5.25 | 7.95 | -0.09 | -1.02 | -0.37 |
| IDEQ | 14-Jun-94 | 1280 | 340.5 | 2344.8 | 7.15 | 5.83 | 7.76 | -0.57 | -0.01 | -0.52 |
| IDEQ | 20-Jul-94 | 648 | 410.2 | 1430.1 | 6.47 | 6.02 | 7.27 | -0.78 | 0.46 | -0.80 |
| IDEQ | 15-Aug-94 | 346 | 270.7 | 503.9 | 5.85 | 5.60 | 6.22 | -0.88 | -0.48 | -1.08 |
| IDEQ | 20-Sep-94 | 221 | 420.2 | 499.6 | 5.40 | 6.04 | 6.21 | -0.92 | 0.53 | -1.08 |
| IDEQ | 6-Oct-94 | 281 | 396.3 | 599.1 | 5.64 | 5.98 | 6.40 | -0.90 | 0.37 | -1.05 |
| IDEQ | 22-Nov-94 | 444 | 500 | 1194.4 | 6.10 | 6.21 | 7.09 | -0.85 | 1.07 | -0.87 |
| IDEQ | 16-Dec-94 | 774 | 386.3 | 1608.6 | 6.65 | 5.96 | 7.38 | -0.74 | 0.30 | -0.74 |
| IDEQ | 12-Jan-95 | 4822 | 364.4 | 9453.4 | 8.48 | 5.90 | 9.15 | 0.59 | 0.15 | 1.66 |
| IDEQ | 16-Feb-95 | 2626 | 226.8 | 3204.2 | 7.87 | 5.42 | 8.07 | -0.13 | -0.78 | -0.25 |
| IDEQ | 7-Mar-95 | 3326 | 204.9 | 3666.5 | 8.11 | 5.32 | 8.21 | 0.10 | -0.93 | -0.11 |
| IDEQ | 23-Mar-95 | 8328 | 174 | 7796.0 | 9.03 | 5.16 | 8.96 | 1.74 | -1.13 | 1.15 |
| IDEQ | 14-Apr-95 | 4631 | 219.8 | 5476.3 | 8.44 | 5.39 | 8.61 | 0.52 | -0.82 | 0.44 |

dZn

**Concentration over time analysis**

| | dZn | LC60 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.035** | **-0.00011** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 6-Oct-92 | 5.87 | 354 | | |
| mid | 15-Aug-95 | 5.75 | 315 | | |
| last | 9-Sep-99 | 5.59 | 266 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.180** | **-0.00051** |
| | 28-Dec-95 | 6.07 | 431 | | |
| | 9-Sep-99 | 5.38 | 216 | | |

**Load over time analysis**

| | dZn | LC60 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.000** | **-0.00001** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 6-Oct-92 | 8.00 | 2,983 | | |
| mid | 15-Aug-95 | 7.99 | 2,941 | | |
| last | 9-Sep-99 | 7.97 | 2,882 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.047** | **-0.00043** |
| | 28-Dec-95 | 8.35 | 4,247 | | |
| | 9-Sep-99 | 7.77 | 2,368 | | |

max r2 0.912

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points, delete last 4 rows | | |
| 0.035 | -0.00011 | 9.69 |
| 0.026 | -0.00010 | 9.15 |
| 0.022 | -0.00009 | 8.91 |
| 0.021 | -0.00009 | 8.81 |
| 0.016 | -0.00008 | 8.43 |
| 0.011 | -0.00007 | 8.04 |
| 0.009 | -0.00006 | 7.76 |
| 0.007 | -0.00005 | 7.50 |
| 0.008 | -0.00006 | 7.77 |
| 0.015 | -0.00008 | 8.47 |
| 0.024 | -0.00010 | 9.22 |
| 0.035 | -0.00012 | 9.97 |
| 0.046 | -0.00014 | 10.65 |
| 0.049 | -0.00015 | 10.94 |
| 0.049 | -0.00015 | 10.98 |
| 0.053 | -0.00016 | 11.29 |
| 0.051 | -0.00016 | 11.28 |
| 0.045 | -0.00015 | 11.06 |
| 0.038 | -0.00014 | 10.63 |
| 0.028 | -0.00012 | 9.99 |
| 0.019 | -0.00010 | 9.22 |
| 0.021 | -0.00011 | 9.45 |
| 0.015 | -0.00009 | 8.94 |
| 0.017 | -0.00010 | 9.15 |
| 0.026 | -0.00012 | 10.02 |
| 0.036 | -0.00015 | 10.89 |
| 0.049 | -0.00017 | 11.83 |
| 0.049 | -0.00017 | 11.90 |
| 0.044 | -0.00017 | 11.67 |
| 0.048 | -0.00018 | 12.10 |
| 0.043 | -0.00017 | 11.80 |
| 0.038 | -0.00017 | 11.58 |
| 0.030 | -0.00015 | 10.92 |
| 0.026 | -0.00014 | 10.66 |
| 0.023 | -0.00014 | 10.49 |
| 0.030 | -0.00015 | 11.17 |
| 0.039 | -0.00018 | 12.12 |
| 0.057 | -0.00022 | 13.47 |

max r2: 0.984

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points, delete last 4 rows | | |
| 0.000 | -0.00001 | 8.46 |
| 0.002 | -0.00005 | 9.70 |
| 0.004 | -0.00007 | 10.54 |
| 0.006 | -0.00009 | 11.20 |
| 0.008 | -0.00011 | 11.71 |
| 0.010 | -0.00012 | 12.13 |
| 0.009 | -0.00011 | 11.85 |
| 0.003 | -0.00006 | 10.27 |
| 0.001 | -0.00003 | 8.99 |
| 0.000 | 0.00000 | 7.96 |
| 0.001 | 0.00003 | 6.91 |
| 0.003 | 0.00006 | 5.76 |
| 0.007 | 0.00010 | 4.41 |
| 0.010 | 0.00012 | 3.63 |
| 0.010 | 0.00012 | 3.53 |
| 0.011 | 0.00013 | 3.32 |
| 0.010 | 0.00012 | 3.55 |
| 0.007 | 0.00011 | 4.21 |
| 0.005 | 0.00009 | 4.64 |
| 0.003 | 0.00007 | 5.42 |
| 0.003 | 0.00007 | 5.33 |
| 0.003 | 0.00008 | 5.30 |
| 0.002 | 0.00007 | 5.61 |
| 0.003 | 0.00007 | 5.39 |
| 0.004 | 0.00010 | 4.58 |
| 0.010 | 0.00014 | 2.86 |
| 0.010 | 0.00015 | 2.63 |
| 0.010 | 0.00015 | 2.70 |
| 0.007 | 0.00012 | 3.58 |
| 0.001 | 0.00005 | 6.29 |
| 0.001 | -0.00003 | 9.22 |
| 0.006 | -0.00011 | 12.10 |
| 0.013 | -0.00017 | 13.92 |
| 0.019 | -0.00021 | 15.36 |
| 0.011 | -0.00016 | 13.62 |
| 0.011 | -0.00016 | 13.78 |
| 0.011 | -0.00016 | 13.69 |
| 0.005 | -0.00011 | 12.07 |

update for EV, CV

**dZn** **LC60**

**LN Analysis** **dZn**

**Load** **Load Data, EV=4030 lbs/day CV=0.81**

| | |
|---|---|
| **Avg:** | **4,028** |
| **SD:** | **3,263** |
| **CV:** | **0.81** |
| **Min:** | **499.6** |
| **Max:** | **18,153** |
| **Median:** | **2,868** |

**Load Data-based LN**

| u | ln tCd Load | tCd Load |
|---|---|---|
| 3 | 10.2 | 26367 |
| 0 | 8.05 | 3130 |
| -3 | 5.92 | 371.5 |

4,028 4030

0.81 0.81

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.99, EV=4190lbs/day CV=1.02; max r2=0.99**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.990 | u | lnLoad | Load | |
| slope, m: | 1.187 | 3 | 10.51 | 36768 | |
| intercept, b: | -9.478 | 0 | 7.98 | 2936 | |
| N: | 91 | -3 | 5.46 | 234.5 | |
| E[Load] | 4187.4 | Parameter Estimates | | | 0.990 |
| SD[Load] | 4257 | from LN regression . | | | 4187.4 |
| CV[Load] | 1.02 | update graph label | | | 1.0 |
| | | | | | max r2 |
| | N: 91 | | | | 0.991 |

| Date | dZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 20-Sep-94 | **499.6** | 1 | 0.0068 | -2.465 | 6.214 | 0.990 |
| 15-Aug-94 | **503.9** | 2 | 0.0178 | -2.101 | 6.222 | 0.991 |
| 25-Aug-98 | **581.4** | 3 | 0.0288 | -1.899 | 6.365 | 0.990 |
| 6-Oct-94 | **599.1** | 4 | 0.0397 | -1.754 | 6.395 | 0.990 |
| 9-Sep-99 | **644.6** | 5 | 0.0507 | -1.638 | 6.469 | 0.990 |
| 23-Sep-98 | **687.1** | 6 | 0.0616 | -1.541 | 6.532 | 0.989 |
| 6-Oct-92 | **716.7** | 7 | 0.0726 | -1.457 | 6.575 | 0.990 |
| 27-Jul-98 | **913.1** | 8 | 0.0836 | -1.382 | 6.817 | 0.990 |
| 14-Sep-95 | **986.9** | 9 | 0.0945 | -1.313 | 6.895 | 0.990 |
| 11-Aug-99 | **998.5** | 10 | 0.1055 | -1.251 | 6.906 | 0.989 |
| 3-Sep-97 | **1123.5** | 11 | 0.1164 | -1.193 | 7.024 | 0.989 |
| 16-Oct-97 | **1163.2** | 12 | 0.1274 | -1.139 | 7.059 | 0.988 |
| 22-Nov-94 | **1194.4** | 13 | 0.1384 | -1.088 | 7.085 | 0.988 |
| 21-Aug-96 | **1196.6** | 14 | 0.1493 | -1.039 | 7.087 | 0.988 |
| 15-Aug-95 | **1217.7** | 15 | 0.1603 | -0.993 | 7.105 | 0.987 |
| 20-Oct-92 | **1227.7** | 16 | 0.1712 | -0.949 | 7.113 | 0.987 |
| 26-Jul-95 | **1246.4** | 17 | 0.1822 | -0.907 | 7.128 | 0.987 |
| 26-Sep-96 | **1248.5** | 18 | 0.1932 | -0.866 | 7.130 | 0.987 |
| 16-Nov-93 | **1425.5** | 19 | 0.2041 | -0.827 | 7.262 | 0.987 |
| 20-Jul-94 | **1430.1** | 20 | 0.2151 | -0.789 | 7.265 | 0.987 |
| 20-Sep-93 | **1448.9** | 21 | 0.2260 | -0.752 | 7.279 | 0.987 |
| 13-Aug-97 | **1476.1** | 22 | 0.2370 | -0.716 | 7.297 | 0.987 |
| 17-Nov-92 | **1587.7** | 23 | 0.2479 | -0.681 | 7.370 | 0.987 |
| 16-Dec-94 | **1608.6** | 24 | 0.2589 | -0.647 | 7.383 | 0.987 |
| 12-Jul-95 | **1715.5** | 25 | 0.2699 | -0.613 | 7.447 | 0.987 |
| 20-Oct-93 | **1813.1** | 26 | 0.2808 | -0.580 | 7.503 | 0.987 |
| 9-Dec-92 | **1931.3** | 27 | 0.2918 | -0.548 | 7.566 | 0.987 |
| 17-Aug-93 | **2012.7** | 28 | 0.3027 | -0.517 | 7.607 | 0.986 |
| 24-Jul-97 | **2070.2** | 29 | 0.3137 | -0.485 | 7.635 | 0.986 |
| 23-Jul-96 | **2091.6** | 30 | 0.3247 | -0.455 | 7.646 | 0.985 |
| 29-Oct-96 | **2110.4** | 31 | 0.3356 | -0.424 | 7.655 | 0.985 |
| 23-Feb-94 | **2117.6** | 32 | 0.3466 | -0.395 | 7.658 | 0.984 |
| 28-Jun-95 | **2125.6** | 33 | 0.3575 | -0.365 | 7.662 | 0.984 |
| 16-Feb-93 | **2164.4** | 34 | 0.3685 | -0.336 | 7.680 | 0.984 |
| 14-Jun-94 | **2344.8** | 35 | 0.3795 | -0.307 | 7.760 | 0.984 |
| 14-Jul-99 | **2430.2** | 36 | 0.3904 | -0.278 | 7.796 | 0.983 |
| 16-Oct-95 | **2448.4** | 37 | 0.4014 | -0.250 | 7.803 | 0.983 |
| 21-Jun-93 | **2639.2** | 38 | 0.4123 | -0.222 | 7.878 | 0.982 |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| dZn | | LC60 | | 342 | 342 |
| LN Analysis | | dZn | | 0.43 | 0.432 |

**Concentration**

Conc. Data, EV=342 ug/L CV=0.432

| | |
|---|---|
| Avg: | 342 |
| SD: | 148 |
| CV: | 0.43 |
| Min: | 90 |
| Max: | 920 |
| Median: | 322 |

Data-based LN

| u | ln[tCd] | [tCd] |
|---|---|---|
| 3 | 7.0 | 1085 |
| 0 | 5.75 | 313 |
| -3 | 4.51 | 91 |

0.990 0.99

u=mLn{Conc.}+b: 344 4 344

update for r2, EV, CV r2=0.99, EV=344 ug/L CV=0.475; max r2=0.99 0.475 0.475

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.990 | u | lnConc | Conc |
| slope, m | 2.216 | 3 | 7.09 | 1204 |
| intercept, b | -12.720 | 0 | 5 74 | 311 |
| N | 91 | -3 | 4.39 | 80 |

| | | | |
|---|---|---|---|
| 0.99 | E[Conc] | 344 4 | Parameter Estimates |
| 4190 | SD[Conc] | 164 | from LN regression |
| 1.02 | CV[Conc] | 0 48 | update graph label |

N: 91

| Date | dZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.991 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-May-99 | 90 | 1 | 0.0068 | -2.465 | 4.500 | 0.990 |
| 6-May-99 | 110 | 2 | 0.0178 | -2.101 | 4.700 | 0.990 |
| 21-Apr-99 | 117 | 3 | 0.0288 | -1.899 | 4 762 | 0.991 |
| 17-Jun-99 | 137 | 4 | 0.0397 | -1 754 | 4.920 | 0.991 |
| 12-Apr-93 | 161 | 5 | 0.0507 | -1.638 | 5.081 | 0.991 |
| 20-Apr-93 | 161 | 6 | 0.0616 | -1.541 | 5.081 | 0.991 |
| 23-Mar-99 | 170 | 7 | 0.0726 | -1 457 | 5.136 | 0.991 |
| 5-May-93 | 171 | 8 | 0.0836 | -1.382 | 5.142 | 0.990 |
| 23-Mar-95 | 174 | 9 | 0.0945 | -1.313 | 5.159 | 0.990 |
| 6-Apr-94 | 180.9 | 10 | 0.1055 | -1.251 | 5.198 | 0.990 |
| 11-May-95 | 188.9 | 11 | 0.1164 | -1.193 | 5.241 | 0.989 |
| 17-May-93 | 190.9 | 12 | 0.1274 | -1.139 | 5.252 | 0.989 |
| 20-Apr-94 | 190.9 | 13 | 0.1384 | -1.088 | 5.252 | 0.989 |
| 11-May-94 | 190.9 | 14 | 0.1493 | -1.039 | 5.252 | 0.988 |
| 18-Jan-96 | 199.9 | 15 | 0.1603 | -0.993 | 5.298 | 0.988 |
| 24-May-95 | 201.9 | 16 | 0.1712 | -0.949 | 5.308 | 0.987 |
| 19-Mar-98 | 203 | 17 | 0.1822 | -0.907 | 5.313 | 0.987 |
| 7-Mar-95 | 204.9 | 18 | 0.1932 | -0.866 | 5.323 | 0.987 |
| 21-Nov-95 | 211.8 | 19 | 0.2041 | -0.827 | 5.356 | 0.987 |
| 24-Jun-97 | 215 | 20 | 0.2151 | -0.789 | 5.371 | 0.986 |
| 14-Apr-95 | 219.8 | 21 | 0.2260 | -0.752 | 5.393 | 0.986 |
| 23-Apr-98 | 221 | 22 | 0.2370 | -0.716 | 5.398 | 0.986 |
| 16-Feb-95 | 226.8 | 23 | 0.2479 | -0.681 | 5.424 | 0.985 |
| 16-Apr-97 | 232 | 24 | 0.2589 | -0.647 | 5 447 | 0.985 |
| 9-May-96 | 237.8 | 25 | 0.2699 | -0.613 | 5.471 | 0.985 |
| 14-Jul-99 | 239 | 26 | 0.2808 | -0.580 | 5.476 | 0.984 |
| 26-Mar-93 | 240.8 | 27 | 0.2918 | -0.548 | 5.484 | 0.984 |
| 27-Apr-95 | 240.8 | 28 | 0.3027 | -0.517 | 5.484 | 0.983 |
| 28-May-98 | 248 | 29 | 0.3137 | -0.485 | 5.513 | 0.983 |
| 25-Aug-98 | 249 | 30 | 0.3247 | -0.455 | 5.517 | 0.983 |
| 18-Apr-96 | 249.7 | 31 | 0.3356 | -0.424 | 5.520 | 0.983 |
| 28-Feb-96 | 251 7 | 32 | 0.3466 | -0.395 | 5.528 | 0.983 |
| 27-Mar-97 | 252 | 33 | 0.3575 | -0.365 | 5.529 | 0.984 |
| 15-Aug-94 | 270 7 | 34 | 0.3685 | -0.336 | 5.601 | 0.985 |
| 27-Jul-98 | 272 | 35 | 0.3795 | -0.307 | 5.606 | 0.984 |
| 2-Jun-93 | 280.6 | 36 | 0.3904 | -0.278 | 5.637 | 0.984 |
| 22-Jul-93 | 280.6 | 37 | 0.4014 | -0.250 | 5.637 | 0.984 |
| 18-Jan-94 | 280.6 | 38 | 0.4123 | -0.222 | 5.637 | 0.983 |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dZn** | | **LC60** | | | 3,031 | 3030 |
| **LN Analysis** | | **dZn** | | | 1.01 | 1.01 |
| **Discharge, Q** | | **Q Data, EV=3030 cfs CV=1.01** | | | | |
| **Avg:** | **3,031** | **Q Data-based LN** | | | | |
| **SD:** | **3,048** | u | lnQ | Q | | |
| **CV:** | **1.01** | 3 | 10.2 | 26234 | | |
| **Min:** | **202** | 0 | 7.67 | 2138 | | |
| **Max:** | **12,400** | -3 | 5.16 | 174 | | |
| **Median:** | **1,800** | | | | | |
| | | | | | 0.964 | 0.964 |
| | | | | | 3335.8 | 3340 |
| | **u=mLn(Q)+b:** | | | | 1.62 | 1.62 |

update for r2, EV, CV: **r2=0.964, EV=3340 cfs CV=1.62; max r2=0.99**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnQ: | 0.964 | u | lnQ | Q | |
| slope, m: | 0.882 | 3 | 10.87 | 52596 | |
| intercept, b: | -6.591 | 0 | 7.47 | 1755 | |
| N: | 91 | -3 | 4.07 | 59 | |
| E[Q] | 3335.8 | Parameter Estimates | | | |
| SD[Q] | 5393 | from LN regression | | | |
| CV[Q] | 1.62 | update graph label | | | |

| | Q | N | 91 | | | max r2 0.985 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 6-Oct-92 | 202 | 1 | 0.0068 | -2.465 | 5.308 | 0.964 |
| 20-Sep-94 | 221 | 2 | 0.0178 | -2.101 | 5.398 | 0.965 |
| 6-Oct-94 | 281 | 3 | 0.0288 | -1.899 | 5.638 | 0.964 |
| 15-Aug-94 | 346 | 4 | 0.0397 | -1.754 | 5.846 | 0.964 |
| 9-Sep-99 | 362 | 5 | 0.0507 | -1.638 | 5.892 | 0.964 |
| 23-Sep-98 | 367 | 6 | 0.0616 | -1.541 | 5.905 | 0.964 |
| 26-Sep-96 | 368 | 7 | 0.0726 | -1.457 | 5.908 | 0.964 |
| 14-Sep-95 | 414 | 8 | 0.0836 | -1.382 | 6.026 | 0.963 |
| 21-Aug-96 | 427 | 9 | 0.0945 | -1.313 | 6.057 | 0.962 |
| 25-Aug-98 | 434 | 10 | 0.1055 | -1.251 | 6.073 | 0.961 |
| 22-Nov-94 | 444 | 11 | 0.1164 | -1.193 | 6.096 | 0.960 |
| 3-Sep-97 | 461 | 12 | 0.1274 | -1.139 | 6.133 | 0.959 |
| 16-Nov-93 | 465 | 13 | 0.1384 | -1.088 | 6.142 | 0.957 |
| 15-Aug-95 | 504 | 14 | 0.1493 | -1.039 | 6.223 | 0.956 |
| 20-Oct-92 | 507 | 15 | 0.1603 | -0.993 | 6.229 | 0.954 |
| 29-Oct-96 | 589 | 16 | 0.1712 | -0.949 | 6.378 | 0.952 |
| 16-Oct-97 | 594 | 17 | 0.1822 | -0.907 | 6.387 | 0.951 |
| 13-Aug-97 | 607 | 18 | 0.1932 | -0.866 | 6.409 | 0.949 |
| 27-Jul-98 | 624 | 19 | 0.2041 | -0.827 | 6.436 | 0.948 |
| 20-Sep-93 | 626 | 20 | 0.2151 | -0.789 | 6.439 | 0.946 |
| 11-Aug-99 | 627 | 21 | 0.2260 | -0.752 | 6.441 | 0.944 |
| 26-Jul-95 | 634 | 22 | 0.2370 | -0.716 | 6.452 | 0.942 |
| 20-Jul-94 | 648 | 23 | 0.2479 | -0.681 | 6.474 | 0.940 |
| 20-Oct-93 | 674 | 24 | 0.2589 | -0.647 | 6.513 | 0.938 |
| 9-Dec-92 | 704 | 25 | 0.2699 | -0.613 | 6.557 | 0.937 |
| 23-Jul-96 | 711 | 26 | 0.2808 | -0.580 | 6.567 | 0.935 |
| 16-Dec-94 | 774 | 27 | 0.2918 | -0.548 | 6.652 | 0.933 |
| 17-Nov-92 | 776 | 28 | 0.3027 | -0.517 | 6.654 | 0.931 |
| 16-Feb-93 | 789 | 29 | 0.3137 | -0.485 | 6.671 | 0.929 |
| 23-Feb-94 | 820 | 30 | 0.3247 | -0.455 | 6.709 | 0.928 |
| 26-Nov-96 | 851 | 31 | 0.3356 | -0.424 | 6.746 | 0.927 |
| 13-Dec-93 | 877 | 32 | 0.3466 | -0.395 | 6.777 | 0.925 |
| 12-Jul-95 | 934 | 33 | 0.3575 | -0.365 | 6.839 | 0.924 |
| 17-Aug-93 | 1010 | 34 | 0.3685 | -0.336 | 6.918 | 0.923 |
| 24-Jul-97 | 1040 | 35 | 0.3795 | -0.307 | 6.947 | 0.922 |
| 16-Nov-98 | 1100 | 36 | 0.3904 | -0.278 | 7.003 | 0.920 |
| 14-Jun-94 | 1280 | 37 | 0.4014 | -0.250 | 7.155 | 0.919 |
| 21-Jan-98 | 1280 | 38 | 0.4123 | -0.222 | 7.155 | 0.916 |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **LC60** | **Date:** | **14-Jul-00** |
| **Chemical:** | **tCd** | **Analyst:** | **J.Johnston** |
| **Notes:** | | | |

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,885 | 3,263 | 2 | 31 | 0.00 | 0.00 | 0.00 |
| **SD:** | 325 | 3,315 | 1 | 32 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.02 | 0.37 | 1.03 | | | |
| **Min:** | 35,367 | 362 | 1 | 3.2 | -0.88 | -1.32 | -0.87 |
| **Max:** | 36,412 | 12,400 | 5 | 133 | 2.76 | 3.88 | 3.22 |
| **Median:** | 35,862 | 1,920 | 2 | 18 | -0.41 | 0.05 | -0.41 |

| tCd LC60 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b | |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.0781)** | | update r2 | **0.08** | 0.0781 | r2 | 0.095 | 0.025 | |
| r2 Q,[COC]: | 0.08 | [tCd] | Q | | m | 3.1452 | 0.00052 | |
| slope, m | 0.0 | 2 | 362.0 | | b | -109605 | -11.12 | |
| intercept, b | 2.2 | 2 | 3263.0 | | | | | |
| N: 32 | | 1 | 12400 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.115)** | | update r2 | | 0.11 | 0.115 | | | |
| r2 lnQ,ln[COC]: | 0.11 | ln[tCd] | ln Q | [tCd] | Q | | | |
| slope, m | -0.10 | 0.79 | 5.89 | 2 | 362 | | | |
| intercept, b | 1.38 | 0.57 | 8.09 | 2 | 3,263 | | | |
| N 32 | | 0.43 | 9.43 | 2 | 12,400 | | | |

*N= 32*

| | Sampling Date | Q Discharge | tCd Concentration | tCd Load | Ln Q | Ln tCd Conc. | Ln tCd Load | for grapn 0 tCd LC60 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 29-Oct-96 | 589 | 1.9 | 6.0 | 6.38 | 0.64 | 1.80 | -0.81 | -0.09 | -0.78 |
| IDEQ | 26-Nov-96 | 851 | 3.6 | 16.5 | 6.75 | 1.28 | 2.80 | -0.73 | 2.24 | -0.45 |
| IDEQ | 13-Dec-96 | 2620 | 4.8 | 67.7 | 7.87 | 1.57 | 4.21 | -0.19 | 3.88 | 1.15 |
| IDEQ | 30-Jan-97 | 1950 | 2.1 | 22.0 | 7.58 | 0.74 | 3.09 | -0.40 | 0.18 | -0.28 |
| IDEQ | 19-Feb-97 | 3100 | 1.9 | 31.7 | 8.04 | 0.64 | 3.46 | -0.05 | -0.09 | 0.03 |
| IDEQ | 27-Mar-97 | 8590 | 1.5 | 69.3 | 9.06 | 0.41 | 4.24 | 1.61 | -0.64 | 1.21 |
| IDEQ | 16-Apr-97 | 4700 | 1.4 | 35.4 | 8.46 | 0.34 | 3.57 | 0.43 | -0.77 | 0.14 |
| IDEQ | 24-Jun-97 | 2330 | 1.3 | 16.3 | 7.75 | 0.26 | 2.79 | -0.28 | -0.91 | -0.46 |
| IDEQ | 24-Jul-97 | 1040 | 2 | 11.2 | 6.95 | 0.69 | 2.42 | -0.67 | 0.05 | -0.62 |
| IDEQ | 13-Aug-97 | 607 | 2.1 | 6.9 | 6.41 | 0.74 | 1.93 | -0.80 | 0.18 | -0.75 |
| IDEQ | 3-Sep-97 | 461 | 2.2 | 5.5 | 6.13 | 0.79 | 1.70 | -0.85 | 0.32 | -0.80 |
| IDEQ | 16-Oct-97 | 594 | 2.1 | 6.7 | 6.39 | 0.74 | 1.90 | -0.81 | 0.18 | -0.76 |
| IDEQ | 24-Nov-97 | 1410 | 2.2 | 16.7 | 7.25 | 0.79 | 2.81 | -0.56 | 0.32 | -0.44 |
| IDEQ | 17-Dec-97 | 1310 | 2 | 14.1 | 7.18 | 0.69 | 2.65 | -0.59 | 0.05 | -0.53 |
| IDEQ | 21-Jan-98 | 1280 | 2.6 | 17.9 | 7.15 | 0.96 | 2.89 | -0.60 | 0.87 | -0.41 |
| IDEQ | 25-Feb-98 | 2110 | 1.6 | 18.2 | 7.65 | 0.47 | 2.90 | -0.35 | -0.50 | -0.40 |
| IDEQ | 19-Mar-98 | 4180 | 1.3 | 29.2 | 8.34 | 0.26 | 3.38 | 0.28 | -0.91 | -0.05 |
| IDEQ | 23-Apr-98 | 5890 | 1.3 | 41.2 | 8.68 | 0.26 | 3.72 | 0.79 | -0.91 | 0.32 |
| IDEQ | 28-May-98 | 7540 | 1.5 | 60.8 | 8.93 | 0.41 | 4.11 | 1.29 | -0.64 | 0.94 |
| IDEQ | 27-Jul-98 | 624 | 1.8 | 6.0 | 6.44 | 0.59 | 1.80 | -0.80 | -0.23 | -0.78 |
| IDEQ | 25-Aug-98 | 434 | 1.4 | 3.3 | 6.07 | 0.34 | 1.18 | -0.85 | -0.77 | -0.87 |
| IDEQ | 23-Sep-98 | 367 | 1.6 | 3.2 | 5.91 | 0.47 | 1.15 | -0.87 | -0.56 | -0.87 |
| USGS | 16-Nov-98 | 1100 | 3 | 17.8 | 7.00 | 1.10 | 2.88 | -0.65 | 1.42 | -0.41 |
| USGS | 14-Dec-98 | 2440 | 2 | 26.3 | 7.80 | 0.69 | 3.27 | -0.25 | 0.05 | -0.14 |
| USGS | 23-Mar-99 | 7850 | 2 | 84.5 | 8.97 | 0.69 | 4.44 | 1.38 | 0.05 | 1.68 |
| USGS | 21-Apr-99 | 10700 | 2 | 115.1 | 9.28 | 0.69 | 4.75 | 2.24 | 0.05 | 2.64 |
| USGS | 6-May-99 | 8320 | 1 | 44.8 | 9.03 | 0.00 | 3.80 | 1.53 | -1.32 | 0.44 |
| USGS | 27-May-99 | 12400 | 2 | 133.4 | 9.43 | 0.69 | 4.89 | 2.76 | 0.05 | 3.22 |
| USGS | 17-Jun-99 | 6150 | 1 | 33.1 | 8.72 | 0.00 | 3.50 | 0.87 | -1.32 | 0.07 |
| USGS | 14-Jul-99 | 1890 | 1.6 | 16.3 | 7.54 | 0.47 | 2.79 | -0.41 | -0.50 | -0.46 |
| USGS | 11-Aug-99 | 627 | 2 | 6.7 | 6.44 | 0.69 | 1.91 | -0.80 | 0.05 | -0.76 |
| USGS | 9-Sep-99 | 362 | 2.1 | 4.1 | 5.89 | 0.74 | 1.41 | -0.88 | 0.18 | -0.84 |

tCd

**Concentration over time analysis** r2 Slope, m

| | tCd | LC60 | | Concentration over time | |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.105** | **-0.00032** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 29-Oct-96 | 0.79 | 2 | | |
| mid | 8-Mar-98 | 0.63 | 2 | | |
| last | 9-Sep-99 | 0.45 | 2 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Sep-99 | 0.00 | 1 | | |

**Load over time analysis**

| | tCd | LC60 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.004** | **0.00020** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 29-Oct-96 | 2.84 | 17 | | |
| mid | 8-Mar-98 | 2.94 | 19 | | |
| last | 9-Sep-99 | 3.05 | 21 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Sep-99 | 0.00 | 1 | | |

max r2: 0.427 max r2 0.948

| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
|---|---|---|---|---|---|
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points, delete last 4 rows | | | only on >4 data points, delete last 4 rows | | |
| 0.105 | -0.00032 | 12.11 | 0.004 | 0.00020 | -4.23 |
| 0.112 | -0.00035 | 13.01 | 0.000 | 0.00002 | 2.25 |
| 0.065 | -0.00026 | 9.77 | 0.000 | -0.00001 | 3.35 |
| 0.010 | -0.00008 | 3.58 | 0.005 | 0.00024 | -5.67 |
| 0.004 | -0.00005 | 2.52 | 0.007 | 0.00030 | -7.69 |
| 0.002 | -0.00004 | 2.04 | 0.014 | 0.00045 | -13.25 |
| 0.007 | -0.00008 | 3.55 | 0.047 | 0.00083 | -27.03 |
| 0.023 | -0.00016 | 6.20 | 0.078 | 0.00113 | -37.94 |
| 0.061 | -0.00026 | 9.90 | 0.085 | 0.00125 | -42.02 |
| 0.054 | -0.00026 | 9.79 | 0.079 | 0.00126 | -42.66 |
| 0.040 | -0.00023 | 8.99 | 0.056 | 0.00111 | -37.24 |
| 0.022 | -0.00018 | 7.20 | 0.028 | 0.00082 | -26.46 |
| 0.011 | -0.00014 | 5.46 | 0.010 | 0.00050 | -15.12 |
| 0.001 | -0.00005 | 2.36 | 0.008 | 0.00049 | -14.68 |
| 0.000 | 0.00002 | -0.22 | 0.004 | 0.00038 | -10.72 |
| 0.033 | 0.00027 | -9.27 | 0.003 | 0.00036 | -9.95 |
| 0.034 | 0.00030 | -10.36 | 0.002 | 0.00033 | -8.88 |
| 0.010 | 0.00018 | -5.83 | 0.007 | 0.00066 | -20.89 |
| 0.000 | -0.00003 | 1.61 | 0.030 | 0.00150 | -51.26 |
| 0.009 | -0.00020 | 7.95 | 0.121 | 0.00334 | -118.02 |
| 0.008 | -0.00022 | 8.41 | 0.072 | 0.00285 | -100.27 |
| 0.057 | -0.00068 | 25.22 | 0.004 | 0.00069 | -21.71 |
| 0.137 | -0.00131 | 47.96 | 0.127 | -0.00428 | 158.83 |
| 0.004 | -0.00023 | 8.74 | 0.329 | -0.00864 | 317.14 |
| 0.023 | 0.00083 | -29.51 | 0.824 | -0.02039 | 744.19 |
| 0.132 | 0.00235 | -84.76 | 0.872 | -0.02417 | 881.46 |
| 0.427 | 0.00480 | -174.00 | 0.835 | -0.02471 | 901.31 |
| 0.200 | 0.00330 | -119.35 | 0.948 | -0.03188 | 1161.96 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tCd** | | **LC60** | | |
| **LN Analysis** | | **tCd** | | |
| **Load** | | **Load Data, EV=30.9 lbs/day CV=1.03** | | |
| **Avg:** | **31** | **Load Data-based LN** | | |
| **SD:** | **32** | u | ln tCd Load | tCd Load |
| **CV:** | **1.03** | 3 | 5.6 | 277 |
| **Min:** | **3.2** | 0 | 3.07 | 21 |
| **Max:** | **133** | -3 | 0.51 | 1.7 |
| **Median:** | **18** | | | |
| | | 31 | 30.9 | |
| | | 1.03 | 1.03 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.979, EV=33.6lbs/day CV=1.47; max r2=0.98**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.979 | u | lnLoad | Load | |
| slope, m | 0.934 | 3 | 6.15 | 470 | |
| intercept, b | -2.746 | 0 | 2.94 | 19 | |
| N: | 32 | -3 | -0.27 | 0.8 | |
| E[Load] | 33.6 | Parameter Estimates | | | 0.979 |
| SD[Load] | 49 | from LN regression | | | 33.6 |
| CV[Load] | 1.47 | update graph label | | | 1.5 |
| | | | | | max r2 |
| | | N: 32 | | | 0.983 |

| Date | tCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 23-Sep-98 | **3.2** | 1 | 0.0194 | -2.067 | 1.150 | 0.979 |
| 25-Aug-98 | **3.3** | 2 | 0.0504 | -1.641 | 1.184 | 0.983 |
| 9-Sep-99 | **4.1** | 3 | 0.0814 | -1.396 | 1.409 | 0.981 |
| 3-Sep-97 | **5.5** | 4 | 0.1124 | -1.214 | 1.697 | 0.978 |
| 29-Oct-96 | **6.0** | 5 | 0.1434 | -1.065 | 1.795 | 0.977 |
| 27-Jul-98 | **6.0** | 6 | 0.1744 | -0.937 | 1.799 | 0.974 |
| 16-Oct-97 | **6.7** | 7 | 0.2054 | -0.822 | 1.904 | 0.972 |
| 11-Aug-99 | **6.7** | 8 | 0.2364 | -0.718 | 1.909 | 0.970 |
| 13-Aug-97 | **6.9** | 9 | 0.2674 | -0.621 | 1.925 | 0.971 |
| 24-Jul-97 | **11.2** | 10 | 0.2984 | -0.529 | 2.415 | 0.980 |
| 17-Dec-97 | **14.1** | 11 | 0.3295 | -0.441 | 2.646 | 0.977 |
| 14-Jul-99 | **16.3** | 12 | 0.3605 | -0.357 | 2.789 | 0.977 |
| 24-Jun-97 | **16.3** | 13 | 0.3915 | -0.275 | 2.791 | 0.979 |
| 26-Nov-96 | **16.5** | 14 | 0.4225 | -0.196 | 2.802 | 0.979 |
| 24-Nov-97 | **16.7** | 15 | 0.4535 | -0.117 | 2.815 | 0.978 |
| 16-Nov-98 | **17.8** | 16 | 0.4845 | -0.039 | 2.877 | 0.975 |
| 21-Jan-98 | **17.9** | 17 | 0.5155 | 0.039 | 2.885 | 0.972 |
| 25-Feb-98 | **18.2** | 18 | 0.5465 | 0.117 | 2.899 | 0.970 |
| 30-Jan-97 | **22.0** | 19 | 0.5775 | 0.196 | 3.092 | 0.973 |
| 14-Dec-98 | **26.3** | 20 | 0.6085 | 0.275 | 3.268 | 0.972 |
| 19-Mar-98 | **29.2** | 21 | 0.6395 | 0.357 | 3.375 | 0.968 |
| 19-Feb-97 | **31.7** | 22 | 0.6705 | 0.441 | 3.456 | 0.963 |
| 17-Jun-99 | **33.1** | 23 | 0.7016 | 0.529 | 3.499 | 0.956 |
| 16-Apr-97 | **35.4** | 24 | 0.7326 | 0.621 | 3.567 | 0.948 |
| 23-Apr-98 | **41.2** | 25 | 0.7636 | 0.718 | 3.718 | 0.945 |
| 6-May-99 | **44.8** | 26 | 0.7946 | 0.822 | 3.801 | 0.938 |
| 28-May-98 | **60.8** | 27 | 0.8256 | 0.937 | 4.108 | 0.956 |
| 13-Dec-96 | **67.7** | 28 | 0.8566 | 1.065 | 4.214 | 0.941 |
| 27-Mar-97 | **69.3** | 29 | 0.8876 | 1.214 | 4.239 | |
| 23-Mar-99 | **84.5** | 30 | 0.9186 | 1.396 | 4.436 | |
| 21-Apr-99 | **115.1** | 31 | 0.9496 | 1.641 | 4.746 | |
| 27-May-99 | **133.4** | 32 | 0.9806 | 2.067 | 4.894 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| tCd | | LC60 | | 2 | 1 97 |
| LN Analysis | | tCd | | 0.37 | 0.372 |

**Concentration**

**Conc. Data, EV=1.97 ug/L CV=0.372**

| | | | | |
|---|---|---|---|---|
| Avg: | 2 | Data-based LN | | |
| SD: | 1 | u | ln[tCd] | [tCd] |
| CV: | 0.37 | 3 | 1 ? | 5 |
| Min: | 1 | 0 | 0.61 | 2 |
| Max: | 5 | -3 | -0.47 | 1 |
| Median: | 2 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.925 | 0.925 |
| | u=mLn{Conc.}+b: | | | | 2.0 | 1.98 |
| update for r2, EV, CV: | r2=0.925, EV=1.98 ug/L CV=0.359; max r2=0.99 | | | | 0.359 | 0.359 |
| | r2 u,lnConc | 0 925 | u | lnConc | Conc | |
| | slope, m | 2.869 | 3 | 1.67 | 5 | |
| | intercept, b | -1 780 | 0 | 0 62 | 2 | |
| | N | 32 | -3 | -0 43 | 1 | |
| 0.979 | E[Conc] | 2 0 | Parameter Estimates | | | |
| 33 6 | SD[Conc] | 1 | from LN regression | | | |
| 1 4? | CV[Conc] | 0.36 | update graph label | | | |

| | tCd | N | 32 | | | max r2 0 992 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 6-May-99 | 1 | 1 | 0.0194 | -2.067 | 0.000 | 0.925 |
| 17-Jun-99 | 1 | 2 | 0.0504 | -1.641 | 0.000 | 0.916 |
| 19-Mar-98 | 1.3 | 3 | 0.0814 | -1.396 | 0.262 | 0.905 |
| 23-Apr-98 | 1.3 | 4 | 0.1124 | -1.214 | 0.262 | 0.902 |
| 24-Jun-97 | 1.3 | 5 | 0.1434 | -1.065 | 0.262 | 0.895 |
| 16-Apr-97 | 1 4 | 6 | 0 1744 | -0.937 | 0.336 | 0.885 |
| 25-Aug-98 | 1 4 | 7 | 0.2054 | -0.822 | 0.336 | 0.876 |
| 27-Mar-97 | 1.5 | 8 | 0.2364 | -0 718 | 0.405 | 0.865 |
| 28-May-98 | 1.5 | 9 | 0.2674 | -0.621 | 0.405 | 0.855 |
| 23-Sep-98 | 1.6 | 10 | 0.2984 | -0.529 | 0.470 | 0.843 |
| 25-Feb-98 | 1.6 | 11 | 0.3295 | -0.441 | 0.470 | 0.833 |
| 14-Jul-99 | 1.6 | 12 | 0.3605 | -0.357 | 0 470 | 0.820 |
| 27-Jul-98 | 1.8 | 13 | 0.3915 | -0.275 | 0.588 | 0.803 |
| 19-Feb-97 | 1.9 | 14 | 0.4225 | -0.196 | 0.642 | 0.799 |
| 29-Oct-96 | 1.9 | 15 | 0.4535 | -0.117 | 0.642 | 0.806 |
| 17-Dec-97 | 2 | 16 | 0.4845 | -0.039 | 0.693 | 0.811 |
| 24-Jul-97 | 2 | 17 | 0.5155 | 0.039 | 0.693 | 0.832 |
| 11-Aug-99 | 2 | 18 | 0.5465 | 0 117 | 0.693 | 0.852 |
| 14-Dec-98 | 2 | 19 | 0.5775 | 0.196 | 0.693 | 0 871 |
| 21-Apr-99 | 2 | 20 | 0.6085 | 0.275 | 0.693 | 0.889 |
| 23-Mar-99 | 2 | 21 | 0.6395 | 0.357 | 0.693 | 0.905 |
| 27-May-99 | 2 | 22 | 0.6705 | 0 441 | 0 693 | 0.918 |
| 13-Aug-97 | 2 1 | 23 | 0 7016 | 0.529 | 0 742 | 0.927 |
| 16-Oct-97 | 2 1 | 24 | 0 7326 | 0 621 | 0 742 | 0.950 |
| 30-Jan-97 | 2.1 | 25 | 0 7636 | 0.718 | 0 742 | 0.971 |
| 9-Sep-99 | 2.1 | 26 | 0 7946 | 0.822 | 0 742 | 0 985 |
| 3-Sep-97 | 2.2 | 27 | 0.8256 | 0.937 | 0 788 | 0 989 |
| 24-Nov-97 | 2.2 | 28 | 0.8566 | 1.065 | 0.788 | 0.992 |
| 21-Jan-98 | 2 6 | 29 | 0.8876 | 1.214 | 0.956 | |
| 16-Nov-98 | 3 | 30 | 0.9186 | 1.396 | 1.099 | |
| 26-Nov-96 | 3.6 | 31 | 0.9496 | 1.641 | 1.281 | |
| 13-Dec-96 | 4.8 | 32 | 0.9806 | 2.067 | 1.569 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **LC60** | | | 3,263 | 3260 |
| **LN Analysis** | | **tCd** | | | 1.02 | 1.02 |
| **Discharge, Q** | | **Q Data, EV=3260 cfs CV=1.02** | | | | |
| **Avg:** | **3,263** | **Q Data-based LN** | | | | |
| **SD:** | **3,315** | u | lnQ | Q | | |
| **CV:** | **1.02** | 3 | 10.3 | 28626 | | |
| **Min:** | **362** | 0 | 7.74 | 2289 | | |
| **Max:** | **12,400** | -3 | 5.21 | 183 | | |
| **Median:** | **1,920** | | | | | |
| | | | | | 0.958 | 0.958 |
| | | | | | 3666.3 | 3670 |
| | **u=mLn(Q)+b:** | | | | 1.66 | 1.66 |

update for r2, EV, CV: **r2=0.958, EV=3670 cfs CV=1.66; max r2=0.97**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnQ | 0.958 | u | lnQ | Q | |
| slope, m | 0.869 | 3 | 11.00 | 59636 | |
| intercept, b | -6.560 | 0 | 7.55 | 1892 | |
| N | 32 | -3 | 4.09 | 60 | |
| E[Q] | 3666.3 | Parameter Estimates | | | |
| SD[Q] | 6085 | from LN regression | | | |
| CV[Q] | 1.66 | update graph label | | | |

N: 32

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.968 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 9-Sep-99 | 362 | 1 | 0.0194 | -2.067 | 5.892 | 0.958 |
| 23-Sep-98 | 367 | 2 | 0.0504 | -1.641 | 5.905 | 0.968 |
| 25-Aug-98 | 434 | 3 | 0.0814 | -1.396 | 6.073 | 0.968 |
| 3-Sep-97 | 461 | 4 | 0.1124 | -1.214 | 6.133 | 0.966 |
| 29-Oct-96 | 589 | 5 | 0.1434 | -1.065 | 6.378 | 0.963 |
| 16-Oct-97 | 594 | 6 | 0.1744 | -0.937 | 6.387 | 0.962 |
| 13-Aug-97 | 607 | 7 | 0.2054 | -0.822 | 6.409 | 0.958 |
| 27-Jul-98 | 624 | 8 | 0.2364 | -0.718 | 6.436 | 0.954 |
| 11-Aug-99 | 627 | 9 | 0.2674 | -0.621 | 6.441 | 0.950 |
| 26-Nov-96 | 851 | 10 | 0.2984 | -0.529 | 6.746 | 0.949 |
| 24-Jul-97 | 1040 | 11 | 0.3295 | -0.441 | 6.947 | 0.945 |
| 16-Nov-98 | 1100 | 12 | 0.3605 | -0.357 | 7.003 | 0.939 |
| 21-Jan-98 | 1280 | 13 | 0.3915 | -0.275 | 7.155 | 0.933 |
| 17-Dec-97 | 1310 | 14 | 0.4225 | -0.196 | 7.178 | 0.926 |
| 24-Nov-97 | 1410 | 15 | 0.4535 | -0.117 | 7.251 | 0.920 |
| 14-Jul-99 | 1890 | 16 | 0.4845 | -0.039 | 7.544 | 0.916 |
| 30-Jan-97 | 1950 | 17 | 0.5155 | 0.039 | 7.576 | 0.905 |
| 25-Feb-98 | 2110 | 18 | 0.5465 | 0.117 | 7.654 | 0.894 |
| 24-Jun-97 | 2330 | 19 | 0.5775 | 0.196 | 7.754 | 0.881 |
| 14-Dec-98 | 2440 | 20 | 0.6085 | 0.275 | 7.800 | 0.867 |
| 13-Dec-96 | 2620 | 21 | 0.6395 | 0.357 | 7.871 | 0.859 |
| 19-Feb-97 | 3100 | 22 | 0.6705 | 0.441 | 8.039 | 0.871 |
| 19-Mar-98 | 4180 | 23 | 0.7016 | 0.529 | 8.338 | 0.911 |
| 16-Apr-97 | 4700 | 24 | 0.7326 | 0.621 | 8.455 | 0.921 |
| 23-Apr-98 | 5890 | 25 | 0.7636 | 0.718 | 8.681 | 0.953 |
| 17-Jun-99 | 6150 | 26 | 0.7946 | 0.822 | 8.724 | 0.947 |
| 28-May-98 | 7540 | 27 | 0.8256 | 0.937 | 8.928 | 0.967 |
| 23-Mar-99 | 7850 | 28 | 0.8566 | 1.065 | 8.968 | 0.963 |
| 6-May-99 | 8320 | 29 | 0.8876 | 1.214 | 9.026 | |
| 27-Mar-97 | 8590 | 30 | 0.9186 | 1.396 | 9.058 | |
| 21-Apr-99 | 10700 | 31 | 0.9496 | 1.641 | 9.278 | |
| 27-May-99 | 12400 | 32 | 0.9806 | 2.067 | 9.425 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **LC50** | **Date:** | **3-Jun-00** |
| **Chemical:** | **tPb** | **Analyst:** | **J.Johnston** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 35,885 | 3,263 | 54 | 1,920 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 325 | 3,315 | 84 | 5,382 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.02 | 1.55 | 2.80 | | | | |
| **Min:** | 35,367 | 362 | 15 | 29.6 | | -0.88 | -0.47 | -0.35 |
| **Max:** | 36,412 | 12,400 | 430 | 24,753 | | 2.76 | 4.47 | 4.24 |
| **Median:** | 35,862 | 1,920 | 30 | 328 | | -0.41 | -0.29 | -0.30 |

| tPb LC50 | | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.417)** | | update r2 | **0.42** | 0.417 | | r2 | 0.095 | 0.025 |
| r2 Q,[COC]: | 0.42 | [tPb] | Q | | | m | 3.1452 | 0.00052 |
| slope, m | 0.0 | ? | 362.0 | | | b | -109605 | -11.12 |
| intercept, b | 0.9 | 54 | 3263.0 | | | | | |
| N: 32 | | 204 | 12400 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.231)** | | update r2 | | 0.23 | 0.231 | | | |
| r2 lnQ,ln[COC]: | 0.23 | ln[tPb] | ln Q | [tPb] | Q | | | |
| slope, m | 0.33 | 3.01 | 5.89 | 20 | 362 | | | |
| intercept, b | 1.08 | 3.74 | 8.09 | 42 | 3,263 | | | |
| N: 32 | | 4.17 | 9.43 | 65 | 12,400 | | | |

**N= 32**

| | | | | | | | | tPb LC50 Standardized Values = (x - Avg)/SD | | | for graph 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Sampling Date** | **Q Discharge** | **tPb Concentration** | **tPb Load** | **Ln Q** | **Ln tPb Conc.** | **Ln tPb Load** | | | | |
| update for new data | | **cfs** | **ug/L** | **lbs/day** | | | | **Q** | **Conc** | **Load** | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | | |
| IDEQ | 29-Oct-96 | 589 | 28 | 88.7 | 6.38 | 3.33 | 4.49 | -0.81 | -0.31 | -0.34 | |
| IDEQ | 26-Nov-96 | 851 | 30 | 137.4 | 6.75 | 3.40 | 4.92 | -0.73 | -0.29 | -0.33 | |
| IDEQ | 13-Dec-96 | 2620 | 26 | 366.5 | 7.87 | 3.26 | 5.90 | -0.19 | -0.34 | -0.29 | |
| IDEQ | 30-Jan-97 | 1950 | 40 | 419.6 | 7.58 | 3.69 | 6.04 | -0.40 | -0.17 | -0.28 | |
| IDEQ | 19-Feb-97 | 3100 | 36 | 600.4 | 8.04 | 3.58 | 6.40 | -0.05 | -0.22 | -0.25 | |
| IDEQ | 27-Mar-97 | 8590 | 40 | 1848.6 | 9.06 | 3.69 | 7.52 | 1.61 | -0.17 | -0.01 | |
| IDEQ | 16-Apr-97 | 4700 | 25 | 632.2 | 8.46 | 3.22 | 6.45 | 0.43 | -0.35 | -0.24 | |
| IDEQ | 24-Jun-97 | 2330 | 31 | 388.6 | 7.75 | 3.43 | 5.96 | -0.28 | -0.28 | -0.28 | |
| IDEQ | 24-Jul-97 | 1040 | 83 | 464.4 | 6.95 | 4.42 | 6.14 | -0.67 | 0.34 | -0.27 | |
| IDEQ | 13-Aug-97 | 607 | 32 | 104.5 | 6.41 | 3.47 | 4.65 | -0.80 | -0.27 | -0.34 | |
| IDEQ | 3-Sep-97 | 461 | 25 | 62.0 | 6.13 | 3.22 | 4.13 | -0.85 | -0.35 | -0.35 | |
| IDEQ | 16-Oct-97 | 594 | 30 | 95.9 | 6.39 | 3.40 | 4.56 | -0.81 | -0.29 | -0.34 | |
| IDEQ | 24-Nov-97 | 1410 | 18 | 136.5 | 7.25 | 2.89 | 4.92 | -0.56 | -0.43 | -0.33 | |
| IDEQ | 17-Dec-97 | 1310 | 56 | 394.7 | 7.18 | 4.03 | 5.98 | -0.59 | 0.02 | -0.28 | |
| IDEQ | 21-Jan-98 | 1280 | 27 | 185.9 | 7.15 | 3.30 | 5.23 | -0.60 | -0.32 | -0.32 | |
| IDEQ | 25-Feb-98 | 2110 | 16 | 181.6 | 7.65 | 2.77 | 5.20 | -0.35 | -0.46 | -0.32 | |
| IDEQ | 19-Mar-98 | 4180 | 44 | 989.5 | 8.34 | 3.78 | 6.90 | 0.28 | -0.12 | -0.17 | |
| IDEQ | 23-Apr-98 | 5890 | 30 | 950.6 | 8.68 | 3.40 | 6.86 | 0.79 | -0.29 | -0.18 | |
| IDEQ | 28-May-98 | 7540 | 21 | 851.9 | 8.93 | 3.04 | 6.75 | 1.29 | -0.40 | -0.20 | |
| IDEQ | 27-Jul-98 | 624 | 47 | 157.8 | 6.44 | 3.85 | 5.06 | -0.80 | -0.09 | -0.33 | |
| IDEQ | 25-Aug-98 | 434 | 19 | 44.4 | 6.07 | 2.94 | 3.79 | -0.85 | -0.42 | -0.35 | |
| IDEQ | 23-Sep-98 | 367 | 15 | 29.6 | 5.91 | 2.71 | 3.39 | -0.87 | -0.47 | -0.35 | |
| USGS | 16-Nov-98 | 1100 | 27 | 159.8 | 7.00 | 3.30 | 5.07 | -0.65 | -0.32 | -0.33 | |
| USGS | 14-Dec-98 | 2440 | 22 | 288.8 | 7.80 | 3.09 | 5.67 | -0.25 | -0.38 | -0.30 | |
| USGS | 23-Mar-99 | 7850 | 110 | 4645.6 | 8.97 | 4.70 | 8.44 | 1.38 | 0.66 | 0.51 | |
| USGS | 21-Apr-99 | 10700 | 430 | 24753.4 | 9.28 | 6.06 | 10.12 | 2.24 | 4.47 | 4.24 | |
| USGS | 6-May-99 | 8320 | 22 | 984.8 | 9.03 | 3.09 | 6.89 | 1.53 | -0.38 | -0.17 | |
| USGS | 27-May-99 | 12400 | 300 | 20013.6 | 9.43 | 5.70 | 9.90 | 2.76 | 2.93 | 3.36 | |
| USGS | 17-Jun-99 | 6150 | 32 | 1058.8 | 8.72 | 3.47 | 6.96 | 0.87 | -0.27 | -0.16 | |
| USGS | 14-Jul-99 | 1890 | 27.2 | 276.6 | 7.54 | 3.30 | 5.62 | -0.41 | -0.32 | -0.31 | |
| USGS | 11-Aug-99 | 627 | 30.4 | 102.5 | 6.44 | 3.41 | 4.63 | -0.80 | -0.28 | -0.34 | |
| USGS | 9-Sep-99 | 362 | 17.9 | 34.9 | 5.89 | 2.88 | 3.55 | -0.88 | -0.43 | -0.35 | |

tPb

**Concentration over time analysis**

| | tPb | LC50 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.036** | **0.00043** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 29-Oct-96 | 3.34 | 28 | | |
| mid | 8-Mar-98 | 3.55 | 35 | | |
| last | 9-Sep-99 | 3.78 | 44 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Sep-99 | 0.00 | 1 | | |

**Load over time analysis**

| | tPb | LC50 | | | |
|---|---|---|---|---|---|
| | | | | ***Load over time*** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.038** | **0.00095** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 29-Oct-96 | 5.39 | 219 | | |
| mid | 8-Mar-98 | 5.86 | 349 | | |
| last | 9-Sep-99 | 6.38 | 588 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Sep-99 | 0.00 | 1 | | |

| | max r2: 0.601 | | | max r2: 0.908 | | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | ***r2*** | ***slope*** | ***intercept*** | ***r2*** | ***slope*** | ***intercept*** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.036 | 0.00043 | -11.76 | 0.038 | 0.00095 | -28.10 |
| | 0.033 | 0.00043 | -11.73 | 0.025 | 0.00079 | -22.49 |
| | 0.031 | 0.00044 | -12.08 | 0.017 | 0.00068 | -18.50 |
| | 0.026 | 0.00042 | -11.40 | 0.019 | 0.00074 | -20.65 |
| | 0.032 | 0.00048 | -13.74 | 0.021 | 0.00083 | -23.96 |
| | 0.035 | 0.00054 | -15.71 | 0.029 | 0.00103 | -31.00 |
| | 0.043 | 0.00063 | -18.92 | 0.061 | 0.00154 | -49.51 |
| | 0.036 | 0.00061 | -18.20 | 0.083 | 0.00189 | -62.35 |
| | 0.035 | 0.00063 | -19.11 | 0.094 | 0.00213 | -71.04 |
| | 0.075 | 0.00095 | -30.69 | 0.113 | 0.00247 | -83.14 |
| | 0.080 | 0.00104 | -34.03 | 0.096 | 0.00239 | -80.25 |
| | 0.073 | 0.00106 | -34.79 | 0.065 | 0.00206 | -68.45 |
| | 0.075 | 0.00115 | -37.80 | 0.044 | 0.00179 | -58.38 |
| | 0.052 | 0.00101 | -32.78 | 0.030 | 0.00155 | -49.82 |
| | 0.085 | 0.00139 | -46.44 | 0.032 | 0.00175 | -56.95 |
| | 0.080 | 0.00146 | -49.14 | 0.022 | 0.00155 | -49.82 |
| | 0.047 | 0.00119 | -39.34 | 0.011 | 0.00122 | -37.86 |
| | 0.065 | 0.00156 | -52.78 | 0.026 | 0.00205 | -67.83 |
| | 0.063 | 0.00173 | -58.78 | 0.053 | 0.00325 | -111.65 |
| | 0.037 | 0.00150 | -50.60 | 0.096 | 0.00504 | -176.57 |
| | 0.057 | 0.00211 | -72.82 | 0.080 | 0.00518 | -181.50 |
| | 0.022 | 0.00152 | -51.41 | 0.020 | 0.00289 | -98.34 |
| | 0.002 | -0.00054 | 23.41 | 0.024 | -0.00352 | 134.29 |
| | 0.042 | -0.00304 | 114.46 | 0.166 | -0.01146 | 422.87 |
| | 0.397 | -0.01351 | 494.95 | 0.714 | -0.03473 | 1268.65 |
| | 0.408 | -0.01625 | 594.60 | 0.782 | -0.04277 | 1560.82 |
| | 0.186 | -0.00939 | 344.94 | 0.693 | -0.03890 | 1420.26 |
| | 0.601 | -0.02056 | 751.24 | 0.908 | -0.05574 | 2032.55 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tPb** | | **LC50** | | |
| **LN Analysis** | | **tPb** | | |
| **Load** | | **Load Data, EV=1920 lbs/day CV=2.8** | | |
| **Avg:** | **1,920** | **Load Data-based LN** | | |
| **SD:** | **5,382** | u | ln tPb Load | tPb Load |
| **CV:** | **2.80** | 3 | 10.9 | 54187 |
| **Min:** | **29.6** | 0 | 6.47 | 645 |
| **Max:** | **24,753** | -3 | 2.04 | 7.7 |
| **Median:** | **328** | | | |
| | | 1,920 | 1920 | |
| | | 2.80 | 2.8 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.932, EV=1510lbs/day CV=4.11; max r2=0.94**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.932 | u | lnLoad | Load |
| slope, m | 0.589 | 3 | 10.97 | 58161 |
| intercept, b | -3.462 | 0 | 5.88 | 357 |
| N | 32 | -3 | 0.78 | 2.2 |
| E[Load] | 1508.7 | Parameter Estimates | | |
| SD[Load] | 6193 | from LN regression | | |
| CV[Load] | 4.11 | update graph label | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | N: 32 | | | | 0.932 |
| | | | | | | | 1508.7 |
| | | | | | | | 4.1 |
| | | | | | | | max r2 |
| | | | | | | | 0.937 |
| | **tPb** | | | | | | |
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 23-Sep-98 | **29.6** | 1 | 0.0194 | -2.067 | 3.388 | 0.932 |
| 9-Sep-99 | **34.9** | 2 | 0.0504 | -1.641 | 3.551 | 0.937 |
| 25-Aug-98 | **44.4** | 3 | 0.0814 | -1.396 | 3.792 | 0.934 |
| 3-Sep-97 | **62.0** | 4 | 0.1124 | -1.214 | 4.127 | 0.930 |
| 29-Oct-96 | **88.7** | 5 | 0.1434 | -1.065 | 4.486 | 0.928 |
| 16-Oct-97 | **95.9** | 6 | 0.1744 | -0.937 | 4.563 | 0.930 |
| 11-Aug-99 | **102.5** | 7 | 0.2054 | -0.822 | 4.630 | 0.931 |
| 13-Aug-97 | **104.5** | 8 | 0.2364 | -0.718 | 4.649 | 0.931 |
| 24-Nov-97 | **136.5** | 9 | 0.2674 | -0.621 | 4.917 | 0.928 |
| 26-Nov-96 | **137.4** | 10 | 0.2984 | -0.529 | 4.923 | 0.929 |
| 27-Jul-98 | **157.8** | 11 | 0.3295 | -0.441 | 5.061 | 0.927 |
| 16-Nov-98 | **159.8** | 12 | 0.3605 | -0.357 | 5.074 | 0.925 |
| 25-Feb-98 | **181.6** | 13 | 0.3915 | -0.275 | 5.202 | 0.921 |
| 21-Jan-98 | **185.9** | 14 | 0.4225 | -0.196 | 5.225 | 0.916 |
| 14-Jul-99 | **276.6** | 15 | 0.4535 | -0.117 | 5.622 | 0.909 |
| 14-Dec-98 | **288.8** | 16 | 0.4845 | -0.039 | 5.666 | 0.909 |
| 13-Dec-96 | **366.5** | 17 | 0.5155 | 0.039 | 5.904 | 0.906 |
| 24-Jun-97 | **388.6** | 18 | 0.5465 | 0.117 | 5.963 | 0.910 |
| 17-Dec-97 | **394.7** | 19 | 0.5775 | 0.196 | 5.978 | 0.912 |
| 30-Jan-97 | **419.6** | 20 | 0.6085 | 0.275 | 6.039 | 0.911 |
| 24-Jul-97 | **464.4** | 21 | 0.6395 | 0.357 | 6.141 | 0.907 |
| 19-Feb-97 | **600.4** | 22 | 0.6705 | 0.441 | 6.398 | 0.902 |
| 16-Apr-97 | **632.2** | 23 | 0.7016 | 0.529 | 6.449 | 0.902 |
| 28-May-98 | **851.9** | 24 | 0.7326 | 0.621 | 6.747 | 0.898 |
| 23-Apr-98 | **950.6** | 25 | 0.7636 | 0.718 | 6.857 | 0.905 |
| 6-May-99 | **984.8** | 26 | 0.7946 | 0.822 | 6.892 | 0.914 |
| 19-Mar-98 | **989.5** | 27 | 0.8256 | 0.937 | 6.897 | 0.912 |
| 17-Jun-99 | **1058.8** | 28 | 0.8566 | 1.065 | 6.965 | |
| 27-Mar-97 | **1848.6** | 29 | 0.8876 | 1.214 | 7.522 | |
| 23-Mar-99 | **4645.6** | 30 | 0.9186 | 1.396 | 8.444 | |
| 27-May-99 | **20013.6** | 31 | 0.9496 | 1.641 | 9.904 | |
| 21-Apr-99 | **24753.4** | 32 | 0.9806 | 2.067 | 10.117 | |

*update for EV, CV*

| | | | | |
|---|---|---|---|---|
| **tPb** | | **LC50** | 54 | 54.3 |
| **LN Analysis** | | **tPb** | 1.55 | 1.55 |

**Concentration**

**Conc. Data, EV=54.3 ug/L CV=1.55**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **54** | ***Data-based LN*** | | |
| **SD:** | **84** | u | ln[tPb] | [tPb] |
| **CV:** | **1.55** | 3 | 6.7 | 812 |
| **Min:** | **15** | 0 | 3.38 | 29 |
| **Max:** | **430** | -3 | 0.07 | 1 |
| **Median:** | **30** | | | |

**u=mLn{Conc.}+b:**

*update for r2, EV, CV* **r2=0.765, EV=51.6 ug/L CV=1.08; max r2=0.96**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.765 | 0.765 |
| | | | | | 51.6 | 51.6 |
| | | | | | 1.078 | 1.08 |
| | r2 u,lnConc. | 0.765 | u | lnConc | Conc | |
| | *slope, m* | 1.139 | 3 | 6.19 | 488 | |
| | *intercept, b* | -4.052 | 0 | 3.56 | 35 | |
| | N | 32 | -3 | 0.92 | 3 | |
| 0.932 | E[Conc] | 51.6 | Parameter Estimates | | | |
| 1510 | SD[Conc] | 56 | from LN regression | | | |
| 4.11 | CV[Conc] | 1.08 | update graph label | | | |

| | | | | | | max r2 |
|---|---|---|---|---|---|---|
| | **tPb** | N | 32 | | | 0.958 |
| | **Concentration** | **i** | | **u** | **Ln** | **r2** |
| **Date** | **ug/L** | **rank** | **i-3/8 / N+1/4** | **y-axis** | **x-axis** | **forward** |
| | ***Ranked*** | | **plotting points** | | | |
| update and rank for new data | | | | | | |
| 23-Sep-98 | 15 | 1 | 0.0194 | -2.067 | 2.708 | 0.765 |
| 25-Feb-98 | 16 | 2 | 0.0504 | -1.641 | 2.773 | 0.775 |
| 9-Sep-99 | 17.9 | 3 | 0.0814 | -1.396 | 2.885 | 0.778 |
| 24-Nov-97 | 18 | 4 | 0.1124 | -1.214 | 2.890 | 0.783 |
| 25-Aug-98 | 19 | 5 | 0.1434 | -1.065 | 2.944 | 0.784 |
| 28-May-98 | 21 | 6 | 0.1744 | -0.937 | 3.045 | 0.784 |
| 14-Dec-98 | 22 | 7 | 0.2054 | -0.822 | 3.091 | 0.789 |
| 6-May-99 | 22 | 8 | 0.2364 | -0.718 | 3.091 | 0.794 |
| 16-Apr-97 | 25 | 9 | 0.2674 | -0.621 | 3.219 | 0.797 |
| 3-Sep-97 | 25 | 10 | 0.2984 | -0.529 | 3.219 | 0.808 |
| 13-Dec-96 | 26 | 11 | 0.3295 | -0.441 | 3.258 | 0.817 |
| 21-Jan-98 | 27 | 12 | 0.3605 | -0.357 | 3.296 | 0.828 |
| 16-Nov-98 | 27 | 13 | 0.3915 | -0.275 | 3.296 | 0.840 |
| 14-Jul-99 | 27.2 | 14 | 0.4225 | -0.196 | 3.303 | 0.851 |
| 29-Oct-96 | 28 | 15 | 0.4535 | -0.117 | 3.332 | 0.861 |
| 26-Nov-96 | 30 | 16 | 0.4845 | -0.039 | 3.401 | 0.872 |
| 16-Oct-97 | 30 | 17 | 0.5155 | 0.039 | 3.401 | 0.887 |
| 23-Apr-98 | 30 | 18 | 0.5465 | 0.117 | 3.401 | 0.901 |
| 11-Aug-99 | 30.4 | 19 | 0.5775 | 0.196 | 3.414 | 0.912 |
| 24-Jun-97 | 31 | 20 | 0.6085 | 0.275 | 3.434 | 0.922 |
| 13-Aug-97 | 32 | 21 | 0.6395 | 0.357 | 3.466 | 0.931 |
| 17-Jun-99 | 32 | 22 | 0.6705 | 0.441 | 3.466 | 0.938 |
| 19-Feb-97 | 36 | 23 | 0.7016 | 0.529 | 3.584 | 0.941 |
| 30-Jan-97 | 40 | 24 | 0.7326 | 0.621 | 3.689 | 0.946 |
| 27-Mar-97 | 40 | 25 | 0.7636 | 0.718 | 3.689 | 0.957 |
| 19-Mar-98 | 44 | 26 | 0.7946 | 0.822 | 3.784 | 0.958 |
| 27-Jul-98 | 47 | 27 | 0.8256 | 0.937 | 3.850 | 0.954 |
| 17-Dec-97 | 56 | 28 | 0.8566 | 1.065 | 4.025 | 0.938 |
| 24-Jul-97 | 83 | 29 | 0.8876 | 1.214 | 4.419 | |
| 23-Mar-99 | 110 | 30 | 0.9186 | 1.396 | 4.700 | |
| 27-May-99 | 300 | 31 | 0.9496 | 1.641 | 5.704 | |
| 21-Apr-99 | 430 | 32 | 0.9806 | 2.067 | 6.064 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **LC50** | | | 3,263 | 3260 |
| **LN Analysis** | | **tPb** | | | 1.02 | 1.02 |
| **Discharge, Q** | | **Q Data, EV=3260 cfs CV=1.02** | | | | |
| **Avg:** | **3,263** | **Q Data-based LN** | | | | |
| **SD:** | **3,315** | u | lnQ | Q | | |
| **CV:** | **1.02** | 3 | 10.3 | 28626 | | |
| **Min:** | **362** | 0 | 7.74 | 2289 | | |
| **Max:** | **12,400** | -3 | 5.21 | 183 | | |
| **Median:** | **1,920** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.958 | 0.958 |
| | | | | | 3666.3 | 3670 |
| **u=mLn(Q)+b:** | | | | | 1.66 | 1.66 |

update for r2, EV, CV: **r2=0.958, EV=3670 cfs CV=1.66; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.958 | u | lnQ | Q |
| slope, m: | 0.869 | 3 | 11.00 | 59636 |
| intercept, b: | -6.560 | 0 | 7.55 | 1892 |
| N: | 32 | -3 | 4.09 | 60 |
| E[Q] | 3666.3 | Parameter Estimates | | |
| SD[Q] | 6085 | from LN regression | | |
| CV[Q] | 1.66 | update graph label | | |

N: 32 — max r2: 0.968

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 9-Sep-99 | 362 | 1 | 0.0194 | -2.067 | 5.892 | 0.958 |
| 23-Sep-98 | 367 | 2 | 0.0504 | -1.641 | 5.905 | 0.968 |
| 25-Aug-98 | 434 | 3 | 0.0814 | -1.396 | 6.073 | 0.968 |
| 3-Sep-97 | 461 | 4 | 0.1124 | -1.214 | 6.133 | 0.966 |
| 29-Oct-96 | 589 | 5 | 0.1434 | -1.065 | 6.378 | 0.963 |
| 16-Oct-97 | 594 | 6 | 0.1744 | -0.937 | 6.387 | 0.962 |
| 13-Aug-97 | 607 | 7 | 0.2054 | -0.822 | 6.409 | 0.958 |
| 27-Jul-98 | 624 | 8 | 0.2364 | -0.718 | 6.436 | 0.954 |
| 11-Aug-99 | 627 | 9 | 0.2674 | -0.621 | 6.441 | 0.950 |
| 26-Nov-96 | 851 | 10 | 0.2984 | -0.529 | 6.746 | 0.949 |
| 24-Jul-97 | 1040 | 11 | 0.3295 | -0.441 | 6.947 | 0.945 |
| 16-Nov-98 | 1100 | 12 | 0.3605 | -0.357 | 7.003 | 0.939 |
| 21-Jan-98 | 1280 | 13 | 0.3915 | -0.275 | 7.155 | 0.933 |
| 17-Dec-97 | 1310 | 14 | 0.4225 | -0.196 | 7.178 | 0.926 |
| 24-Nov-97 | 1410 | 15 | 0.4535 | -0.117 | 7.251 | 0.920 |
| 14-Jul-99 | 1890 | 16 | 0.4845 | -0.039 | 7.544 | 0.916 |
| 30-Jan-97 | 1950 | 17 | 0.5155 | 0.039 | 7.576 | 0.905 |
| 25-Feb-98 | 2110 | 18 | 0.5465 | 0.117 | 7.654 | 0.894 |
| 24-Jun-97 | 2330 | 19 | 0.5775 | 0.196 | 7.754 | 0.881 |
| 14-Dec-98 | 2440 | 20 | 0.6085 | 0.275 | 7.800 | 0.867 |
| 13-Dec-96 | 2620 | 21 | 0.6395 | 0.357 | 7.871 | 0.859 |
| 19-Feb-97 | 3100 | 22 | 0.6705 | 0.441 | 8.039 | 0.871 |
| 19-Mar-98 | 4180 | 23 | 0.7016 | 0.529 | 8.338 | 0.911 |
| 16-Apr-97 | 4700 | 24 | 0.7326 | 0.621 | 8.455 | 0.921 |
| 23-Apr-98 | 5890 | 25 | 0.7636 | 0.718 | 8.681 | 0.953 |
| 17-Jun-99 | 6150 | 26 | 0.7946 | 0.822 | 8.724 | 0.947 |
| 28-May-98 | 7540 | 27 | 0.8256 | 0.937 | 8.928 | 0.967 |
| 23-Mar-99 | 7850 | 28 | 0.8566 | 1.065 | 8.968 | 0.963 |
| 6-May-99 | 8320 | 29 | 0.8876 | 1.214 | 9.026 | |
| 27-Mar-97 | 8590 | 30 | 0.9186 | 1.396 | 9.058 | |
| 21-Apr-99 | 10700 | 31 | 0.9496 | 1.641 | 9.278 | |
| 27-May-99 | 12400 | 32 | 0.9806 | 2.067 | 9.425 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **LC60** | **Date:** | **20-Sep-00** |
| **Chemical:** | **tZn** | **Analyst:** | **S.R. Peterson** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,885 | 3,263 | 339 | 4,691 | 0.00 | 0.00 | 0.00 |
| **SD:** | 325 | 3,315 | 116 | 4,094 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 1.02 | 0.34 | 0.87 | | | |
| **Min:** | 35,367 | 362 | 120 | 656.1 | -0.88 | -1.88 | -0.99 |
| **Max:** | 36,412 | 12,400 | 600 | 17,270 | 2.76 | 2.25 | 3.07 |
| **Median:** | 35,862 | 1,920 | 326 | 3,434 | -0.41 | -0.11 | -0.31 |

| tZn LC60 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.366)** | | update r2 | 0.37 | 0.366 | r2 | 0.095 | 0.025 |
| r2 Q,[COC] | 0.37 | [tCd] | Q | | m | 3.1452 | 0.00052 |
| slope, m | 0.0 | 400 | 362.0 | | b | -109605 | -11.12 |
| intercept, b | 407.9 | 339 | 3263.0 | | | | |
| N: 32 | | 145 | 12400 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.378)** | | update r2 | 0.38 | 0.378 | | | |
| r2 lnQ,ln[COC] | 0.38 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m: | -0.21 | 6.11 | 5.89 | 450 | 362 | | |
| intercept, b | 7.36 | 5.65 | 8.09 | 283 | 3,263 | | |
| N: 32 | | 5.36 | 9.43 | 213 | 12,400 | | |

**N= 32**

| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | tZn LC60 Standardized Values = (x - Avg)/SD | for graph 0 | |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | Q | Conc | Load |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 29-Oct-96 | 589 | 444 | 1407.0 | 6.38 | 6.10 | 7.25 | -0.81 | 0.91 | -0.80 |
| IDEQ | 26-Nov-96 | 851 | 592 | 2710.4 | 6.75 | 6.38 | 7.90 | -0.73 | 2.18 | -0.48 |
| IDEQ | 13-Dec-96 | 2620 | 494 | 6963.2 | 7.87 | 6.20 | 8.85 | -0.19 | 1.34 | 0.56 |
| IDEQ | 30-Jan-97 | 1950 | 382 | 4007.6 | 7.58 | 5.95 | 8.30 | -0.40 | 0.37 | -0.17 |
| IDEQ | 19-Feb-97 | 3100 | 436 | 7271.6 | 8.04 | 6.08 | 8.89 | -0.05 | 0.84 | 0.63 |
| IDEQ | 27-Mar-97 | 8590 | 238 | 10999.0 | 9.06 | 5.47 | 9.31 | 1.61 | -0.87 | 1.54 |
| IDEQ | 16-Apr-97 | 4700 | 244 | 6169.8 | 8.46 | 5.50 | 8.73 | 0.43 | -0.81 | 0.36 |
| IDEQ | 24-Jun-97 | 2330 | 281 | 3522.4 | 7.75 | 5.64 | 8.17 | -0.28 | -0.50 | -0.29 |
| IDEQ | 24-Jul-97 | 1040 | 401 | 2243.7 | 6.95 | 5.99 | 7.72 | -0.67 | 0.54 | -0.60 |
| IDEQ | 13-Aug-97 | 607 | 428 | 1397.7 | 6.41 | 6.06 | 7.24 | -0.80 | 0.77 | -0.80 |
| IDEQ | 3-Sep-97 | 461 | 454 | 1126.0 | 6.13 | 6.12 | 7.03 | -0.85 | 0.99 | -0.87 |
| IDEQ | 16-Oct-97 | 594 | 373 | 1192.0 | 6.39 | 5.92 | 7.08 | -0.81 | 0.30 | -0.85 |
| IDEQ | 24-Nov-97 | 1410 | 441 | 3345.3 | 7.25 | 6.09 | 8.12 | -0.56 | 0.88 | -0.33 |
| IDEQ | 17-Dec-97 | 1310 | 391 | 2755.7 | 7.18 | 5.97 | 7.92 | -0.59 | 0.45 | -0.47 |
| IDEQ | 21-Jan-98 | 1280 | 466 | 3209.1 | 7.15 | 6.14 | 8.07 | -0.60 | 1.10 | -0.36 |
| IDEQ | 25-Feb-98 | 2110 | 290 | 3292.0 | 7.65 | 5.67 | 8.10 | -0.35 | -0.42 | -0.34 |
| IDEQ | 19-Mar-98 | 4180 | 212 | 4767.5 | 8.34 | 5.36 | 8.47 | 0.28 | -1.09 | 0.02 |
| IDEQ | 23-Apr-98 | 5890 | 222 | 7034.8 | 8.68 | 5.40 | 8.86 | 0.79 | -1.00 | 0.57 |
| IDEQ | 28-May-98 | 7540 | 234 | 9492.3 | 8.93 | 5.46 | 9.16 | 1.29 | -0.90 | 1.17 |
| IDEQ | 27-Jul-98 | 624 | 309 | 1037.4 | 6.44 | 5.73 | 6.94 | -0.80 | -0.26 | -0.89 |
| IDEQ | 25-Aug-98 | 434 | 281 | 656.1 | 6.07 | 5.64 | 6.49 | -0.85 | -0.50 | -0.99 |
| IDEQ | 23-Sep-98 | 367 | 345 | 681.2 | 5.91 | 5.84 | 6.52 | -0.87 | 0.05 | -0.98 |
| USGS | 16-Nov-98 | 1100 | 600 | 3550.8 | 7.00 | 6.40 | 8.17 | -0.65 | 2.25 | -0.28 |
| USGS | 14-Dec-98 | 2440 | 380 | 4988.3 | 7.80 | 5.94 | 8.51 | -0.25 | 0.36 | 0.07 |
| USGS | 23-Mar-99 | 7850 | 210 | 8868.9 | 8.97 | 5.35 | 9.09 | 1.38 | -1.11 | 1.02 |
| USGS | 21-Apr-99 | 10700 | 300 | 17269.8 | 9.28 | 5.70 | 9.76 | 2.24 | -0.33 | 3.07 |
| USGS | 6-May-99 | 8320 | 120 | 5371.4 | 9.03 | 4.79 | 8.59 | 1.53 | -1.88 | 0.17 |
| USGS | 27-May-99 | 12400 | 240 | 16010.9 | 9.43 | 5.48 | 9.68 | 2.76 | -0.85 | 2.76 |
| USGS | 17-Jun-99 | 6150 | 140 | 4632.2 | 8.72 | 4.94 | 8.44 | 0.87 | -1.71 | -0.01 |
| USGS | 14-Jul-99 | 1890 | 237 | 2409.9 | 7.54 | 5.47 | 7.79 | -0.41 | -0.87 | -0.56 |
| USGS | 11-Aug-99 | 627 | 312 | 1052.5 | 6.44 | 5.74 | 6.96 | -0.80 | -0.23 | -0.89 |
| USGS | 9-Sep-99 | 362 | 340 | 662.2 | 5.89 | 5.83 | 6.50 | -0.88 | 0.01 | -0.98 |

tZn

**Concentration over time analysis**

| | tZn | LC60 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.259** | **-0.00058** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 29-Oct-96 | 6.06 | 429 | | |
| mid | 8-Mar-98 | 5.77 | 322 | | |
| last | 9-Sep-99 | 5.45 | 234 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Sep-99 | 0.00 | 1 | | |

**Load over time analysis**

| | tZn | LC60 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.000** | **-0.00006** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 29-Oct-96 | 8.11 | 3,336 | | |
| mid | 8-Mar-98 | 8.08 | 3,238 | | |
| last | 9-Sep-99 | 8.05 | 3,131 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 9-Sep-99 | 0.00 | 1 | | |

| | max r2 | #DIV/0! | | max r2 | #DIV/0! | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.259 | -0.00058 | 26.60 | 0.000 | -0.00006 | 10.26 |
| | 0.239 | -0.00057 | 26.39 | 0.005 | -0.00021 | 15.63 |
| | 0.192 | -0.00051 | 24.11 | 0.008 | -0.00027 | 17.69 |
| | 0.155 | -0.00047 | 22.53 | 0.002 | -0.00014 | 13.29 |
| | 0.141 | -0.00047 | 22.46 | 0.001 | -0.00012 | 12.24 |
| | 0.113 | -0.00043 | 21.17 | 0.000 | 0.00006 | 5.88 |
| | 0.159 | -0.00053 | 24.90 | 0.012 | 0.00038 | -5.68 |
| | 0.217 | -0.00066 | 29.39 | 0.031 | 0.00063 | -14.75 |
| | 0.254 | -0.00075 | 32.72 | 0.040 | 0.00075 | -19.21 |
| | 0.234 | -0.00075 | 32.79 | 0.037 | 0.00077 | -19.66 |
| | 0.203 | -0.00073 | 31.91 | 0.022 | 0.00062 | -14.31 |
| | 0.159 | -0.00067 | 29.70 | 0.006 | 0.00033 | -3.96 |
| | 0.138 | -0.00066 | 29.34 | 0.000 | -0.00002 | 8.76 |
| | 0.093 | -0.00056 | 25.77 | 0.000 | -0.00002 | 8.73 |
| | 0.061 | -0.00048 | 22.78 | 0.000 | -0.00012 | 12.28 |
| | 0.016 | -0.00025 | 14.61 | 0.001 | -0.00016 | 13.93 |
| | 0.012 | -0.00023 | 14.06 | 0.001 | -0.00021 | 15.54 |
| | 0.038 | -0.00046 | 22.19 | 0.000 | 0.00003 | 7.13 |
| | 0.083 | -0.00076 | 32.95 | 0.010 | 0.00077 | -19.93 |
| | 0.150 | -0.00117 | 47.82 | 0.078 | 0.00238 | -78.15 |
| | 0.154 | -0.00134 | 54.23 | 0.034 | 0.00172 | -54.45 |
| | 0.195 | -0.00177 | 69.87 | 0.002 | -0.00041 | 22.95 |
| | 0.176 | -0.00205 | 80.03 | 0.210 | -0.00503 | 190.91 |
| | 0.004 | -0.00030 | 16.52 | 0.394 | -0.00872 | 324.93 |
| | 0.202 | 0.00292 | -100.65 | 0.781 | -0.01830 | 673.06 |
| | 0.247 | 0.00391 | -136.72 | 0.865 | -0.02260 | 829.50 |
| | 0.691 | 0.00741 | -263.96 | 0.813 | -0.02210 | 811.35 |
| | 0.512 | 0.00591 | -209.34 | 0.953 | -0.02927 | 1071.98 |
| | 0.889 | 0.01043 | -373.84 | 0.987 | -0.02377 | 871.94 |
| | 0.911 | 0.00631 | -223.95 | 0.971 | -0.02262 | 830.20 |
| | 1.000 | 0.00296 | -102.08 | 1.000 | -0.01598 | 588.28 |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tZn** | | **LC60** | | |
| **LN Analysis** | | **tZn** | | |
| **Load** | | **Load Data, EV=4690 lbs/day CV=0.873** | | |
| **Avg:** | **4,691** | **Load Data-based LN** | | |
| **SD:** | **4,094** | u | ln tCd Load | tCd Load |
| **CV:** | **0.87** | 3 | 10.4 | 33790 |
| **Min:** | **656.1** | 0 | 8.17 | 3534 |
| **Max:** | **17,270** | -3 | 5.91 | 369.5 |
| **Median:** | **3,434** | | | |
| | | 4,691 | 4690 | |
| | | 0.87 | 0.873 | |

**u=mLn(Load}+ b:**

update for r2, EV, CV: **r2=0.977, EV=5080lbs/day CV=1.21; max r2=0.99**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.977 | u | lnLoad | Load | |
| slope, m | 1.053 | 3 | 10.93 | 55861 | |
| intercept, b | -8.508 | 0 | 8.08 | 3233 | |
| N | 32 | -3 | 5.23 | 187.1 | |
| E[Load} | 5076 | Parameter Estimates | | | 0.977 |
| SD[Load} | 6144 | from LN regression | | | 5075.9 |
| CV[Load] | 1.21 | update graph label | | | 1.2 |
| | | | | | max r2 |
| | N | 32 | | | 0.990 |

| Date | tZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 25-Aug-98 | **656.1** | 1 | 0.0194 | -2.067 | 6.486 | 0.977 |
| 9-Sep-99 | **662.2** | 2 | 0.0504 | -1.641 | 6.496 | 0.980 |
| 23-Sep-98 | **681.2** | 3 | 0.0814 | -1.396 | 6.524 | 0.977 |
| 27-Jul-98 | **1037.4** | 4 | 0.1124 | -1.214 | 6.944 | 0.976 |
| 11-Aug-99 | **1052.5** | 5 | 0.1434 | -1.065 | 6.959 | 0.973 |
| 3-Sep-97 | **1126.0** | 6 | 0.1744 | -0.937 | 7.026 | 0.971 |
| 16-Oct-97 | **1192.0** | 7 | 0.2054 | -0.822 | 7.083 | 0.970 |
| 13-Aug-97 | **1397.7** | 8 | 0.2364 | -0.718 | 7.243 | 0.973 |
| 29-Oct-96 | **1407.0** | 9 | 0.2674 | -0.621 | 7.249 | 0.976 |
| 24-Jul-97 | **2243.7** | 10 | 0.2984 | -0.529 | 7.716 | 0.990 |
| 14-Jul-99 | **2409.9** | 11 | 0.3295 | -0.441 | 7.787 | 0.989 |
| 26-Nov-96 | **2710.4** | 12 | 0.3605 | -0.357 | 7.905 | 0.988 |
| 17-Dec-97 | **2755.7** | 13 | 0.3915 | -0.275 | 7.921 | 0.987 |
| 21-Jan-98 | **3209.1** | 14 | 0.4225 | -0.196 | 8.074 | 0.985 |
| 25-Feb-98 | **3292.0** | 15 | 0.4535 | -0.117 | 8.099 | 0.985 |
| 24-Nov-97 | **3345.3** | 16 | 0.4845 | -0.039 | 8.115 | 0.984 |
| 24-Jun-97 | **3522.4** | 17 | 0.5155 | 0.039 | 8.167 | 0.982 |
| 16-Nov-98 | **3550.8** | 18 | 0.5465 | 0.117 | 8.175 | 0.979 |
| 30-Jan-97 | **4007.6** | 19 | 0.5775 | 0.196 | 8.296 | 0.979 |
| 17-Jun-99 | **4632.2** | 20 | 0.6085 | 0.275 | 8.441 | 0.977 |
| 19-Mar-98 | **4767.5** | 21 | 0.6395 | 0.357 | 8.470 | 0.974 |
| 14-Dec-98 | **4988.3** | 22 | 0.6705 | 0.441 | 8.515 | 0.969 |
| 6-May-99 | **5371.4** | 23 | 0.7016 | 0.529 | 8.589 | 0.964 |
| 16-Apr-97 | **6169.8** | 24 | 0.7326 | 0.621 | 8.727 | 0.958 |
| 13-Dec-96 | **6963.2** | 25 | 0.7636 | 0.718 | 8.848 | 0.949 |
| 23-Apr-98 | **7034.8** | 26 | 0.7946 | 0.822 | 8.859 | 0.944 |
| 19-Feb-97 | **7271.6** | 27 | 0.8256 | 0.937 | 8.892 | 0.937 |
| 23-Mar-99 | **8868.9** | 28 | 0.8566 | 1.065 | 9.090 | 0.905 |
| 28-May-98 | **9492.3** | 29 | 0.8876 | 1.214 | 9.158 | |
| 27-Mar-97 | **10999.0** | 30 | 0.9186 | 1.396 | 9.306 | |
| 27-May-99 | **16010.9** | 31 | 0.9496 | 1.641 | 9.681 | |
| 21-Apr-99 | **17269.8** | 32 | 0.9806 | 2.067 | 9.757 | |

update for EV, CV.

| | | | | |
|---|---|---|---|---|
| **tZn** | | ***LC60*** | 339 | 339 |
| **LN Analysis** | | ***tZn*** | 0.34 | 0.343 |
| **Concentration** | | **Conc. Data, EV=339 ug/L CV=0.343** | | |
| **Avg:** | **339** | **Data-based LN** | | |
| **SD:** | **116** | u | ln[tCd] | [tCd] |
| **CV:** | **0.34** | 3 | 6.8 | 872 |
| **Min:** | **120** | 0 | 5.77 | 320 |
| **Max:** | **600** | -3 | 4.77 | 118 |
| **Median.** | **326** | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.961 | 0.961 |
| | **u=mLn{Conc.}+b:** | | | | 343.3 | 343 |
| update for r2, EV, CV: | **r2=0.961, EV=343 ug/L CV=0.411; max r2=0.975** | | | | 0.411 | 0.411 |
| | r2 u,lnConc | 0.961 | u | lnConc | Conc | |
| | slope, m | 2.533 | 3 | 6.95 | 1038 | |
| | intercept, b | -14.590 | 0 | 5.76 | 318 | |
| | N | 32 | -3 | 4.58 | 97 | |
| 0.977 | E[Conc] | 343.3 | Parameter Estimates | | | |
| 5080 | SD[Conc] | 141 | from LN regression | | | |
| 1.21 | CV[Conc] | 0.41 | update graph label | | | |

| | tZn | N | 32 | | | max r2 = 0.975 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 6-May-99 | 120 | 1 | 0.0194 | -2.067 | 4.787 | 0.961 |
| 17-Jun-99 | 140 | 2 | 0.0504 | -1.641 | 4.942 | 0.962 |
| 23-Mar-99 | 210 | 3 | 0.0814 | -1.396 | 5.347 | 0.975 |
| 19-Mar-98 | 212 | 4 | 0.1124 | -1.214 | 5.357 | 0.974 |
| 23-Apr-98 | 222 | 5 | 0.1434 | -1.065 | 5.403 | 0.971 |
| 28-May-98 | 234 | 6 | 0.1744 | -0.937 | 5.455 | 0.968 |
| 14-Jul-99 | 237 | 7 | 0.2054 | -0.822 | 5.468 | 0.965 |
| 27-Mar-97 | 238 | 8 | 0.2364 | -0.718 | 5.472 | 0.962 |
| 27-May-99 | 240 | 9 | 0.2674 | -0.621 | 5.481 | 0.959 |
| 16-Apr-97 | 244 | 10 | 0.2984 | -0.529 | 5.497 | 0.959 |
| 24-Jun-97 | 281 | 11 | 0.3295 | -0.441 | 5.638 | 0.965 |
| 25-Aug-98 | 281 | 12 | 0.3605 | -0.357 | 5.638 | 0.962 |
| 25-Feb-98 | 290 | 13 | 0.3915 | -0.275 | 5.670 | 0.960 |
| 21-Apr-99 | 300 | 14 | 0.4225 | -0.196 | 5.704 | 0.958 |
| 27-Jul-98 | 309 | 15 | 0.4535 | -0.117 | 5.733 | 0.956 |
| 11-Aug-99 | 312 | 16 | 0.4845 | -0.039 | 5.743 | 0.955 |
| 9-Sep-99 | 340 | 17 | 0.5155 | 0.039 | 5.829 | 0.961 |
| 23-Sep-98 | 345 | 18 | 0.5465 | 0.117 | 5.844 | 0.957 |
| 16-Oct-97 | 373 | 19 | 0.5775 | 0.196 | 5.922 | 0.955 |
| 14-Dec-98 | 380 | 20 | 0.6085 | 0.275 | 5.940 | 0.950 |
| 30-Jan-97 | 382 | 21 | 0.6395 | 0.357 | 5.945 | 0.944 |
| 17-Dec-97 | 391 | 22 | 0.6705 | 0.441 | 5.969 | 0.934 |
| 24-Jul-97 | 401 | 23 | 0.7016 | 0.529 | 5.994 | 0.922 |
| 13-Aug-97 | 428 | 24 | 0.7326 | 0.621 | 6.059 | 0.906 |
| 19-Feb-97 | 436 | 25 | 0.7636 | 0.718 | 6.078 | 0.903 |
| 24-Nov-97 | 441 | 26 | 0.7946 | 0.822 | 6.089 | 0.902 |
| 29-Oct-96 | 444 | 27 | 0.8256 | 0.937 | 6.096 | 0.896 |
| 3-Sep-97 | 454 | 28 | 0.8566 | 1.065 | 6.118 | 0.869 |
| 21-Jan-98 | 466 | 29 | 0.8876 | 1.214 | 6.144 | |
| 13-Dec-96 | 494 | 30 | 0.9186 | 1.396 | 6.203 | |
| 26-Nov-96 | 592 | 31 | 0.9496 | 1.641 | 6.384 | |
| 16-Nov-98 | 600 | 32 | 0.9806 | 2.067 | 6.397 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **LC60** | | | 3,263 | 3260 |
| **LN Analysis** | | **tZn** | | | 1.02 | 1.02 |
| **Discharge, Q** | | **Q Data, EV=3260 cfs CV=1.02** | | | | |
| **Avg:** | **3,263** | **Q Data-based LN** | | | | |
| **SD:** | **3,315** | u | lnQ | Q | | |
| **CV:** | **1.02** | 3 | 10.3 | 28626 | | |
| **Min:** | **362** | 0 | 7.74 | 2289 | | |
| **Max:** | **12,400** | -3 | 5.21 | 183 | | |
| **Median:** | **1,920** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.958 | 0.958 |
| | | | | | 3666.3 | 3670 |
| **u=mLn(Q)+b:** | | | | | 1.66 | 1.66 |

update for r2, EV, CV: **r2=0.958, EV=3670 cfs CV=1.66; max r2=0.968**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnQ: | 0.958 | u | lnQ | Q | |
| slope, m: | 0.869 | 3 | 11.00 | 59636 | |
| intercept, b | -6.560 | 0 | 7.55 | 1892 | |
| N: 32 | | -3 | 4.09 | 60 | |
| E[Q]: | 3666.3 | Parameter Estimates | | | |
| SD[Q]: | 6085 | from LN regression | | | |
| CV[Q]: | 1.66 | update graph label | | | |

N: 32

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.968 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 9-Sep-99 | 362 | 1 | 0.0194 | -2.067 | 5.892 | 0.958 |
| 23-Sep-98 | 367 | 2 | 0.0504 | -1.641 | 5.905 | 0.968 |
| 25-Aug-98 | 434 | 3 | 0.0814 | -1.396 | 6.073 | 0.968 |
| 3-Sep-97 | 461 | 4 | 0.1124 | -1.214 | 6.133 | 0.966 |
| 29-Oct-96 | 589 | 5 | 0.1434 | -1.065 | 6.378 | 0.963 |
| 16-Oct-97 | 594 | 6 | 0.1744 | -0.937 | 6.387 | 0.962 |
| 13-Aug-97 | 607 | 7 | 0.2054 | -0.822 | 6.409 | 0.958 |
| 27-Jul-98 | 624 | 8 | 0.2364 | -0.718 | 6.436 | 0.954 |
| 11-Aug-99 | 627 | 9 | 0.2674 | -0.621 | 6.441 | 0.950 |
| 26-Nov-96 | 851 | 10 | 0.2984 | -0.529 | 6.746 | 0.949 |
| 24-Jul-97 | 1040 | 11 | 0.3295 | -0.441 | 6.947 | 0.945 |
| 16-Nov-98 | 1100 | 12 | 0.3605 | -0.357 | 7.003 | 0.939 |
| 21-Jan-98 | 1280 | 13 | 0.3915 | -0.275 | 7.155 | 0.933 |
| 17-Dec-97 | 1310 | 14 | 0.4225 | -0.196 | 7.178 | 0.926 |
| 24-Nov-97 | 1410 | 15 | 0.4535 | -0.117 | 7.251 | 0.920 |
| 14-Jul-99 | 1890 | 16 | 0.4845 | -0.039 | 7.544 | 0.916 |
| 30-Jan-97 | 1950 | 17 | 0.5155 | 0.039 | 7.576 | 0.905 |
| 25-Feb-98 | 2110 | 18 | 0.5465 | 0.117 | 7.654 | 0.894 |
| 24-Jun-97 | 2330 | 19 | 0.5775 | 0.196 | 7.754 | 0.881 |
| 14-Dec-98 | 2440 | 20 | 0.6085 | 0.275 | 7.800 | 0.867 |
| 13-Dec-96 | 2620 | 21 | 0.6395 | 0.357 | 7.871 | 0.859 |
| 19-Feb-97 | 3100 | 22 | 0.6705 | 0.441 | 8.039 | 0.871 |
| 19-Mar-98 | 4180 | 23 | 0.7016 | 0.529 | 8.338 | 0.911 |
| 16-Apr-97 | 4700 | 24 | 0.7326 | 0.621 | 8.455 | 0.921 |
| 23-Apr-98 | 5890 | 25 | 0.7636 | 0.718 | 8.681 | 0.953 |
| 17-Jun-99 | 6150 | 26 | 0.7946 | 0.822 | 8.724 | 0.947 |
| 28-May-98 | 7540 | 27 | 0.8256 | 0.937 | 8.928 | 0.967 |
| 23-Mar-99 | 7850 | 28 | 0.8566 | 1.065 | 8.968 | 0.963 |
| 6-May-99 | 8320 | 29 | 0.8876 | 1.214 | 9.026 | |
| 27-Mar-97 | 8590 | 30 | 0.9186 | 1.396 | 9.058 | |
| 21-Apr-99 | 10700 | 31 | 0.9496 | 1.641 | 9.278 | |
| 27-May-99 | 12400 | 32 | 0.9806 | 2.067 | 9.425 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | MC262 | **Date:** | 28-Jun-00 |
| **Chemical:** | dCd | **Analyst:** | J.MacLachlan |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Avg:** | 35,090 | 14 | 1 | 0.05 | | | 0.00 | 0.00 | 0.00 | |
| **SD:** | 810 | 26 | 0.2 | 0.08 | | | 1.00 | 1.00 | 1.00 | |
| **CV:** | 0.02 | 1.82 | 0.32 | 1.74 | | | | | | first |
| **Min:** | 33,372 | 0.4 | 0.4 | 0.0 | | | -0.53 | -1.43 | -0.56 | mid |
| **Max:** | 36,403 | 137 | 2 | 0.39 | | | 4.70 | 4.59 | 4.31 | last |
| **Median:** | 34,808 | 5 | 1 | 0.02 | | | -0.37 | -0.14 | -0.34 | |

| dCd MC262 | | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b | |
|---|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.0000695)** | | | **0.00** | 0.0000695 | | r2: | 0.013 | 0.020 | |
| r2 Q,[COC]: | 0.0001 | [tCd] | Q | | | m: | 0.0037 | 0.00021 | |
| slope, m: | 0.0001 | 1 | 0.4 | | | b: | -115 | -5.58 | |
| intercept, b: | 0.7 | 1 | 14.3 | | | | | | |
| N: | 47 | 1 | 137 | | | | | | first |
| **LnConc. = mLn(Q)+b (r2=0.0317)** | | | update r2 | 0.03 | 0.0317 | | | | mid |
| r2 lnQ,ln[COC] | 0.03 | ln[tCd] | ln Q | [tCd] | Q | | | | last |
| slope, m | 0.08 | -0.47 | -0.97 | 1 | 0.4 | | | | |
| intercept, b | -0.43 | -0.31 | 2.66 | 1 | 14 | | | | |
| N: | 47 | -0.21 | 4.92 | 1 | 137 | | | | |

**N= 58**

| | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd MC262 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | for graph 0 | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 14-May-91 | 14.9 | 0.5 | 0.040 | 2.70 | -0.69 | -3.22 | 0.02 | -1.00 | -0.07 |
| MFG | 1-Oct-91 | 0.93 | 0.4 | 0.002 | -0.07 | -0.92 | -6.21 | -0.51 | -1.43 | -0.55 |
| IDEQ | 29-Oct-93 | 2.46 | 0.6 | 0.008 | 0.90 | -0.51 | -4.84 | -0.46 | -0.57 | -0.47 |
| IDEQ | 1-Dec-93 | 2.69 | 0.7 | 0.010 | 0.99 | -0.36 | -4.59 | -0.45 | -0.14 | -0.45 |
| IDEQ | 21-Dec-93 | 3.06 | 0.7 | 0.012 | 1.12 | -0.36 | -4.46 | -0.43 | -0.14 | -0.43 |
| IDEQ | 21-Dec-93 | 2.21 | 0.7 | 0.008 | 0.79 | -0.36 | -4.79 | -0.46 | -0.14 | -0.47 |
| IDEQ | 21-Jan-94 | 7.08 | 0.6 | 0.023 | 1.96 | -0.51 | -3.78 | -0.28 | -0.57 | -0.29 |
| IDEQ | 21-Jan-94 | 7.13 | 0.6 | 0.023 | 1.96 | -0.51 | -3.77 | -0.28 | -0.57 | -0.28 |
| IDEQ | 17-Feb-94 | 3.81 | 0.8 | 0.016 | 1.34 | -0.22 | -4.11 | -0.40 | 0.29 | -0.37 |
| IDEQ | 7-Mar-94 | 23.22 | 0.6 | 0.075 | 3.15 | -0.51 | -2.59 | 0.34 | -0.57 | 0.37 |
| IDEQ | 23-Mar-94 | 16.04 | 0.5 | 0.043 | 2.78 | -0.69 | -3.14 | 0.07 | -1.00 | -0.03 |
| IDEQ | 23-Mar-94 | 15.34 | 0.5 | 0.041 | 2.73 | -0.69 | -3.19 | 0.04 | -1.00 | -0.05 |
| IDEQ | 6-Apr-94 | 13.97 | 1 | 0.075 | 2.64 | 0.00 | -2.59 | -0.01 | 1.15 | 0.37 |
| IDEQ | 18-Apr-94 | 10.63 | 0.6 | 0.034 | 2.36 | -0.51 | -3.37 | -0.14 | -0.57 | -0.14 |
| IDEQ | 3-May-94 | 6.19 | 0.9 | 0.030 | 1.82 | -0.11 | -3.51 | -0.31 | 0.72 | -0.20 |
| IDEQ | 20-May-94 | 4.34 | 0.8 | 0.019 | 1.47 | -0.22 | -3.98 | -0.38 | 0.29 | -0.34 |
| IDEQ | 7-Jun-94 | 4.34 | 0.8 | 0.019 | 1.47 | -0.22 | -3.98 | -0.38 | 0.29 | -0.34 |
| IDEQ | 24-Jun-94 | 2.8 | 0.8 | 0.012 | 1.03 | -0.22 | -4.42 | -0.44 | 0.29 | -0.42 |
| IDEQ | 22-Jul-94 | 1.99 | 0.6 | 0.006 | 0.69 | -0.51 | -5.05 | -0.47 | -0.57 | -0.49 |
| IDEQ | 17-Aug-94 | 1.41 | 0.6 | 0.005 | 0.34 | -0.51 | -5.39 | -0.50 | -0.57 | -0.52 |
| IDEQ | 17-Aug-94 | 0.38 | 0.6 | 0.001 | -0.97 | -0.51 | -6.70 | -0.53 | -0.57 | -0.56 |
| IDEQ | 5-Oct-94 | 1.75 | 0.5 | 0.005 | 0.56 | -0.69 | -5.36 | -0.48 | -1.00 | -0.52 |
| IDEQ | 16-Nov-94 | 3.81 | 0.5 | 0.010 | 1.34 | -0.69 | -4.58 | -0.40 | -1.00 | -0.45 |
| IDEQ | 14-Dec-94 | 3.49 | 0.8 | 0.015 | 1.25 | -0.22 | -4.20 | -0.42 | 0.29 | -0.39 |
| IDEQ | 10-Jan-95 | 8.48 | 0.7 | 0.032 | 2.14 | -0.36 | -3.44 | -0.22 | -0.14 | -0.17 |
| IDEQ | 9-Feb-95 | 62.77 | 0.7 | 0.236 | 4.14 | -0.36 | -1.44 | 1.86 | -0.14 | 2.41 |
| IDEQ | 8-Mar-95 | 112.47 | 0.6 | 0.363 | 4.72 | -0.51 | -1.01 | 3.77 | -0.57 | 4.00 |
| IDEQ | 22-Mar-95 | 79.93 | 0.9 | 0.387 | 4.38 | -0.11 | -0.95 | 2.52 | 0.72 | 4.31 |
| IDEQ | 12-Apr-95 | 16.04 | 0.7 | 0.060 | 2.78 | -0.36 | -2.81 | 0.07 | -0.14 | 0.19 |
| IDEQ | 25-Apr-95 | 14.63 | 1.2 | 0.094 | 2.68 | 0.18 | -2.36 | 0.01 | 2.01 | 0.62 |
| IDEQ | 9-May-95 | 6.77 | 0.8 | 0.029 | 1.91 | -0.22 | -3.54 | -0.29 | 0.29 | -0.21 |
| IDEQ | 23-May-95 | 4.16 | 1.1 | 0.025 | 1.43 | 0.10 | -3.70 | -0.39 | 1.58 | -0.26 |
| IDEQ | 12-Jun-95 | 4.16 | 0.7 | 0.016 | 1.43 | -0.36 | -4.16 | -0.39 | -0.14 | -0.38 |
| IDEQ | 27-Jun-95 | 2.93 | 0.7 | 0.011 | 1.08 | -0.36 | -4.51 | -0.44 | -0.14 | -0.44 |
| IDEQ | 11-Jul-95 | 2.8 | 0.7 | 0.011 | 1.03 | -0.36 | -4.55 | -0.44 | -0.14 | -0.44 |
| IDEQ | 25-Jul-95 | 2.07 | 0.7 | 0.008 | 0.73 | -0.36 | -4.85 | -0.47 | -0.14 | -0.48 |
| IDEQ | 14-Aug-95 | 1.82 | 0.7 | 0.007 | 0.60 | -0.36 | -4.98 | -0.48 | -0.14 | -0.49 |
| IDEQ | 13-Sep-95 | 1.75 | 0.8 | 0.008 | 0.56 | -0.22 | -4.89 | -0.48 | 0.29 | -0.48 |
| URS | 5-Nov-97 | 2.44 | 0.59 | 0.008 | 0.89 | -0.53 | -4.86 | -0.46 | -0.61 | -0.48 |
| IDEQ | 23-Apr-98 | 14.62806909 | 0.6 | 0.047 | 2.68 | -0.51 | -3.05 | 0.01 | -0.57 | 0.02 |
| URS | 5-May-98 | 6.86 | 1.8 | 0.066 | 1.93 | 0.59 | -2.71 | -0.29 | 4.59 | 0.26 |
| *IDEQ* | *28-May-98* | *136.9458147* | | | 4.92 | | | 4.70 | | |
| IDEQ | 25-Jun-98 | 7.082855593 | 0.6 | 0.023 | 1.96 | -0.51 | -3.78 | -0.28 | -0.57 | -0.29 |
| IDEQ | 27-Jul-98 | 3.196210553 | 0.6 | 0.010 | 1.16 | -0.51 | -4.57 | -0.43 | -0.57 | -0.44 |
| IDEQ | 25-Aug-98 | 2.571760751 | 0.5 | 0.007 | 0.94 | -0.69 | -4.97 | -0.45 | -1.00 | -0.49 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *IDEQ* | *24-Sep-98* | *2 462807903* | | | 0.90 | | | -0.45 | | |
| *USGS* | *28-Oct-98* | *1.3* | | | 0.26 | | | -0.50 | | |
| *USGS* | *18-Nov-98* | *1.6* | | | 0.47 | | | -0.49 | | |
| *USGS* | *14-Dec-98* | *4.8* | | | 1.57 | | | -0.37 | | |
| *USGS* | *21-Jan-99* | *21* | | | 3.04 | | | 0.26 | | |
| *USGS* | *22-Mar-99* | *63* | | | 4.14 | | | 1.87 | | |
| *USGS* | *20-Apr-99* | *43* | | | 3.76 | | | 1.10 | | |
| USGS | 4-May-99 | 17 | 1 | 0.091 | 2.83 | 0.00 | -2.39 | 0.10 | 1.15 | 0.58 |
| USGS | 23-May-99 | 8.7 | 1 | 0.047 | 2.16 | 0.00 | -3.06 | -0.22 | 1.15 | 0.02 |
| USGS | 16-Jun-99 | 4.2 | 1 | 0.023 | 1.44 | 0.00 | -3.79 | -0.39 | 1.15 | -0.29 |
| *USGS* | *20-Jul-99* | *5* | | | 1.61 | | | -0.36 | | |
| *USGS* | *4-Aug-99* | *5* | | | 1.61 | | | -0.36 | | |
| *USGS* | *31-Aug-99* | *5* | | | 1.61 | | | -0.36 | | |

dCd

**Concentration over time analysis**

| dCd | MC262 | | r2 | Slope, m |
|---|---|---|---|---|
| | | | **Concentration over time** | |
| **LnConc.=mTime+b All data r2, m:** | | | **0.141** | **0.00015** |
| **Time** | **Ln[COC]** | **[COC]** | | |
| 14-May-91 | -0.57 | 1 | | |
| 18-Apr-95 | -0.36 | 1 | | |
| 31-Aug-99 | -0.11 | 1 | | |
| **LnConc.=mTime+b >'96 r2, m.** | | | **0.000** | **0.00000** |
| 21-Jan-99 | 0.00 | 1 | | |
| 31-Aug-99 | 0.00 | 1 | | |

**Load over time analysis**

| dCd | MC262 | | Load over time | |
|---|---|---|---|---|
| **LnLoad=mTime+b All data r2, m:** | | | **0.023** | **0.00027** |
| **Time** | **LnLoad** | **Load** | | |
| 14-May-91 | -4.27 | 0.01 | | |
| 18-Apr-95 | -3.88 | 0.02 | | |
| 31-Aug-99 | -3.45 | 0.03 | | |
| **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| 21-Jan-99 | 0.00 | 1 | | |
| 31-Aug-99 | 0.00 | 1 | | |

| max r2: | 0.984 | | max r2: | 0.664 | |
|---|---|---|---|---|---|
| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points delete last 4 rows | | | only on >4 data points. delete last 4 rows | | |
| 0.141 | 0.00015 | -5.64 | 0.023 | 0.00027 | -13.32 |
| 0.115 | 0.00014 | -5.31 | 0.036 | 0.00035 | -16.23 |
| 0.071 | 0.00011 | -4.23 | 0.012 | 0.00021 | -11.00 |
| 0.065 | 0.00011 | -4.08 | 0.008 | 0.00017 | -9.83 |
| 0.065 | 0.00011 | -4.13 | 0.006 | 0.00015 | -8.93 |
| 0.066 | 0.00011 | -4.18 | 0.004 | 0.00012 | -8.15 |
| 0.066 | 0.00011 | -4.23 | 0.002 | 0.00009 | -6.82 |
| 0.060 | 0.00011 | -4.07 | 0.002 | 0.00009 | -6.87 |
| 0.053 | 0.00010 | -3.88 | 0.002 | 0.00009 | -6.93 |
| 0.059 | 0.00011 | -4.11 | 0.002 | 0.00008 | -6.48 |
| 0.053 | 0.00010 | -3.92 | 0.004 | 0.00013 | -8.34 |
| 0.040 | 0.00009 | -3.41 | 0.007 | 0.00016 | -9.47 |
| 0.028 | 0.00007 | -2.85 | 0.009 | 0.00020 | -10.66 |
| 0.042 | 0.00009 | -3.44 | 0.017 | 0.00026 | -13.00 |
| 0.035 | 0.00008 | -3.16 | 0.020 | 0.00029 | -14.16 |
| 0.046 | 0.00009 | -3.61 | 0.024 | 0.00032 | -15.18 |
| 0.052 | 0.00010 | -3.86 | 0.024 | 0.00033 | -15.38 |
| 0.058 | 0.00011 | -4.17 | 0.024 | 0.00033 | -15.58 |
| 0.066 | 0.00012 | -4.50 | 0.020 | 0.00031 | -14.86 |
| 0.057 | 0.00011 | -4.22 | 0.013 | 0.00025 | -12.65 |
| 0.047 | 0.00010 | -3.90 | 0.005 | 0.00016 | -9.39 |
| 0.037 | 0.00009 | -3.53 | 0.000 | -0.00004 | -2.33 |
| 0.021 | 0.00007 | -2.65 | 0.006 | -0.00016 | 2.04 |
| 0.008 | 0.00004 | -1.68 | 0.014 | -0.00024 | 4.86 |
| 0.009 | 0.00004 | -1.81 | 0.022 | -0.00030 | 7.02 |
| 0.006 | 0.00004 | -1.60 | 0.022 | -0.00031 | 7.38 |
| 0.004 | 0.00003 | -1.35 | 0.006 | -0.00016 | 1.94 |
| 0.000 | 0.00001 | -0.58 | 0.001 | 0.00006 | -5.71 |
| 0.002 | 0.00002 | -1.02 | 0.046 | 0.00032 | -15.11 |
| 0.000 | 0.00001 | -0.63 | 0.092 | 0.00044 | -19.70 |
| 0.013 | 0.00006 | -2.32 | 0.228 | 0.00065 | -27.25 |
| 0.016 | 0.00007 | -2.64 | 0.299 | 0.00077 | -31.50 |
| 0.057 | 0.00013 | -4.74 | 0.376 | 0.00090 | -36.23 |
| 0.053 | 0.00013 | -4.82 | 0.412 | 0.00100 | -39.83 |
| 0.048 | 0.00013 | -4.93 | 0.413 | 0.00107 | -42.39 |
| 0.042 | 0.00014 | -5.09 | 0.414 | 0.00117 | -45.96 |
| 0.035 | 0.00014 | -5.36 | 0.369 | 0.00124 | -48.23 |
| 0.027 | 0.00016 | -6.01 | 0.278 | 0.00129 | -50.22 |
| 0.131 | 0.00073 | -26.48 | 0.174 | 0.00193 | -73.36 |
| 0.072 | 0.00064 | -23.22 | 0.044 | 0.00105 | -41.42 |
| 0.029 | 0.00042 | -15.49 | 0.114 | 0.00182 | -69.53 |
| 0.899 | 0.00181 | -65.79 | 0.482 | 0.00393 | -145.85 |
| 0.899 | 0.00181 | -65.79 | 0.482 | 0.00393 | -145.85 |
| 0.926 | 0.00204 | -74.13 | 0.664 | 0.00546 | -201.24 |
| 0.984 | 0.00250 | -90.78 | 0.613 | 0.00630 | -231.69 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | MC262 | | |
| **LN Analysis** | | dCd | | |
| **Load** | | **Load Data, EV=0.0456 lbs/day CV=1.74** | | |
| **Avg:** | **0.05** | **Load Data-based LN** | | |
| **SD:** | **0.08** | u | ln tCd Load | tCd Load |
| **CV:** | **1.74** | 3 | -0.2 | 1 |
| **Min:** | **0.001** | 0 | -3.79 | 0.02 |
| **Max:** | **0.39** | -3 | -7.33 | 0.001 |
| **Median:** | **0.02** | | | |
| | | 0 | 0.0456 | |
| | | 1.74 | 1.74 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.986, EV=0.0466lbs/day CV=2.24; max r2=0.99**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.986 | u | lnLoad | Load | |
| slope, m | 0.747 | 3 | 0.06 | 1 | |
| intercept, b | 2.958 | 0 | -3.96 | 0.02 | |
| N | 47 | -3 | -7.98 | 0.0003 | |
| E[Load] | 0.05 | Parameter Estimates | | | 0.986 |
| SD[Load] | 0.1 | from LN regression | | | 0.0 |
| CV[Load] | 2.24 | update graph label | | | 2.2 |
| | | | | | max r2 |
| | **dCd** | N 58 | | | 0.990 |

| Date | Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *21-Jan-99* | | 1 | 0.0107 | -2.300 | | |
| 17-Aug-94 | **0.001** | 2 | 0.0279 | -1.913 | -6.703 | 0.986 |
| 1-Oct-91 | **0.002** | 3 | 0.0451 | -1.695 | -6.214 | 0.985 |
| *24-Sep-98* | | 4 | 0.0622 | -1.536 | | |
| *28-Oct-98* | | 5 | 0.0794 | -1.409 | | |
| *18-Nov-98* | | 6 | 0.0966 | -1.301 | | |
| 17-Aug-94 | **0.005** | 7 | 0.1137 | -1.207 | -5.392 | 0.984 |
| 5-Oct-94 | **0.005** | 8 | 0.1309 | -1.122 | -5.359 | 0.983 |
| 22-Jul-94 | **0.006** | 9 | 0.1481 | -1.045 | -5.048 | 0.982 |
| 14-Aug-95 | **0.007** | 10 | 0.1652 | -0.973 | -4.983 | 0.984 |
| 25-Aug-98 | **0.007** | 11 | 0.1824 | -0.906 | -4.974 | 0.985 |
| 13-Sep-95 | **0.008** | 12 | 0.1996 | -0.843 | -4.889 | 0.986 |
| 5-Nov-97 | **0.008** | 13 | 0.2167 | -0.783 | -4.861 | 0.987 |
| 25-Jul-95 | **0.008** | 14 | 0.2339 | -0.726 | -4.854 | 0.987 |
| 29-Oct-93 | **0.008** | 15 | 0.2511 | -0.671 | -4.836 | 0.988 |
| 21-Dec-93 | **0.008** | 16 | 0.2682 | -0.618 | -4.789 | 0.987 |
| 1-Dec-93 | **0.010** | 17 | 0.2854 | -0.567 | -4.592 | 0.987 |
| 16-Nov-94 | **0.010** | 18 | 0.3026 | -0.517 | -4.581 | 0.988 |
| 27-Jul-98 | **0.010** | 19 | 0.3197 | -0.468 | -4.574 | 0.989 |
| 11-Jul-95 | **0.011** | 20 | 0.3369 | -0.421 | -4.552 | 0.990 |
| 27-Jun-95 | **0.011** | 21 | 0.3541 | -0.374 | -4.507 | 0.990 |
| 21-Dec-93 | **0.012** | 22 | 0.3712 | -0.329 | -4.463 | 0.990 |
| 24-Jun-94 | **0.012** | 23 | 0.3884 | -0.283 | -4.419 | 0.990 |
| *14-Dec-98* | | 24 | 0.4056 | -0.239 | | |
| *20-Jul-99* | | 25 | 0.4227 | -0.195 | | |
| *4-Aug-99* | | 26 | 0.4399 | -0.151 | | |
| *31-Aug-99* | | 27 | 0.4571 | -0.108 | | |
| 14-Dec-94 | **0.015** | 28 | 0.4742 | -0.065 | -4.198 | 0.990 |
| 12-Jun-95 | **0.016** | 29 | 0.4914 | -0.022 | -4.156 | 0.989 |
| 17-Feb-94 | **0.016** | 30 | 0.5086 | 0.022 | -4.111 | 0.989 |
| 20-May-94 | **0.019** | 31 | 0.5258 | 0.065 | -3.980 | 0.988 |
| 7-Jun-94 | **0.019** | 32 | 0.5429 | 0.108 | -3.980 | 0.987 |
| 16-Jun-99 | **0.023** | 33 | 0.5601 | 0.151 | -3.790 | 0.986 |
| 21-Jan-94 | **0.023** | 34 | 0.5773 | 0.195 | -3.779 | 0.986 |
| 25-Jun-98 | **0.023** | 35 | 0.5944 | 0.239 | -3.778 | 0.986 |
| 21-Jan-94 | **0.023** | 36 | 0.6116 | 0.283 | -3.772 | 0.985 |
| 23-May-95 | **0.025** | 37 | 0.6288 | 0.329 | -3.704 | 0.984 |
| 9-May-95 | **0.029** | 38 | 0.6459 | 0.374 | -3.536 | 0.983 |
| 3-May-94 | **0.030** | 39 | 0.6631 | 0.421 | -3.507 | 0.982 |
| 10-Jan-95 | **0.032** | 40 | 0.6803 | 0.468 | -3.444 | 0.980 |
| 18-Apr-94 | **0.034** | 41 | 0.6974 | 0.517 | -3.372 | 0.979 |
| 14-May-91 | **0.040** | 42 | 0.7146 | 0.567 | -3.217 | 0.977 |
| 23-Mar-94 | **0.041** | 43 | 0.7318 | 0.618 | -3.188 | 0.975 |
| 23-Mar-94 | **0.043** | 44 | 0.7489 | 0.671 | -3.143 | 0.973 |
| 23-May-99 | **0.047** | 45 | 0.7661 | 0.726 | -3.062 | 0.970 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 23-Apr-98 | 0.047 | 46 | 0.7833 | 0.783 | -3.053 | 0.967 |
| 12-Apr-95 | 0.060 | 47 | 0.8004 | 0.843 | -2.807 | 0.966 |
| 5-May-98 | 0.066 | 48 | 0.8176 | 0.906 | -2.712 | 0.961 |
| 7-Mar-94 | 0.075 | 49 | 0.8348 | 0.973 | -2.591 | 0.954 |
| 6-Apr-94 | 0.075 | 50 | 0.8519 | 1.045 | -2.588 | 0.945 |
| 4-May-99 | 0.091 | 51 | 0.8691 | 1.122 | -2.392 | 0.929 |
| 25-Apr-95 | 0.094 | 52 | 0.8863 | 1.207 | -2.360 | 0.890 |
| *20-Apr-99* | | 53 | 0.9034 | 1.301 | | |
| *22-Mar-99* | | 54 | 0.9206 | 1.409 | | |
| *28-May-98* | | 55 | 0.9378 | 1.536 | | |
| 9-Feb-95 | 0.236 | 56 | 0.9549 | 1.695 | -1.442 | |
| 8-Mar-95 | 0.363 | 57 | 0.9721 | 1.913 | -1.013 | |
| 22-Mar-95 | 0.387 | 58 | 0.9893 | 2.300 | -0.949 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **dCd** | | **MC262** | | 1 | 0.73 | |
| **LN Analysis** | | **dCd** | | 0.32 | 0.32 | |
| **Concentration** | | **Conc. Data, EV=0.73 ug/L CV=0.32** | | | | |
| **Avg:** | 1 | **Data-based LN** | | | | |
| **SD:** | 0.2 | u | ln[tCd] | [tCd] | | |
| **CV:** | 0.32 | 3 | 0.6 | 2 | | |
| **Min:** | 0.4 | 0 | -0.36 | 1 | | |
| **Max:** | 2 | -3 | -1.29 | 0.3 | | |
| **Median:** | 1 | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.926 | 0.93 |
| | **u=mLn(Conc.)+b:** | | | | 0.7 | 0.68 |
| update for r2, EV, CV | **r2=0.93, EV=0.68 ug/L CV=0.33; max r2=0.94** | | | | 0.329 | 0.33 |
| | r2 u,lnConc | 0.926 | u | lnConc | Conc | |
| | slope, m. | 3.124 | 3 | 0.53 | 2 | |
| | intercept, b. | 1.346 | 0 | -0.43 | 1 | |
| | N: | 47 | -3 | -1.39 | 0.2 | |
| 0.986 | E[Conc]. | 0.7 | Parameter Estimates | | | |
| 0.0466 | SD[Conc]. | 0.2 | from LN regression | | | |
| 2.24 | CV[Conc] | 0.33 | update graph label | | | |

| Date | dCd Concentration ug/L Ranked | N: 58 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.936 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *21-Jun-99* | | 1 | 0.0107 | -2.300 | | |
| *28-May-98* | | 2 | 0.0279 | -1.913 | | |
| *24-Sep-98* | | 3 | 0.0451 | -1.695 | | |
| 1-Oct-91 | 0.4 | 4 | 0.0622 | -1.536 | -0.916 | 0.926 |
| 14-May-91 | 0.5 | 5 | 0.0794 | -1.409 | -0.693 | 0.919 |
| 23-Mar-94 | 0.5 | 6 | 0.0966 | -1.301 | -0.693 | 0.923 |
| 23-Mar-94 | 0.5 | 7 | 0.1137 | -1.207 | -0.693 | 0.926 |
| 5-Oct-94 | 0.5 | 8 | 0.1309 | -1.122 | -0.693 | 0.928 |
| 16-Nov-94 | 0.5 | 9 | 0.1481 | -1.045 | -0.693 | 0.929 |
| 25-Aug-98 | 0.5 | 10 | 0.1652 | -0.973 | -0.693 | 0.928 |
| *28-Oct-98* | | 11 | 0.1824 | -0.906 | | |
| *18-Nov-98* | | 12 | 0.1996 | -0.843 | | |
| *14-Dec-98* | | 13 | 0.2167 | -0.783 | | |
| *22-Mar-99* | | 14 | 0.2339 | -0.726 | | |
| *20-Apr-99* | | 15 | 0.2511 | -0.671 | | |
| *20-Jul-99* | | 16 | 0.2682 | -0.618 | | |
| *4-Aug-99* | | 17 | 0.2854 | -0.567 | | |
| *31-Aug-99* | | 18 | 0.3026 | -0.517 | | |
| 5-Nov-97 | 0.59 | 19 | 0.3197 | -0.468 | -0.528 | 0.927 |
| 29-Oct-93 | 0.6 | 20 | 0.3369 | -0.421 | -0.511 | 0.929 |
| 21-Jan-94 | 0.6 | 21 | 0.3541 | -0.374 | -0.511 | 0.932 |
| 21-Jan-94 | 0.6 | 22 | 0.3712 | -0.329 | -0.511 | 0.934 |
| 7-Mar-94 | 0.6 | 23 | 0.3884 | -0.283 | -0.511 | 0.935 |
| 18-Apr-94 | 0.6 | 24 | 0.4056 | -0.239 | -0.511 | 0.936 |
| 22-Jul-94 | 0.6 | 25 | 0.4227 | -0.195 | -0.511 | 0.936 |
| 17-Aug-94 | 0.6 | 26 | 0.4399 | -0.151 | -0.511 | 0.935 |
| 17-Aug-94 | 0.6 | 27 | 0.4571 | -0.108 | -0.511 | 0.933 |
| 8-Mar-95 | 0.6 | 28 | 0.4742 | -0.065 | -0.511 | 0.930 |
| 23-Apr-98 | 0.6 | 29 | 0.4914 | -0.022 | -0.511 | 0.926 |
| 25-Jun-98 | 0.6 | 30 | 0.5086 | 0.022 | -0.511 | 0.922 |
| 27-Jul-98 | 0.6 | 31 | 0.5258 | 0.065 | -0.511 | 0.917 |
| 1-Dec-93 | 0.7 | 32 | 0.5429 | 0.108 | -0.357 | 0.911 |
| 21-Dec-93 | 0.7 | 33 | 0.5601 | 0.151 | -0.357 | 0.917 |
| 21-Dec-93 | 0.7 | 34 | 0.5773 | 0.195 | -0.357 | 0.922 |
| 10-Jan-95 | 0.7 | 35 | 0.5944 | 0.239 | -0.357 | 0.926 |
| 9-Feb-95 | 0.7 | 36 | 0.6116 | 0.283 | -0.357 | 0.929 |
| 12-Apr-95 | 0.7 | 37 | 0.6288 | 0.329 | -0.357 | 0.930 |
| 12-Jun-95 | 0.7 | 38 | 0.6459 | 0.374 | -0.357 | 0.930 |
| 27-Jun-95 | 0.7 | 39 | 0.6631 | 0.421 | -0.357 | 0.929 |
| 11-Jul-95 | 0.7 | 40 | 0.6803 | 0.468 | -0.357 | 0.925 |
| 25-Jul-95 | 0.7 | 41 | 0.6974 | 0.517 | -0.357 | 0.920 |
| 14-Aug-95 | 0.7 | 42 | 0.7146 | 0.567 | -0.357 | 0.912 |
| 17-Feb-94 | 0.8 | 43 | 0.7318 | 0.618 | -0.223 | 0.903 |
| 20-May-94 | 0.8 | 44 | 0.7489 | 0.671 | -0.223 | 0.910 |
| 7-Jun-94 | 0.8 | 45 | 0.7661 | 0.726 | -0.223 | 0.915 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 24-Jun-94 | 0.8 | 46 | 0.7833 | 0.783 | -0.223 | 0.917 |
| 14-Dec-94 | 0.8 | 47 | 0.8004 | 0.843 | -0.223 | 0.915 |
| 9-May-95 | 0.8 | 48 | 0.8176 | 0.906 | -0.223 | 0.907 |
| 13-Sep-95 | 0.8 | 49 | 0.8348 | 0.973 | -0.223 | 0.894 |
| 3-May-94 | 0.9 | 50 | 0.8519 | 1.045 | -0.105 | 0.874 |
| 22-Mar-95 | 0.9 | 51 | 0.8691 | 1.122 | -0.105 | 0.869 |
| 6-Apr-94 | 1 | 52 | 0.8863 | 1.207 | 0.000 | 0.850 |
| 4-May-99 | 1 | 53 | 0.9034 | 1.301 | 0.000 | 0.890 |
| 23-May-99 | 1 | 54 | 0.9206 | 1.409 | 0.000 | 0.930 |
| 16-Jun-99 | 1 | 55 | 0.9378 | 1.536 | 0.000 | |
| 23-May-95 | 1.1 | 56 | 0.9549 | 1.695 | 0.095 | |
| 25-Apr-95 | 1.2 | 57 | 0.9721 | 1.913 | 0.182 | |
| 5-May-98 | 1.8 | 58 | 0.9893 | 2.300 | 0.588 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **dCd** | | **MC262** | | | 14 | 14.3 |
| **LN Analysis** | | **dCd** | | | 1.82 | 1.82 |
| **Discharge, Q** | | **Q Data, EV=14.3 cfs CV=1.82** | | | | |
| **Avg:** | 14 | **Q Data-based LN** | | | | |
| **SD:** | 26 | u | lnQ | Q | | |
| **CV:** | 1.82 | 3 | 5.6 | 259 | | |
| **Min:** | 0.4 | 0 | 1.93 | 7 | | |
| **Max:** | 137 | -3 | -1.70 | 0.2 | | |
| **Median:** | 5 | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.952 | 0.952 |
| | | | | | 13.3 | 13.3 |
| | **u=mLn(Q)+b:** | | | | 1.99 | 1.99 |
| update for r2, EV, CV: | **r2=0.952, EV=13.3 cfs CV=1.99; max r2=0.97** | | | | | |
| | r2 u,lnQ | 0.952 | u | lnQ | Q | |
| | slope, m | 0.790 | 3 | 5.59 | 266 | |
| | intercept, b | -1.415 | 0 | 1.79 | 6 | |
| | N | 58 | -3 | -2.01 | 0.1 | |
| | E[Q] | 13.3 | Parameter Estimates | | | |
| | SD[Q] | 27 | from LN regression | | | |
| | CV[Q] | 1.99 | update graph label | | | |

N 58

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.972 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 17-Aug-94 | 0.38 | 1 | 0.0107 | -2.300 | -0.968 | 0.952 |
| 1-Oct-91 | 0.93 | 2 | 0.0279 | -1.913 | -0.073 | 0.947 |
| *28-Oct-98* | *1.3* | 3 | 0.0451 | -1.695 | 0.262 | 0.947 |
| 17-Aug-94 | 1.41 | 4 | 0.0622 | -1.536 | 0.344 | 0.950 |
| *18-Nov-98* | *1.6* | 5 | 0.0794 | -1.409 | 0.470 | 0.952 |
| 5-Oct-94 | 1.75 | 6 | 0.0966 | -1.301 | 0.560 | 0.954 |
| 13-Sep-95 | 1.75 | 7 | 0.1137 | -1.207 | 0.560 | 0.957 |
| 14-Aug-95 | 1.82 | 8 | 0.1309 | -1.122 | 0.599 | 0.958 |
| 22-Jul-94 | 1.99 | 9 | 0.1481 | -1.045 | 0.688 | 0.960 |
| 25-Jul-95 | 2.07 | 10 | 0.1652 | -0.973 | 0.728 | 0.961 |
| 21-Dec-93 | 2.21 | 11 | 0.1824 | -0.906 | 0.793 | 0.962 |
| 5-Nov-97 | 2.44 | 12 | 0.1996 | -0.843 | 0.892 | 0.964 |
| 29-Oct-93 | 2.46 | 13 | 0.2167 | -0.783 | 0.900 | 0.966 |
| *24-Sep-98* | *2.462807903* | 14 | 0.2339 | -0.726 | 0.901 | 0.967 |
| 25-Aug-98 | 2.571760751 | 15 | 0.2511 | -0.671 | 0.945 | 0.968 |
| 1-Dec-93 | 2.69 | 16 | 0.2682 | -0.618 | 0.990 | 0.969 |
| 24-Jun-94 | 2.8 | 17 | 0.2854 | -0.567 | 1.030 | 0.970 |
| 11-Jul-95 | 2.8 | 18 | 0.3026 | -0.517 | 1.030 | 0.970 |
| 27-Jun-95 | 2.93 | 19 | 0.3197 | -0.468 | 1.075 | 0.970 |
| 21-Dec-93 | 3.06 | 20 | 0.3369 | -0.421 | 1.118 | 0.970 |
| 27-Jul-98 | 3.196210553 | 21 | 0.3541 | -0.374 | 1.162 | 0.970 |
| 14-Dec-94 | 3.49 | 22 | 0.3712 | -0.329 | 1.250 | 0.970 |
| 17-Feb-94 | 3.81 | 23 | 0.3884 | -0.283 | 1.338 | 0.970 |
| 16-Nov-94 | 3.81 | 24 | 0.4056 | -0.239 | 1.338 | 0.971 |
| 23-May-95 | 4.16 | 25 | 0.4227 | -0.195 | 1.426 | 0.971 |
| 12-Jun-95 | 4.16 | 26 | 0.4399 | -0.151 | 1.426 | 0.972 |
| 16-Jun-99 | 4.2 | 27 | 0.4571 | -0.108 | 1.435 | 0.972 |
| 20-May-94 | 4.34 | 28 | 0.4742 | -0.065 | 1.468 | 0.971 |
| 7-Jun-94 | 4.34 | 29 | 0.4914 | -0.022 | 1.468 | 0.971 |
| *14-Dec-98* | *4.8* | 30 | 0.5086 | 0.022 | 1.569 | 0.969 |
| *20-Jul-99* | *5* | 31 | 0.5258 | 0.065 | 1.609 | 0.968 |
| *4-Aug-99* | *5* | 32 | 0.5429 | 0.108 | 1.609 | 0.967 |
| *31-Aug-99* | *5* | 33 | 0.5601 | 0.151 | 1.609 | 0.964 |
| 3-May-94 | 6.19 | 34 | 0.5773 | 0.195 | 1.823 | 0.962 |
| 9-May-95 | 6.77 | 35 | 0.5944 | 0.239 | 1.913 | 0.960 |
| 5-May-98 | 6.86 | 36 | 0.6116 | 0.283 | 1.926 | 0.958 |
| 21-Jan-94 | 7.08 | 37 | 0.6288 | 0.329 | 1.957 | 0.956 |
| 25-Jun-98 | 7.082855593 | 38 | 0.6459 | 0.374 | 1.958 | 0.953 |
| 21-Jan-94 | 7.13 | 39 | 0.6631 | 0.421 | 1.964 | 0.949 |
| 10-Jan-95 | 8.48 | 40 | 0.6803 | 0.468 | 2.138 | 0.944 |
| 23-May-99 | 8.7 | 41 | 0.6974 | 0.517 | 2.163 | 0.939 |
| 18-Apr-94 | 10.63 | 42 | 0.7146 | 0.567 | 2.364 | 0.933 |
| 6-Apr-94 | 13.97 | 43 | 0.7318 | 0.618 | 2.637 | 0.927 |
| 23-Apr-98 | 14.62806909 | 44 | 0.7489 | 0.671 | 2.683 | 0.927 |
| 25-Apr-95 | 14.63 | 45 | 0.7661 | 0.726 | 2.683 | 0.927 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 14-May-91 | 14.9 | 46 | 0.7833 | 0.783 | 2.701 | 0.924 |
| 23-Mar-94 | 15.34 | 47 | 0.8004 | 0.843 | 2.730 | 0.918 |
| 23-Mar-94 | 16.04 | 48 | 0.8176 | 0.906 | 2.775 | 0.907 |
| 12-Apr-95 | 16.04 | 49 | 0.8348 | 0.973 | 2.775 | 0.892 |
| 4-May-99 | 17 | 50 | 0.8519 | 1.045 | 2.833 | 0.873 |
| 21-Jan-99 | 21 | 51 | 0.8691 | 1.122 | 3.045 | 0.855 |
| 7-Mar-94 | 23.22 | 52 | 0.8863 | 1.207 | 3.145 | 0.835 |
| 20-Apr-99 | 43 | 53 | 0.9034 | 1.301 | 3.761 | 0.929 |
| 9-Feb-95 | 62.77 | 54 | 0.9206 | 1.409 | 4.139 | 0.944 |
| 22-Mar-99 | 63 | 55 | 0.9378 | 1.536 | 4.143 | |
| 22-Mar-95 | 79.93 | 56 | 0.9549 | 1.695 | 4.381 | |
| 8-Mar-95 | 112.47 | 57 | 0.9721 | 1.913 | 4.723 | |
| 28-May-98 | 136.9458147 | 58 | 0.9893 | 2.300 | 4.920 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **MC262** | **Date:** | **20-Jun-00** |
| **Chemical:** | **dPb** | **Analyst:** | **J.MacLachlan** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,090 | 14 | 6 | 0.2 | 0 00 | 0 00 | 0 00 |
| **SD:** | 810 | 26 | 16 | 1 | 1 00 | 1 00 | 1 00 |
| **CV:** | 0 02 | 1.82 | 2.91 | 2.42 | | | |
| **Min:** | 33,372 | 0.4 | 0.001 | 0.0001 | -0.53 | -0.34 | -0 41 |
| **Max:** | 36,403 | 137 | 80 | 3 | 4 70 | 4 56 | 4.35 |
| **Median:** | 34,808 | 5 | 1 | 0.04 | -0.37 | -0.25 | -0.34 |

| dPb MC262 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.0115)** | | update r2 | **0.01** | 0 0115 | r2 | 0.013 | 0 020 |
| r2 Q,[COC] | 0.01 | [tCd] | Q | | m | 0.0037 | 0.00021 |
| slope, m | -0 1 | 7 | 0.4 | | b | -115 | -5.58 |
| intercept, b | 6.8 | 6 | 14 3 | | | | |
| N. 22 | | -5 | 137 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.0626)** | | update r2 | | 0 06 | 0 0626 | | |
| r2 lnQ,ln[COC] | 0.06 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m | -0.36 | 1.32 | -0.97 | 4 | 0 4 | | |
| intercept, b | 0.98 | 0.03 | 2.66 | 1 | 14 | | |
| N. 22 | | -0 78 | 4 92 | 0 5 | 137 | | |

**N= 58**

| | Sampling Date | Q Discharge cfs | dPb Concentration ug/L | dPb Load lbs/day | Ln Q | Ln dPb Conc. | Ln dPb Load | for graph: Q | dPb MC262 Standardized Values = (x - Avg)/SD Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| *MFG* | *14-May-91* | *14.9* | | | 2.70 | | | 0.02 | | |
| *MFG* | *1-Oct-91* | *0.93* | | | -0.07 | | | -0.51 | | |
| *IDEQ* | *29-Oct-93* | *2.46* | | | 0.90 | | | -0 46 | | |
| *IDEQ* | *1-Dec-93* | *2.69* | | | 0.99 | | | -0 45 | | |
| *IDEQ* | *21-Dec-93* | *3.06* | | | 1.12 | | | -0 43 | | |
| *IDEQ* | *21-Dec-95* | *2.21* | | | 0 79 | | | -0 46 | | |
| *IDEQ* | *21-Jun-94* | *7.08* | | | 1.96 | | | -0.28 | | |
| *IDEQ* | *21-Jan-94* | *7.13* | | | 1.96 | | | -0.28 | | |
| *IDEQ* | *17-Feb-94* | *3.81* | | | 1.34 | | | -0 40 | | |
| *IDEQ* | *7-Mar-94* | *23.22* | | | 3.15 | | | 0.34 | | |
| *IDEQ* | *23-Mar-94* | *16.04* | | | 2 78 | | | 0 07 | | |
| *IDEQ* | *23-Mar-94* | *15.34* | | | 2.73 | | | 0.04 | | |
| *IDEQ* | *6-Apr-94* | *13.97* | | | 2.64 | | | -0.01 | | |
| *IDEQ* | *18-Apr-94* | *10.63* | | | 2.36 | | | -0 14 | | |
| *IDEQ* | *3-May-94* | *6.19* | | | 1.82 | | | -0.31 | | |
| *IDEQ* | *20-May-94* | *4.34* | | | 1.47 | | | -0.38 | | |
| *IDEQ* | *7-Jun-94* | *4.34* | | | 1.47 | | | -0.38 | | |
| *IDEQ* | *24-Jun-94* | *2.8* | | | 1.03 | | | -0 44 | | |
| *IDEQ* | *22-Jul-94* | *1.99* | | | 0.69 | | | -0 47 | | |
| IDEQ | 17-Aug-94 | 1.41 | 2.5 | 0.019 | 0.34 | 0.92 | -3.97 | -0 50 | -0 19 | -0 38 |
| IDEQ | 17-Aug-94 | 0.38 | 2.5 | 0.005 | -0.97 | 0.92 | -5.28 | -0.53 | -0.19 | -0 40 |
| *IDEQ* | *5-Oct-94* | *1.75* | | | 0.56 | | | -0 48 | | |
| *IDEQ* | *16-Nov-94* | *3.81* | | | 1.34 | | | -0 40 | | |
| *IDEQ* | *14-Dec-94* | *3.49* | | | 1 25 | | | -0 42 | | |
| *IDEQ* | *10-Jan-95* | *8.48* | | | 2.14 | | | -0.22 | | |
| *IDEQ* | *9-Feb-95* | *62.77* | | | 4.14 | | | 1.86 | | |
| *IDEQ* | *8-Mar-95* | *112.47* | | | 4 72 | | | 2 77 | | |
| IDEQ | 22-Mar-95 | 79 93 | 6 | 2.580 | 4.38 | 1 79 | 0 95 | 2 52 | 0 02 | 4 35 |
| *IDEQ* | *12-Apr-95* | *16.04* | | | 2.78 | | | 0.07 | | |
| IDEQ | 25-Apr-95 | 14 63 | 3 | 0.236 | 2.68 | 1.10 | -1 44 | 0.01 | -0.16 | 0 02 |
| IDEQ | 9-May-95 | 6 [illegible] | 4 | 0 146 | 1.91 | 1.39 | -1.93. | -0.29 | -0.10 | -0 14 |
| IDEQ | 23-May-95 | 4 16 | 3 | 0.067 | 1.43 | 1.10 | -2.70 | -0.39 | -0 16 | -0 29 |
| IDEQ | 12-Jun-95 | 4 16 | 4 | 0 090 | 1 43 | 1 39 | -2.41 | -0 39 | -0 10 | -0 25 |
| *IDEQ* | *27-Jun-95* | *2.93* | | | 1.08 | | | -0 44 | | |
| *IDEQ* | *11-Jul-95* | *2.8* | | | 1.03 | | | -0.44 | | |
| IDEQ | 25-Jul-95 | 2.07 | 3 | 0.033 | 0.73 | 1.10 | -3.40 | -0 47 | -0.16 | -0 35 |
| IDEQ | 14-Aug-95 | 1.82 | 80 | 0.783 | 0.60 | 4.38 | -0.24 | -0.48 | 4.56 | 1.03 |
| IDEQ | 13-Sep-95 | 1 75 | 4 | 0.038 | 0.56 | 1.39 | -3.28 | -0.48 | -0.10 | -0.34 |

dPb

<u>Concentration over time analysis</u>

| | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | dPb | MC262 | | Concentration over time | |
| | LnConc.=mTime+b All data r2, m: | | | 0.280 | -0.00150 |
| | Time | Ln[COC] | [COC] | | |
| first | 14-May-91 | 3.58 | 36 | | |
| mid | 18-Apr-95 | 1.43 | 4 | | |
| last | 31-Aug-99 | [illegible] | 0 | | |
| | LnConc.=mTime+b >'96 r2, m | | | 0.680 | 0.04514 |
| | 21-Jan-99 | -5.06 | 0 | | |
| | 31-Aug-99 | 4.96 | 142 | | |

<u>Load over time analysis</u>

| | | | | | |
|---|---|---|---|---|---|
| | dPb | MC262 | | Load over time | |
| | LnLoad=mTime+b All data r2, m: | | | 0.068 | -0.00079 |
| | Time | LnLoad | Load | | |
| first | 14-May-91 | -1.43 | 0 | | |
| mid | 18-Apr-95 | -2.56 | 0 | | |
| last | 31-Aug-99 | -3.82 | 0 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.343 | 0.03325 |
| | 21-Jan-99 | -6.36 | 0 | | |
| | 31-Aug-99 | [illegible] | 3 | | |

max r2 0.680 | max r2 0.343

**Forward time Regression on *Ln Concentration(t)*** | **Forward time Regression on *Ln Load(t)***

| r2 | slope | intercept | r2 | slope | intercept |
|---|---|---|---|---|---|
| only on ~4 data points delete last 4 rows | | | only on ~4 data points delete last 4 rows | | |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | [illegible] | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.280 | -0.00150 | 53.53 | 0.068 | -0.00079 | 24.91 |
| 0.288 | -0.00159 | 57.03 | 0.093 | -0.00097 | 31.25 |
| 0.300 | -0.00173 | 61.85 | 0.178 | -0.00138 | 46.20 |
| 0.300 | -0.00173 | 61.85 | 0.178 | -0.00138 | 46.20 |
| 0.300 | -0.00173 | 61.85 | 0.178 | -0.00138 | 46.20 |
| 0.300 | -0.00173 | 61.85 | 0.178 | -0.00138 | 46.20 |
| 0.300 | -0.00173 | 61.85 | 0.178 | -0.00138 | 46.20 |
| 0.300 | -0.00173 | 61.85 | 0.178 | -0.00138 | 46.20 |
| 0.300 | -0.00173 | 61.85 | 0.178 | -0.00138 | 46.20 |
| 0.279 | -0.00172 | 61.69 | 0.114 | -0.00105 | 34.10 |
| 0.279 | -0.00172 | 61.69 | 0.114 | -0.00105 | 34.10 |
| 0.277 | -0.00180 | 64.62 | 0.084 | -0.00093 | 29.87 |
| 0.264 | -0.00187 | 66.90 | 0.062 | -0.00084 | 26.69 |
| 0.263 | -0.00202 | 72.26 | 0.056 | -0.00086 | 27.53 |
| 0.250 | -0.00217 | 77.98 | 0.041 | -0.00082 | 25.96 |
| 0.250 | -0.00217 | 77.98 | 0.041 | -0.00082 | 25.96 |
| 0.250 | -0.00217 | 77.98 | 0.041 | -0.00082 | 25.96 |
| 0.255 | -0.00233 | 91.43 | 0.053 | -0.00110 | 35.95 |
| 0.054 | -0.00127 | 45.30 | 0.003 | 0.00033 | -15.44 |

update for EV, CV

**dPb** **MC262**

**LN Analysis** **dPb**

**Load** **Load Data, EV=0.224 lbs/day CV=2.42**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **0.2** | **Load Data-based LN** | | |
| **SD:** | **1** | u | ln tCd Load | tCd Load |
| **CV:** | **2.42** | 3 | 1 [illegible] | 5 |
| **Min:** | **0.0001** | 0 | -2 46 | 0.1 |
| **Max:** | **3** | -3 | -6 62 | 0 001 |
| **Median:** | **0.04** | | | |

| | |
|---|---|
| 0 | 0.224 |
| 2.42 | 2.42 |

**u=mLn{Load}+ b:**

update for r2, EV, CV **r2=0.937, EV=0.161lbs/day CV=5.44; max r2=0.99**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.937 | u | lnLoad | Load | |
| slope, m | 0 541 | 3 | 2.01 | [illegible] | |
| intercept, b | 1 911 | 0 | -3.53 | 0.03 | |
| N | 22 | -3 | -9.08 | 0.0001 | |
| E[Load] | 0 2 | Parameter Estimates | | | 0 93[illegible] |
| SD[Load] | 1 | from LN regression | | | 0.2 |
| CV[Load] | 5 44 | update graph label | | | 5 4 |
| | | | | | max r2 |
| **dPb** | N | 58 | | | 0.993 |

| **Date** | **Load lbs/day Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | **r2 forward** |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 21-Jan-99 | **0.0001** | 1 | 0.0107 | -2.300 | -9.088 | 0.937 |
| *1-Oct-91* | | 2 | 0.0279 | -1.913 | | |
| 5-Nov-9[illegible] | **0.0030** | 3 | 0.0451 | -1.695 | -5.803 | 0.95[illegible] |
| 17-Aug-94 | **0.0051** | 4 | 0.0622 | -1.536 | -5.276 | 0.950 |
| *5-Oct-94* | | 5 | 0.0794 | -1 409 | | |
| *22-Jul-94* | | 6 | 0.0966 | -1.301 | | |
| 18-Nov-98 | **0.0086** | 7 | 0 1137 | -1.207 | -4 755 | 0 950 |
| *21-Dec-93* | | 8 | 0.1309 | -1.122 | | |
| 28-Oct-98 | **0.0098** | 9 | 0.1481 [illegible] | -1.045 | -4.626 | 0.961 |
| *29-Oct-93* | | 10 | 0.1652 | -0.973 | | |
| *1-Dec-93* | | 11 | 0.1824 | -0 906 | | |
| *24-Jun-94* | | 12 | 0 1996 | -0.843 | | |
| *11-Jul-95* | | 13 | 0.2167 | -0.783 | | |
| *27-Jun-95* | | 14 | 0.2339 | -0 726 | | |
| *21-Dec-93* | | 15 | 0 2511 | -0 671 | | |
| *20-Jul-99* | | 16 | 0.2682 | -0.618 | | |
| *4-Aug-99* | | 17 | 0.2854 | -0.567 | | |
| *31-Aug-99* | | 18 | 0.3026 | -0.517 | | |
| *14-Dec-94* | | 19 | 0.3197 | -0 468 | | |
| *17-Feb-94* | | 20 | 0 3369 | -0 421 | | |
| *16-Nov-94* | | 21 | 0.3541 | -0.374 | | |
| *20-May-94* | | 22 | 0.3712 | -0.329 | | |
| *7-Jun-94* | | 23 | 0.3884 | -0.283 | | |
| 17-Aug-94 | **0.0190** | 24 | 0 4056 | -0 239 | -3 965 | 0 98[illegible] |
| *24-Sep-98* | | 25 | 0 4227 | -0.195 | | |
| 25-Aug-98 | | 26 | 0 4399 | -0.151 | | |
| 16-Jun-96 | **0.0226** | 27 | 0 4571 | -0.108 | -3 790 | 0 988 |
| *3-May-94* | | 28 | 0 4742 | -0.065 | | |
| *27-Jul-98* | | 29 | 0 4914 | -0.022 | | |
| 14-Dec-98 | **0.0258** | 30 | 0.5086 | 0.022 | -3.656 | 0.990 |
| *21-Jan-94* | | 31 | 0.5258 | 0.065 | | |
| *21-Jan-94* | | 32 | 0.5429 | 0.108 | | |
| 25-Jul-95 | **0.0334** | 33 | 0.5601 | 0.151 | -3.399 | 0.990 |
| *10-Jan-95* | | 34 | 0.5773 | 0.195 | | |
| 5-May-98 | **0.0369** | 35 | 0.5944 | 0.239 | -3.299 | 0.991 |
| 13-Sep-95 | **0.0377** | 36 | 0.6116 | 0.283 | -3.279 | 0.992 |
| *18-Apr-94* | | 37 | 0.6288 | 0.329 | | |
| 23-May-99 | **0.0468** | 38 | 0.6459 | 0.374 | -3.062 | 0.991 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| dPb | | MC262 | 6 | 5.6 |
| LN Analysis | | dPb | 2.91 | 2.91 |

**Concentration** — Conc. Data, EV=5.6 ug/L CV=2.91

| | | Data-based LN | | |
|---|---|---|---|---|
| Avg: | 6 | u | ln[tCd] | [tCd] |
| SD: | 16 | 3 | 5.1 | 164 |
| CV: | 2.91 | 0 | 0.60 | 2 |
| Min: | 0.001 | -3 | -3.90 | 0.02 |
| Max: | 80 | | | |
| Median: | 1 | | | |

u=mLn{Conc.}+b:

update for r2, EV, CV — r2=0.813, EV=3.08 ug/L CV=7.68; max r2=0.84

| | | | | | |
|---|---|---|---|---|---|
| | r2 u,lnConc | 0.813 | u | lnConc. | Conc |
| | slope, m | 0.494 | 3 | 5.15 | 172 |
| | intercept, b | 0.455 | 0 | -0.92 | 0.4 |
| | N | 22 | -3 | -6.99 | 0.001 |
| 0.937 | E[Conc] | 3.1 | Parameter Estimates | | |
| 0.161 | SD[Conc] | 24 | from LN regression | | |
| 5.44 | CV[Conc] | 7.68 | update graph label | | |

0.813 0.813
3.1 3.08
7.680 7.68

N 58 — max r2 0.835

| Date | dPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 21-Jan-99 | 0.001 | 1 | 0.0107 | -2.300 | -6.908 | 0.813 |
| 5-Nov-97 | 0.25 | 2 | 0.0279 | -1.913 | -1.470 | 0.797 |
| 1-Oct-91 | | 3 | 0.0451 | -1.695 | | |
| 20-Jul-99 | | 4 | 0.0622 | -1.536 | | |
| 4-Aug-99 | | 5 | 0.0794 | -1.409 | | |
| 31-Aug-99 | | 6 | 0.0966 | -1.301 | | |
| 29-Oct-93 | | 7 | 0.1137 | -1.207 | | |
| 1-Dec-93 | | 8 | 0.1309 | -1.122 | | |
| 21-Dec-93 | | 9 | 0.1481 | -1.045 | | |
| 21-Dec-93 | | 10 | 0.1652 | -0.973 | | |
| 21-Jan-94 | | 11 | 0.1824 | -0.906 | | |
| 21-Jan-94 | | 12 | 0.1996 | -0.843 | | |
| 17-Feb-94 | | 13 | 0.2167 | -0.783 | | |
| 7-Mar-94 | | 14 | 0.2339 | -0.726 | | |
| 23-Mar-94 | | 15 | 0.2511 | -0.671 | | |
| 23-Mar-94 | | 16 | 0.2682 | -0.618 | | |
| 6-Apr-94 | | 17 | 0.2854 | -0.567 | | |
| 18-Apr-94 | | 18 | 0.3026 | -0.517 | | |
| 3-May-94 | | 19 | 0.3197 | -0.468 | | |
| 20-May-94 | | 20 | 0.3369 | -0.421 | | |
| 7-Jun-94 | | 21 | 0.3541 | -0.374 | | |
| 24-Jun-94 | | 22 | 0.3712 | -0.329 | | |
| 22-Jul-94 | | 23 | 0.3884 | -0.283 | | |
| 5-Oct-94 | | 24 | 0.4056 | -0.239 | | |
| 16-Nov-94 | | 25 | 0.4227 | -0.195 | | |
| 14-Dec-94 | | 26 | 0.4399 | -0.151 | | |
| 10-Jan-95 | | 27 | 0.4571 | -0.108 | | |
| 9-Feb-95 | | 28 | 0.4742 | -0.065 | | |
| 8-Mar-95 | | 29 | 0.4914 | -0.022 | | |
| 12-Apr-95 | | 30 | 0.5086 | 0.022 | | |
| 27-Jun-95 | | 31 | 0.5258 | 0.065 | | |
| 11-Jul-95 | | 32 | 0.5429 | 0.108 | | |
| 5-May-98 | 1 | 33 | 0.5601 | 0.151 | 0.000 | 0.835 |
| 18-Nov-98 | 1 | 34 | 0.5773 | 0.195 | 0.000 | 0.835 |
| 14-Dec-98 | 1 | 35 | 0.5944 | 0.239 | 0.000 | 0.833 |
| 22-Mar-99 | 1 | 36 | 0.6116 | 0.283 | 0.000 | 0.830 |
| 20-Apr-99 | 1 | 37 | 0.6288 | 0.329 | 0.000 | 0.824 |
| 4-May-99 | 1 | 38 | 0.6459 | 0.374 | 0.000 | 0.816 |

update for EV CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dPb** | | **MC262** | | | 14 | 14.3 |
| **LN Analysis** | | **dPb** | | | 1.82 | 1.82 |
| **Discharge, Q** | | **Q Data, EV=14.3 cfs CV=1.82** | | | | |
| **Avg:** | 14 | **Q Data-based LN** | | | | |
| **SD:** | 26 | u | lnQ | Q | | |
| **CV:** | 1.82 | 3 | 5.6 | 259 | | |
| **Min:** | 0.4 | 0 | 1.93 | 7 | | |
| **Max:** | 137 | -3 | -1.70 | 0.2 | | |
| **Median:** | 5 | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.952 | 0.952 |
| | | | | | 13.3 | 13.3 |
| | **u=mLn(Q)+b:** | | | | 1.99 | 1.99 |
| update for r2, EV, CV | **r2=0.952, EV=13.3 cfs CV=1.99; max r2=0.97** | | | | | |
| | r2 u,lnQ | 0.952 | u | lnQ | Q | |
| | slope, m | 0.790 | 3 | 5.59 | 266 | |
| | intercept, b | -1.415 | 0 | 1.79 | 6 | |
| | N | 58 | -3 | -2.01 | 0.1 | |
| | E[Q] | 13.3 | Parameter Estimates | | | |
| | SD[Q] | 27 | from LN regression | | | |
| | CV[Q] | 1.99 | update graph label | | | |

| | Q | N: 58 | | | | max r2 0.972 |
|---|---|---|---|---|---|---|
| | Discharge | i | i-3/8 / N+1/4 | u | Ln | r2 |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 17-Aug-94 | 0.38 | 1 | 0.0107 | -2.300 | -0.968 | 0.952 |
| *1-Oct-91* | *0.93* | 2 | 0.0279 | -1.913 | -0.073 | 0.947 |
| 28-Oct-98 | 1.3 | 3 | 0.0451 | -1.695 | 0.262 | 0.947 |
| 17-Aug-94 | 1.41 | 4 | 0.0622 | -1.536 | 0.344 | 0.950 |
| 18-Nov-98 | 1.6 | 5 | 0.0794 | -1.409 | 0.470 | 0.952 |
| *5-Oct-94* | *1.75* | 6 | 0.0966 | -1.301 | 0.560 | 0.954 |
| 13-Sep-95 | 1.75 | 7 | 0.1137 | -1.207 | 0.560 | 0.957 |
| 14-Aug-95 | 1.82 | 8 | 0.1309 | -1.122 | 0.599 | 0.958 |
| *22-Jul-94* | *1.99* | 9 | 0.1481 | -1.045 | 0.688 | 0.960 |
| 25-Jul-95 | 2.07 | 10 | 0.1652 | -0.973 | 0.728 | 0.961 |
| *21-Dec-93* | *2.21* | 11 | 0.1824 | -0.906 | 0.793 | 0.962 |
| 5-Nov-97 | 2.44 | 12 | 0.1996 | -0.843 | 0.892 | 0.964 |
| *29-Oct-93* | *2.46* | 13 | 0.2167 | -0.783 | 0.900 | 0.966 |
| *24-Sep-98* | *2.462807903* | 14 | 0.2339 | -0.726 | 0.901 | 0.967 |
| *25-Aug-98* | *2.571760751* | 15 | 0.2511 | -0.671 | 0.945 | 0.968 |
| *1-Dec-93* | *2.69* | 16 | 0.2682 | -0.618 | 0.990 | 0.969 |
| *24-Jun-94* | *2.8* | 17 | 0.2854 | -0.567 | 1.030 | 0.970 |
| *11-Jul-95* | *2.8* | 18 | 0.3026 | -0.517 | 1.030 | 0.970 |
| *27-Jun-95* | *2.93* | 19 | 0.3197 | -0.468 | 1.075 | 0.970 |
| *21-Dec-93* | *3.06* | 20 | 0.3369 | -0.421 | 1.118 | 0.970 |
| *27-Jul-98* | *3.196210553* | 21 | 0.3541 | -0.374 | 1.162 | 0.970 |
| *14-Dec-94* | *3.49* | 22 | 0.3712 | -0.329 | 1.250 | 0.970 |
| *17-Feb-94* | *3.81* | 23 | 0.3884 | -0.283 | 1.338 | 0.970 |
| *16-Nov-94* | *3.81* | 24 | 0.4056 | -0.239 | 1.338 | 0.971 |
| 23-May-95 | 4.16 | 25 | 0.4227 | -0.195 | 1.426 | 0.971 |
| 12-Jun-95 | 4.16 | 26 | 0.4399 | -0.151 | 1.426 | 0.972 |
| 16-Jun-99 | 4.2 | 27 | 0.4571 | -0.108 | 1.435 | 0.972 |
| *20-May-94* | *4.34* | 28 | 0.4742 | -0.065 | 1.468 | 0.971 |
| *7-Jun-94* | *4.34* | 29 | 0.4914 | -0.022 | 1.468 | 0.971 |
| 14-Dec-98 | 4.8 | 30 | 0.5086 | 0.022 | 1.569 | 0.969 |
| *20-Jul-99* | *5* | 31 | 0.5258 | 0.065 | 1.609 | 0.968 |
| *4-Aug-99* | *5* | 32 | 0.5429 | 0.108 | 1.609 | 0.967 |
| *31-Aug-99* | *5* | 33 | 0.5601 | 0.151 | 1.609 | 0.964 |
| *3-May-94* | *6.19* | 34 | 0.5773 | 0.195 | 1.823 | 0.962 |
| 9-May-95 | 6.77 | 35 | 0.5944 | 0.239 | 1.913 | 0.960 |
| 5-May-98 | 6.86 | 36 | 0.6116 | 0.283 | 1.926 | 0.958 |
| *21-Jan-94* | *7.08* | 37 | 0.6288 | 0.329 | 1.957 | 0.956 |
| *25-Jun-98* | *7.082855593* | 38 | 0.6459 | 0.374 | 1.958 | 0.953 |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | **MC262** | **Date:** **20-Jun-00** |
| **Chemical:** | **dZn** | **Analyst:** **J.MacLachlan** |
| **Notes:** | | |

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,090 | 14 | 119 | 8 | | 0 00 | 0 00 | 0 00 |
| **SD:** | 810 | 26 | 47 | 15 | | 1 00 | 1 00 | 1 00 |
| **CV:** | 0.02 | 1.85 | 0.39 | 1.85 | | | | |
| **Min:** | 33,372 | 0 | 0 | 0.0 | | -0.53 | -2.55 | -0 54 |
| **Max:** | 36,403 | 137 | 318 | 73 | | 4 70 | 4.26 | 4.40 |
| **Median:** | 34,808 | 4 | 116 | 3 | | -0.38 | -0 08 | -0 34 |

| dZn | MC262 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.0292)** | | update r2 | **0.03** | 0.0292 | r2 | 0.011 | 0.004 |
| r2 Q,[COC] | 0.03 | [tCd] | Q | | m | 0.0033 | 0 00010 |
| slope, m | -0.3 | 123 | 0.4 | | b | -103 | -1.66 |
| intercept, b | 123.6 | 119 | 141 | | | | |
| N: 58 | | 82 | 137 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.0292)** | | update r2 | | 0.03 | 0.0292 | | |
| r2 lnQ,ln[COC] | 0.03 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m | -0 14 | 4 98 | -0 97 | 146 | 0 | | |
| intercept, b | 4.85 | 4 49 | 2 65 | 89 | 14 | | |
| N 58 | | 4 19 | 4.92 | 66 | 137 | | |

**N= 58**

| | Sampling Date | Q Discharge | dZn Concentration | dZn Load | Ln Q | Ln dZn Conc. | Ln dZn Load | for graph 0 dZn MC262 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 14-May-91 | 14.9 | 102 | 8.2 | 2.70 | 4.62 | 2.10 | 0.03 | -0.37 | 0.01 |
| MFG | 1-Oct-91 | 0.93 | 84 | 0.4 | -0.07 | 4.43 | -0.87 | -0.51 | -0.76 | -0.51 |
| IDEQ | 29-Oct-93 | 2.46 | 160 | 2.1 | 0.90 | 5.08 | 0 75 | -0.45 | 0.87 | -0 40 |
| IDEQ | 1-Dec-93 | 2.69 | 160 | 2.3 | 0.99 | 5.08 | 0 84 | -0 44 | 0 87 | -0 38 |
| IDEQ | 21-Dec-93 | 3.06 | 187 | 3.1 | 1.12 | 5.23 | 1.12 | -0.42 | 1.45 | -0.33 |
| IDEQ | 21-Dec-93 | 2.21 | 187 | 2.2 | 0.79 | 5.23 | 0.80 | -0.46 | 1.45 | -0.39 |
| IDEQ | 21-Jan-94 | 7.08 | 160 | 6.1 | 1.96 | 5.08 | 1.81 | -0.27 | 0.87 | -0.13 |
| IDEQ | 21-Jan-94 | 7.13 | 160 | 6.1 | 1.96 | 5.08 | 1.81 | -0.27 | 0.87 | -0.12 |
| IDEQ | 17-Feb-94 | 3.81 | 156 | 3.2 | 1.34 | 5.05 | 1.16 | -0.40 | 0 79 | -0.32 |
| IDEQ | 7-Mar-94 | 23.22 | 114 | 14.2 | 3.15 | 4.74 | 2.66 | 0.35 | -0.11 | 0 43 |
| IDEQ | 23-Mar-94 | 16.04 | 119 | 10.3 | 2.78 | 4.78 | 2.33 | 0.07 | -0.01 | 0.16 |
| IDEQ | 23-Mar-94 | 15.34 | 119 | 9.8 | 2.73 | 4.78 | 2.28 | 0.05 | -0.01 | 0.13 |
| IDEQ | 6-Apr-94 | 13.97 | 101 | 7.6 | 2.64 | 4.62 | 2.03 | -0.01 | -0.39 | -0.02 |
| IDEQ | 18-Apr-94 | 10.63 | 97 | 5.5 | 2.36 | 4.57 | 1 71 | -0.13 | -0.48 | -0 16 |
| IDEQ | 3-May-94 | 6.19 | 104 | 3.5 | 1.82 | 4.64 | 1.24 | -0.30 | -0.33 | -0 30 |
| IDEQ | 20-May-94 | 4.34 | 127 | 3.0 | 1.47 | 4.84 | 1.09 | -0.38 | 0.17 | -0.34 |
| IDEQ | 7-Jun-94 | 4.34 | 141 | 3.3 | 1.47 | 4.95 | 1.19 | -0.38 | 0.47 | -0.32 |
| IDEQ | 24-Jun-94 | 2.8 | 121 | 1.8 | 1.03 | 4.80 | 0.60 | -0.43 | 0.04 | -0.42 |
| IDEQ | 22-Jul-94 | 1.99 | 104 | 1.1 | 0.69 | 4.64 | 0.11 | -0.47 | -0.33 | -0.46 |
| IDEQ | 17-Aug-94 | 1.41 | 74 | 0.6 | 0.34 | 4.30 | -0.58 | -0.49 | -0.97 | -0.50 |
| IDEQ | 17-Aug-94 | 0.38 | 74 | 0.2 | -0.97 | 4.30 | -1.89 | -0.53 | -0 97 | -0 53 |
| IDEQ | 5-Oct-94 | 1.75 | 78 | 0.7 | 0.56 | 4.36 | -0.31 | -0.47 | -0.88 | -0.49 |
| IDEQ | 16-Nov-94 | 3.81 | 152 | 3.1 | 1.34 | 5.02 | 1.14 | -0.40 | 0.70 | -0.33 |
| IDEQ | 14-Dec-94 | 3 49 | 159 | 3.0 | 1.25 | 5.07 | 1.09 | -0 41 | 0 85 | -0 34 |
| IDEQ | 10-Jan-95 | 8.48 | 160 | 7.3 | 2.14 | 5 08 | 1.99 | -0.22 | 0 87 | -0 04 |
| IDEQ | 9-Feb-95 | 62.77 | 114 | 38.5 | 4.14 | 4 74 | 3.65 | 1.86 | -0 11 | 2 07 |
| IDEQ | 8-Mar-95 | 112 47 | 120 | 72.6 | 4.72 | 4.79 | 4.29 | 3.76 | 0.02 | 4.38 |
| IDEQ | 22-Mar-95 | 79 93 | 113 | 48 6 | 4.38 | 4 73 | 3.88 | 2.52 | -0.13 | 2 75 |
| IDEQ | 12-Apr-95 | 16.04 | 117 | 10.1 | 2.78 | 4 76 | 2.31 | 0.07 | -0.05 | 0 14 |
| IDEQ | 25-Apr-95 | 14.63 | 114 | 9 0 | 2.68 | 4 74 | 2.19 | 0.02 | -0.11 | 0 07 |
| IDEQ | 9-May-95 | 6.77 | 128 | 4.7 | 1.91 | 4.85 | 1.54 | -0.28 | 0 19 | -0.22 |
| IDEQ | 23-May-95 | 4.16 | 125 | 2 8 | 1 43 | 4.83 | 1.03 | -0.38 | 0 12 | -0 35 |
| IDEQ | 12-Jun-95 | 4 16 | 134 | 3 0 | 1.43 | 4.90 | 1.10 | -0.38 | 0.32 | -0 34 |
| IDEQ | 27-Jun-95 | 2.93 | 96 | 1.5 | 1.08 | 4.56 | 0.41 | -0.43 | -0.50 | -0.44 |
| IDEQ | 11-Jul-95 | 2.8 | 139 | 2.1 | 1 03 | 4.93 | 0.74 | -0.43 | 0.42 | -0 40 |
| IDEQ | 25-Jul-95 | 2.07 | 106 | 1.2 | 0 73 | 4.66 | 0.17 | -0.46 | -0.28 | -0 46 |
| IDEQ | 14-Aug-95 | 1.82 | 226 | 2.2 | 0.60 | 5.42 | 0 79 | -0.47 | 2.29 | -0.39 |
| IDEQ | 13-Sep-95 | 1 75 | 110 | 1.0 | 0.56 | 4.70 | 0.04 | -0 47 | -0.20 | -0 47 |
| URS | 5-Nov-97 | 2.44 | 130 | 1.7 | 0.89 | 4.87 | 0.53 | -0.45 | 0.23 | -0.42 |
| IDEQ | 23-Apr-98 | 14.62806909 | 151 | 11.9 | 2.68 | 5.02 | 2.48 | 0.02 | 0.68 | 0.27 |
| URS | 5-May-98 | 6.86 | 318 | 11 7 | 1.93 | 5 76 | 2.46 | -0.28 | 4.26 | 0 26 |
| IDEQ | 28-May-98 | 136.9458147 | 99 | 72 9 | 4.92 | 4.60 | 4.29 | 4.70 | -0.43 | 4 40 |
| IDEQ | 25-Jun-98 | 7.082855593 | 138 | 5.3 | 1.96 | 4.93 | 1.66 | -0.27 | 0 40 | -0.18 |
| IDEQ | 27-Jul-98 | 3.196210553 | 87 | 1.5 | 1.16 | 4.47 | 0 40 | -0.42 | -0.69 | -0 44 |
| IDEQ | 25-Aug-98 | 2.571760751 | 84 | 1.2 | 0.94 | 4.43 | 0.15 | -0 44 | -0 76 | -0 46 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 24-Sep-98 | 2 462807903 | 103 | 1 3 | 0 90 | 4 61 | 0.28 | -0 45 | -0 41 | -0 45 |
| USGS | 28-Oct-98 | 1.3 | 127 | 0.9 | 0.26 | 4.84 | -0.12 | -0 49 | 0 17 | -0 48 |
| USGS | 18-Nov-98 | 1.6 | 123 | 1 1 | 0.47 | 4.81 | 0.06 | -0 48 | 0 08 | -0 47 |
| USGS | 14-Dec-98 | 4.8 | 167 | 4.3 | 1.57 | 5.12 | 1.46 | -0.36 | 1.02 | -0.25 |
| USGS | 21-Jan-99 | 21 | 0 101 | 0.0 | 3.04 | -2 29 | -4 47 | 0 26 | 2 55 | -0 54 |
| USGS | 22-Mar-99 | 63 | 57 | 19.3 | 4.14 | 4.04 | 2.96 | 1 87 | -1 33 | 0 77 |
| USGS | 20-Apr-99 | 43 | 45 | 10.4 | 3.76 | 3.81 | 2.34 | -1.10 | -1.59 | 0.17 |
| USGS | 4-May-99 | 17 | 56 | 5.1 | 2.83 | 4.03 | 1.63 | 0 11 | -1.36 | -0 19 |
| USGS | 23-May-99 | 8 7 | 61 | 2.9 | 2.16 | 4.11 | 1.05 | -0.21 | -1.25 | -0.35 |
| USGS | 16-Jun-99 | 4.2 | 74 | 1 7 | 1.44 | 4.30 | 0.51 | -0.38 | -0.97 | -0 43 |
| USGS | 20-Jul-99 | 2.1 | 93 | 1.1 | 0.74 | 4.53 | 0.05 | -0 46 | -0.56 | -0.47 |
| USGS | 4-Aug-99 | 1 5 | 81 | 0 7 | 0.41 | 4 39 | -0.43 | -0 48 | -0.82 | -0 49 |
| USGS | 31-Aug-99 | 1 4 | 85 | 0.6 | 0.34 | 4 44 | -0 45 | -0 49 | -0 73 | -0 50 |

**dZn**

**Concentration over time analysis**

| | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **dZn** | **MC262** | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.079** | **-0.00034** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 14-May-91 | 5.20 | 182 | | |
| mid | 18-Apr-95 | 4.71 | 111 | | |
| last | 31-Aug-99 | 4.17 | 65 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.531** | **0.02263** |
| | 21-Jan-99 | 0.68 | 2 | | |
| | 31-Aug-99 | 5.70 | 299 | | |

**Load over time analysis**

| | | | | | |
|---|---|---|---|---|---|
| | **dZn** | **MC262** | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.019** | **-0.00024** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 14-May-91 | 1.54 | 5 | | |
| mid | 18-Apr-95 | 1.19 | 3 | | |
| last | 31-Aug-99 | 0.81 | 2 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.024** | **0.00474** |
| | 21-Jan-99 | -0.23 | 1 | | |
| | 31-Aug-99 | 0.82 | 2 | | |

| | | | | | |
|---|---|---|---|---|---|
| | max r2 | 0.823 | | max r2. | 0.953 |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points. delete last 4 rows | | | only on >4 data points. delete last 4 rows | |
| | 0.079 | -0.00034 | 16.55 | 0.019 | -0.00024 | 9.67 |
| | 0.086 | -0.00037 | 17.57 | 0.014 | -0.00022 | 8.68 |
| | 0.097 | -0.00041 | 18.97 | 0.031 | -0.00033 | 12.84 |
| | 0.094 | -0.00041 | 18.87 | 0.034 | -0.00035 | 13.53 |
| | 0.091 | -0.00040 | 18.75 | 0.037 | -0.00037 | 14.16 |
| | 0.086 | -0.00039 | 18.46 | 0.038 | -0.00038 | 14.52 |
| | 0.080 | -0.00039 | 18.14 | 0.041 | -0.00040 | 15.26 |
| | 0.077 | -0.00038 | 17.96 | 0.038 | -0.00039 | 14.93 |
| | 0.073 | -0.00037 | 17.76 | 0.035 | -0.00038 | 14.56 |
| | 0.069 | -0.00037 | 17.56 | 0.036 | -0.00039 | 14.92 |
| | 0.069 | -0.00037 | 17.72 | 0.029 | -0.00035 | 13.49 |
| | 0.068 | -0.00038 | 17.84 | 0.024 | -0.00032 | 12.35 |
| | 0.067 | -0.00038 | 17.96 | 0.019 | -0.00029 | 11.14 |
| | 0.068 | -0.00039 | 18.32 | 0.015 | -0.00026 | 10.15 |
| | 0.070 | -0.00040 | 18.76 | 0.012 | -0.00024 | 9.51 |
| | 0.071 | -0.00041 | 19.14 | 0.012 | -0.00024 | 9.49 |
| | 0.070 | -0.00042 | 19.23 | 0.012 | -0.00025 | 9.71 |
| | 0.066 | -0.00041 | 19.16 | 0.012 | -0.00025 | 9.78 |
| | 0.065 | -0.00042 | 19.32 | 0.014 | -0.00028 | 10.86 |
| | 0.066 | -0.00043 | 19.75 | 0.020 | -0.00034 | 12.94 |
| | 0.072 | -0.00046 | 20.85 | 0.033 | -0.00044 | 16.52 |
| | 0.080 | -0.00050 | 22.13 | 0.071 | -0.00062 | 23.34 |
| | 0.087 | -0.00053 | 23.39 | 0.097 | -0.00074 | 27.56 |
| | 0.082 | -0.00053 | 23.32 | 0.103 | -0.00078 | 29.12 |
| | 0.077 | -0.00052 | 23.10 | 0.111 | -0.00084 | 30.95 |
| | 0.070 | -0.00051 | 22.80 | 0.105 | -0.00083 | 30.86 |
| | 0.070 | -0.00053 | 23.28 | 0.077 | -0.00071 | 26.46 |
| | 0.068 | -0.00054 | 23.66 | 0.044 | -0.00052 | 19.53 |
| | 0.068 | -0.00056 | 24.28 | 0.018 | -0.00032 | 12.35 |
| | 0.067 | -0.00057 | 24.87 | 0.008 | -0.00022 | 8.73 |
| | 0.066 | -0.00059 | 25.69 | 0.002 | -0.00011 | 4.61 |
| | 0.063 | -0.00061 | 26.22 | 0.000 | -0.00003 | 2.02 |
| | 0.060 | -0.00063 | 27.00 | 0.000 | -0.00001 | 1.01 |
| | 0.055 | -0.00065 | 27.61 | 0.000 | 0.00004 | -0.77 |
| | 0.059 | -0.00073 | 30.72 | 0.000 | -0.00001 | 1.30 |
| | 0.054 | -0.00078 | 32.35 | 0.000 | -0.00003 | 1.76 |
| | 0.059 | -0.00095 | 38.61 | 0.003 | -0.00025 | 9.74 |
| | 0.034 | -0.00092 | 37.40 | 0.006 | -0.00041 | 15.70 |
| | 0.053 | -0.00199 | 76.11 | 0.075 | -0.00264 | 96.17 |
| | 0.046 | -0.00212 | 81.00 | 0.116 | -0.00379 | 137.75 |
| | 0.034 | -0.00195 | 74.65 | 0.084 | -0.00337 | 122.61 |
| | 0.010 | -0.00113 | 45.05 | 0.049 | -0.00274 | 99.89 |
| | 0.006 | -0.00091 | 37.16 | 0.000 | -0.00021 | 8.02 |
| | 0.000 | -0.00023 | 12.45 | 0.006 | 0.00095 | -34.21 |
| | 0.000 | 0.00027 | -5.94 | 0.008 | 0.00123 | -44.26 |

| | | | | | |
|---|---|---|---|---|---|
| 0.004 | 0.00102 | -32.94 | 0.006 | 0.00128 | -45.87 |
| 0.017 | 0.00248 | -86.18 | 0.007 | 0.00150 | -54.10 |
| 0.059 | 0.00525 | -186.60 | 0.002 | 0.00099 | -35.61 |
| 0.168 | 0.01037 | -372.56 | 0.000 | 0.00040 | -14.11 |
| 0.531 | 0.02263 | -818.27 | 0.024 | 0.00474 | -171.55 |
| 0.755 | 0.00386 | -136.00 | 0.953 | -0.02209 | 803.29 |
| 0.823 | 0.00474 | -167.88 | 0.936 | -0.02060 | 749.24 |
| 0.778 | 0.00382 | -134.69 | 0.951 | -0.01787 | 649.74 |
| 0.635 | 0.00323 | -113.06 | 0.941 | -0.01568 | 570.32 |

update for EV, CV

**dZn** **MC262**

**LN Analysis** **dZn**

**Load** **Load Data, EV=7.96 lbs/day CV=1.85**

| | | | **Load Data-based LN** | |
|---|---|---|---|---|
| Avg: | 8 | u | ln tCd Load | tCd Load |
| SD: | 15 | 3 | 5.0 | 147 |
| CV | 1.85 | 0 | 1.33 | 4 |
| Min: | 0.0 | -3 | -2.33 | 0.1 |
| Max: | 73 | | | |
| *Median:* | 3 | | | |

| | |
|---|---|
| 8 | 7.96 |
| 1.85 | 1.85 |

**u=mLn{Load}+ b:**

update for r2, EV, CV **r2=0.934, EV=9.9lbs/day CV=3.06; max r2=0.98**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.934 | u | lnLoad | Load | |
| slope, m | 0.654 | 3 | 5.71 | 302 | |
| intercept, b | -0.736 | 0 | 1.12 | 3 | |
| N | 58 | -3 | -3.46 | 0.0 | |
| E[Load] | 9.9 | Parameter Estimates | | | 0.934 |
| SD[Load] | 30 | from LN regression | | | 9.9 |
| CV[Load] | 3.06 | update graph label | | | 3.1 |
| | | | | | max r2 |
| | N | 58 | | | 0.980 |

| Date | dZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 21-Jan-99 | 0.0 | 1 | 0.0107 | -2.300 | -4.473 | 0.934 |
| 17-Aug-94 | 0.2 | 2 | 0.0279 | -1.913 | -1.889 | 0.978 |
| 1-Oct-91 | 0.4 | 3 | 0.0451 | -1.695 | -0.867 | 0.980 |
| 17-Aug-94 | 0.6 | 4 | 0.0622 | -1.536 | -0.577 | 0.979 |
| 31-Aug-99 | 0.6 | 5 | 0.0794 | -1.409 | -0.446 | 0.978 |
| 4-Aug-99 | 0.7 | 6 | 0.0966 | -1.301 | -0.425 | 0.978 |
| 5-Oct-94 | 0.7 | 7 | 0.1137 | -1.207 | -0.309 | 0.977 |
| 28-Oct-98 | 0.9 | 8 | 0.1309 | -1.122 | -0.119 | 0.976 |
| 13-Sep-95 | 1.0 | 9 | 0.1481 | -1.045 | 0.035 | 0.976 |
| 20-Jul-99 | 1.1 | 10 | 0.1652 | -0.973 | 0.049 | 0.977 |
| 18-Nov-98 | 1.1 | 11 | 0.1824 | -0.906 | 0.057 | 0.977 |
| 22-Jul-94 | 1.1 | 12 | 0.1996 | -0.843 | 0.107 | 0.977 |
| 28-Aug-98 | 1.2 | 13 | 0.2167 | -0.783 | 0.150 | 0.976 |
| 25-Jul-95 | 1.2 | 14 | 0.2339 | -0.726 | 0.166 | 0.975 |
| 24-Sep-98 | 1.3 | 15 | 0.2511 | -0.671 | 0.281 | 0.974 |
| 27-Jul-98 | 1.5 | 16 | 0.2682 | -0.618 | 0.403 | 0.973 |
| 27-Jun-95 | 1.5 | 17 | 0.2854 | -0.567 | 0.414 | 0.972 |
| 16-Jun-99 | 1.7 | 18 | 0.3026 | -0.517 | 0.514 | 0.971 |
| 5-Nov-97 | 1.7 | 19 | 0.3197 | -0.468 | 0.534 | 0.971 |
| 24-Jun-94 | 1.8 | 20 | 0.3369 | -0.421 | 0.600 | 0.970 |
| 11-Jul-95 | 2.1 | 21 | 0.3541 | -0.374 | 0.739 | 0.969 |
| 29-Oct-93 | 2.1 | 22 | 0.3712 | -0.329 | 0.750 | 0.969 |
| 14-Aug-95 | 2.2 | 23 | 0.3884 | -0.283 | 0.794 | 0.968 |
| 21-Dec-93 | 2.2 | 24 | 0.4056 | -0.239 | 0.799 | 0.967 |
| 1-Dec-93 | 2.3 | 25 | 0.4227 | -0.195 | 0.840 | 0.966 |
| 23-May-95 | 2.8 | 26 | 0.4399 | -0.151 | 1.029 | 0.965 |
| 23-May-99 | 2.9 | 27 | 0.4571 | -0.108 | 1.049 | 0.965 |
| 20-May-94 | 3.0 | 28 | 0.4742 | -0.065 | 1.087 | 0.966 |
| 14-Dec-94 | 3.0 | 29 | 0.4914 | -0.022 | 1.094 | 0.966 |
| 12-Jun-95 | 3.0 | 30 | 0.5086 | 0.022 | 1.098 | 0.965 |
| 21-Dec-93 | 3.1 | 31 | 0.5258 | 0.065 | 1.124 | 0.964 |
| 16-Nov-94 | 3.1 | 32 | 0.5429 | 0.108 | 1.136 | 0.962 |
| 17-Feb-94 | 3.2 | 33 | 0.5601 | 0.151 | 1.162 | 0.959 |
| 7-Jun-94 | 3.3 | 34 | 0.5773 | 0.195 | 1.192 | 0.956 |
| 3-May-94 | 3.5 | 35 | 0.5944 | 0.239 | 1.242 | 0.953 |
| 14-Dec-98 | 4.3 | 36 | 0.6116 | 0.283 | 1.462 | 0.950 |
| 9-May-95 | 4.7 | 37 | 0.6288 | 0.329 | 1.539 | 0.947 |
| 4-May-99 | 5.1 | 38 | 0.6459 | 0.374 | 1.633 | 0.944 |
| 25-Jun-98 | 5.3 | 39 | 0.6631 | 0.421 | 1.660 | 0.941 |
| 18-Apr-94 | 5.5 | 40 | 0.6803 | 0.468 | 1.713 | 0.937 |
| 21-Jan-94 | 6.1 | 41 | 0.6974 | 0.517 | 1.807 | 0.933 |
| 21-Jan-94 | 6.1 | 42 | 0.7146 | 0.567 | 1.814 | 0.930 |
| 10-Jan-95 | 7.3 | 43 | 0.7318 | 0.618 | 1.988 | 0.923 |
| 6-Apr-94 | 7.6 | 44 | 0.7489 | 0.671 | 2.027 | 0.921 |
| 14-May-91 | 8.2 | 45 | 0.7661 | 0.726 | 2.101 | 0.916 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25-Apr-95 | 9.0 | 46 | 0.7833 | 0.783 | 2.194 | 0.912 |
| 23-Mar-94 | 9.8 | 47 | 0.8004 | 0.843 | 2.285 | 0.909 |
| 12-Apr-95 | 10.1 | 48 | 0.8176 | 0.906 | 2.312 | 0.907 |
| 23-Mar-94 | 10.3 | 49 | 0.8348 | 0.973 | 2.329 | 0.901 |
| 20-Apr-99 | 10.4 | 50 | 0.8519 | 1.045 | 2.343 | 0.889 |
| 5-May-98 | 11.7 | 51 | 0.8691 | 1.122 | 2.463 | 0.867 |
| 23-Apr-98 | 11.9 | 52 | 0.8863 | 1.207 | 2.475 | 0.835 |
| 7-Mar-94 | 14.2 | 53 | 0.9034 | 1.301 | 2.656 | 0.789 |
| 22-Mar-99 | 19.3 | 54 | 0.9206 | 1.409 | 2.961 | 0.734 |
| 9-Feb-95 | 38.5 | 55 | 0.9378 | 1.536 | 3.651 | |
| 22-Mar-95 | 48.6 | 56 | 0.9549 | 1.695 | 3.883 | |
| 8-Mar-95 | 72.6 | 57 | 0.9721 | 1.913 | 4.285 | |
| 28-May-98 | 72.9 | 58 | 0.9893 | 2.300 | 4.290 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **dZn** | | **MC262** | | 119 | 119 |
| **LN Analysis** | | **dZn** | | 0.39 | 0.39 |

## Concentration

**Conc. Data, EV=119 ug/L CV=0.39**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **119** | **Data-based LN** | | |
| **SD:** | **47** | u | ln[tCd] | [tCd] |
| **CV:** | **0.39** | 3 | 5.8 | 345 |
| **Min:** | **0** | 0 | 4.71 | 111 |
| **Max:** | **318** | -3 | 3.58 | 36 |
| **Median:** | **116** | | | |

**u=mLn(Conc.)+b:**

update for r2 EV, CV; r2=0.97, EV=121 ug/L, CV=0.39; max r2=0.97

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.968 | u | lnConc | Conc |
| slope, m | 2.638 | 3 | 5.86 | 351 |
| intercept, b | -12.460 | 0 | 4.72 | 112 |
| N | 57 | -3 | 3.59 | 36 |

| | | | |
|---|---|---|---|
| 0.934 | E[Conc] | 120.9 | Parameter Estimates |
| 9.9 | SD[Conc] | 48 | from LN regression |
| 3.06 | CV[Conc] | 0.39 | update graph label |

0.968 0.97
120.9 121
0.393 0.39

N: 58

| Date | dZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.974 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 21-Jan-99 | 0.101 | 1 | 0.0107 | -2.300 | | 0.968 |
| 20-Apr-99 | 45 | 2 | 0.0279 | -1.913 | 3.807 | 0.968 |
| 4-May-99 | 56 | 3 | 0.0451 | -1.695 | 4.025 | 0.972 |
| 22-Mar-96 | 57 | 4 | 0.0622 | -1.536 | 4.043 | 0.971 |
| 23-May-99 | 61 | 5 | 0.0794 | -1.409 | 4.111 | 0.972 |
| 17-Aug-94 | 74 | 6 | 0.0966 | -1.301 | 4.304 | 0.974 |
| 17-Aug-94 | 74 | 7 | 0.1137 | -1.207 | 4.304 | 0.972 |
| 16-Jun-99 | 74 | 8 | 0.1309 | -1.122 | 4.304 | 0.971 |
| 5-Oct-94 | 78 | 9 | 0.1481 | -1.045 | 4.357 | 0.969 |
| 4-Aug-99 | 81 | 10 | 0.1652 | -0.973 | 4.394 | 0.968 |
| 1-Oct-91 | 84 | 11 | 0.1824 | -0.906 | 4.431 | 0.966 |
| 25-Aug-98 | 84 | 12 | 0.1996 | -0.843 | 4.431 | 0.964 |
| 31-Aug-99 | 85 | 13 | 0.2167 | -0.783 | 4.443 | 0.962 |
| 27-Jul-98 | 87 | 14 | 0.2339 | -0.726 | 4.466 | 0.960 |
| 20-Jul-99 | 93 | 15 | 0.2511 | -0.671 | 4.533 | 0.958 |
| 27-Jun-95 | 96 | 16 | 0.2682 | -0.618 | 4.564 | 0.956 |
| 18-Apr-94 | 97 | 17 | 0.2854 | -0.567 | 4.575 | 0.954 |
| 28-May-98 | 99 | 18 | 0.3026 | -0.517 | 4.595 | 0.952 |
| 24-Sep-98 | 100 | 19 | 0.3197 | -0.468 | 4.605 | 0.951 |
| 6-Apr-94 | 101 | 20 | 0.3369 | -0.421 | 4.615 | 0.949 |
| 14-May-96 | 102 | 21 | 0.3541 | -0.374 | 4.625 | 0.946 |
| 3-May-94 | 104 | 22 | 0.3712 | -0.329 | 4.644 | 0.944 |
| 22-Jul-94 | 104 | 23 | 0.3884 | -0.283 | 4.644 | 0.942 |
| 25-Jul-95 | 106 | 24 | 0.4056 | -0.239 | 4.663 | 0.939 |
| 13-Sep-95 | 110 | 25 | 0.4227 | -0.195 | 4.700 | 0.935 |
| 22-Mar-95 | 113 | 26 | 0.4399 | -0.151 | 4.727 | 0.933 |
| 7-Mar-94 | 114 | 27 | 0.4571 | -0.108 | 4.736 | 0.932 |
| 9-Feb-95 | 114 | 28 | 0.4742 | -0.065 | 4.736 | 0.931 |
| 25-Apr-95 | 114 | 29 | 0.4914 | -0.022 | 4.736 | 0.929 |
| 12-Apr-95 | 117 | 30 | 0.5086 | 0.022 | 4.762 | 0.926 |
| 23-Mar-94 | 119 | 31 | 0.5258 | 0.065 | 4.779 | 0.924 |
| 23-Mar-94 | 119 | 32 | 0.5429 | 0.108 | 4.779 | 0.922 |
| 8-Mar-95 | 120 | 33 | 0.5601 | 0.151 | 4.787 | 0.919 |
| 24-Jun-94 | 121 | 34 | 0.5773 | 0.195 | 4.796 | 0.916 |
| 18-Nov-98 | 123 | 35 | 0.5944 | 0.239 | 4.812 | 0.911 |
| 23-May-95 | 125 | 36 | 0.6116 | 0.283 | 4.828 | 0.907 |
| 20-May-94 | 127 | 37 | 0.6288 | 0.329 | 4.844 | 0.903 |
| 28-Oct-98 | 127 | 38 | 0.6459 | 0.374 | 4.844 | 0.898 |
| 9-May-95 | 128 | 39 | 0.6631 | 0.421 | 4.852 | 0.892 |
| 5-Nov-97 | 130 | 40 | 0.6803 | 0.468 | 4.868 | 0.883 |
| 12-Jun-95 | 134 | 41 | 0.6974 | 0.517 | 4.898 | 0.874 |
| 25-Jun-98 | 138 | 42 | 0.7146 | 0.567 | 4.927 | 0.866 |
| 11-Jul-95 | 139 | 43 | 0.7318 | 0.618 | 4.934 | 0.859 |
| 7-Jun-94 | 141 | 44 | 0.7489 | 0.671 | 4.949 | 0.849 |
| 23-Apr-98 | 151 | 45 | 0.7661 | 0.726 | 5.017 | 0.838 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 16-Nov-94 | 152 | 46 | 0.7833 | 0.783 | 5.024 | 0.843 |
| 17-Feb-94 | 156 | 47 | 0.8004 | 0.843 | 5.050 | 0.848 |
| 14-Dec-94 | 159 | 48 | 0.8176 | 0.906 | 5.069 | 0.861 |
| 29-Oct-93 | 160 | 49 | 0.8348 | 0.973 | 5.075 | 0.884 |
| 1-Dec-93 | 160 | 50 | 0.8519 | 1.045 | 5.075 | 0.909 |
| 21-Jan-94 | 160 | 51 | 0.8691 | 1.122 | 5.075 | 0.932 |
| 21-Jan-94 | 160 | 52 | 0.8863 | 1.207 | 5.075 | 0.952 |
| 10-Jan-95 | 160 | 53 | 0.9034 | 1.301 | 5.075 | 0.965 |
| 14-Dec-98 | 167 | 54 | 0.9206 | 1.409 | 5.118 | 0.964 |
| 21-Dec-93 | 187 | 55 | 0.9378 | 1.536 | 5.231 | |
| 21-Dec-93 | 187 | 56 | 0.9549 | 1.695 | 5.231 | |
| 14-Aug-95 | 226 | 57 | 0.9721 | 1.913 | 5.421 | |
| 5-May-98 | 318 | 58 | 0.9893 | 2.300 | 5.762 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dZn** | | **MC262** | | | 14 | 14.1 |
| **LN Analysis** | | **dZn** | | | 1.85 | 1.9 |
| **Discharge, Q** | | **Q Data, EV=14.1 cfs CV=1.9** | | | | |
| **Avg:** | 14 | **Q Data-based LN** | | | | |
| **SD:** | 26 | u | lnQ | Q | | |
| **CV:** | 1.85 | 3 | 5.6 | 260 | | |
| **Min:** | 0 | 0 | 1.91 | 7 | | |
| **Max:** | 137 | -3 | -1.75 | 0 | | |
| **Median:** | 4 | | | | | |

| | | |
|---|---|---|
| | 0.950 | 0.95 |
| | 13.2 | 13.2 |
| **u=mLn{Q}+b:** | 2.11 | 2.11 |

update for r2, EV, CV: **r2=0.95, EV=13.2 cfs CV=2.11; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.948 | u | lnQ | Q |
| slope, m: | 0.767 | 3 | 5.64 | 282 |
| intercept, b: | -1.329 | 0 | 1.73 | 6 |
| N: | 58 | -3 | -2.18 | 0 |
| E[Q]: | 13.2 | Parameter Estimates | | |
| SD[Q]: | 28 | from LN regression | | |
| CV[Q]: | 2.11 | update graph label | | |

| | | N 58 | | | | max r2 0.977 |
|---|---|---|---|---|---|---|
| | Q Discharge | i | i-3/8 / N+1/4 | u | Ln | r2 |
| **Date** | **cfs Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 17-Aug-94 | 0.38 | 1 | 0.0107 | -2.300 | -0.968 | 0.948 |
| 1-Oct-91 | 0.93 | 2 | 0.0279 | -1.913 | -0.073 | 0.944 |
| 28-Oct-98 | 1.3 | 3 | 0.0451 | -1.695 | 0.262 | 0.946 |
| 31-Aug-99 | 1.4 | 4 | 0.0622 | -1.536 | 0.336 | 0.951 |
| 17-Aug-94 | 1.41 | 5 | 0.0794 | -1.409 | 0.344 | 0.955 |
| 4-Aug-99 | 1.5 | 6 | 0.0966 | -1.301 | 0.405 | 0.958 |
| 18-Nov-98 | 1.6 | 7 | 0.1137 | -1.207 | 0.470 | 0.960 |
| 5-Oct-94 | 1.75 | 8 | 0.1309 | -1.122 | 0.560 | 0.962 |
| 13-Sep-95 | 1.75 | 9 | 0.1481 | -1.045 | 0.560 | 0.965 |
| 14-Aug-95 | 1.82 | 10 | 0.1652 | -0.973 | 0.599 | 0.966 |
| 22-Jul-94 | 1.99 | 11 | 0.1824 | -0.906 | 0.688 | 0.968 |
| 25-Jul-95 | 2.07 | 12 | 0.1996 | -0.843 | 0.728 | 0.969 |
| 20-Jul-99 | 2.1 | 13 | 0.2167 | -0.783 | 0.742 | 0.971 |
| 21-Dec-93 | 2.21 | 14 | 0.2339 | -0.726 | 0.793 | 0.972 |
| 5-Nov-97 | 2.44 | 15 | 0.2511 | -0.671 | 0.892 | 0.973 |
| 29-Oct-93 | 2.46 | 16 | 0.2682 | -0.618 | 0.900 | 0.974 |
| 24-Sep-98 | 2.462807903 | 17 | 0.2854 | -0.567 | 0.901 | 0.976 |
| 25-Aug-98 | 2.571760751 | 18 | 0.3026 | -0.517 | 0.945 | 0.976 |
| 1-Dec-93 | 2.69 | 19 | 0.3197 | -0.468 | 0.990 | 0.977 |
| 24-Jun-94 | 2.8 | 20 | 0.3369 | -0.421 | 1.030 | 0.977 |
| 11-Jul-95 | 2.8 | 21 | 0.3541 | -0.374 | 1.030 | 0.977 |
| 27-Jun-95 | 2.93 | 22 | 0.3712 | -0.329 | 1.075 | 0.977 |
| 21-Dec-93 | 3.06 | 23 | 0.3884 | -0.283 | 1.118 | 0.976 |
| 27-Jul-98 | 3.196210553 | 24 | 0.4056 | -0.239 | 1.162 | 0.976 |
| 14-Dec-94 | 3.49 | 25 | 0.4227 | -0.195 | 1.250 | 0.975 |
| 17-Feb-94 | 3.81 | 26 | 0.4399 | -0.151 | 1.338 | 0.974 |
| 16-Nov-94 | 3.81 | 27 | 0.4571 | -0.108 | 1.338 | 0.974 |
| 23-May-95 | 4.16 | 28 | 0.4742 | -0.065 | 1.426 | 0.973 |
| 12-Jun-95 | 4.16 | 29 | 0.4914 | -0.022 | 1.426 | 0.972 |
| 16-Jun-99 | 4.2 | 30 | 0.5086 | 0.022 | 1.435 | 0.971 |
| 20-May-94 | 4.34 | 31 | 0.5258 | 0.065 | 1.468 | 0.969 |
| 7-Jun-94 | 4.34 | 32 | 0.5429 | 0.108 | 1.468 | 0.967 |
| 14-Dec-98 | 4.8 | 33 | 0.5601 | 0.151 | 1.569 | 0.964 |
| 3-May-94 | 6.19 | 34 | 0.5773 | 0.195 | 1.823 | 0.962 |
| 9-May-95 | 6.77 | 35 | 0.5944 | 0.239 | 1.913 | 0.960 |
| 5-May-98 | 6.86 | 36 | 0.6116 | 0.283 | 1.926 | 0.958 |
| 21-Jan-94 | 7.08 | 37 | 0.6288 | 0.329 | 1.957 | 0.956 |
| 25-Jun-98 | 7.08 | 38 | 0.6459 | 0.374 | 1.958 | 0.953 |
| 21-Jan-94 | 7.13 | 39 | 0.6631 | 0.421 | 1.964 | 0.949 |
| 10-Jan-95 | 8.48 | 40 | 0.6803 | 0.468 | 2.138 | 0.944 |
| 23-May-99 | 8.7 | 41 | 0.6974 | 0.517 | 2.163 | 0.939 |
| 18-Apr-94 | 10.63 | 42 | 0.7146 | 0.567 | 2.364 | 0.933 |
| 6-Apr-94 | 13.97 | 43 | 0.7318 | 0.618 | 2.637 | 0.927 |
| 23-Apr-98 | 14.63 | 44 | 0.7489 | 0.671 | 2.683 | 0.927 |
| 25-Apr-95 | 14.63 | 45 | 0.7661 | 0.726 | 2.683 | 0.927 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 14-May-91 | 14.9 | 46 | 0.7833 | 0.783 | 2.701 | 0.924 |
| 23-Mar-94 | 15.34 | 47 | 0.8004 | 0.843 | 2.730 | 0.918 |
| 23-Mar-94 | 16.04 | 48 | 0.8176 | 0.906 | 2.775 | 0.907 |
| 12-Apr-95 | 16.04 | 49 | 0.8348 | 0.973 | 2.775 | 0.892 |
| 4-May-99 | 17 | 50 | 0.8519 | 1.045 | 2.833 | 0.873 |
| 21-Jan-99 | 21 | 51 | 0.8691 | 1.122 | 3.045 | 0.855 |
| 7-Mar-94 | 23.22 | 52 | 0.8863 | 1.207 | 3.145 | 0.835 |
| 20-Apr-99 | 43 | 53 | 0.9034 | 1.301 | 3.761 | 0.929 |
| 9-Feb-95 | 62.77 | 54 | 0.9206 | 1.409 | 4.139 | 0.944 |
| 22-Mar-99 | 63 | 55 | 0.9378 | 1.536 | 4.143 | |
| 22-Mar-95 | 79.93 | 56 | 0.9549 | 1.695 | 4.381 | |
| 8-Mar-95 | 112.47 | 57 | 0.9721 | 1.913 | 4.723 | |
| 28-May-98 | 136.95 | 58 | 0.9893 | 2.300 | 4.920 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **MC262** | **Date:** | **20-Jun-00** |
| **Chemical:** | **tCd** | **Analyst:** | **J.MacLachlan** |
| **Notes:** | | | |

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,946 | 15 | 1 | 0.04 | 0.00 | 0.00 | 0.00 |
| **SD:** | 728 | 27 | 0 | 0.08 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.81 | 0.35 | 1.87 | | | |
| **Min:** | 33,372 | 0.4 | 1 | 0.0 | -0.54 | -0.83 | -0.51 |
| **Max:** | 36,270 | 137 | 2 | 0.39 | 4.45 | 4.86 | 4.35 |
| **Median:** | 34,753 | 4 | 1 | 0.02 | -0.40 | -0.42 | -0.33 |

| tCd | MC262 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.000977)** | | update r2 | **0.00** | 0.000977 | r2: | 0.037 | 0.024 |
| r2 Q,[COC]: | 0.001 | [tCd] | Q | | m: | 0.0072 | 0.00027 |
| slope, m: | -0.0004 | 1 | 0.4 | | b: | -236 | -7.56 |
| intercept, b: | 0.7 | 1 | 15.1 | | | | |
| N: | 45 | 1 | 137 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.00441)** | | update r2 | | 0.00 | 0.00441 | | |
| r2 lnQ,ln[COC] | 0.004 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m: | -0.02 | -0.35 | -0.97 | 1 | 0.4 | | |
| intercept, b | -0.37 | -0.41 | 2.72 | 1 | 15 | | |
| N | 45 | -0.45 | 4.92 | 1 | 137 | | |

**N= 52**

| update for new data | Sampling Date | Q Discharge cfs | tCd Concentration ug/L | tCd Load lbs/day | Ln Q | Ln tCd Conc. | Ln tCd Load | tCd MC262 Standardized Values = (x - Avg)/SD Q | Conc | Load | for graph 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | | |
| MFG | 14-May-91 | 14.9 | 0.5 | 0.040 | 2.70 | -0.69 | -3.22 | -0.01 | -0.83 | -0.03 | |
| MFG | 1-Oct-91 | 0.93 | 0.5 | 0.003 | -0.07 | -0.69 | -5.99 | -0.52 | -0.83 | -0.50 | |
| IDEQ | 29-Oct-93 | 2.46 | 0.6 | 0.008 | 0.90 | -0.51 | -4.84 | -0.46 | -0.42 | -0.43 | |
| IDEQ | 1-Dec-93 | 2.69 | 0.7 | 0.010 | 0.99 | -0.36 | -4.59 | -0.45 | -0.01 | -0.41 | |
| IDEQ | 21-Dec-93 | 3.06 | 0.7 | 0.012 | 1.12 | -0.36 | -4.46 | -0.44 | -0.01 | -0.39 | |
| IDEQ | 21-Dec-93 | 2.21 | 0.7 | 0.008 | 0.79 | -0.36 | -4.79 | -0.47 | -0.01 | -0.43 | |
| IDEQ | 21-Jan-94 | 7.08 | 0.5 | 0.019 | 1.96 | -0.69 | -3.96 | -0.29 | -0.83 | -0.29 | |
| IDEQ | 21-Jan-94 | 7.13 | 0.5 | 0.019 | 1.96 | -0.69 | -3.95 | -0.29 | -0.83 | -0.29 | |
| IDEQ | 17-Feb-94 | 3.81 | 0.8 | 0.016 | 1.34 | -0.22 | -4.11 | -0.41 | 0.39 | -0.33 | |
| IDEQ | 7-Mar-94 | 23.22 | 0.5 | 0.062 | 3.15 | -0.69 | -2.77 | 0.30 | -0.83 | 0.26 | |
| IDEQ | 23-Mar-94 | 16.04 | 0.5 | 0.043 | 2.78 | -0.69 | -3.14 | 0.03 | -0.83 | 0.01 | |
| IDEQ | 23-Mar-94 | 15.34 | 0.5 | 0.041 | 2.73 | -0.69 | -3.19 | 0.01 | -0.83 | -0.01 | |
| IDEQ | 6-Apr-94 | 13.97 | 0.6 | 0.045 | 2.64 | -0.51 | -3.10 | -0.04 | -0.42 | 0.04 | |
| IDEQ | 18-Apr-94 | 10.63 | 0.6 | 0.034 | 2.36 | -0.51 | -3.37 | -0.16 | -0.42 | -0.10 | |
| IDEQ | 3-May-94 | 6.19 | 0.6 | 0.020 | 1.82 | -0.51 | -3.91 | -0.33 | -0.42 | -0.28 | |
| IDEQ | 20-May-94 | 4.34 | 0.8 | 0.019 | 1.47 | -0.22 | -3.98 | -0.39 | 0.39 | -0.30 | |
| IDEQ | 7-Jun-94 | 4.34 | 0.7 | 0.016 | 1.47 | -0.36 | -4.11 | -0.39 | -0.01 | -0.33 | |
| IDEQ | 24-Jun-94 | 2.8 | 0.7 | 0.011 | 1.03 | -0.36 | -4.55 | -0.45 | -0.01 | -0.40 | |
| IDEQ | 22-Jul-94 | 1.99 | 0.8 | 0.009 | 0.69 | -0.22 | -4.76 | -0.48 | 0.39 | -0.43 | |
| IDEQ | 17-Aug-94 | 1.41 | 0.8 | 0.006 | 0.34 | -0.22 | -5.10 | -0.50 | 0.39 | -0.46 | |
| IDEQ | 17-Aug-94 | 0.38 | 0.8 | 0.002 | -0.97 | -0.22 | -6.42 | -0.54 | 0.39 | -0.51 | |
| IDEQ | 5-Oct-94 | 1.75 | 0.5 | 0.005 | 0.56 | -0.69 | -5.36 | -0.49 | -0.83 | -0.47 | |
| IDEQ | 16-Nov-94 | 3.81 | 0.5 | 0.010 | 1.34 | -0.69 | -4.58 | -0.41 | -0.83 | -0.40 | |
| IDEQ | 14-Dec-94 | 3.49 | 0.7 | 0.013 | 1.25 | -0.36 | -4.33 | -0.42 | -0.01 | -0.37 | |
| IDEQ | 10-Jan-95 | 8.48 | 0.5 | 0.023 | 2.14 | -0.69 | -3.78 | -0.24 | -0.83 | -0.25 | |
| IDEQ | 9-Feb-95 | 62.77 | 0.6 | 0.203 | 4.14 | -0.51 | -1.60 | 1.74 | -0.42 | 2.02 | |
| IDEQ | 8-Mar-95 | 112.47 | 0.6 | 0.363 | 4.72 | -0.51 | -1.01 | 3.56 | -0.42 | 4.05 | |
| IDEQ | 22-Mar-95 | 79.93 | 0.9 | 0.387 | 4.38 | -0.11 | -0.95 | 2.37 | 0.80 | 4.35 | |
| IDEQ | 12-Apr-95 | 16.04 | 0.8 | 0.069 | 2.78 | -0.22 | -2.67 | 0.03 | 0.39 | 0.34 | |
| IDEQ | 25-Apr-95 | 14.63 | 1.2 | 0.094 | 2.68 | 0.18 | -2.36 | -0.02 | 2.02 | 0.66 | |
| IDEQ | 9-May-95 | 6.77 | 1 | 0.036 | 1.91 | 0.00 | -3.31 | -0.30 | 1.20 | -0.07 | |
| IDEQ | 23-May-95 | 4.16 | 1.1 | 0.025 | 1.43 | 0.10 | -3.70 | -0.40 | 1.61 | -0.22 | |
| IDEQ | 12-Jun-95 | 4.16 | 0.8 | 0.018 | 1.43 | -0.22 | -4.02 | -0.40 | 0.39 | -0.31 | |
| IDEQ | 27-Jun-95 | 2.93 | 0.6 | 0.009 | 1.08 | -0.51 | -4.66 | -0.44 | -0.42 | -0.41 | |
| IDEQ | 11-Jul-95 | 2.8 | 0.8 | 0.012 | 1.03 | -0.22 | -4.42 | -0.45 | 0.39 | -0.38 | |
| IDEQ | 25-Jul-95 | 2.07 | 0.7 | 0.008 | 0.73 | -0.36 | -4.85 | -0.48 | -0.01 | -0.44 | |
| IDEQ | 14-Aug-95 | 1.82 | 0.6 | 0.006 | 0.60 | -0.51 | -5.14 | -0.49 | -0.42 | -0.46 | |
| IDEQ | 13-Sep-95 | 1.75 | 0.6 | 0.006 | 0.56 | -0.51 | -5.18 | -0.49 | -0.42 | -0.46 | |
| URS | 5-Nov-97 | 2.44 | 0.56 | 0.007 | 0.89 | -0.58 | -4.91 | -0.46 | -0.58 | -0.44 | |
| IDEQ | 23-Apr-98 | 14.62806909 | 0.6 | 0.047 | 2.68 | -0.51 | -3.05 | -0.02 | -0.42 | 0.06 | |
| URS | 5-May-98 | 6.86 | 1.9 | 0.070 | 1.93 | 0.64 | -2.66 | -0.30 | 4.86 | 0.35 | |
| *IDEQ* | *28-May-98* | *136.9458147* | | | 4.92 | | | 4.45 | | | |
| IDEQ | 25-Jun-98 | 7.082855593 | 0.6 | 0.023 | 1.96 | -0.51 | -3.78 | -0.29 | -0.42 | -0.24 | |
| IDEQ | 27-Jul-98 | 3.196210553 | 0.6 | 0.010 | 1.16 | -0.51 | -4.57 | -0.44 | -0.42 | -0.40 | |
| IDEQ | 25-Aug-98 | 2.571760751 | 0.5 | 0.007 | 0.94 | -0.69 | -4.97 | -0.46 | -0.83 | -0.45 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *IDEQ* | *24-Sep-98* | *2.462807903* | | | 0.90 | | | -0.46 | | |
| USGS | 28-Oct-98 | 1.3 | 1 | 0.007 | 0.26 | 0.00 | -4.96 | -0.50 | 1.20 | -0 45 |
| *USGS* | *18-Nov-98* | *1.6* | | | 0.47 | | | -0.49 | | |
| *USGS* | *14-Dec-98* | *4.8* | | | 1.57 | | | -0.38 | | |
| *USGS* | *21-Jan-99* | *21* | | | 3.04 | | | 0.22 | | |
| *USGS* | *22-Mar-99* | *63* | | | 4.14 | | | 1.75 | | |
| *USGS* | *20-Apr-99* | *43* | | | 3.76 | | | 1.02 | | |

**tCd**

**Concentration over time analysis** r2 Slope, m

**tCd MC262** **Concentration over time**

**LnConc.=mTime+b All data r2, m:** **0.084** **0.00013**

| | Time | Ln[COC] | [COC] |
|---|---|---|---|
| first | 14-May-91 | -0.58 | 1 |
| mid | 22-Feb-95 | -0.40 | 1 |
| last | 20-Apr-99 | -0.19 | 1 |

**LnConc.=mTime+b >'96 r2, m:** **0.000** **0.00000**

| | | | |
|---|---|---|---|
| | 21-Jan-99 | 0.00 | 1 |
| | 20-Apr-99 | 0.00 | 1 |

**Load over time analysis**

**tCd MC262** **Load over time**

**LnLoad=mTime+b All data r2, m:** **0.001** **0.00005**

| | Time | LnLoad | Load |
|---|---|---|---|
| first | 14-May-91 | -4.05 | 0.02 |
| mid | 22-Feb-95 | -3.98 | 0.02 |
| last | 20-Apr-99 | -3.91 | 0.02 |

**LnLoad=mTime+b >'96 r2, m:** **0.000** **0.00000**

| | | | |
|---|---|---|---|
| | 21-Jan-99 | 0.00 | 1 |
| | 20-Apr-99 | 0.00 | 1 |

max r2 0.712 max r2: 0.855

**Forward time Regression on Ln Concentration(t)** **Forward time Regression on Ln Load(t)**

| r2 | slope | intercept | r2 | slope | intercept |
|---|---|---|---|---|---|
| only on >4 data points delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| 0.084 | 0.00013 | -5.08 | 0.001 | 0.00005 | -5.59 |
| 0.064 | 0.00012 | -4.69 | 0.004 | 0.00013 | -8.53 |
| 0.044 | 0.00011 | -4.15 | 0.001 | -0.00006 | -1.76 |
| 0.041 | 0.00010 | -4.04 | 0.002 | -0.00011 | -0.24 |
| 0.043 | 0.00011 | -4.16 | 0.004 | -0.00014 | 0.93 |
| 0.044 | 0.00011 | -4.29 | 0.006 | -0.00017 | 1.96 |
| 0.047 | 0.00012 | -4.44 | 0.010 | -0.00022 | 3.66 |
| 0.037 | 0.00010 | -4.00 | 0.011 | -0.00023 | 3.99 |
| 0.028 | 0.00009 | -3.52 | 0.011 | -0.00024 | 4.35 |
| 0.034 | 0.00010 | -3.86 | 0.013 | -0.00025 | 5.01 |
| 0.025 | 0.00009 | -3.35 | 0.008 | -0.00020 | 3.21 |
| 0.017 | 0.00007 | -2.79 | 0.005 | -0.00017 | 1.95 |
| 0.010 | 0.00005 | -2.16 | 0.003 | -0.00013 | 0.64 |
| 0.007 | 0.00004 | -1.85 | 0.001 | -0.00008 | -1.00 |
| 0.004 | 0.00003 | -1.51 | 0.000 | -0.00005 | -2.23 |
| 0.002 | 0.00002 | -1.13 | 0.000 | -0.00005 | -2.34 |
| 0.003 | 0.00003 | -1.39 | 0.000 | -0.00005 | -2.31 |
| 0.003 | 0.00003 | -1.35 | 0.001 | -0.00006 | -1.94 |
| 0.002 | 0.00003 | -1.30 | 0.002 | -0.00010 | -0.39 |
| 0.004 | 0.00004 | -1.61 | 0.004 | -0.00017 | 1.88 |
| 0.006 | 0.00005 | -1.94 | 0.011 | -0.00026 | 5.35 |
| 0.009 | 0.00006 | -2.34 | 0.041 | -0.00049 | 13.41 |
| 0.002 | 0.00003 | -1.35 | 0.072 | -0.00064 | 18.92 |
| 0.000 | 0.00000 | -0.25 | 0.094 | -0.00074 | 22.53 |
| 0.000 | -0.00001 | -0.08 | 0.115 | -0.00084 | 25.76 |
| 0.005 | -0.00004 | 1.23 | 0.124 | -0.00089 | 27.57 |
| 0.012 | -0.00007 | 2.09 | 0.092 | -0.00073 | 22.09 |
| 0.024 | -0.00009 | 3.09 | 0.053 | -0.00050 | 13.59 |
| 0.018 | -0.00008 | 2.70 | 0.014 | -0.00020 | 3.06 |
| 0.017 | -0.00008 | 2.72 | 0.001 | -0.00005 | -2.41 |
| 0.003 | -0.00003 | 0.83 | 0.016 | 0.00018 | -10.76 |
| 0.000 | 0.00001 | -0.64 | 0.057 | 0.00034 | -16.46 |
| 0.016 | 0.00008 | -3.20 | 0.112 | 0.00049 | -21.65 |
| 0.030 | 0.00012 | -4.44 | 0.166 | 0.00062 | -26.52 |
| 0.018 | 0.00009 | -3.72 | 0.164 | 0.00066 | -28.03 |
| 0.039 | 0.00016 | -5.91 | 0.200 | 0.00081 | -33.33 |
| 0.053 | 0.00021 | -7.90 | 0.180 | 0.00089 | -36.05 |
| 0.034 | 0.00022 | -8.33 | 0.097 | 0.00082 | -33.77 |
| 0.012 | 0.00046 | -16.71 | 0.039 | -0.00167 | 55.98 |
| 0.032 | -0.00126 | 45.16 | 0.855 | -0.01298 | 463.07 |
| 0.150 | -0.00319 | 114.73 | 0.819 | -0.01351 | 482.20 |
| 0.535 | 0.00410 | -148.23 | 0.672 | -0.00864 | 306.81 |
| 0.535 | 0.00410 | -148.23 | 0.672 | -0.00864 | 306.81 |
| 0.712 | 0.00637 | -230.10 | 0.524 | -0.00346 | 119.98 |

update for EV, CV

**tCd** **MC262**

**LN Analysis** **tCd**

**Load** **Load Data, EV=0.0423 lbs/day CV=1.87**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **0.04** | **Load Data-based LN** | | |
| **SD:** | **0.08** | u | ln tCd Load | tCd Load |
| **CV:** | **1.87** | 3 | -0.2 | 1 |
| **Min:** | **0.0** | 0 | -3.92 | 0.02 |
| **Max:** | **0.39** | -3 | -7.60 | 0.001 |
| **Median:** | **0.02** | | | |

| | |
|---|---|
| 0 | 0.0423 |
| 1.87 | 1.87 |

**u=lnLn{Load}+ b:**

update for r2, EV, CV **r2=0.974, EV=0.0438lbs/day CV=2.01; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.974 | u | lnLoad | Load |
| slope, m | 0.787 | 3 | -0.12 | 1 |
| intercept, b | 3.098 | 0 | -3.94 | 0.02 |
| N | 45 | -3 | -7.75 | 0.0004 |
| E[Load] | 0.04 | Parameter Estimates | | |
| SD[Load] | 0.1 | from LN regression | | |
| CV[Load] | 2.01 | update graph label | | |

| | | | | | | 0.974 |
|---|---|---|---|---|---|---|
| | | | | | | 0.0 |
| | | | | | | 2.0 |
| | | | | | | max r2 |
| | tCd | N= 52 | | | | 0.989 |
| | Load | i | i-3/8 / N+1/4 | u | Ln | r2 |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 17-Aug-94 | 0.002 | 1 | 0.0120 | -2.258 | -6.416 | 0.974 |
| 1-Oct-91 | 0.003 | 2 | 0.0311 | -1.865 | -5.991 | 0.973 |
| *24-Sep-98* | | 3 | 0.0502 | -1.643 | | |
| *18-Nov-98* | | 4 | 0.0694 | -1.480 | | |
| 5-Oct-94 | 0.005 | 5 | 0.0885 | -1.350 | -5.359 | 0.973 |
| 13-Sep-95 | 0.006 | 6 | 0.1077 | -1.239 | -5.176 | 0.974 |
| 14-Aug-95 | 0.006 | 7 | 0.1268 | -1.142 | -5.137 | 0.976 |
| 17-Aug-94 | 0.006 | 8 | 0.1459 | -1.054 | -5.105 | 0.978 |
| 25-Aug-98 | 0.007 | 9 | 0.1651 | -0.974 | -4.974 | 0.979 |
| 28-Oct-98 | 0.007 | 10 | 0.1842 | -0.899 | -4.963 | 0.982 |
| 5-Nov-97 | 0.007 | 11 | 0.2033 | -0.830 | -4.913 | 0.983 |
| 25-Jul-95 | 0.008 | 12 | 0.2225 | -0.764 | -4.854 | 0.985 |
| 29-Oct-93 | 0.008 | 13 | 0.2416 | -0.701 | -4.836 | 0.986 |
| 21-Dec-93 | 0.008 | 14 | 0.2608 | -0.641 | -4.789 | 0.986 |
| 22-Jul-94 | 0.009 | 15 | 0.2799 | -0.583 | -4.760 | 0.987 |
| 27-Jun-95 | 0.009 | 16 | 0.2990 | -0.527 | -4.661 | 0.987 |
| 1-Dec-93 | 0.010 | 17 | 0.3182 | -0.473 | -4.592 | 0.988 |
| 16-Nov-94 | 0.010 | 18 | 0.3373 | -0.420 | -4.581 | 0.988 |
| 27-Jul-98 | 0.010 | 19 | 0.3565 | -0.368 | -4.574 | 0.989 |
| 24-Jun-94 | 0.011 | 20 | 0.3756 | -0.317 | -4.552 | 0.988 |
| 21-Dec-93 | 0.012 | 21 | 0.3947 | -0.267 | -4.463 | 0.987 |
| 11-Jul-95 | 0.012 | 22 | 0.4139 | -0.218 | -4.419 | 0.987 |
| *14-Dec-98* | | 23 | 0.4330 | -0.169 | | |
| 14-Dec-94 | 0.013 | 24 | 0.4522 | -0.120 | -4.332 | 0.986 |
| 7-Jun-94 | 0.016 | 25 | 0.4713 | -0.072 | -4.114 | 0.985 |
| 17-Feb-94 | 0.016 | 26 | 0.4904 | -0.024 | -4.111 | 0.985 |
| 12-Jun-95 | 0.018 | 27 | 0.5096 | 0.024 | -4.023 | 0.984 |
| 20-May-94 | 0.019 | 28 | 0.5287 | 0.072 | -3.980 | 0.984 |
| 21-Jan-94 | 0.019 | 29 | 0.5478 | 0.120 | -3.961 | 0.983 |
| 21-Jan-94 | 0.019 | 30 | 0.5670 | 0.169 | -3.954 | 0.982 |
| 3-May-94 | 0.020 | 31 | 0.5861 | 0.218 | -3.913 | 0.981 |
| 10-Jan-95 | 0.023 | 32 | 0.6053 | 0.267 | -3.781 | 0.980 |
| 25-Jun-98 | 0.023 | 33 | 0.6244 | 0.317 | -3.778 | 0.978 |
| 23-May-95 | 0.025 | 34 | 0.6435 | 0.368 | -3.704 | 0.978 |
| 18-Apr-94 | 0.034 | 35 | 0.6627 | 0.420 | -3.372 | 0.978 |
| 9-May-95 | 0.036 | 36 | 0.6818 | 0.473 | -3.313 | 0.977 |
| 14-May-91 | 0.040 | 37 | 0.7010 | 0.527 | -3.217 | 0.976 |
| 23-Mar-94 | 0.041 | 38 | 0.7201 | 0.583 | -3.188 | 0.975 |
| 23-Mar-94 | 0.043 | 39 | 0.7392 | 0.641 | -3.143 | 0.974 |
| 6-Apr-94 | 0.045 | 40 | 0.7584 | 0.701 | -3.099 | 0.970 |
| 23-Apr-98 | 0.047 | 41 | 0.7775 | 0.764 | -3.053 | 0.965 |
| *21-Jan-99* | | 42 | 0.7967 | 0.830 | | |
| 7-Mar-94 | 0.062 | 43 | 0.8158 | 0.899 | -2.773 | 0.958 |
| 12-Apr-95 | 0.069 | 44 | 0.8349 | 0.974 | -2.673 | 0.949 |
| 5-May-98 | 0.070 | 45 | 0.8541 | 1.054 | -2.658 | 0.933 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25-Apr-95 | 0.094 | 46 | 0.8732 | 1.142 | -2.360 | 0.906 |
| *20-Apr-99* | | 47 | 0.8923 | 1.239 | | |
| *22-Mar-99* | | 48 | 0.9115 | 1.350 | | |
| *28-May-98* | | 49 | 0.9306 | 1.480 | | |
| 9-Feb-95 | 0.203 | 50 | 0.9498 | 1.643 | -1.596 | |
| 8-Mar-95 | 0.363 | 51 | 0.9689 | 1.865 | -1.013 | |
| 22-Mar-95 | 0.387 | 52 | 0.9880 | 2.258 | -0.949 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| tCd | | MC262 | | | 1 | 0.704 |
| LN Analysis | | tCd | | | 0.35 | 0.35 |
| **Concentration** | | **Conc. Data, EV=0.704 ug/L CV=0.35** | | | | |
| Avg: | 1 | **Data-based LN** | | | | |
| SD: | 0.2 | u | ln[tCd] | [tCd] | | |
| CV: | 0.35 | 3 | 0.6 | 2 | | |
| Min: | 1 | 0 | -0.41 | 1 | | |
| Max: | 2 | -3 | -1.43 | 0.2 | | |
| Median: | 1 | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | 0.875 | 0.875 |
| | u=mLn(Conc.)+b: | | | | | 0.7 | 0.676 |
| update for r2, EV, CV | r2=0.875, EV=0.676 ug/L CV=0.331; max r2=0.95 | | | | | 0.331 | 0.331 |
| | r2 u,lnConc | 0.875 | u | | lnConc | Conc. | |
| | slope, m | 3.105 | 3 | | 0.52 | 2 | |
| | intercept, b | 1.379 | 0 | | -0.44 | 1 | |
| | N: | 45 | -3 | | -1.41 | 0.2 | |
| 0.974 | E[Conc]: | 0.7 | Parameter Estimates | | | | |
| 0.0438 | SD[Conc] | 0.2 | from LN regression | | | | |
| 2.01 | CV[Conc]. | 0.33 | update graph label | | | | |

| | tCd | N: 52 | | | | | max r2 0.949 |
|---|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | | forward |
| update and rank for new data | | | | | | | |
| *28-May-98* | | 1 | 0.0120 | -2.258 | | | |
| *24-Sep-98* | | 2 | 0.0311 | -1.865 | | | |
| 14-May-91 | 0.5 | 3 | 0.0502 | -1.643 | -0.693 | | 0.875 |
| 1-Oct-91 | 0.5 | 4 | 0.0694 | -1.480 | -0.693 | | 0.886 |
| 21-Jan-94 | 0.5 | 5 | 0.0885 | -1.350 | -0.693 | | 0.895 |
| 21-Jan-94 | 0.5 | 6 | 0.1077 | -1.239 | -0.693 | | 0.901 |
| 7-Mar-94 | 0.5 | 7 | 0.1268 | -1.142 | -0.693 | | 0.906 |
| 23-Mar-94 | 0.5 | 8 | 0.1459 | -1.054 | -0.693 | | 0.910 |
| 23-Mar-94 | 0.5 | 9 | 0.1651 | -0.974 | -0.693 | | 0.912 |
| 5-Oct-94 | 0.5 | 10 | 0.1842 | -0.899 | -0.693 | | 0.913 |
| 16-Nov-94 | 0.5 | 11 | 0.2033 | -0.830 | -0.693 | | 0.913 |
| 10-Jan-95 | 0.5 | 12 | 0.2225 | -0.764 | -0.693 | | 0.912 |
| 25-Aug-98 | 0.5 | 13 | 0.2416 | -0.701 | -0.693 | | 0.909 |
| *18-Nov-98* | | 14 | 0.2608 | -0.641 | | | |
| *14-Dec-98* | | 15 | 0.2799 | -0.583 | | | |
| *21-Jan-99* | | 16 | 0.2990 | -0.527 | | | |
| *22-Mar-99* | | 17 | 0.3182 | -0.473 | | | |
| *20-Apr-99* | | 18 | 0.3373 | -0.420 | | | |
| 5-Nov-97 | 0.56 | 19 | 0.3565 | -0.368 | -0.580 | | 0.904 |
| 29-Oct-93 | 0.6 | 20 | 0.3756 | -0.317 | -0.511 | | 0.902 |
| 6-Apr-94 | 0.6 | 21 | 0.3947 | -0.267 | -0.511 | | 0.907 |
| 18-Apr-94 | 0.6 | 22 | 0.4139 | -0.218 | -0.511 | | 0.911 |
| 3-May-94 | 0.6 | 23 | 0.4330 | -0.169 | -0.511 | | 0.914 |
| 9-Feb-95 | 0.6 | 24 | 0.4522 | -0.120 | -0.511 | | 0.916 |
| 8-Mar-95 | 0.6 | 25 | 0.4713 | -0.072 | -0.511 | | 0.916 |
| 27-Jun-95 | 0.6 | 26 | 0.4904 | -0.024 | -0.511 | | 0.916 |
| 14-Aug-95 | 0.6 | 27 | 0.5096 | 0.024 | -0.511 | | 0.914 |
| 13-Sep-95 | 0.6 | 28 | 0.5287 | 0.072 | -0.511 | | 0.911 |
| 23-Apr-98 | 0.6 | 29 | 0.5478 | 0.120 | -0.511 | | 0.906 |
| 25-Jun-98 | 0.6 | 30 | 0.5670 | 0.169 | -0.511 | | 0.900 |
| 27-Jul-98 | 0.6 | 31 | 0.5861 | 0.218 | -0.511 | | 0.892 |
| 1-Dec-93 | 0.7 | 32 | 0.6053 | 0.267 | -0.357 | | 0.883 |
| 21-Dec-93 | 0.7 | 33 | 0.6244 | 0.317 | -0.357 | | 0.887 |
| 21-Dec-93 | 0.7 | 34 | 0.6435 | 0.368 | -0.357 | | 0.891 |
| 7-Jun-94 | 0.7 | 35 | 0.6627 | 0.420 | -0.357 | | 0.892 |
| 24-Jun-94 | 0.7 | 36 | 0.6818 | 0.473 | -0.357 | | 0.891 |
| 14-Dec-94 | 0.7 | 37 | 0.7010 | 0.527 | -0.357 | | 0.888 |
| 25-Jul-95 | 0.7 | 38 | 0.7201 | 0.583 | -0.357 | | 0.880 |
| 17-Feb-94 | 0.8 | 39 | 0.7392 | 0.641 | -0.223 | | 0.869 |
| 20-May-94 | 0.8 | 40 | 0.7584 | 0.701 | -0.223 | | 0.887 |
| 22-Jul-94 | 0.8 | 41 | 0.7775 | 0.764 | -0.223 | | 0.905 |
| 17-Aug-94 | 0.8 | 42 | 0.7967 | 0.830 | -0.223 | | 0.921 |
| 17-Aug-94 | 0.8 | 43 | 0.8158 | 0.899 | -0.223 | | 0.935 |
| 12-Apr-95 | 0.8 | 44 | 0.8349 | 0.974 | -0.223 | | 0.945 |
| 12-Jun-95 | 0.8 | 45 | 0.8541 | 1.054 | -0.223 | | 0.949 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 11-Jul-95 | 0.8 | 46 | 0.8732 | 1.142 | -0.223 | 0.944 |
| 22-Mar-95 | 0.9 | 47 | 0.8923 | 1.239 | -0.105 | 0.927 |
| 9-May-95 | 1 | 48 | 0.9115 | 1.350 | 0.000 | 0.915 |
| 28-Oct-98 | 1 | 49 | 0.9306 | 1.480 | 0.000 | |
| 23-May-95 | 1.1 | 50 | 0.9498 | 1.643 | 0.095 | |
| 25-Apr-95 | 1.2 | 51 | 0.9689 | 1.865 | 0.182 | |
| 5-May-98 | 1.9 | 52 | 0.9880 | 2.258 | 0.642 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **MC262** | | | 15 | 15.1 |
| **LN Analysis** | | **tCd** | | | 1.81 | 1.81 |
| **Discharge, Q** | | **Q Data, EV=15.1 cfs CV=1.81** | | | | |
| **Avg:** | 15 | **Q Data-based LN** | | | | |
| **SD:** | 27 | u | lnQ | Q | | |
| **CV:** | 1.81 | 3 | 5.6 | 272 | | |
| **Min:** | 0.4 | 0 | 1.99 | 7 | | |
| **Max:** | 137 | -3 | -1.63 | 0.2 | | |
| **Median:** | 4 | | | | | |
| | | | | | 0.948 | 0.948 |
| | | | | | 14.4 | 14.4 |
| | | **u=mLn(Q)+b:** | | | 2.21 | 2.21 |

update for r2, EV, CV **r2=0.948, EV=14.4 cfs CV=2.21; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.948 | u | lnQ | Q |
| slope, m | 0.752 | 3 | 5.77 | 321 |
| intercept, b | -1.338 | 0 | 1.78 | 6 |
| N | 52 | -3 | -2.21 | 0.1 |
| E[Q] | 14.4 | Parameter Estimates | | |
| SD[Q] | 32 | from LN regression | | |
| CV[Q] | 2.21 | update graph label | | |

N: 52 — max r2: 0.976

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 17-Aug-94 | 0.38 | 1 | 0.0120 | -2.258 | -0.968 | 0.948 |
| 1-Oct-91 | 0.93 | 2 | 0.0311 | -1.865 | -0.073 | 0.943 |
| 28-Oct-98 | 1.3 | 3 | 0.0502 | -1.643 | 0.262 | 0.944 |
| 17-Aug-94 | 1.41 | 4 | 0.0694 | -1.480 | 0.344 | 0.948 |
| *18-Nov-98* | *1.6* | 5 | 0.0885 | -1.350 | 0.470 | 0.951 |
| 5-Oct-94 | 1.75 | 6 | 0.1077 | -1.239 | 0.560 | 0.954 |
| 13-Sep-95 | 1.75 | 7 | 0.1268 | -1.142 | 0.560 | 0.958 |
| 14-Aug-95 | 1.82 | 8 | 0.1459 | -1.054 | 0.599 | 0.960 |
| 22-Jul-94 | 1.99 | 9 | 0.1651 | -0.974 | 0.688 | 0.962 |
| 25-Jul-95 | 2.07 | 10 | 0.1842 | -0.899 | 0.728 | 0.964 |
| 21-Dec-93 | 2.21 | 11 | 0.2033 | -0.830 | 0.793 | 0.966 |
| 5-Nov-97 | 2.44 | 12 | 0.2225 | -0.764 | 0.892 | 0.968 |
| 29-Oct-93 | 2.46 | 13 | 0.2416 | -0.701 | 0.900 | 0.970 |
| *24-Sep-98* | *2.462807903* | 14 | 0.2608 | -0.641 | 0.901 | 0.972 |
| 25-Aug-98 | 2.571760751 | 15 | 0.2799 | -0.583 | 0.945 | 0.974 |
| 1-Dec-93 | 2.69 | 16 | 0.2990 | -0.527 | 0.990 | 0.975 |
| 24-Jun-94 | 2.8 | 17 | 0.3182 | -0.473 | 1.030 | 0.975 |
| 11-Jul-95 | 2.8 | 18 | 0.3373 | -0.420 | 1.030 | 0.976 |
| 27-Jun-95 | 2.93 | 19 | 0.3565 | -0.368 | 1.075 | 0.976 |
| 21-Dec-93 | 3.06 | 20 | 0.3756 | -0.317 | 1.118 | 0.975 |
| 27-Jul-98 | 3.196210553 | 21 | 0.3947 | -0.267 | 1.162 | 0.975 |
| 14-Dec-94 | 3.49 | 22 | 0.4139 | -0.218 | 1.250 | 0.974 |
| 17-Feb-94 | 3.81 | 23 | 0.4330 | -0.169 | 1.338 | 0.973 |
| 16-Nov-94 | 3.81 | 24 | 0.4522 | -0.120 | 1.338 | 0.973 |
| 23-May-95 | 4.16 | 25 | 0.4713 | -0.072 | 1.426 | 0.971 |
| 12-Jun-95 | 4.16 | 26 | 0.4904 | -0.024 | 1.426 | 0.970 |
| 20-May-94 | 4.34 | 27 | 0.5096 | 0.024 | 1.468 | 0.968 |
| 7-Jun-94 | 4.34 | 28 | 0.5287 | 0.072 | 1.468 | 0.966 |
| *14-Dec-98* | *4.8* | 29 | 0.5478 | 0.120 | 1.569 | 0.963 |
| 3-May-94 | 6.19 | 30 | 0.5670 | 0.169 | 1.823 | 0.961 |
| 9-May-95 | 6.77 | 31 | 0.5861 | 0.218 | 1.913 | 0.958 |
| 5-May-98 | 6.86 | 32 | 0.6053 | 0.267 | 1.926 | 0.957 |
| 21-Jan-94 | 7.08 | 33 | 0.6244 | 0.317 | 1.957 | 0.953 |
| 25-Jun-98 | 7.082855593 | 34 | 0.6435 | 0.368 | 1.958 | 0.949 |
| 21-Jan-94 | 7.13 | 35 | 0.6627 | 0.420 | 1.964 | 0.944 |
| 10-Jan-95 | 8.48 | 36 | 0.6818 | 0.473 | 2.138 | 0.940 |
| 18-Apr-94 | 10.63 | 37 | 0.7010 | 0.527 | 2.364 | 0.933 |
| 6-Apr-94 | 13.97 | 38 | 0.7201 | 0.583 | 2.637 | 0.926 |
| 23-Apr-98 | 14.62806909 | 39 | 0.7392 | 0.641 | 2.683 | 0.925 |
| 25-Apr-95 | 14.63 | 40 | 0.7584 | 0.701 | 2.683 | 0.924 |
| 14-May-91 | 14.9 | 41 | 0.7775 | 0.764 | 2.701 | 0.917 |
| 23-Mar-94 | 15.34 | 42 | 0.7967 | 0.830 | 2.730 | 0.907 |
| 23-Mar-94 | 16.04 | 43 | 0.8158 | 0.899 | 2.775 | 0.891 |
| 12-Apr-95 | 16.04 | 44 | 0.8349 | 0.974 | 2.775 | 0.871 |
| *21-Jan-99* | *21* | 45 | 0.8541 | 1.054 | 3.045 | 0.856 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 7-Mar-94 | 23.22 | 46 | 0.8732 | 1.142 | 3.145 | 0.837 |
| *20-Apr-99* | *43* | 47 | 0.8923 | 1.239 | 3.761 | 0.930 |
| 9-Feb-95 | 62.77 | 48 | 0.9115 | 1.350 | 4.139 | 0.944 |
| *22-Mar-99* | *63* | 49 | 0.9306 | 1.480 | 4.143 | |
| 22-Mar-95 | 79.93 | 50 | 0.9498 | 1.643 | 4.381 | |
| 8-Mar-95 | 112.47 | 51 | 0.9689 | 1.865 | 4.723 | |
| *28-May-98* | *136.9458147* | 52 | 0.9880 | 2.258 | 4.920 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** MC262 **Date:** 20-Jun-00

**Chemical:** tPb **Analyst:** J.MacLachlan

**Notes:**

Input Discharge and Concentration Data below (in red)

| | Date | Discharge | Concentration | Load | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Avg:** | 35,069 | [illegible] | 6 | 1 | | | 0.00 | 0.00 | 0.00 |
| **SD:** | 801 | 26 | 8 | 3 | | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.82 | 1.43 | 2.94 | | | | | |
| **Min:** | 33,372 | 0.3 | 0.3 | 0.01 | | | -0.53 | -0.66 | -0.34 |
| **Max:** | 36,403 | 137 | 47 | 16 | | | 4.66 | 4.98 | 4.55 |
| **Median:** | 34,801 | 4 | 5 | 0.1 | | | -0.38 | -0.10 | -0.31 |

| tPb MC262 | | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b | |
|---|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.204)** | | update r2 | 0.20 | 0.204 | | r2: | 0.015 | 0.019 | |
| r2 Q,[COC]: | 0.20 | [tCd] | Q | | | m: | 0.0040 | 0.00021 | |
| slope, m: | 0.1 | 4 | 0.4 | | | b: | -127 | -5.45 | |
| intercept, b: | 3.7 | 5 | 14.4 | | | | | | |
| N: 29 | | 21 | 137 | | | | | | |
| **LnConc. = mLn{Q}+b (r2=0.0962)** | | update r2 | | 0.10 | 0.0962 | | | | |
| r2 lnQ,ln[COC]: | 0.10 | ln[tCd] | ln Q | [tCd] | Q | | | | |
| slope, m: | 0.26 | 0.47 | -0.97 | 2 | 0.4 | | | | |
| intercept, b: | 0.72 | 1.42 | 2.67 | 4 | 14 | | | | |
| N: 29 | | 2.01 | 4.92 | 7 | 137 | | | | |

N= 57

| | Sampling Date | Q Discharge | tPb Concentration | tPb Load | Ln Q | Ln tPb Conc. | Ln tPb Load | tPb MC262 Standardized Values = (x - Avg)/SD | | for graph 0 |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | Q | Conc | Load |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 14-May-91 | 14.9 | 4 | 0.32 | 2.70 | 1.39 | -1.14 | 0.02 | -0.22 | -0.24 |
| MFG | 1-Oct-91 | 0.93 | 5 | 0.03 | -0.07 | 1.61 | -3.69 | -0.51 | -0.10 | -0.33 |
| *IDEQ* | *29-Oct-93* | *2.46* | | | 0.90 | | | -0.46 | | |
| *IDEQ* | *1-Dec-93* | *2.69* | | | 0.99 | | | -0.45 | | |
| IDEQ | 21-Dec-93 | 3.06 | 7 | 0.12 | 1.12 | 1.95 | -2.16 | -0.43 | 0.15 | -0.31 |
| IDEQ | 21-Dec-93 | 2.21 | 7 | 0.08 | 0.79 | 1.95 | -2.49 | -0.46 | 0.15 | -0.31 |
| *IDEQ* | *21-Jan-94* | *7.08* | | | 1.96 | | | -0.28 | | |
| *IDEQ* | *21-Jun-94* | *7.13* | | | 1.96 | | | -0.28 | | |
| *IDEQ* | *17-Feb-94* | *3.81* | | | 1.34 | | | -0.40 | | |
| *IDEQ* | *7-Mar-94* | *23.22* | | | 3.15 | | | 0.33 | | |
| *IDEQ* | *23-Mar-94* | *16.04* | | | 2.78 | | | 0.06 | | |
| IDEQ | *23-Mar-94* | *15.34* | | | 2.73 | | | 0.04 | | |
| *IDEQ* | *6-Apr-94* | *13.97* | | | 2.64 | | | -0.02 | | |
| *IDEQ* | *18-Apr-94* | *10.63* | | | 2.36 | | | -0.14 | | |
| *IDEQ* | *3-May-94* | *6.19* | | | 1.82 | | | -0.31 | | |
| *IDEQ* | *20-May-94* | *4.34* | | | 1.47 | | | -0.38 | | |
| *IDEQ* | *7-Jun-94* | *4.34* | | | 1.47 | | | -0.38 | | |
| *IDEQ* | *24-Jun-94* | *2.8* | | | 1.03 | | | -0.44 | | |
| *IDEQ* | *22-Jul-94* | *1.99* | | | 0.69 | | | -0.47 | | |
| *IDEQ* | *17-Aug-94* | *1.41* | | | 0.34 | | | -0.49 | | |
| *IDEQ* | *17-Aug-94* | *0.38* | | | -0.97 | | | -0.53 | | |
| *IDEQ* | *5-Oct-94* | *1.75* | | | 0.56 | | | -0.48 | | |
| *IDEQ* | *16-Nov-94* | *3.81* | | | 1.34 | | | -0.40 | | |
| *IDEQ* | *14-Dec-94* | *3.49* | | | 1.25 | | | -0.42 | | |
| *IDEQ* | *10-Jan-95* | *8.48* | | | 2.14 | | | -0.23 | | |
| *IDEQ* | *9-Feb-95* | *62.77* | | | 4.14 | | | 1.84 | | |
| *IDEQ* | *8-Mar-95* | *112.47* | | | 4.72 | | | 3.73 | | |
| IDEQ | 22-Mar-95 | 79.93 | 7 | 3.01 | 4.38 | 1.95 | 1.10 | 2.49 | 0.15 | 0.58 |
| IDEQ | 12-Apr-95 | 16.04 | 6 | 0.52 | 2.78 | 1.79 | -0.66 | 0.06 | 0.03 | -0.18 |
| IDEQ | 25-Apr-95 | 14.63 | 7 | 0.55 | 2.68 | 1.95 | -0.60 | 0.01 | 0.15 | -0.17 |
| IDEQ | 9-May-95 | 6.77 | 7 | 0.25 | 1.91 | 1.95 | -1.37 | -0.29 | 0.15 | -0.26 |
| *IDEQ* | *23-May-95* | *4.16* | | | 1.43 | | | -0.39 | | |
| IDEQ | 12-Jun-95 | 4.16 | 5 | 0.11 | 1.43 | 1.61 | -2.19 | -0.39 | -0.10 | -0.31 |
| IDEQ | 27-Jun-95 | 2.93 | 7 | 0.11 | 1.08 | 1.95 | -2.20 | -0.44 | 0.15 | -0.31 |
| *IDEQ* | *11-Jul-95* | *2.8* | | | 1.03 | | | -0.44 | | |
| IDEQ | 25-Jul-95 | 2.07 | 6 | 0.07 | 0.73 | 1.79 | -2.71 | -0.47 | 0.03 | -0.32 |
| IDEQ | 14-Aug-95 | 1.82 | 5 | 0.05 | 0.60 | 1.61 | -3.02 | -0.48 | -0.10 | -0.33 |
| IDEQ | 13-Sep-95 | 1.75 | 7 | 0.07 | 0.56 | 1.95 | -2.72 | -0.48 | 0.15 | -0.32 |
| URS | 5-Nov-97 | 2.44 | 0.47 | 0.01 | 0.89 | -0.76 | -5.09 | -0.46 | -0.64 | -0.34 |
| IDEQ | 23-Apr-98 | 14.62806909 | 2.5 | 0.20 | 2.68 | 0.92 | -1.63 | 0.01 | -0.40 | -0.28 |
| URS | 5-May-98 | 6.86 | 2.6 | 0.10 | 1.93 | 0.96 | -2.34 | -0.29 | -0.39 | -0.31 |
| IDEQ | 28-May-98 | 136.9458147 | 12 | 8.84 | 4.92 | 2.48 | 2.18 | 4.66 | 0.75 | 2.37 |
| *IDEQ* | *25-Jun-98* | *7.082855593* | | | 1.96 | | | -0.28 | | |
| *IDEQ* | *27-Jul-98* | *3.196210553* | | | 1.16 | | | -0.43 | | |
| IDEQ | 25-Aug-98 | 2.571760751 | 6 | 0.08 | 0.94 | 1.79 | -2.49 | -0.45 | 0.03 | -0.32 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *IDEQ* | *24-Sep-98* | *2.462807903* | | | 0.90 | | | -0.45 | | |
| USGS | 28-Oct-98 | 1.3 | 2 | 0.01 | 0.26 | 0.69 | -4.27 | -0.50 | -0.46 | -0.34 |
| USGS | 18-Nov-98 | 1.6 | 2 | 0.02 | 0.47 | 0.69 | -4.06 | -0.49 | -0.46 | -0.34 |
| USGS | 14-Dec-98 | 4.8 | 2 | 0.05 | 1.57 | 0.69 | -2.96 | -0.37 | -0.46 | -0.32 |
| USGS | 21-Jan-99 | 21 | 3 | 0.34 | 3.04 | 1.10 | -1.08 | 0.25 | -0.34 | -0.24 |
| USGS | 22-Mar-99 | 63 | 47 | 15.93 | 4.14 | 3.85 | 2.77 | 1.85 | 4.98 | 4.55 |
| USGS | 20-Apr-99 | 43 | 5 | 1.16 | 3.76 | 1.61 | 0.15 | 1.09 | -0.10 | 0.01 |
| USGS | 4-May-99 | 17 | 1 | 0.09 | 2.83 | 0.00 | -2.39 | 0.10 | -0.58 | -0.31 |
| USGS | 16-Jun-99 | 4.2 | 1 | 0.02 | 1.44 | 0.00 | -3.79 | -0.39 | -0.58 | -0.33 |
| USGS | 20-Jul-99 | 5 | 0.49 | 0.01 | 1.61 | -0.71 | -4.33 | -0.36 | -0.64 | -0.34 |
| USGS | 4-Aug-99 | 5 | 0.34 | 0.01 | 1.61 | -1.08 | -4.69 | -0.36 | -0.66 | -0.34 |
| USGS | 31-Aug-99 | 5 | 0.6 | 0.02 | 1.61 | -0.51 | -4.13 | -0.36 | -0.63 | -0.34 |

**tPb**

**Concentration over time analysis**

| | tPb | MC262 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.202** | **-0.00056** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 14-May-91 | 2.36 | 11 | | |
| mid | 12-Apr-95 | 1.56 | 5 | | |
| last | 31-Aug-99 | 0.67 | 2 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.512** | **-0.01541** |
| | 21-Jan-99 | 2.45 | 12 | | |
| | 31-Aug-99 | -0.97 | 0.4 | | |

**Load over time analysis**

| | tPb | MC262 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.013** | **-0.00025** |
| | **Time** | **Ln Load** | **Load** | | |
| first | 14-May-91 | -1.62 | 0.2 | | |
| mid | 12-Apr-95 | -1.98 | 0.1 | | |
| last | 31-Aug-99 | -2.38 | 0.1 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.583** | **-0.02677** |
| | 21-Jan-99 | 1.14 | 3 | | |
| | 31-Aug-99 | -4.80 | 0.0 | | |

| | max r2 | 0.712 | | max r2: | 0.788 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.202 | -0.00056 | 20.91 | 0.013 | -0.00025 | 6.75 |
| | 0.238 | -0.00067 | 25.12 | 0.006 | -0.00019 | 4.66 |
| | 0.270 | -0.00082 | 30.28 | 0.031 | -0.00048 | 15.06 |
| | 0.270 | -0.00082 | 30.28 | 0.031 | -0.00048 | 15.06 |
| | 0.270 | -0.00082 | 30.28 | 0.031 | -0.00048 | 15.06 |
| | 0.260 | -0.00085 | 31.36 | 0.036 | -0.00055 | 17.63 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.249 | -0.00089 | 32.93 | 0.049 | -0.00070 | 22.93 |
| | 0.232 | -0.00089 | 32.89 | 0.020 | -0.00044 | 13.50 |
| | 0.220 | -0.00090 | 33.40 | 0.009 | -0.00031 | 8.66 |
| | 0.200 | -0.00090 | 33.29 | 0.001 | -0.00012 | 1.85 |
| | 0.176 | -0.00089 | 33.06 | 0.000 | 0.00002 | -3.29 |
| | 0.176 | -0.00089 | 33.06 | 0.000 | 0.00002 | -3.29 |
| | 0.167 | -0.00093 | 34.84 | 0.000 | 0.00007 | -5.11 |
| | 0.136 | -0.00094 | 34.58 | 0.001 | 0.00015 | -7.92 |
| | 0.136 | -0.00094 | 34.58 | 0.001 | 0.00015 | -7.92 |
| | 0.109 | -0.00097 | 35.71 | 0.001 | 0.00012 | -6.74 |
| | 0.094 | -0.00114 | 42.09 | 0.001 | -0.00015 | 3.04 |
| | 0.047 | -0.00144 | 52.72 | 0.009 | -0.00116 | 39.40 |
| | 0.240 | -0.00371 | 135.05 | 0.111 | -0.00463 | 165.39 |
| | 0.287 | -0.00451 | 164.00 | 0.115 | -0.00521 | 186.31 |
| | 0.363 | -0.00585 | 212.51 | 0.158 | -0.00706 | 253.26 |
| | 0.266 | -0.00569 | 206.73 | 0.019 | -0.00251 | 88.49 |
| | 0.266 | -0.00569 | 206.73 | 0.019 | -0.00251 | 88.49 |
| | 0.266 | -0.00569 | 206.73 | 0.019 | -0.00251 | 88.49 |

| | | | | | |
|---|---|---|---|---|---|
| 0.212 | -0.00577 | 209.84 | 0.023 | -0.00327 | 115.81 |
| 0.212 | -0.00577 | 209.84 | 0.023 | -0.00327 | 115.81 |
| 0.261 | -0.00733 | 266.59 | 0.097 | -0.00752 | 270.22 |
| 0.345 | -0.01003 | 364.61 | 0.289 | -0.01500 | 542.19 |
| 0.512 | -0.01541 | 559.98 | 0.583 | -0.02677 | 969.73 |
| 0.712 | -0.02424 | 881.01 | 0.788 | -0.04132 | 1498.65 |
| 0.655 | -0.01456 | 526.82 | 0.724 | -0.02943 | 1066.14 |
| 0.527 | -0.00736 | 267.15 | 0.728 | -0.01643 | 593.26 |

update for EV, CV:

**tPb** **MC262**

**LN Analysis** **tPb**

**Load** **Load Data, EV=1.1 lbs/day CV=2.94**

**Load Data-based LN**

| | | | | |
|---|---|---|---|---|
| **Avg:** | 1 | u | ln tCd Load | tCd Load |
| **SD:** | 3 | 3 | 3.5 | 33 |
| **CV:** | 2.94 | 0 | -1.03 | 0.4 |
| **Min:** | 0.01 | -3 | -5.54 | 0.004 |
| **Max:** | 16 | | | |
| **Median:** | 0.1 | | | |

| | |
|---|---|
| 1 | 1.1 |
| 2.94 | 2.94 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.91, EV=0.42lbs/day CV=6; max r2=0.981**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.909 | u | lnLoad | Load |
| slope, m | 0.526 | 3 | 3.05 | 21 |
| intercept, b | 1.397 | 0 | -2.65 | 0.1 |
| N | 24 | -3 | -8.35 | 0.0002 |
| E[Load] | 0.4 | Parameter Estimates | | 0.909 |
| SD[Load] | 3 | from LN regression | | 0.4 |
| CV[Load] | 6.00 | update graph label | | 6.0 |
| | | | | max r2 |
| | | | | 0.981 |

| Date | tPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *17-Aug-94* | | 1 | 0.0109 | -2.293 | | |
| 5-Nov-97 | 0.01 | 2 | 0.0284 | -1.905 | -5.088 | 0.909 |
| 4-Aug-99 | 0.01 | 3 | 0.0459 | -1.686 | -4.694 | 0.909 |
| *17-Aug-94* | | 4 | 0.0633 | -1.527 | | |
| *5-Oct-94* | | 5 | 0.0808 | -1.400 | | |
| 20-Jul-99 | 0.01 | 6 | 0.0983 | -1.292 | -4.329 | 0.915 |
| *22-Jul-94* | | 7 | 0.1157 | -1.197 | | |
| 28-Oct-98 | 0.01 | 8 | 0.1332 | -1.111 | -4.270 | 0.919 |
| 31-Aug-99 | 0.02 | 9 | 0.1507 | -1.034 | -4.126 | 0.920 |
| *29-Oct-93* | | 10 | 0.1681 | -0.962 | | |
| 18-Nov-98 | 0.02 | 11 | 0.1856 | -0.894 | -4.062 | 0.926 |
| *1-Dec-93* | | 12 | 0.2031 | -0.831 | | |
| *24-Jun-94* | | 13 | 0.2205 | -0.770 | | |
| *11-Jul-95* | | 14 | 0.2380 | -0.713 | | |
| 16-Jun-99 | 0.02 | 15 | 0.2555 | -0.657 | -3.790 | 0.931 |
| *14-Dec-94* | | 16 | 0.2729 | -0.604 | | |
| 1-Oct-91 | 0.03 | 17 | 0.2904 | -0.552 | -3.688 | 0.937 |
| *17-Feb-94* | | 18 | 0.3079 | -0.502 | | |
| *16-Nov-94* | | 19 | 0.3253 | -0.453 | | |
| *23-May-95* | | 20 | 0.3428 | -0.405 | | |
| *20-May-94* | | 21 | 0.3603 | -0.358 | | |
| *7-Jun-94* | | 22 | 0.3777 | -0.311 | | |
| *24-Sep-98* | | 23 | 0.3952 | -0.266 | | |
| *3-May-94* | | 24 | 0.4127 | -0.221 | | |
| *27-Jul-98* | | 25 | 0.4301 | -0.176 | | |
| *21-Jun-94* | | 26 | 0.4476 | -0.132 | | |
| *21-Jun-94* | | 27 | 0.4651 | -0.088 | | |
| 14-Aug-95 | 0.05 | 28 | 0.4825 | -0.044 | -3.017 | 0.945 |
| 14-Dec-98 | 0.05 | 29 | 0.5000 | 0.000 | -2.963 | 0.945 |
| *10-Jun-95* | | 30 | 0.5175 | 0.044 | | |
| 13-Sep-95 | 0.07 | 31 | 0.5349 | 0.088 | -2.720 | 0.946 |
| 25-Jul-95 | 0.07 | 32 | 0.5524 | 0.132 | -2.706 | 0.949 |
| *18-Apr-94* | | 33 | 0.5699 | 0.176 | | |
| 25-Aug-98 | 0.08 | 34 | 0.5873 | 0.221 | -2.489 | 0.952 |
| 21-Dec-93 | 0.08 | 35 | 0.6048 | 0.266 | -2.486 | 0.959 |
| 4-May-99 | 0.09 | 36 | 0.6223 | 0.311 | -2.392 | 0.965 |
| *6-Apr-94* | | 37 | 0.6397 | 0.358 | | |
| *25-Jun-98* | | 38 | 0.6572 | 0.405 | | |
| 5-May-98 | 0.10 | 39 | 0.6747 | 0.453 | -2.344 | 0.976 |
| *23-Mar-94* | | 40 | 0.6921 | 0.502 | | |
| *23-Mar-94* | | 41 | 0.7096 | 0.552 | | |
| 27-Jun-95 | 0.11 | 42 | 0.7271 | 0.604 | -2.204 | 0.981 |
| 12-Jun-95 | 0.11 | 43 | 0.7445 | 0.657 | -2.190 | 0.980 |
| 21-Dec-93 | 0.12 | 44 | 0.7620 | 0.713 | -2.161 | 0.977 |
| *7-Mar-94* | | 45 | 0.7795 | 0.770 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 23-Apr-98 | 0.20 | 46 | 0.7969 | 0.831 | -1.626 | 0.973 |
| 9-May-95 | 0.25 | 47 | 0.8144 | 0.894 | -1.367 | 0.969 |
| 14-May-91 | 0.32 | 48 | 0.8319 | 0.962 | -1.137 | 0.966 |
| 21-Jan-99 | 0.34 | 49 | 0.8493 | 1.034 | -1.082 | 0.966 |
| *9-Feb-95* | | 50 | 0.8668 | 1.111 | | |
| 12-Apr-95 | 0.52 | 51 | 0.8843 | 1.197 | -0.658 | 0.958 |
| 25-Apr-95 | 0.55 | 52 | 0.9017 | 1.292 | -0.596 | 0.946 |
| *8-Mar-95* | | 53 | 0.9192 | 1.400 | | |
| 20-Apr-99 | 1.16 | 54 | 0.9367 | 1.527 | 0.146 | |
| 22-Mar-95 | 3.01 | 55 | 0.9541 | 1.686 | 1.102 | |
| 28-May-98 | 8.84 | 56 | 0.9716 | 1.905 | 2.179 | |
| 22-Mar-99 | 15.93 | 57 | 0.9891 | 2.293 | 2.768 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tPb** | | **MC262** | | 6 | 5.8 |
| **LN Analysis** | | **tPb** | | 1.43 | 1.4 |
| **Concentration** | | **Conc. Data, EV=5.8 ug/L CV=1.4** | | | |
| **Avg:** | **6** | **Data-based LN** | | | |
| **SD:** | **8** | u | ln[tCd] | [tCd] | |
| **CV:** | **1.43** | 3 | 4.4 | 79 | |
| **Min:** | **0.3** | 0 | 1.20 | 3 | |
| **Max:** | **47** | -3 | -1.96 | 0.1 | |
| **Median:** | **5** | | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV **r2=0.94, EV=3.7 ug/L CV=1.2; max r2=0.937**

| | | | | | |
|---|---|---|---|---|---|
| | r2 u,lnConc | 0.937 | u | lnConc | Conc |
| | slope, m | 1.056 | 3 | 3.69 | 40 |
| | intercept, b | -0.898 | 0 | 0.85 | 2 |
| | N: | 29 | -3 | -1.99 | 0.1 |
| 0.91 | E[Conc] | 3.7 | Parameter Estimates | | |
| 0.42 | SD[Conc] | 4 | from LN regression | | |
| 6 | CV[Conc] | 1.20 | update graph label | | |

| | 0.937 | 0.94 |
|---|---|---|
| | 3.7 | 3.7 |
| | 1.204 | 1.2 |

**tPb** N: 57

| Date | Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.937 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Aug-99 | 0.34 | 1 | 0.0109 | -2.293 | -1.079 | 0.937 |
| 5-Nov-97 | 0.47 | 2 | 0.0284 | -1.905 | -0.755 | 0.926 |
| 20-Jul-99 | 0.49 | 3 | 0.0459 | -1.686 | -0.713 | 0.913 |
| 31-Aug-99 | 0.6 | 4 | 0.0633 | -1.527 | -0.511 | 0.892 |
| 4-May-99 | 1 | 5 | 0.0808 | -1.400 | 0.000 | 0.865 |
| 16-Jun-99 | 1 | 6 | 0.0983 | -1.292 | 0.000 | 0.856 |
| *29-Oct-93* | | 7 | 0.1157 | -1.197 | | |
| *1-Dec-93* | | 8 | 0.1332 | -1.111 | | |
| *21-Jan-94* | | 9 | 0.1507 | -1.034 | | |
| *21-Jan-94* | | 10 | 0.1681 | -0.962 | | |
| *17-Feb-94* | | 11 | 0.1856 | -0.894 | | |
| *7-Mar-94* | | 12 | 0.2031 | -0.831 | | |
| *23-Mar-94* | | 13 | 0.2205 | -0.770 | | |
| *23-Mar-94* | | 14 | 0.2380 | -0.713 | | |
| *6-Apr-94* | | 15 | 0.2555 | -0.657 | | |
| *18-Apr-94* | | 16 | 0.2729 | -0.604 | | |
| *3-May-94* | | 17 | 0.2904 | -0.552 | | |
| *20-May-94* | | 18 | 0.3079 | -0.502 | | |
| *7-Jun-94* | | 19 | 0.3253 | -0.453 | | |
| *24-Jun-94* | | 20 | 0.3428 | -0.405 | | |
| *[illegible]* | | 21 | 0.3603 | -0.358 | | |
| *[illegible]* | | 22 | 0.3777 | -0.311 | | |
| *17-Aug-94* | | 23 | 0.3952 | -0.266 | | |
| *5-Oct-94* | | 24 | 0.4127 | -0.221 | | |
| *16-Nov-94* | | 25 | 0.4301 | -0.176 | | |
| *14-Dec-94* | | 26 | 0.4476 | -0.132 | | |
| *10-Jan-95* | | 27 | 0.4651 | -0.088 | | |
| *9-Feb-95* | | 28 | 0.4825 | -0.044 | | |
| *8-Mar-95* | | 29 | 0.5000 | 0.000 | | |
| *23-May-95* | | 30 | 0.5175 | 0.044 | | |
| *11-Jul-95* | | 31 | 0.5349 | 0.088 | | |
| 28-Oct-98 | 2 | 32 | 0.5524 | 0.132 | 0.693 | 0.855 |
| 18-Nov-98 | 2 | 33 | 0.5699 | 0.176 | 0.693 | 0.841 |
| 14-Dec-98 | 2 | 34 | 0.5873 | 0.221 | 0.693 | 0.824 |
| 23-Apr-98 | 2.5 | 35 | 0.6048 | 0.266 | 0.916 | 0.803 |
| *25-Jun-98* | | 36 | 0.6223 | 0.311 | | |
| *27-Jul-98* | | 37 | 0.6397 | 0.358 | | |
| *24-Sep-98* | | 38 | 0.6572 | 0.405 | | |
| 5-May-98 | 2.6 | 39 | 0.6747 | 0.453 | 0.956 | 0.778 |
| 21-Jan-99 | 3 | 40 | 0.6921 | 0.502 | 1.099 | 0.758 |
| 14-May-91 | 4 | 41 | 0.7096 | 0.552 | 1.386 | 0.734 |
| 1-Oct-91 | 5 | 42 | 0.7271 | 0.604 | 1.609 | 0.713 |
| 12-Jun-95 | 5 | 43 | 0.7445 | 0.657 | 1.609 | 0.712 |
| 14-Aug-95 | 5 | 44 | 0.7620 | 0.713 | 1.609 | 0.706 |
| 20-Apr-99 | 5 | 45 | 0.7795 | 0.770 | 1.609 | 0.696 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 12-Apr-95 | 7 | 46 | 0.7969 | 0.831 | 1.792 | 0.680 |
| 25-Jul-95 | 6 | 47 | 0.8144 | 0.894 | 1.792 | 0.689 |
| 25-Aug-98 | 6 | 48 | 0.8319 | 0.962 | 1.792 | 0.695 |
| 21-Dec-93 | 7 | 49 | 0.8493 | 1.034 | 1.946 | 0.696 |
| 21-Dec-93 | 7 | 50 | 0.8668 | 1.111 | 1.946 | 0.734 |
| 22-Mar-95 | 7 | 51 | 0.8843 | 1.197 | 1.946 | 0.777 |
| 25-Apr-95 | 7 | 52 | 0.9017 | 1.292 | 1.946 | 0.825 |
| 9-May-95 | 7 | 53 | 0.9192 | 1.400 | 1.946 | 0.879 |
| 27-Jun-95 | 7 | 54 | 0.9367 | 1.527 | 1.946 | |
| 13-Sep-95 | 7 | 55 | 0.9541 | 1.686 | 1.946 | |
| 28-May-98 | 12 | 56 | 0.9716 | 1.905 | 2.485 | |
| 22-Mar-99 | 47 | 57 | 0.9891 | 2.293 | 3.850 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **MC262** | | | 14 | 14.4 |
| **LN Analysis** | | **tPb** | | | 1.82 | 1.82 |
| **Discharge, Q** | | **Q Data, EV=14.4 cfs CV=1.82** | | | | |
| **Avg:** | 14 | **Q Data-based LN** | | | | |
| **SD:** | 26 | u | lnQ | Q | | |
| **CV:** | 1.82 | 3 | 5.6 | 261 | | |
| **Min:** | 0.4 | 0 | 1.94 | 7 | | |
| **Max:** | 137 | -3 | -1.69 | 0.2 | | |
| **Median:** | 4 | | | | | |
| | | | | | 0.949 | 0.949 |
| | | | | | 13.5 | 13.5 |
| | | **u=mLn(Q)+b:** | | | 2.03 | 2.03 |

update for r2, EV, CV **r2=0.949, EV=13.5 cfs CV=2.03; max r2=0.971**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.949 | u | lnQ | Q |
| slope, m | 0.783 | 3 | 5.62 | 275 |
| intercept, b | -1.396 | 0 | 1.78 | 6 |
| N | 57 | -3 | -2.05 | 0.1 |
| E[Q] | 13.5 | Parameter Estimates | | |
| SD[Q] | 27 | from LN regression | | |
| V[Q] | 2.03 | update graph label | | |

| Date | Q Discharge cfs Ranked | N= 57 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.971 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *17-Aug-94* | *0.38* | 1 | 0.0109 | -2.293 | -0.968 | 0.949 |
| 1-Oct-91 | 0.93 | 2 | 0.0284 | -1.905 | -0.073 | 0.944 |
| 28-Oct-98 | 1.3 | 3 | 0.0459 | -1.686 | 0.262 | 0.944 |
| *17-Aug-94* | *1.41* | 4 | 0.0633 | -1.527 | 0.344 | 0.947 |
| 18-Nov-98 | 1.6 | 5 | 0.0808 | -1.400 | 0.470 | 0.949 |
| *5-Oct-94* | *1.75* | 6 | 0.0983 | -1.292 | 0.560 | 0.952 |
| 13-Sep-95 | 1.75 | 7 | 0.1157 | -1.197 | 0.560 | 0.955 |
| 14-Aug-95 | 1.82 | 8 | 0.1332 | -1.111 | 0.599 | 0.956 |
| *22-Jul-94* | *1.99* | 9 | 0.1507 | -1.034 | 0.688 | 0.958 |
| 25-Jul-95 | 2.07 | 10 | 0.1681 | -0.962 | 0.728 | 0.959 |
| 21-Dec-93 | 2.2[illegible] | 11 | 0.1856 | -0.894 | 0.793 | 0.961 |
| 5-Nov-97 | 2.3[illegible] | 12 | 0.2031 | -0.831 | 0.892 | 0.962 |
| *29-Oct-93* | *2.46* | 13 | 0.2205 | -0.770 | 0.900 | 0.964 |
| *24-Sep-96* | *2.462807903* | 14 | 0.2380 | -0.713 | 0.901 | 0.966 |
| 25-Aug-98 | 2.571760751 | 15 | 0.2555 | -0.657 | 0.945 | 0.967 |
| *1-Dec-93* | *2.69* | 16 | 0.2729 | -0.604 | 0.990 | 0.968 |
| *24-Jun-94* | *2.8* | 17 | 0.2904 | -0.552 | 1.030 | 0.969 |
| *11-Jul-95* | *2.8* | 18 | 0.3079 | -0.502 | 1.030 | 0.970 |
| 27-Jun-95 | 2.93 | 19 | 0.3253 | -0.453 | 1.075 | 0.970 |
| 21-Dec-93 | 3.06 | 20 | 0.3428 | -0.405 | 1.118 | 0.970 |
| *27-Jul-98* | *3.196210553* | 21 | 0.3603 | -0.358 | 1.162 | 0.970 |
| *14-Dec-94* | *3.49* | 22 | 0.3777 | -0.311 | 1.250 | 0.969 |
| *17-Feb-94* | *3.81* | 23 | 0.3952 | -0.266 | 1.338 | 0.970 |
| *16-Nov-94* | *3.81* | 24 | 0.4127 | -0.221 | 1.338 | 0.970 |
| *23-May-95* | *4.16* | 25 | 0.4301 | -0.176 | 1.426 | 0.971 |
| 12-Jun-95 | 4.16 | 26 | 0.4476 | -0.132 | 1.426 | 0.971 |
| 16-Jun-99 | 4.2 | 27 | 0.4651 | -0.088 | 1.435 | 0.971 |
| *20-May-94* | *4.34* | 28 | 0.4825 | -0.044 | 1.468 | 0.971 |
| *7-Jun-94* | *4.34* | 29 | 0.5000 | 0.000 | 1.468 | 0.970 |
| 14-Dec-98 | 4.8 | 30 | 0.5175 | 0.044 | 1.569 | 0.968 |
| 20-Jul-99 | 5 | 31 | 0.5349 | 0.088 | 1.609 | 0.967 |
| 4-Aug-99 | 5 | 32 | 0.5524 | 0.132 | 1.609 | 0.965 |
| 31-Aug-99 | 5 | 33 | 0.5699 | 0.176 | 1.609 | 0.963 |
| *3-May-94* | *6.19* | 34 | 0.5873 | 0.221 | 1.823 | 0.960 |
| 9-May-95 | 6.[illegible] | 35 | 0.6048 | 0.266 | 1.913 | 0.958 |
| 5-May-98 | 6.86 | 36 | 0.6223 | 0.311 | 1.926 | 0.955 |
| *21-Jan-94* | *7.08* | 37 | 0.6397 | 0.358 | 1.957 | 0.952 |
| *25-Jun-98* | *7.082855593* | 38 | 0.6572 | 0.405 | 1.958 | 0.948 |
| *21-Jan-94* | *7.13* | 39 | 0.6747 | 0.453 | 1.964 | 0.943 |
| *10-Jan-95* | *8.48* | 40 | 0.6921 | 0.502 | 2.138 | 0.939 |
| *18-Apr-94* | *10.63* | 41 | 0.7096 | 0.552 | 2.364 | 0.933 |
| *6-Apr-94* | *13.97* | 42 | 0.7271 | 0.604 | 2.637 | 0.927 |
| 23-Apr-98 | 14.02806909 | 43 | 0.7445 | 0.657 | 2.683 | 0.927 |
| 25-Apr-95 | 14.[illegible] | 44 | 0.7620 | 0.713 | 2.683 | 0.928 |
| 14-May-91 | 15.[illegible] | 45 | 0.7795 | 0.770 | 2.701 | 0.924 |

| | | | | | | |
|---|---|---|---|---|---|---|
| *23-Mar-94* | *15.34* | 46 | 0.7969 | 0.831 | 2.730 | 0.918 |
| *23-Mar-94* | *16.04* | 47 | 0.8144 | 0.894 | 2.775 | 0.907 |
| 12-Apr-95 | 16.04 | 48 | 0.8319 | 0.962 | 2.775 | 0.892 |
| 4-May-99 | 17 | 49 | 0.8493 | 1.034 | 2.833 | 0.873 |
| 21-Jan-99 | 21 | 50 | 0.8668 | 1.111 | 3.045 | 0.855 |
| *7-Mar-94* | *23.22* | 51 | 0.8843 | 1.197 | 3.145 | 0.835 |
| 20-Apr-99 | 43 | 52 | 0.9017 | 1.292 | 3.761 | 0.929 |
| *9-Feb-95* | *62.77* | 53 | 0.9192 | 1.400 | 4.139 | 0.944 |
| 22-Mar-99 | 63 | 54 | 0.9367 | 1.527 | 4.143 | |
| 22-Mar-95 | 79.95 | 55 | 0.9541 | 1.686 | 4.381 | |
| *8-Mar-95* | *112.47* | 56 | 0.9716 | 1.905 | 4.723 | |
| 28-May-98 | 136.9458147 | 57 | 0.9891 | 2.293 | 4.920 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | **MC262** | **Date:** 20-Jun-00 |
| **Chemical:** | **tZn** | **Analyst:** J.MacLachlan |
| **Notes:** | | |

Input Discharge and Concentration Data below (in red)

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,090 | 14 | 122 | 9 | 0.00 | 0.00 | 0.00 |
| **SD:** | 810 | 26 | 39 | 16 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.85 | 0.32 | 1.84 | | | |
| **Min:** | 33,372 | 0 | 40 | 0.2 | -0.53 | -2.09 | -0.53 |
| **Max:** | 36,403 | 137 | 316 | 77 | 4.70 | 4.94 | 4.32 |
| **Median:** | 34,808 | 4 | 118 | 3 | -0.38 | -0.11 | -0.35 |

| tZn MC262 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.0129)** | update r2 | | **0.01** | 0.0129 | r2: | 0.011 | 0.004 |
| r2 Q,[COC] | 0.01 | [tCd] | Q | | m | 0.0033 | 0.00010 |
| slope, m | -0.2 | 124 | 0.4 | | b | -103 | -1.66 |
| intercept, b | 124.4 | 122 | 14.1 | | | | |
| N: 58 | | 101 | 137 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.00362)** | | update r2 | | 0.00 | 0.00362 | | |
| r2 lnQ,ln[COC] | 0.06 | [tCd] | ln Q | [tCd] | Q | | |
| slope, m | -0.02 | 1.80 | -0.97 | 121 | 0 | | |
| intercept, b | 4.78 | 4.74 | 2.65 | 115 | 14 | | |
| N: 58 | | 4.71 | 4.92 | 111 | 137 | | |

N= 58

| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | for graph 0 tZn MC262 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 14-May-91 | 14.9 | 113 | 9.1 | 2.70 | 4.73 | 2.20 | 0.03 | -0.23 | 0.03 |
| MFG | 1-Oct-91 | 0.93 | 158 | 0.8 | -0.07 | 5.06 | -0.24 | -0.51 | 0.92 | -0.49 |
| IDEQ | 29-Oct-93 | 2.46 | 152 | 2.0 | 0.90 | 5.02 | 0.70 | -0.45 | 0.77 | -0.42 |
| IDEQ | 1-Dec-93 | 2.69 | 157 | 2.3 | 0.99 | 5.06 | 0.82 | -0.44 | 0.89 | -0.40 |
| IDEQ | 21-Dec-93 | 3.06 | 178 | 2.9 | 1.12 | 5.18 | 1.08 | -0.42 | 1.43 | -0.36 |
| IDEQ | 21-Dec-93 | 2.21 | 178 | 2.1 | 0.79 | 5.18 | 0.75 | -0.46 | 1.43 | -0.41 |
| IDEQ | 21-Jan-94 | 7.08 | 155 | 5.9 | 1.96 | 5.04 | 1.78 | -0.27 | 0.84 | -0.17 |
| IDEQ | 21-Jan-94 | 7.13 | 155 | 5.9 | 1.96 | 5.04 | 1.78 | -0.27 | 0.84 | -0.17 |
| IDEQ | 17-Feb-94 | 3.81 | 156 | 3.2 | 1.34 | 5.05 | 1.16 | -0.40 | 0.87 | -0.34 |
| IDEQ | 7-Mar-94 | 23.22 | 116 | 14.5 | 3.15 | 4.75 | 2.67 | 0.35 | -0.15 | 0.37 |
| IDEQ | 23-Mar-94 | 16.04 | 117 | 10.1 | 2.78 | 4.76 | 2.31 | 0.07 | -0.13 | 0.09 |
| IDEQ | 23-Mar-94 | 15.34 | 117 | 9.7 | 2.73 | 4.76 | 2.27 | 0.05 | -0.13 | 0.06 |
| IDEQ | 6-Apr-94 | 13.97 | 106 | 8.0 | 2.64 | 4.66 | 2.08 | -0.01 | -0.41 | -0.04 |
| IDEQ | 18-Apr-94 | 10.63 | 97 | 5.5 | 2.36 | 4.57 | 1.71 | -0.13 | -0.64 | -0.20 |
| IDEQ | 3-May-94 | 6.19 | 101 | 3.4 | 1.82 | 4.62 | 1.21 | -0.30 | -0.53 | -0.33 |
| IDEQ | 20-May-94 | 4.34 | 125 | 2.9 | 1.47 | 4.83 | 1.07 | -0.38 | 0.08 | -0.36 |
| IDEQ | 7-Jun-94 | 4.34 | 137 | 3.2 | 1.47 | 4.92 | 1.16 | -0.38 | 0.38 | -0.34 |
| IDEQ | 24-Jun-94 | 2.8 | 125 | 1.9 | 1.03 | 4.83 | 0.63 | -0.43 | 0.08 | -0.43 |
| IDEQ | 22-Jul-94 | 1.99 | 103 | 1.1 | 0.69 | 4.63 | 0.10 | -0.47 | -0.48 | -0.47 |
| IDEQ | 17-Aug-94 | 1.41 | 74 | 0.6 | 0.34 | 4.30 | -0.58 | -0.49 | -1.22 | -0.51 |
| IDEQ | 17-Aug-94 | 0.38 | 74 | 0.2 | -0.97 | 4.30 | -1.89 | -0.53 | -1.22 | -0.53 |
| IDEQ | 5-Oct-94 | 1.75 | 88 | 0.8 | 0.56 | 4.48 | -0.19 | -0.47 | -0.86 | -0.49 |
| IDEQ | 16-Nov-94 | 3.81 | 151 | 3.1 | 1.34 | 5.02 | 1.13 | -0.40 | 0.74 | -0.35 |
| IDEQ | 14-Dec-94 | 3.49 | 162 | 3.0 | 1.25 | 5.09 | 1.11 | -0.41 | 1.02 | -0.35 |
| IDEQ | 10-Jan-95 | 8.48 | 160 | 7.3 | 2.14 | 5.08 | 1.99 | -0.22 | 0.97 | -0.09 |
| IDEQ | 9-Feb-95 | 62.77 | 113 | 38.2 | 4.14 | 4.73 | 3.64 | 1.86 | -0.23 | 1.86 |
| IDEQ | 8-Mar-95 | 112.47 | 127 | 76.8 | 4.72 | 4.84 | 4.34 | 3.76 | 0.13 | 4.29 |
| IDEQ | 22-Mar-95 | 79.93 | 120 | 51.6 | 4.38 | 4.79 | 3.94 | 2.52 | -0.05 | 2.70 |
| IDEQ | 12-Apr-95 | 16.04 | 128 | 11.0 | 2.78 | 4.85 | 2.40 | 0.07 | 0.15 | 0.15 |
| IDEQ | 25-Apr-95 | 14.63 | 117 | 9.2 | 2.68 | 4.76 | 2.22 | 0.02 | -0.13 | 0.03 |
| IDEQ | 9-May-95 | 6.77 | 153 | 5.6 | 1.91 | 5.03 | 1.72 | -0.28 | 0.79 | -0.19 |
| IDEQ | 23-May-95 | 4.16 | 127 | 2.8 | 1.43 | 4.84 | 1.04 | -0.38 | 0.13 | -0.37 |
| IDEQ | 12-Jun-95 | 4.16 | 137 | 3.1 | 1.43 | 4.92 | 1.12 | -0.38 | 0.38 | -0.35 |
| IDEQ | 27-Jun-95 | 2.93 | 105 | 1.7 | 1.08 | 4.65 | 0.50 | -0.43 | -0.43 | -0.44 |
| IDEQ | 11-Jul-95 | 2.8 | 130 | 2.0 | 1.03 | 4.87 | 0.67 | -0.43 | 0.21 | -0.42 |
| IDEQ | 25-Jul-95 | 2.07 | 109 | 1.2 | 0.73 | 4.69 | 0.19 | -0.46 | -0.33 | -0.47 |
| IDEQ | 14-Aug-95 | 1.82 | 118 | 1.2 | 0.60 | 4.77 | 0.14 | -0.47 | -0.10 | -0.47 |
| IDEQ | 13-Sep-95 | 1.75 | 113 | 1.1 | 0.56 | 4.73 | 0.06 | -0.47 | -0.23 | -0.48 |
| URS | 5-Nov-97 | 2.44 | 135 | 1.8 | 0.89 | 4.91 | 0.57 | -0.45 | 0.33 | -0.43 |
| IDEQ | 23-Apr-98 | 14.02806909 | 132 | 10.4 | 2.68 | 4.88 | 2.34 | 0.02 | 0.26 | 0.11 |
| URS | 5-May-98 | 6.86 | 316 | 11.7 | 1.93 | 5.76 | 2.46 | -0.28 | 4.94 | 0.19 |
| IDEQ | 28-May-98 | 130.9458147 | 105 | 77.4 | 4.92 | 4.65 | 4.35 | 4.70 | -0.43 | 4.32 |
| IDEQ | 25-Jun-98 | 7.082855593 | 134 | 5.1 | 1.96 | 4.90 | 1.63 | -0.27 | 0.31 | -0.22 |
| IDEQ | 27-Jul-98 | 3.196210553 | 90 | 1.5 | 1.16 | 4.50 | 0.44 | -0.42 | -0.81 | -0.45 |
| IDEQ | 25-Aug-98 | 2.571760751 | 98 | 1.4 | 0.94 | 4.58 | 0.30 | -0.44 | -0.61 | -0.46 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 24-Sep-98 | 2.462807903 | 109 | 1.4 | 0.90 | 4.69 | 0.37 | -0.45 | -0.33 | -0.45 |
| USGS | 28-Oct-98 | 1.3 | 120 | 0.8 | 0.26 | 4.79 | -0.18 | -0.49 | -0.05 | -0.49 |
| USGS | 18-Nov-98 | 1.6 | 120 | 1.0 | 0.47 | 4.79 | 0.03 | -0.48 | -0.05 | -0.48 |
| USGS | 14-Dec-98 | 4.8 | 160 | 4.1 | 1.57 | 5.08 | 1.42 | -0.36 | 0.97 | -0.28 |
| USGS | 21-Jan-99 | 21 | 100 | 11.3 | 3.04 | 4.61 | 2.42 | 0.26 | -0.56 | 0.17 |
| USGS | 22-Mar-99 | 63 | 110 | 37.3 | 4.14 | 4.70 | 3.62 | 1.87 | -0.30 | 1.80 |
| USGS | 20-Apr-99 | 43 | 40 | 9.3 | 3.76 | 3.69 | 2.23 | 1.10 | -2.09 | 0.04 |
| USGS | 4-May-99 | 17 | 60 | 5.5 | 2.83 | 4.09 | 1.70 | 0.11 | -1.58 | -0.20 |
| USGS | 23-May-99 | 8.7 | 70 | 3.3 | 2.16 | 4.25 | 1.19 | -0.21 | -1.32 | -0.34 |
| USGS | 16-Jun-99 | 4.2 | 70 | 1.6 | 1.44 | 4.25 | 0.46 | -0.38 | -1.32 | -0.44 |
| USGS | 20-Jul-99 | 2.1 | 90.5 | 1.0 | 0.74 | 4.51 | 0.02 | -0.46 | -0.80 | -0.48 |
| USGS | 4-Aug-99 | 1.5 | 78 | 0.6 | 0.41 | 4.36 | -0.46 | -0.48 | -1.12 | -0.50 |
| USGS | 31-Aug-99 | 1.4 | 82.9 | 0.6 | 0.34 | 4.42 | -0.47 | -0.49 | -0.99 | -0.50 |

**tZn**

**Concentration over time analysis**

| | tZn | MC262 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.154** | **-0.00015** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 14-May-91 | 5.02 | 151 | | |
| mid | 18-Apr-95 | 4.80 | 121 | | |
| last | 31-Aug-99 | 4.56 | 95 | | |
| | **LnConc.=mTime+b >'96 r2, m** | | | **0.005** | **-0.00030** |
| | 21-Jan-99 | 4.36 | 78 | | |
| | 31-Aug-99 | 4.29 | 73 | | |

**Load over time analysis**

| | tZn | MC262 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.001** | **-0.00005** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 14-May-91 | 1.36 | 4 | | |
| mid | 18-Apr-95 | 1.28 | 4 | | |
| last | 31-Aug-99 | 1.19 | 3 | | |
| | **LnLoad=mTime+b >'96 r2, m** | | | **0.808** | **-0.01820** |
| | 21-Jan-99 | 3.45 | 31 | | |
| | 31-Aug-99 | -0.59 | 1 | | |

| | max r2 | 0.699 | | max r2 | 0.950 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points, delete last 4 rows | | | only on >4 data points, delete last 4 rows | | |
| | 0.154 | -0.00015 | 10.06 | 0.001 | -0.00005 | 3.17 |
| | 0.171 | -0.00017 | 10.57 | 0.000 | -0.00001 | 1.68 |
| | 0.157 | -0.00016 | 10.50 | 0.003 | -0.00009 | 4.37 |
| | 0.148 | -0.00016 | 10.37 | 0.004 | -0.00011 | 5.03 |
| | 0.138 | -0.00015 | 10.19 | 0.005 | -0.00012 | 5.59 |
| | 0.124 | -0.00015 | 9.82 | 0.006 | -0.00013 | 5.92 |
| | 0.110 | -0.00014 | 9.52 | 0.008 | -0.00015 | 6.64 |
| | 0.100 | -0.00013 | 9.30 | 0.007 | -0.00014 | 6.27 |
| | 0.089 | -0.00012 | 9.05 | 0.005 | -0.00013 | 5.85 |
| | 0.078 | -0.00012 | 8.78 | 0.006 | -0.00014 | 6.13 |
| | 0.078 | -0.00012 | 8.84 | 0.003 | -0.00009 | 4.61 |
| | 0.078 | -0.00012 | 8.89 | 0.001 | -0.00006 | 3.40 |
| | 0.078 | -0.00012 | 8.95 | 0.000 | -0.00003 | 2.12 |
| | 0.082 | -0.00013 | 9.15 | 0.000 | 0.00001 | 0.98 |
| | 0.092 | -0.00014 | 9.49 | 0.000 | 0.00003 | 0.23 |
| | 0.088 | -0.00014 | 9.38 | 0.000 | 0.00003 | 0.16 |
| | 0.098 | -0.00014 | 9.82 | 0.000 | 0.00003 | 0.30 |
| | 0.096 | -0.00014 | 9.68 | 0.000 | 0.00003 | 0.30 |
| | 0.086 | -0.00014 | 9.67 | 0.000 | 0.00000 | 1.22 |
| | 0.094 | -0.00015 | 10.01 | 0.001 | -0.00006 | 3.19 |
| | 0.130 | -0.00018 | 11.00 | 0.005 | -0.00015 | 6.67 |
| | 0.179 | -0.00021 | 12.14 | 0.029 | -0.00034 | 13.35 |
| | 0.215 | -0.00023 | 13.03 | 0.050 | -0.00044 | 17.21 |
| | 0.200 | -0.00023 | 12.85 | 0.056 | -0.00048 | 18.66 |
| | 0.179 | -0.00022 | 12.47 | 0.064 | -0.00053 | 20.32 |
| | 0.157 | -0.00021 | 12.04 | 0.060 | -0.00052 | 20.10 |
| | 0.163 | -0.00022 | 12.42 | 0.035 | -0.00040 | 15.60 |
| | 0.158 | -0.00022 | 12.53 | 0.010 | -0.00020 | 8.40 |
| | 0.158 | -0.00023 | 12.82 | 0.000 | 0.00001 | 0.90 |
| | 0.152 | -0.00023 | 12.95 | 0.004 | 0.00012 | -3.20 |
| | 0.156 | -0.00024 | 13.43 | 0.015 | 0.00024 | -7.65 |
| | 0.129 | -0.00023 | 12.92 | 0.027 | 0.00034 | -11.28 |
| | 0.121 | -0.00024 | 13.11 | 0.030 | 0.00039 | -12.87 |
| | 0.103 | -0.00023 | 12.93 | 0.036 | 0.00046 | -15.45 |
| | 0.121 | -0.00027 | 14.46 | 0.029 | 0.00045 | -14.96 |
| | 0.109 | -0.00029 | 15.00 | 0.025 | 0.00046 | -15.60 |
| | 0.135 | -0.00037 | 18.13 | 0.009 | 0.00033 | -10.74 |
| | 0.167 | -0.00053 | 23.88 | 0.000 | -0.00003 | 2.19 |
| | 0.398 | -0.00143 | 56.27 | 0.081 | -0.00208 | 76.34 |
| | 0.416 | -0.00167 | 64.85 | 0.157 | -0.00333 | 121.61 |
| | 0.408 | -0.00175 | 67.80 | 0.128 | -0.00317 | 115.76 |
| | 0.303 | -0.00121 | 48.36 | 0.091 | -0.00282 | 103.20 |
| | 0.314 | -0.00135 | 53.24 | 0.006 | -0.00064 | 24.10 |
| | 0.249 | -0.00127 | 50.34 | 0.000 | -0.00008 | 3.68 |
| | 0.303 | -0.00156 | 60.88 | 0.004 | -0.00060 | 22.56 |

| | | | | | |
|---|---|---|---|---|---|
| 0.336 | -0.00185 | 73.11 | 0.020 | -0.00158 | 58.18 |
| 0.327 | -0.00234 | 78.29 | 0.057 | -0.00302 | 110.38 |
| 0.270 | -0.00204 | 78.51 | 0.204 | -0.00630 | 229.50 |
| 0.190 | -0.00194 | 74.70 | 0.552 | -0.01190 | 433.15 |
| 0.005 | -0.00030 | 15.15 | 0.808 | -0.01820 | 661.86 |
| 0.057 | 0.00128 | -42.25 | 0.931 | -0.02467 | 897.04 |
| 0.676 | 0.00447 | -158.22 | 0.950 | -0.02087 | 758.90 |
| 0.699 | 0.00268 | -92.95 | 0.944 | -0.01902 | 691.48 |
| 0.504 | 0.00199 | -68.00 | 0.921 | -0.01692 | 615.39 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tZn** | | **MC262** | | |
| **LN Analysis** | | **tZn** | | |
| **Load** | | **Load Data, EV=8.7 lbs/day CV=1.8** | | |
| Avg: | 9 | **Load Data-based LN** | | |
| SD: | 16 | u | ln tCd Load | tCd Load |
| CV: | 1.84 | 3 | 5.1 | 158 |
| Min. | 0.2 | 0 | 1.42 | 4 |
| Max: | 77 | -3 | -2.23 | 0.1 |
| **Median:** | 3 | | | |
| | | 9 | 8.7 | |
| | | 1.84 | 1.8 | |

**u=mLn(Load)+ b:**

update for r2, EV, CV **r2=0.97, EV=8.3lbs/day CV=2.1; max r2=0.97**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.969 | u | lnLoad | Load | |
| slope, m | 0.763 | 3 | 5.19 | 180 | |
| intercept, b | -0.964 | 0 | 1.26 | 4 | |
| N | 58 | -3 | -2.67 | 0.1 | |
| E[Load] | 8.3 | Parameter Estimates | | | 0.969 |
| SD[Load] | 18 | from LN regression | | | 8.3 |
| CV[Load] | 2.14 | update graph label | | | 2.1 |
| | | | | | max r2 |
| tZn | | N. 58 | | | 0.972 |

| Date | Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 17-Aug-94 | 0.2 | 1 | 0.0107 | -2.300 | -1.889 | 0.969 |
| 17-Aug-94 | 0.6 | 2 | 0.0279 | -1.913 | -0.577 | 0.966 |
| 31-Aug-99 | 0.6 | 3 | 0.0451 | -1.695 | -0.471 | 0.969 |
| 4-Aug-99 | 0.6 | 4 | 0.0622 | -1.536 | -0.463 | 0.970 |
| 1-Oct-91 | 0.8 | 5 | 0.0794 | -1.409 | -0.235 | 0.970 |
| 5-Oct-94 | 0.8 | 6 | 0.0966 | -1.301 | -0.188 | 0.971 |
| 28-Oct-98 | 0.8 | 7 | 0.1137 | -1.207 | -0.175 | 0.972 |
| [illegible] | 1.0 | 8 | 0.1309 | -1.122 | 0.022 | 0.971 |
| 18-Nov-98 | 1.0 | 9 | 0.1481 | -1.045 | 0.032 | 0.972 |
| 13-Sep-[illegible] | 1.1 | 10 | 0.1652 | -0.973 | 0.062 | 0.972 |
| 22-Jul-94 | 1.1 | 11 | 0.1824 | -0.906 | 0.098 | 0.972 |
| 14-Aug-95 | 1.2 | 12 | 0.1996 | -0.843 | 0.144 | 0.971 |
| 25-Jul-95 | 1.2 | 13 | 0.2167 | -0.783 | 0.194 | 0.970 |
| 25-Aug-98 | 1.4 | 14 | 0.2339 | -0.726 | 0.304 | 0.969 |
| 24-Sep-98 | 1.4 | 15 | 0.2511 | -0.671 | 0.368 | 0.969 |
| 27-Jul-98 | 1.5 | 16 | 0.2682 | -0.618 | 0.437 | 0.968 |
| 16-Jun-99 | 1.6 | 17 | 0.2854 | -0.567 | 0.459 | 0.967 |
| 27-Jun-95 | 1.7 | 18 | 0.3026 | -0.517 | 0.504 | 0.966 |
| 5-Nov-97 | 1.8 | 19 | 0.3197 | -0.468 | 0.572 | 0.965 |
| 24-Jun-94 | 1.9 | 20 | 0.3369 | -0.421 | 0.633 | 0.963 |
| 11-Jul-95 | 2.0 | 21 | 0.3541 | -0.374 | 0.672 | 0.962 |
| 29-Oct-93 | 2.0 | 22 | 0.3712 | -0.329 | 0.699 | 0.961 |
| 21-Dec-93 | 2.1 | 23 | 0.3884 | -0.283 | 0.750 | 0.959 |
| 1-Dec-93 | 2.3 | 24 | 0.4056 | -0.239 | 0.821 | 0.957 |
| 25-May-95 | 2.8 | 25 | 0.4227 | -0.195 | 1.045 | 0.955 |
| 20-May-94 | 2.9 | 26 | 0.4399 | -0.151 | 1.071 | 0.955 |
| 21-Dec-93 | 2.9 | 27 | 0.4571 | -0.108 | 1.075 | 0.955 |
| 14-Dec-94 | 3.0 | 28 | 0.4742 | -0.065 | 1.112 | 0.954 |
| 12-Jun-95 | 3.1 | 29 | 0.4914 | -0.022 | 1.120 | 0.953 |
| 16-Nov-94 | 3.1 | 30 | 0.5086 | 0.022 | 1.130 | 0.951 |
| 17-Feb-94 | 3.2 | 31 | 0.5258 | 0.065 | 1.162 | 0.948 |
| 7-Jun-94 | 3.2 | 32 | 0.5429 | 0.108 | 1.163 | 0.945 |
| 23-May-99 | 3.3 | 33 | 0.5601 | 0.151 | 1.187 | 0.941 |
| 3-May-94 | 3.4 | 34 | 0.5773 | 0.195 | 1.213 | 0.937 |
| 14-Dec-98 | 4.1 | 35 | 0.5944 | 0.239 | 1.419 | 0.932 |
| 25-Jun-98 | 5.1 | 36 | 0.6116 | 0.283 | 1.630 | 0.928 |
| 4-May-99 | 5.5 | 37 | 0.6288 | 0.329 | 1.702 | 0.925 |
| 18-Apr-94 | 5.5 | 38 | 0.6459 | 0.374 | 1.713 | 0.923 |
| 9-May-95 | 5.6 | 39 | 0.6631 | 0.421 | 1.718 | 0.920 |
| 21-Jan-94 | 5.9 | 40 | 0.6803 | 0.468 | 1.776 | 0.915 |
| 21-Jan-94 | 5.9 | 41 | 0.6974 | 0.517 | 1.783 | 0.909 |
| [illegible] | 7.5 | 42 | 0.7146 | 0.567 | 1.988 | 0.901 |
| 6-Apr-95 | 8.0 | 43 | 0.7318 | 0.618 | 2.075 | 0.897 |
| 14-May-95 | 9.1 | 44 | 0.7489 | 0.671 | 2.204 | 0.893 |
| 25-Apr-95 | 9.2 | 45 | 0.7661 | 0.726 | 2.220 | 0.894 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 20-Apr-99 | 9.3 | 46 | 0.7833 | 0.783 | 2.225 | 0.893 |
| 23-Mar-94 | 9.7 | 47 | 0.8004 | 0.843 | 2.268 | 0.888 |
| 23-Mar-94 | 10.1 | 48 | 0.8176 | 0.906 | 2.312 | 0.879 |
| 23-Apr-98 | 10.4 | 49 | 0.8348 | 0.973 | 2.341 | 0.867 |
| 12-Apr-95 | 11.0 | 50 | 0.8519 | 1.045 | 2.402 | 0.846 |
| 21-Jan-97 | 11.3 | 51 | 0.8691 | 1.122 | 2.425 | 0.815 |
| 5-May-98 | 11.7 | 52 | 0.8863 | 1.207 | 2.456 | 0.769 |
| 7-Mar-94 | 14.5 | 53 | 0.9034 | 1.301 | 2.674 | 0.720 |
| 22-Mar-95 | 37.3 | 54 | 0.9206 | 1.409 | 3.619 | 0.836 |
| 9-Feb-95 | 38.2 | 55 | 0.9378 | 1.536 | 3.642 | |
| 22-Mar-95 | 51.6 | 56 | 0.9549 | 1.695 | 3.944 | |
| 8-Mar-95 | 76.8 | 57 | 0.9721 | 1.913 | 4.342 | |
| 28-May-98 | 77.4 | 58 | 0.9893 | 2.300 | 4.348 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tZn** | | **MC262** | 122 | 122 |
| **LN Analysis** | | **tZn** | 0.32 | 0.322 |

**Concentration** — **Conc. Data, EV=122 ug/L CV=0.322**

| | | Data-based LN | | |
|---|---|---|---|---|
| **Avg:** | **122** | u | ln[tCd] | [tCd] |
| **SD:** | **39** | 3 | 5.7 | 298 |
| **CV:** | **0.32** | 0 | 4.75 | 116 |
| **Min:** | **40** | -3 | 3.81 | 45 |
| **Max:** | **316** | | | |
| **Median** | **118** | | | |

**u=mLn{Conc.}+b:** — 0.933 0.933

update for r2, EV, CV — **r2=0.933, EV=123 ug/L CV=0.34; max r2=0.95** — 122.8 123 — 0.340 0.34

| | | | | |
|---|---|---|---|---|
| r2 u,ln:Conc | 0.933 | u | lnConc | Conc. |
| slope, m | 3.022 | 3 | 5.75 | 314 |
| intercept, b | -14.374 | 0 | 4.76 | 116 |
| N | 58 | -3 | 3.76 | 43 |
| E[Conc] | 122.8 | Parameter Estimates | | |
| SD[Conc] | 42 | from LN regression | | |
| CV[Conc] | 0.34 | update graph label | | |

0.97
8.3
2.1

N 58 — max r2 0.948

| Date | tZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 20-Apr-90 | 40 | 1 | 0.0107 | -2.300 | 3.689 | 0.933 |
| 4-May-95 | 60 | 2 | 0.0279 | -1.913 | 4.094 | 0.948 |
| 23-May-95 | 70 | 3 | 0.0451 | -1.695 | 4.248 | 0.945 |
| 16-Jun-90 | 70 | 4 | 0.0622 | -1.536 | 4.248 | 0.941 |
| 17-Aug-94 | 74 | 5 | 0.0794 | -1.409 | 4.304 | 0.938 |
| 17-Aug-94 | 74 | 6 | 0.0966 | -1.301 | 4.304 | 0.934 |
| 4-Aug-94 | 78 | 7 | 0.1137 | -1.207 | 4.357 | 0.932 |
| 31-Aug-99 | 82.9 | 8 | 0.1309 | -1.122 | 4.418 | 0.929 |
| 5-Oct-94 | 88 | 9 | 0.1481 | -1.045 | 4.477 | 0.925 |
| 27-Jul-98 | 90 | 10 | 0.1652 | -0.973 | 4.500 | 0.921 |
| 20-Jul-99 | 90.5 | 11 | 0.1824 | -0.906 | 4.505 | 0.917 |
| 18-Apr-94 | 97 | 12 | 0.1996 | -0.843 | 4.575 | 0.912 |
| 25-Aug-98 | 98 | 13 | 0.2167 | -0.783 | 4.585 | 0.908 |
| 21-Jan-99 | 100 | 14 | 0.2339 | -0.726 | 4.605 | 0.904 |
| 3-May-94 | 101 | 15 | 0.2511 | -0.671 | 4.615 | 0.901 |
| 22-Jul-94 | 103 | 16 | 0.2682 | -0.618 | 4.635 | 0.897 |
| 27-Jun-95 | 105 | 17 | 0.2854 | -0.567 | 4.654 | 0.893 |
| 28-May-98 | 105 | 18 | 0.3026 | -0.517 | 4.654 | 0.890 |
| 6-Apr-94 | 106 | 19 | 0.3197 | -0.468 | 4.663 | 0.886 |
| 25-Jul-95 | 109 | 20 | 0.3369 | -0.421 | 4.691 | 0.882 |
| 24-Sep-98 | 109 | 21 | 0.3541 | -0.374 | 4.691 | 0.879 |
| 22-Mar-99 | 110 | 22 | 0.3712 | -0.329 | 4.700 | 0.875 |
| 14-May-91 | 113 | 23 | 0.3884 | -0.283 | 4.727 | 0.870 |
| 9-Feb-95 | 113 | 24 | 0.4056 | -0.239 | 4.727 | 0.868 |
| 13-Sep-95 | 113 | 25 | 0.4227 | -0.195 | 4.727 | 0.864 |
| 7-Mar-94 | 116 | 26 | 0.4399 | -0.151 | 4.754 | 0.859 |
| 23-Mar-94 | 117 | 27 | 0.4571 | -0.108 | 4.762 | 0.855 |
| 23-Mar-94 | 117 | 28 | 0.4742 | -0.065 | 4.762 | 0.852 |
| 25-Apr-95 | 117 | 29 | 0.4914 | -0.022 | 4.762 | 0.847 |
| 14-Aug-95 | 118 | 30 | 0.5086 | 0.022 | 4.771 | 0.841 |
| 22-Mar-95 | 120 | 31 | 0.5258 | 0.065 | 4.787 | 0.834 |
| 28-Oct-98 | 120 | 32 | 0.5429 | 0.108 | 4.787 | 0.828 |
| 18-Nov-98 | | 33 | 0.5601 | 0.151 | 4.787 | 0.820 |
| 20-May-94 | 125 | 34 | 0.5773 | 0.195 | 4.828 | 0.810 |
| 24-Jun-94 | 125 | 35 | 0.5944 | 0.239 | 4.828 | 0.804 |
| 8-Mar-95 | 127 | 36 | 0.6116 | 0.283 | 4.844 | 0.795 |
| 23-May-95 | 127 | 37 | 0.6288 | 0.329 | 4.844 | 0.787 |
| 12-Apr-95 | 128 | 38 | 0.6459 | 0.374 | 4.852 | 0.776 |
| 11-Jul-95 | 130 | 39 | 0.6631 | 0.421 | 4.868 | 0.763 |
| 23-Apr-98 | 132 | 40 | 0.6803 | 0.468 | 4.883 | 0.750 |
| 25-Jun-98 | 134 | 41 | 0.6974 | 0.517 | 4.898 | 0.737 |
| 5-Nov-97 | 135 | 42 | 0.7146 | 0.567 | 4.905 | 0.722 |
| 7-Jun-94 | 137 | 43 | 0.7318 | 0.618 | 4.920 | 0.705 |
| 12-Jun-95 | 137 | 44 | 0.7489 | 0.671 | 4.920 | 0.687 |
| 16-Nov-94 | 151 | 45 | 0.7661 | 0.726 | 5.017 | 0.662 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 29-Oct-93 | 52 | 46 | 0.7833 | 0.783 | 5.024 | 0.670 |
| 9-May-95 | 53 | 47 | 0.8004 | 0.843 | 5.030 | 0.680 |
| 21-Jan-94 | 155 | 48 | 0.8176 | 0.906 | 5.043 | 0.692 |
| 21-Jan-94 | 155 | 49 | 0.8348 | 0.973 | 5.043 | 0.711 |
| 17-Feb-94 | 156 | 50 | 0.8519 | 1.045 | 5.050 | 0.730 |
| 1-Dec-93 | 157 | 51 | 0.8691 | 1.122 | 5.056 | 0.751 |
| 1-Oct-91 | 158 | 52 | 0.8863 | 1.207 | 5.063 | 0.776 |
| 10-Jan-95 | 160 | 53 | 0.9034 | 1.301 | 5.075 | 0.804 |
| 14-Dec-98 | 160 | 54 | 0.9206 | 1.409 | 5.075 | 0.839 |
| 14-Dec-94 | 162 | 55 | 0.9378 | 1.536 | 5.088 | |
| 21-Dec-93 | 178 | 56 | 0.9549 | 1.695 | 5.182 | |
| 21-Dec-93 | 178 | 57 | 0.9721 | 1.913 | 5.182 | |
| 5-May-98 | 316 | 58 | 0.9893 | 2.300 | 5.756 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | **MC262** | | 14 | 14.1 |
| **LN Analysis** | | **tZn** | | 1.85 | 1.85 |
| **Discharge, Q** | | **Q Data, EV=14.1 cfs CV=1.85** | | | |
| **Avg:** | **14** | **Q Data-based LN** | | | |
| **SD:** | **26** | u | lnQ | Q | |
| **CV:** | **1.85** | 5 | 5.6 | 260 | |
| **Min:** | **0** | 0 | 1.91 | 7 | |
| **Max:** | **137** | -3 | -1.75 | 0 | |
| **Median:** | **4** | | | | |

| | | |
|---|---|---|
| | 0.948 | 0.948 |
| | 13.2 | 13.2 |
| **u=mLn(Q)+b:** | 2.11 | 2.11 |

update for r2, EV, CV **r2=0.948, EV=13.2 cfs CV=2.11; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.948 | u | lnQ | Q |
| slope, m | 0.767 | 3 | 5.64 | 282 |
| intercept, b | -1.329 | 0 | 1.73 | 6 |
| | | -3 | -2.18 | 0 |
| EV[Q] | 13.2 | Parameter Estimates | | |
| SD[Q] | 28 | from LN regression | | |
| CV[Q] | 2.11 | update graph label | | |

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.977 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 17-Aug-94 | 0.38 | 1 | 0.0107 | -2.300 | -0.968 | 0.948 |
| 1-Oct-91 | 0.95 | 2 | 0.0279 | -1.913 | -0.073 | 0.944 |
| 28-Oct-98 | 1.3 | 3 | 0.0451 | -1.695 | 0.262 | 0.946 |
| 31-Aug-99 | 1.4 | 4 | 0.0622 | -1.536 | 0.336 | 0.951 |
| 17-Aug-94 | 1.4 | 5 | 0.0794 | -1.409 | 0.344 | 0.955 |
| 4-Aug-99 | 1.5 | 6 | 0.0966 | -1.301 | 0.405 | 0.958 |
| 18-Nov-98 | | 7 | 0.1137 | -1.207 | 0.470 | 0.960 |
| 5-Oct-94 | | 8 | 0.1309 | -1.122 | 0.560 | 0.962 |
| 13-Sep-95 | 1.75 | 9 | 0.1481 | -1.045 | 0.560 | 0.965 |
| 14-Aug-95 | 1.82 | 10 | 0.1652 | -0.973 | 0.599 | 0.966 |
| 22-Jul-94 | 1.99 | 11 | 0.1824 | -0.906 | 0.688 | 0.968 |
| 25-Jul-95 | 2.07 | 12 | 0.1996 | -0.843 | 0.728 | 0.969 |
| 20-Jul-99 | 2 | 13 | 0.2167 | -0.783 | 0.742 | 0.971 |
| 21-Dec-93 | 2.21 | 14 | 0.2339 | -0.726 | 0.793 | 0.972 |
| 5-Nov-97 | 2.44 | 15 | 0.2511 | -0.671 | 0.892 | 0.973 |
| 29-Oct-93 | 2.46 | 16 | 0.2682 | -0.618 | 0.900 | 0.974 |
| 24-Sep-98 | 2.462807903 | 17 | 0.2854 | -0.567 | 0.901 | 0.976 |
| 25-Aug-98 | 2.571760751 | 18 | 0.3026 | -0.517 | 0.945 | 0.976 |
| 1-Dec-93 | 2.69 | 19 | 0.3197 | -0.468 | 0.990 | 0.977 |
| 24-Jun-94 | 2.8 | 20 | 0.3369 | -0.421 | 1.030 | 0.977 |
| 11-Jul-95 | 2.8 | 21 | 0.3541 | -0.374 | 1.030 | 0.977 |
| 27-Jun-95 | 2.93 | 22 | 0.3712 | -0.329 | 1.075 | 0.977 |
| 21-Dec-93 | 3.03 | 23 | 0.3884 | -0.283 | 1.118 | 0.976 |
| 27-Jul-98 | 3.196216066 | 24 | 0.4056 | -0.239 | 1.162 | 0.976 |
| 14-Dec-93 | 3.3 | 25 | 0.4227 | -0.195 | 1.250 | 0.975 |
| 17-Feb-94 | 3.5 | 26 | 0.4399 | -0.151 | 1.338 | 0.974 |
| 16-Nov-94 | 3.5 | 27 | 0.4571 | -0.108 | 1.338 | 0.974 |
| 23-May-95 | 3.1 | 28 | 0.4742 | -0.065 | 1.426 | 0.973 |
| 12-Jun-95 | 3.1 | 29 | 0.4914 | -0.022 | 1.426 | 0.972 |
| 16-Jun-99 | 3.2 | 30 | 0.5086 | 0.022 | 1.435 | 0.971 |
| 20-May-94 | 4.34 | 31 | 0.5258 | 0.065 | 1.468 | 0.969 |
| 7-Jun-94 | 4.34 | 32 | 0.5429 | 0.108 | 1.468 | 0.967 |
| 14-Dec-98 | 4.8 | 33 | 0.5601 | 0.151 | 1.569 | 0.964 |
| 3-May-94 | 6.19 | 34 | 0.5773 | 0.195 | 1.823 | 0.962 |
| 9-May-95 | 6.77 | 35 | 0.5944 | 0.239 | 1.913 | 0.960 |
| 5-May-98 | 6.86 | 36 | 0.6116 | 0.283 | 1.926 | 0.958 |
| 21-Jan-94 | 7.08 | 37 | 0.6288 | 0.329 | 1.957 | 0.956 |
| 25-Jun-98 | 7.082855595 | 38 | 0.6459 | 0.374 | 1.958 | 0.953 |
| 21-Jan-94 | 7.15 | 39 | 0.6631 | 0.421 | 1.964 | 0.949 |
| 10-Jan-95 | 8.48 | 40 | 0.6803 | 0.468 | 2.138 | 0.944 |
| 23-May-99 | 8.7 | 41 | 0.6974 | 0.517 | 2.163 | 0.939 |
| 18-Apr-96 | 9.3 | 42 | 0.7146 | 0.567 | 2.364 | 0.933 |
| 6-Apr-94 | 13.97 | 43 | 0.7318 | 0.618 | 2.637 | 0.927 |
| 23-Apr-98 | 14.02806908 | 44 | 0.7489 | 0.671 | 2.683 | 0.927 |
| 25-Apr-95 | 14.04 | 45 | 0.7661 | 0.726 | 2.683 | 0.927 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 14-May-91 | 14.6 | 46 | 0.7833 | 0.783 | 2.701 | 0.924 |
| 23-Mar-94 | 15.34 | 47 | 0.8004 | 0.843 | 2.730 | 0.918 |
| 23-Mar-94 | 16.08 | 48 | 0.8176 | 0.906 | 2.775 | 0.907 |
| 12-Apr-95 | 16.08 | 49 | 0.8348 | 0.973 | 2.775 | 0.892 |
| 4-May-99 | 17 | 50 | 0.8519 | 1.045 | 2.833 | 0.873 |
| 21-Jan-99 | 21 | 51 | 0.8691 | 1.122 | 3.045 | 0.855 |
| 7-Mar-94 | 23.22 | 52 | 0.8863 | 1.207 | 3.145 | 0.835 |
| 20-Apr-98 | 43 | 53 | 0.9034 | 1.301 | 3.761 | 0.929 |
| 9-Feb-95 | 62.77 | 54 | 0.9206 | 1.409 | 4.139 | 0.944 |
| 22-Mar-95 | 73 | 55 | 0.9378 | 1.536 | 4.143 | |
| 22-Mar-95 | 73.44 | 56 | 0.9549 | 1.695 | 4.381 | |
| 8-Mar-95 | 112.47 | 57 | 0.9721 | 1.913 | 4.723 | |
| 28-May-98 | 136.945814 | 58 | 0.9893 | 2.300 | 4.920 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **NF13** | **Date:** | **3-Jun-00** |
| **Chemical:** | **dCd** | **Analyst:** | **J.Johnston** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 36,229 | 1,018 | 3 | #DIV/0! | | | #DIV/0! | 0.00 | #DIV/0! |
| **SD:** | 126 | 1,271 | 1 | #DIV/0! | | | #DIV/0! | 1.00 | #DIV/0! |
| **CV:** | 0.00 | 1.25 | 0.19 | #DIV/0! | | | | | |
| **Min:** | 35,931 | 90 | 2 | 0.0 | | | 0.00 | -1.48 | 0.00 |
| **Max:** | 36,411 | 4,750 | 4 | 0 | | | 0.00 | 1.89 | 0.00 |
| **Median:** | 36,246 | 477 | 3 | #NUM! | | | #NUM! | -0.07 | #NUM! |

| **dCd** | **NF13** | | **: Concentration v. Discharge, Q** | | | **Q = mTime +b** | | **LnQ = mTime +b** |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.763)** | | update r2 | **0.76** | 0.763 | | r2. | 0.033 | 0.002 |
| r2 Q,[COC]: | 0.76 | [dCd] | Q | | | m | 1.8279 | 0.00044 |
| slope, m: | 0.0 | 3 | 90.0 | | | b. | -65204 | -9.64 |
| intercept, b. | 2.7 | 3 | 1017.7 | | | | | |
| N: 14 | | 5 | 4750 | | | | | |
| **#DIV/0!** | | | update r2 | #DIV/0! | #DIV/0! | | | |
| r2 lnQ,ln[COC]: | #DIV/0! | ln[dCd] | ln Q | [dCd] | Q | | | |
| slope, m: | #DIV/0! | #DIV/0! | 4.50 | #DIV/0! | 90 | | | |
| intercept, b: | #DIV/0! | #DIV/0! | 6.93 | #DIV/0! | 1,018 | | | |
| N: 0 | | #DIV/0! | 8.47 | #DIV/0! | 4,750 | | | |

**N= 14**

| | Sampling Date | Q Discharge | dCd Concentration | dCd Load | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd NF13 Standardized Values = (x - Avg)/SD | | |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | Q | Conc | Load |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| URS | 16-May-98 | 1070 | 3.487706964 | | 6.98 | | | | 0.62 | |
| USGS | 20-Oct-98 | 90 | 2.249904835 | | 4.50 | | | | -1.48 | |
| USGS | 18-Nov-98 | 155 | 2.521712558 | | 5.04 | | | | -1.01 | |
| USGS | 10-Dec-98 | 304 | 2.858513851 | | 5.72 | | | | -0.44 | |
| USGS | 27-Jan-99 | 569 | 3.171940217 | | 6.34 | | | | 0.09 | |
| USGS | 8-Feb-99 | 408 | 3.005633587 | | 6.01 | | | | -0.19 | |
| USGS | 8-Mar-99 | 545 | 3.150392897 | | 6.30 | | | | 0.05 | |
| USGS | 15-Apr-99 | 1160 | 3.528087642 | | 7.06 | | | | 0.69 | |
| USGS | 10-May-99 | 1930 | 3.782637641 | | 7.57 | | | | 1.12 | |
| USGS | 24-May-99 | 4750 | 4.232949949 | | 8.47 | | | | 1.89 | |
| USGS | 1-Jun-99 | 2700 | 3.950503526 | | 7.90 | | | | 1.41 | |
| USGS | 13-Jul-99 | 295 | 2.843487678 | | 5.69 | | | | -0.47 | |
| USGS | 12-Aug-99 | 161 | 2.540702182 | | 5.08 | | | | -0.98 | |
| USGS | 8-Sep-99 | 111 | 2.354765101 | | 4.71 | | | | -1.36 | |

dCd

**Concentration over time analysis**

| | dCd | NF13 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | LnConc.=mTime+b All data r2, m: | | | Conceatration over time | |
| | | | | 0.000 | 0.00000 |
| | Time | Ln[COC] | [COC] | | |
| first | 16-May-98 | 0.00 | 1 | | |
| mid | 27-Mar-99 | 0.00 | 1 | | |
| last | 8-Sep-99 | 0.00 | 1 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Sep-99 | 0.00 | 1 | | |

**Load over time analysis**

| | dCd | NF13 | | Load over time | |
|---|---|---|---|---|---|
| | LnLoad=mTime+b All data r2, m: | | | #DIV/0! | #DIV/0! |
| | Time | LnLoad | Load | | |
| first | 16-May-98 | #DIV/0! | #DIV/0! | | |
| mid | 27-Mar-99 | #DIV/0! | #DIV/0! | | |
| last | 8-Sep-99 | #DIV/0! | #DIV/0! | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Sep-99 | 0.00 | 1 | | |

| | | | | | |
|---|---|---|---|---|---|
| | max r2 | 0.000 | | max r2 | #DIV/0! |
| | Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | |
| | r2 | slope | intercept | r2 | slope | intercept |
| | only on >4 data points, delete last 4 rows | | | only on >4 data points delete last 4 rows | |
| | | | | #DIV/0! | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! | #DIV/0! |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | **NF13** | | |
| **LN Analysis** | | **dCd** | | |
| **Load** | | ###### | | |
| **Avg:** | #DIV/0! | **Load Data-based LN** | | |
| **SD:** | #DIV/0! | u | ln dCd Load | dCd Load |
| **CV:** | #DIV/0! | 3 | #DIV/0! | #DIV/0! |
| **Min:** | **0.0** | 0 | #DIV/0! | #DIV/0! |
| **Max:** | **0** | -3 | #DIV/0! | #DIV/0! |
| **Median:** | #NUM! | | | |
| | | ###### | #DIV/0! | |
| | | ###### | #DIV/0! | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: #DIV/0!

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | ###### | u | lnLoad | Load | |
| slope, m: | ###### | 3 | #DIV/0! | #DIV/0! | |
| intercept, b: | ###### | 0 | #DIV/0! | #DIV/0! | |
| N | 0 | -3 | #DIV/0! | #DIV/0! | |
| E[Load]: | ###### Parameter Estimates | | | | #DIV/0! |
| SD[Load]: | ###### from LN regression | | | | #DIV/0! |
| CV[Load]: | ###### update graph label | | | | #DIV/0! |
| | | | | | max r2 |
| | | N 14 | | | 0.000 |

| Date | dCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-98 | | 1 | 0.0439 | -1.708 | | |
| 20-Oct-98 | | 2 | 0.1140 | -1.205 | | |
| 18-Nov-98 | | 3 | 0.1842 | -0.899 | | |
| 10-Dec-98 | | 4 | 0.2544 | -0.661 | | |
| 27-Jan-99 | | 5 | 0.3246 | -0.455 | | |
| 8-Feb-99 | | 6 | 0.3947 | -0.267 | | |
| 8-Mar-99 | | 7 | 0.4649 | -0.088 | | |
| 15-Apr-99 | | 8 | 0.5351 | 0.088 | | |
| 10-May-99 | | 9 | 0.6053 | 0.267 | | |
| 24-May-99 | | 10 | 0.6754 | 0.455 | | |
| 1-Jun-99 | | 11 | 0.7456 | 0.661 | | |
| 13-Jul-99 | | 12 | 0.8158 | 0.899 | | |
| 12-Aug-99 | | 13 | 0.8860 | 1.205 | | |
| 8-Sep-99 | | 14 | 0.9561 | 1.708 | | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | **NF13** | 0 | 0.25 |
| **LN Analysis** | | **dCd** | 0.57 | 0.566 |

## Concentration

**Conc. Data, EV=0.25 ug/L CV=0.566**

| | |
|---|---|
| **Avg:** | **0** |
| **SD:** | **0** |
| **CV:** | **0.57** |
| **Min:** | **0** |
| **Max:** | **0** |
| **Median:** | **0** |

**Data-based LN**

| u | ln(dCd) | (dCd) |
|---|---|---|
| 3 | 0.1 | 1 |
| 0 | -1.53 | 0 |
| -3 | -3.11 | 0 |

**u=mLn(Conc.)+b:**

update for r2, EV, CV

| | | | | | |
|---|---|---|---|---|---|
| #DIV/0! | | | | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! |

#DIV/0!

| | | | | | |
|---|---|---|---|---|---|
| | r2 u,lnConc | #DIV/0! | u | lnConc | Conc |
| | slope, m | #DIV/0! | 3 | #DIV/0! | #DIV/0! |
| | intercept, b | #DIV/0! | 0 | #DIV/0! | #DIV/0! |
| | N | 0 | -3 | #DIV/0! | #DIV/0! |
| #DIV/0! | E[Conc] | #DIV/0! | Parameter Estimates | | |
| #DIV/0! | SD[Conc] | #DIV/0! | from LN regression | | |
| #DIV/0! | CV[Conc] | #DIV/0! | update graph label | | |

N 14

max r2 0.000

| Date | dCd Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-98 | 0.021929825 | 1 | 0.0439 | -1.708 | | |
| 20-Oct-98 | 0.057017544 | 2 | 0.1140 | -1.205 | | |
| 18-Nov-98 | 0.092105263 | 3 | 0.1842 | -0.899 | | |
| 10-Dec-98 | 0.127192982 | 4 | 0.2544 | -0.661 | | |
| 27-Jan-99 | 0.162280702 | 5 | 0.3246 | -0.455 | | |
| 8-Feb-99 | 0.19736842 | 6 | 0.3947 | -0.267 | | |
| 8-Mar-99 | 0.23245614 | 7 | 0.4649 | -0.088 | | |
| 15-Apr-99 | 0.26754386 | 8 | 0.5351 | 0.088 | | |
| 10-May-99 | 0.302631579 | 9 | 0.6053 | 0.267 | | |
| 24-May-99 | 0.337719298 | 10 | 0.6754 | 0.455 | | |
| 1-Jun-99 | 0.372807018 | 11 | 0.7456 | 0.661 | | |
| 13-Jul-99 | 0.407894737 | 12 | 0.8158 | 0.899 | | |
| 12-Aug-99 | 0.442982456 | 13 | 0.8860 | 1.205 | | |
| 8-Sep-99 | 0.478070175 | 14 | 0.9561 | 1.708 | | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dCd** | | **NF13** | | | 1,018 | 1020 |
| **LN Analysis** | | **dCd** | | | 1.25 | 1.25 |
| **Discharge, Q** | | **Q Data, EV=1020 cfs CV=1.25** | | | | |
| **Avg:** | **1,018** | **Q Data-based LN** | | | | |
| **SD:** | **1,271** | u | lnQ | Q | | |
| **CV:** | **1.25** | 3 | 9.4 | 11655 | | |
| **Min:** | **90** | 0 | 6.46 | 636 | | |
| **Max:** | **4,750** | -3 | 3.55 | 35 | | |
| **Median:** | **477** | | | | | |
| | | | | | 0.976 | 0.976 |
| | | | | | 1194.3 | 1190 |
| | **u=mLn{Q}+b:** | | | | 2.10 | 2.1 |
| update for r2, EV, CV | **r2=0.976, EV=1190 cfs CV=2.1; max r2=0.98** | | | | | |
| | r2 u,lnQ | 0.976 | u | lnQ | Q | |
| | slope, m | 0 769 | 3 | 10.14 | 25359 | |
| | intercept, b. | -4.799 | 0 | 6.24 | 513 | |
| | N: | 14 | -3 | 2.34 | 10 | |
| | E[Q] | 1194.3 | Parameter Estimates | | | |
| | SD[Q] | 2512 | from LN regression | | | |
| | CV[Q] | 2 10 | update graph label | | | |

| | Q | N: 14 | | | | max r2 0.987 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 20-Oct-98 | 90 | 1 | 0.0439 | -1 708 | 4.500 | 0 976 |
| 8-Sep-99 | 111 | 2 | 0 1140 | -1 205 | 4 710 | 0.987 |
| 18-Nov-98 | 155 | 3 | 0.1842 | -0.899 | 5.043 | 0.987 |
| 12-Aug-99 | 161 | 4 | 0.2544 | -0 661 | 5.081 | 0.986 |
| 13-Jul-99 | 295 | 5 | 0.3246 | -0.455 | 5.687 | 0.984 |
| 10-Dec-98 | 304 | 6 | 0.3947 | -0.267 | 5.717 | 0.985 |
| 8-Feb-99 | 408 | 7 | 0.4649 | -0.088 | 6.011 | 0.980 |
| 8-Mar-99 | 545 | 8 | 0.5351 | 0.088 | 6.301 | 0.974 |
| 27-Jan-99 | 569 | 9 | 0.6053 | 0.267 | 6.344 | 0.965 |
| 16-May-98 | 1070 | 10 | 0.6754 | 0.455 | 6.975 | 0.982 |
| 15-Apr-99 | 1160 | 11 | 0.7456 | 0.661 | 7.056 | |
| 10-May-99 | 1930 | 12 | 0.8158 | 0.899 | 7.565 | |
| 1-Jun-99 | 2700 | 13 | 0.8860 | 1.205 | 7.901 | |
| 24-May-99 | 4750 | 14 | 0.9561 | 1.708 | 8.466 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | NF13 | **Date:** 18-Jul-00 |
| **Chemical:** | dPb | **Analyst:** J.Johnston |
| **Notes:** | | |
| **Input Discharge and Concentration Data below (in red)** | | |

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 36,229 | 1,018 | #DIV/0! | #DIV/0! | | | 0.00 | #DIV/0! | #DIV/0! |
| **SD:** | 126 | 1,271 | #DIV/0! | #DIV/0! | | | 1.00 | #DIV/0! | #DIV/0! |
| **CV:** | 0.00 | 1.25 | #DIV/0! | #DIV/0! | | | | | |
| **Min:** | 35,931 | 90 | 0 | 0.0 | | | -0.73 | 0.00 | 0.00 |
| **Max:** | 36,411 | 4,750 | 0 | 0 | | | 2.94 | 0.00 | 0.00 |
| **Median:** | 36,246 | 477 | #NUM! | #NUM! | | | -0.43 | #NUM! | #NUM! |

| **dPb** | **NF13** | | **: Concentration v. Discharge, Q** | | | **Q = mTime +b** | | **LnQ = mTime +b** |
|---|---|---|---|---|---|---|---|---|
| **#DIV/0!** | | update r2 | **#DIV/0!** | #DIV/0! | | r2 | 0.033 | 0.002 |
| r2 Q,[COC] | #DIV/0! | [dPb] | Q | | | m | 1.8279 | 0.00044 |
| slope, m | #DIV/0! | #DIV/0! | 90.0 | | | b | -65204 | -9.64 |
| intercept, b | #DIV/0! | #DIV/0! | 1017 | | | | | |
| N: 0 | | #DIV/0! | 4750 | | | | | |
| **#DIV/0!** | | | update r2 | #DIV/0! | #DIV/0! | | | |
| r2 lnQ,ln[COC] | #DIV/0! | ln[dPb] | ln Q | [dPb] | Q | | | |
| slope, m | #DIV/0! | #DIV/0! | 4.50 | #DIV/0! | 90 | | | |
| intercept, b | #DIV/0! | #DIV/0! | 6.93 | #DIV/0! | 1,018 | | | |
| N: 0 | | #DIV/0! | 8.47 | #DIV/0! | 4,750 | | | |

| | | | | | | | | dPb | for graph 0 |
|---|---|---|---|---|---|---|---|---|---|
| **N= 14** | | | | | | | | NF13 | |
| | **Sampling Date** | **Q Discharge** | **dPb Concentration** | **dPb Load** | **Ln Q** | **Ln dPb Conc.** | **Ln dPb Load** | **Standardized Values = (x - Avg)/SD** | |
| update for new data | | **cfs** | **ug/L** | **lbs/day** | | | | **Q** | **Conc** | **Load** |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| URS | 16-May-98 | 1070 | | | 6.98 | | | 0.04 | | |
| USGS | 20-Oct-98 | 90 | | | 4.50 | | | -0.73 | | |
| USGS | 18-Nov-98 | 155 | | | 5.04 | | | -0.68 | | |
| USGS | 10-Dec-98 | 304 | | | 5.72 | | | -0.56 | | |
| USGS | 27-Jan-99 | 569 | | | 6.34 | | | -0.35 | | |
| USGS | 8-Feb-99 | 408 | | | 6.01 | | | -0.48 | | |
| USGS | 8-Mar-99 | 545 | | | 6.30 | | | -0.37 | | |
| USGS | 15-Apr-99 | 1160 | | | 7.06 | | | 0.11 | | |
| USGS | 10-May-99 | 1930 | | | 7.57 | | | 0.72 | | |
| USGS | 24-May-99 | 4750 | | | 8.47 | | | 2.94 | | |
| USGS | 1-Jun-99 | 2700 | | | 7.90 | | | 1.32 | | |
| USGS | 13-Jul-99 | 295 | | | 5.69 | | | -0.57 | | |
| USGS | 12-Aug-99 | 161 | | | 5.08 | | | -0.67 | | |
| USGS | 8-Sep-99 | 111 | | | 4.71 | | | -0.71 | | |

dPb

**Concentration over time analysis**

| | dPb | NF13 | |
|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | |
| | **Time** | **Ln(COC)** | **(COC)** |
| first | 16-May-98 | #DIV/0! | #DIV/0! |
| mid | 27-Mar-99 | #DIV/0! | #DIV/0! |
| last | 8-Sep-99 | #DIV/0! | #DIV/0! |
| | **LnConc.=mTime+b >'96 r2, m:** | | |
| | 0-Jan-00 | 0.00 | 1 |
| | 8-Sep-99 | 0.00 | 1 |

| r2 | Slope, m |
|---|---|
| **Concentration over time** | |
| **#DIV/0!** | **#DIV/0!** |
| **0.000** | **0.00000** |

**Load over time analysis**

| | dPb | NF13 | |
|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | |
| | **Time** | **LnLoad** | **Load** |
| first | 16-May-98 | #DIV/0! | #DIV/0! |
| mid | 27-Mar-99 | #DIV/0! | #DIV/0! |
| last | 8-Sep-99 | #DIV/0! | #DIV/0! |
| | ***LnLoad=mTime+b >'96 r2, m*** | | |
| | 0-Jan-00 | 0.00 | 1 |
| | 8-Sep-99 | 0.00 | 1 |

| | |
|---|---|
| **Load over time** | |
| **#DIV/0!** | **#DIV/0!** |
| ***0.000*** | ***0.00000*** |

max r2 #DIV/0!

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points delete last 4 rows | | |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |

max r2 #DIV/0!

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points delete last 4 rows | | |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |
| #DIV/0! | #DIV/0! | #DIV/0! |

update for EV, CV

**dPb**
**NF13**
**LN Analysis**
**dPb**
**Load**
######

| | | | | |
|---|---|---|---|---|
| **Avg:** | **#DIV/0!** | **Load Data-based LN** | | |
| **SD:** | **#DIV/0!** | u | ln dPb Load | dPb Load |
| **CV:** | **#DIV/0!** | 3 | #DIV/0! | #DIV/0! |
| **Min:** | **0.0** | 0 | #DIV/0! | #DIV/0! |
| **Max:** | **0** | -3 | #DIV/0! | #DIV/0! |
| **Median:** | **#NUM!** | | | |
| | | ###### | #DIV/0! | |
| | | ###### | #DIV/0! | |

**u=mLn{Load}+ b:**

update for r2, EV, CV. **#DIV/0!**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad. | ###### | u | lnLoad | Load | | |
| slope, m. | ###### | 3 | #DIV/0! | #DIV/0! | | |
| intercept, b | ###### | 0 | #DIV/0! | #DIV/0! | | |
| N | 0 | -3 | #DIV/0! | #DIV/0! | | |
| E[Load] | ###### Parameter Estimates | | | | #DIV/0! | #DIV/0! |
| SD{Load}. | ###### from LN regression | | | | #DIV/0! | #DIV/0! |
| CV[Load] | ###### update graph label | | | | #DIV/0! | #DIV/0! |
| | | | | | max r2 | |
| | | N. 14 | | | 0 000 | |

| Date | dPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-98 | | 1 | 0.0439 | -1.708 | | |
| 20-Oct-98 | | 2 | 0.1140 | -1.205 | | |
| 18-Nov-98 | | 3 | 0.1842 | -0.899 | | |
| 10-Dec-98 | | 4 | 0.2544 | -0.661 | | |
| 27-Jan-99 | | 5 | 0.3246 | -0.455 | | |
| 8-Feb-99 | | 6 | 0.3947 | -0.267 | | |
| 8-Mar-99 | | 7 | 0.4649 | -0.088 | | |
| 15-Apr-99 | | 8 | 0.5351 | 0.088 | | |
| 10-May-99 | | 9 | 0.6053 | 0.267 | | |
| 24-May-99 | | 10 | 0.6754 | 0.455 | | |
| 1-Jun-99 | | 11 | 0.7456 | 0.661 | | |
| 13-Jul-99 | | 12 | 0.8158 | 0.899 | | |
| 12-Aug-99 | | 13 | 0.8860 | 1.205 | | |
| 8-Sep-99 | | 14 | 0.9561 | 1.708 | | |

dPb
LN Analysis
**Concentration**

update for EV, CV
NF13
dPb
#DIV/0!

| | | | | | |
|---|---|---|---|---|---|
| | | | | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! |

| | | Data-based LN | | |
|---|---|---|---|---|
| Avg: | #DIV/0! | u | ln(dPb) | (dPb) |
| SD: | #DIV/0! | 3 | #DIV/0! | #DIV/0! |
| CV: | #DIV/0! | 0 | #DIV/0! | #DIV/0! |
| Min: | 0 | -3 | #DIV/0! | #DIV/0! |
| Max: | 0 | | | |
| Median: | #NUM! | | | |

u=mLn(Conc.)+b:

update for r2, EV, CV #DIV/0!

| | | | | | |
|---|---|---|---|---|---|
| | | | | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! |
| r2 u,lnConc | #DIV/0! | u | lnConc | Conc | |
| slope, m | #DIV/0! | 3 | #DIV/0! | #DIV/0! | |
| intercept, b | #DIV/0! | 0 | #DIV/0! | #DIV/0! | |
| N: | 0 | -3 | #DIV/0! | #DIV/0! | |
| E(Conc) | #DIV/0! | Parameter Estimates | | | |
| SD(Conc) | #DIV/0! | from LN regression | | | |
| CV(Conc) | #DIV/0! | update graph label | | | |

N: 14

| Date | dPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.000 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-98 | | 1 | 0.0439 | -1.708 | | |
| 20-Oct-98 | | 2 | 0.1140 | -1.205 | | |
| 18-Nov-98 | | 3 | 0.1842 | -0.899 | | |
| 10-Dec-98 | | 4 | 0.2544 | -0.661 | | |
| 27-Jan-99 | | 5 | 0.3246 | -0.455 | | |
| 8-Feb-99 | | 6 | 0.3947 | -0.267 | | |
| 8-Mar-99 | | 7 | 0.4649 | -0.088 | | |
| 15-Apr-99 | | 8 | 0.5351 | 0.088 | | |
| 10-May-99 | | 9 | 0.6053 | 0.267 | | |
| 24-May-99 | | 10 | 0.6754 | 0.455 | | |
| 1-Jun-99 | | 11 | 0.7456 | 0.661 | | |
| 13-Jul-99 | | 12 | 0.8158 | 0.899 | | |
| 12-Aug-99 | | 13 | 0.8860 | 1.205 | | |
| 8-Sep-99 | | 14 | 0.9561 | 1.708 | | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dPb** | | **NF13** | | | 1.018 | 1020 |
| **LN Analysis** | | **dPb** | | | 1.25 | 1.25 |
| **Discharge, Q** | | **Q Data, EV=1020 cfs CV=1.25** | | | | |
| **Avg:** | **1,018** | **Q Data-based LN** | | | | |
| **SD:** | **1,271** | u | lnQ | Q | | |
| **CV:** | **1.25** | 3 | 9.4 | 11655 | | |
| **Min:** | **90** | 0 | 6.46 | 636 | | |
| **Max:** | **4,750** | -3 | 3.55 | 35 | | |
| **Median:** | **477** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.000 | 0.000394 |
| | | | | | #NUM! | #NUM! |
| | **u=mLn(Q)+b:** | | | | #NUM! | #NUM! |
| update for r2, EV, CV | #NUM! | | | | | |
| | r2 u,lnQ: | 0.000 | u | lnQ | Q | |
| | slope, m | 0.015 | 3 | 200.46 | ######## | |
| | intercept, b | -0.096 | 0 | 6.24 | 513 | |
| | N: | 14 | -3 | -187.98 | 0 | |
| | E[Q] | #NUM! | Parameter Estimates | | | |
| | SD[Q]: | #NUM! | from LN regression | | | |
| | CV[Q]: | #NUM! | update graph label | | | |

| | Q | N: 14 | | | | max r2 #DIV/0! |
|---|---|---|---|---|---|---|
| | Discharge | i | i-3/8 / N+1/4 | u | Ln | r2 |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 16-May-98 | 1070 | 1 | 0.0439 | -1.708 | 6.975 | 0.000 |
| 20-Oct-98 | 90 | 2 | 0.1140 | -1.205 | 4.500 | 0.017 |
| 18-Nov-98 | 155 | 3 | 0.1842 | -0.899 | 5.043 | 0.006 |
| 10-Dec-98 | 304 | 4 | 0.2544 | -0.661 | 5.717 | 0.076 |
| 27-Jan-99 | 569 | 5 | 0.3246 | -0.455 | 6.344 | 0.180 |
| 8-Feb-99 | 408 | 6 | 0.3947 | -0.267 | 6.011 | 0.255 |
| 8-Mar-99 | 545 | 7 | 0.4649 | -0.088 | 6.301 | 0.440 |
| 15-Apr-99 | 1160 | 8 | 0.5351 | 0.088 | 7.056 | 0.667 |
| 10-May-99 | 1930 | 9 | 0.6053 | 0.267 | 7.565 | 0.787 |
| 24-May-99 | 4750 | 10 | 0.6754 | 0.455 | 8.466 | 0.821 |
| 1-Jun-99 | 2700 | 11 | 0.7456 | 0.661 | 7.901 | 0.719 |
| 13-Jul-99 | 295 | 12 | 0.8158 | 0.899 | 5.687 | 0.925 |
| 12-Aug-99 | 161 | 13 | 0.8860 | 1.205 | 5.081 | 1.000 |
| 8-Sep-99 | 111 | 14 | 0.9561 | 1.708 | 4.710 | #DIV/0! |

**Secondary Scale For LN graphs**

| u | *Cumulative* | | |
|---|---|---|---|
| | **Frequecny** | ***Candidate x-axis positions*** | |
| | secondary y-axis | x-axis position | |
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **NF13** | **Date:** | **18-Jul-00** |
| **Chemical:** | **dZn** | **Analyst:** | **J.Johnston** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 36,229 | 1,018 | 1 | 2 | | | 0.00 | #DIV/0! | #DIV/0! |
| **SD:** | 126 | 1,271 | 0 | 0 | | | 1.00 | #DIV/0! | #DIV/0! |
| **CV:** | 0.00 | 1.25 | 0.00 | 0.00 | | | | | |
| **Min:** | 35,931 | 90 | 1 | 1.6 | | | -0.73 | #DIV/0! | #DIV/0! |
| **Max:** | 36,411 | 4,750 | 1 | 2 | | | 2.94 | #DIV/0! | #DIV/0! |
| **Median:** | 36,246 | 477 | 1 | 2 | | | -0.43 | #DIV/0! | #DIV/0! |

| **dZn** | **NF13** | | **: Concentration v. Discharge, Q** | | | **Q = mTime +b** | | **LnQ = mTime +b** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **#DIV/0!** | | update r2 | **#DIV/0!** | #DIV/0! | | r2 | 0.033 | 0.002 | | |
| r2 Q,[COC] | #DIV/0! | [dZn] | Q | | | m | 1.8279 | 0.00044 | | |
| slope, m | #DIV/0! | #DIV/0! | 90.0 | | | b | -65204 | -9.64 | | |
| intercept, b | #DIV/0! | #DIV/0! | 1017.7 | | | | | | | |
| N | 1 | #DIV/0! | 4750 | | | | | | | |
| **#DIV/0!** | | | update r2 | #DIV/0! | #DIV/0! | | | | | |
| r2 lnQ,ln[COC] | #DIV/0! | ln[dZn] | ln Q | [dZn] | Q | | | | | |
| slope, m | #DIV/0! | #DIV/0! | 4.50 | #DIV/0! | 90 | | | | | |
| intercept, b | #DIV/0! | #DIV/0! | 6.93 | #DIV/0! | 1,018 | | | | | |
| N | 1 | #DIV/0! | 8.47 | #DIV/0! | 4,750 | | | | | |

**N= 14**

| | | | | | | | | dZn | for graph 0 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Sampling Date** | **Q Discharge** | **dZn Concentration** | **dZn Load** | **Ln Q** | **Ln dZn** | **Ln dZn** | NF13 **Standardized Values = (x - Avg)/SD** | | |
| update for new data | | **cfs** | **ug/L** | **lbs/day** | | **Conc.** | **Load** | **Q** | **Conc** | **Load** |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| URS | 16-May-98 | 1070 | | | 6.98 | | | 0.04 | | |
| USGS | 20-Oct-98 | 90 | | | 4.50 | | | -0.73 | | |
| USGS | 18-Nov-98 | 155 | | | 5.04 | | | -0.68 | | |
| USGS | 10-Dec-98 | 304 | | | 5.72 | | | -0.56 | | |
| USGS | 27-Jan-99 | 569 | | | 6.34 | | | -0.35 | | |
| USGS | 8-Feb-99 | 408 | | | 6.01 | | | -0.48 | | |
| USGS | 8-Mar-99 | 545 | | | 6.30 | | | -0.37 | | |
| USGS | 15-Apr-99 | 1160 | | | 7.06 | | | 0.11 | | |
| USGS | 10-May-99 | 1930 | | | 7.57 | | | 0.72 | | |
| USGS | 24-May-99 | 4750 | | | 8.47 | | | 2.94 | | |
| USGS | 1-Jun-99 | 2700 | | | 7.90 | | | 1.32 | | |
| USGS | 13-Jul-99 | 295 | 1 | 1.6 | 5.69 | 0.00 | 0.46 | -0.57 | #DIV/0! | #DIV/0! |
| USGS | 12-Aug-99 | 161 | | | 5.08 | | | -0.67 | | |
| USGS | 8-Sep-99 | 111 | | | 4.71 | | | -0.71 | | |

dZn

**Concentration over time analysis**

| | dZn | NF13 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **Concentration over time** | |
| | **Time** | **Ln[COC]** | **[COC]** | #DIV/0! | #DIV/0! |
| first | 16-May-98 | #DIV/0! | #DIV/0! | | |
| mid. | 27-Mar-99 | #DIV/0! | #DIV/0! | | |
| last | 8-Sep-99 | #DIV/0! | #DIV/0! | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Sep-99 | 0.00 | 1 | | |

**Load over time analysis**

| | dZn | NF13 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **#DIV/0!** | **#DIV/0!** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 16-May-98 | #DIV/0! | #DIV/0! | | |
| mid. | 27-Mar-99 | #DIV/0! | #DIV/0! | | |
| last | 8-Sep-99 | #DIV/0! | #DIV/0! | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Sep-99 | 0.00 | 1 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | max r2 | #DIV/0! | | max r2 | #DIV/0! | |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |

update for EV, CV

**dZn**

**NF13**

**LN Analysis**

**dZn**

## Load

**Load Data, EV=1.59 #/d CV=0**

**Load Data-based LN**

| | | u | ln dZn Load | dZn Load |
|---|---|---|---|---|
| **Avg:** | **2** | 3 | 0.5 | 2 |
| **SD:** | **0** | 0 | 0.46 | 2 |
| **CV:** | **0.00** | -3 | 0.46 | 1.6 |
| **Min:** | **1.6** | | | |
| **Max:** | **2** | | | |
| **Median:** | **2** | | | |

| | |
|---|---|
| 2 | 1.59 |
| 0.00 | 0 |

**u=mLn(Load)+ b:**

update for r2, EV, CV **#DIV/0!**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad: | ###### | u | lnLoad | Load | | |
| slope, m: | ###### | 3 | #DIV/0! | #DIV/0! | | |
| intercept, b: | ###### | 0 | #DIV/0! | #DIV/0! | | |
| N: | 1 | -3 | #DIV/0! | #DIV/0! | | |
| E[Load]: | ###### Parameter Estimates | | | | #DIV/0! | #DIV/0! |
| SD[Load]: | ###### from LN regression | | | | #DIV/0! | #DIV/0! |
| CV[Load]: | ###### update graph label | | | | #DIV/0! | #DIV/0! |
| | | | | | max r2 | |
| | | N: 14 | | | #DIV/0! | |

| Date | dZn Load lbs/day | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 16-May-98 | | 1 | 0.0439 | -1.708 | | |
| 20-Oct-98 | | 2 | 0.1140 | -1.205 | | |
| 18-Nov-98 | | 3 | 0.1842 | -0.899 | | |
| 10-Dec-98 | | 4 | 0.2544 | -0.661 | | |
| 27-Jan-99 | | 5 | 0.3246 | -0.455 | | |
| 8-Feb-99 | | 6 | 0.3947 | -0.267 | | |
| 8-Mar-99 | | 7 | 0.4649 | -0.088 | | |
| 15-Apr-99 | | 8 | 0.5351 | 0.088 | | |
| 10-May-99 | | 9 | 0.6053 | 0.267 | | |
| 24-May-99 | | 10 | 0.6754 | 0.455 | | |
| 1-Jun-99 | | 11 | 0.7456 | 0.661 | | |
| 13-Jul-99 | 1.6 | 12 | 0.8158 | 0.899 | 0.462 | #DIV/0! |
| 12-Aug-99 | | 13 | 0.8860 | 1.205 | | |
| 8-Sep-99 | | 14 | 0.9561 | 1.708 | | |

update for EV, CV

**dZn**
**LN Analysis**
**Concentration**

**NF13**
**dZn**

| | | | | | |
|---|---|---|---|---|---|
| | | | | 1 | 1 |
| | | | | 0.00 | 0 |

**Conc. Data, EV=1 ug/L CV=0**
**Data-based LN**

| | | u | ln(dZn) | (dZn) |
|---|---|---|---|---|
| **Avg:** | 1 | 3 | 0.0 | 1 |
| **SD:** | 0 | 0 | 0.00 | 1 |
| **CV:** | 0.00 | -3 | 0.00 | 1 |
| **Min:** | 1 | | | |
| **Max:** | 1 | | | |
| **Median:** | 1 | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV #DIV/0!

| | | | | | |
|---|---|---|---|---|---|
| | | | | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! |
| | | | | #DIV/0! | #DIV/0! |
| r2 u,lnConc | #DIV/0! | u | lnConc. | Conc | |
| slope, m | #DIV/0! | 3 | #DIV/0! | #DIV/0! | |
| intercept, b | #DIV/0! | 0 | #DIV/0! | #DIV/0! | |
| N | 1 | -3 | #DIV/0! | #DIV/0! | |
| E[Conc] | #DIV/0! | Parameter Estimates | | | |
| SD[Conc] | #DIV/0! | from LN regression | | | |
| CV[Conc] | #DIV/0! | update graph label | | | |

N= 14

| Date | dZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-98 | | 1 | 0.0439 | -1.708 | | |
| 20-Oct-98 | | 2 | 0.1140 | -1.205 | | |
| 18-Nov-98 | | 3 | 0.1842 | -0.899 | | |
| 10-Dec-98 | | 4 | 0.2544 | -0.661 | | |
| 27-Jan-99 | | 5 | 0.3246 | -0.455 | | |
| 8-Feb-99 | | 6 | 0.3947 | -0.267 | | |
| 8-Mar-99 | | 7 | 0.4649 | -0.088 | | |
| 15-Apr-99 | | 8 | 0.5351 | 0.088 | | |
| 10-May-99 | | 9 | 0.6053 | 0.267 | | |
| 24-May-99 | | 10 | 0.6754 | 0.455 | | |
| 1-Jun-99 | | 11 | 0.7456 | 0.661 | | |
| 13-Jul-99 | 1 | 12 | 0.8158 | 0.899 | 0.000 | #DIV/0! |
| 12-Aug-99 | | 13 | 0.8860 | 1.205 | | |
| 8-Sep-99 | | 14 | 0.9561 | 1.708 | | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **dZn** | | **NF13** | | | 1,018 | 1020 |
| **LN Analysis** | | **dZn** | | | 1.25 | 1.25 |

## Discharge, Q

**Q Data, EV=1020 cfs CV=1.25**

| | |
|---|---|
| **Avg:** | **1,018** |
| **SD:** | **1,271** |
| **CV:** | **1.25** |
| **Min:** | **90** |
| **Max:** | **4,750** |
| **Median:** | **477** |

**Q Data-based LN**

| u | lnQ | Q |
|---|---|---|
| 3 | 9.4 | 11655 |
| 0 | 6.46 | 636 |
| -3 | 3.55 | 35 |

| | | |
|---|---|---|
| | 0.000 | 0.000394 |
| | #NUM! | #NUM! |
| **u=mLn(Q)+b:** | #NUM! | #NUM! |

update for r2, EV, CV

| | | | | | |
|---|---|---|---|---|---|
| #NUM! | | | | | |
| r2 u,lnQ | 0.000 | u | lnQ | Q | |
| slope, m | 0.015 | 3 | 200.46 | ######## | |
| intercept, b | -0.096 | 0 | 6.24 | 513 | |
| N: | 14 | -3 | -187.98 | 0 | |
| E[Q] | #NUM! | Parameter Estimates | | | |
| SD[Q] | #NUM! | from LN regression | | | |
| CV[Q] | #NUM! | update graph label | | | |

N: 14

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-98 | 1070 | 1 | 0.0439 | -1.708 | 6.975 | 0.000 |
| 20-Oct-98 | 90 | 2 | 0.1140 | -1.205 | 4.500 | 0.017 |
| 18-Nov-98 | 155 | 3 | 0.1842 | -0.899 | 5.043 | 0.006 |
| 10-Dec-98 | 304 | 4 | 0.2544 | -0.661 | 5.717 | 0.076 |
| 27-Jan-99 | 569 | 5 | 0.3246 | -0.455 | 6.344 | 0.180 |
| 8-Feb-99 | 408 | 6 | 0.3947 | -0.267 | 6.011 | 0.255 |
| 8-Mar-99 | 545 | 7 | 0.4649 | -0.088 | 6.301 | 0.440 |
| 15-Apr-99 | 1160 | 8 | 0.5351 | 0.088 | 7.056 | 0.667 |
| 10-May-99 | 1930 | 9 | 0.6053 | 0.267 | 7.565 | 0.787 |
| 24-May-99 | 4750 | 10 | 0.6754 | 0.455 | 8.466 | 0.821 |
| 1-Jun-99 | 2700 | 11 | 0.7456 | 0.661 | 7.901 | 0.719 |
| 13-Jul-99 | 295 | 12 | 0.8158 | 0.899 | 5.687 | 0.925 |
| 12-Aug-99 | 161 | 13 | 0.8860 | 1.205 | 5.081 | 1.000 |
| 8-Sep-99 | 111 | 14 | 0.9561 | 1.708 | 4.710 | #DIV/0! |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **NF13** | **Date:** | **19-Jul-00** |
| **Chemical:** | **tCd** | **Analyst:** | **J.Johnston** |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 36,209 | 443 | #DIV/0! | #DIV/0! | | 0.00 | #DIV/0! | #DIV/0! |
| **SD:** | 135 | 353 | #DIV/0! | #DIV/0! | | 1.00 | #DIV/0! | #DIV/0! |
| **CV:** | 0.00 | 0.80 | #DIV/0! | #DIV/0! | | | | |
| **Min:** | 35,931 | 90 | 0 | 0.0 | | -1.00 | 0.00 | 0.00 |
| **Max:** | 36,411 | 1,160 | 0 | 0 | | 2.03 | 0.00 | 0.00 |
| **Median:** | 36,199 | 304 | #NUM! | #NUM! | | -0.39 | #NUM! | #NUM! |

| **tCd** | **NF13** | | **: Concentration v. Discharge, Q** | | | **Q = mTime +b** | | **LnQ = mTime +b** |
|---|---|---|---|---|---|---|---|---|
| **#DIV/0!** | | update r2 | **#DIV/0!** | #DIV/0! | | r2 | 0.135 | 0.101 |
| r2 Q,[COC]: | #DIV/0! | [tCd] | Q | | | m | -0.9598 | -0.00194 |
| slope, m | #DIV/0! | #DIV/0! | 90.0 | | | b | 35196 | 75.94 |
| intercept, b: | #DIV/0! | #DIV/0! | 442.5 | | | | | |
| N: 0 | | #DIV/0! | 1160 | | | | | |
| **#DIV/0!** | | update r2 | | #DIV/0! | #DIV/0! | | | |
| r2 lnQ,ln[COC]: | #DIV/0! | ln[tCd] | ln Q | [tCd] | Q | | | |
| slope, m | #DIV/0! | #DIV/0! | 4.50 | #DIV/0! | 90 | | | |
| intercept, b | #DIV/0! | #DIV/0! | 6.09 | #DIV/0! | 443 | | | |
| N: 0 | | #DIV/0! | 7.06 | #DIV/0! | 1,160 | | | |

| | | | | | | | | tCd | for graph 0 | |
|---|---|---|---|---|---|---|---|---|---|---|
| **N= 11** | | | | | | | | NF13 | | |
| | **Sampling Date** | **Q Discharge** | **tCd Concentration** | **tCd Load** | **Ln Q** | **Ln tCd Conc.** | **Ln tCd Load** | **Standardized Values = (x - Avg)/SD** | | |
| update for new data | | **cfs** | **ug/L** | **lbs/day** | | | | **Q** | **Conc** | **Load** |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| URS | 16-May-98 | 1070 | | | 6.98 | | | 1.78 | | |
| USGS | 20-Oct-98 | 90 | | | 4.50 | | | -1.00 | | |
| USGS | 18-Nov-98 | 155 | | | 5.04 | | | -0.81 | | |
| USGS | 10-Dec-98 | 304 | | | 5.72 | | | -0.39 | | |
| USGS | 27-Jan-99 | 569 | | | 6.34 | | | 0.36 | | |
| USGS | 8-Feb-99 | 408 | | | 6.01 | | | -0.10 | | |
| USGS | 8-Mar-99 | 545 | | | 6.30 | | | 0.29 | | |
| USGS | 15-Apr-99 | 1160 | | | 7.06 | | | 2.03 | | |
| USGS | 13-Jul-99 | 295 | | | 5.69 | | | -0.42 | | |
| USGS | 12-Aug-99 | 161 | | | 5.08 | | | -0.80 | | |
| USGS | 8-Sep-99 | 111 | | | 4.71 | | | -0.94 | | |

tCd

**Concentration over time analysis**

| | tCd | NF13 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **Concentration over time** | |
| | **Time** | **Ln[COC]** | **[COC]** | **#DIV/0!** | **#DIV/0!** |
| first | 16-May-98 | #DIV/0! | #DIV/0! | | |
| mid | 8-Feb-99 | #DIV/0! | #DIV/0! | | |
| last | 8-Sep-99 | #DIV/0! | #DIV/0! | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Sep-99 | 0.00 | 1 | | |

***Load over time analysis***

| | tCd | NF13 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | ***#DIV/0!*** | ***#DIV/0!*** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 16-May-98 | #DIV/0! | #DIV/0! | | |
| mid | 8-Feb-99 | #DIV/0! | #DIV/0! | | |
| last | 8-Sep-99 | #DIV/0! | #DIV/0! | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | ***0.000*** | ***0.00000*** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 8-Sep-99 | 0.00 | 1 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | max r2 | #DIV/0! | | max r2 | #DIV/0! | |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |
| | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |

update for EV, CV

**tCd** NF13

**LN Analysis** tCd

**Load** ######

| | | | | |
|---|---|---|---|---|
| **Avg:** | **#DIV/0!** | **Load Data-based LN** | | |
| **SD:** | **#DIV/0!** | u | ln tCd Load | tCd Load |
| **CV:** | **#DIV/0!** | 3 | #DIV/0! | #DIV/0! |
| **Min:** | **0.0** | 0 | #DIV/0! | #DIV/0! |
| **Max:** | **0** | -3 | #DIV/0! | #DIV/0! |
| **Median:** | **#NUM!** | | | |
| | | ###### | #DIV/0! | |
| | | ###### | #DIV/0! | |

**u=mLn{Load}+ b:**

update for r2, EV, CV **#DIV/0!**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad | ###### | u | lnLoad | Load | | |
| slope, m | ###### | 3 | #DIV/0! | #DIV/0! | | |
| intercept, b | ###### | 0 | #DIV/0! | #DIV/0! | | |
| N: | 0 | -3 | #DIV/0! | #DIV/0! | | |
| E[Load] | ###### Parameter Estimates | | | | #DIV/0! | #DIV/0! |
| SD[Load] | ###### from LN regression | | | | #DIV/0! | #DIV/0! |
| CV[Load] | ###### update graph label | | | | #DIV/0! | #DIV/0! |
| | | | | | max r2 | |
| | N: 11 | | | | 0.000 | |

| Date | tCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward | |
|---|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | | |
| 20-Oct-98 | | 1 | 0.0556 | -1.593 | | | |
| 8-Sep-99 | | 2 | 0.1444 | -1.061 | | | |
| 18-Nov-98 | | 3 | 0.2333 | -0.728 | | | |
| 12-Aug-99 | | 4 | 0.3222 | -0.461 | | | |
| 13-Jul-99 | | 5 | 0.4111 | -0.225 | | | |
| 27-Jan-99 | | 6 | 0.5000 | 0.000 | | | |
| 16-May-98 | | 7 | 0.5889 | 0.225 | | | |
| 15-Apr-99 | | 8 | 0.6778 | 0.461 | | | |
| 10-Dec-98 | | 9 | 0.7667 | 0.728 | | | |
| 8-Feb-99 | | 10 | 0.8556 | 1.061 | | | |
| 8-Mar-99 | | 11 | 0.9444 | 1.593 | | | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tCd** | | **NF13** | | #DIV/0! | #DIV/0! |
| **LN Analysis** | | **tCd** | | #DIV/0! | #DIV/0! |
| **Concentration** | | **#DIV/0!** | | | |
| **Avg:** | **#DIV/0!** | **Data-based LN** | | | |
| **SD:** | **#DIV/0!** | u | ln[tCd] | [tCd] | |
| **CV:** | **#DIV/0!** | 3 | #DIV/0! | #DIV/0! | |
| **Min:** | **0** | 0 | #DIV/0! | #DIV/0! | |
| **Max:** | **0** | -3 | #DIV/0! | #DIV/0! | |
| **Median:** | **#NUM!** | | | | |

**u=mLn(Conc.)+b:**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | #DIV/0! | #DIV/0! |
| | | | | | #DIV/0! | #DIV/0! |
| update for r2, EV, CV | **#DIV/0!** | | | | #DIV/0! | #DIV/0! |
| | r2 u,lnConc | #DIV/0! | u | lnConc | Conc | |
| | slope, m | #DIV/0! | 3 | #DIV/0! | #DIV/0! | |
| | intercept, b | #DIV/0! | 0 | #DIV/0! | #DIV/0! | |
| | N | 0 | -3 | #DIV/0! | #DIV/0! | |
| | E[Conc] | #DIV/0! | Parameter Estimates | | | |
| | SD[Conc] | #DIV/0! | from LN regression | | | |
| | CV[Conc] | #DIV/0! | update graph label | | | |

| Date | tCd **Concentration** ug/L **Ranked** | i **rank** | N 11 *i-3/8 / N+1/4* **plotting points** | u **y-axis** | Ln **x-axis** | max r2 0.000 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-98 | | 1 | 0.0556 | -1.593 | | |
| 13-Jul-99 | | 2 | 0.1444 | -1.061 | | |
| 12-Aug-99 | | 3 | 0.2333 | -0.728 | | |
| 8-Sep-99 | | 4 | 0.3222 | -0.461 | | |
| 10-Dec-98 | | 5 | 0.4111 | -0.225 | | |
| 8-Feb-99 | | 6 | 0.5000 | 0.000 | | |
| 20-Oct-98 | | 7 | 0.5889 | 0.225 | | |
| 18-Nov-98 | | 8 | 0.6778 | 0.461 | | |
| 27-Jan-99 | | 9 | 0.7667 | 0.728 | | |
| 8-Mar-99 | | 10 | 0.8556 | 1.061 | | |
| 15-Apr-99 | | 11 | 0.9444 | 1.593 | | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **NF13** | | | 443 | 443 |
| **LN Analysis** | | **tCd** | | | 0.80 | 0.798 |

## Discharge, Q

**Q Data, EV=443 cfs CV=0.798**

| | |
|---|---|
| **Avg:** | **443** |
| **SD:** | **353** |
| **CV:** | **0.80** |
| **Min:** | **90** |
| **Max:** | **1,160** |
| **Median:** | **304** |

**Q Data-based LN**

| | u | lnQ | Q |
|---|---|---|---|
| | 3 | 8.07 | 2843 |
| | 0 | 5.85 | 346 |
| | -3 | 3.74 | 42 |

| | | |
|---|---|---|
| | 0.968 | 0.968 |
| | 493.8 | 494 |
| **u=mLn(Q)+b:** | 1.18 | 1.18 |

update for r2, EV, CV **r2=0.968, EV=494 cfs CV=1.18; max r2=0.98**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnQ | 0.968 | u | lnQ | Q | |
| slope, m | 1.071 | 3 | 8.57 | 5260 | |
| intercept, b | -6.174 | 0 | 5.77 | 319 | |
| N | 11 | -3 | 2.96 | 19 | |
| E[Q] | 493.8 | Parameter Estimates | | | |
| SD[Q] | 583 | from LN regression | | | |
| CV[Q] | 1.18 | update graph label | | | |

| Date | Q Discharge cfs Ranked | N 11 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 20-Oct-98 | 90 | 1 | 0.0556 | -1.593 | 4.500 | 0.968 |
| 8-Sep-99 | 111 | 2 | 0.1444 | -1.061 | 4.710 | 0.967 |
| 18-Nov-98 | 155 | 3 | 0.2333 | -0.728 | 5.043 | 0.954 |
| 12-Aug-99 | 161 | 4 | 0.3222 | -0.461 | 5.081 | 0.939 |
| 13-Jul-99 | 295 | 5 | 0.4111 | -0.225 | 5.687 | 0.941 |
| 10-Dec-98 | 304 | 6 | 0.5000 | 0.000 | 5.717 | 0.925 |
| 8-Feb-99 | 408 | 7 | 0.5889 | 0.225 | 6.011 | 0.892 |
| 8-Mar-99 | 545 | 8 | 0.6778 | 0.461 | 6.301 | 0.827 |
| 27-Jan-99 | 569 | 9 | 0.7667 | 0.728 | 6.344 | 0.725 |
| 16-May-98 | 1070 | 10 | 0.8556 | 1.061 | 6.975 | 1.000 |
| 15-Apr-99 | 1160 | 11 | 0.9444 | 1.593 | 7.056 | #DIV/0! |

**Secondary Scale For LN graphs**

| z | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** NF13 **Date:** 19-Jul-00

**Chemical:** tPb **Analyst:** J.Johnston

**Notes:**

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Avg:** | 36,304 | 4,750 | #DIV/0! | #DIV/0! | | | #DIV/0! | #DIV/0! | #DIV/0! |
| **SD:** | 0 | 0 | #DIV/0! | #DIV/0! | | | #DIV/0! | #DIV/0! | #DIV/0! |
| **CV:** | 0.00 | 0.00 | #DIV/0! | #DIV/0! | | | | | |
| **Min:** | 36,304 | 4,750 | 0 | 0.0 | | | #DIV/0! | 0.00 | 0.00 |
| **Max:** | 36,304 | 4,750 | 0 | 0 | | | #DIV/0! | 0.00 | 0.00 |
| **Median:** | 36,304 | 4,750 | #NUM! | #NUM! | | | #DIV/0! | #NUM! | #NUM! |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **tPb** | **NF13** | | **: Concentration v. Discharge, Q** | | | **Q = mTime +b** | | **LnQ = mTime +b** | |
| **#DIV/0!** | | update r2 | **#DIV/0!** | #DIV/0! | | r2: | #DIV/0! | #DIV/0! | |
| r2 Q,[COC]: | #DIV/0! | [tPb] | Q | | | m | #DIV/0! | #DIV/0! | |
| **slope, m** | #DIV/0! | #DIV/0! | 4750.0 | | | b | #DIV/0! | #DIV/0! | |
| intercept, b | #DIV/0! | #DIV/0! | 4750.0 | | | | | | |
| N: 0 | | #DIV/0! | 4750 | | | | | | |
| **#DIV/0!** | | | update r2 | #DIV/0! | #DIV/0! | | | | |
| r2 lnQ,ln[COC]: | #DIV/0! | ln[tPb] | ln Q | [tPb] | Q | | | | |
| slope, m | #DIV/0! | #DIV/0! | 8.47 | #DIV/0! | 4,750 | | | | |
| intercept, b | #DIV/0! | #DIV/0! | 8.47 | #DIV/0! | 4,750 | | | | |
| N: 0 | | #DIV/0! | 8.47 | #DIV/0! | 4,750 | | | | |

| | | | | | | | | | for graph | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | tPb | 0 | |
| N= 1 | | | | | | | | NF13 | | |
| | **Sampling Date** | **Q Discharge** | **tPb Concentration** | **tPb Load** | **Ln Q** | **Ln tPb Conc.** | **Ln tPb Load** | **Standardized Values = (x - Avg)/SD** | | |
| update for new data | | cfs | ug/L | lbs/day | | | | **Q** | **Conc** | **Load** |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| USGS | 24-May-99 | 4750 | | | 8.47 | | | #DIV/0! | | |

tPb

**Concentration over time analysis** r2 Slope, m

| | tPb | NF13 | | Concentration over time | |
|---|---|---|---|---|---|
| | LnConc.=mTime+b All data r2, m: | | | #DIV/0! | #DIV/0! |
| | Time | Ln[COC] | [COC] | | |
| first | 24-May-99 | #DIV/0! | #DIV/0! | | |
| mid | 24-May-99 | #DIV/0! | #DIV/0! | | |
| last | 24-May-99 | #DIV/0! | #DIV/0! | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 24-May-99 | 0.00 | 1 | | |

**Load over time analysis**

| | tPb | NF13 | | Load over time | |
|---|---|---|---|---|---|
| | LnLoad=mTime+b All data r2, m: | | | #DIV/0! | #DIV/0! |
| | Time | LnLoad | Load | | |
| first | 24-May-99 | #DIV/0! | #DIV/0! | | |
| mid | 24-May-99 | #DIV/0! | #DIV/0! | | |
| last | 24-May-99 | #DIV/0! | #DIV/0! | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 24-May-99 | 0.00 | 1 | | |

max r2 #DIV/0! max r2 #DIV/0!

| Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | | |
|---|---|---|---|---|---|
| r2 | slope | intercept | r2 | slope | intercept |
| only on >4 data points: delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tPb** | | **NF13** | | |
| **LN Analysis** | | **tPb** | | |
| **Load** | | ###### | | |
| **Avg:** | #DIV/0! | **Load Data-based LN** | | |
| **SD:** | #DIV/0! | u | ln tPb Load | tPb Load |
| **CV:** | #DIV/0! | 3 | #DIV/0! | #DIV/0! |
| **Min:** | 0.0 | 0 | #DIV/0! | #DIV/0! |
| **Max:** | 0 | -3 | #DIV/0! | #DIV/0! |
| **Median:** | #NUM! | | | |
| | | ###### | #DIV/0! | |
| | | ###### | #DIV/0! | |

**u=mLn(Load)+ b:**

| | | | | | | |
|---|---|---|---|---|---|---|
| update for r2, EV, CV | #DIV/0! | | | | | |
| r2 u,lnLoad | ###### | u | lnLoad | Load | | |
| slope, m | ###### | 3 | #DIV/0! | #DIV/0! | | |
| intercept, b | ###### | 0 | #DIV/0! | #DIV/0! | | |
| N | 0 | -3 | #DIV/0! | #DIV/0! | | |
| E[Load] | ###### Parameter Estimates | | | | | #DIV/0! |
| SD[Load] | ###### from LN regression | | | | | #DIV/0! |
| CV[Load] | ###### update graph label | | | | | #DIV/0! |
| | | | | | | max r2 |
| | **tPb** | N, i | | | | 0.000 |
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 24-May-99 | | 1 | 0.5000 | 0.000 | | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tPb** | | NF13 | | #DIV/0! | #DIV/0! |
| **LN Analysis** | | tPb | | #DIV/0! | #DIV/0! |
| **Concentration** | | #DIV/0! | | | |
| **Avg:** | #DIV/0! | Data-based LN | | | |
| **SD:** | #DIV/0! | u | ln[tPb] | {tPb} | |
| **CV:** | #DIV/0! | 3 | #DIV/0! | #DIV/0! | |
| **Min:** | 0 | 0 | #DIV/0! | #DIV/0! | |
| **Max:** | 0 | -3 | #DIV/0! | #DIV/0! | |
| **Median:** | #NUM! | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | #DIV/0! | #DIV/0! |
| | **u=mLn(Conc.)+b:** | | | | #DIV/0! | #DIV/0! |
| update for r2, EV, CV | #DIV/0! | | | | #DIV/0! | #DIV/0! |
| | r2 u,lnConc | #DIV/0! | u | lnConc | Conc | |
| | slope, m | #DIV/0! | 3 | #DIV/0! | #DIV/0! | |
| | intercept, b | #DIV/0! | 0 | #DIV/0! | #DIV/0! | |
| | N | 0 | -3 | #DIV/0! | #DIV/0! | |
| #DIV/0! | E[Conc] | #DIV/0! | Parameter Estimates | | | |
| #DIV/0! | SD[Conc] | #DIV/0! | from LN regression | | | |
| #DIV/0! | CV[Conc] | #DIV/0! | update graph label | | | |

| | | | | | | max r2 |
|---|---|---|---|---|---|---|
| | **tPb** | N= 1 | | | | 0.000 |
| | ***Concentration*** | ***i*** | ***i-3/8 / N+1/4*** | **u** | **Ln** | r2 |
| **Date** | **ug/L** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | ***Ranked*** | | | | | |
| update and rank for new data | | | | | | |
| 24-May-99 | | 1 | 0.5000 | 0.000 | | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **NF13** | | | 4,750 | 4750 |
| **LN Analysis** | | **tPb** | | | 0.00 | 0 |
| **Discharge, Q** | | **Q Data, EV=4750 cfs CV=0** | | | | |
| **Avg:** | **4,750** | **Q Data-based LN** | | | | |
| **SD:** | **0** | u | lnQ | Q | | |
| **CV:** | **0.00** | 3 | 8.5 | 4750 | | |
| **Min:** | **4,750** | 0 | 8.47 | 4750 | | |
| **Max:** | **4,750** | -3 | 8.47 | 4750 | | |
| **Median:** | **4,750** | | | | | |
| | | | | | #DIV/0! | #DIV/0! |
| | | | | | #DIV/0! | #DIV/0! |
| | **u=mLn{Q}+b:** | | | | #DIV/0! | #DIV/0! |

update for r2, EV, CV **#DIV/0!**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | ###### | u | lnQ | Q |
| slope, m: | ###### | 3 | #DIV/0! | #DIV/0! |
| intercept, b: | ###### | 0 | #DIV/0! | #DIV/0! |
| N: | 1 | -3 | #DIV/0! | #DIV/0! |
| E[Q] | ###### Parameter Estimates | | | |
| SD[Q] | ###### from LN regression | | | |
| CV[Q] | ###### update graph label | | | |

| | Q | N | 1 | | | | max r2 #DIV/0! |
|---|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 24-May-99 | 4750 | 1 | 0.5000 | 0.000 | 8.466 | #DIV/0! |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | **NF13** | **Date:** **19-Jul-00** |
| **Chemical:** | **tZn** | **Analyst:** **J.Johnston** |
| **Notes:** | | |
| **Input Discharge and Concentration Data below (in red)** | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 36,175 | 462 | 19 | 64 | 0.00 | 0.00 | 0.00 |
| **SD:** | 58 | 331 | 14 | 84 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.00 | 0.72 | 0.73 | 1.30 | | | |
| **Min:** | 36,088 | 90 | 10 | 4.8 | -1.12 | -0.63 | -0.71 |
| **Max:** | 36,265 | 1,160 | 40 | 250 | 2.11 | 1.58 | 2.22 |
| **Median:** | 36,187 | 408 | 10 | 22 | -0.16 | -0.63 | -0.50 |

| tZn NF13 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.559)** | | update r2 | **0.56** | 0.559 | r2 | 0.831 | 0.921 |
| r2 Q,[COC] | 0.56 | [tZn] | Q | | m | 5.1778 | 0.01309 |
| slope, m | 0.0 | | 90.0 | | b | -186842 | -467.56 |
| intercept, b | 4.4 | 19 | 461.6 | | | | |
| N: 7 | | 40 | 1160 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.432)** | | update r2 | | 0.43 | 0.432 | | |
| r2 lnQ,ln[COC] | 0.43 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m | 0.52 | 2.00 | 4.50 | 7 | 90 | | |
| intercept, b | -0.33 | 2.84 | 6.13 | 1 | 462 | | |
| N: 7 | | 3.32 | 7.06 | 28 | 1,160 | | |

| N= 7 | | | | | | | | tZn NF13 | for graph 0 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | Standardized Values = (x - Avg)/SD Q | Conc | Load |
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| USGS | 8-Feb-99 | 408 | 10 | 22.0 | 6.01 | 2.30 | 3.09 | -0.16 | -0.63 | -0.50 |
| USGS | 8-Mar-99 | 545 | 40 | 117.3 | 6.30 | 3.69 | 4.76 | 0.25 | 1.58 | 0.63 |
| USGS | 10-Dec-98 | 304 | 10 | 16.4 | 5.72 | 2.30 | 2.79 | -0.48 | -0.63 | -0.57 |
| USGS | 15-Apr-99 | 1160 | 40 | 249.6 | 7.06 | 3.69 | 5.52 | 2.11 | 1.58 | 2.22 |
| USGS | 18-Nov-98 | 155 | 10 | 8.3 | 5.04 | 2.30 | 2.12 | -0.93 | -0.63 | -0.67 |
| USGS | 20-Oct-98 | 90 | 10 | 4.8 | 4.50 | 2.30 | 1.58 | -1.12 | -0.63 | -0.71 |
| USGS | 27-Jan-99 | 569 | 10 | 30.6 | 6.34 | 2.30 | 3.42 | 0.32 | -0.63 | -0.40 |

**tZn**

**Concentration over time analysis**

| | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **tZn** | **NF13** | | ***Concentration over time*** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.601** | **0.00834** |
| | **Time** | **Ln(COC)** | **(COC)** | | |
| first | 20-Oct-98 | 1.98 | 7 | | |
| mid | 27-Jan-99 | 2.80 | 16 | | |
| last | 15-Apr-99 | 3.45 | 32 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | ***0.000*** | ***0.00000*** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Apr-99 | 0.00 | 1 | | |

**Load over time analysis**

| | | | | | |
|---|---|---|---|---|---|
| | **tZn** | **NF13** | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.929** | **0.02142** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 20-Oct-98 | 1.47 | 4 | | |
| mid | 27-Jan-99 | 3.59 | 36 | | |
| last | 15-Apr-99 | 5.26 | 193 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Apr-99 | 0.00 | 1 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | max r2 | 0.742 | | max r2 | 0.988 | |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | ***intercept*** |
| | *only on >4 data points. delete last 4 rows* | | | only on >4 data points: delete last 4 rows | | |
| | 0.601 | 0.00834 | -298.93 | 0.929 | 0.02142 | -771.71 |
| | 0.742 | 0.00908 | -325.64 | 0.988 | 0.02237 | -805.63 |
| | 0.728 | 0.00763 | -273.29 | 0.988 | 0.02189 | -788.51 |

update for EV, CV

**tZn**
**LN Analysis**

**NF13**
**tZn**

## Load

**Load Data, EV=64.1 lbs/day CV=1.3**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **64** | **Load Data-based LN** | | |
| **SD:** | **84** | u | ln tZn Load | tZn Load |
| **CV:** | **1.30** | 3 | 6.7 | 779 |
| **Min:** | **4.8** | 0 | 3.66 | 39 |
| **Max:** | **250** | -3 | 0.67 | 2.0 |
| **Median:** | **22** | | | |
| | | 64 | 64.1 | |
| | | 1.30 | 1.3 | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **r2=0.962, EV=91.7lbs/day CV=3.14; max r2=0.96**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.962 | u | lnLoad | Load |
| slope, m | 0.648 | 3 | 7.96 | 2858 |
| intercept, b | -2.155 | 0 | 3.33 | 28 |
| N | | -3 | -1.30 | 0.3 |
| E[Load] | 91.7 | Parameter Estimates | | |
| SD[Load] | 288 | from LN regression | | |
| CV[Load] | 3.14 | update graph label | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | N | | | | | max r2 |
| | **tZn** | | | | | | 0.964 |
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 20-Oct-98 | **4.8** | 1 | 0.0862 | -1.364 | 1.577 | 0.962 |
| 18-Nov-98 | **8.3** | 2 | 0.2241 | -0.758 | 2.121 | 0.964 |
| 10-Dec-98 | **16.4** | 3 | 0.3621 | -0.353 | 2.795 | 0.951 |
| 8-Feb-99 | **22.0** | 4 | 0.5000 | 0.000 | 3.089 | |
| 27-Jan-99 | **30.6** | 5 | 0.6379 | 0.353 | 3.421 | |
| 8-Mar-99 | **117.3** | 6 | 0.7759 | 0.758 | 4.765 | |
| 15-Apr-99 | **249.6** | 7 | 0.9138 | 1.364 | 5.520 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | update for EV, CV | | | | |
| tZn | | NF13 | | 19 | 18.6 | |
| LN Analysis | | tZn | | 0.73 | 0.73 | |
| **Concentration** | | Conc. Data, EV=18.6 ug/L CV=0.73 | | | | |
| Avg: | 19 | Data-based LN | | | | |
| SD: | 14 | u | ln[tZn] | [tZn] | | |
| CV: | 0.73 | 3 | 4.7 | 107 | | |
| Min: | 10 | 0 | 2.71 | 15 | | |
| Max: | 40 | -3 | 0.75 | 2 | | |
| Median: | 10 | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.616 | 0.616 |
| | u=mLn(Conc.)+b: | | | | 23.0 | 23 |
| update for r2, EV, CV | r2=0.616, EV=23 ug/L CV=1.18; max r2=0.76 | | | | 1.178 | 1.18 |
| | r2 u,lnConc | 0.616 | u | lnConc | Conc | |
| | slope, m | 1.072 | 3 | 5.50 | 244 | |
| | intercept, b | -2.893 | 0 | 2.70 | 15 | |
| | N | 7 | -3 | -0.10 | 1 | |
| 0.962 | E[Conc] | 23.0 | Parameter Estimates | | | |
| 91.7 | SD[Conc] | 27 | from LN regression | | | |
| 3.14 | CV[Conc] | 1.18 | update graph label | | | |

| Date | tZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.757 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 8-Feb-99 | 10 | 1 | 0.0862 | -1.364 | 2.303 | 0.616 |
| 10-Dec-98 | 10 | 2 | 0.2241 | -0.758 | 2.303 | 0.707 |
| 18-Nov-98 | 10 | 3 | 0.3621 | -0.353 | 2.303 | 0.757 |
| 20-Oct-98 | 10 | 4 | 0.5000 | 0.000 | 2.303 | |
| 27-Jan-99 | 10 | 5 | 0.6379 | 0.353 | 2.303 | |
| 8-Mar-99 | 40 | 6 | 0.7759 | 0.758 | 3.689 | |
| 15-Apr-99 | 40 | 7 | 0.9138 | 1.364 | 3.689 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **NF13** | | | 462 | 462 |
| **LN Analysis** | | **tZn** | | | 0.72 | 0.717 |
| **Discharge, Q** | | **Q Data, EV=462 cfs CV=0.717** | | | | |
| **Avg:** | **462** | **Q Data-based LN** | | | | |
| **SD:** | **331** | u | lnQ | Q | | |
| **CV:** | **0.72** | 3 | 7.9 | 2589 | | |
| **Min:** | **90** | 0 | 5.93 | 375 | | |
| **Max:** | **1,160** | -3 | 4.00 | 54 | | |
| **Median:** | **408** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.968 | 0.968 |
| | | | | | 544.0 | 544 |
| **u=mLn(Q)+b:** | | | | | 1.20 | 1.2 |

update for r2, EV, CV **r2=0.968, EV=544 cfs CV=1.2; max r2=0.97**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnQ | 0.968 | u | lnQ | Q | |
| slope, m | 1.059 | 3 | 8.69 | 5918 | |
| intercept, b | -6.199 | 0 | 5.85 | 348 | |
| N: 7 | | -3 | 3.02 | 21 | |
| E[Q]: | 544.0 | Parameter Estimates | | | |
| SD[Q] | 653 | from LN regression | | | |
| CV[Q]: | 1.20 | update graph label | | | |

| | | | | | | max r2 0.968 |
|---|---|---|---|---|---|---|
| | **Q** | N: 7 | | | | |
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 20-Oct-98 | 90 | 1 | 0.0862 | -1.364 | 4.500 | 0.968 |
| 18-Nov-98 | 155 | 2 | 0.2241 | -0.758 | 5.043 | 0.947 |
| 10-Dec-98 | 304 | 3 | 0.3621 | -0.353 | 5.717 | 0.953 |
| 8-Feb-99 | 408 | 4 | 0.5000 | 0.000 | 6.011 | |
| 8-Mar-99 | 545 | 5 | 0.6379 | 0.353 | 6.301 | |
| 27-Jan-99 | 569 | 6 | 0.7759 | 0.758 | 6.344 | |
| 15-Apr-99 | 1160 | 7 | 0.9138 | 1.364 | 7.056 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment | | |
|---|---|---|---|---|
| **Station:** | **NF50** | **Date:** | **3-Aug-01** | |
| **Chemical:** | **tPb** | **Analyst:** | **D.Giaudrone** | |
| **Notes:** | | | | |
| **Input Discharge and Concentration Data below (in red** | | | | |

| | Date | Discharge | Concentration | Load | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Avg:** | 35,208 | 3,105 | 4 | 160 | 7.33 | 0.63 | 3.12 | 0.00 | 0.00 | 0.00 |
| **SD:** | 929 | 3,787 | 5 | 336 | 1.25 | 1.24 | 2.24 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.03 | 1.22 | 1.26 | 2.11 | 0.17 | 1.97 | 0.72 | | | |
| **Min:** | 33,947 | 173 | 0 | 0.2 | 5.2 | -2.3 | -1.8 | -0.77 | -0.77 | -0.47 |
| **Max:** | 36,411 | 21,400 | 17 | 1,566 | 10 | 3 | 7 | 4.83 | 2.85 | 4.18 |
| **Median:** | 35,502 | 1,570 | 2 | 24 | 7 | 1 | 3 | -0.41 | -0.36 | -0.40 |

| **tPb** | **NF50** | | **: Concentration v. Discharge, Q** | | | **Q = mTime +b** | | **LnQ = mTime +b** |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.371)** | | update r2 | 0.37 | 0.371 | | r2: | 0.009 | 0.022 |
| r2 Q,[COC]: | 0.37 | [dZn] | Q | | | m: | 0.3891 | 0.00020 |
| slope, m: | 0.0 | 1 | 173.0 | | | b: | -10594 | -0.34 |
| intercept, b: | 0.9 | 3 | 3104.5 | | | | | |
| N: 30 | | 14 | 21400 | | | | | |
| **LnConc. = mLn{Q}+b (r2=0.224)** | | update r2 | | 0.22 | 0.224 | | | |
| r2 lnQ,ln[COC]: | 0.22 | ln[dZn] | ln Q | [dZn] | Q | | | |
| slope, m: | 0.43 | -0.47 | 5.15 | 1 | 173 | | | |
| intercept, b: | -2.68 | 0.77 | 8.04 | 2 | 3,105 | | | |
| N: 30 | | 1.60 | 9.97 | 5 | 21,400 | | | |

N= 57

| | Sampling Date | Q Discharge | tPb Concentration | tPb Load | Ln Q | Ln tPb Conc. | Ln tPb Load | for graph 0 tPb NF50 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| USGS | 09-Dec-92 | 320 | | | 5.77 | | | -0.74 | | |
| USGS | 23-Feb-93 | 441 | | | 6.09 | | | -0.70 | | |
| USGS | 24-Mar-93 | 8320 | 17 | 760.9 | 9.03 | 2.83 | 6.63 | 1.38 | 2.85 | 1.79 |
| USGS | 24-Mar-93 | 8320 | 17 | 760.9 | 9.03 | 2.83 | 6.63 | 1.38 | 2.85 | 1.79 |
| USGS | 06-Apr-93 | 7310 | 3 | 118.0 | 8.90 | 1.10 | 4.77 | 1.11 | -0.15 | -0.12 |
| USGS | 20-Apr-93 | 6860 | 1 | 36.9 | 8.83 | 0.00 | 3.61 | 0.99 | -0.58 | -0.36 |
| USGS | 04-May-93 | 6830 | 3 | 110.2 | 8.83 | 1.10 | 4.70 | 0.98 | -0.15 | -0.15 |
| USGS | 20-May-93 | 3450 | 4 | 74.2 | 8.15 | 1.39 | 4.31 | 0.09 | 0.06 | -0.25 |
| USGS | 03-Jun-93 | 1780 | 2 | 19.2 | 7.48 | 0.69 | 2.95 | -0.35 | -0.36 | -0.42 |
| USGS | 22-Jun-93 | 868 | | | 6.77 | | | -0.59 | | |
| USGS | 21-Jul-93 | 1320 | 1 | 7.1 | 7.19 | 0.00 | 1.96 | -0.47 | -0.58 | -0.45 |
| USGS | 25-Aug-93 | 421 | | | 6.04 | | | -0.71 | | |
| USGS | 21-Sep-93 | 342 | | | 5.83 | | | -0.73 | | |
| USGS | 18-Oct-93 | 425 | | | 6.05 | | | -0.71 | | |
| USGS | 17-Nov-93 | 252 | 2 | 2.7 | 5.53 | 0.69 | 1.00 | -0.75 | -0.36 | -0.47 |
| USGS | 16-Dec-93 | 442 | 2 | 4.8 | 6.09 | 0.69 | 1.56 | -0.70 | -0.36 | -0.46 |
| USGS | 19-Jan-94 | 1040 | 1 | 5.6 | 6.95 | 0.00 | 1.72 | -0.55 | -0.58 | -0.46 |
| USGS | 15-Feb-94 | 421 | 1 | 2.3 | 6.04 | 0.00 | 0.82 | -0.71 | -0.58 | -0.47 |
| USGS | 06-Mar-94 | 3390 | 2 | 36.5 | 8.13 | 0.69 | 3.60 | 0.08 | -0.36 | -0.37 |
| USGS | 15-Mar-94 | 1570 | 3 | 25.3 | 7.36 | 1.10 | 3.23 | -0.41 | -0.15 | -0.40 |
| USGS | 04-Apr-94 | 4140 | 2 | 44.5 | 8.33 | 0.69 | 3.80 | 0.27 | -0.36 | -0.34 |
| USGS | 21-Apr-94 | 6650 | | | 8.80 | | | 0.94 | | |
| USGS | 10-May-94 | 2260 | 1 | 12.2 | 7.72 | 0.00 | 2.50 | -0.22 | -0.58 | -0.44 |
| USGS | 15-Jun-94 | 701 | 1 | 3.8 | 6.55 | 0.00 | 1.33 | -0.63 | -0.58 | -0.46 |
| USGS | 21-Jul-94 | 272 | | | 5.61 | | | -0.75 | | |
| USGS | 17-Aug-94 | 175 | 8 | 7.5 | 5.16 | 2.08 | 2.02 | -0.77 | 0.92 | -0.45 |
| USGS | 20-Sep-94 | 173 | 2 | 1.9 | 5.15 | 0.69 | 0.62 | -0.77 | -0.36 | -0.47 |
| USGS | 12-Nov-96 | 311 | | | 5.74 | | | -0.74 | | |
| USGS | 13-Mar-97 | 1740 | | | 7.46 | | | -0.36 | | |
| USGS | 16-Apr-97 | 4030 | | | 8.30 | | | 0.24 | | |
| USGS | 28-Apr-97 | 21400 | 13.6 | 1565.8 | 9.97 | 2.61 | 7.36 | 4.83 | 2.12 | 4.18 |
| USGS | 04-Jun-97 | 5360 | | | 8.59 | | | 0.60 | | |
| USGS | 24-Jul-97 | 676 | | | 6.52 | | | -0.64 | | |
| USGS | 19-Sep-97 | 613 | | | 6.42 | | | -0.66 | | |
| USGS | 06-Feb-98 | 1560 | | | 7.35 | | | -0.41 | | |
| USGS | 20-Apr-98 | 2460 | | | 7.81 | | | -0.17 | | |
| USGS | 19-May-98 | 1690 | | | 7.43 | | | -0.37 | | |
| USGS | 07-Jul-98 | 675 | | | 6.51 | | | -0.64 | | |
| USGS | 20-Oct-98 | 254 | | | 5.54 | | | -0.75 | | |
| USGS | 17-Nov-98 | 592 | | | 6.38 | | | -0.66 | | |
| USGS | 15-Dec-98 | 1940 | | | 7.57 | | | -0.31 | | |
| USGS | 27-Jan-99 | 1840 | | | 7.52 | | | -0.33 | | |
| USGS | 08-Feb-99 | 1540 | | | 7.34 | | | -0.41 | | |
| USGS | 08-Mar-99 | 1940 | | | 7.57 | | | -0.31 | | |
| USGS | 23-Mar-99 | 6880 | 2 | 74.0 | 8.84 | 0.69 | 4.30 | 1.00 | -0.36 | -0.25 |
| USGS | 13-Apr-99 | 2740 | | | 7.92 | | | -0.10 | | |
| USGS | 20-Apr-99 | 9680 | 3.031 | 157.8 | 9.18 | 1.11 | 5.06 | 1.74 | -0.14 | -0.01 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USGS | 06-May-99 | 5180 | 0.782 | 21.8 | 8.55 | -0.25 | 3.08 | 0.55 | -0.63 | -0.41 |
| USGS | 20-May-99 | 6400 | 4.012 | 138.1 | 8.76 | 1.39 | 4.93 | 0.87 | 0.07 | -0.06 |
| USGS | 25-May-99 | 11100 | 11.258 | 672.3 | 9.31 | 2.42 | 6.51 | 2.11 | 1.62 | 1.52 |
| USGS | 27-May-99 | 8450 | 2.247 | 102.2 | 9.04 | 0.81 | 4.63 | 1.41 | -0.31 | -0.17 |
| USGS | 02-Jun-99 | 5810 | 0.666 | 20.8 | 8.67 | -0.41 | 3.04 | 0.71 | -0.65 | -0.41 |
| USGS | 29-Jun-99 | 1370 | | | 7.22 | | | -0.46 | | |
| USGS | 13-Jul-99 | 902 | 0.169 | 0.8 | 6.80 | -1.78 | -0.20 | -0.58 | -0.76 | -0.47 |
| USGS | 26-Jul-99 | 522 | | | 6.26 | | | -0.68 | | |
| USGS | 10-Aug-99 | 504 | 0.137 | 0.4 | 6.22 | -1.99 | -0.99 | -0.69 | -0.76 | -0.47 |
| USGS | 08-Sep-99 | 306 | 0.103 | 0.2 | 5.72 | -2.27 | -1.77 | -0.74 | -0.77 | -0.47 |

**tPb**

**Concentration over time analysis**

| | tPb | NF50 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.120** | **-0.00045** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 9-Dec-92 | 1.10 | 3 | | |
| mid: | 13-Mar-97 | 0.41 | 2 | | |
| last: | 8-Sep-99 | 0.01 | 1 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.356** | **-0.00429** |
| | 28-Apr-97 | 3.21 | 25 | | |
| | 8-Sep-99 | -0.49 | 1 | | |

**Load over time analysis**

| | tPb | NF50 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.007** | **-0.00019** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 9-Dec-92 | 3.33 | 28 | | |
| mid: | 13-Mar-97 | 3.03 | 21 | | |
| last: | 8-Sep-99 | 2.85 | 17 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.352** | **-0.00759** |
| | 28-Apr-97 | 8.57 | 5,280 | | |
| | 8-Sep-99 | 2.02 | 8 | | |

max r2: 0.994 — **Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.120 | -0.00045 | 16.21 |
| 0.120 | -0.00045 | 16.21 |
| 0.120 | -0.00045 | 16.21 |
| 0.095 | -0.00038 | 13.88 |
| 0.068 | -0.00031 | 11.19 |
| 0.060 | -0.00029 | 10.71 |
| 0.072 | -0.00033 | 11.93 |
| 0.063 | -0.00031 | 11.43 |
| 0.050 | -0.00028 | 10.28 |
| 0.047 | -0.00028 | 10.33 |
| 0.047 | -0.00028 | 10.33 |
| 0.059 | -0.00033 | 11.90 |
| 0.059 | -0.00033 | 11.90 |
| 0.059 | -0.00033 | 11.90 |
| 0.059 | -0.00033 | 11.90 |
| 0.057 | -0.00033 | 12.02 |
| 0.054 | -0.00033 | 12.15 |
| 0.069 | -0.00039 | 14.16 |
| 0.088 | -0.00046 | 16.71 |
| 0.088 | -0.00048 | 17.64 |
| 0.075 | -0.00047 | 17.20 |
| 0.074 | -0.00051 | 18.66 |
| 0.074 | -0.00051 | 18.66 |
| 0.114 | -0.00071 | 25.82 |
| 0.194 | -0.00109 | 39.64 |
| 0.194 | -0.00109 | 39.64 |
| 0.110 | -0.00103 | 37.27 |
| 0.356 | -0.00429 | 155.68 |
| 0.356 | -0.00429 | 155.68 |
| 0.356 | -0.00429 | 155.68 |
| 0.356 | -0.00429 | 155.68 |
| 0.591 | -0.02373 | 861.95 |
| 0.591 | -0.02373 | 861.95 |
| 0.591 | -0.02373 | 861.95 |
| 0.591 | -0.02373 | 861.95 |
| 0.591 | -0.02373 | 861.95 |
| 0.591 | -0.02373 | 861.95 |
| 0.591 | -0.02373 | 861.95 |
| 0.591 | -0.02373 | 861.95 |
| 0.591 | -0.02373 | 861.95 |
| 0.591 | -0.02373 | 861.95 |
| 0.591 | -0.02373 | 861.95 |
| 0.591 | -0.02373 | 861.95 |
| 0.591 | -0.02373 | 861.95 |
| 0.657 | -0.02878 | 1045.19 |
| 0.657 | -0.02878 | 1045.19 |

max r2: 1.000 — **Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.007 | -0.00019 | 9.88 |
| 0.007 | -0.00019 | 9.88 |
| 0.007 | -0.00019 | 9.88 |
| 0.001 | -0.00007 | 5.51 |
| 0.001 | 0.00007 | 0.48 |
| 0.005 | 0.00015 | -2.49 |
| 0.007 | 0.00019 | -4.04 |
| 0.017 | 0.00030 | -7.77 |
| 0.030 | 0.00040 | -11.44 |
| 0.035 | 0.00044 | -13.04 |
| 0.035 | 0.00044 | -13.04 |
| 0.031 | 0.00043 | -12.69 |
| 0.031 | 0.00043 | -12.69 |
| 0.031 | 0.00043 | -12.69 |
| 0.031 | 0.00043 | -12.69 |
| 0.021 | 0.00036 | -10.03 |
| 0.014 | 0.00031 | -8.12 |
| 0.009 | 0.00025 | -6.16 |
| 0.002 | 0.00011 | -0.85 |
| 0.004 | 0.00018 | -3.61 |
| 0.007 | 0.00025 | -5.95 |
| 0.017 | 0.00043 | -12.51 |
| 0.017 | 0.00043 | -12.51 |
| 0.016 | 0.00048 | -14.19 |
| 0.003 | 0.00023 | -5.31 |
| 0.003 | 0.00023 | -5.31 |
| 0.000 | -0.00008 | 6.08 |
| 0.352 | -0.00759 | 278.28 |
| 0.352 | -0.00759 | 278.28 |
| 0.352 | -0.00759 | 278.28 |
| 0.352 | -0.00759 | 278.28 |
| 0.713 | -0.04690 | 1706.26 |
| 0.713 | -0.04690 | 1706.26 |
| 0.713 | -0.04690 | 1706.26 |
| 0.713 | -0.04690 | 1706.26 |
| 0.713 | -0.04690 | 1706.26 |
| 0.713 | -0.04690 | 1706.26 |
| 0.713 | -0.04690 | 1706.26 |
| 0.713 | -0.04690 | 1706.26 |
| 0.713 | -0.04690 | 1706.26 |
| 0.713 | -0.04690 | 1706.26 |
| 0.713 | -0.04690 | 1706.26 |
| 0.713 | -0.04690 | 1706.26 |
| 0.713 | -0.04690 | 1706.26 |
| 0.794 | -0.05676 | 2064.39 |
| 0.794 | -0.05676 | 2064.39 |

| | | | | | |
|---|---|---|---|---|---|
| 0.639 | -0.03044 | 1105.71 | 0.787 | -0.06019 | 2189.27 |
| 0.771 | -0.03678 | 1336.18 | 0.881 | -0.06975 | 2537.03 |
| 0.733 | -0.03576 | 1299.27 | 0.864 | -0.07015 | 2551.65 |
| 0.825 | -0.02651 | 962.59 | 0.910 | -0.05908 | 2148.61 |
| 0.886 | -0.01867 | 677.43 | 0.923 | -0.04859 | 1767.11 |
| 0.994 | -0.00869 | 314.30 | 1.000 | -0.02765 | 1004.95 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| tPb | | NF50 | | |
| LN Analysis | | tPb | | |
| **Load** | | **Load Data, EV=160 lbs/day CV=2.11** | | |
| Avg: | 160 | **Load Data-based LN** | | |
| SD: | 336 | u | ln dZn Load | dZn Load |
| CV: | 2.11 | 3 | 8.1 | 3397 |
| Min: | 0.2 | 0 | 4.23 | 68 |
| Max: | 1,566 | -3 | 0.32 | 1.4 |
| Median: | 24 | | | |
| | | 160 | 160 | |
| | | 2.11 | 2.11 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.954, EV= 98lbs/day CV=11.6; max r2=0.98**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.954 | u | lnLoad | Load | |
| slope, m: | 0.452 | 3 | 8.78 | 6501 | |
| intercept, b: | -0.965 | 0 | 2.14 | 8 | |
| N: | 30 | -3 | -4.51 | 0.0 | |
| E[Load]: | 98.3 | Parameter Estimates | | | 0.954 0.954 |
| SD[Load]: | 1137 | from LN regression | | | 98.3 98.3 |
| CV[Load]: | 11.56 | update graph label | | | 11.6 11.6 |
| | | | | | max r2 |
| | tPb | N: 57 | | | 0.976 |
| | Load | i | i-3/8 / N+1/4 | u | Ln r2 |
| Date | lbs/day | rank | plotting points | y-axis | x-axis forward |
| | Ranked | | | | |
| update and rank for new data | | | | | |
| 08-Sep-99 | 0.2 | 1 | 0.0109 | -2.293 | -1.775 0.954 |
| 10-Aug-99 | 0.4 | 2 | 0.0284 | -1.905 | -0.990 0.954 |
| 20-Oct-98 | | 3 | 0.0459 | -1.686 | 0.962 |
| 21-Jul-94 | | 4 | 0.0633 | -1.527 | 0.962 |
| 13-Jul-99 | 0.8 | 5 | 0.0808 | -1.400 | -0.198 0.962 |
| 12-Nov-96 | | 6 | 0.0983 | -1.292 | 0.976 |
| 09-Dec-92 | | 7 | 0.1157 | -1.197 | 0.976 |
| 21-Sep-93 | | 8 | 0.1332 | -1.111 | 0.976 |
| 25-Aug-93 | | 9 | 0.1507 | -1.034 | 0.976 |
| 18-Oct-93 | | 10 | 0.1681 | -0.962 | 0.976 |
| 23-Feb-93 | | 11 | 0.1856 | -0.894 | 0.976 |
| 26-Jul-99 | | 12 | 0.2031 | -0.831 | 0.976 |
| 17-Nov-98 | | 13 | 0.2205 | -0.770 | 0.976 |
| 19-Sep-97 | | 14 | 0.2380 | -0.713 | 0.976 |
| 07-Jul-98 | | 15 | 0.2555 | -0.657 | 0.976 |
| 24-Jul-97 | | 16 | 0.2729 | -0.604 | 0.976 |
| 20-Sep-94 | 1.9 | 17 | 0.2904 | -0.552 | 0.621 0.976 |
| 15-Feb-94 | 2.3 | 18 | 0.3079 | -0.502 | 0.818 0.975 |
| 22-Jun-93 | | 19 | 0.3253 | -0.453 | 0.974 |
| 17-Nov-93 | 2.7 | 20 | 0.3428 | -0.405 | 0.998 0.974 |
| 29-Jun-99 | | 21 | 0.3603 | -0.358 | 0.973 |
| 15-Jun-94 | 3.8 | 22 | 0.3777 | -0.311 | 1.327 0.973 |
| 08-Feb-99 | | 23 | 0.3952 | -0.266 | 0.974 |
| 06-Feb-98 | | 24 | 0.4127 | -0.221 | 0.974 |
| 19-May-98 | | 25 | 0.4301 | -0.176 | 0.974 |
| 13-Mar-97 | | 26 | 0.4476 | -0.132 | 0.974 |
| 16-Dec-93 | 4.8 | 27 | 0.4651 | -0.088 | 1.559 0.974 |
| 27-Jan-99 | | 28 | 0.4825 | -0.044 | 0.972 |
| 15-Dec-98 | | 29 | 0.5000 | 0.000 | 0.972 |
| 08-Mar-99 | | 30 | 0.5175 | 0.044 | 0.972 |
| 19-Jan-94 | 5.6 | 31 | 0.5349 | 0.088 | 1.722 0.972 |
| 20-Apr-98 | | 32 | 0.5524 | 0.132 | 0.969 |
| 21-Jul-93 | 7.1 | 33 | 0.5699 | 0.176 | 1.960 0.969 |
| 13-Apr-99 | | 34 | 0.5873 | 0.221 | 0.965 |
| 17-Aug-94 | 7.5 | 35 | 0.6048 | 0.266 | 2.019 0.965 |
| 16-Apr-97 | | 36 | 0.6223 | 0.311 | 0.962 |
| 10-May-94 | 12.2 | 37 | 0.6397 | 0.358 | 2.498 0.962 |
| 04-Jun-97 | | 38 | 0.6572 | 0.405 | 0.957 |
| 21-Apr-94 | | 39 | 0.6747 | 0.453 | 0.957 |
| 03-Jun-93 | 19.2 | 40 | 0.6921 | 0.502 | 2.952 0.957 |
| 02-Jun-99 | 20.8 | 41 | 0.7096 | 0.552 | 3.036 0.952 |
| 06-May-99 | 21.8 | 42 | 0.7271 | 0.604 | 3.082 0.947 |
| 15-Mar-94 | 25.3 | 43 | 0.7445 | 0.657 | 3.232 0.942 |
| 06-Mar-94 | 36.5 | 44 | 0.7620 | 0.713 | 3.597 0.936 |
| 20-Apr-93 | 36.9 | 45 | 0.7795 | 0.770 | 3.608 0.928 |
| 04-Apr-94 | 44.5 | 46 | 0.7969 | 0.831 | 3.797 0.919 |
| 23-Mar-99 | 74.0 | 47 | 0.8144 | 0.894 | 4.304 0.907 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 20-May-93 | 74.2 | 48 | 0.8319 | 0.962 | 4.307 | 0.896 |
| 27-May-99 | 102.2 | 49 | 0.8493 | 1.034 | 4.626 | 0.877 |
| 04-May-93 | 110.2 | 50 | 0.8668 | 1.111 | 4.703 | 0.857 |
| 06-Apr-93 | 118.0 | 51 | 0.8843 | 1.197 | 4.771 | 0.826 |
| 20-May-99 | 138.1 | 52 | 0.9017 | 1.292 | 4.928 | 0.774 |
| 20-Apr-99 | 157.8 | 53 | 0.9192 | 1.400 | 5.062 | 0.692 |
| 25-May-99 | 672.3 | 54 | 0.9367 | 1.527 | 6.511 | |
| 24-Mar-93 | 760.9 | 55 | 0.9541 | 1.686 | 6.635 | |
| 24-Mar-93 | 760.9 | 56 | 0.9716 | 1.905 | 6.635 | |
| 28-Apr-97 | 1565.8 | 57 | 0.9891 | 2.293 | 7.356 | |

| | | update for EV, CV: | | | | |
|---|---|---|---|---|---|---|
| tPb | | NF50 | | 4 | 3.7 | |
| LN Analysis | | tPb | | 1.26 | 1.26 | |
| **Concentration** | | Conc. Data, EV=3.7 ug/L CV=1.26 | | | | |
| Avg: | 3.7 | Data-based LN | | | | |
| SD: | 4.7 | u | ln[dZn] | [dZn] | | |
| CV: | 1.26 | 3 | 3.8 | 43 | | |
| Min: | 0 | 0 | 0.83 | 2 | | |
| Max: | 17 | -3 | -2.09 | 0 | | |
| Median: | 2 | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.936 | 0.936 |
| u=mLn{Conc.}+b: | | | | | 2.1 | 2.13 |
| update for r2, EV, CV: | r2=0.936, EV=2.13 ug/L CV=2.07; max r2=0.95 | | | | 2.067 | 2.07 |
| r2 u,lnConc: | 0.936 | u | | lnConc. | Conc. | |
| slope, m: | 0.776 | 3 | | 3.79 | 44 | |
| intercept, b: | 0.059 | 0 | | -0.08 | 1 | |
| N: | 30 | -3 | | -3.94 | 0 | |
| E[Conc]: | 2.1 | Parameter Estimates | | | | |
| SD[Conc]: | 4 | from LN regression | | | | |
| CV[Conc]: | 2.07 | update graph label | | | | |

| Date | tPb Concentration ug/L Ranked | N: 57 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.949 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 08-Sep-99 | 0.103 | 1 | 0.0109 | -2.293 | -2.273 | 0.936 |
| 10-Aug-99 | 0.137 | 2 | 0.0284 | -1.905 | -1.988 | 0.932 |
| 13-Jul-99 | 0.169 | 3 | 0.0459 | -1.686 | -1.778 | 0.929 |
| 09-Dec-92 | | 4 | 0.0633 | -1.527 | | 0.949 |
| 23-Feb-93 | | 5 | 0.0808 | -1.400 | | 0.949 |
| 22-Jun-93 | | 6 | 0.0983 | -1.292 | | 0.949 |
| 25-Aug-93 | | 7 | 0.1157 | -1.197 | | 0.949 |
| 21-Sep-93 | | 8 | 0.1332 | -1.111 | | 0.949 |
| 18-Oct-93 | | 9 | 0.1507 | -1.034 | | 0.949 |
| 21-Apr-94 | | 10 | 0.1681 | -0.962 | | 0.949 |
| 21-Jul-94 | | 11 | 0.1856 | -0.894 | | 0.949 |
| 12-Nov-96 | | 12 | 0.2031 | -0.831 | | 0.949 |
| 13-Mar-97 | | 13 | 0.2205 | -0.770 | | 0.949 |
| 16-Apr-97 | | 14 | 0.2380 | -0.713 | | 0.949 |
| 04-Jun-97 | | 15 | 0.2555 | -0.657 | | 0.949 |
| 24-Jul-97 | | 16 | 0.2729 | -0.604 | | 0.949 |
| 19-Sep-97 | | 17 | 0.2904 | -0.552 | | 0.949 |
| 06-Feb-98 | | 18 | 0.3079 | -0.502 | | 0.949 |
| 20-Apr-98 | | 19 | 0.3253 | -0.453 | | 0.949 |
| 19-May-98 | | 20 | 0.3428 | -0.405 | | 0.949 |
| 07-Jul-98 | | 21 | 0.3603 | -0.358 | | 0.949 |
| 20-Oct-98 | | 22 | 0.3777 | -0.311 | | 0.949 |
| 17-Nov-98 | | 23 | 0.3952 | -0.266 | | 0.949 |
| 15-Dec-98 | | 24 | 0.4127 | -0.221 | | 0.949 |
| 27-Jan-99 | | 25 | 0.4301 | -0.176 | | 0.949 |
| 08-Feb-99 | | 26 | 0.4476 | -0.132 | | 0.949 |
| 08-Mar-99 | | 27 | 0.4651 | -0.088 | | 0.949 |
| 13-Apr-99 | | 28 | 0.4825 | -0.044 | | 0.949 |
| 29-Jun-99 | | 29 | 0.5000 | 0.000 | | 0.949 |
| 26-Jul-99 | | 30 | 0.5175 | 0.044 | | 0.949 |
| 02-Jun-99 | 0.666 | 31 | 0.5349 | 0.088 | -0.406 | 0.949 |
| 06-May-99 | 0.782 | 32 | 0.5524 | 0.132 | -0.246 | 0.945 |
| 20-Apr-93 | 1 | 33 | 0.5699 | 0.176 | 0.000 | 0.941 |
| 21-Jul-93 | 1 | 34 | 0.5873 | 0.221 | 0.000 | 0.938 |
| 19-Jan-94 | 1 | 35 | 0.6048 | 0.266 | 0.000 | 0.934 |
| 15-Feb-94 | 1 | 36 | 0.6223 | 0.311 | 0.000 | 0.929 |
| 10-May-94 | 1 | 37 | 0.6397 | 0.358 | 0.000 | 0.923 |
| 15-Jun-94 | 1 | 38 | 0.6572 | 0.405 | 0.000 | 0.918 |
| 03-Jun-93 | 2 | 39 | 0.6747 | 0.453 | 0.693 | 0.915 |
| 17-Nov-93 | 2 | 40 | 0.6921 | 0.502 | 0.693 | 0.919 |
| 16-Dec-93 | 2 | 41 | 0.7096 | 0.552 | 0.693 | 0.921 |
| 06-Mar-94 | 2 | 42 | 0.7271 | 0.604 | 0.693 | 0.921 |
| 04-Apr-94 | 2 | 43 | 0.7445 | 0.657 | 0.693 | 0.918 |
| 20-Sep-94 | 2 | 44 | 0.7620 | 0.713 | 0.693 | 0.912 |
| 23-Mar-99 | 2 | 45 | 0.7795 | 0.770 | 0.693 | 0.902 |
| 27-May-99 | 2.247 | 46 | 0.7969 | 0.831 | 0.810 | 0.888 |
| 06-Apr-93 | 3 | 47 | 0.8144 | 0.894 | 1.099 | 0.871 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 04-May-93 | 3 | 48 | 0.8319 | 0.962 | 1.099 | 0.858 |
| 15-Mar-94 | 3 | 49 | 0.8493 | 1.034 | 1.099 | 0.835 |
| 20-Apr-99 | 3.031 | 50 | 0.8668 | 1.111 | 1.109 | 0.800 |
| 20-May-93 | 4 | 51 | 0.8843 | 1.197 | 1.386 | 0.755 |
| 20-May-99 | 4.012 | 52 | 0.9017 | 1.292 | 1.389 | 0.684 |
| 17-Aug-94 | 8 | 53 | 0.9192 | 1.400 | 2.079 | 0.754 |
| 25-May-99 | 11.258 | 54 | 0.9367 | 1.527 | 2.421 | |
| 28-Apr-97 | 13.6 | 55 | 0.9541 | 1.686 | 2.610 | |
| 24-Mar-93 | 17 | 56 | 0.9716 | 1.905 | 2.833 | |
| 24-Mar-93 | 17 | 57 | 0.9891 | 2.293 | 2.833 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **NF50** | | | 3,105 | 3100 |
| **LN Analysis** | | **tPb** | | | 1.22 | 1.22 |
| **Discharge, Q** | | **Q Data, EV=3100 cfs CV=1.22** | | | | |
| **Avg:** | **3,105** | **Q Data-based LN** | | | | |
| **SD:** | **3,787** | **u** | **lnQ** | **Q** | | |
| **CV:** | **1.22** | 3 | 10.4 | 34512 | | |
| **Min:** | **173** | 0 | 7.58 | 1968 | | |
| **Max:** | **21,400** | -3 | 4.72 | 112 | | |
| **Median:** | **1,570** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.965 | 0.965 |
| | | | | | 3583.0 | 3580 |
| **u=mLn{Q}+b:** | | | | | 2.12 | 2.12 |
| update for r2, EV, CV: | **r2=0.965, EV=3580 cfs CV=2.12; max r2=0.97** | | | | | |
| | r2 u,lnQ: | 0.965 | u | lnQ | Q | |
| | slope, m: | 0.766 | 3 | 11.25 | 76715 | |
| | intercept, b: | -5.618 | 0 | 7.33 | 1529 | |
| | N: 57 | | -3 | 3.42 | 30 | |
| | E[Q]: | 3583.0 | Parameter Estimates | | | |
| | SD[Q]: | 7596 | from LN regression | | | |
| | CV[Q]: | 2.12 | update graph label | | | |

N: 57

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.970 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 20-Sep-94 | 173 | 1 | 0.0109 | -2.293 | 5.153 | 0.965 |
| 17-Aug-94 | 175 | 2 | 0.0284 | -1.905 | 5.165 | 0.969 |
| 17-Nov-93 | 252 | 3 | 0.0459 | -1.686 | 5.529 | 0.969 |
| 20-Oct-98 | 254 | 4 | 0.0633 | -1.527 | 5.537 | 0.970 |
| 21-Jul-94 | 272 | 5 | 0.0808 | -1.400 | 5.606 | 0.969 |
| 08-Sep-99 | 306 | 6 | 0.0983 | -1.292 | 5.724 | 0.968 |
| 12-Nov-96 | 311 | 7 | 0.1157 | -1.197 | 5.740 | 0.967 |
| 09-Dec-92 | 320 | 8 | 0.1332 | -1.111 | 5.768 | 0.965 |
| 21-Sep-93 | 342 | 9 | 0.1507 | -1.034 | 5.835 | 0.963 |
| 25-Aug-93 | 421 | 10 | 0.1681 | -0.962 | 6.043 | 0.961 |
| 15-Feb-94 | 421 | 11 | 0.1856 | -0.894 | 6.043 | 0.959 |
| 18-Oct-93 | 425 | 12 | 0.2031 | -0.831 | 6.052 | 0.957 |
| 23-Feb-93 | 441 | 13 | 0.2205 | -0.770 | 6.089 | 0.955 |
| 16-Dec-93 | 442 | 14 | 0.2380 | -0.713 | 6.091 | 0.952 |
| 10-Aug-99 | 504 | 15 | 0.2555 | -0.657 | 6.223 | 0.950 |
| 26-Jul-99 | 522 | 16 | 0.2729 | -0.604 | 6.258 | 0.948 |
| 17-Nov-98 | 592 | 17 | 0.2904 | -0.552 | 6.384 | 0.946 |
| 19-Sep-97 | 613 | 18 | 0.3079 | -0.502 | 6.418 | 0.944 |
| 07-Jul-98 | 675 | 19 | 0.3253 | -0.453 | 6.515 | 0.942 |
| 24-Jul-97 | 676 | 20 | 0.3428 | -0.405 | 6.516 | 0.940 |
| 15-Jun-94 | 701 | 21 | 0.3603 | -0.358 | 6.553 | 0.940 |
| 22-Jun-93 | 868 | 22 | 0.3777 | -0.311 | 6.766 | 0.941 |
| 13-Jul-99 | 902 | 23 | 0.3952 | -0.266 | 6.805 | 0.940 |
| 19-Jan-94 | 1040 | 24 | 0.4127 | -0.221 | 6.947 | 0.939 |
| 21-Jul-93 | 1320 | 25 | 0.4301 | -0.176 | 7.185 | 0.938 |
| 29-Jun-99 | 1370 | 26 | 0.4476 | -0.132 | 7.223 | 0.934 |
| 08-Feb-99 | 1540 | 27 | 0.4651 | -0.088 | 7.340 | 0.930 |
| 06-Feb-98 | 1560 | 28 | 0.4825 | -0.044 | 7.352 | 0.925 |
| 15-Mar-94 | 1570 | 29 | 0.5000 | 0.000 | 7.359 | 0.921 |
| 19-May-98 | 1690 | 30 | 0.5175 | 0.044 | 7.432 | 0.916 |
| 13-Mar-97 | 1740 | 31 | 0.5349 | 0.088 | 7.462 | 0.910 |
| 03-Jun-93 | 1780 | 32 | 0.5524 | 0.132 | 7.484 | 0.905 |
| 27-Jan-99 | 1840 | 33 | 0.5699 | 0.176 | 7.518 | 0.901 |
| 15-Dec-98 | 1940 | 34 | 0.5873 | 0.221 | 7.570 | 0.897 |
| 08-Mar-99 | 1940 | 35 | 0.6048 | 0.266 | 7.570 | 0.896 |
| 10-May-94 | 2260 | 36 | 0.6223 | 0.311 | 7.723 | 0.902 |
| 20-Apr-98 | 2460 | 37 | 0.6397 | 0.358 | 7.808 | 0.906 |
| 13-Apr-99 | 2740 | 38 | 0.6572 | 0.405 | 7.916 | 0.914 |
| 06-Mar-94 | 3390 | 39 | 0.6747 | 0.453 | 8.129 | 0.923 |
| 20-May-93 | 3450 | 40 | 0.6921 | 0.502 | 8.146 | 0.921 |
| 16-Apr-97 | 4030 | 41 | 0.7096 | 0.552 | 8.302 | 0.925 |
| 04-Apr-94 | 4140 | 42 | 0.7271 | 0.604 | 8.328 | 0.921 |
| 06-May-99 | 5180 | 43 | 0.7445 | 0.657 | 8.553 | 0.922 |
| 04-Jun-97 | 5360 | 44 | 0.7620 | 0.713 | 8.587 | 0.913 |
| 02-Jun-99 | 5810 | 45 | 0.7795 | 0.770 | 8.667 | 0.902 |
| 20-May-99 | 6400 | 46 | 0.7969 | 0.831 | 8.764 | 0.893 |
| 21-Apr-94 | 6650 | 47 | 0.8144 | 0.894 | 8.802 | 0.893 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 04-May-93 | 6830 | 48 | 0.8319 | 0.962 | 8.829 | 0.898 |
| 20-Apr-93 | 6860 | 49 | 0.8493 | 1.034 | 8.833 | 0.905 |
| 23-Mar-99 | 6880 | 50 | 0.8668 | 1.111 | 8.836 | 0.907 |
| 06-Apr-93 | 7310 | 51 | 0.8843 | 1.197 | 8.897 | 0.898 |
| 24-Mar-93 | 8320 | 52 | 0.9017 | 1.292 | 9.026 | 0.890 |
| 24-Mar-93 | 8320 | 53 | 0.9192 | 1.400 | 9.026 | 0.927 |
| 27-May-99 | 8450 | 54 | 0.9367 | 1.527 | 9.042 | |
| 20-Apr-99 | 9680 | 55 | 0.9541 | 1.686 | 9.178 | |
| 25-May-99 | 11100 | 56 | 0.9716 | 1.905 | 9.315 | |
| 28-Apr-97 | 21400 | 57 | 0.9891 | 2.293 | 9.971 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** NF50 **Date:** 3-Aug-01
**Chemical:** dZn **Analyst:** D.Giandrone
**Notes:**
Input Discharge and Concentration Data below (in red

| | Date | Discharge | Concentration | Load | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Avg:** | 35,664 | 3,561 | 11 | 290 | 7.56 | 1.95 | 4.37 | 0.00 | 0.00 | 0.00 |
| **SD:** | 942 | 4,189 | 13 | 509 | 1.16 | 0.79 | 1.75 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.03 | 1.18 | 1.27 | 1.76 | 0.15 | 0.40 | 0.40 | | | |
| **Min:** | 32,953 | 254 | 3 | 4.4 | 5.5 | 1.0 | 1.5 | -0.79 | -0.58 | -0.56 |
| **Max:** | 36,411 | 21,400 | 66 | 2,268 | 10 | 4 | 8 | 4.26 | 4.14 | 3.89 |
| **Median:** | 36,102 | 1,890 | 6 | 127 | 8 | 2 | 5 | -0.40 | -0.37 | -0.32 |

| dZn NF50 | | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.0158)** | | update r2 | 0.02 | 0.0158 | | r2: | 0.000 | 0.001 |
| r2 Q,[COC]: | 0.02 | [dZn] | Q | | | m: | 0.0065 | -0.00004 |
| slope, m: | 0.0 | 9 | 254.0 | | | b: | 3328 | 9.05 |
| intercept, b: | 9.0 | 10 | 3560.9 | | | | | |
| N: 22 | | 16 | 21400 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.11)** | | update r2 | 0.11 | 0.11 | | | | |
| r2 lnQ,ln[COC]: | 0.11 | ln[dZn] | ln Q | [dZn] | Q | | | |
| slope, m: | 0.20 | 1.53 | 5.54 | 5 | 254 | | | |
| intercept, b: | 0.45 | 2.05 | 8.18 | 8 | 3,561 | | | |
| N: 22 | | 2.41 | 9.97 | 11 | 21,400 | | | |

**N= 36**

| | Sampling Date | Q Discharge cfs | dZn Concentration ug/L | dZn Load lbs/day | Ln Q | Ln dZn Conc. | Ln dZn Load | dZn NF50 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | for graph 0 |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| USGS | 21-Mar-90 | 4270 | 6 | 137.8 | 8.36 | 1.79 | 4.93 | 0.17 | -0.34 | -0.30 |
| USGS | 16-May-90 | 2850 | 19 | 291.3 | 7.96 | 2.94 | 5.67 | -0.17 | 0.63 | 0.00 |
| USGS | 18-Nov-92 | 494 | 12 | 31.9 | 6.20 | 2.48 | 3.46 | -0.73 | 0.11 | -0.51 |
| USGS | 24-Mar-93 | 8320 | 20 | 895.2 | 9.03 | 3.00 | 6.80 | 1.14 | 0.71 | 1.19 |
| USGS | 20-May-93 | 3450 | 23 | 426.9 | 8.15 | 3.14 | 6.06 | -0.03 | 0.93 | 0.27 |
| USGS | 21-Sep-93 | 342 | 13 | 23.9 | 5.83 | 2.56 | 3.17 | -0.77 | 0.19 | -0.52 |
| USGS | 12-Nov-96 | 311 | 3 | 5.0 | 5.74 | 1.10 | 1.61 | -0.78 | -0.56 | -0.56 |
| USGS | 13-Mar-97 | 1740 | | | 7.46 | | | -0.43 | | |
| USGS | 16-Apr-97 | 4030 | | | 8.30 | | | 0.11 | | |
| USGS | 28-Apr-97 | 21400 | 8.985 | 1034.5 | 9.97 | 2.20 | 6.94 | 4.26 | -0.11 | 1.46 |
| USGS | 04-Jun-97 | 5360 | 5.608 | 161.7 | 8.59 | 1.72 | 5.09 | 0.43 | -0.37 | -0.25 |
| USGS | 24-Jul-97 | 676 | 7.374 | 26.8 | 6.52 | 2.00 | 3.29 | -0.69 | -0.23 | -0.52 |
| USGS | 19-Sep-97 | 613 | 3.71 | 12.2 | 6.42 | 1.31 | 2.50 | -0.70 | -0.51 | -0.55 |
| USGS | 06-Feb-98 | 1560 | | | 7.35 | | | -0.48 | | |
| USGS | 20-Apr-98 | 2460 | | | 7.81 | | | -0.26 | | |
| USGS | 19-May-98 | 1690 | | | 7.43 | | | -0.45 | | |
| USGS | 07-Jul-98 | 675 | | | 6.51 | | | -0.69 | | |
| USGS | 20-Oct-98 | 254 | | | 5.54 | | | -0.79 | | |
| USGS | 17-Nov-98 | 592 | | | 6.38 | | | -0.71 | | |
| USGS | 15-Dec-98 | 1940 | | | 7.57 | | | -0.39 | | |
| USGS | 27-Jan-99 | 1840 | | | 7.52 | | | -0.41 | | |
| USGS | 08-Feb-99 | 1540 | | | 7.34 | | | -0.48 | | |
| USGS | 08-Mar-99 | 1940 | | | 7.57 | | | -0.39 | | |
| USGS | 23-Mar-99 | 6880 | 6.355 | 235.2 | 8.84 | 1.85 | 5.46 | 0.79 | -0.31 | -0.11 |
| USGS | 13-Apr-99 | 2740 | | | 7.92 | | | -0.20 | | |
| USGS | 20-Apr-99 | 9680 | | | 9.18 | | | 1.46 | | |
| USGS | 06-May-99 | 5180 | 4.167 | 116.1 | 8.55 | 1.43 | 4.75 | 0.39 | -0.47 | -0.34 |
| USGS | 20-May-99 | 6400 | 65.865 | 2267.9 | 8.76 | 4.19 | 7.73 | 0.68 | 4.14 | 3.89 |
| USGS | 25-May-99 | 11100 | 4.861 | 290.3 | 9.31 | 1.58 | 5.67 | 1.80 | -0.42 | 0.00 |
| USGS | 27-May-99 | 8450 | 4.319 | 196.3 | 9.04 | 1.46 | 5.28 | 1.17 | -0.46 | -0.18 |
| USGS | 02-Jun-99 | 5810 | 4.398 | 137.5 | 8.67 | 1.48 | 4.92 | 0.54 | -0.46 | -0.30 |
| USGS | 29-Jun-99 | 1370 | 5.487 | 40.4 | 7.22 | 1.70 | 3.70 | -0.52 | -0.38 | -0.49 |
| USGS | 13-Jul-99 | 902 | 4.85 | 23.5 | 6.80 | 1.58 | 3.16 | -0.63 | -0.42 | -0.52 |
| USGS | 26-Jul-99 | 522 | 3.595 | 10.1 | 6.26 | 1.28 | 2.31 | -0.73 | -0.52 | -0.55 |
| USGS | 10-Aug-99 | 504 | 2.976 | 8.1 | 6.22 | 1.09 | 2.09 | -0.73 | -0.56 | -0.55 |
| USGS | 08-Sep-99 | 306 | 2.7 | 4.4 | 5.72 | 0.99 | 1.49 | -0.78 | -0.58 | -0.56 |

dZn

**Concentration over time analysis**

| | dZn NF50 | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | Concentration over time | |
| | LnConc.=mTime+b All data r2, m: | | | 0.228 | -0.00033 |
| | Time | Ln[COC] | [COC] | | |
| first: | 21-Mar-90 | 2.77 | 16 | | |
| mid: | 3-Nov-98 | 1.73 | 6 | | |
| last: | 8-Sep-99 | 1.63 | 5 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.018 | -0.00031 |
| | 28-Apr-97 | 1.90 | 7 | | |
| | 8-Sep-99 | 1.64 | 5 | | |

**Load over time analysis**

| | dZn NF50 | | | | |
|---|---|---|---|---|---|
| | | | | Load over time | |
| | LnLoad=mTime+b All data r2, m: | | | 0.048 | -0.00034 |
| | Time | LnLoad | Load | | |
| first: | 21-Mar-90 | 5.21 | 183 | | |
| mid: | 3-Nov-98 | 4.15 | 63 | | |
| last: | 8-Sep-99 | 4.04 | 57 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.034 | -0.00103 |
| | 28-Apr-97 | 4.90 | 134 | | |
| | 8-Sep-99 | 4.01 | 55 | | |

| | max r2: 0.899 | | | max r2: 0.963 | | |
|---|---|---|---|---|---|---|
| | Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | | |
| | r2 | slope | intercept | r2 | slope | intercept |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.228 | -0.00033 | 13.67 | 0.048 | -0.00034 | 16.32 |
| | 0.323 | -0.00045 | 17.87 | 0.045 | -0.00037 | 17.52 |
| | 0.270 | -0.00048 | 18.86 | 0.021 | -0.00030 | 15.04 |
| | 0.257 | -0.00052 | 20.34 | 0.048 | -0.00051 | 22.68 |
| | 0.173 | -0.00047 | 18.60 | 0.005 | -0.00018 | 10.50 |
| | 0.051 | -0.00029 | 12.31 | 0.014 | 0.00038 | -9.45 |
| | 0.000 | -0.00001 | 2.07 | 0.001 | 0.00016 | -1.73 |
| | 0.018 | -0.00031 | 12.75 | 0.034 | -0.00103 | 41.39 |
| | 0.018 | -0.00031 | 12.75 | 0.034 | -0.00103 | 41.39 |
| | 0.018 | -0.00031 | 12.75 | 0.034 | -0.00103 | 41.39 |
| | 0.003 | -0.00015 | 6.96 | 0.000 | 0.00009 | 0.73 |
| | 0.004 | -0.00019 | 8.55 | 0.018 | 0.00095 | -30.57 |
| | 0.001 | 0.00013 | -3.14 | 0.005 | 0.00067 | -20.27 |
| | 0.168 | -0.00735 | 268.68 | 0.681 | -0.03192 | 1163.90 |
| | 0.168 | -0.00735 | 268.68 | 0.681 | -0.03192 | 1163.90 |
| | 0.168 | -0.00735 | 268.68 | 0.681 | -0.03192 | 1163.90 |
| | 0.168 | -0.00735 | 268.68 | 0.681 | -0.03192 | 1163.90 |
| | 0.168 | -0.00735 | 268.68 | 0.681 | -0.03192 | 1163.90 |
| | 0.168 | -0.00735 | 268.68 | 0.681 | -0.03192 | 1163.90 |
| | 0.168 | -0.00735 | 268.68 | 0.681 | -0.03192 | 1163.90 |
| | 0.168 | -0.00735 | 268.68 | 0.681 | -0.03192 | 1163.90 |
| | 0.168 | -0.00735 | 268.68 | 0.681 | -0.03192 | 1163.90 |
| | 0.168 | -0.00735 | 268.68 | 0.681 | -0.03192 | 1163.90 |
| | 0.168 | -0.00735 | 268.68 | 0.681 | -0.03192 | 1163.90 |
| | 0.217 | -0.01032 | 376.53 | 0.781 | -0.04136 | 1507.10 |
| | 0.217 | -0.01032 | 376.53 | 0.781 | -0.04136 | 1507.10 |
| | 0.217 | -0.01032 | 376.53 | 0.781 | -0.04136 | 1507.10 |
| | 0.320 | -0.01383 | 504.31 | 0.865 | -0.04794 | 1746.14 |
| | 0.614 | -0.00513 | 187.80 | 0.961 | -0.04029 | 1467.94 |
| | 0.581 | -0.00532 | 194.67 | 0.963 | -0.03803 | 1385.96 |
| | 0.671 | -0.00676 | 247.15 | 0.953 | -0.03583 | 1305.75 |
| | 0.899 | -0.01061 | 387.09 | 0.928 | -0.03095 | 1128.33 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dZn** | | **NF50** | | |
| **LN Analysis** | | **dZn** | | |
| **Load** | | **Load Data, EV=290 lbs/day CV=1.76** | | |
| **Avg:** | **290** | **Load Data-based LN** | | |
| **SD:** | **509** | u | ln dZn Load | dZn Load |
| **CV:** | **1.76** | 3 | 8.5 | 5033 |
| **Min:** | **4.4** | 0 | 4.97 | 144 |
| **Max:** | **2,268** | -3 | 1.41 | 4.1 |
| **Median:** | **127** | | | |
| | | 290 | 290 | |
| | | 1.76 | 1.76 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.993, EV= 239lbs/day CV=3.11; max r2=0.995**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.993 | u | lnLoad | Load | |
| slope, m: | 0.650 | 3 | 8.91 | 7387 | |
| intercept, b: | -2.787 | 0 | 4.29 | 73 | |
| N: | 22 | -3 | -0.33 | 0.7 | |
| E[Load]: | 238.6 | Parameter Estimates | | | 0.993 0.993 |
| SD[Load]: | 742 | from LN regression | | | 238.6 239 |
| CV[Load]: | 3.11 | update graph label | | | 3.1 3.11 |
| | | | | | max r2 |
| | N: 36 | | | | 0.995 |

| Date | dZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 08-Sep-99 | 4.4 | 1 | 0.0172 | -2.114 | 1.492 | 0.993 |
| 12-Nov-96 | 5.0 | 2 | 0.0448 | -1.697 | 1.613 | 0.995 |
| 10-Aug-99 | 8.1 | 3 | 0.0724 | -1.458 | 2.088 | 0.995 |
| 26-Jul-99 | 10.1 | 4 | 0.1000 | -1.282 | 2.312 | 0.994 |
| 19-Sep-97 | 12.2 | 5 | 0.1276 | -1.138 | 2.504 | 0.993 |
| 20-Oct-98 | | 6 | 0.1552 | -1.014 | | 0.992 |
| 13-Mar-97 | | 7 | 0.1828 | -0.905 | | 0.992 |
| 13-Jul-99 | 23.5 | 8 | 0.2103 | -0.805 | 3.159 | 0.992 |
| 21-Sep-93 | 23.9 | 9 | 0.2379 | -0.713 | 3.175 | 0.993 |
| 17-Nov-98 | | 10 | 0.2655 | -0.626 | | 0.993 |
| 24-Jul-97 | 26.8 | 11 | 0.2931 | -0.544 | 3.289 | 0.993 |
| 18-Nov-92 | 31.9 | 12 | 0.3207 | -0.466 | 3.462 | 0.991 |
| 16-Apr-97 | | 13 | 0.3483 | -0.390 | | 0.989 |
| 07-Jul-98 | | 14 | 0.3759 | -0.316 | | 0.989 |
| 29-Jun-99 | 40.4 | 15 | 0.4034 | -0.244 | 3.700 | 0.989 |
| 08-Feb-99 | | 16 | 0.4310 | -0.174 | | 0.985 |
| 06-Feb-98 | | 17 | 0.4586 | -0.104 | | 0.985 |
| 19-May-98 | | 18 | 0.4862 | -0.035 | | 0.985 |
| 27-Jan-99 | | 19 | 0.5138 | 0.035 | | 0.985 |
| 15-Dec-98 | | 20 | 0.5414 | 0.104 | | 0.985 |
| 08-Mar-99 | | 21 | 0.5690 | 0.174 | | 0.985 |
| 06-May-99 | 116.1 | 22 | 0.5966 | 0.244 | 4.755 | 0.985 |
| 20-Apr-98 | | 23 | 0.6241 | 0.316 | | 0.988 |
| 02-Jun-99 | 137.5 | 24 | 0.6517 | 0.390 | 4.923 | 0.988 |
| 21-Mar-90 | 137.8 | 25 | 0.6793 | 0.466 | 4.926 | 0.990 |
| 13-Apr-99 | | 26 | 0.7069 | 0.544 | | 0.989 |
| 04-Jun-97 | 161.7 | 27 | 0.7345 | 0.626 | 5.086 | 0.989 |
| 27-May-99 | 196.3 | 28 | 0.7621 | 0.713 | 5.280 | 0.987 |
| 23-Mar-99 | 235.2 | 29 | 0.7897 | 0.805 | 5.461 | 0.984 |
| 25-May-99 | 290.3 | 30 | 0.8172 | 0.905 | 5.671 | 0.979 |
| 16-May-90 | 291.3 | 31 | 0.8448 | 1.014 | 5.674 | 0.974 |
| 20-May-93 | 426.9 | 32 | 0.8724 | 1.138 | 6.057 | 0.974 |
| 20-Apr-99 | | 33 | 0.9000 | 1.282 | | |
| 24-Mar-93 | 895.2 | 34 | 0.9276 | 1.458 | 6.797 | |
| 28-Apr-97 | 1034.5 | 35 | 0.9552 | 1.697 | 6.942 | |
| 20-May-99 | 2267.9 | 36 | 0.9828 | 2.114 | 7.727 | |

| | | update for EV, CV: | | | |
|---|---|---|---|---|---|
| dZn | | NF50 | | 11 | 10.5 |
| LN Analysis | | dZn | | 1.27 | 1.27 |
| **Concentration** | | Conc. Data, EV=10.5 ug/L CV=1.27 | | | |
| Avg: | 10.5 | Data-based LN | | | |
| SD: | 13.4 | u | ln[dZn] | [dZn] | |
| CV: | 1.27 | 3 | 4.8 | 123 | |
| Min: | 3 | 0 | 1.87 | 6 | |
| Max: | 66 | -3 | -1.07 | 0 | |
| Median: | 6 | | | | |

| | | | | | 0.955 | 0.955 |
|---|---|---|---|---|---|---|
| u=mLn(Conc.)+b: | | | | | 10.1 | 10.1 |
| update for r2, EV, CV: | r2=0.955, EV=10.1 ug/L CV=0.935; max r2=0.943 | | | | 0.935 | 0.935 |
| | r2 u,lnConc: | 0.955 | u | lnConc. | Conc. | |
| | slope, m: | 1.262 | 3 | 4.38 | 80 | |
| | intercept, b: | -2.524 | 0 | 2.00 | 7 | |
| | N: 22 | | -3 | -0.38 | 1 | |
| | E[Conc]: | 10.1 | Parameter Estimates | | | |
| | SD[Conc]: | 9 | from LN regression | | | |
| | CV[Conc]: | 0.94 | update graph label | | | |

| Date | dZn Concentration ug/L Ranked | N: 36 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.955 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Mar-97 | | 1 | 0.0172 | -2.114 | | 0.955 |
| 16-Apr-97 | | 2 | 0.0448 | -1.697 | | 0.955 |
| 08-Sep-99 | 2.7 | 3 | 0.0724 | -1.458 | 0.993 | 0.955 |
| 10-Aug-99 | 2.976 | 4 | 0.1000 | -1.282 | 1.091 | 0.953 |
| 12-Nov-96 | 3 | 5 | 0.1276 | -1.138 | 1.099 | 0.950 |
| 26-Jul-99 | 3.595 | 6 | 0.1552 | -1.014 | 1.280 | 0.946 |
| 19-Sep-97 | 3.71 | 7 | 0.1828 | -0.905 | 1.311 | 0.942 |
| 06-May-99 | 4.167 | 8 | 0.2103 | -0.805 | 1.427 | 0.938 |
| 27-May-99 | 4.319 | 9 | 0.2379 | -0.713 | 1.463 | 0.935 |
| 02-Jun-99 | 4.398 | 10 | 0.2655 | -0.626 | 1.481 | 0.930 |
| 13-Jul-99 | 4.85 | 11 | 0.2931 | -0.544 | 1.579 | 0.923 |
| 25-May-99 | 4.861 | 12 | 0.3207 | -0.466 | 1.581 | 0.917 |
| 29-Jun-99 | 5.487 | 13 | 0.3483 | -0.390 | 1.702 | 0.907 |
| 04-Jun-97 | 5.608 | 14 | 0.3759 | -0.316 | 1.724 | 0.897 |
| 21-Mar-90 | 6 | 15 | 0.4034 | -0.244 | 1.792 | 0.881 |
| 23-Mar-99 | 6.355 | 16 | 0.4310 | -0.174 | 1.849 | 0.860 |
| 24-Jul-97 | 7.374 | 17 | 0.4586 | -0.104 | 1.998 | 0.825 |
| 17-Nov-98 | | 18 | 0.4862 | -0.035 | | 0.785 |
| 28-Apr-97 | 8.985 | 19 | 0.5138 | 0.035 | 2.196 | 0.785 |
| 06-Feb-98 | | 20 | 0.5414 | 0.104 | | 0.928 |
| 20-Apr-98 | | 21 | 0.5690 | 0.174 | | 0.928 |
| 19-May-98 | | 22 | 0.5966 | 0.244 | | 0.928 |
| 07-Jul-98 | | 23 | 0.6241 | 0.316 | | 0.928 |
| 20-Oct-98 | | 24 | 0.6517 | 0.390 | | 0.928 |
| 15-Dec-98 | | 25 | 0.6793 | 0.466 | | 0.928 |
| 27-Jan-99 | | 26 | 0.7069 | 0.544 | | 0.928 |
| 08-Feb-99 | | 27 | 0.7345 | 0.626 | | 0.928 |
| 08-Mar-99 | | 28 | 0.7621 | 0.713 | | 0.928 |
| 13-Apr-99 | | 29 | 0.7897 | 0.805 | | 0.928 |
| 20-Apr-99 | | 30 | 0.8172 | 0.905 | | 0.928 |
| 18-Nov-92 | 12 | 31 | 0.8448 | 1.014 | 2.485 | 0.928 |
| 21-Sep-93 | 13 | 32 | 0.8724 | 1.138 | 2.565 | 0.915 |
| 16-May-90 | 19 | 33 | 0.9000 | 1.282 | 2.944 | |
| 24-Mar-93 | 20 | 34 | 0.9276 | 1.458 | 2.996 | |
| 20-May-93 | 23 | 35 | 0.9552 | 1.697 | 3.135 | |
| 20-May-99 | 65.865 | 36 | 0.9828 | 2.114 | 4.188 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **dZn** | | **NF50** | | | 3,561 | 3560 |
| **LN Analysis** | | **dZn** | | | 1.18 | 1.18 |
| **Discharge, Q** | | **Q Data, EV=3560 cfs CV=1.18** | | | | |
| **Avg:** | **3,561** | **Q Data-based LN** | | | | |
| **SD:** | **4,189** | u | lnQ | Q | | |
| **CV:** | **1.18** | 3 | 10.5 | 37784 | | |
| **Min:** | **254** | 0 | 7.74 | 2306 | | |
| **Max:** | **21,400** | -3 | 4.95 | 141 | | |
| **Median:** | **1,890** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.975 | 0.975 |
| | | | | | 4053.5 | 4050 |
| **u=mLn(Q)+b:** | | | | | 1.87 | 1.87 |

update for r2, EV, CV: **r2=0.975, EV=4050 cfs CV=1.87; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.975 | u | lnQ | Q |
| slope, m: | 0.816 | 3 | 11.23 | 75525 |
| intercept, b: | -6.168 | 0 | 7.56 | 1914 |
| N: 36 | | -3 | 3.88 | 48 |
| E[Q]: | 4053.5 | Parameter Estimates | | |
| SD[Q]: | 7568 | from LN regression | | |
| CV[Q]: | 1.87 | update graph label | | |

N: 36

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.980 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 20-Oct-98 | 254 | 1 | 0.0172 | -2.114 | 5.537 | 0.975 |
| 08-Sep-99 | 306 | 2 | 0.0448 | -1.697 | 5.724 | 0.980 |
| 12-Nov-96 | 311 | 3 | 0.0724 | -1.458 | 5.740 | 0.980 |
| 21-Sep-93 | 342 | 4 | 0.1000 | -1.282 | 5.835 | 0.978 |
| 18-Nov-92 | 494 | 5 | 0.1276 | -1.138 | 6.203 | 0.976 |
| 10-Aug-99 | 504 | 6 | 0.1552 | -1.014 | 6.223 | 0.974 |
| 26-Jul-99 | 522 | 7 | 0.1828 | -0.905 | 6.258 | 0.972 |
| 17-Nov-98 | 592 | 8 | 0.2103 | -0.805 | 6.384 | 0.970 |
| 19-Sep-97 | 613 | 9 | 0.2379 | -0.713 | 6.418 | 0.968 |
| 07-Jul-98 | 675 | 10 | 0.2655 | -0.626 | 6.515 | 0.967 |
| 24-Jul-97 | 676 | 11 | 0.2931 | -0.544 | 6.516 | 0.968 |
| 13-Jul-99 | 902 | 12 | 0.3207 | -0.466 | 6.805 | 0.976 |
| 29-Jun-99 | 1370 | 13 | 0.3483 | -0.390 | 7.223 | 0.979 |
| 08-Feb-99 | 1540 | 14 | 0.3759 | -0.316 | 7.340 | 0.977 |
| 06-Feb-98 | 1560 | 15 | 0.4034 | -0.244 | 7.352 | 0.976 |
| 19-May-98 | 1690 | 16 | 0.4310 | -0.174 | 7.432 | 0.973 |
| 13-Mar-97 | 1740 | 17 | 0.4586 | -0.104 | 7.462 | 0.970 |
| 27-Jan-99 | 1840 | 18 | 0.4862 | -0.035 | 7.518 | 0.968 |
| 15-Dec-98 | 1940 | 19 | 0.5138 | 0.035 | 7.570 | 0.965 |
| 08-Mar-99 | 1940 | 20 | 0.5414 | 0.104 | 7.570 | 0.964 |
| 20-Apr-98 | 2460 | 21 | 0.5690 | 0.174 | 7.808 | 0.971 |
| 13-Apr-99 | 2740 | 22 | 0.5966 | 0.244 | 7.916 | 0.970 |
| 16-May-90 | 2850 | 23 | 0.6241 | 0.316 | 7.955 | 0.969 |
| 20-May-93 | 3450 | 24 | 0.6517 | 0.390 | 8.146 | 0.975 |
| 16-Apr-97 | 4030 | 25 | 0.6793 | 0.466 | 8.302 | 0.975 |
| 21-Mar-90 | 4270 | 26 | 0.7069 | 0.544 | 8.359 | 0.971 |
| 06-May-99 | 5180 | 27 | 0.7345 | 0.626 | 8.553 | 0.967 |
| 04-Jun-97 | 5360 | 28 | 0.7621 | 0.713 | 8.587 | 0.964 |
| 02-Jun-99 | 5810 | 29 | 0.7897 | 0.805 | 8.667 | 0.957 |
| 20-May-99 | 6400 | 30 | 0.8172 | 0.905 | 8.764 | 0.949 |
| 23-Mar-99 | 6880 | 31 | 0.8448 | 1.014 | 8.836 | 0.939 |
| 24-Mar-93 | 8320 | 32 | 0.8724 | 1.138 | 9.026 | 0.922 |
| 27-May-99 | 8450 | 33 | 0.9000 | 1.282 | 9.042 | |
| 20-Apr-99 | 9680 | 34 | 0.9276 | 1.458 | 9.178 | |
| 25-May-99 | 11100 | 35 | 0.9552 | 1.697 | 9.315 | |
| 28-Apr-97 | 21400 | 36 | 0.9828 | 2.114 | 9.971 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| Station: | NF50 | Date: | 3-Aug-01 |
| Chemical: | tZn | Analyst: | D.Giaudrone |
| Notes: | | | |
| Input Discharge and Concentration Data below (in red | | | |

| | Date | Discharge | Concentration | Load | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Avg: | 35,189 | 3,009 | 21 | 415 | 7.30 | 2.71 | 4.73 | 0.00 | 0.00 | 0.00 |
| SD: | 925 | 3,752 | 18 | 719 | 1.24 | 0.82 | 1.65 | 1.00 | 1.00 | 1.00 |
| CV: | 0.03 | 1.25 | 0.88 | 1.73 | 0.17 | 0.30 | 0.35 | | | |
| Min: | 33,947 | 173 | 2 | 3.9 | 5.2 | 0.9 | 1.4 | -0.76 | -1.01 | -0.57 |
| Max: | 36,411 | 21,400 | 84 | 2,904 | 10 | 4 | 8 | 4.90 | 3.49 | 3.46 |
| Median: | 35,442 | 1,565 | 18 | 103 | 7 | 3 | 5 | -0.38 | -0.18 | -0.43 |

| tZn | NF50 | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| Conc. = mQ+b (r2=0.016) | | update r2 | 0.02 | 0.016 | | r2: | 0.005 | 0.015 |
| r2 Q,[COC]: | 0.02 | [dZn] | Q | | | m: | 0.2744 | 0.00016 |
| slope, m: | 0.0 | 19 | 173.0 | | | b: | -6646 | 1.54 |
| intercept, b: | 19.0 | 21 | 3009.1 | | | | | |
| N: 30 | | 30 | 21400 | | | | | |
| LnConc. = mLn(Q)+b (r2=0.011) | | update r2 | 0.01 | 0.011 | | | | |
| r2 lnQ,ln[COC]: | 0.01 | ln[dZn] | ln Q | [dZn] | Q | | | |
| slope, m: | 0.06 | 2.57 | 5.15 | 13 | 173 | | | |
| intercept, b: | 2.24 | 2.75 | 8.01 | 16 | 3,009 | | | |
| N: 30 | | 2.88 | 9.97 | 18 | 21,400 | | | |

N= 56

| update for new data | Sampling Date | Q Discharge cfs | tZn Concentration ug/L | tZn Load lbs/day | Ln Q | Ln tZn Conc. | Ln tZn Load | tZn NF50 for graph 0 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| DATA: | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| USGS | 09-Dec-92 | 320 | | | 5.77 | | | -0.72 | | |
| USGS | 23-Feb-93 | 441 | 10 | 23.7 | 6.09 | 2.30 | 3.17 | -0.68 | -0.59 | -0.54 |
| USGS | 24-Mar-93 | 8320 | 40 | 1790.5 | 9.03 | 3.69 | 7.49 | 1.42 | 1.06 | 1.91 |
| USGS | 24-Mar-93 | 8320 | 40 | 1790.5 | 9.03 | 3.69 | 7.49 | 1.42 | 1.06 | 1.91 |
| USGS | 06-Apr-93 | 7310 | 30 | 1179.8 | 8.90 | 3.40 | 7.07 | 1.15 | 0.51 | 1.06 |
| USGS | 20-Apr-93 | 6860 | 10 | 369.1 | 8.83 | 2.30 | 5.91 | 1.03 | -0.59 | -0.06 |
| USGS | 04-May-93 | 6830 | 10 | 367.5 | 8.83 | 2.30 | 5.91 | 1.02 | -0.59 | -0.07 |
| USGS | 20-May-93 | 3450 | 20 | 371.2 | 8.15 | 3.00 | 5.92 | 0.12 | -0.04 | -0.06 |
| USGS | 03-Jun-93 | 1780 | 20 | 191.5 | 7.48 | 3.00 | 5.26 | -0.33 | -0.04 | -0.31 |
| USGS | 22-Jun-93 | 868 | 20 | 93.4 | 6.77 | 3.00 | 4.54 | -0.57 | -0.04 | -0.45 |
| USGS | 21-Jul-93 | 1320 | 20 | 142.0 | 7.19 | 3.00 | 4.96 | -0.45 | -0.04 | -0.38 |
| USGS | 25-Aug-93 | 421 | | | 6.04 | | | -0.69 | | |
| USGS | 21-Sep-93 | 342 | | | 5.83 | | | -0.71 | | |
| USGS | 18-Oct-93 | 425 | 10 | 22.9 | 6.05 | 2.30 | 3.13 | -0.69 | -0.59 | -0.55 |
| USGS | 17-Nov-93 | 252 | 20 | 27.1 | 5.53 | 3.00 | 3.30 | -0.73 | -0.04 | -0.54 |
| USGS | 16-Dec-93 | 442 | 30 | 71.3 | 6.09 | 3.40 | 4.27 | -0.68 | 0.51 | -0.48 |
| USGS | 19-Jan-94 | 1040 | 20 | 111.9 | 6.95 | 3.00 | 4.72 | -0.52 | -0.04 | -0.42 |
| USGS | 15-Feb-94 | 421 | 30 | 67.9 | 6.04 | 3.40 | 4.22 | -0.69 | 0.51 | -0.48 |
| USGS | 06-Mar-94 | 3390 | 10 | 182.4 | 8.13 | 2.30 | 5.21 | 0.10 | -0.59 | -0.32 |
| USGS | 15-Mar-94 | 1570 | 10 | 84.5 | 7.36 | 2.30 | 4.44 | -0.38 | -0.59 | -0.46 |
| USGS | 04-Apr-94 | 4140 | | | 8.33 | | | 0.30 | | |
| USGS | 21-Apr-94 | 6650 | | | 8.80 | | | 0.97 | | |
| USGS | 10-May-94 | 2260 | | | 7.72 | | | -0.20 | | |
| USGS | 15-Jun-94 | 701 | 10 | 37.7 | 6.55 | 2.30 | 3.63 | -0.62 | -0.59 | -0.53 |
| USGS | 21-Jul-94 | 272 | 10 | 14.6 | 5.61 | 2.30 | 2.68 | -0.73 | -0.59 | -0.56 |
| USGS | 17-Aug-94 | 175 | 30 | 28.2 | 5.16 | 3.40 | 3.34 | -0.76 | 0.51 | -0.54 |
| USGS | 20-Sep-94 | 173 | 70 | 65.2 | 5.15 | 4.25 | 4.18 | -0.76 | 2.70 | -0.49 |
| USGS | 12-Nov-96 | 311 | | | 5.74 | | | -0.72 | | |
| USGS | 13-Mar-97 | 1740 | | | 7.46 | | | -0.34 | | |
| USGS | 16-Apr-97 | 4030 | | | 8.30 | | | 0.27 | | |
| USGS | 28-Apr-97 | 21400 | 17 | 1957.2 | 9.97 | 2.83 | 7.58 | 4.90 | -0.20 | 2.14 |
| USGS | 04-Jun-97 | 5360 | | | 8.59 | | | 0.63 | | |
| USGS | 24-Jul-97 | 676 | | | 6.52 | | | -0.62 | | |
| USGS | 19-Sep-97 | 613 | | | 6.42 | | | -0.64 | | |
| USGS | 06-Feb-98 | 1560 | | | 7.35 | | | -0.39 | | |
| USGS | 20-Apr-98 | 2460 | | | 7.81 | | | -0.15 | | |
| USGS | 19-May-98 | 1690 | 18 | 163.7 | 7.43 | 2.89 | 5.10 | -0.35 | -0.15 | -0.35 |
| USGS | 07-Jul-98 | 675 | 11 | 39.9 | 6.51 | 2.40 | 3.69 | -0.62 | -0.53 | -0.52 |
| USGS | 20-Oct-98 | 254 | | | 5.54 | | | -0.73 | | |
| USGS | 17-Nov-98 | 592 | | | 6.38 | | | -0.64 | | |
| USGS | 15-Dec-98 | 1940 | | | 7.57 | | | -0.28 | | |
| USGS | 27-Jan-99 | 1840 | | | 7.52 | | | -0.31 | | |
| USGS | 08-Feb-99 | 1540 | | | 7.34 | | | -0.39 | | |
| USGS | 08-Mar-99 | 1940 | | | 7.57 | | | -0.28 | | |
| USGS | 23-Mar-99 | 6880 | | | 8.84 | | | 1.03 | | |
| USGS | 13-Apr-99 | 2740 | | | 7.92 | | | -0.07 | | |
| USGS | 20-Apr-99 | 9680 | | | 9.18 | | | 1.78 | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USGS | 06-May-99 | 5180 | 6.894 | 192.1 | 8.55 | 1.93 | 5.26 | 0.58 | -0.76 | -0.31 |
| USGS | 20-May-99 | 6400 | 84.34 | 2904.0 | 8.76 | 4.43 | 7.97 | 0.90 | 3.49 | 3.46 |
| USGS | 25-May-99 | 11100 | | | 9.31 | | | 2.16 | | |
| USGS | 02-Jun-99 | 5810 | 4.36 | 136.3 | 8.67 | 1.47 | 4.91 | 0.75 | -0.90 | -0.39 |
| USGS | 29-Jun-99 | 1370 | | | 7.22 | | | -0.44 | | |
| USGS | 13-Jul-99 | 902 | 4.842 | 23.5 | 6.80 | 1.58 | 3.16 | -0.56 | -0.87 | -0.54 |
| USGS | 26-Jul-99 | 522 | | | 6.26 | | | -0.66 | | |
| USGS | 10-Aug-99 | 504 | 3.182 | 8.6 | 6.22 | 1.16 | 2.16 | -0.67 | -0.96 | -0.57 |
| USGS | 08-Sep-99 | 306 | 2.367 | 3.9 | 5.72 | 0.86 | 1.36 | -0.72 | -1.01 | -0.57 |

**tZn**

**Concentration over time analysis**

| | tZn | NF50 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.208** | **-0.00042** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 9-Dec-92 | 3.08 | 22 | | |
| mid: | 11-Jan-97 | 2.45 | 12 | | |
| last: | 8-Sep-99 | 2.05 | 8 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.185** | **-0.00165** |
| | 28-Apr-97 | 3.20 | 24 | | |
| | 8-Sep-99 | 1.77 | 6 | | |

**Load over time analysis**

| | tZn | NF50 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.041** | **-0.00037** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 9-Dec-92 | 5.06 | 158 | | |
| mid: | 11-Jan-97 | 4.51 | 91 | | |
| last: | 8-Sep-99 | 4.15 | 64 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.293** | **-0.00422** |
| | 28-Apr-97 | 7.19 | 1,326 | | |
| | 8-Sep-99 | 3.55 | 35 | | |

| | | | | | |
|---|---|---|---|---|---|
| | max r2: | 0.988 | | max r2: | 0.994 |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.208 | -0.00042 | 17.27 | 0.041 | -0.00037 | 17.58 |
| | 0.208 | -0.00042 | 17.27 | 0.041 | -0.00037 | 17.58 |
| | 0.230 | -0.00044 | 18.22 | 0.057 | -0.00044 | 19.96 |
| | 0.212 | -0.00042 | 17.42 | 0.039 | -0.00035 | 16.87 |
| | 0.192 | -0.00040 | 16.50 | 0.022 | -0.00025 | 13.34 |
| | 0.175 | -0.00038 | 15.89 | 0.009 | -0.00016 | 9.95 |
| | 0.196 | -0.00041 | 16.92 | 0.004 | -0.00010 | 7.91 |
| | 0.221 | -0.00044 | 18.10 | 0.000 | -0.00003 | 5.56 |
| | 0.216 | -0.00044 | 18.20 | 0.001 | 0.00004 | 2.80 |
| | 0.209 | -0.00045 | 18.31 | 0.003 | 0.00010 | 0.85 |
| | 0.202 | -0.00045 | 18.41 | 0.005 | 0.00012 | 0.06 |
| | 0.195 | -0.00045 | 18.52 | 0.010 | 0.00017 | -1.87 |
| | 0.195 | -0.00045 | 18.52 | 0.010 | 0.00017 | -1.87 |
| | 0.195 | -0.00045 | 18.52 | 0.010 | 0.00017 | -1.87 |
| | 0.224 | -0.00050 | 20.19 | 0.004 | 0.00011 | 0.34 |
| | 0.216 | -0.00050 | 20.39 | 0.001 | 0.00005 | 2.60 |
| | 0.187 | -0.00048 | 19.42 | 0.001 | 0.00005 | 2.63 |
| | 0.175 | -0.00048 | 19.45 | 0.002 | 0.00009 | 1.20 |
| | 0.138 | -0.00044 | 17.90 | 0.002 | 0.00009 | 1.18 |
| | 0.168 | -0.00051 | 20.64 | 0.009 | 0.00021 | -3.33 |
| | 0.214 | -0.00063 | 24.86 | 0.014 | 0.00028 | -5.86 |
| | 0.214 | -0.00063 | 24.86 | 0.014 | 0.00028 | -5.86 |
| | 0.214 | -0.00063 | 24.86 | 0.014 | 0.00028 | -5.86 |
| | 0.214 | -0.00063 | 24.86 | 0.014 | 0.00028 | -5.86 |
| | 0.283 | -0.00080 | 31.12 | 0.008 | 0.00023 | -3.93 |
| | 0.413 | -0.00112 | 42.72 | 0.002 | -0.00014 | 9.43 |
| | 0.413 | -0.00140 | 52.68 | 0.043 | -0.00078 | 32.49 |
| | 0.185 | -0.00165 | 61.83 | 0.293 | -0.00422 | 157.10 |
| | 0.185 | -0.00165 | 61.83 | 0.293 | -0.00422 | 157.10 |
| | 0.185 | -0.00165 | 61.83 | 0.293 | -0.00422 | 157.10 |
| | 0.185 | -0.00165 | 61.83 | 0.293 | -0.00422 | 157.10 |
| | 0.188 | -0.00273 | 101.18 | 0.072 | -0.00305 | 114.80 |
| | 0.188 | -0.00273 | 101.18 | 0.072 | -0.00305 | 114.80 |
| | 0.188 | -0.00273 | 101.18 | 0.072 | -0.00305 | 114.80 |
| | 0.188 | -0.00273 | 101.18 | 0.072 | -0.00305 | 114.80 |
| | 0.188 | -0.00273 | 101.18 | 0.072 | -0.00305 | 114.80 |
| | 0.188 | -0.00273 | 101.18 | 0.072 | -0.00305 | 114.80 |
| | 0.119 | -0.00288 | 106.60 | 0.043 | -0.00321 | 120.40 |
| | 0.396 | -0.01642 | 598.59 | 0.784 | -0.04323 | 1575.15 |
| | 0.396 | -0.01642 | 598.59 | 0.784 | -0.04323 | 1575.15 |
| | 0.396 | -0.01642 | 598.59 | 0.784 | -0.04323 | 1575.15 |
| | 0.396 | -0.01642 | 598.59 | 0.784 | -0.04323 | 1575.15 |
| | 0.396 | -0.01642 | 598.59 | 0.784 | -0.04323 | 1575.15 |
| | 0.396 | -0.01642 | 598.59 | 0.784 | -0.04323 | 1575.15 |
| | 0.396 | -0.01642 | 598.59 | 0.784 | -0.04323 | 1575.15 |
| | 0.396 | -0.01642 | 598.59 | 0.784 | -0.04323 | 1575.15 |

| | | | | | |
|---|---|---|---|---|---|
| 0.396 | -0.01642 | 598.59 | 0.784 | -0.04323 | 1575.15 |
| 0.553 | -0.02315 | 843.46 | 0.869 | -0.05286 | 1925.38 |
| 0.727 | -0.00662 | 241.89 | 0.990 | -0.03654 | 1331.58 |
| 0.727 | -0.00662 | 241.89 | 0.990 | -0.03654 | 1331.58 |
| 0.988 | -0.01254 | 457.51 | 0.994 | -0.03150 | 1148.16 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **tZn** | | **NF50** | | |
| **LN Analysis** | | **tZn** | | |
| **Load** | | **Load Data, EV=415 lbs/day CV=1.73** | | |
| **Avg:** | **415** | **Load Data-based LN** | | |
| **SD:** | **719** | u | ln dZn Load | dZn Load |
| **CV:** | **1.73** | 3 | 8.9 | 7101 |
| **Min:** | **3.9** | 0 | 5.34 | 208 |
| **Max:** | **2,904** | -3 | 1.80 | 6.1 |
| **Median:** | **103** | | | |
| | | 415 | 415 | |
| | | 1.73 | 1.73 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.98, EV= 327lbs/day CV=3.78; max r2=0.984**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.980 | u | lnLoad | Load | |
| slope, m: | 0.606 | 3 | 9.38 | 11849 | |
| intercept, b: | -2.681 | 0 | 4.43 | 84 | |
| N: | 30 | -3 | -0.53 | 0.6 | |
| E[Load]: | 326.9 | Parameter Estimates | | | 0.980 0.98 |
| SD[Load]: | 1235 | from LN regression | | | 326.9 327 |
| CV[Load]: | 3.78 | update graph label | | | 3.8 3.78 |
| | | | | | max r2 |
| | N: 56 | | | | 0.984 |

| Date | tZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 08-Sep-99 | 3.9 | 1 | 0.0111 | -2.287 | 1.360 | 0.980 |
| 20-Oct-98 | | 2 | 0.0289 | -1.897 | | 0.984 |
| 12-Nov-96 | | 3 | 0.0467 | -1.678 | | 0.984 |
| 09-Dec-92 | | 4 | 0.0644 | -1.518 | | 0.984 |
| 10-Aug-99 | 8.6 | 5 | 0.0822 | -1.390 | 2.155 | 0.984 |
| 21-Sep-93 | | 6 | 0.1000 | -1.282 | | 0.983 |
| 25-Aug-93 | | 7 | 0.1178 | -1.186 | | 0.983 |
| 21-Jul-94 | 14.6 | 8 | 0.1356 | -1.101 | 2.683 | 0.983 |
| 17-Nov-98 | | 9 | 0.1533 | -1.022 | | 0.981 |
| 19-Sep-97 | | 10 | 0.1711 | -0.950 | | 0.981 |
| 24-Jul-97 | | 11 | 0.1889 | -0.882 | | 0.981 |
| 18-Oct-93 | 22.9 | 12 | 0.2067 | -0.818 | 3.130 | 0.981 |
| 13-Jul-99 | 23.5 | 13 | 0.2244 | -0.757 | 3.157 | 0.981 |
| 23-Feb-93 | 23.7 | 14 | 0.2422 | -0.699 | 3.167 | 0.979 |
| 17-Nov-93 | 27.1 | 15 | 0.2600 | -0.643 | 3.300 | 0.977 |
| 17-Aug-94 | 28.2 | 16 | 0.2778 | -0.589 | 3.341 | 0.975 |
| 15-Jun-94 | 37.7 | 17 | 0.2956 | -0.537 | 3.630 | 0.972 |
| 07-Jul-98 | 39.9 | 18 | 0.3133 | -0.486 | 3.688 | 0.971 |
| 08-Feb-99 | | 19 | 0.3311 | -0.437 | | 0.969 |
| 06-Feb-98 | | 20 | 0.3489 | -0.388 | | 0.969 |
| 13-Mar-97 | | 21 | 0.3667 | -0.341 | | 0.969 |
| 27-Jan-99 | | 22 | 0.3844 | -0.294 | | 0.969 |
| 15-Dec-98 | | 23 | 0.4022 | -0.248 | | 0.969 |
| 26-Jul-99 | | 24 | 0.4200 | -0.202 | | 0.969 |
| 10-May-94 | | 25 | 0.4378 | -0.157 | | 0.969 |
| 20-Sep-94 | 65.2 | 26 | 0.4556 | -0.112 | 4.177 | 0.969 |
| 20-Apr-98 | | 27 | 0.4733 | -0.067 | | 0.967 |
| 15-Feb-94 | 67.9 | 28 | 0.4911 | -0.022 | 4.219 | 0.967 |
| 16-Dec-93 | 71.3 | 29 | 0.5089 | 0.022 | 4.267 | 0.964 |
| 15-Mar-94 | 84.5 | 30 | 0.5267 | 0.067 | 4.436 | 0.961 |
| 22-Jun-93 | 93.4 | 31 | 0.5444 | 0.112 | 4.537 | 0.957 |
| 16-Apr-97 | | 32 | 0.5622 | 0.157 | | 0.952 |
| 04-Apr-94 | | 33 | 0.5800 | 0.202 | | 0.952 |
| 19-Jan-94 | 111.9 | 34 | 0.5978 | 0.248 | 4.718 | 0.952 |
| 02-Jun-99 | 136.3 | 35 | 0.6156 | 0.294 | 4.915 | 0.946 |
| 21-Jul-93 | 142.0 | 36 | 0.6333 | 0.341 | 4.956 | 0.941 |
| 04-Jun-97 | | 37 | 0.6511 | 0.388 | | 0.934 |
| 29-Jun-99 | | 38 | 0.6689 | 0.437 | | 0.934 |
| 19-May-98 | 163.7 | 39 | 0.6867 | 0.486 | 5.098 | 0.934 |
| 21-Apr-94 | | 40 | 0.7044 | 0.537 | | 0.924 |
| 06-Mar-94 | 182.4 | 41 | 0.7222 | 0.589 | 5.206 | 0.924 |
| 03-Jun-93 | 191.5 | 42 | 0.7400 | 0.643 | 5.255 | 0.912 |
| 06-May-99 | 192.1 | 43 | 0.7578 | 0.699 | 5.258 | 0.894 |
| 08-Mar-99 | | 44 | 0.7756 | 0.757 | | 0.873 |
| 13-Apr-99 | | 45 | 0.7933 | 0.818 | | 0.873 |
| 04-May-93 | 367.5 | 46 | 0.8111 | 0.882 | 5.907 | 0.873 |
| 20-Apr-93 | 369.1 | 47 | 0.8289 | 0.950 | 5.911 | 0.840 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 20-May-93 | 371.2 | 48 | 0.8467 | 1.022 | 5.917 | 0.784 |
| 20-Apr-99 | | 49 | 0.8644 | 1.101 | | 0.920 |
| 23-Mar-99 | | 50 | 0.8822 | 1.186 | | 0.920 |
| 06-Apr-93 | 1179.8 | 51 | 0.9000 | 1.282 | 7.073 | 0.920 |
| 25-May-99 | | 52 | 0.9178 | 1.390 | | 0.896 |
| 24-Mar-93 | 1790.5 | 53 | 0.9356 | 1.518 | 7.490 | |
| 24-Mar-93 | 1790.5 | 54 | 0.9533 | 1.678 | 7.490 | |
| 28-Apr-97 | 1957.2 | 55 | 0.9711 | 1.897 | 7.579 | |
| 20-May-99 | 2904.0 | 56 | 0.9889 | 2.287 | 7.974 | |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | **NF50** | | 21 | 20.7 |
| **LN Analysis** | | **tZn** | | 0.88 | 0.879 |
| **Concentration** | | **Conc. Data, EV=20.7 ug/L CV=0.879** | | | |
| **Avg:** | 20.7 | **Data-based LN** | | | |
| **SD:** | 18.2 | u | ln[dZn] | [dZn] | |
| **CV:** | 0.88 | 3 | 5.0 | 151 | |
| **Min:** | 2 | 0 | 2.75 | 16 | |
| **Max:** | 84 | -3 | 0.48 | 2 | |
| **Median:** | 18 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.946 | 0.946 |
| **u=mLn{Conc.}+b:** | | | | | 16.6 | 16.6 |
| update for r2, EV, CV: | **r2=0.946, EV=16.6 ug/L CV=0.951; max r2=0.946** | | | | 0.951 | 0.951 |
| | r2 u,lnConc: | 0.946 | u | lnConc. | Conc. | |
| | slope, m: | 1.246 | 3 | 4.89 | 133 | |
| | intercept, b: | -3.096 | 0 | 2.48 | 12 | |
| | N: | 30 | -3 | 0.08 | 1 | |
| | E[Conc]: | 16.6 | Parameter Estimates | | | |
| | SD[Conc]: | 16 | from LN regression | | | |
| | CV[Conc]: | 0.95 | update graph label | | | |

| Date | tZn Concentration ug/L Ranked | N: 56 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.946 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 08-Sep-99 | 2.367 | 1 | 0.0111 | -2.287 | 0.862 | 0.946 |
| 10-Aug-99 | 3.182 | 2 | 0.0289 | -1.897 | 1.158 | 0.935 |
| 02-Jun-99 | 4.36 | 3 | 0.0467 | -1.678 | 1.472 | 0.924 |
| 13-Jul-99 | 4.842 | 4 | 0.0644 | -1.518 | 1.577 | 0.923 |
| 09-Dec-92 | | 5 | 0.0822 | -1.390 | | 0.929 |
| 25-Aug-93 | | 6 | 0.1000 | -1.282 | | 0.929 |
| 21-Sep-93 | | 7 | 0.1178 | -1.186 | | 0.929 |
| 04-Apr-94 | | 8 | 0.1356 | -1.101 | | 0.929 |
| 21-Apr-94 | | 9 | 0.1533 | -1.022 | | 0.929 |
| 10-May-94 | | 10 | 0.1711 | -0.950 | | 0.929 |
| 12-Nov-96 | | 11 | 0.1889 | -0.882 | | 0.929 |
| 13-Mar-97 | | 12 | 0.2067 | -0.818 | | 0.929 |
| 16-Apr-97 | | 13 | 0.2244 | -0.757 | | 0.929 |
| 04-Jun-97 | | 14 | 0.2422 | -0.699 | | 0.929 |
| 24-Jul-97 | | 15 | 0.2600 | -0.643 | | 0.929 |
| 19-Sep-97 | | 16 | 0.2778 | -0.589 | | 0.929 |
| 06-Feb-98 | | 17 | 0.2956 | -0.537 | | 0.929 |
| 20-Apr-98 | | 18 | 0.3133 | -0.486 | | 0.929 |
| 20-Oct-98 | | 19 | 0.3311 | -0.437 | | 0.929 |
| 17-Nov-98 | | 20 | 0.3489 | -0.388 | | 0.929 |
| 15-Dec-98 | | 21 | 0.3667 | -0.341 | | 0.929 |
| 27-Jan-99 | | 22 | 0.3844 | -0.294 | | 0.929 |
| 08-Feb-99 | | 23 | 0.4022 | -0.248 | | 0.929 |
| 06-May-99 | 6.894 | 24 | 0.4200 | -0.202 | 1.931 | 0.929 |
| 23-Feb-93 | 10 | 25 | 0.4378 | -0.157 | 2.303 | 0.931 |
| 20-Apr-93 | 10 | 26 | 0.4556 | -0.112 | 2.303 | 0.928 |
| 04-May-93 | 10 | 27 | 0.4733 | -0.067 | 2.303 | 0.923 |
| 18-Oct-93 | 10 | 28 | 0.4911 | -0.022 | 2.303 | 0.918 |
| 06-Mar-94 | 10 | 29 | 0.5089 | 0.022 | 2.303 | 0.913 |
| 15-Mar-94 | 10 | 30 | 0.5267 | 0.067 | 2.303 | 0.909 |
| 15-Jun-94 | 10 | 31 | 0.5444 | 0.112 | 2.303 | 0.905 |
| 21-Jul-94 | 10 | 32 | 0.5622 | 0.157 | 2.303 | 0.906 |
| 07-Jul-98 | 11 | 33 | 0.5800 | 0.202 | 2.398 | 0.918 |
| 28-Apr-97 | 17 | 34 | 0.5978 | 0.248 | 2.833 | 0.934 |
| 19-May-98 | 18 | 35 | 0.6156 | 0.294 | 2.890 | 0.929 |
| 20-May-93 | 20 | 36 | 0.6333 | 0.341 | 2.996 | 0.924 |
| 03-Jun-93 | 20 | 37 | 0.6511 | 0.388 | 2.996 | 0.926 |
| 22-Jun-93 | 20 | 38 | 0.6689 | 0.437 | 2.996 | 0.928 |
| 21-Jul-93 | 20 | 39 | 0.6867 | 0.486 | 2.996 | 0.927 |
| 17-Nov-93 | 20 | 40 | 0.7044 | 0.537 | 2.996 | 0.925 |
| 19-Jan-94 | 20 | 41 | 0.7222 | 0.589 | 2.996 | 0.919 |
| 08-Mar-99 | | 42 | 0.7400 | 0.643 | | 0.912 |
| 13-Apr-99 | | 43 | 0.7578 | 0.699 | | 0.912 |
| 20-Apr-99 | | 44 | 0.7756 | 0.757 | | 0.912 |
| 25-May-99 | | 45 | 0.7933 | 0.818 | | 0.912 |
| 29-Jun-99 | | 46 | 0.8111 | 0.882 | | 0.912 |
| 26-Jul-99 | | 47 | 0.8289 | 0.950 | | 0.912 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 23-Mar-99 | | 48 | 0.8467 | 1.022 | | 0.912 |
| 06-Apr-93 | 30 | 49 | 0.8644 | 1.101 | 3.401 | 0.912 |
| 16-Dec-93 | 30 | 50 | 0.8822 | 1.186 | 3.401 | 0.926 |
| 15-Feb-94 | 30 | 51 | 0.9000 | 1.282 | 3.401 | 0.929 |
| 17-Aug-94 | 30 | 52 | 0.9178 | 1.390 | 3.401 | 0.913 |
| 24-Mar-93 | 40 | 53 | 0.9356 | 1.518 | 3.689 | |
| 24-Mar-93 | 40 | 54 | 0.9533 | 1.678 | 3.689 | |
| 20-Sep-94 | 70 | 55 | 0.9711 | 1.897 | 4.248 | |
| 20-May-99 | 84.34 | 56 | 0.9889 | 2.287 | 4.435 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **NF50** | | | 3,009 | 3010 |
| **LN Analysis** | | **tZn** | | | 1.25 | 1.25 |
| **Discharge, Q** | | **Q Data, EV=3010 cfs CV=1.25** | | | | |
| **Avg:** | **3,009** | **Q Data-based LN** | | | | |
| **SD:** | **3,752** | **u** | **lnQ** | **Q** | | |
| **CV:** | **1.25** | 3 | 10.4 | 34404 | | |
| **Min:** | **173** | 0 | 7.54 | 1883 | | |
| **Max:** | **21,400** | -3 | 4.63 | 103 | | |
| **Median:** | **1,565** | | | | | |
| | | | | | 0.967 | 0.967 |
| | | | | | 3422.9 | 3420 |
| | **u=mLn{Q}+b:** | | | | 2.08 | 2.08 |

update for r2, EV, CV: **r2=0.967, EV=3420 cfs CV=2.08; max r2=0.973**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.967 | u | lnQ | Q |
| slope, m: | 0.773 | 3 | 11.18 | 71844 |
| intercept, b: | -5.645 | 0 | 7.30 | 1483 |
| N: 56 | | -3 | 3.42 | 31 |
| E[Q]: | 3422.9 | Parameter Estimates | | |
| SD[Q]: | 7122 | from LN regression | | |
| CV[Q]: | 2.08 | update graph label | | |

N: 56

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.973 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 20-Sep-94 | 173 | 1 | 0.0111 | -2.287 | 5.153 | 0.967 |
| 17-Aug-94 | 175 | 2 | 0.0289 | -1.897 | 5.165 | 0.972 |
| 17-Nov-93 | 252 | 3 | 0.0467 | -1.678 | 5.529 | 0.972 |
| 20-Oct-98 | 254 | 4 | 0.0644 | -1.518 | 5.537 | 0.973 |
| 21-Jul-94 | 272 | 5 | 0.0822 | -1.390 | 5.606 | 0.973 |
| 08-Sep-99 | 306 | 6 | 0.1000 | -1.282 | 5.724 | 0.972 |
| 12-Nov-96 | 311 | 7 | 0.1178 | -1.186 | 5.740 | 0.971 |
| 09-Dec-92 | 320 | 8 | 0.1356 | -1.101 | 5.768 | 0.970 |
| 21-Sep-93 | 342 | 9 | 0.1533 | -1.022 | 5.835 | 0.968 |
| 25-Aug-93 | 421 | 10 | 0.1711 | -0.950 | 6.043 | 0.966 |
| 15-Feb-94 | 421 | 11 | 0.1889 | -0.882 | 6.043 | 0.965 |
| 18-Oct-93 | 425 | 12 | 0.2067 | -0.818 | 6.052 | 0.963 |
| 23-Feb-93 | 441 | 13 | 0.2244 | -0.757 | 6.089 | 0.961 |
| 16-Dec-93 | 442 | 14 | 0.2422 | -0.699 | 6.091 | 0.959 |
| 10-Aug-99 | 504 | 15 | 0.2600 | -0.643 | 6.223 | 0.957 |
| 26-Jul-99 | 522 | 16 | 0.2778 | -0.589 | 6.258 | 0.955 |
| 17-Nov-98 | 592 | 17 | 0.2956 | -0.537 | 6.384 | 0.953 |
| 19-Sep-97 | 613 | 18 | 0.3133 | -0.486 | 6.418 | 0.951 |
| 07-Jul-98 | 675 | 19 | 0.3311 | -0.437 | 6.515 | 0.950 |
| 24-Jul-97 | 676 | 20 | 0.3489 | -0.388 | 6.516 | 0.948 |
| 15-Jun-94 | 701 | 21 | 0.3667 | -0.341 | 6.553 | 0.948 |
| 22-Jun-93 | 868 | 22 | 0.3844 | -0.294 | 6.766 | 0.949 |
| 13-Jul-99 | 902 | 23 | 0.4022 | -0.248 | 6.805 | 0.948 |
| 19-Jan-94 | 1040 | 24 | 0.4200 | -0.202 | 6.947 | 0.948 |
| 21-Jul-93 | 1320 | 25 | 0.4378 | -0.157 | 7.185 | 0.947 |
| 29-Jun-99 | 1370 | 26 | 0.4556 | -0.112 | 7.223 | 0.944 |
| 08-Feb-99 | 1540 | 27 | 0.4733 | -0.067 | 7.340 | 0.940 |
| 06-Feb-98 | 1560 | 28 | 0.4911 | -0.022 | 7.352 | 0.936 |
| 15-Mar-94 | 1570 | 29 | 0.5089 | 0.022 | 7.359 | 0.932 |
| 19-May-98 | 1690 | 30 | 0.5267 | 0.067 | 7.432 | 0.928 |
| 13-Mar-97 | 1740 | 31 | 0.5444 | 0.112 | 7.462 | 0.923 |
| 03-Jun-93 | 1780 | 32 | 0.5622 | 0.157 | 7.484 | 0.918 |
| 27-Jan-99 | 1840 | 33 | 0.5800 | 0.202 | 7.518 | 0.913 |
| 15-Dec-98 | 1940 | 34 | 0.5978 | 0.248 | 7.570 | 0.910 |
| 08-Mar-99 | 1940 | 35 | 0.6156 | 0.294 | 7.570 | 0.909 |
| 10-May-94 | 2260 | 36 | 0.6333 | 0.341 | 7.723 | 0.915 |
| 20-Apr-98 | 2460 | 37 | 0.6511 | 0.388 | 7.808 | 0.918 |
| 13-Apr-99 | 2740 | 38 | 0.6689 | 0.437 | 7.916 | 0.925 |
| 06-Mar-94 | 3390 | 39 | 0.6867 | 0.486 | 8.129 | 0.933 |
| 20-May-93 | 3450 | 40 | 0.7044 | 0.537 | 8.146 | 0.930 |
| 16-Apr-97 | 4030 | 41 | 0.7222 | 0.589 | 8.302 | 0.932 |
| 04-Apr-94 | 4140 | 42 | 0.7400 | 0.643 | 8.328 | 0.927 |
| 06-May-99 | 5180 | 43 | 0.7578 | 0.699 | 8.553 | 0.925 |
| 04-Jun-97 | 5360 | 44 | 0.7756 | 0.757 | 8.587 | 0.917 |
| 02-Jun-99 | 5810 | 45 | 0.7933 | 0.818 | 8.667 | 0.907 |
| 20-May-99 | 6400 | 46 | 0.8111 | 0.882 | 8.764 | 0.900 |
| 21-Apr-94 | 6650 | 47 | 0.8289 | 0.950 | 8.802 | 0.904 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 04-May-93 | 6830 | 48 | 0.8467 | 1.022 | 8.829 | 0.915 |
| 20-Apr-93 | 6860 | 49 | 0.8644 | 1.101 | 8.833 | 0.928 |
| 23-Mar-99 | 6880 | 50 | 0.8822 | 1.186 | 8.836 | 0.936 |
| 06-Apr-93 | 7310 | 51 | 0.9000 | 1.282 | 8.897 | 0.932 |
| 24-Mar-93 | 8320 | 52 | 0.9178 | 1.390 | 9.026 | 0.927 |
| 24-Mar-93 | 8320 | 53 | 0.9356 | 1.518 | 9.026 | |
| 20-Apr-99 | 9680 | 54 | 0.9533 | 1.678 | 9.178 | |
| 25-May-99 | 11100 | 55 | 0.9711 | 1.897 | 9.315 | |
| 28-Apr-97 | 21400 | 56 | 0.9889 | 2.287 | 9.971 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM291 | **Date:** | 29-May-00 |
| **Chemical:** | dCd | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,655 | 6 | 1 | 0.04 | 0.00 | 0.00 | 0.00 |
| **SD:** | 539 | 6 | 0.4 | 0.07 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.08 | 0.38 | 1.86 | | | |
| **Min:** | 33,374 | 0 | 0.4 | 0.005 | -0.92 | -1.72 | -0.47 |
| **Max:** | 36,114 | 25 | 3 | 0.39 | 2.96 | 3.95 | 5.24 |
| **Median:** | 34,561 | 3 | 1 | 0.02 | -0.50 | 0.10 | -0.26 |

**dCd NM291 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

**Conc. = mQ+b (r2=0.01)** update r2

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 Q,[COC] | 0.01 | [dCd] | Q | r2 | 0.0000001 | 0.035 |
| slope, m | 0.01 | 1 | 0.04 | m | 0.000004 | -0.00043 |
| intercept, b | 1.1 | 1 | 6.0 | b | 6 | 16.03 |
| N: 30 | | 1 | 25 | | | |

**LnConc. = mLn(Q)+b (r2=0.10)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC] | 0.10 | ln[dCd] | ln Q | [dCd] | Q |
| slope, m | -0.13 | 0.64 | -3.17 | 2 | 0.04 |
| intercept, b | 0.24 | 0.02 | 1.80 | 1 | 6 |
| N: 30 | | -0.16 | 3.23 | 1 | 25 |

**N= 32**

| | Sampling Date | Q Discharge | dCd Concentration | dCd Load | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd NM291 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 20 | 0.4 | 0.0430 | 3.00 | -0.92 | -3.15 | 2.16 | -1.72 | 0.10 |
| MFG | 4-Oct-91 | 0.89 | 1 | 0.0048 | -0.12 | 0.00 | -5.34 | -0.79 | -0.36 | -0.47 |
| IDEQ | 27-Oct-93 | 2.13 | 1.6 | 0.0183 | 0.76 | 0.47 | -4.00 | -0.60 | 1.00 | -0.27 |
| IDEQ | 2-Dec-93 | 2.04 | 1.4 | 0.0154 | 0.71 | 0.34 | -4.18 | -0.61 | 0.55 | -0.31 |
| IDEQ | 16-Dec-93 | 1.81 | 1.2 | 0.0117 | 0.59 | 0.18 | -4.45 | -0.65 | 0.10 | -0.36 |
| IDEQ | 16-Dec-93 | 0.82 | 1.2 | 0.0053 | -0.20 | 0.18 | -5.24 | -0.80 | 0.10 | -0.46 |
| IDEQ | 24-Jan-94 | 1.81 | 1.2 | 0.0117 | 0.59 | 0.18 | -4.45 | -0.65 | 0.10 | -0.36 |
| IDEQ | 24-Jan-94 | 0.88 | 1.2 | 0.0057 | -0.13 | 0.18 | -5.17 | -0.79 | 0.10 | -0.45 |
| IDEQ | 8-Apr-94 | 4.73 | 1.6 | 0.0407 | 1.55 | 0.47 | -3.20 | -0.20 | 1.00 | 0.06 |
| IDEQ | 19-Apr-94 | 25.2 | 2.9 | 0.3932 | 3.23 | 1.06 | -0.93 | 2.96 | 3.95 | 5.24 |
| IDEQ | 4-May-94 | 10.13 | 1 | 0.0545 | 2.32 | 0.00 | -2.91 | 0.63 | -0.36 | 0.26 |
| IDEQ | 19-May-94 | 12.79 | 0.6 | 0.0413 | 2.55 | -0.51 | -3.19 | 1.04 | -1.27 | 0.07 |
| IDEQ | 7-Jun-94 | 7.36 | 1 | 0.0396 | 2.00 | 0.00 | -3.23 | 0.21 | -0.36 | 0.05 |
| IDEQ | 23-Jun-94 | 5.16 | 1 | 0.0278 | 1.64 | 0.00 | -3.58 | -0.13 | -0.36 | -0.13 |
| IDEQ | 20-Jul-94 | 3.81 | 1.2 | 0.0246 | 1.34 | 0.18 | -3.71 | -0.34 | 0.10 | -0.18 |
| IDEQ | 15-Aug-94 | 2.61 | 1.3 | 0.0183 | 0.96 | 0.26 | -4.00 | -0.53 | 0.32 | -0.27 |
| IDEQ | 15-Aug-94 | 1.53 | 1.3 | 0.0107 | 0.43 | 0.26 | -4.54 | -0.69 | 0.32 | -0.38 |
| IDEQ | 8-Sep-94 | 1.88 | 1.4 | 0.0142 | 0.63 | 0.34 | -4.26 | -0.64 | 0.55 | -0.33 |
| IDEQ | 4-Oct-94 | 1.88 | 1.4 | 0.0142 | 0.63 | 0.34 | -4.26 | -0.64 | 0.55 | -0.33 |
| IDEQ | 13-Apr-95 | 6.15 | 1.3 | 0.0430 | 1.82 | 0.26 | -3.15 | 0.02 | 0.32 | 0.10 |
| IDEQ | 25-Apr-95 | 5.39 | 1.3 | 0.0377 | 1.68 | 0.26 | -3.28 | -0.10 | 0.32 | 0.02 |
| IDEQ | 9-May-95 | 11.11 | 1 | 0.0598 | 2.41 | 0.00 | -2.82 | 0.79 | -0.36 | 0.34 |
| IDEQ | 23-May-95 | 14.06 | 0.7 | 0.0529 | 2.64 | -0.36 | -2.94 | 1.24 | -1.04 | 0.24 |
| IDEQ | 12-Jun-95 | 9.24 | 0.5 | 0.0249 | 2.22 | -0.69 | -3.69 | 0.50 | -1.49 | -0.17 |
| IDEQ | 27-Jun-95 | 5.16 | 0.7 | 0.0194 | 1.64 | -0.36 | -3.94 | -0.13 | -1.04 | -0.25 |
| IDEQ | 11-Jul-95 | 2.96 | 0.9 | 0.0143 | 1.09 | -0.11 | -4.25 | -0.47 | -0.59 | -0.33 |
| IDEQ | 25-Jul-95 | 2.31 | 0.8 | 0.0099 | 0.84 | -0.22 | -4.61 | -0.57 | -0.81 | -0.39 |
| IDEQ | 14-Aug-95 | 1.74 | 1 | 0.0094 | 0.55 | 0.00 | -4.67 | -0.66 | -0.36 | -0.40 |
| IDEQ | 13-Sep-95 | 1.48 | 1.3 | 0.0104 | 0.39 | 0.26 | -4.57 | -0.70 | 0.32 | -0.38 |
| URS | 13-Nov-97 | 2.63 | 1.34 | 0.0190 | 0.97 | 0.29 | -3.97 | -0.52 | 0.41 | -0.26 |
| *URS* | *14-May-98* | 22.9 | | | 3.13 | | | 2.60 | | |
| *URS* | *15-Nov-98* | *0.0422* | | | -3.17 | | | -0.92 | | |

**dCd**

**Concentration over time analysis**

| | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **dCd** | **NM291** | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.017** | **0.00012** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 16-May-91 | -0.06 | 1 | | |
| mid | 15-Aug-94 | 0.08 | 1 | | |
| last | 15-Nov-98 | 0.26 | 1 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | | | | | |
|---|---|---|---|---|---|
| | **dCd** | **NM291** | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.005** | **0.00015** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 16-May-91 | -4.04 | 0.02 | | |
| mid | 15-Aug-94 | -3.86 | 0.02 | | |
| last | 15-Nov-98 | -3.62 | 0.03 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

| | | | | | |
|---|---|---|---|---|---|
| | *max r2* | *0.430* | | max r2: | 0.990 |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points delete last 4 rows | | | only on >4 data points delete last 4 rows | |
| | 0.017 | 0.00012 | -3.97 | 0.005 | 0.00015 | -9.08 |
| | 0.030 | -0.00016 | 5.58 | 0.032 | 0.00044 | -19.00 |
| | 0.065 | -0.00028 | 9.88 | 0.000 | 0.00001 | -4.15 |
| | 0.047 | -0.00024 | 8.51 | 0.000 | -0.00002 | -3.22 |
| | 0.037 | -0.00022 | 7.70 | 0.001 | -0.00007 | -1.24 |
| | 0.035 | -0.00022 | 7.65 | 0.004 | -0.00019 | 2.65 |
| | 0.032 | -0.00022 | 7.58 | 0.025 | -0.00047 | 12.56 |
| | 0.029 | -0.00021 | 7.45 | 0.045 | -0.00063 | 18.31 |
| | 0.026 | -0.00021 | 7.28 | 0.116 | -0.00099 | 30.72 |
| | 0.013 | -0.00015 | 5.17 | 0.107 | -0.00097 | 29.92 |
| | 0.002 | 0.00004 | -1.48 | 0.053 | -0.00049 | 13.17 |
| | 0.002 | 0.00004 | -1.50 | 0.026 | -0.00034 | 7.84 |
| | 0.005 | -0.00007 | 2.55 | 0.011 | -0.00021 | 3.59 |
| | 0.007 | -0.00009 | 3.08 | 0.001 | -0.00008 | -1.22 |
| | 0.009 | -0.00011 | 3.72 | 0.000 | 0.00000 | -3.90 |
| | 0.005 | -0.00008 | 2.68 | 0.001 | 0.00006 | -5.96 |
| | 0.000 | -0.00001 | 0.53 | 0.000 | 0.00004 | -5.36 |
| | 0.004 | 0.00007 | -2.47 | 0.006 | -0.00017 | 2.23 |
| | 0.032 | 0.00022 | -7.58 | 0.021 | -0.00035 | 8.45 |
| | 0.120 | 0.00042 | -14.68 | 0.055 | -0.00060 | 17.07 |
| | 0.192 | 0.00051 | -17.85 | 0.036 | -0.00046 | 12.34 |
| | 0.320 | 0.00061 | -21.64 | 0.020 | -0.00033 | 7.71 |
| | 0.379 | 0.00068 | -23.78 | 0.001 | -0.00005 | -2.44 |
| | 0.354 | 0.00065 | -22.71 | 0.056 | 0.00029 | -14.26 |
| | 0.422 | 0.00049 | -17.34 | 0.245 | 0.00048 | -21.04 |
| | 0.430 | 0.00040 | -13.99 | 0.659 | 0.00066 | -27.42 |
| | 0.380 | 0.00036 | -12.74 | 0.988 | 0.00080 | -32.46 |
| | 0.366 | 0.00021 | -7.17 | 0.990 | 0.00081 | -33.09 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | **NM291** | | |
| **LN Analysis** | | **dCd** | | |
| **Load** | | **Load Data, EV=0.04 lbs/day CV=1.86** | | |
| **Avg:** | **0.04** | **Load Data-based LN** | | |
| **SD:** | **0.07** | u | ln dCd Load | dCd Load |
| **CV:** | **1.86** | 3 | -0 4 | 0.6791 |
| **Min:** | **0.005** | 0 | -4 06 | 0.0173 |
| **Max:** | **0.39** | -3 | -7.73 | 0.0004 |
| **Median:** | **0.02** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.924, EV=0.03 lbs/day CV=1.34; max r2=0.92**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.924 | u | lnLoad | Load |
| slope, m | 0 986 | 3 | -0.90 | 0.4 |
| intercept, b | 3.886 | 0 | -3.94 | 0.0194 |
| N | 30 | -3 | -6.98 | 0.0009 |
| E[Load] | 0 03 | Parameter Estimates | | |
| SD[Load] | 0.04 | from LN regression | | |
| CV[Load] | 1 34 | update graph label | | |

N 32

max r2 0.924

| Date | dCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *15-Nov-98* | | 1 | 0.0194 | -2.067 | | |
| 4-Oct-91 | **0.0048** | 2 | 0.0504 | -1.641 | -5.342 | 0.924 |
| 16-Dec-93 | **0.0053** | 3 | 0.0814 | -1.396 | -5.241 | 0.917 |
| 24-Jan-94 | **0.0057** | 4 | 0.1124 | -1.214 | -5.171 | 0.907 |
| 14-Aug-95 | **0.0094** | 5 | 0.1434 | -1.065 | -4.671 | 0.896 |
| 25-Jul-95 | **0.0099** | 6 | 0 1744 | -0 937 | -4.611 | 0.895 |
| 13-Sep-95 | **0.0104** | 7 | 0.2054 | -0.822 | -4.571 | 0.893 |
| 15-Aug-94 | **0.0107** | 8 | 0.2364 | -0.718 | -4.537 | 0.890 |
| 16-Dec-93 | **0.0117** | 9 | 0.2674 | -0.621 | -4.449 | 0.885 |
| 24-Jan-94 | **0.0117** | 10 | 0.2984 | -0.529 | -4.449 | 0.881 |
| *14-May-98* | | 11 | 0.3295 | -0.441 | | |
| 4-Oct-94 | **0.0142** | 12 | 0.3605 | -0.357 | -4.257 | 0.873 |
| 8-Sep-94 | **0.0142** | 13 | 0.3915 | -0.275 | -4.257 | 0 868 |
| 11-Jul-95 | **0.0143** | 14 | 0.4225 | -0 196 | -4.245 | 0.859 |
| 2-Dec-93 | **0.0154** | 15 | 0.4535 | -0.117 | -4.176 | 0.847 |
| 15-Aug-94 | **0.0183** | 16 | 0.4845 | -0.039 | -4.003 | 0.833 |
| 27-Oct-93 | **0.0183** | 17 | 0.5155 | 0.039 | -3.999 | 0.824 |
| 13-Nov-97 | **0.0190** | 18 | 0.5465 | 0.117 | -3.965 | 0.809 |
| 27-Jun-95 | **0.0194** | 19 | 0.5775 | 0.196 | -3.941 | 0.790 |
| 20-Jul-94 | **0.0246** | 20 | 0.6085 | 0.275 | -3.705 | 0.764 |
| 12-Jun-95 | **0.0249** | 21 | 0.6395 | 0.357 | -3.695 | 0 747 |
| 23-Jun-94 | **0.0278** | 22 | 0.6705 | 0 441 | -3.584 | 0.720 |
| 25-Apr-95 | **0.0377** | 23 | 0 7016 | 0.529 | -3.278 | 0.693 |
| 7-Jun-94 | **0.0396** | 24 | 0.7326 | 0.621 | -3.229 | 0 706 |
| 8-Apr-94 | **0.0407** | 25 | 0 7636 | 0 718 | -3.201 | 0 726 |
| 19-May-94 | **0.0413** | 26 | 0 7946 | 0.822 | -3 187 | 0 751 |
| 13-Apr-95 | **0.0430** | 27 | 0.8256 | 0.937 | -3.146 | 0.775 |
| 16-May-91 | **0.0430** | 28 | 0.8566 | 1 065 | -3.146 | 0.804 |
| 23-May-95 | **0.0529** | 29 | 0.8876 | 1.214 | -2.938 | |
| 4-May-94 | **0.0545** | 30 | 0.9186 | 1.396 | -2.910 | |
| 9-May-95 | **0.0598** | 31 | 0.9496 | 1 641 | -2.817 | |
| 19-Apr-94 | **0.3932** | 32 | 0.9806 | 2.067 | -0.934 | |

update for EV, CV

**dCd** **NM291**

**LN Analysis** **dCd**

## Concentration

**Conc. Data, EV=1 ug/L CV=.38**

**Data-based LN**

| | | | | |
|---|---|---|---|---|
| **Avg:** | 1 | u | ln[dCd] | [dCd] |
| **SD:** | 0.4 | 3 | 1.2 | 3 |
| **CV:** | 0.38 | 0 | 0.08 | 1 |
| **Min:** | 0.4 | -3 | -1.02 | 0.4 |
| **Max:** | 3 | | | |
| **Median:** | 1 | | | |

**u=mLn[Conc.]+b:**

update for r2, EV, CV **$r^2$=0.885, EV=1.1 ug/L CV=0.48; max r2=0.89**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc. | 0.885 | u | lnConc. | Conc. |
| slope, *m* | 2.186 | 3 | 1.40 | 4 |
| intercept, b | -0.057 | 0 | 0.03 | 1 |
| N | 30 | -3 | -1.35 | 0.3 |
| E[Conc] | 1.1 | Parameter Estimates | | |
| SD[Conc] | 1 | from LN regression | | |
| CV[Conc] | 0.48 | update graph label | | |

N= 32

| Date | dCd Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.885 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *14-May-98* | | 1 | 0.0194 | -2.067 | | |
| 16-May-91 | 0.4 | 2 | 0.0504 | -1.641 | -0.916 | 0.885 |
| *15-Nov-98* | | 3 | 0.0814 | -1.396 | | |
| 12-Jun-95 | 0.5 | 4 | 0.1124 | -1.214 | -0.693 | 0.878 |
| 19-May-94 | 0.6 | 5 | 0.1434 | -1.065 | -0.511 | 0.882 |
| 23-May-95 | 0.7 | 6 | 0.1744 | -0.937 | -0.357 | 0.877 |
| 27-Jun-95 | 0.7 | 7 | 0.2054 | -0.822 | -0.357 | 0.866 |
| 25-Jul-95 | 0.8 | 8 | 0.2364 | -0.718 | -0.223 | 0.860 |
| 11-Jul-95 | 0.9 | 9 | 0.2674 | -0.621 | -0.105 | 0.847 |
| 4-Oct-91 | 1 | 10 | 0.2984 | -0.529 | 0.000 | 0.832 |
| 4-May-94 | 1 | 11 | 0.3295 | -0.441 | 0.000 | 0.826 |
| 7-Jun-94 | 1 | 12 | 0.3605 | -0.357 | 0.000 | 0.817 |
| 9-May-95 | 1 | 13 | 0.3915 | -0.275 | 0.000 | 0.804 |
| 14-Aug-95 | 1 | 14 | 0.4225 | -0.196 | 0.000 | 0.787 |
| 23-Jun-94 | 1 | 15 | 0.4535 | -0.117 | 0.000 | 0.764 |
| 16-Dec-93 | 1.2 | 16 | 0.4845 | -0.039 | 0.182 | 0.737 |
| 16-Dec-93 | 1.2 | 17 | 0.5155 | 0.039 | 0.182 | 0.743 |
| 20-Jul-94 | 1.2 | 18 | 0.5465 | 0.117 | 0.182 | 0.746 |
| 24-Jan-94 | 1.2 | 19 | 0.5775 | 0.196 | 0.182 | 0.745 |
| 24-Jan-94 | 1.2 | 20 | 0.6085 | 0.275 | 0.182 | 0.740 |
| 13-Apr-95 | 1.3 | 21 | 0.6395 | 0.357 | 0.262 | 0.728 |
| 13-Sep-95 | 1.3 | 22 | 0.6705 | 0.441 | 0.262 | 0.749 |
| 15-Aug-94 | 1.3 | 23 | 0.7016 | 0.529 | 0.262 | 0.768 |
| 15-Aug-94 | 1.3 | 24 | 0.7326 | 0.621 | 0.262 | 0.785 |
| 25-Apr-95 | 1.3 | 25 | 0.7636 | 0.718 | 0.262 | 0.798 |
| 13-Nov-97 | 1.34 | 26 | 0.7946 | 0.822 | 0.293 | 0.802 |
| 2-Dec-93 | 1.4 | 27 | 0.8256 | 0.937 | 0.336 | 0.814 |
| 4-Oct-94 | 1.4 | 28 | 0.8566 | 1.065 | 0.336 | 0.852 |
| 8-Sep-94 | 1.4 | 29 | 0.8876 | 1.214 | 0.336 | |
| 8-Apr-94 | 1.6 | 30 | 0.9186 | 1.396 | 0.470 | |
| 27-Oct-93 | 1.6 | 31 | 0.9496 | 1.641 | 0.470 | |
| 19-Apr-94 | 2.9 | 32 | 0.9806 | 2.067 | 1.065 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | **NM291** | | |
| **LN Analysis** | | **dCd** | | |
| **Discharge, Q** | | **Q Data, EV=6 cfs CV=1.08** | | |
| **Avg:** | **6** | **Q Data-based LN** | | |
| **SD:** | **6** | u | lnQ | Q |
| **CV:** | **1.08** | 3 | 4.0 | 57 |
| **Min:** | **0.04** | 0 | 1.41 | 4 |
| **Max:** | **25** | -3 | -1.22 | 0.3 |
| **Median:** | **3** | | | |

**u=mLn(Q)+b:**

update for r2, EV CV **r2=0.898, EV=8.4 cfs CV=2.31; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.898 | u | lnQ | Q |
| slope, m | 0.736 | 3 | 5.28 | 197 |
| intercept, b | -0.890 | 0 | 1.21 | 3 |
| N | 32 | -3 | -2.87 | 0.1 |
| E[Q] | 8.4 | Parameter Estimates | | |
| SD[Q]: | 19 | from LN regression | | |
| CV[Q]: | 2.31 | update graph label | | |

| Date | Q Discharge cfs Ranked | N: 32 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.974 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *15-Nov-98* | *0.0422* | 1 | 0.0194 | -2.067 | -3.165 | 0.898 |
| 16-Dec-93 | 0.82 | 2 | 0.0504 | -1.641 | -0.198 | 0.973 |
| 24-Jan-94 | 0.88 | 3 | 0.0814 | -1.396 | -0.128 | 0.973 |
| 4-Oct-91 | 0.89 | 4 | 0.1124 | -1.214 | -0.117 | 0.971 |
| 13-Sep-95 | 1.48 | 5 | 0.1434 | -1.065 | 0.392 | 0.968 |
| 15-Aug-94 | 1.53 | 6 | 0.1744 | -0.937 | 0.425 | 0.970 |
| 14-Aug-95 | 1.74 | 7 | 0.2054 | -0.822 | 0.554 | 0.971 |
| 16-Dec-93 | 1.81 | 8 | 0.2364 | -0.718 | 0.593 | 0.973 |
| 24-Jan-94 | 1.81 | 9 | 0.2674 | -0.621 | 0.593 | 0.974 |
| 4-Oct-94 | 1.88 | 10 | 0.2984 | -0.529 | 0.631 | 0.974 |
| 8-Sep-94 | 1.88 | 11 | 0.3295 | -0.441 | 0.631 | 0.972 |
| 2-Dec-93 | 2.04 | 12 | 0.3605 | -0.357 | 0.713 | 0.969 |
| 27-Oct-93 | 2.13 | 13 | 0.3915 | -0.275 | 0.756 | 0.965 |
| 25-Jul-95 | 2.31 | 14 | 0.4225 | -0.196 | 0.837 | 0.962 |
| 15-Aug-94 | 2.61 | 15 | 0.4535 | -0.117 | 0.959 | 0.959 |
| 13-Nov-97 | 2.63 | 16 | 0.4845 | -0.039 | 0.967 | 0.955 |
| 11-Jul-95 | 2.96 | 17 | 0.5155 | 0.039 | 1.085 | 0.956 |
| 20-Jul-94 | 3.81 | 18 | 0.5465 | 0.117 | 1.338 | 0.960 |
| 8-Apr-94 | 4.73 | 19 | 0.5775 | 0.196 | 1.554 | 0.957 |
| 23-Jun-94 | 5.16 | 20 | 0.6085 | 0.275 | 1.641 | 0.950 |
| 27-Jun-95 | 5.16 | 21 | 0.6395 | 0.357 | 1.641 | 0.943 |
| 25-Apr-95 | 5.39 | 22 | 0.6705 | 0.441 | 1.685 | 0.935 |
| 13-Apr-95 | 6.15 | 23 | 0.7016 | 0.529 | 1.816 | 0.933 |
| 7-Jun-94 | 7.36 | 24 | 0.7326 | 0.621 | 1.996 | 0.936 |
| 12-Jun-95 | 9.24 | 25 | 0.7636 | 0.718 | 2.224 | 0.934 |
| 4-May-94 | 10.13 | 26 | 0.7946 | 0.822 | 2.316 | 0.917 |
| 9-May-95 | 11.11 | 27 | 0.8256 | 0.937 | 2.408 | 0.891 |
| 19-May-94 | 12.79 | 28 | 0.8566 | 1.065 | 2.549 | 0.852 |
| 23-May-95 | 14.06 | 29 | 0.8876 | 1.214 | 2.643 | |
| 16-May-91 | 20 | 30 | 0.9186 | 1.396 | 2.996 | |
| *14-May-96* | *22.9* | 31 | 0.9496 | 1.641 | 3.131 | |
| 19-Apr-94 | 25.2 | 32 | 0.9806 | 2.067 | 3.227 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** NM291 **Date:** 30-May-00
**Chemical:** dPb **Analyst:** J.Johnston
**Notes:**
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 34,655 | 6 | 3 | 0.1 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 539 | 6 | 1 | 0.1 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.08 | 0.24 | 0.96 | | | | |
| **Min:** | 33,374 | 0 | 1 | 0.02 | | -0.92 | -2.17 | -0.88 |
| **Max:** | 36,114 | 25 | 4 | 0.5 | | 2.96 | 1.36 | 2.92 |
| **Median:** | 34,561 | 3 | 3 | 0.1 | | -0.50 | -0.01 | -0.22 |

**dPb NM291 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

**Conc. = mQ+b (r2=0.06)** update r2

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 Q,[COC] | 0.06 | [dPb] | Q | r2 | 0.000 | 0.035 |
| slope, m | 0.03 | 3 | 0.04 | m | 0.0000 | -0.00043 |
| intercept, b | 2.8 | 3 | 6.0 | b | 6 | 16.03 |
| N | 14 | 3 | 25 | | | |

**LnConc. = mLn(Q)+b (r2=0.03)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC] | 0.03 | ln[dPb] | ln Q | [dPb] | Q |
| slope, m | 0.06 | 0.80 | -3.17 | 2 | 0.04 |
| intercept, b | 0.97 | 1.07 | 1.80 | 3 | 6 |
| N | 14 | 1.15 | 3.23 | 3 | 25 |

for graph: dPb 0

**N= 32** NM291

| update for new data | Sampling Date | Q Discharge cfs | dPb Concentration ug/L | dPb Load lbs/day | Ln Q | Ln dPb Conc. | Ln dPb Load | Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| *MFG* | *16-May-91* | *20* | | | 3.00 | | | 2.16 | | |
| *MFG* | *4-Oct-91* | *0.89* | | | -0.12 | | | -0.79 | | |
| *IDEQ* | *27-Oct-93* | *2.13* | | | 0.76 | | | -0.60 | | |
| *IDEQ* | *2-Dec-93* | *2.04* | | | 0.71 | | | -0.61 | | |
| *IDEQ* | *16-Dec-93* | *0.82* | | | -0.20 | | | -0.80 | | |
| *IDEQ* | *16-Dec-93* | *1.81* | | | 0.59 | | | -0.65 | | |
| *IDEQ* | *24-Jan-94* | *0.88* | | | -0.13 | | | -0.79 | | |
| *IDEQ* | *24-Jan-94* | *1.81* | | | 0.59 | | | -0.65 | | |
| *IDEQ* | *8-Apr-94* | *4.73* | | | 1.55 | | | -0.20 | | |
| IDEQ | 19-Apr-94 | 25.2 | 3.7 | 0.5016 | 3.23 | 1.31 | -0.69 | 2.96 | 0.95 | 2.92 |
| IDEQ | 4-May-94 | 10.13 | 2 | 0.1090 | 2.32 | 0.69 | -2.22 | 0.63 | -1.38 | -0.18 |
| IDEQ | 19-May-94 | 12.79 | 3 | 0.2064 | 2.55 | 1.10 | -1.58 | 1.04 | -0.01 | 0.59 |
| IDEQ | 7-Jun-94 | 7.36 | 3 | 0.1188 | 2.00 | 1.10 | -2.13 | 0.21 | -0.01 | -0.11 |
| *IDEQ* | *23-Jun-94* | *5.16* | | | 1.64 | | | -0.13 | | |
| *IDEQ* | *20-Jul-94* | *3.81* | | | 1.34 | | | -0.34 | | |
| IDEQ | 15-Aug-94 | 1.53 | 2.5 | 0.0206 | 0.43 | 0.92 | -3.88 | -0.69 | -0.70 | -0.88 |
| IDEQ | 15-Aug-94 | 2.61 | 2.5 | 0.0351 | 0.96 | 0.92 | -3.35 | -0.53 | -0.70 | -0.77 |
| *IDEQ* | *8-Sep-94* | *1.88* | | | 0.63 | | | -0.64 | | |
| *IDEQ* | *4-Oct-94* | *1.88* | | | 0.63 | | | -0.64 | | |
| IDEQ | 13-Apr-95 | 6.15 | 3 | 0.0993 | 1.82 | 1.10 | -2.31 | 0.02 | -0.01 | -0.26 |
| *IDEQ* | *25-Apr-95* | *5.39* | | | 1.68 | | | -0.10 | | |
| IDEQ | 9-May-95 | 11.11 | 4 | 0.2391 | 2.41 | 1.39 | -1.43 | 0.79 | 1.36 | 0.84 |
| IDEQ | 23-May-95 | 14.06 | 3 | 0.2269 | 2.64 | 1.10 | -1.48 | 1.24 | -0.01 | 0.75 |
| IDEQ | 12-Jun-95 | 9.24 | 3 | 0.1491 | 2.22 | 1.10 | -1.90 | 0.50 | -0.01 | 0.13 |
| *IDEQ* | *27-Jun-95* | *5.16* | | | 1.64 | | | -0.13 | | |
| IDEQ | 11-Jul-95 | 2.96 | 4 | 0.0637 | 1.09 | 1.39 | -2.75 | -0.47 | 1.36 | -0.54 |
| *IDEQ* | *25-Jul-95* | *2.31* | | | 0.84 | | | -0.57 | | |
| IDEQ | 14-Aug-95 | 1.74 | 3 | 0.0281 | 0.55 | 1.10 | -3.57 | -0.66 | -0.01 | -0.82 |
| IDEQ | 13-Sep-95 | 1.48 | 4 | 0.0318 | 0.39 | 1.39 | -3.45 | -0.70 | 1.36 | -0.79 |
| URS | 13-Nov-97 | 2.63 | 1.42 | 0.0201 | 0.97 | 0.35 | -3.91 | -0.52 | -2.17 | -0.88 |
| *URS* | *14-May-98* | *22.9* | | | 3.13 | | | 2.60 | | |
| *URS* | *15-Nov-98* | *0.0422* | | | -3.17 | | | -0.92 | | |

dPb

**Concentration over time analysis**

| | dPb | NM291 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.150** | **-0.00033** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 16-May-91 | 1.52 | 5 | | |
| mid | 15-Aug-94 | 1.14 | 3 | | |
| last | 15-Nov-98 | 0.63 | 2 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | dPb | NM291 | | | Load over time |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.224** | **-0.00143** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 16-May-91 | -0.48 | 0.62 | | |
| mid | 15-Aug-94 | -2.17 | 0.11 | | |
| last | 15-Nov-98 | -4.39 | 0.01 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | max r2 | 0.921 | | max r2 | 0.913 | |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| | 0.150 | -0.00033 | 12.41 | 0.224 | -0.00143 | 47.12 |
| | 0.150 | -0.00033 | 12.41 | 0.224 | -0.00143 | 47.12 |
| | 0.150 | -0.00033 | 12.41 | 0.224 | -0.00143 | 47.12 |
| | 0.150 | -0.00033 | 12.41 | 0.224 | -0.00143 | 47.12 |
| | 0.150 | -0.00033 | 12.41 | 0.224 | -0.00143 | 47.12 |
| | 0.150 | -0.00033 | 12.41 | 0.224 | -0.00143 | 47.12 |
| | 0.150 | -0.00033 | 12.41 | 0.224 | -0.00143 | 47.12 |
| | 0.150 | -0.00033 | 12.41 | 0.224 | -0.00143 | 47.12 |
| | 0.150 | -0.00033 | 12.41 | 0.224 | -0.00143 | 47.12 |
| | 0.150 | -0.00033 | 12.41 | 0.224 | -0.00143 | 47.12 |
| | 0.117 | -0.00029 | 11.20 | 0.161 | -0.00109 | 35.24 |
| | 0.262 | -0.00043 | 15.90 | 0.146 | -0.00108 | 34.99 |
| | 0.286 | -0.00047 | 17.49 | 0.091 | -0.00084 | 26.68 |
| | 0.319 | -0.00053 | 19.70 | 0.060 | -0.00072 | 22.25 |
| | 0.319 | -0.00053 | 19.70 | 0.060 | -0.00072 | 22.25 |
| | 0.319 | -0.00053 | 19.70 | 0.060 | -0.00072 | 22.25 |
| | 0.469 | -0.00068 | 24.95 | 0.203 | -0.00130 | 42.82 |
| | 0.763 | -0.00095 | 34.20 | 0.421 | -0.00201 | 67.61 |
| | 0.763 | -0.00095 | 34.20 | 0.421 | -0.00201 | 67.61 |
| | 0.763 | -0.00095 | 34.20 | 0.421 | -0.00201 | 67.61 |
| | 0.814 | -0.00100 | 36.26 | 0.413 | -0.00203 | 68.39 |
| | 0.814 | -0.00100 | 36.26 | 0.413 | -0.00203 | 68.39 |
| | 0.806 | -0.00097 | 35.15 | 0.389 | -0.00174 | 58.12 |
| | 0.853 | -0.00104 | 37.51 | 0.388 | -0.00132 | 43.14 |
| | 0.921 | -0.00114 | 41.02 | 0.499 | -0.00083 | 25.76 |
| | 0.921 | -0.00114 | 41.02 | 0.499 | -0.00083 | 25.76 |
| | 0.910 | -0.00109 | 39.46 | 0.913 | -0.00049 | 13.54 |
| | 0.910 | -0.00109 | 39.46 | 0.913 | -0.00049 | 13.54 |

update for EV, CV

**dPb** NM291
**LN Analysis** dPb
**Load** **Load Data, EV=0.1 lbs/day CV=.96**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **0.1** | **Load Data-based LN** | | |
| **SD:** | **0.1** | u | ln dPb Load | dPb Load |
| **CV:** | **0.96** | 3 | 0.1 | 1 07 |
| **Min:** | **0.02** | 0 | -2.35 | 0 10 |
| **Max:** | **0.5** | -3 | -4 77 | 0.01 |
| **Median:** | **0.1** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.926, EV=0.1 lbs/day CV=4.11; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.926 | u | lnLoad | Load |
| slope, m | 0.589 | 3 | 1.30 | 4 |
| intercept, b | 2.233 | 0 | -3.79 | 0.02 |
| N 14 | | -3 | -8.89 | 0 0001380 |
| E[Load] | 0 1 | Parameter Estimates | | |
| SD[Load] | 0 4 | from LN regression | | |
| CV[Load] | 4 11 | update graph label | | |

N 32

| Date | dPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.967 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *15-Nov-98* | | 1 | 0.0194 | -2.067 | | |
| *4-Oct-91* | | 2 | 0.0504 | -1.641 | | |
| *16-Dec-93* | | 3 | 0.0814 | -1.396 | | |
| *24-Jan-94* | | 4 | 0.1124 | -1.214 | | |
| *16-Dec-93* | | 5 | 0.1434 | -1.065 | | |
| *24-Jan-94* | | 6 | 0.1744 | -0.937 | | |
| *4-Oct-94* | | 7 | 0.2054 | -0.822 | | |
| *8-Sep-94* | | 8 | 0.2364 | -0.718 | | |
| *2-Dec-93* | | 9 | 0.2674 | -0.621 | | |
| *27-Oct-93* | | 10 | 0.2984 | -0.529 | | |
| *25-Jul-95* | | 11 | 0.3295 | -0 441 | | |
| *14-May-96* | | 12 | 0.3605 | -0.357 | | |
| *20-Jul-94* | | 13 | 0.3915 | -0.275 | | |
| *6-Apr-94* | | 14 | 0 4225 | -0.196 | | |
| 13-Nov-97 | **0.0201** | 15 | 0.4535 | -0.117 | -3.907 | 0.926 |
| 15-Aug-94 | **0.0206** | 16 | 0 4845 | -0.039 | -3.884 | 0.911 |
| *23-Jun-94* | | 17 | 0.5155 | 0.039 | | |
| *27-Jun-95* | | 18 | 0.5465 | 0.117 | | |
| *25-Apr-95* | | 19 | 0.5775 | 0.196 | | |
| 14-Aug-95 | **0.0281** | 20 | 0.6085 | 0.275 | -3.573 | 0.889 |
| 13-Sep-95 | **0.0318** | 21 | 0.6395 | 0.357 | -3.447 | 0.881 |
| 15-Aug-94 | **0.0351** | 22 | 0.6705 | 0.441 | -3.349 | 0.883 |
| 11-Jul-95 | **0.0637** | 23 | 0.7016 | 0.529 | -2.754 | 0.947 |
| 13-Apr-95 | **0.0993** | 24 | 0 7326 | 0.621 | -2.310 | 0.967 |
| 4-May-94 | **0.1090** | 25 | 0.7636 | 0.718 | -2.216 | 0.959 |
| 7-Jun-94 | **0.1188** | 26 | 0 7946 | 0.822 | -2.130 | 0.947 |
| 12-Jun-95 | **0.1491** | 27 | 0 8256 | 0 937 | -1 903 | 0 924 |
| *16-May-91* | | 28 | 0.8566 | 1 065 | | |
| 19-May-94 | **0.2064** | 29 | 0.8876 | 1 214 | -1 578 | |
| 23-May-95 | **0.2269** | 30 | 0.9186 | 1 396 | -1 483 | |
| 9-May-95 | **0.2391** | 31 | 0 9496 | 1.641 | -1.431 | |
| 19-Apr-94 | **0.5016** | 32 | 0.9806 | 2.067 | -0.690 | |

update for EV, CV

**dPb** **NM291**

**LN Analysis** **dPb**

## Concentration

**Conc. Data, EV=3 ug/L CV=.24**

| | | **Data-based LN** | | |
|---|---|---|---|---|
| **Avg:** | 3 | u | ln[dPb] | [dPb] |
| **SD:** | 1 | u | 1 8 | 6 |
| **CV:** | 0.24 | 3 | 1.07 | 3 |
| **Min:** | 1 | 0 | 0 35 | 1 |
| **Max:** | 4 | -3 | | |
| **Median:** | 3 | | | |

**u=mLn[Conc.]+b:**

update for r2, EV, CV: **$r^2$=0.723, EV=2.1 ug/L CV=0.66; max r2=0.83**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.723 | u | lnConc | Conc |
| slope, m | 1.653 | 3 | 2.35 | 11 |
| intercept, b | -0.892 | 0 | 0.54 | 2 |
| N: | 14 | -3 | -1.28 | 0.28 |
| E[Conc] | 2.1 | Parameter Estimates | | |
| SD[Conc] | 1 | from LN regression | | |
| CV[Conc] | 0.66 | update graph label | | |

N 32

| Date | dPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.827 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *14-May-98* | | 1 | 0.0194 | -2.067 | | |
| *15-Nov-98* | | 2 | 0.0504 | -1.641 | | |
| *4-Oct-91* | | 3 | 0.0814 | -1.396 | | |
| *16-Dec-93* | | 4 | 0.1124 | -1.214 | | |
| *24-Jan-94* | | 5 | 0.1434 | -1.065 | | |
| *16-Dec-93* | | 6 | 0.1744 | -0.937 | | |
| *24-Jan-94* | | 7 | 0.2054 | -0.822 | | |
| *4-Oct-94* | | 8 | 0.2364 | -0.718 | | |
| *8-Sep-94* | | 9 | 0.2674 | -0.621 | | |
| *2-Dec-93* | | 10 | 0.2984 | -0.529 | | |
| *27-Oct-93* | | 11 | 0.3295 | -0.441 | | |
| *25-Jul-95* | | 12 | 0.3605 | -0.357 | | |
| *20-Jul-94* | | 13 | 0.3915 | -0.275 | | |
| *8-Apr-94* | | 14 | 0.4225 | -0.196 | | |
| *23-Jun-94* | | 15 | 0.4535 | -0.117 | | |
| *27-Jun-95* | | 16 | 0.4845 | -0.039 | | |
| *25-Apr-95* | | 17 | 0.5155 | 0.039 | | |
| 13-Nov-97 | 1.42 | 18 | 0.5465 | 0.117 | 0.351 | 0.723 |
| *16-May-91* | | 19 | 0.5775 | 0.196 | | |
| 4-May-94 | 2 | 20 | 0.6085 | 0.275 | 0.693 | 0.794 |
| 15-Aug-94 | 2.5 | 21 | 0.6395 | 0.357 | 0.916 | 0.827 |
| 15-Aug-94 | 2.5 | 22 | 0.6705 | 0.441 | 0.916 | 0.798 |
| 14-Aug-95 | 3 | 23 | 0.7016 | 0.529 | 1.099 | 0.776 |
| 13-Apr-95 | 3 | 24 | 0.7326 | 0.621 | 1.099 | 0.770 |
| 7-Jun-94 | 3 | 25 | 0.7636 | 0.718 | 1.099 | 0.752 |
| 12-Jun-95 | 3 | 26 | 0.7946 | 0.822 | 1.099 | 0.713 |
| 19-May-94 | 3 | 27 | 0.8256 | 0.937 | 1.099 | 0.639 |
| 23-May-95 | 3 | 28 | 0.8566 | 1.065 | 1.099 | 0.500 |
| 19-Apr-94 | 3 7 | 29 | 0.8876 | 1.214 | 1.308 | |
| 13-Sep-95 | 4 | 30 | 0.9186 | 1 396 | 1.386 | |
| 11-Jul-95 | 4 | 31 | 0.9496 | 1.641 | 1.386 | |
| 9-May-95 | 4 | 32 | 0.9806 | 2 067 | 1.386 | |

update for EV, CV

**dPb** **NM291**

**LN Analysis** **dPb**

**Discharge, Q** **Q Data, EV=6 cfs CV=1.08**

**Q Data-based LN**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **6** | u | lnQ | Q |
| **SD:** | **6** | 3 | 4 0 | 5" |
| **CV:** | **1.08** | 0 | 1.41 | 4 |
| **Min:** | **0.0** | -3 | -1.22 | 0.3 |
| **Max:** | **25** | | | |
| **Median:** | **3** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.898, EV=8.4 cfs CV=2.31; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.898 | u | lnQ | Q |
| slope, m | 0 736 | 3 | 5 28 | 19" |
| intercept, b | -0.890 | 0 | 1.21 | 3 |
| N | 32 | -3 | -2 8" | 0 1 |
| E[Q] | 8 4 | Parameter Estimates | | |
| SD[Q] | 19 | from LN regression | | |
| CV[Q] | 2.31 | update graph label | | |

N 32

max r2 0.974

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *15-Nov-98* | *0.0422* | 1 | 0 0194 | -2.067 | -3.165 | 0.898 |
| *16-Dec-93* | *0.82* | 2 | 0 0504 | -1.641 | -0.198 | 0.973 |
| *24-Jan-94* | *0.88* | 3 | 0.0814 | -1.396 | -0.128 | 0.973 |
| *4-Oct-91* | *0.89* | 4 | 0 1124 | -1.214 | -0 117 | 0.971 |
| 13-Sep-95 | 1 48 | 5 | 0.1434 | -1.065 | 0.392 | 0.968 |
| 15-Aug-94 | 1 53 | 6 | 0.1744 | -0.937 | 0.425 | 0.970 |
| 14-Aug-95 | 1 74 | 7 | 0.2054 | -0.822 | 0.554 | 0.971 |
| *16-Dec-93* | *1.81* | 8 | 0.2364 | -0 718 | 0.593 | 0.973 |
| *24-Jan-94* | *1.81* | 9 | 0.2674 | -0 621 | 0.593 | 0.974 |
| *4-Oct-94* | *1.88* | 10 | 0.2984 | -0.529 | 0 631 | 0 974 |
| *8-Sep-94* | *1.88* | 11 | 0.3295 | -0.441 | 0.631 | 0 972 |
| *2-Dec-93* | *2.04* | 12 | 0.3605 | -0.357 | 0 713 | 0 969 |
| *27-Oct-93* | *2.13* | 13 | 0.3915 | -0.275 | 0.756 | 0.965 |
| *25-Jul-95* | *2.31* | 14 | 0.4225 | -0.196 | 0.837 | 0.962 |
| 15-Aug-94 | 2 61 | 15 | 0.4535 | -0.117 | 0.959 | 0.959 |
| 13-Nov-97 | 2.63 | 16 | 0 4845 | -0.039 | 0.967 | 0.955 |
| 11-Jul-95 | 2.96 | 17 | 0.5155 | 0.039 | 1.085 | 0.956 |
| *20-Jul-94* | *3.81* | 18 | 0.5465 | 0 117 | 1.338 | 0.960 |
| *8-Apr-94* | *4.73* | 19 | 0 5775 | 0.196 | 1 554 | 0 957 |
| *23-Jun-94* | *5.16* | 20 | 0.6085 | 0.275 | 1.641 | 0 950 |
| *27-Jun-95* | *5.16* | 21 | 0 6395 | 0 35" | 1 641 | 0 943 |
| *25-Apr-95* | *5.39* | 22 | 0 6705 | 0 441 | 1.685 | 0.935 |
| 13-Apr-95 | 6 13 | 23 | 0 7016 | 0 529 | 1 816 | 0 933 |
| 7-Jun-94 | 7 36 | 24 | 0 7326 | 0.621 | 1 996 | 0.936 |
| 12-Jun-95 | 9.24 | 25 | 0.7636 | 0.718 | 2.224 | 0.934 |
| 4-May-94 | 10.13 | 26 | 0.7946 | 0.822 | 2.316 | 0.917 |
| 9-May-95 | 11 11 | 27 | 0.8256 | 0.937 | 2.408 | 0.891 |
| 19-May-94 | 12.79 | 28 | 0.8566 | 1.065 | 2.549 | 0.852 |
| 23-May-95 | 14.06 | 29 | 0.8876 | 1.214 | 2.643 | |
| *16-May-91* | *20* | 30 | 0.9186 | 1.396 | 2.996 | |
| *14-May-98* | *22.9* | 31 | 0.9496 | 1.641 | 3.131 | |
| 19-Apr-94 | 25.2 | 32 | 0.9806 | 2.067 | 3.227 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **NM291** | **Date:** | **29-May-00** |
| **Chemical:** | **dZn** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,655 | 6 | 219 | 6 | 0.00 | 0.00 | 0.00 |
| **SD:** | 539 | 6 | 91 | 9 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.08 | 0.42 | 1.54 | | | |
| **Min:** | 33,374 | 0.04 | 6 | 0.001 | -0.92 | -2.34 | -0.65 |
| **Max:** | 36,114 | 25 | 397 | 54 | 2.96 | 1.95 | 5.16 |
| **Median:** | 34,561 | 3 | 249 | 4 | -0.50 | 0.33 | -0.26 |

**dZn NM291 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.02)** update r2

| | | [dZn] | Q |
|---|---|---|---|
| r2 Q,[COC]: | 0.02 | | |
| slope, m: | -2.5 | 233 | 0.04 |
| intercept, b | 232.6 | 218 | 6.0 |
| N: 31 | | 170 | 25 |

**LnConc. = mLn(Q)+b (r2=0.10)** update r2

| | | ln[dZn] | ln Q | [dZn] | Q |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC] | 0.10 | | | | |
| slope, m | 0.21 | 4.33 | -3.17 | 76 | 0.04 |
| intercept, b: | 4.98 | 5.35 | 1.80 | 211 | 6 |
| N: 31 | | 5.64 | 3.23 | 283 | 25 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2: | 0.0000001 | 0.035 |
| m: | 0.000004 | -0.00043 |
| b: | 6 | 16.03 |

**LnQ = mTime +b**

for graph: 0

**N= 32**

| | Sampling Date | Q Discharge cfs | dZn Concentration ug/L | dZn Load lbs/day | Ln Q | Ln dZn Conc. | Ln dZn Load | NM291 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 20 | 137 | 15 | 3.00 | 4.92 | 2.69 | 2.16 | -0.90 | 0.94 |
| MFG | 4-Oct-91 | 0.89 | 249 | 1 | -0.12 | 5.52 | 0.18 | -0.79 | 0.33 | -0.52 |
| IDEQ | 27-Oct-93 | 2.13 | 331 | 4 | 0.76 | 5.80 | 1.33 | -0.60 | 1.22 | -0.24 |
| IDEQ | 2-Dec-93 | 2.04 | 299 | 3 | 0.71 | 5.70 | 1.19 | -0.61 | 0.87 | -0.29 |
| IDEQ | 16-Dec-93 | 1.81 | 276 | 3 | 0.59 | 5.62 | 0.99 | -0.65 | 0.62 | -0.36 |
| IDEQ | 16-Dec-93 | 0.82 | 276 | 1 | -0.20 | 5.62 | 0.20 | -0.80 | 0.62 | -0.52 |
| IDEQ | 24-Jan-94 | 1.81 | 303 | 3 | 0.59 | 5.71 | 1.08 | -0.65 | 0.92 | -0.33 |
| IDEQ | 24-Jan-94 | 0.88 | 303 | 1 | -0.13 | 5.71 | 0.36 | -0.79 | 0.92 | -0.49 |
| IDEQ | 8-Apr-94 | 4.73 | 331 | 8 | 1.55 | 5.80 | 2.13 | -0.20 | 1.22 | 0.26 |
| IDEQ | 19-Apr-94 | 25.2 | 397 | 54 | 3.23 | 5.98 | 3.99 | 2.96 | 1.95 | 5.16 |
| IDEQ | 4-May-94 | 10.13 | 161 | 9 | 2.32 | 5.08 | 2.17 | 0.63 | -0.64 | 0.30 |
| IDEQ | 19-May-94 | 12.79 | 106 | 7 | 2.55 | 4.66 | 1.99 | 1.04 | -1.24 | 0.14 |
| IDEQ | 7-Jun-94 | 7.36 | 161 | 6 | 2.00 | 5.08 | 1.85 | 0.21 | -0.64 | 0.04 |
| IDEQ | 23-Jun-94 | 5.16 | 158 | 4 | 1.64 | 5.06 | 1.48 | -0.13 | -0.67 | -0.17 |
| IDEQ | 20-Jul-94 | 3.81 | 203 | 4 | 1.34 | 5.31 | 1.43 | -0.34 | -0.18 | -0.20 |
| IDEQ | 15-Aug-94 | 2.61 | 256 | 4 | 0.96 | 5.55 | 1.28 | -0.53 | 0.40 | -0.26 |
| IDEQ | 15-Aug-94 | 1.53 | 256 | 2 | 0.43 | 5.55 | 0.75 | -0.69 | 0.40 | -0.42 |
| IDEQ | 8-Sep-94 | 1.88 | 259 | 3 | 0.63 | 5.56 | 0.96 | -0.64 | 0.44 | -0.37 |
| IDEQ | 4-Oct-94 | 1.88 | 305 | 3 | 0.63 | 5.72 | 1.13 | -0.64 | 0.94 | -0.32 |
| IDEQ | 13-Apr-95 | 6.15 | 282 | 9 | 1.82 | 5.64 | 2.23 | 0.02 | 0.69 | 0.36 |
| IDEQ | 25-Apr-95 | 5.39 | 277 | 8 | 1.68 | 5.62 | 2.08 | -0.10 | 0.63 | 0.22 |
| IDEQ | 9-May-95 | 11.11 | 136 | 8 | 2.41 | 4.91 | 2.10 | 0.79 | -0.91 | 0.23 |
| IDEQ | 23-May-95 | 14.06 | 71 | 5 | 2.64 | 4.26 | 1.68 | 1.24 | -1.62 | -0.07 |
| IDEQ | 12-Jun-95 | 9.24 | 74 | 4 | 2.22 | 4.30 | 1.30 | 0.50 | -1.59 | -0.25 |
| IDEQ | 27-Jun-95 | 5.16 | 108 | 3 | 1.64 | 4.68 | 1.10 | -0.13 | -1.22 | -0.32 |
| IDEQ | 11-Jul-95 | 2.96 | 151 | 2 | 1.09 | 5.02 | 0.88 | -0.47 | -0.75 | -0.39 |
| IDEQ | 25-Jul-95 | 2.31 | 160 | 2 | 0.84 | 5.08 | 0.69 | -0.57 | -0.65 | -0.43 |
| IDEQ | 14-Aug-95 | 1.74 | 209 | 2 | 0.55 | 5.34 | 0.67 | -0.66 | -0.11 | -0.44 |
| IDEQ | 13-Sep-95 | 1.48 | 241 | 2 | 0.39 | 5.48 | 0.65 | -0.70 | 0.24 | -0.44 |
| URS | 13-Nov-97 | 2.63 | 311 | 4 | 0.97 | 5.74 | 1.48 | -0.52 | 1.01 | -0.17 |
| *URS* | *14-May-98* | *22.9* | | | 3.13 | | | 2.66 | | |
| URS | 15-Nov-98 | 0.0422 | 5.5 | 0.001 | -3.17 | 1.70 | -6.69 | -0.92 | -2.34 | -0.65 |

**dZn**

***Concentration over time analysis***

| | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **dZn** | **NM291** | | ***Concentration over time*** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.261** | **-0.00080** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 16-May-91 | 6.21 | 498 | | |
| mid. | 15-Aug-94 | 5.26 | 193 | | |
| last | 15-Nov-98 | 4.02 | 56 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

***Load over time analysis***

| | | | | | |
|---|---|---|---|---|---|
| | **dZn** | **NM291** | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.254** | **-0.00165** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 16-May-91 | 3.19 | 24 | | |
| mid | 15-Aug-94 | 1.23 | 3 | | |
| last | 15-Nov-98 | -1.34 | 0.3 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

| | | | | | |
|---|---|---|---|---|---|
| max r2 | 0.504 | | max r2 | 0.618 | |
| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points: delete last 4 rows | | | only on >4 data points, delete last 4 rows | | |
| 0.261 | -0.00080 | 32.90 | 0.254 | -0.00165 | 58.35 |
| 0.374 | -0.00107 | 42.44 | 0.234 | -0.00176 | 62.04 |
| 0.434 | -0.00131 | 50.63 | 0.370 | -0.00249 | 87.63 |
| 0.423 | -0.00131 | 50.54 | 0.380 | -0.00258 | 90.54 |
| 0.414 | -0.00131 | 50.63 | 0.392 | -0.00267 | 93.84 |
| 0.408 | -0.00132 | 50.94 | 0.412 | -0.00279 | 98.13 |
| 0.401 | -0.00133 | 51.32 | 0.467 | -0.00302 | 106.24 |
| 0.390 | -0.00132 | 51.16 | 0.490 | -0.00316 | 111.15 |
| 0.376 | -0.00132 | 50.98 | 0.549 | -0.00342 | 120.02 |
| 0.360 | -0.00129 | 50.09 | 0.544 | -0.00345 | 121.12 |
| 0.337 | -0.00124 | 48.28 | 0.528 | -0.00327 | 114.75 |
| 0.348 | -0.00129 | 49.95 | 0.518 | -0.00327 | 114.92 |
| 0.392 | -0.00140 | 53.68 | 0.510 | -0.00329 | 115.73 |
| 0.408 | -0.00146 | 55.92 | 0.504 | -0.00333 | 117.01 |
| 0.428 | -0.00153 | 58.54 | 0.507 | -0.00342 | 120.16 |
| 0.430 | -0.00158 | 60.06 | 0.513 | -0.00352 | 123.64 |
| 0.419 | -0.00158 | 60.32 | 0.520 | -0.00364 | 128.06 |
| 0.405 | -0.00159 | 60.66 | 0.557 | -0.00390 | 137.25 |
| 0.387 | -0.00159 | 60.73 | 0.589 | -0.00417 | 146.62 |
| 0.356 | -0.00155 | 59.21 | 0.618 | -0.00445 | 156.57 |
| 0.335 | -0.00149 | 56.97 | 0.605 | -0.00438 | 154.25 |
| 0.311 | -0.00141 | 54.21 | 0.591 | -0.00432 | 151.92 |
| 0.308 | -0.00143 | 54.91 | 0.573 | -0.00422 | 148.53 |
| 0.360 | -0.00158 | 60.16 | 0.555 | -0.00417 | 146.52 |
| 0.426 | -0.00176 | 66.69 | 0.538 | -0.00416 | 146.11 |
| 0.468 | -0.00192 | 72.49 | 0.520 | -0.00418 | 146.86 |
| 0.484 | -0.00206 | 77.58 | 0.502 | -0.00427 | 150.09 |
| 0.504 | -0.00230 | 86.11 | 0.485 | -0.00451 | 158.88 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dZn** | | **NM291** | | |
| **LN Analysis** | | **dZn** | | |
| **Load** | | **Load Data, EV=6 lbs/day CV=1.54** | | |
| **Avg:** | **6** | **Load Data-based LN** | | |
| **SD:** | **9** | u | ln dZn Load | dZn Load |
| **CV:** | **1.54** | 3 | 4.5 | 90 |
| **Min:** | **0.001** | 0 | 1.18 | 3 |
| **Max:** | **54** | -3 | -2.13 | 0.1 |
| **Median:** | **4** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV **$r^2$=0.622, EV=33.1 lbs/day CV=11.86; max r2=0.94**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.622 | u | lnLoad | Load |
| slope, m | 0.449 | 3 | 2.70 | 2205 |
| intercept, b | -0.459 | 0 | 1.02 | 3 |
| N | 31 | -3 | -5.65 | 0.004 |
| E[Load] | 33.1 | Parameter Estimates | | |
| SD[Load] | 392 | from LN regression | | |
| CV[Load] | 11.86 | update graph label | | |

N, 32

max r2 0.943

| Date | dZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 15-Nov-98 | **0.001** | 1 | 0.0194 | -2.067 | -6.686 | 0.622 |
| *14-May-98* | | 2 | 0.0504 | -1.641 | | |
| 4-Oct-91 | 1 | 3 | 0.0814 | -1.396 | 0.176 | 0.943 |
| 16-Dec-93 | 1 | 4 | 0.1124 | -1.214 | 0.197 | 0.939 |
| 24-Jan-94 | 1 | 5 | 0.1434 | -1.065 | 0.361 | 0.933 |
| 13-Sep-95 | 2 | 6 | 0.1744 | -0.937 | 0.652 | 0.927 |
| 14-Aug-95 | 2 | 7 | 0.2054 | -0.822 | 0.671 | 0.927 |
| 25-Jul-95 | 2 | 8 | 0.2364 | -0.718 | 0.687 | 0.925 |
| 15-Aug-94 | 2 | 9 | 0.2674 | -0.621 | 0.745 | 0.921 |
| 11-Jul-95 | 2 | 10 | 0.2984 | -0.529 | 0.877 | 0.916 |
| 8-Sep-94 | 3 | 11 | 0.3295 | -0.441 | 0.963 | 0.913 |
| 16-Dec-93 | 3 | 12 | 0.3605 | -0.357 | 0.989 | 0.912 |
| 24-Jan-94 | 3 | 13 | 0.3915 | -0.275 | 1.082 | 0.909 |
| 27-Jun-95 | 3 | 14 | 0.4225 | -0.196 | 1.098 | 0.908 |
| 4-Oct-94 | 3 | 15 | 0.4535 | -0.117 | 1.127 | 0.905 |
| 2-Dec-93 | 3 | 16 | 0.4845 | -0.039 | 1.188 | 0.900 |
| 15-Aug-94 | 4 | 17 | 0.5155 | 0.039 | 1.279 | 0.895 |
| 12-Jun-95 | 4 | 18 | 0.5465 | 0.117 | 1.303 | 0.891 |
| 27-Oct-93 | 4 | 19 | 0.5775 | 0.196 | 1.333 | 0.885 |
| 20-Jul-94 | 4 | 20 | 0.6085 | 0.275 | 1.426 | 0.874 |
| 23-Jun-94 | 4 | 21 | 0.6395 | 0.357 | 1.478 | 0.864 |
| 13-Nov-97 | 4 | 22 | 0.6705 | 0.441 | 1.482 | 0.850 |
| 23-May-95 | 5 | 23 | 0.7016 | 0.529 | 1.681 | 0.827 |
| 7-Jun-94 | 6 | 24 | 0.7326 | 0.621 | 1.852 | 0.808 |
| 19-May-94 | 7 | 25 | 0.7636 | 0.718 | 1.987 | 0.803 |
| 25-Apr-95 | 8 | 26 | 0.7946 | 0.822 | 2.083 | 0.818 |
| 9-May-95 | 8 | 27 | 0.8256 | 0.937 | 2.095 | 0.856 |
| 8-Apr-94 | 8 | 28 | 0.8566 | 1.065 | 2.131 | 0.895 |
| 4-May-94 | 9 | 29 | 0.8876 | 1.214 | 2.172 | |
| 13-Apr-95 | 9 | 30 | 0.9186 | 1.396 | 2.233 | |
| 16-May-91 | 15 | 31 | 0.9496 | 1.641 | 2.691 | |
| 19-Apr-94 | 54 | 32 | 0.9806 | 2.067 | 3.986 | |

*update for EV, CV*

**dZn**
**LN Analysis**

**Concentration**

| | |
|---|---|
| **Avg:** | **219** |
| **SD:** | **91** |
| **CV:** | **0.42** |
| **Min:** | **6** |
| **Max:** | **397** |
| **Median:** | **249** |

**NM291**
***dZn***
**Conc. Data, EV=219 ug/L CV=.42**
**Data-based LN**

| u | ln[dZn] | [dZn] |
|---|---|---|
| 3 | 6.5 | 672 |
| 0 | 5.31 | 202 |
| -3 | 4.11 | 61 |

**u=mLn{Conc.}+b:**

*update for r2, EV, CV* **$r^2$=0.606, EV=317.5 ug/L CV=1.56; max r2=0.96**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.606 | u | lnConc | Conc. |
| slope, m | 0.900 | 3 | 8.48 | 4797 |
| intercept, b | -4.632 | 0 | 5.14 | 171 |
| N: | 31 | -3 | 1.81 | 6 |
| E{Conc} | 317.5 | Parameter Estimates | | |
| SD{Conc}: | 495 | from LN regression | | |
| CV{Conc} | 1.56 | *update graph label* | | |

| Date | dZn Concentration ug/L Ranked | N: 32 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.962 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *14-May-98* | | 1 | 0.0194 | -2.067 | | |
| 15-Nov-98 | 55 | 2 | 0.0504 | -1.641 | 4.705 | 0.606 |
| 23-May-95 | 71 | 3 | 0.0814 | -1.396 | 4.263 | 0.865 |
| 12-Jun-95 | 74 | 4 | 0.1124 | -1.214 | 4.304 | 0.860 |
| 19-May-94 | 106 | 5 | 0.1434 | -1.065 | 4.663 | 0.874 |
| 27-Jun-95 | 108 | 6 | 0.1744 | -0.937 | 4.682 | 0.866 |
| 9-May-95 | 136 | 7 | 0.2054 | -0.822 | 4.913 | 0.867 |
| 16-May-91 | 137 | 8 | 0.2364 | -0.718 | 4.920 | 0.854 |
| 11-Jul-95 | 151 | 9 | 0.2674 | -0.621 | 5.017 | 0.845 |
| 23-Jun-94 | 158 | 10 | 0.2984 | -0.529 | 5.063 | 0.831 |
| 25-Jul-95 | 160 | 11 | 0.3295 | -0.441 | 5.075 | 0.817 |
| 4-May-94 | 161 | 12 | 0.3605 | -0.357 | 5.081 | 0.808 |
| 7-Jun-94 | 161 | 13 | 0.3915 | -0.275 | 5.081 | 0.818 |
| 20-Jul-94 | 203 | 14 | 0.4225 | -0.196 | 5.313 | 0.904 |
| 14-Aug-95 | 209 | 15 | 0.4535 | -0.117 | 5.342 | 0.920 |
| 13-Sep-95 | 241 | 16 | 0.4845 | -0.039 | 5.485 | 0.962 |
| 4-Oct-91 | 249 | 17 | 0.5155 | 0.039 | 5.517 | 0.959 |
| 15-Aug-94 | 256 | 18 | 0.5465 | 0.117 | 5.545 | 0.953 |
| 15-Aug-94 | 256 | 19 | 0.5775 | 0.196 | 5.545 | 0.947 |
| 8-Sep-94 | 259 | 20 | 0.6085 | 0.275 | 5.557 | 0.940 |
| 16-Dec-93 | 276 | 21 | 0.6395 | 0.357 | 5.620 | 0.933 |
| 16-Dec-93 | 276 | 22 | 0.6705 | 0.441 | 5.620 | 0.930 |
| 25-Apr-95 | 277 | 23 | 0.7016 | 0.529 | 5.624 | 0.920 |
| 13-Apr-95 | 282 | 24 | 0.7326 | 0.621 | 5.642 | 0.904 |
| 2-Dec-93 | 299 | 25 | 0.7636 | 0.718 | 5.700 | 0.882 |
| 24-Jan-94 | 303 | 26 | 0.7946 | 0.822 | 5.714 | 0.891 |
| 24-Jan-94 | 303 | 27 | 0.8256 | 0.937 | 5.714 | 0.913 |
| 4-Oct-94 | 305 | 28 | 0.8566 | 1.065 | 5.720 | 0.921 |
| 13-Nov-97 | 311 | 29 | 0.8876 | 1.214 | 5.740 | |
| 27-Oct-93 | 331 | 30 | 0.9186 | 1.396 | 5.802 | |
| 8-Apr-94 | 331 | 31 | 0.9496 | 1.641 | 5.802 | |
| 19-Apr-94 | 397 | 32 | 0.9806 | 2.067 | 5.984 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dZn** | | **NM291** | | |
| **LN Analysis** | | **dZn** | | |
| **Discharge, Q** | | **Q Data, EV=6 cfs CV=1.08** | | |
| **Avg:** | **6** | **Q Data-based LN** | | |
| **SD:** | **6** | u | lnQ | Q |
| **CV:** | **1.08** | 3 | 4.0 | 57 |
| **Min:** | **0.04** | 0 | 1.41 | 4 |
| **Max:** | **25** | -3 | -1.22 | 0.3 |
| **Median:** | **3** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV **r2=0.898, EV=8.4 cfs CV=2.31; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.898 | u | lnQ | Q |
| slope, m | 0.736 | 3 | 5.28 | 197 |
| intercept, b | -0.890 | 0 | 1.21 | 3 |
| N | 32 | -3 | -2.87 | 0.1 |
| E[Q] | 8.4 | Parameter Estimates | | |
| SD[Q] | 19 | from LN regression | | |
| CV[Q] | 2.31 | update graph label | | |

| Date | Q Discharge cfs Ranked | i rank | N 32 i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.974 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 15-Nov-98 | 0.0422 | 1 | 0.0194 | -2.067 | -3.165 | 0.898 |
| 16-Dec-93 | 0.82 | 2 | 0.0504 | -1.641 | -0.198 | 0.973 |
| 24-Jan-94 | 0.88 | 3 | 0.0814 | -1.396 | -0.128 | 0.973 |
| 4-Oct-91 | 0.89 | 4 | 0.1124 | -1.214 | -0.117 | 0.971 |
| 13-Sep-95 | 1.48 | 5 | 0.1434 | -1.065 | 0.392 | 0.968 |
| 15-Aug-94 | 1.53 | 6 | 0.1744 | -0.937 | 0.425 | 0.970 |
| 14-Aug-95 | 1.74 | 7 | 0.2054 | -0.822 | 0.554 | 0.971 |
| 16-Dec-93 | 1.81 | 8 | 0.2364 | -0.718 | 0.593 | 0.973 |
| 24-Jan-94 | 1.81 | 9 | 0.2674 | -0.621 | 0.593 | 0.974 |
| 8-Sep-94 | 1.88 | 10 | 0.2984 | -0.529 | 0.631 | 0.974 |
| 4-Oct-94 | 1.88 | 11 | 0.3295 | -0.441 | 0.631 | 0.972 |
| 2-Dec-93 | 2.04 | 12 | 0.3605 | -0.357 | 0.713 | 0.969 |
| 27-Oct-93 | 2.13 | 13 | 0.3915 | -0.275 | 0.756 | 0.965 |
| 25-Jul-95 | 2.31 | 14 | 0.4225 | -0.196 | 0.837 | 0.962 |
| 15-Aug-94 | 2.61 | 15 | 0.4535 | -0.117 | 0.959 | 0.959 |
| 13-Nov-97 | 2.63 | 16 | 0.4845 | -0.039 | 0.967 | 0.955 |
| 11-Jul-95 | 2.96 | 17 | 0.5155 | 0.039 | 1.085 | 0.956 |
| 20-Jul-94 | 3.81 | 18 | 0.5465 | 0.117 | 1.338 | 0.960 |
| 8-Apr-94 | 4.73 | 19 | 0.5775 | 0.196 | 1.554 | 0.957 |
| 23-Jun-94 | 5.16 | 20 | 0.6085 | 0.275 | 1.641 | 0.950 |
| 27-Jun-95 | 5.16 | 21 | 0.6395 | 0.357 | 1.641 | 0.943 |
| 25-Apr-95 | 5.39 | 22 | 0.6705 | 0.441 | 1.685 | 0.935 |
| 13-Apr-95 | 6.15 | 23 | 0.7016 | 0.529 | 1.816 | 0.933 |
| 7-Jun-94 | 7.36 | 24 | 0.7326 | 0.621 | 1.996 | 0.936 |
| 12-Jun-95 | 9.24 | 25 | 0.7636 | 0.718 | 2.224 | 0.934 |
| 4-May-94 | 10.13 | 26 | 0.7946 | 0.822 | 2.316 | 0.917 |
| 9-May-95 | 11.11 | 27 | 0.8256 | 0.937 | 2.408 | 0.891 |
| 19-May-94 | 12.79 | 28 | 0.8566 | 1.065 | 2.549 | 0.852 |
| 23-May-95 | 14.06 | 29 | 0.8876 | 1.214 | 2.643 | |
| 16-May-91 | 20 | 30 | 0.9186 | 1.396 | 2.996 | |
| *14-May-98* | *22.9* | 31 | 0.9496 | 1.641 | 3.131 | |
| 19-Apr-94 | 25.2 | 32 | 0.9806 | 2.067 | 3.227 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM291 | **Date:** | 3-Jun-00 |
| **Chemical:** | tCd | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,655 | 6 | 1 | 0.03 | 0.00 | 0.00 | 0.00 |
| **SD:** | 539 | 6 | 0.3 | 0.05 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.08 | 0.30 | 1.47 | | | |
| **Min:** | 33,374 | 0.04 | 1 | 0.005 | -0.92 | -1.90 | -0.58 |
| **Max:** | 36,114 | 25 | 2 | 0.28 | 2.96 | 2.85 | 4.98 |
| **Median:** | 34,561 | 3 | 1 | 0.02 | -0.50 | 0.18 | -0.34 |

| tCd | NM291 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.00257)** | | update r2 | 0.00 | 0.00257 | r2: | 0.000 | 0.035 |
| r2 Q,[COC] | 0.003 | | [tCd] | Q | m: | 0.0000 | -0.00043 |
| slope, m: | -0.003 | | 1 | 0.042 | b | 6 | 16.03 |
| intercept, b | 1.2 | | 1 | 6.0 | | | |
| N: 30 | | | 1 | 25 | | | |
| **LnConc. = mLn(Q)+b (r2=0.104)** | | update r2 | | 0.10 | 0.104 | | |
| r2 lnQ,ln[COC]: | 0.10 | | ln[tCd] | ln Q | [tCd] | Q | |
| slope, m: | -0.11 | | 0.59 | -3.17 | 2 | 0.04 | |
| intercept, b: | 0.23 | | 0.02 | 1.80 | 1 | 6 | |
| N: 30 | | | -0.14 | 3.23 | 1 | 25 | |

N= 32

| | Sampling Date | Q Discharge cfs | tCd Concentration ug/L | tCd Load lbs/day | Ln Q | Ln tCd Conc. | Ln tCd Load | tCd NM291 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | for graph | 0 |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 20 | 0.6 | 0.065 | 3.00 | -0.51 | -2.74 | 2.16 | -1.60 | 0.60 |
| MFG | 4-Oct-91 | 0.89 | 1 | 0.005 | -0.12 | 0.00 | -5.34 | -0.79 | -0.42 | -0.58 |
| IDEQ | 27-Oct-93 | 2.13 | 1.5 | 0.017 | 0.76 | 0.41 | -4.06 | -0.60 | 1.07 | -0.34 |
| IDEQ | 2-Dec-93 | 2.04 | 1.5 | 0.016 | 0.71 | 0.41 | -4.11 | -0.61 | 1.07 | -0.35 |
| IDEQ | 16-Dec-93 | 1.81 | 1.2 | 0.012 | 0.59 | 0.18 | -4.45 | -0.65 | 0.18 | -0.45 |
| IDEQ | 16-Dec-93 | 0.82 | 1.2 | 0.005 | -0.20 | 0.18 | -5.24 | -0.80 | 0.18 | -0.57 |
| IDEQ | 24-Jan-94 | 1.81 | 1.3 | 0.013 | 0.59 | 0.26 | -4.37 | -0.65 | 0.47 | -0.43 |
| IDEQ | 24-Jan-94 | 0.88 | 1.3 | 0.006 | -0.13 | 0.26 | -5.09 | -0.79 | 0.47 | -0.56 |
| IDEQ | 8-Apr-94 | 4.73 | 1.4 | 0.036 | 1.55 | 0.34 | -3.33 | -0.20 | 0.77 | 0.03 |
| IDEQ | 19-Apr-94 | 25.2 | 2.1 | 0.285 | 3.23 | 0.74 | -1.26 | 2.96 | 2.85 | 4.98 |
| IDEQ | 4-May-94 | 10.13 | 1 | 0.054 | 2.32 | 0.00 | -2.91 | 0.63 | -0.42 | 0.40 |
| IDEQ | 19-May-94 | 12.79 | 0.6 | 0.041 | 2.55 | -0.51 | -3.19 | 1.04 | -1.60 | 0.14 |
| IDEQ | 7-Jun-94 | 7.36 | 1.2 | 0.048 | 2.00 | 0.18 | -3.05 | 0.21 | 0.18 | 0.27 |
| IDEQ | 23-Jun-94 | 5.16 | 1 | 0.028 | 1.64 | 0.00 | -3.58 | -0.13 | -0.42 | -0.13 |
| IDEQ | 20-Jul-94 | 3.81 | 1.1 | 0.023 | 1.34 | 0.10 | -3.79 | -0.34 | -0.12 | -0.23 |
| IDEQ | 15-Aug-94 | 2.61 | 1.4 | 0.020 | 0.96 | 0.34 | -3.93 | -0.53 | 0.77 | -0.29 |
| IDEQ | 15-Aug-94 | 1.53 | 1.4 | 0.012 | 0.43 | 0.34 | -4.46 | -0.69 | 0.77 | -0.45 |
| IDEQ | 8-Sep-94 | 1.88 | 1.2 | 0.012 | 0.63 | 0.18 | -4.41 | -0.64 | 0.18 | -0.44 |
| IDEQ | 4-Oct-94 | 1.88 | 1.4 | 0.014 | 0.63 | 0.34 | -4.26 | -0.64 | 0.77 | -0.40 |
| IDEQ | 13-Apr-95 | 6.15 | 1.2 | 0.040 | 1.82 | 0.18 | -3.23 | 0.02 | 0.18 | 0.11 |
| IDEQ | 25-Apr-95 | 5.39 | 1.3 | 0.038 | 1.68 | 0.26 | -3.28 | -0.10 | 0.47 | 0.07 |
| IDEQ | 9-May-95 | 11.11 | 1.4 | 0.084 | 2.41 | 0.34 | -2.48 | 0.79 | 0.77 | 0.98 |
| IDEQ | 23-May-95 | 14.06 | 0.7 | 0.053 | 2.64 | -0.36 | -2.94 | 1.24 | -1.30 | 0.37 |
| IDEQ | 12-Jun-95 | 9.24 | 0.5 | 0.025 | 2.22 | -0.69 | -3.69 | 0.50 | -1.90 | -0.18 |
| IDEQ | 27-Jun-95 | 5.16 | 0.6 | 0.017 | 1.64 | -0.51 | -4.09 | -0.13 | -1.60 | -0.35 |
| IDEQ | 11-Jul-95 | 2.96 | 0.8 | 0.013 | 1.09 | -0.22 | -4.36 | -0.47 | -1.01 | -0.43 |
| IDEQ | 25-Jul-95 | 2.31 | 0.8 | 0.010 | 0.84 | -0.22 | -4.61 | -0.57 | -1.01 | -0.48 |
| IDEQ | 14-Aug-95 | 1.74 | 1.1 | 0.010 | 0.55 | 0.10 | -4.58 | -0.66 | -0.12 | -0.47 |
| IDEQ | 13-Sep-95 | 1.48 | 1.3 | 0.010 | 0.39 | 0.26 | -4.57 | -0.70 | 0.47 | -0.47 |
| URS | 13-Nov-97 | 2.63 | 1.1 | 0.016 | 0.97 | 0.10 | -4.16 | -0.52 | -0.12 | -0.37 |
| *URS* | *14-May-98* | *22.9* | | | 3.13 | | | 2.60 | | |
| *URS* | *15-Nov-98* | *0.0422* | | | -3.17 | | | -0.92 | | |

tCd

**Concentration over time analysis**

| | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **tCd** | **NM291** | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.0003** | **-0.00001** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 16-May-91 | 0.10 | 1 | | |
| mid | 15-Aug-94 | 0.08 | 1 | | |
| last | 15-Nov-98 | 0.06 | 1 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | | | | | |
|---|---|---|---|---|---|
| | **tCd** | **NM291** | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.0001** | **0.00002** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 16-May-91 | -3.88 | 0 | | |
| mid | 15-Aug-94 | -3.85 | 0 | | |
| last | 15-Nov-98 | -3.82 | 0 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

| | | | | | |
|---|---|---|---|---|---|
| | max r2 | 0.223 | | max r2 | 1.000 |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points. delete last 4 rows | | | only on >4 data points. delete last 4 rows | |
| | 0.000 | -0.00001 | 0.52 | 0.000 | 0.00002 | -4.59 |
| | 0.056 | -0.00021 | 7.30 | 0.026 | 0.00039 | -17.28 |
| | 0.113 | -0.00035 | 12.26 | 0.000 | -0.00006 | -1.77 |
| | 0.094 | -0.00032 | 11.33 | 0.001 | -0.00010 | -0.40 |
| | 0.076 | -0.00029 | 10.25 | 0.003 | -0.00015 | 1.31 |
| | 0.072 | -0.00029 | 10.27 | 0.008 | -0.00026 | 5.28 |
| | 0.068 | -0.00029 | 10.30 | 0.037 | -0.00055 | 15.28 |
| | 0.058 | -0.00028 | 9.74 | 0.058 | -0.00070 | 20.60 |
| | 0.047 | -0.00026 | 9.04 | 0.135 | -0.00104 | 32.48 |
| | 0.034 | -0.00022 | 7.74 | 0.129 | -0.00104 | 32.49 |
| | 0.008 | -0.00010 | 3.37 | 0.076 | -0.00063 | 18.03 |
| | 0.009 | -0.00010 | 3.66 | 0.047 | -0.00048 | 13.00 |
| | 0.045 | -0.00023 | 8.06 | 0.028 | -0.00037 | 9.10 |
| | 0.036 | -0.00021 | 7.43 | 0.008 | -0.00020 | 3.13 |
| | 0.042 | -0.00024 | 8.31 | 0.003 | -0.00013 | 0.69 |
| | 0.040 | -0.00024 | 8.38 | 0.002 | -0.00011 | -0.27 |
| | 0.019 | -0.00017 | 5.86 | 0.002 | -0.00011 | -0.03 |
| | 0.003 | -0.00007 | 2.35 | 0.015 | -0.00031 | 7.04 |
| | 0.000 | 0.00001 | -0.24 | 0.046 | -0.00056 | 15.79 |
| | 0.020 | 0.00018 | -6.42 | 0.092 | -0.00083 | 25.33 |
| | 0.037 | 0.00025 | -8.73 | 0.072 | -0.00072 | 21.46 |
| | 0.080 | 0.00035 | -12.21 | 0.052 | -0.00060 | 17.14 |
| | 0.202 | 0.00049 | -17.18 | 0.016 | -0.00024 | 4.16 |
| | 0.181 | 0.00046 | -16.29 | 0.009 | 0.00010 | -7.84 |
| | 0.145 | 0.00032 | -11.18 | 0.206 | 0.00030 | -14.88 |
| | 0.092 | 0.00018 | -6.19 | 0.704 | 0.00043 | -19.62 |
| | 0.030 | 0.00009 | -2.93 | 0.998 | 0.00052 | -22.66 |
| | 0.223 | -0.00010 | 3.59 | 1.000 | 0.00051 | -22.33 |

update for EV, CV

tCd
NM291
LN Analysis
tCd

**Load**

**Load Data, EV=0.0342 lbs/day CV=1.47**

| | |
|---|---|
| **Avg:** | **0.03** |
| **SD:** | **0.05** |
| **CV:** | **1.47** |
| **Min:** | **0.005** |
| **Max:** | **0.285** |
| **Median:** | **0.017** |

**Load Data-based LN**

| u | ln tCd Load | tCd Load |
|---|---|---|
| 3 | -0.7 | 0.481 |
| 0 | -3.95 | 0.019 |
| -3 | -7.18 | 0.001 |

| | |
|---|---|
| 0 | 0.0342 |
| 1.47 | 1.47 |

**u=mLn{Load}+ b:**

update for r2, EV, CV **r2=0.954, EV=0.0319lbs/day CV=1.29; max r2=0.96**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.954 | u | lnLoad | Load | |
| slope, m | 1.011 | 3 | -0.97 | 0.379 | |
| intercept, b | 3.980 | 0 | -3.94 | 0.020 | |
| N. | 30 | -3 | -6.90 | 0.001 | |
| E[Load] | 0.03 | Parameter Estimates | | | 0.954 |
| SD[Load] | 0.04 | from LN regression | | | 0.0 |
| CV[Load] | 1.29 | update graph label | | | 1.3 |
| | | | | | max r2 |
| | N | 32 | | | 0.959 |

| Date | tCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *15-Nov-98* | | 1 | 0.0194 | -2.067 | | |
| 4-Oct-91 | **0.005** | 2 | 0.0504 | -1.641 | -5.342 | 0.954 |
| 16-Dec-93 | **0.005** | 3 | 0.0814 | -1.396 | -5.241 | 0.950 |
| 24-Jan-94 | **0.006** | 4 | 0.1124 | -1.214 | -5.091 | 0.944 |
| 25-Jul-95 | **0.010** | 5 | 0.1434 | -1.065 | -4.611 | 0.938 |
| 14-Aug-95 | **0.010** | 6 | 0.1744 | -0.937 | -4.576 | 0.943 |
| 13-Sep-95 | **0.010** | 7 | 0.2054 | -0.822 | -4.571 | 0.948 |
| 15-Aug-94 | **0.012** | 8 | 0.2364 | -0.718 | -4.463 | 0.949 |
| 16-Dec-93 | **0.012** | 9 | 0.2674 | -0.621 | -4.449 | 0.954 |
| 8-Sep-94 | **0.012** | 10 | 0.2984 | -0.529 | -4.411 | 0.956 |
| *14-May-98* | | 11 | 0.3295 | -0.441 | | |
| 24-Jan-94 | **0.013** | 12 | 0.3605 | -0.357 | -4.369 | 0.959 |
| 11-Jul-95 | **0.013** | 13 | 0.3915 | -0.275 | -4.363 | 0.957 |
| 4-Oct-94 | **0.014** | 14 | 0.4225 | -0.196 | -4.257 | 0.953 |
| 13-Nov-97 | **0.016** | 15 | 0.4535 | -0.117 | -4.163 | 0.949 |
| 2-Dec-93 | **0.016** | 16 | 0.4845 | -0.039 | -4.107 | 0.946 |
| 27-Jun-95 | **0.017** | 17 | 0.5155 | 0.039 | -4.095 | 0.941 |
| 27-Oct-93 | **0.017** | 18 | 0.5465 | 0.117 | -4.063 | 0.934 |
| 15-Aug-94 | **0.020** | 19 | 0.5775 | 0.196 | -3.929 | 0.925 |
| 20-Jul-94 | **0.023** | 20 | 0.6085 | 0.275 | -3.792 | 0.913 |
| 12-Jun-95 | **0.025** | 21 | 0.6395 | 0.357 | -3.695 | 0.903 |
| 23-Jun-94 | **0.028** | 22 | 0.6705 | 0.441 | -3.584 | 0.889 |
| 8-Apr-94 | **0.036** | 23 | 0.7016 | 0.529 | -3.335 | 0.873 |
| 25-Apr-95 | **0.038** | 24 | 0.7326 | 0.621 | -3.278 | 0.876 |
| 13-Apr-95 | **0.040** | 25 | 0.7636 | 0.718 | -3.226 | 0.880 |
| 19-May-94 | **0.041** | 26 | 0.7946 | 0.822 | -3.187 | 0.884 |
| 7-Jun-94 | **0.048** | 27 | 0.8256 | 0.937 | -3.047 | 0.882 |
| 23-May-95 | **0.053** | 28 | 0.8566 | 1.065 | -2.938 | 0.898 |
| 4-May-94 | **0.054** | 29 | 0.8876 | 1.214 | -2.910 | |
| 16-May-91 | **0.065** | 30 | 0.9186 | 1.396 | -2.740 | |
| 9-May-95 | **0.084** | 31 | 0.9496 | 1.641 | -2.481 | |
| 19-Apr-94 | **0.285** | 32 | 0.9806 | 2.067 | -1.256 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| tCd | | NM291 | | 1 | 1.14 |
| LN Analysis | | tCd | | 0.30 | 0.296 |
| **Concentration** | | Conc. Data, EV=1.14 ug/L CV=0.296 | | | |
| Avg: | 1 | Data-based LN | | | |
| SD: | 0 | u | ln(tCd) | tCd | |
| CV: | 0.30 | 3 | 1.0 | 3 | |
| Min: | 1 | 0 | 0.09 | 1 | |
| Max: | 2 | -3 | -0.78 | 0 | |
| Median: | 1 | | | | |

u=mLn(Conc.)+b:

update for r2, EV, CV **r2=0.88, EV=1.12 ug/L CV=0.416; max r2=0.91**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | *0.880* | *0.88* |
| | r2 u,lnConc | 0.880 | u | lnConc | 1.1 | 1.12 |
| | slope, m | 2.502 | 3 | 1.23 | *0.416* | *0.416* |
| | intercept, b | -0.089 | 0 | 0.04 | 3 | |
| | N | 30 | -3 | -1.16 | 1 | |
| 0.954 | E[Conc] | 1.1 | Parameter Estimates | | 0 | |
| 0.0319 | SD[Conc] | 0 | from LN regression | | | |
| 1.29 | CV[Conc] | 0.42 | update graph label | | | |

| Date | tCd Concentration ug/L Ranked | | N 32 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.911 r2 forward |
|---|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | | |
| *14-May-98* | | | 1 | 0.0194 | -2.067 | | |
| 12-Jun-95 | 0.5 | | 2 | 0.0504 | -1.641 | -0.693 | *0.880* |
| *15-Nov-98* | | | 3 | 0.0814 | -1.396 | | |
| 16-May-91 | 0.6 | | 4 | 0.1124 | -1.214 | -0.511 | *0.863* |
| 19-May-94 | 0.6 | | 5 | 0.1434 | -1.065 | -0.511 | *0.850* |
| 27-Jun-95 | 0.6 | | 6 | 0.1744 | -0.937 | -0.511 | *0.846* |
| 23-May-95 | 0.7 | | 7 | 0.2054 | -0.822 | -0.357 | *0.868* |
| 11-Jul-95 | 0.8 | | 8 | 0.2364 | -0.718 | -0.223 | *0.882* |
| 25-Jul-95 | 0.8 | = | 9 | 0.2674 | -0.621 | -0.223 | *0.883* |
| 4-Oct-91 | 1 | | 10 | 0.2984 | -0.529 | 0.000 | *0.911* |
| 4-May-94 | 1 | | 11 | 0.3295 | -0.441 | 0.000 | *0.902* |
| 23-Jun-94 | 1 | | 12 | 0.3605 | -0.357 | 0.000 | *0.892* |
| 20-Jul-94 | 1.1 | | 13 | 0.3915 | -0.275 | 0.095 | *0.883* |
| 14-Aug-95 | 1.1 | | 14 | 0.4225 | -0.196 | 0.095 | *0.873* |
| 13-Nov-97 | 1.1 | | 15 | 0.4535 | -0.117 | 0.095 | *0.859* |
| 16-Dec-93 | 1.2 | | 16 | 0.4845 | -0.039 | 0.182 | *0.843* |
| 16-Dec-93 | 1.2 | | 17 | 0.5155 | 0.039 | 0.182 | *0.840* |
| 7-Jun-94 | 1.2 | | 18 | 0.5465 | 0.117 | 0.182 | *0.833* |
| 8-Sep-94 | 1.2 | | 19 | 0.5775 | 0.196 | 0.182 | *0.820* |
| 13-Apr-95 | 1.2 | | 20 | 0.6085 | 0.275 | 0.182 | *0.800* |
| 24-Jan-94 | 1.3 | | 21 | 0.6395 | 0.357 | 0.262 | *0.772* |
| 24-Jan-94 | 1.3 | | 22 | 0.6705 | 0.441 | 0.262 | *0.774* |
| 25-Apr-95 | 1.3 | | 23 | 0.7016 | 0.529 | 0.262 | *0.769* |
| 13-Sep-95 | 1.3 | | 24 | 0.7326 | 0.621 | 0.262 | *0.754* |
| 8-Apr-94 | 1.4 | | 25 | 0.7636 | 0.718 | 0.336 | *0.724* |
| 15-Aug-94 | 1.4 | | 26 | 0.7946 | 0.822 | 0.336 | *0.763* |
| 15-Aug-94 | 1.4 | | 27 | 0.8256 | 0.937 | 0.336 | *0.803* |
| 4-Oct-94 | 1.4 | | 28 | 0.8566 | 1.065 | 0.336 | *0.843* |
| 9-May-95 | 1.4 | | 29 | 0.8876 | 1.214 | 0.336 | |
| 27-Oct-93 | 1.5 | | 30 | 0.9186 | 1.396 | 0.405 | |
| 2-Dec-93 | 1.5 | | 31 | 0.9496 | 1.641 | 0.405 | |
| 19-Apr-94 | 2.1 | | 32 | 0.9806 | 2.067 | 0.742 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **NM291** | | | 6 | 6.02 |
| **LN Analysis** | | **tCd** | | | 1.08 | 1.08 |
| **Discharge, Q** | | **Q Data, EV=6.02 cfs CV=1.08** | | | | |
| **Avg:** | **6** | **Q Data-based LN** | | | | |
| **SD:** | **6** | u | lnQ | Q | | |
| **CV:** | **1.08** | 3 | 4.0 | 57 | | |
| **Min:** | **0.04** | 0 | 1.41 | 4 | | |
| **Max:** | **25** | -3 | -1.22 | 0 | | |
| **Median:** | **3** | | | | | |

| | | | | | 0.898 | 0.898 |
|---|---|---|---|---|---|---|
| | | | | | 8.4 | 8.43 |
| **u=mLn(Q)+b:** | | | | | 2.31 | 2.31 |

update for r2, EV, CV: **r2=0.898, EV=8.43 cfs CV=2.31; max r2=0.97**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnQ | 0.898 | u | lnQ | Q | |
| slope, m | 0.736 | 3 | 5.28 | 197 | |
| intercept, b | -0.890 | 0 | 1.21 | 3 | |
| N: | 32 | -3 | -2.87 | 0 | |
| E[Q] | 8.4 | Parameter Estimates | | | |
| SD[Q] | 19 | from LN regression | | | |
| CV[Q] | 2.31 | update graph label | | | |

| Date | Q Discharge cfs Ranked | N 32 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.974 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *15-Nov-98* | *0.0422* | 1 | 0.0194 | -2.067 | -3.165 | 0.898 |
| 16-Dec-93 | 0.82 | 2 | 0.0504 | -1.641 | -0.198 | 0.973 |
| 24-Jan-94 | 0.88 | 3 | 0.0814 | -1.396 | -0.128 | 0.973 |
| 4-Oct-91 | 0.89 | 4 | 0.1124 | -1.214 | -0.117 | 0.971 |
| 13-Sep-95 | 1.48 | 5 | 0.1434 | -1.065 | 0.392 | 0.968 |
| 15-Aug-94 | 1.53 | 6 | 0.1744 | -0.937 | 0.425 | 0.970 |
| 14-Aug-95 | 1.74 | 7 | 0.2054 | -0.822 | 0.554 | 0.971 |
| 16-Dec-93 | 1.81 | 8 | 0.2364 | -0.718 | 0.593 | 0.973 |
| 24-Jan-94 | 1.81 | 9 | 0.2674 | -0.621 | 0.593 | 0.974 |
| 8-Sep-94 | 1.88 | 10 | 0.2984 | -0.529 | 0.631 | 0.974 |
| 4-Oct-94 | 1.88 | 11 | 0.3295 | -0.441 | 0.631 | 0.972 |
| 2-Dec-93 | 2.04 | 12 | 0.3605 | -0.357 | 0.713 | 0.969 |
| 27-Oct-93 | 2.13 | 13 | 0.3915 | -0.275 | 0.756 | 0.965 |
| 25-Jul-95 | 2.31 | 14 | 0.4225 | -0.196 | 0.837 | 0.962 |
| 15-Aug-94 | 2.61 | 15 | 0.4535 | -0.117 | 0.959 | 0.959 |
| 13-Nov-97 | 2.63 | 16 | 0.4845 | -0.039 | 0.967 | 0.955 |
| 11-Jul-95 | 2.96 | 17 | 0.5155 | 0.039 | 1.085 | 0.956 |
| 20-Jul-94 | 3.81 | 18 | 0.5465 | 0.117 | 1.338 | 0.960 |
| 8-Apr-94 | 4.73 | 19 | 0.5775 | 0.196 | 1.554 | 0.957 |
| 23-Jun-94 | 5.16 | 20 | 0.6085 | 0.275 | 1.641 | 0.950 |
| 27-Jun-95 | 5.16 | 21 | 0.6395 | 0.357 | 1.641 | 0.943 |
| 25-Apr-95 | 5.39 | 22 | 0.6705 | 0.441 | 1.685 | 0.935 |
| 13-Apr-95 | 6.15 | 23 | 0.7016 | 0.529 | 1.816 | 0.933 |
| 7-Jun-94 | 7.36 | 24 | 0.7326 | 0.621 | 1.996 | 0.936 |
| 12-Jun-95 | 9.24 | 25 | 0.7636 | 0.718 | 2.224 | 0.934 |
| 4-May-94 | 10.13 | 26 | 0.7946 | 0.822 | 2.316 | 0.917 |
| 9-May-95 | 11.11 | 27 | 0.8256 | 0.937 | 2.408 | 0.891 |
| 19-May-94 | 12.79 | 28 | 0.8566 | 1.065 | 2.549 | 0.852 |
| 23-May-95 | 14.06 | 29 | 0.8876 | 1.214 | 2.643 | |
| 16-May-91 | 20 | 30 | 0.9186 | 1.396 | 2.996 | |
| *14-May-98* | *22.9* | 31 | 0.9496 | 1.641 | 3.131 | |
| 19-Apr-94 | 25.2 | 32 | 0.9806 | 2.067 | 3.227 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM291 | **Date:** | 3-Jun-00 |
| **Chemical:** | tPb | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Avg:** | 34,655 | 6 | 7 | 0.2 | | | 0.00 | 0.00 | 0.00 |
| **SD:** | 539 | 6 | 5 | 0.5 | | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.08 | 0.73 | 1.87 | | | | | |
| **Min:** | 33,374 | 0.04 | 0.3 | 0.0 | | | -0.92 | -1.32 | -0.53 |
| **Max:** | 36,114 | 25 | 28 | 2 | | | 2.96 | 3.78 | 4.76 |
| **Median:** | 34,561 | 3 | 7 | 0.1 | | | -0.50 | -0.09 | -0.36 |

| tPb NM291 | | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.0000477)** | | update r2 | **0.00005** | 0.0000477 | | r2 | 0.0000001 | 0.035 | | |
| r2 Q,[COC] | 0.00005 | [tPb] | Q | | | m | 0.000004 | -0.00043 | | |
| slope, m | 0.01 | 7 | 0.04 | | | b | 6 | 16.03 | | |
| intercept, b | 7.4 | 7 | 6.0 | | | | | | | |
| N 27 | | 8 | 25 | | | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.000475)** | | update r2 | | 0.00 | 0.000475 | | | | | |
| r2 lnQ,ln[COC] | 0.0005 | ln[tPb] | ln Q | [tPb] | Q | | | | | |
| slope, m | -0.01 | 1.81 | -3.17 | 6 | 0.04 | | | | | |
| intercept, b | 1.77 | 1.74 | 1.80 | 6 | 6 | | | | | |
| N 27 | | 1.72 | 3.23 | 6 | 25 | | | | | |

**N= 32**

| | | | | | | | | tPb NM291 | for graph 0 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Sampling Date** | **Q Discharge** | **tPb Concentration** | **tPb Load** | **Ln Q** | **Ln tPb Conc.** | **Ln tPb Load** | **Standardized Values = (x - Avg)/SD** | | |
| update for new data | | **cfs** | **ug/L** | **lbs/day** | | | | **Q** | **Conc** | **Load** |
| DATA: | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 20 | 3 | 0.32 | 3.00 | 1.10 | -1.13 | 2.16 | -0.83 | 0.17 |
| MFG | 4-Oct-91 | 0.89 | 4 | 0.02 | -0.12 | 1.39 | -3.96 | -0.79 | -0.64 | -0.49 |
| *IDEQ* | *27-Oct-93* | *2.13* | | | 0.76 | | | -0.60 | | |
| IDEQ | 2-Dec-93 | 2.04 | 28 | 0.31 | 0.71 | 3.33 | -1.18 | -0.61 | 3.78 | 0.13 |
| IDEQ | 16-Dec-93 | 1.81 | 7 | 0.07 | 0.59 | 1.95 | -2.69 | -0.65 | -0.09 | -0.39 |
| IDEQ | 16-Dec-93 | 0.82 | 3 | 0.03 | -0.20 | 1.95 | -3.48 | -0.80 | -0.09 | -0.47 |
| IDEQ | 24-Jan-94 | 1.81 | 8 | 0.08 | 0.59 | 2.08 | -2.55 | -0.65 | 0.10 | -0.36 |
| IDEQ | 24-Jan-94 | 0.88 | 8 | 0.04 | -0.13 | 2.08 | -3.27 | -0.79 | 0.10 | -0.45 |
| IDEQ | 8-Apr-94 | 4.73 | 6 | 0.15 | 1.55 | 1.79 | -1.88 | -0.20 | -0.27 | -0.20 |
| IDEQ | 19-Apr-94 | 25.2 | 18 | 2.44 | 3.23 | 2.89 | 0.89 | 2.96 | 1.94 | 4.76 |
| *IDEQ* | *4-May-94* | *10.13* | | | 2.32 | | | 0.63 | | |
| IDEQ | 19-May-94 | 12.79 | 5 | 0.34 | 2.55 | 1.61 | -1.07 | 1.04 | -0.46 | 0.21 |
| *IDEQ* | *7-Jun-94* | *7.36* | | | 2.00 | | | 0.21 | | |
| IDEQ | 23-Jun-94 | 5.16 | 5 | 0.14 | 1.64 | 1.61 | -1.97 | -0.13 | -0.46 | -0.23 |
| *IDEQ* | *20-Jul-94* | *3.81* | | | 1.34 | | | -0.34 | | |
| IDEQ | 15-Aug-94 | 2.61 | 5 | 0.07 | 0.96 | 1.61 | -2.66 | -0.53 | -0.46 | -0.38 |
| IDEQ | 15-Aug-94 | 1.53 | 5 | 0.04 | 0.43 | 1.61 | -3.19 | -0.69 | -0.46 | -0.44 |
| IDEQ | 8-Sep-94 | 1.88 | 5 | 0.05 | 0.63 | 1.61 | -2.98 | -0.64 | -0.46 | -0.42 |
| IDEQ | 4-Oct-94 | 1.88 | 8 | 0.08 | 0.63 | 2.08 | -2.51 | -0.64 | 0.10 | -0.36 |
| IDEQ | 13-Apr-95 | 6.15 | 8 | 0.26 | 1.82 | 2.08 | -1.33 | 0.02 | 0.10 | 0.04 |
| IDEQ | 25-Apr-95 | 5.39 | 8 | 0.23 | 1.68 | 2.08 | -1.46 | -0.10 | 0.10 | -0.03 |
| IDEQ | 9-May-95 | 11.11 | 12 | 0.72 | 2.41 | 2.48 | -0.33 | 0.79 | 0.83 | 1.02 |
| IDEQ | 23-May-95 | 14.06 | 5 | 0.38 | 2.64 | 1.61 | -0.97 | 1.24 | -0.46 | 0.29 |
| IDEQ | 12-Jun-95 | 9.24 | 9 | 0.45 | 2.22 | 2.20 | -0.80 | 0.50 | 0.28 | 0.44 |
| *IDEQ* | *27-Jun-95* | *5.16* | | | 1.64 | | | -0.13 | | |
| IDEQ | 11-Jul-95 | 2.96 | 5 | 0.08 | 1.08 | 1.61 | -2.53 | -0.47 | -0.46 | -0.36 |
| IDEQ | 25-Jul-95 | 2.31 | 7 | 0.09 | 0.84 | 1.95 | -2.44 | -0.57 | -0.09 | -0.34 |
| IDEQ | 14-Aug-95 | 1.74 | 8 | 0.07 | 0.55 | 2.08 | -2.59 | -0.66 | 0.10 | -0.37 |
| IDEQ | 13-Sep-95 | 1.48 | 14 | 0.11 | 0.39 | 2.64 | -2.19 | -0.70 | 1.20 | -0.29 |
| URS | 13-Nov-97 | 2.63 | 1.5 | 0.02 | 0.97 | 0.41 | -3.85 | -0.52 | -1.10 | -0.49 |
| URS | 14-May-98 | 22.9 | 0.3 | 0.04 | 3.13 | -1.20 | -3.30 | 2.60 | -1.32 | -0.45 |
| URS | 15-Nov-98 | 0.0422 | 2 | 0.00 | -3.17 | 0.69 | -7.70 | -0.92 | -1.01 | -0.53 |

**tPb**

**Concentration over time analysis**

| | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **tPb** | **NM291** | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.211** | **-0.00066** |
| | **Time** | ***Ln*[COC]** | **[COC]** | | |
| first | 16-May-91 | 2.61 | 14 | | |
| *mid* | 15-Aug-94 | 1.83 | 6 | | |
| last | 15-Nov-98 | 0.81 | 2 | | |
| | **LnConc.=*m*Time+*b* >'96 r2, m:** | | | **#REF!** | **#REF!** |
| | #REF! | #REF! | #REF! | | |
| | 15-Nov-98 | #REF! | #REF! | | |

**Load over time analysis**

| | | | | | |
|---|---|---|---|---|---|
| | **tPb** | **NM291** | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.167** | **-0.00108** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 16-May-91 | -0.92 | 0.40 | | |
| *mid* | 15-Aug-94 | -2.21 | 0.11 | | |
| last | 15-Nov-98 | -3.89 | 0.02 | | |
| | **LnLoad=*m*Time+*b* >'96 r2, m:** | | | **#REF!** | **#REF!** |
| | #REF! | #REF! | #REF! | | |
| | 15-Nov-98 | #REF! | #REF! | | |

| | | | | | |
|---|---|---|---|---|---|
| | max r2 | 0.718 | | max r2 | 0.719 |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| | 0.211 | -0.00066 | 24.57 | 0.167 | -0.00108 | 35.26 |
| | 0.356 | -0.00094 | 34.46 | 0.147 | -0.00112 | 36.61 |
| | 0.524 | -0.00128 | 46.34 | 0.301 | -0.00177 | 59.33 |
| | 0.524 | -0.00128 | 46.34 | 0.301 | -0.00177 | 59.33 |
| | 0.509 | -0.00120 | 43.37 | 0.287 | -0.00175 | 58.37 |
| | 0.517 | -0.00123 | 44.57 | 0.311 | -0.00186 | 62.25 |
| | 0.526 | -0.00127 | 46.00 | 0.376 | -0.00207 | 69.84 |
| | 0.526 | -0.00130 | 46.92 | 0.406 | -0.00220 | 74.56 |
| | 0.526 | -0.00133 | 48.05 | 0.483 | -0.00245 | 83.39 |
| | 0.543 | -0.00138 | 50.01 | 0.493 | -0.00254 | 86.44 |
| | 0.516 | -0.00131 | 47.49 | 0.470 | -0.00230 | 77.83 |
| | 0.516 | -0.00131 | 47.49 | 0.470 | -0.00230 | 77.83 |
| | 0.547 | -0.00139 | 50.28 | 0.448 | -0.00226 | 76.44 |
| | 0.547 | -0.00139 | 50.28 | 0.448 | -0.00226 | 76.44 |
| | 0.580 | -0.00148 | 53.33 | 0.450 | -0.00233 | 78.84 |
| | 0.580 | -0.00148 | 53.33 | 0.450 | -0.00233 | 78.84 |
| | 0.613 | -0.00157 | 56.43 | 0.483 | -0.00248 | 84.33 |
| | 0.657 | -0.00168 | 60.45 | 0.565 | -0.00277 | 94.49 |
| | 0.710 | -0.00182 | 65.35 | 0.652 | -0.00308 | 105.77 |
| | 0.718 | -0.00189 | 68.12 | 0.719 | -0.00339 | 116.72 |
| | 0.712 | -0.00191 | 68.66 | 0.710 | -0.00339 | 116.71 |
| | 0.704 | -0.00192 | 69.20 | 0.700 | -0.00341 | 117.23 |
| | 0.684 | -0.00186 | 67.04 | 0.686 | -0.00321 | 110.05 |
| | 0.705 | -0.00197 | 70.73 | 0.659 | -0.00306 | 104.67 |
| | 0.679 | -0.00195 | 70.17 | 0.625 | -0.00277 | 94.42 |
| | 0.679 | -0.00195 | 70.17 | 0.625 | -0.00277 | 94.42 |
| | 0.700 | -0.00211 | 75.79 | 0.611 | -0.00287 | 98.03 |
| | 0.682 | -0.00224 | 80.38 | 0.579 | -0.00301 | 102.88 |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **tPb** | | **NM291** | | |
| **LN Analysis** | | **tPb** | | |
| **Load** | | **Load Data, EV=0.246 lbs/day CV=1.87** | | |
| **Avg:** | **0.2** | **Load Data-based LN** | | |
| **SD:** | **0.5** | u | ln tPb Load | tPb Load |
| **CV:** | **1.87** | 3 | 1.5 | 5 |
| **Min:** | **0.0005** | 0 | -2.16 | 0.1 |
| **Max:** | **2** | -3 | -5.84 | 0.003 |
| **Median:** | **0.1** | | | |
| | | 0 | 0.246 | |
| | | 1.87 | 1.87 | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **r2=0.906, EV=0.318lbs/day CV=4.2; max r2=0.97**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.906 | u | lnLoad | Load | |
| slope, m | 0.585 | 3 | 2.52 | 12 | |
| intercept, b | 1.524 | 0 | -2.61 | 0.1 | |
| N | 27 | -3 | -7.74 | 0.0004 | |
| E[Load] | 0.3 | Parameter Estimates | | | 0.906 |
| SD[Load] | 1 | from LN regression | | | 0.3 |
| CV[Load] | 4.20 | update graph label | | | 4.2 |
| | | | | | max r2 |
| **tPb** | N | 32 | | | 0.968 |

| **Date** | **Load lbs/day Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | **r2 forward** |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 15-Nov-98 | **0.0005** | 1 | 0.0194 | -2.067 | -7.697 | 0.906 |
| *27-Oct-93* | | 2 | 0.0504 | -1.641 | | |
| 4-Oct-91 | **0.02** | 3 | 0.0814 | -1.396 | -3.955 | 0.966 |
| 13-Nov-97 | **0.02** | 4 | 0.1124 | -1.214 | -3.853 | 0.967 |
| *20-Jul-94* | | 5 | 0.1434 | -1.065 | | |
| 16-Dec-93 | **0.03** | 6 | 0.1744 | -0.937 | -3.478 | 0.966 |
| *27-Jun-95* | | 7 | 0.2054 | -0.822 | | |
| 14-May-98 | **0.04** | 8 | 0.2364 | -0.718 | -3.298 | 0.967 |
| 24-Jan-94 | **0.04** | 9 | 0.2674 | -0.621 | -3.273 | 0.968 |
| 15-Aug-94 | **0.04** | 10 | 0.2984 | -0.529 | -3.190 | 0.966 |
| *7-Jun-94* | | 11 | 0.3295 | -0.441 | | |
| 8-Sep-94 | **0.05** | 12 | 0.3605 | -0.357 | -2.984 | 0.964 |
| *4-May-94* | | 13 | 0.3915 | -0.275 | | |
| 16-Dec-93 | **0.07** | 14 | 0.4225 | -0.196 | -2.686 | 0.961 |
| 15-Aug-94 | **0.07** | 15 | 0.4535 | -0.117 | -2.656 | 0.962 |
| 14-Aug-95 | **0.07** | 16 | 0.4845 | -0.039 | -2.592 | 0.962 |
| 24-Jan-94 | **0.08** | 17 | 0.5155 | 0.039 | -2.552 | 0.960 |
| 11-Jul-95 | **0.08** | 18 | 0.5465 | 0.117 | -2.530 | 0.957 |
| 4-Oct-94 | **0.08** | 19 | 0.5775 | 0.196 | -2.514 | 0.951 |
| 25-Jul-95 | **0.09** | 20 | 0.6085 | 0.275 | -2.442 | 0.944 |
| 13-Sep-95 | **0.11** | 21 | 0.6395 | 0.357 | -2.194 | 0.938 |
| 23-Jun-94 | **0.14** | 22 | 0.6705 | 0.441 | -1.975 | 0.928 |
| 8-Apr-94 | **0.15** | 23 | 0.7016 | 0.529 | -1.879 | 0.914 |
| 25-Apr-95 | **0.23** | 24 | 0.7326 | 0.621 | -1.461 | 0.897 |
| 13-Apr-95 | **0.26** | 25 | 0.7636 | 0.718 | -1.329 | 0.892 |
| 2-Dec-93 | **0.31** | 26 | 0.7946 | 0.822 | -1.180 | 0.895 |
| 16-May-91 | **0.32** | 27 | 0.8256 | 0.937 | -1.131 | 0.918 |
| 19-May-94 | **0.34** | 28 | 0.8566 | 1.065 | -1.067 | 0.942 |
| 23-May-95 | **0.38** | 29 | 0.8876 | 1.214 | -0.972 | |
| 12-Jun-95 | **0.45** | 30 | 0.9186 | 1.396 | -0.804 | |
| 9-May-95 | **0.72** | 31 | 0.9496 | 1.641 | -0.332 | |
| 19-Apr-94 | **2.44** | 32 | 0.9806 | 2.067 | 0.892 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tPb** | | **NM291** | | 7 | 7.47 |
| **LN Analysis** | | **tPb** | | 0.73 | 0.726 |
| **Concentration** | | **Conc. Data, EV=7.47 ug/L CV=0.726** | | | |
| **Avg:** | 7 | **Data-based LN** | | | |
| **SD:** | 5 | u | ln[tPb] | [tPb] | |
| **CV:** | 0.73 | 3 | 3.8 | 43 | |
| **Min:** | 0.3 | 0 | 1.80 | 6 | |
| **Max:** | 28 | -3 | -0.15 | 1 | |
| **Median:** | 7 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.886 | 0.886 |
| | ***u=mLn{Conc.}+b:*** | | | | 7.7 | 7.68 |
| update for r2, EV, CV | **r2=0.886, EV=7.68 ug/L CV=1.36; max r2=0.99** | | | | 1.362 | 1.36 |
| | r2 u,lnConc | 0.886 | u | lnConc | Conc | |
| | slope, m | 0.976 | 3 | 4.59 | 98 | |
| | intercept, b | -1.478 | 0 | 1.51 | 5 | |
| | N: | 27 | -3 | -1.56 | 0.2 | |
| 0.906 | E[Conc] | 7.7 | Parameter Estimates | | | |
| 0.318 | SD[Conc] | 10 | *from LN regression* | | | |
| 4.2 | CV[Conc] | 1.36 | *update graph label* | | | |

| | **tPb** | N | 32 | | | max r2 0.991 |
|---|---|---|---|---|---|---|
| | **Concentration** | **i** | ***i-3/8 / N+1/4*** | **u** | **Ln** | **r2** |
| **Date** | **ug/L** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for *new data* | | | | | | |
| 14-May-98 | 0.3 | 1 | 0.0194 | -2.067 | -1.204 | 0.886 |
| *27-Oct-93* | | 2 | 0.0504 | -1.641 | | |
| *4-May-94* | | 3 | 0.0814 | -1.396 | | |
| *7-Jun-94* | | 4 | 0.1124 | -1.214 | | |
| *20-Jul-94* | | 5 | 0.1434 | -1.065 | | |
| *27-Jun-95* | | 6 | 0.1744 | -0.937 | | |
| 13-Nov-97 | 1.5 | 7 | 0.2054 | -0.822 | 0.405 | 0.892 |
| 15-Nov-98 | 2 | 8 | 0.2364 | -0.718 | 0.693 | 0.914 |
| 16-May-91 | 3 | 9 | 0.2674 | -0.621 | 1.099 | 0.933 |
| 4-Oct-91 | 4 | 10 | 0.2984 | -0.529 | 1.386 | 0.931 |
| 19-May-94 | 5 | 11 | 0.3295 | -0.441 | 1.609 | 0.924 |
| 23-Jun-94 | 5 | 12 | 0.3605 | -0.357 | 1.609 | 0.929 |
| 15-Aug-94 | 5 | 13 | 0.3915 | -0.275 | 1.609 | 0.932 |
| 15-Aug-94 | 5 | 14 | 0.4225 | -0.196 | 1.609 | 0.932 |
| 8-Sep-94 | 5 | 15 | 0.4535 | -0.117 | 1.609 | 0.929 |
| 23-May-95 | 5 | 16 | 0.4845 | -0.039 | 1.609 | 0.923 |
| 11-Jul-95 | 5 | 17 | 0.5155 | 0.039 | 1.609 | 0.914 |
| 8-Apr-94 | 6 | 18 | 0.5465 | 0.117 | 1.792 | 0.903 |
| 16-Dec-93 | 7 | 19 | 0.5775 | 0.196 | 1.946 | 0.895 |
| 16-Dec-93 | 7 | 20 | 0.6085 | 0.275 | 1.946 | 0.903 |
| 25-Jul-95 | 7 | 21 | 0.6395 | 0.357 | 1.946 | 0.908 |
| 24-Jan-94 | 8 | 22 | 0.6705 | 0.441 | 2.079 | 0.907 |
| 24-Jan-94 | 8 | 23 | 0.7016 | 0.529 | 2.079 | 0.932 |
| 4-Oct-94 | 8 | 24 | 0.7326 | 0.621 | 2.079 | 0.955 |
| 13-Apr-95 | 8 | 25 | 0.7636 | 0.718 | 2.079 | 0.974 |
| 25-Apr-95 | 8 | 26 | 0.7946 | 0.822 | 2.079 | 0.987 |
| 14-Aug-95 | 8 | 27 | 0.8256 | 0.937 | 2.079 | 0.991 |
| 12-Jun-95 | 9 | 28 | 0.8566 | 1.065 | 2.197 | 0.988 |
| 9-May-95 | 12 | 29 | 0.8876 | 1.214 | 2.485 | |
| 13-Sep-95 | 14 | 30 | 0.9186 | 1.396 | 2.639 | |
| 19-Apr-94 | 18 | 31 | 0.9496 | 1.641 | 2.890 | |
| 2-Dec-93 | 28 | 32 | 0.9806 | 2.067 | 3.332 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **NM291** | | | 6 | 6.02 |
| **LN Analysis** | | **tPb** | | | 1.08 | 1.08 |

## Discharge, Q

**Q Data, EV=6.02 cfs CV=1.08**

**Q Data-based LN**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **6** | u | lnQ | Q |
| **SD:** | **6** | 3 | 4.0 | 57 |
| **CV:** | **1.08** | 3 | 4.0 | 57 |
| **Min:** | **0.04** | 0 | 1.41 | 4 |
| **Max:** | **25** | -3 | -1.22 | 0.3 |
| **Median:** | **3** | | | |

| | | |
|---|---|---|
| | 0.898 | 0.898 |
| | 8.4 | 8.43 |
| | 2.31 | 2.31 |

**u=mLn(Q)+b:**

update for r2, EV, CV **r2=0.898, EV=8.43 cfs CV=2.31; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.898 | u | lnQ | Q |
| slope, m | 0.736 | 3 | 5.28 | 197 |
| intercept, b | -0.896 | 0 | 1.21 | 3 |
| N | 32 | -3 | -2.87 | 0.1 |
| E[Q] | 8.4 | Parameter Estimates | | |
| SD[Q] | 19 | from LN regression | | |
| CV[Q] | 2.31 | update graph label | | |

N= 32

max r2 = 0.974

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 15-Nov-98 | 0.0422 | 1 | 0.0194 | -2.067 | -3.165 | 0.898 |
| 16-Dec-93 | 0.82 | 2 | 0.0504 | -1.641 | -0.198 | 0.973 |
| 24-Jan-94 | 0.88 | 3 | 0.0814 | -1.396 | -0.128 | 0.973 |
| 4-Oct-91 | 0.89 | 4 | 0.1124 | -1.214 | -0.117 | 0.971 |
| 13-Sep-95 | 1.48 | 5 | 0.1434 | -1.065 | 0.392 | 0.968 |
| 15-Aug-94 | 1.53 | 6 | 0.1744 | -0.937 | 0.425 | 0.970 |
| 14-Aug-95 | 1.74 | 7 | 0.2054 | -0.822 | 0.554 | 0.971 |
| 16-Dec-93 | 1.81 | 8 | 0.2364 | -0.718 | 0.593 | 0.973 |
| 24-Jan-94 | 1.81 | 9 | 0.2674 | -0.621 | 0.593 | 0.974 |
| 8-Sep-94 | 1.88 | 10 | 0.2984 | -0.529 | 0.631 | 0.974 |
| 4-Oct-94 | 1.88 | 11 | 0.3295 | -0.441 | 0.631 | 0.972 |
| 2-Dec-93 | 2.04 | 12 | 0.3605 | -0.357 | 0.713 | 0.969 |
| *27-Oct-93* | *2.13* | 13 | 0.3915 | -0.275 | 0.756 | 0.965 |
| 25-Jul-95 | 2.31 | 14 | 0.4225 | -0.196 | 0.837 | 0.962 |
| 15-Aug-94 | 2.61 | 15 | 0.4535 | -0.117 | 0.959 | 0.959 |
| 13-Nov-97 | 2.63 | 16 | 0.4845 | -0.039 | 0.967 | 0.955 |
| 11-Jul-95 | 2.96 | 17 | 0.5155 | 0.039 | 1.085 | 0.956 |
| *20-Jul-94* | *3.81* | 18 | 0.5465 | 0.117 | 1.338 | 0.960 |
| 8-Apr-94 | 4.73 | 19 | 0.5775 | 0.196 | 1.554 | 0.957 |
| 23-Jun-94 | 5.16 | 20 | 0.6085 | 0.275 | 1.641 | 0.950 |
| *27-Jun-95* | *5.16* | 21 | 0.6395 | 0.357 | 1.641 | 0.943 |
| 25-Apr-95 | 5.39 | 22 | 0.6705 | 0.441 | 1.685 | 0.935 |
| 13-Apr-95 | 6.15 | 23 | 0.7016 | 0.529 | 1.816 | 0.933 |
| 7-Jun-94 | 7.36 | 24 | 0.7326 | 0.621 | 1.996 | 0.936 |
| 12-Jun-95 | 9.24 | 25 | 0.7636 | 0.718 | 2.224 | 0.934 |
| 4-May-94 | *10.13* | 26 | 0.7946 | 0.822 | 2.316 | 0.917 |
| 9-May-95 | 11.11 | 27 | 0.8256 | 0.937 | 2.408 | 0.891 |
| 19-May-94 | 12.79 | 28 | 0.8566 | 1.065 | 2.549 | 0.852 |
| 23-May-95 | 14.06 | 29 | 0.8876 | 1.214 | 2.643 | |
| 16-May-91 | 20 | 30 | 0.9186 | 1.396 | 2.996 | |
| 14-May-98 | 22.9 | 31 | 0.9496 | 1.641 | 3.131 | |
| 19-Apr-94 | 25.2 | 32 | 0.9806 | 2.067 | 3.227 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **NM291** | **Date:** | **3-Jun-00** |
| **Chemical:** | **tZn** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,655 | 6 | 224 | 6 | 0.00 | 0.00 | 0.00 |
| **SD:** | 539 | 6 | 94 | 10 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.08 | 0.42 | 1.56 | | | |
| **Min:** | 33,374 | 0.04 | 16 | 0.0 | -0.92 | -2.21 | -0.64 |
| **Max:** | 36,114 | 25 | 410 | 56 | 2.96 | 1.98 | 5.15 |
| **Median:** | 34,561 | 3 | 257 | 4 | -0.50 | 0.35 | -0.27 |

| tZn | NM291 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.0227)** | | update r2 | 0.02 | 0.0227 | r2 | 0.000 | 0.035 |
| r2 Q,[COC] | 0.02 | [tZn] | Q | | m | 0.0000 | -0.00043 |
| slope, m | -2.4 | 237 | 0.04 | | b | 6 | 16.03 |
| intercept, b | 237.0 | 222 | 6.0 | | | | |
| N: 31 | | 176 | 25 | | | | |
| **LnConc. = mLn{Q}+b (r2=0.0389)** | | update r2 | | 0.04 | 0.0389 | | |
| r2 lnQ,ln[COC] | 0.04 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m | 0.11 | 4.81 | -3.17 | 123 | 0.0 | | |
| intercept, b | 5.14 | 5.33 | 1.80 | 207 | 6 | | |
| N: 31 | | 5.48 | 3.23 | 241 | 25 | | |

N= 32

| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | for graph: tZn NM291 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 20 | 145 | 15.6 | 3.00 | 4.98 | 2.75 | 2.16 | -0.83 | 0.99 |
| MFG | 4-Oct-91 | 0.89 | 260 | 1.2 | -0.12 | 5.56 | 0.22 | -0.79 | 0.39 | -0.51 |
| IDEQ | 27-Oct-93 | 2.13 | 314 | 3.6 | 0.76 | 5.75 | 1.28 | -0.60 | 0.96 | -0.27 |
| IDEQ | 2-Dec-93 | 2.04 | 328 | 3.6 | 0.71 | 5.79 | 1.28 | -0.61 | 1.11 | -0.27 |
| IDEQ | 16-Dec-93 | 1.81 | 300 | 2.9 | 0.59 | 5.70 | 1.07 | -0.65 | 0.81 | -0.34 |
| IDEQ | 16-Dec-93 | 0.82 | 300 | 1.3 | -0.20 | 5.70 | 0.28 | -0.80 | 0.81 | -0.50 |
| IDEQ | 24-Jan-94 | 1.81 | 300 | 2.9 | 0.59 | 5.70 | 1.07 | -0.65 | 0.81 | -0.34 |
| IDEQ | 24-Jan-94 | 0.88 | 300 | 1.4 | -0.13 | 5.70 | 0.35 | -0.79 | 0.81 | -0.49 |
| IDEQ | 8-Apr-94 | 4.73 | 315 | 8.0 | 1.55 | 5.75 | 2.08 | -0.20 | 0.97 | 0.20 |
| IDEQ | 19-Apr-94 | 25.2 | 410 | 55.6 | 3.23 | 6.02 | 4.02 | 2.96 | 1.98 | 5.15 |
| IDEQ | 4-May-94 | 10.13 | 167 | 9.1 | 2.32 | 5.12 | 2.21 | 0.63 | -0.60 | 0.31 |
| IDEQ | 19-May-94 | 12.79 | 102 | 7.0 | 2.55 | 4.62 | 1.95 | 1.04 | -1.29 | 0.09 |
| IDEQ | 7-Jun-94 | 7.36 | 145 | 5.7 | 2.00 | 4.98 | 1.75 | 0.21 | -0.83 | -0.04 |
| IDEQ | 23-Jun-94 | 5.16 | 161 | 4.5 | 1.64 | 5.08 | 1.50 | -0.13 | -0.66 | -0.17 |
| IDEQ | 20-Jul-94 | 3.81 | 198 | 4.1 | 1.34 | 5.29 | 1.40 | -0.34 | -0.27 | -0.22 |
| IDEQ | 15-Aug-94 | 2.61 | 257 | 3.6 | 0.96 | 5.55 | 1.28 | -0.53 | 0.35 | -0.26 |
| IDEQ | 15-Aug-94 | 1.53 | 257 | 2.1 | 0.43 | 5.55 | 0.75 | -0.69 | 0.35 | -0.42 |
| IDEQ | 8-Sep-94 | 1.88 | 251 | 2.5 | 0.63 | 5.53 | 0.93 | -0.64 | 0.29 | -0.38 |
| IDEQ | 4-Oct-94 | 1.88 | 308 | 3.1 | 0.63 | 5.73 | 1.14 | -0.64 | 0.89 | -0.32 |
| IDEQ | 13-Apr-95 | 6.15 | 279 | 9.2 | 1.82 | 5.63 | 2.22 | 0.02 | 0.59 | 0.32 |
| IDEQ | 25-Apr-95 | 5.39 | 316 | 9.2 | 1.68 | 5.76 | 2.22 | -0.10 | 0.98 | 0.31 |
| IDEQ | 9-May-95 | 11.11 | 151 | 9.0 | 2.41 | 5.02 | 2.20 | 0.79 | -0.77 | 0.30 |
| IDEQ | 23-May-95 | 14.06 | 74 | 5.6 | 2.64 | 4.30 | 1.72 | 1.24 | -1.59 | -0.06 |
| IDEQ | 12-Jun-95 | 9.24 | 75 | 3.7 | 2.22 | 4.32 | 1.32 | 0.50 | -1.58 | -0.25 |
| IDEQ | 27-Jun-95 | 5.16 | 97 | 2.7 | 1.64 | 4.57 | 0.99 | -0.13 | -1.34 | -0.36 |
| IDEQ | 11-Jul-95 | 2.96 | 142 | 2.3 | 1.09 | 4.96 | 0.82 | -0.47 | -0.87 | -0.40 |
| IDEQ | 25-Jul-95 | 2.31 | 160 | 2.0 | 0.84 | 5.08 | 0.69 | -0.57 | -0.67 | -0.43 |
| IDEQ | 14-Aug-95 | 1.74 | 216 | 2.0 | 0.55 | 5.38 | 0.70 | -0.68 | -0.08 | -0.43 |
| IDEQ | 13-Sep-95 | 1.48 | 261 | 2.1 | 0.39 | 5.56 | 0.73 | -0.70 | 0.40 | -0.42 |
| URS | 13-Nov-97 | 2.63 | 328 | 4.6 | 0.97 | 5.79 | 1.53 | -0.52 | 1.11 | -0.16 |
| *URS* | *14-May-98* | 22.9 | | | 3.13 | | | 2.60 | | |
| URS | 15-Nov-98 | 0.0422 | 15.5 | 0.0 | -3.17 | 2.74 | -5.65 | -0.92 | -2.21 | -0.64 |

tZn

**Concentration over time analysis**

| | tZn | NM291 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.214** | **-0.00060** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 16-May-91 | 6 01 | 408 | | |
| mid | 15-Aug-94 | 5.30 | 200 | | |
| last | 15-Nov-98 | 4 36 | 78 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0 00 | 1 | | |
| | 15-Nov-98 | 0 00 | 1 | | |

**Load over time analysis**

| | tZn | NM291 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.240** | **-0.00145** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 16-May-91 | 2.99 | 20 | | |
| mid | 15-Aug-94 | 1.26 | 4 | | |
| last | 15-Nov-98 | -0.99 | 0 | | |
| | **LnLoad=mTime+b >'96 r2, m** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0 00 | 1 | | |

| max r2 | 0 476 | | max r2 | 0 602 | |
|---|---|---|---|---|---|
| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points, delete last 4 rows | | | only on >4 data points, delete last 4 rows | | |
| 0.214 | -0.00060 | 26.09 | 0.240 | -0.00145 | 51.54 |
| 0.318 | -0.00082 | 33 74 | 0.211 | -0.00151 | 53.34 |
| 0.358 | -0.00099 | 39 44 | 0.345 | -0.00217 | 76.43 |
| 0.346 | -0 00098 | 39.21 | 0.356 | -0.00225 | 79.22 |
| 0.331 | -0.00096 | 38 71 | 0.367 | -0.00233 | 81.92 |
| 0.319 | -0 00096 | 38.40 | 0.385 | -0.00243 | 85.58 |
| 0.305 | -0 00095 | 38.05 | 0 439 | -0.00264 | 92.97 |
| 0.290 | -0.00093 | 37.52 | 0.463 | -0.00277 | 97.50 |
| 0.273 | -0.00091 | 36.89 | 0.527 | -0.00301 | 105.93 |
| 0.254 | -0.00088 | 35.83 | 0.523 | -0.00304 | 106.85 |
| 0.227 | -0 00082 | 33.50 | 0.508 | -0.00284 | 99.97 |
| 0.234 | -0 00085 | 34 59 | 0.495 | -0.00283 | 99.56 |
| 0.284 | -0 00094 | 38 02 | 0 486 | -0 00284 | 100.06 |
| 0.308 | -0 00101 | 40.25 | 0 481 | -0.00288 | 101.34 |
| 0.326 | -0.00107 | 42.28 | 0 483 | -0 00295 | 103 90 |
| 0.329 | -0 00110 | 43 30 | 0 487 | -0 00304 | 106.98 |
| 0.313 | -0 00109 | 43 10 | 0 496 | -0.00315 | 110.85 |
| 0.295 | -0 00108 | 42 71 | 0 536 | -0.00339 | 119.31 |
| 0 274 | -0 00106 | 42.21 | 0.572 | -0.00364 | 128 11 |
| 0 235 | -0 00099 | 39 73 | 0 602 | -0 00389 | 137 10 |
| 0 213 | -0 00093 | 37.41 | 0.589 | -0.00382 | 134.69 |
| 0 183 | -0 00083 | 33 80 | 0.573 | -0.00373 | 131.51 |
| 0.175 | -0 00082 | 33.65 | 0.554 | -0.00361 | 127.26 |
| 0.230 | -0 00095 | 38.26 | 0.533 | -0.00354 | 124.62 |
| 0.311 | -0 00112 | 44.25 | 0.514 | -0.00351 | 123.67 |
| 0.389 | -0 00129 | 50 49 | 0.498 | -0.00355 | 124.86 |
| 0.430 | -0.00144 | 55.84 | 0.484 | -0.00364 | 128.36 |
| 0 476 | -0 00167 | 63 95 | 0.471 | -0 00388 | 136 72 |

update for EV, CV

**tZn** NM291
**LN Analysis** tZn

## Load

**Load Data, EV=6.14 lbs/day CV=1.56**

| | |
|---|---|
| **Avg:** | **6** |
| **SD:** | **10** |
| **CV:** | **1.56** |
| **Min:** | **0.004** |
| **Max:** | **56** |
| **Median:** | **4** |

**Load Data-based LN**

| u | ln tZn Load | tZn Load |
|---|---|---|
| 3 | 4.5 | 93 |
| 0 | 1.20 | 3 |
| -3 | -2.14 | 0.1 |

| | |
|---|---|
| 6 | 6.14 |
| 1.56 | 1.56 |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **r2=0.675, EV=19.2lbs/day CV=6.41; max r2=0.94**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad | 0.675 | u | lnLoad | Load | |
| slope, m | 0.517 | 3 | 6.89 | 979 | |
| intercept, b | -0.561 | 0 | 1.08 | 3 | |
| N | 31 | -3 | -4.72 | 0.01 | |
| E[Load] | 19.2 | Parameter Estimates | | | 0.675 |
| SD[Load] | 123 | from LN regression | | | 19.2 |
| CV[Load] | 6.41 | update graph label | | | 6.4 |
| | | | | | max r2 |
| | N | 32 | | | 0.940 |

| Date | tZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 15-Nov-98 | 0.0 | 1 | 0.0194 | -2.067 | -5.650 | 0.675 |
| *14-May-98* | | 2 | 0.0504 | -1.641 | | |
| 4-Oct-91 | 1.2 | 3 | 0.0814 | -1.396 | 0.219 | 0.940 |
| 16-Dec-93 | 1.3 | 4 | 0.1124 | -1.214 | 0.280 | 0.937 |
| 24-Jan-94 | 1.4 | 5 | 0.1434 | -1.065 | 0.351 | 0.932 |
| 25-Jul-95 | 2.0 | 6 | 0.1744 | -0.937 | 0.687 | 0.926 |
| 14-Aug-95 | 2.0 | 7 | 0.2054 | -0.822 | 0.704 | 0.928 |
| 13-Sep-95 | 2.1 | 8 | 0.2364 | -0.718 | 0.731 | 0.928 |
| 15-Aug-94 | 2.1 | 9 | 0.2674 | -0.621 | 0.749 | 0.926 |
| 11-Jul-95 | 2.3 | 10 | 0.2984 | -0.529 | 0.816 | 0.922 |
| 8-Sep-94 | 2.5 | 11 | 0.3295 | -0.441 | 0.932 | 0.918 |
| 27-Jun-95 | 2.7 | 12 | 0.3605 | -0.357 | 0.991 | 0.916 |
| 16-Dec-93 | 2.9 | 13 | 0.3915 | -0.275 | 1.072 | 0.913 |
| 24-Jan-94 | 2.9 | 14 | 0.4225 | -0.196 | 1.072 | 0.912 |
| 4-Oct-94 | 3.1 | 15 | 0.4535 | -0.117 | 1.136 | 0.908 |
| 27-Oct-93 | 3.6 | 16 | 0.4845 | -0.039 | 1.280 | 0.903 |
| 2-Dec-93 | 3.6 | 17 | 0.5155 | 0.039 | 1.281 | 0.904 |
| 15-Aug-94 | 3.6 | 18 | 0.5465 | 0.117 | 1.283 | 0.902 |
| 12-Jun-95 | 3.7 | 19 | 0.5775 | 0.196 | 1.316 | 0.895 |
| 20-Jul-94 | 4.1 | 20 | 0.6085 | 0.275 | 1.401 | 0.885 |
| 23-Jun-94 | 4.5 | 21 | 0.6395 | 0.357 | 1.497 | 0.873 |
| 13-Nov-97 | 4.6 | 22 | 0.6705 | 0.441 | 1.535 | 0.861 |
| 23-May-95 | 5.6 | 23 | 0.7016 | 0.529 | 1.722 | 0.842 |
| 7-Jun-94 | 5.7 | 24 | 0.7326 | 0.621 | 1.748 | 0.832 |
| 19-May-94 | 7.0 | 25 | 0.7636 | 0.718 | 1.949 | 0.811 |
| 8-Apr-94 | 8.0 | 26 | 0.7946 | 0.822 | 2.081 | 0.808 |
| 9-May-95 | 9.0 | 27 | 0.8256 | 0.937 | 2.200 | 0.826 |
| 4-May-94 | 9.1 | 28 | 0.8566 | 1.065 | 2.208 | 0.879 |
| 25-Apr-95 | 9.2 | 29 | 0.8876 | 1.214 | 2.215 | |
| 13-Apr-95 | 9.2 | 30 | 0.9186 | 1.396 | 2.223 | |
| 16-May-91 | 15.6 | 31 | 0.9496 | 1.641 | 2.747 | |
| 19-Apr-94 | 55.6 | 32 | 0.9806 | 2.067 | 4.018 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | *NM291* | | 224 | 224 |
| **LN Analysis** | | *tZn* | | 0 42 | 0 422 |

## Concentration

**Conc. Data, EV=224 ug/L CV=0.422**

| | | *Data-based LN* | | |
|---|---|---|---|---|
| **Avg:** | **224** | u | ln[tZn] | [tZn] |
| **SD:** | **94** | 3 | 5 5 | 693 |
| **CV:** | **0.42** | 0 | 5 35 | 206 |
| **Min:** | **16** | -3 | 4 11 | 61 |
| **Max:** | **410** | | | |
| **Median:** | **257** | | | |

0 731 0 731

**u=mLn{Conc.}+b:** 260.1 260

update for r2, EV, CV **r2=0.731, EV=260 ug/L CV=1.01; max r2=0.90** 1.011 1.01

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc. | 0.731 | u | lnConc | Conc |
| slope, m | 1 192 | 3 | 7 73 | 2266 |
| intercept, b | -6.209 | 0 | 5.21 | 183 |
| N | 31 | -3 | 2 69 | 15 |

| | | | |
|---|---|---|---|
| 0.675 | E[Conc] | 260 1 | Parameter Estimates |
| 19.2 | SD[Conc] | 263 | from LN regression |
| 0 41 | CV[Conc] | 1 01 | update graph label |

N 32

max r2 0.901

| Date | tZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| *update and rank for new data* | | | | | | |
| *14-May-98* | | 1 | 0.0194 | -2.067 | | |
| 15-Nov-98 | 15.5 | 2 | 0.0504 | -1.641 | 2.741 | 0.731 |
| 23-May-95 | 74 | 3 | 0.0814 | -1.396 | 4.304 | 0.857 |
| 12-Jun-95 | 75 | 4 | 0.1124 | -1.214 | 4.317 | 0.845 |
| 27-Jun-95 | 97 | 5 | 0.1434 | -1.065 | 4.575 | 0.849 |
| 19-May-94 | 102 | 6 | 0.1744 | -0.937 | 4.625 | 0.842 |
| 11-Jul-95 | 142 | 7 | 0.2054 | -0.822 | 4.956 | 0.847 |
| 16-May-91 | 145 | 8 | 0.2364 | -0 718 | 4 977 | 0 831 |
| 7-Jun-94 | 145 | 9 | 0.2674 | -0 621 | 4 977 | 0.814 |
| 9-May-95 | 151 | 10 | 0.2984 | -0.529 | 5.017 | 0 799 |
| 25-Jul-95 | 160 | 11 | 0.3295 | -0.441 | 5 075 | 0 787 |
| 23-Jun-94 | 161 | 12 | 0.3605 | -0.357 | 5.081 | 0 775 |
| 4-May-94 | 167 | 13 | 0.3915 | -0.275 | 5.118 | 0 784 |
| 20-Jul-94 | 198 | 14 | 0 4225 | -0 196 | 5.288 | 0.841 |
| 14-Aug-95 | 216 | 15 | 0 4535 | -0.117 | 5 375 | 0 872 |
| 8-Sep-94 | 251 | 16 | 0 4845 | -0.039 | 5.525 | 0.901 |
| 15-Aug-94 | 257 | 17 | 0.5155 | 0.039 | 5.549 | 0.889 |
| 15-Aug-94 | 257 | 18 | 0.5465 | 0.117 | 5.549 | 0.875 |
| 4-Oct-91 | 260 | 19 | 0.5775 | 0.196 | 5.561 | 0.858 |
| 13-Sep-95 | 261 | 20 | 0.6085 | 0.275 | 5.565 | 0.839 |
| 13-Apr-95 | 279 | 21 | 0.6395 | 0.357 | 5.631 | 0 827 |
| 16-Dec-93 | 300 | 22 | 0.6705 | 0.441 | 5 704 | 0.798 |
| 16-Dec-93 | 300 | 23 | 0 7016 | 0 529 | 5 704 | 0 809 |
| 24-Jan-94 | 300 | 24 | 0 7326 | 0 621 | 5 704 | 0.815 |
| 24-Jan-94 | 300 | 25 | 0 7636 | 0 718 | 5 704 | 0.811 |
| 4-Oct-94 | 308 | 26 | 0 7946 | 0 822 | 5 730 | 0 793 |
| 27-Oct-93 | 314 | 27 | 0.8256 | 0 937 | 5.749 | 0.796 |
| 8-Apr-94 | 315 | 28 | 0.8566 | 1.065 | 5.753 | 0.830 |
| 25-Apr-95 | 316 | 29 | 0.8876 | 1 214 | 5 756 | |
| 2-Dec-93 | 328 | 30 | 0.9186 | 1.396 | 5.793 | |
| 13-Nov-97 | 328 | 31 | 0.9496 | 1.641 | 5 793 | |
| 19-Apr-94 | 410 | 32 | 0.9806 | 2.067 | 6.016 | |

update for EV, CV

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **NM291** | | | 6 | 6.02 |
| **LN Analysis** | | **tZn** | | | 1.08 | 1.08 |
| **Discharge, Q** | | **Q Data, EV=6.02 cfs CV=1.08** | | | | |
| **Avg:** | **6** | **Q Data-based LN** | | | | |
| **SD:** | **6** | u | lnQ | Q | | |
| **CV:** | **1.08** | 3 | 4.0 | 57 | | |
| **Min:** | **0.04** | 0 | 1.41 | 4 | | |
| **Max:** | **25** | -3 | -1.22 | 0.3 | | |
| **Median:** | **3** | | | | | |

| | | |
|---|---|---|
| | 0.898 | 0.898 |
| | 8.4 | 8.43 |
| **u=mLn(Q)+b:** | 2.31 | 2.31 |

update for r2, EV, CV: **r2=0.898, EV=8.43 cfs CV=2.31; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.898 | u | lnQ | Q |
| slope, m | 0.736 | 3 | 5.28 | 197 |
| intercept, b | -0.890 | 0 | 1.21 | 3 |
| N | 32 | -3 | -2.87 | 0.1 |
| E[Q] | 8.4 | Parameter Estimates | | |
| SD[Q] | 19 | from LN regression | | |
| CV[Q] | 2.31 | update graph label | | |

N 32

max r2 0.974

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 15-Nov-98 | 0.0422 | 1 | 0.0194 | -2.067 | -3.165 | 0.898 |
| 16-Dec-93 | 0.82 | 2 | 0.0504 | -1.640 | -0.198 | 0.973 |
| 24-Jan-94 | 0.88 | 3 | 0.0814 | -1.396 | -0.128 | 0.973 |
| 4-Oct-91 | 0.89 | 4 | 0.1124 | -1.214 | -0.117 | 0.971 |
| 13-Sep-95 | 1.48 | 5 | 0.1434 | -1.065 | 0.392 | 0.968 |
| 15-Aug-94 | 1.53 | 6 | 0.1744 | -0.937 | 0.425 | 0.970 |
| 14-Aug-95 | 1.74 | 7 | 0.2054 | -0.822 | 0.554 | 0.971 |
| 16-Dec-93 | 1.81 | 8 | 0.2364 | -0.718 | 0.593 | 0.973 |
| 24-Jan-94 | 1.81 | 9 | 0.2674 | -0.621 | 0.593 | 0.974 |
| 8-Sep-94 | 1.88 | 10 | 0.2984 | -0.529 | 0.631 | 0.974 |
| 4-Oct-94 | 1.88 | 11 | 0.3295 | -0.441 | 0.631 | 0.972 |
| 2-Dec-93 | 2.04 | 12 | 0.3605 | -0.357 | 0.713 | 0.969 |
| 27-Oct-93 | 2.13 | 13 | 0.3915 | -0.275 | 0.756 | 0.965 |
| 25-Jul-95 | 2.31 | 14 | 0.4225 | -0.196 | 0.837 | 0.962 |
| 15-Aug-94 | 2.61 | 15 | 0.4535 | -0.117 | 0.959 | 0.959 |
| 13-Nov-97 | 2.63 | 16 | 0.4845 | -0.039 | 0.967 | 0.955 |
| 11-Jul-95 | 2.96 | 17 | 0.5155 | 0.039 | 1.085 | 0.956 |
| 20-Jul-94 | 3.81 | 18 | 0.5465 | 0.117 | 1.338 | 0.960 |
| 8-Apr-94 | 4.73 | 19 | 0.5775 | 0.196 | 1.554 | 0.957 |
| 23-Jun-94 | 5.16 | 20 | 0.6085 | 0.275 | 1.641 | 0.950 |
| 27-Jun-95 | 5.16 | 21 | 0.6395 | 0.357 | 1.641 | 0.943 |
| 25-Apr-95 | 5.39 | 22 | 0.6705 | 0.441 | 1.685 | 0.935 |
| 13-Apr-95 | 6.15 | 23 | 0.7016 | 0.529 | 1.816 | 0.933 |
| 7-Jun-94 | 7.36 | 24 | 0.7326 | 0.621 | 1.996 | 0.936 |
| 12-Jun-95 | 9.24 | 25 | 0.7636 | 0.718 | 2.224 | 0.934 |
| 4-May-94 | 10.13 | 26 | 0.7946 | 0.822 | 2.316 | 0.917 |
| 9-May-95 | 11.11 | 27 | 0.8256 | 0.937 | 2.408 | 0.891 |
| 19-May-94 | 12.79 | 28 | 0.8566 | 1.065 | 2.549 | 0.852 |
| 23-May-95 | 14.06 | 29 | 0.8876 | 1.214 | 2.643 | |
| 16-May-91 | 20 | 30 | 0.9186 | 1.396 | 2.996 | |
| 14-May-98 | 22.9 | 31 | 0.9496 | 1.641 | 3.131 | |
| 19-Apr-94 | 25.2 | 32 | 0.9806 | 2.067 | 3.227 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | NM293 | **Date:** 29-May-00 |
| **Chemical:** | dCd | **Analyst:** J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | |

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,746 | 7 | 17 | 0.5 | 0.00 | 0.00 | 0.00 |
| **SD:** | 589 | 7 | 15 | 0.4 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.06 | 0.88 | 0.90 | | | |
| **Min:** | 33,374 | 1 | 4 | 0.1 | -0.78 | -0.88 | -0.98 |
| **Max:** | 36,114 | 26 | 79 | 2 | 2.59 | 4.12 | 3.19 |
| **Median:** | 34,720 | 5 | 14 | 0.3 | -0.50 | -0.20 | -0.45 |

**dCd NM293 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

**Conc. = mQ+b (r2=0.09)** update r2

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 Q,[COC] | 0.09 | [dCd] | Q | r2 | 0.001 | 0.001 |
| slope, m | -0.6 | 20 | 1.2 | m | -0.0004 | -0.00004 |
| intercept, b | 21.1 | 17 | 7.0 | b | 22 | 2.79 |
| N | 24 | 6 | 26 | | | |

**LnConc. = mLn(Q)+b (r2=0.22)** update r2

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 lnQ,ln[COC] | 0.22 | ln[dCd] | ln Q | [dCd] | Q | |
| slope, m | -0.31 | 3.03 | 0.22 | 21 | 1 | |
| intercept, b | 3.10 | 2.48 | 1.95 | 12 | 7 | |
| N | 24 | 2.07 | 3.27 | 8 | 26 | |

for graph: 0

**N= 24**

| | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd NM293 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 25.5 | 3.8 | 0.5 | 3.24 | 1.34 | -0.65 | 2.49 | -0.88 | 0.13 |
| MFG | 4-Oct-91 | 1.24 | 8.3 | 0.1 | 0.22 | 2.12 | -2.89 | -0.78 | -0.58 | -0.98 |
| IDEQ | 4-May-94 | 9.52 | 20.3 | 1.0 | 2.25 | 3.01 | 0.04 | 0.34 | 0.22 | 1.38 |
| IDEQ | 19-May-94 | 10.44 | 11 | 0.6 | 2.35 | 2.40 | -0.48 | 0.46 | -0.40 | 0.36 |
| IDEQ | 7-Jun-94 | 4.78 | 13 | 0.3 | 1.56 | 2.56 | -1.10 | -0.30 | -0.27 | -0.32 |
| IDEQ | 23-Jun-94 | 4.25 | 14 | 0.3 | 1.45 | 2.64 | -1.14 | -0.37 | -0.20 | -0.35 |
| IDEQ | 20-Jul-94 | 2.68 | 14 | 0.2 | 0.99 | 2.64 | -1.60 | -0.58 | -0.20 | -0.63 |
| IDEQ | 20-Jul-94 | 3.52 | 14 | 0.3 | 1.26 | 2.64 | -1.33 | -0.47 | -0.20 | -0.48 |
| IDEQ | 15-Aug-94 | 2.61 | 16 | 0.2 | 0.96 | 2.77 | -1.49 | -0.59 | -0.07 | -0.58 |
| IDEQ | 15-Aug-94 | 1.86 | 16 | 0.2 | 0.62 | 2.77 | -1.83 | -0.69 | -0.07 | -0.73 |
| IDEQ | 8-Sep-94 | 2.4 | 14 | 0.2 | 0.88 | 2.64 | -1.71 | -0.62 | -0.20 | -0.68 |
| IDEQ | 4-Oct-94 | 2.4 | 14 | 0.2 | 0.88 | 2.64 | -1.71 | -0.62 | -0.20 | -0.68 |
| IDEQ | 9-May-95 | 17.74 | 13 | 1.2 | 2.88 | 2.56 | 0.22 | 1.45 | -0.27 | 1.86 |
| IDEQ | 13-May-95 | 7.25 | 46 | 1.8 | 1.98 | 3.83 | 0.58 | 0.03 | 1.95 | 3.19 |
| IDEQ | 23-May-95 | 20.15 | 9.3 | 1.0 | 3.00 | 2.23 | 0.01 | 1.77 | -0.51 | 1.30 |
| IDEQ | 12-Jun-95 | 7.47 | 9 | 0.4 | 2.01 | 2.20 | -1.02 | 0.06 | -0.53 | -0.25 |
| IDEQ | 27-Jun-95 | 2.92 | 12 | 0.2 | 1.07 | 2.48 | -1.67 | -0.55 | -0.33 | -0.67 |
| IDEQ | 11-Jul-95 | 3.9 | 12 | 0.3 | 1.36 | 2.48 | -1.38 | -0.42 | -0.33 | -0.51 |
| IDEQ | 25-Jul-95 | 2.46 | 13 | 0.2 | 0.90 | 2.56 | -1.76 | -0.61 | -0.27 | -0.70 |
| IDEQ | 14-Aug-95 | 2.08 | 16 | 0.2 | 0.73 | 2.77 | -1.72 | -0.66 | -0.07 | -0.69 |
| IDEQ | 13-Sep-95 | 1.92 | 18 | 0.2 | 0.65 | 2.89 | -1.68 | -0.69 | 0.07 | -0.67 |
| URS | 12-Nov-97 | 3.11 | 17.5 | 0.3 | 1.13 | 2.86 | -1.23 | -0.53 | 0.04 | -0.42 |
| URS | 14-May-98 | 26.2 | 4.6 | 0.6 | 3.27 | 1.53 | -0.43 | 2.59 | -0.83 | 0.44 |
| URS | 15-Nov-98 | 1.792 | 78.5 | 0.8 | 0.58 | 4.36 | -0.28 | -0.70 | 4.12 | 0.70 |

dCd

**Concentration over time analysis**

| | dCd | NM293 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.191** | **0.00044** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first | 16-May-91 | 2.02 | 8 | | |
| mid | 20-Jan-95 | 2.61 | 14 | | |
| last | 15-Nov-98 | 3.22 | 25 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | dCd | NM293 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.088** | **0.00040** |
| | **Time** | **LnLoad** | **Load** | | |
| first | 16-May-91 | -1.65 | 0.2 | | |
| mid | 20-Jan-95 | -1.10 | 0.3 | | |
| last | 15-Nov-98 | -0.54 | 1 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

| | max r2 | 0.191 | | max r2 | 0.904 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points delete last 4 rows | | | only on >4 data points delete last 4 rows | | |
| | 0.191 | 0.00044 | -12.63 | 0.088 | 0.00040 | -15.06 |
| | 0.077 | 0.00028 | -7.23 | 0.165 | 0.00063 | -22.90 |
| | 0.038 | 0.00023 | -5.24 | 0.046 | 0.00034 | -12.94 |
| | 0.051 | 0.00027 | -6.59 | 0.088 | 0.00046 | -17.05 |
| | 0.043 | 0.00025 | -5.94 | 0.120 | 0.00054 | -19.88 |
| | 0.040 | 0.00024 | -5.81 | 0.127 | 0.00056 | -20.78 |
| | 0.039 | 0.00025 | -5.93 | 0.131 | 0.00059 | -21.63 |
| | 0.038 | 0.00025 | -6.04 | 0.116 | 0.00056 | -20.60 |
| | 0.037 | 0.00025 | -6.18 | 0.116 | 0.00056 | -20.61 |
| | 0.042 | 0.00028 | -6.98 | 0.097 | 0.00053 | -19.71 |
| | 0.047 | 0.00031 | -8.04 | 0.085 | 0.00044 | -16.57 |
| | 0.047 | 0.00032 | -8.48 | 0.041 | 0.00035 | -13.24 |
| | 0.047 | 0.00033 | -9.01 | 0.016 | 0.00022 | -8.74 |
| | 0.043 | 0.00033 | -8.71 | 0.055 | 0.00038 | -14.49 |
| | 0.131 | 0.00052 | -15.54 | 0.253 | 0.00065 | -24.09 |
| | 0.108 | 0.00048 | -14.09 | 0.706 | 0.00090 | -33.09 |
| | 0.079 | 0.00041 | -11.76 | 0.860 | 0.00103 | -37.46 |
| | 0.065 | 0.00039 | -10.94 | 0.849 | 0.00103 | -37.71 |
| | 0.046 | 0.00035 | -9.50 | 0.904 | 0.00114 | -41.50 |
| | 0.029 | 0.00031 | -8.01 | 0.884 | 0.00115 | -41.86 |

update for EV, CV

**dCd** **NM293**

**LN Analysis** **dCd**

**Load** **Load Data, EV=0.5 lbs/day CV=.9**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **0.5** | **Load Data-based LN** | | |
| **SD:** | **0.4** | u | ln dCd Load | dCd Load |
| **CV:** | **0.90** | 3 | 1.2 | 3 |
| **Min:** | **0.1** | 0 | -1.06 | 0.35 |
| **Max:** | **2** | -3 | -3.36 | 0.03 |
| **Median:** | **0.3** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.940, EV=0.5 lbs/day CV=1.06; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad | 0.940 | u | lnLoad | Load |
| slope, m | 1.149 | 3 | 1.52 | 5 |
| intercept, b | 1.257 | 0 | -1.09 | 0.3 |
| N | 24 | -3 | -3.70 | 0.02 |
| E[Load] | 0.5 | Parameter Estimates | | |
| SD[Load] | 1 | from LN regression | | |
| CV[Load] | 1.06 | update graph label | | |

| | | | | | | max r2 0.980 |
|---|---|---|---|---|---|---|
| | **dCd** | N 24 | | | | |
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 4-Oct-91 | **0.1** | 1 | 0.0258 | -1.947 | -2.894 | 0.940 |
| 15-Aug-94 | **0.2** | 2 | 0.0670 | -1.498 | -1.832 | 0.928 |
| 25-Jul-95 | **0.2** | 3 | 0.1082 | -1.236 | -1.760 | 0.944 |
| 14-Aug-95 | **0.2** | 4 | 0.1495 | -1.039 | -1.720 | 0.959 |
| 8-Sep-94 | **0.2** | 5 | 0.1907 | -0.875 | -1.711 | 0.970 |
| 4-Oct-94 | **0.2** | 6 | 0.2320 | -0.732 | -1.711 | 0.977 |
| 13-Sep-95 | **0.2** | 7 | 0.2732 | -0.603 | -1.682 | 0.980 |
| 27-Jun-95 | **0.2** | 8 | 0.3144 | -0.483 | -1.669 | 0.980 |
| 20-Jul-94 | **0.2** | 9 | 0.3557 | -0.370 | -1.600 | 0.978 |
| 15-Aug-94 | **0.2** | 10 | 0.3969 | -0.261 | -1.493 | 0.975 |
| 11-Jul-95 | **0.3** | 11 | 0.4381 | -0.156 | -1.379 | 0.971 |
| 20-Jul-94 | **0.3** | 12 | 0.4794 | -0.052 | -1.328 | 0.967 |
| 12-Nov-97 | **0.3** | 13 | 0.5206 | 0.052 | -1.228 | 0.961 |
| 23-Jun-94 | **0.3** | 14 | 0.5619 | 0.156 | -1.139 | 0.955 |
| 7-Jun-94 | **0.3** | 15 | 0.6031 | 0.261 | -1.096 | 0.946 |
| 12-Jun-95 | **0.4** | 16 | 0.6443 | 0.370 | -1.017 | 0.945 |
| 16-May-91 | **0.5** | 17 | 0.6856 | 0.483 | -0.651 | 0.976 |
| 19-May-94 | **0.6** | 18 | 0.7268 | 0.603 | -0.482 | 0.973 |
| 14-May-98 | **0.6** | 19 | 0.7680 | 0.732 | -0.433 | 0.964 |
| 15-Nov-98 | **0.8** | 20 | 0.8093 | 0.875 | -0.279 | 0.961 |
| 23-May-95 | **1.0** | 21 | 0.8505 | 1.039 | 0.008 | |
| 4-May-94 | **1.0** | 22 | 0.8918 | 1.236 | 0.039 | |
| 9-May-95 | **1.2** | 23 | 0.9330 | 1.498 | 0.216 | |
| 13-May-95 | **1.8** | 24 | 0.9742 | 1.947 | 0.585 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | NM293 | | |
| **LN Analysis** | | dCd | | |
| **Concentration** | | Conc. Data, EV=17 ug/L CV=.88 | | |
| **Avg:** | **17** | **Data-based LN** | | |
| **SD:** | **15** | u | ln[dCd] | [dCd] |
| **CV:** | **0.88** | 3 | 4.8 | 123 |
| **Min:** | **4** | 0 | 2.55 | 13 |
| **Max:** | **79** | -3 | 0.27 | 1 |
| **Median:** | **14** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV $r^2$=0.847, EV=17.3 ug/L CV=0.76; max r2=0.94

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc | 0.847 | u | lnConc | Conc |
| *slope, m* | 1.476 | 3 | 4.66 | 105 |
| *intercept, b* | -3.870 | 0 | 2.62 | 14 |
| N | 24 | -3 | 0.59 | 2 |
| E[Conc] | 17.3 | Parameter Estimates | | |
| SD[Conc] | 13 | from LN regression | | |
| CV[Conc] | 0.76 | update graph label | | |

| Date | dCd Concentration ug/L Ranked | i rank | N, 24 i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.935 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-91 | 3.8 | 1 | 0.0258 | -1.947 | 1.335 | 0.847 |
| 14-May-98 | 4.0 | 2 | 0.0676 | -1.498 | 1.526 | 0.813 |
| 4-Oct-91 | 5.5 | 3 | 0.1082 | -1.236 | 2.116 | 0.781 |
| 12-Jun-95 | 6 | 4 | 0.1499 | -1.039 | 2.197 | 0.767 |
| 23-May-95 | 9.5 | 5 | 0.1907 | -0.875 | 2.230 | 0.753 |
| 19-May-94 | 11 | 6 | 0.2320 | -0.732 | 2.398 | 0.736 |
| 27-Jun-95 | 12 | 7 | 0.2732 | -0.603 | 2.485 | 0.734 |
| 11-Jul-95 | 12 | 8 | 0.3144 | -0.483 | 2.485 | 0.742 |
| 7-Jun-94 | 13 | 9 | 0.3557 | -0.370 | 2.565 | 0.746 |
| 9-May-95 | 13 | 10 | 0.3969 | -0.261 | 2.565 | 0.762 |
| 25-Jul-95 | 13 | 11 | 0.4381 | -0.156 | 2.565 | 0.775 |
| 23-Jun-94 | 14 | 12 | 0.4794 | -0.052 | 2.639 | 0.784 |
| 20-Jul-94 | 14 | 13 | 0.5206 | 0.052 | 2.639 | 0.807 |
| 20-Jul-94 | 14 | 14 | 0.5619 | 0.156 | 2.639 | 0.828 |
| 8-Sep-94 | 14 | 15 | 0.6031 | 0.261 | 2.639 | 0.846 |
| 4-Oct-94 | 14 | 16 | 0.6443 | 0.370 | 2.639 | 0.858 |
| 15-Aug-94 | 16 | 17 | 0.6856 | 0.483 | 2.773 | 0.863 |
| 15-Aug-94 | 16 | 18 | 0.7268 | 0.603 | 2.773 | 0.895 |
| 14-Aug-95 | 16 | 19 | 0.7680 | 0.732 | 2.773 | 0.921 |
| 12-Nov-97 | 17.5 | 20 | 0.8093 | 0.875 | 2.862 | 0.935 |
| 13-Sep-95 | 18 | 21 | 0.8505 | 1.039 | 2.890 | |
| 4-May-94 | 20.3 | 22 | 0.8918 | 1.236 | 3.011 | |
| 13-May-95 | 46 | 23 | 0.9330 | 1.498 | 3.829 | |
| 15-Nov-98 | 78.5 | 24 | 0.9742 | 1.947 | 4.363 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dCd** | | NM293 | | |
| **LN Analysis** | | dCd | | |
| **Discharge, Q** | | Q Data, EV=7 cfs CV=1.06 | | |
| **Avg:** | 7 | Q Data-based LN | | |
| **SD:** | 7 | u | lnQ | Q |
| **CV:** | 1.06 | 3 | 4.2 | 65 |
| **Min:** | 1 | 0 | 1.57 | 5 |
| **Max:** | 26 | -3 | -1.03 | 0.4 |
| **Median:** | 3 | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV **r2=0.913, EV=7.3 cfs CV=1.26; max r2=0.96**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ | 0.913 | u | lnQ | Q |
| slope, m | 1.025 | 3 | 4.44 | 85 |
| intercept, b | -1.546 | 0 | 1.51 | 5 |
| N | 24 | -3 | -1.42 | 0.2 |
| E[Q] | 7.3 | Parameter Estimates | | |
| SD[Q] | 9 | from LN regression | | |
| CV[Q] | 1.26 | update graph label | | |

| | Q | N 24 | | | | max r2 0.958 |
|---|---|---|---|---|---|---|
| **Date** | **Discharge cfs Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | **r2 forward** |
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.24 | 1 | 0.0258 | -1.947 | 0.215 | 0.913 |
| 15-Nov-98 | 1.792 | 2 | 0.0670 | -1.498 | 0.583 | 0.918 |
| 15-Aug-94 | 1.86 | 3 | 0.1082 | -1.236 | 0.621 | 0.933 |
| 13-Sep-95 | 1.92 | 4 | 0.1495 | -1.039 | 0.652 | 0.942 |
| 14-Aug-95 | 2.08 | 5 | 0.1907 | -0.875 | 0.732 | 0.946 |
| 8-Sep-94 | 2.4 | 6 | 0.2320 | -0.732 | 0.875 | 0.949 |
| 4-Oct-94 | 2.4 | 7 | 0.2732 | -0.603 | 0.875 | 0.955 |
| 25-Jul-95 | 2.46 | 8 | 0.3144 | -0.483 | 0.900 | 0.958 |
| 15-Aug-94 | 2.61 | 9 | 0.3557 | -0.370 | 0.959 | 0.957 |
| 20-Jul-94 | 2.68 | 10 | 0.3969 | -0.261 | 0.986 | 0.955 |
| 27-Jun-95 | 2.92 | 11 | 0.4381 | -0.156 | 1.072 | 0.949 |
| 12-Nov-97 | 3.11 | 12 | 0.4794 | -0.052 | 1.135 | 0.941 |
| 20-Jul-94 | 3.52 | 13 | 0.5206 | 0.052 | 1.258 | 0.931 |
| 11-Jul-95 | 3.9 | 14 | 0.5619 | 0.156 | 1.361 | 0.919 |
| 23-Jun-94 | 4.25 | 15 | 0.6031 | 0.261 | 1.447 | 0.903 |
| 7-Jun-94 | 4.78 | 16 | 0.6443 | 0.370 | 1.564 | 0.887 |
| 13-May-95 | 7.25 | 17 | 0.6856 | 0.483 | 1.981 | 0.877 |
| 12-Jun-95 | 7.47 | 18 | 0.7268 | 0.603 | 2.011 | 0.843 |
| 4-May-94 | 9.52 | 19 | 0.7680 | 0.732 | 2.253 | 0.801 |
| 19-May-94 | 10.44 | 20 | 0.8093 | 0.875 | 2.346 | 0.725 |
| 9-May-95 | 17.74 | 21 | 0.8505 | 1.039 | 2.876 | |
| 23-May-95 | 20.15 | 22 | 0.8918 | 1.236 | 3.003 | |
| 16-May-91 | 25.5 | 23 | 0.9330 | 1.498 | 3.239 | |
| 14-May-98 | 26.2 | 24 | 0.9742 | 1.947 | 3.266 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM293 | **Date:** | 30-May-00 |
| **Chemical:** | dPb | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,746 | 7 | 15 | 0.4 | 0.00 | 0.00 | 0.00 |
| **SD:** | 589 | 7 | 17 | 0.3 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.06 | 1.13 | 0.80 | | | |
| **Min:** | 33,374 | 1 | 3 | 0.05 | -0.78 | -0.71 | -1.10 |
| **Max:** | 36,114 | 26 | 96 | 1.15 | 2.59 | 4.70 | 2.38 |
| **Median:** | 34,720 | 3 | 12 | 0.24 | -0.50 | -0.17 | -0.48 |

**dPb NM293 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.07)** update r2

| | | | | |
|---|---|---|---|---|
| r2 Q,[COC]: | 0.07 | [dPb] | Q | |
| slope, m: | -0.6 | 19 | 1.2 | |
| intercept, b: | 19.4 | 15 | 7.0 | |
| N: 24 | | 4 | 26 | |

**LnConc. = mLn(Q)+b (r2=0.26)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.26 | ln[dPb] | ln Q | [dPb] | Q |
| slope, m: | -0.33 | 2.91 | 0.22 | 18 | 1 |
| intercept, b: | 2.98 | 2.35 | 1.95 | 10 | 7 |
| N: 24 | | 1.92 | 3.27 | 7 | 26 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2: | 0.001 | 0.001 |
| m: | -0.0004 | -0.00004 |
| b: | 22 | 2.79 |

**LnQ = mTime +b**

for graph 0

**N= 24**

| | Sampling Date | Q Discharge cfs | dPb Concentration ug/L | dPb Load lbs/day | Ln Q | Ln dPb Conc. | Ln dPb Load | dPb NM293 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 25.5 | 3 | 0.41 | 3.24 | 1.10 | -0.89 | 2.49 | -0.71 | 0.06 |
| MFG | 4-Oct-91 | 1.24 | 7 | 0.05 | 0.22 | 1.95 | -3.06 | -0.78 | -0.48 | -1.10 |
| IDEQ | 4-May-94 | 9.52 | 12.6 | 0.65 | 2.25 | 2.53 | -0.44 | 0.34 | -0.15 | 0.80 |
| IDEQ | 19-May-94 | 10.44 | 9 | 0.51 | 2.35 | 2.20 | -0.68 | 0.46 | -0.36 | 0.35 |
| IDEQ | 7-Jun-94 | 4.78 | 10 | 0.26 | 1.56 | 2.30 | -1.36 | -0.30 | -0.30 | -0.43 |
| IDEQ | 23-Jun-94 | 4.25 | 19 | 0.43 | 1.45 | 2.94 | -0.83 | -0.37 | 0.22 | 0.13 |
| IDEQ | 20-Jul-94 | 2.68 | 13 | 0.19 | 0.99 | 2.56 | -1.67 | -0.58 | -0.13 | -0.65 |
| IDEQ | 20-Jul-94 | 3.52 | 13 | 0.25 | 1.26 | 2.56 | -1.40 | -0.47 | -0.13 | -0.47 |
| IDEQ | 15-Aug-94 | 2.61 | 15 | 0.21 | 0.96 | 2.71 | -1.56 | -0.59 | -0.01 | -0.58 |
| IDEQ | 15-Aug-94 | 1.86 | 15 | 0.15 | 0.62 | 2.71 | -1.90 | -0.69 | -0.01 | -0.77 |
| IDEQ | 8-Sep-94 | 2.4 | 15 | 0.19 | 0.88 | 2.71 | -1.64 | -0.62 | -0.01 | -0.63 |
| IDEQ | 4-Oct-94 | 2.4 | 12 | 0.15 | 0.88 | 2.48 | -1.86 | -0.62 | -0.19 | -0.76 |
| IDEQ | 9-May-95 | 17.74 | 12 | 1.15 | 2.88 | 2.48 | 0.14 | 1.45 | -0.19 | 2.38 |
| IDEQ | 13-May-95 | 7.25 | 12.6 | 0.49 | 1.98 | 2.53 | -0.71 | 0.03 | -0.15 | 0.31 |
| IDEQ | 23-May-95 | 20.15 | 9 | 0.98 | 3.00 | 2.20 | -0.02 | 1.77 | -0.36 | 1.84 |
| IDEQ | 12-Jun-95 | 7.47 | 8 | 0.32 | 2.01 | 2.08 | -1.13 | 0.06 | -0.42 | -0.23 |
| IDEQ | 27-Jun-95 | 2.92 | 9 | 0.14 | 1.07 | 2.20 | -1.96 | -0.55 | -0.36 | -0.80 |
| IDEQ | 11-Jul-95 | 3.9 | 11 | 0.23 | 1.36 | 2.40 | -1.47 | -0.42 | -0.24 | -0.52 |
| IDEQ | 25-Jul-95 | 2.46 | 11 | 0.15 | 0.90 | 2.40 | -1.93 | -0.61 | -0.24 | -0.79 |
| IDEQ | 14-Aug-95 | 2.08 | 14 | 0.16 | 0.73 | 2.64 | -1.85 | -0.66 | -0.07 | -0.75 |
| IDEQ | 13-Sep-95 | 1.92 | 17 | 0.18 | 0.65 | 2.83 | -1.74 | -0.69 | 0.11 | -0.69 |
| URS | 12-Nov-97 | 3.11 | 14.1 | 0.24 | 1.13 | 2.65 | -1.44 | -0.53 | -0.06 | -0.50 |
| URS | 14-May-98 | 26.2 | 7.5 | 1.06 | 3.27 | 2.01 | 0.06 | 2.59 | -0.45 | 2.10 |
| URS | 15-Nov-98 | 1.792 | 95.9 | 0.92 | 0.58 | 4.56 | -0.08 | -0.70 | 4.70 | 1.68 |

dPb

**Concentration over time analysis**

| | dPb | NM293 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | ***Concentration over time*** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.361** | **0.00058** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 1.69 | 5 | | |
| mid. | 20-Jan-95 | 2.47 | 12 | | |
| last: | 15-Nov-98 | 3.28 | 27 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | dPb | NM293 | | | |
|---|---|---|---|---|---|
| | | | | ***Load over time*** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.172** | **0.00054** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | -1.97 | 0.1 | | |
| mid. | 20-Jan-95 | -1.24 | 0.3 | | |
| last. | 15-Nov-98 | -0.48 | 0.6 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

max r2: 0.361

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.361 | 0.00058 | -17.67 |
| 0.220 | 0.00045 | -12.98 |
| 0.165 | 0.00044 | -12.69 |
| 0.168 | 0.00045 | -13.15 |
| 0.152 | 0.00043 | -12.44 |
| 0.140 | 0.00042 | -12.00 |
| 0.176 | 0.00048 | -14.03 |
| 0.182 | 0.00050 | -14.72 |
| 0.190 | 0.00052 | -15.59 |
| 0.214 | 0.00057 | -17.29 |
| 0.245 | 0.00063 | -19.52 |
| 0.286 | 0.00071 | -22.28 |
| 0.301 | 0.00076 | -24.18 |
| 0.304 | 0.00078 | -24.89 |
| 0.313 | 0.00081 | -26.08 |
| 0.291 | 0.00080 | -25.39 |
| 0.252 | 0.00074 | -23.43 |
| 0.210 | 0.00069 | -21.49 |
| 0.176 | 0.00066 | -20.63 |
| 0.126 | 0.00061 | -18.75 |

max r2: 0.803

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.172 | 0.00054 | -20.10 |
| 0.279 | 0.00079 | -28.65 |
| 0.132 | 0.00055 | -20.39 |
| 0.181 | 0.00064 | -23.60 |
| 0.225 | 0.00072 | -26.38 |
| 0.226 | 0.00074 | -26.97 |
| 0.268 | 0.00082 | -29.73 |
| 0.253 | 0.00080 | -29.29 |
| 0.253 | 0.00082 | -30.03 |
| 0.241 | 0.00082 | -30.03 |
| 0.207 | 0.00077 | -28.05 |
| 0.183 | 0.00074 | -27.04 |
| 0.140 | 0.00065 | -23.91 |
| 0.274 | 0.00084 | -30.67 |
| 0.342 | 0.00095 | -34.63 |
| 0.691 | 0.00122 | -44.40 |
| 0.788 | 0.00135 | -49.12 |
| 0.766 | 0.00133 | -48.26 |
| 0.803 | 0.00145 | -52.63 |
| 0.763 | 0.00145 | -52.60 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dPb** | | **NM293** | | |
| **LN Analysis** | | **dPb** | | |
| **Load** | | **Load Data, EV=0.4 lbs/d CV=.80** | | |
| **Avg:** | **0.4** | **Load Data-based LN** | | |
| **SD:** | **0.3** | u | ln dPb Load | dPb Load |
| **CV:** | **0.80** | 3 | 0.9 | 3 |
| **Min:** | **0.05** | 0 | -1.18 | 0.31 |
| **Max:** | **1.1** | -3 | -3.30 | 0.04 |
| **Median:** | **0.2** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.943, EV=0.4lbs/d CV=1.01; max r2=0.96**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.943 | u | lnLoad | Load |
| slope, m: | 1.193 | 3 | 1.29 | 4 |
| intercept, b: | 1.464 | 0 | -1.23 | 0.3 |
| N: | 24 | -3 | -3.74 | 0.02 |
| E[Load]: | 0.4 | Parameter Estimates | | |
| SD[Load]: | 0.4 | from LN regression | | |
| CV[Load]: | 1.01 | update graph label | | |

| Date | dPb Load lbs/day Ranked | N: 24 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.959 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | **0.05** | 1 | 0.0258 | -1.947 | -3.064 | 0.943 |
| 27-Jun-95 | **0.14** | 2 | 0.0670 | -1.498 | -1.956 | 0.934 |
| 25-Jul-95 | **0.15** | 3 | 0.1082 | -1.236 | -1.927 | 0.948 |
| 15-Aug-94 | **0.15** | 4 | 0.1495 | -1.039 | -1.896 | 0.956 |
| 4-Oct-94 | **0.15** | 5 | 0.1907 | -0.875 | -1.865 | 0.959 |
| 14-Aug-95 | **0.16** | 6 | 0.2320 | -0.732 | -1.854 | 0.959 |
| 13-Sep-95 | **0.18** | 7 | 0.2732 | -0.603 | -1.740 | 0.956 |
| 20-Jul-94 | **0.19** | 8 | 0.3144 | -0.483 | -1.674 | 0.953 |
| 8-Sep-94 | **0.19** | 9 | 0.3557 | -0.370 | -1.642 | 0.949 |
| 15-Aug-94 | **0.21** | 10 | 0.3969 | -0.261 | -1.558 | 0.942 |
| 11-Jul-95 | **0.23** | 11 | 0.4381 | -0.156 | -1.466 | 0.934 |
| 12-Nov-97 | **0.24** | 12 | 0.4794 | -0.052 | -1.444 | 0.924 |
| 20-Jul-94 | **0.25** | 13 | 0.5206 | 0.052 | -1.402 | 0.911 |
| 7-Jun-94 | **0.26** | 14 | 0.5619 | 0.156 | -1.358 | 0.897 |
| 12-Jun-95 | **0.32** | 15 | 0.6031 | 0.261 | -1.135 | 0.892 |
| 16-May-91 | **0.41** | 16 | 0.6443 | 0.370 | -0.888 | 0.877 |
| 23-Jun-94 | **0.43** | 17 | 0.6856 | 0.483 | -0.834 | 0.847 |
| 13-May-95 | **0.49** | 18 | 0.7268 | 0.603 | -0.710 | 0.806 |
| 19-May-94 | **0.51** | 19 | 0.7680 | 0.732 | -0.682 | 0.743 |
| 4-May-94 | **0.65** | 20 | 0.8093 | 0.875 | -0.438 | 0.709 |
| 15-Nov-98 | **0.92** | 21 | 0.8505 | 1.039 | -0.078 | |
| 23-May-95 | **0.98** | 22 | 0.8918 | 1.236 | -0.025 | |
| 14-May-98 | **1.06** | 23 | 0.9330 | 1.498 | 0.056 | |
| 9-May-95 | **1.15** | 24 | 0.9742 | 1.947 | 0.136 | |

| dPb | | update for EV, CV: NM293 | | |
|---|---|---|---|---|
| LN Analysis | | dPb | | |
| **Concentration** | | Conc. Data, EV=15 ug/L CV=1.13 | | |
| Avg: | 15 | Data-based LN | | |
| SD: | 17 | u | ln[dPb] | [dPb] |
| CV: | 1.13 | 3 | 5.0 | 153 |
| Min: | 3 | 0 | 2.31 | 10 |
| Max: | 96 | -3 | -0.41 | 1 |
| Median: | 12 | | | |

| dPb | | update for NM293 |
|---|---|---|
| LN Analysis | | dPb |
| **Discharge, Q** | | Q Data, |
| Avg: | 7 | Q Data-b |
| SD: | 7 | u |
| CV: | 1.06 | 3 |
| Min: | 1 | 0 |
| Max: | 26 | -3 |
| Median: | 3 | |

u=mLn(Conc.)+b:

update for r2, EV, CV: $r^2$=0.760, EV=15.3 ug/L CV=0.78; max r2=0.80

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.760 | u | lnConc. | Conc. |
| slope, m: | 1.453 | 3 | 4.55 | 95 |
| intercept, b: | -3.616 | 0 | 2.49 | 12 |
| N: | 24 | -3 | 0.42 | 2 |
| E[Conc]: | 15.3 | Parameter Estimates | | |
| SD[Conc]: | 12 | from LN regression | | |
| CV[Conc]: | 0.78 | update graph label | | |

u=mLn(Q)+b:

update for r2, EV, CV: r2=0.913, EV=7.3 cfs CV

| | |
|---|---|
| r2 u,lnQ: | 0.913 |
| slope, m: | 1.025 |
| intercept, b: | -1.546 |
| N: | 24 |
| E[Q]: | 7.3 |
| SD[Q] | 9 |
| CV[Q] | 1.26 |

| Date | dPb Concentration ug/L Ranked | N: 24 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.799 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-91 | 3 | 1 | 0.0258 | -1.947 | 1.099 | 0.760 |
| 4-Oct-91 | 7 | 2 | 0.0670 | -1.498 | 1.946 | 0.707 |
| 14-May-98 | 7.5 | 3 | 0.1082 | -1.236 | 2.015 | 0.691 |
| 12-Jun-95 | 8 | 4 | 0.1495 | -1.039 | 2.079 | 0.675 |
| 19-May-94 | 9 | 5 | 0.1907 | -0.875 | 2.197 | 0.659 |
| 23-May-95 | 9 | 6 | 0.2320 | -0.732 | 2.197 | 0.653 |
| 27-Jun-95 | 9 | 7 | 0.2732 | -0.603 | 2.197 | 0.640 |
| 7-Jun-94 | 10 | 8 | 0.3144 | -0.483 | 2.303 | 0.621 |
| 11-Jul-95 | 11 | 9 | 0.3557 | -0.370 | 2.398 | 0.611 |
| 25-Jul-95 | 11 | 10 | 0.3969 | -0.261 | 2.398 | 0.612 |
| 4-Oct-94 | 12 | 11 | 0.4381 | -0.156 | 2.485 | 0.609 |
| 9-May-95 | 12 | 12 | 0.4794 | -0.052 | 2.485 | 0.620 |
| 4-May-94 | 12.6 | 13 | 0.5206 | 0.052 | 2.534 | 0.627 |
| 13-May-95 | 12.6 | 14 | 0.5619 | 0.156 | 2.534 | 0.642 |
| 20-Jul-94 | 13 | 15 | 0.6031 | 0.261 | 2.565 | 0.654 |
| 20-Jul-94 | 13 | 16 | 0.6443 | 0.370 | 2.565 | 0.671 |
| 14-Aug-95 | 14 | 17 | 0.6856 | 0.483 | 2.639 | 0.684 |
| 12-Nov-97 | 14.1 | 18 | 0.7268 | 0.603 | 2.646 | 0.714 |
| 15-Aug-94 | 15 | 19 | 0.7680 | 0.732 | 2.708 | 0.745 |
| 15-Aug-94 | 15 | 20 | 0.8093 | 0.875 | 2.708 | 0.799 |
| 8-Sep-94 | 15 | 21 | 0.8505 | 1.039 | 2.708 | |
| 13-Sep-95 | 17 | 22 | 0.8918 | 1.236 | 2.833 | |
| 23-Jun-94 | 19 | 23 | 0.9330 | 1.498 | 2.944 | |
| 15-Nov-98 | 95.9 | 24 | 0.9742 | 1.947 | 4.563 | |

| Date | Q Discharge cfs Ranked | N i rank |
|---|---|---|
| update and rank for new data | | |
| 4-Oct-91 | 1.24 | 1 |
| 15-Nov-98 | 1.792 | 2 |
| 15-Aug-94 | 1.86 | 3 |
| 13-Sep-95 | 1.92 | 4 |
| 14-Aug-95 | 2.08 | 5 |
| 8-Sep-94 | 2.4 | 6 |
| 4-Oct-94 | 2.4 | 7 |
| 25-Jul-95 | 2.46 | 8 |
| 15-Aug-94 | 2.61 | 9 |
| 20-Jul-94 | 2.68 | 10 |
| 27-Jun-95 | 2.92 | 11 |
| 12-Nov-97 | 3.11 | 12 |
| 20-Jul-94 | 3.52 | 13 |
| 11-Jul-95 | 3.9 | 14 |
| 23-Jun-94 | 4.25 | 15 |
| 7-Jun-94 | 4.78 | 16 |
| 13-May-95 | 7.25 | 17 |
| 12-Jun-95 | 7.47 | 18 |
| 4-May-94 | 9.52 | 19 |
| 19-May-94 | 10.44 | 20 |
| 9-May-95 | 17.74 | 21 |
| 23-May-95 | 20.15 | 22 |
| 16-May-91 | 25.5 | 23 |
| 14-May-98 | 26.2 | 24 |

r EV, CV:

**EV=7 cfs CV=1.06**
**-based LN**

| lnQ | Q |
|---|---|
| 4.2 | 65 |
| 1.57 | 5 |
| -1.03 | 0.4 |

**V=1.26; max r2=0.96**

| u | lnQ | Q |
|---|---|---|
| 3 | 4.44 | 85 |
| 0 | 1.51 | 5 |
| -3 | -1.42 | 0.2 |

Parameter Estimates
from LN regression
update graph label

| 24 | | | max r2<br>0.958 |
|---|---|---|---|
| **i-3/8 / N+1/4**<br>**plotting points** | **u**<br>**y-axis** | **Ln**<br>**x-axis** | **r2**<br>forward |
| 0.0258 | -1.947 | 0.215 | 0.913 |
| 0.0670 | -1.498 | 0.583 | 0.918 |
| 0.1082 | -1.236 | 0.621 | 0.933 |
| 0.1495 | -1.039 | 0.652 | 0.942 |
| 0.1907 | -0.875 | 0.732 | 0.946 |
| 0.2320 | -0.732 | 0.875 | 0.949 |
| 0.2732 | -0.603 | 0.875 | 0.955 |
| 0.3144 | -0.483 | 0.900 | 0.958 |
| 0.3557 | -0.370 | 0.959 | 0.957 |
| 0.3969 | -0.261 | 0.986 | 0.955 |
| 0.4381 | -0.156 | 1.072 | 0.949 |
| 0.4794 | -0.052 | 1.135 | 0.941 |
| 0.5206 | 0.052 | 1.258 | 0.931 |
| 0.5619 | 0.156 | 1.361 | 0.919 |
| 0.6031 | 0.261 | 1.447 | 0.903 |
| 0.6443 | 0.370 | 1.564 | 0.887 |
| 0.6856 | 0.483 | 1.981 | 0.877 |
| 0.7268 | 0.603 | 2.011 | 0.843 |
| 0.7680 | 0.732 | 2.253 | 0.801 |
| 0.8093 | 0.875 | 2.346 | 0.725 |
| 0.8505 | 1.039 | 2.876 | |
| 0.8918 | 1.236 | 3.003 | |
| 0.9330 | 1.498 | 3.239 | |
| 0.9742 | 1.947 | 3.266 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecuy secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | NM293 | **Date:** 29-May-00 |
| **Chemical:** | dZn | **Analyst:** J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | |
| **Input Discharge and Concentration Data below (in red)** | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,687 | 7 | 2,377 | 71 | 0.00 | 0.00 | 0.00 |
| **SD:** | 526 | 7 | 946 | 58 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.04 | 0.40 | 0.81 | | | |
| **Min:** | 33,374 | 1 | 37 | 1 | -0.80 | -2.47 | -1.21 |
| **Max:** | 35,929 | 26 | 4,380 | 219 | 2.53 | 2.12 | 2.54 |
| **Median:** | 34,611 | 4 | 2,410 | 47 | -0.50 | 0.03 | -0.42 |

**dZn NM293 : Concentration v. Discharge, Q** — **Q = mTime +b** — **LnQ = mTime +b**

**Conc. = mQ+b (r2=0.31)** update r2

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 Q,[COC]: | 0.31 | [dZn] | Q | r2: | 0.002 | 0.009 |
| slope, m: | -69.9 | 2,796 | 1.2 | m: | 0.0006 | 0.00016 |
| intercept, b: | 2883.1 | 2,377 | 7.2 | b: | -13 | -3.97 |
| N: 23 | | 1,051 | 26 | | | |

**LnConc. = mLn(Q)+b (r2=0.14)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.14 | ln[dZn] | ln Q | [dZn] | Q |
| slope, m: | -0.39 | 8.09 | 0.22 | 3,276 | 1 |
| intercept, b: | 8.18 | 7.42 | 1.98 | 1,661 | 7 |
| N: 23 | | 6.92 | 3.27 | 1,012 | 26 |

**N= 23**

| | Sampling Date | Q Discharge | dZn Concentration | dZn Load | Ln Q | Ln dZn Conc. | Ln dZn Load | dZn NM293 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | for graph 0 |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 25.5 | 1310 | 180 | 3.24 | 7.18 | 5.19 | 2.44 | -1.13 | 1.87 |
| MFG | 4-Oct-91 | 1.24 | 2410 | 16 | 0.22 | 7.79 | 2.78 | -0.80 | 0.03 | -0.95 |
| IDEQ | 4-May-94 | 9.52 | 2710 | 139 | 2.25 | 7.90 | 4.93 | 0.30 | 0.35 | 1.16 |
| IDEQ | 19-May-94 | 10.44 | 1500 | 84 | 2.35 | 7.31 | 4.43 | 0.43 | -0.93 | 0.22 |
| IDEQ | 7-Jun-94 | 4.78 | 1990 | 51 | 1.56 | 7.60 | 3.94 | -0.33 | -0.41 | -0.35 |
| IDEQ | 23-Jun-94 | 4.25 | 2160 | 49 | 1.45 | 7.68 | 3.90 | -0.40 | -0.23 | -0.38 |
| IDEQ | 20-Jul-94 | 2.68 | 2490 | 36 | 0.99 | 7.82 | 3.58 | -0.61 | 0.12 | -0.61 |
| IDEQ | 20-Jul-94 | 3.52 | 2490 | 47 | 1.26 | 7.82 | 3.85 | -0.50 | 0.12 | -0.42 |
| IDEQ | 15-Aug-94 | 2.61 | 3010 | 42 | 0.96 | 8.01 | 3.74 | -0.62 | 0.67 | -0.50 |
| IDEQ | 15-Aug-94 | 1.86 | 3010 | 30 | 0.62 | 8.01 | 3.41 | -0.72 | 0.67 | -0.71 |
| IDEQ | 8-Sep-94 | 2.4 | 2990 | 39 | 0.88 | 8.00 | 3.65 | -0.64 | 0.65 | -0.56 |
| IDEQ | 4-Oct-94 | 2.4 | 3480 | 45 | 0.88 | 8.15 | 3.81 | -0.64 | 1.17 | -0.46 |
| IDEQ | 9-May-95 | 17.74 | 2290 | 219 | 2.88 | 7.74 | 5.39 | 1.40 | -0.09 | 2.54 |
| IDEQ | 13-May-95 | 7.25 | 37 | 1 | 1.98 | 3.61 | 0.37 | 0.00 | -2.47 | -1.21 |
| IDEQ | 23-May-95 | 20.15 | 1490 | 162 | 3.00 | 7.31 | 5.08 | 1.72 | -0.94 | 1.55 |
| IDEQ | 12-Jun-95 | 7.47 | 1600 | 64 | 2.01 | 7.38 | 4.16 | 0.03 | -0.82 | -0.12 |
| IDEQ | 27-Jun-95 | 2.92 | 1900 | 30 | 1.07 | 7.55 | 3.40 | -0.58 | -0.50 | -0.72 |
| IDEQ | 11-Jul-95 | 3.9 | 2330 | 49 | 1.36 | 7.75 | 3.89 | -0.44 | -0.05 | -0.39 |
| IDEQ | 25-Jul-95 | 2.46 | 2550 | 34 | 0.90 | 7.84 | 3.52 | -0.64 | 0.18 | -0.65 |
| IDEQ | 14-Aug-95 | 2.08 | 3360 | 38 | 0.73 | 8.12 | 3.63 | -0.69 | 1.04 | -0.58 |
| IDEQ | 13-Sep-95 | 1.92 | 3960 | 41 | 0.65 | 8.28 | 3.71 | -0.71 | 1.67 | -0.53 |
| URS | 12-Nov-97 | 3.11 | 4380 | 73 | 1.13 | 8.38 | 4.29 | -0.55 | 2.12 | 0.03 |
| URS | 14-May-98 | 26.2 | 1230 | 173 | 3.27 | 7.11 | 5.16 | 2.53 | -1.21 | 1.76 |

**dZn**

**Concentration over time analysis**

**dZn NM293**

**LnConc.=mTime+b All data r2, m:**

| | Time | Ln[COC] | [COC] |
|---|---|---|---|
| first | 16-May-91 | 7.58 | 1,949 |
| mid | 4-Oct-94 | 7.58 | 1,959 |
| last | 14-May-98 | 7.59 | 1,970 |

**LnConc.=mTime+b >'96 r2, m:**

| | | |
|---|---|---|
| 0-Jan-00 | 0.00 | 1 |
| 14-May-98 | 0.00 | 1 |

**Load over time analysis**

**dZn NM293**

**LnLoad=mTime+b All data r2, m:**

| | Time | LnLoad | Load |
|---|---|---|---|
| first | 16-May-91 | 3.69 | 40 |
| mid | 4-Oct-94 | 3.89 | 49 |
| last | 14-May-98 | 4.11 | 61 |

**LnLoad=mTime+b >'96 r2, m:**

| | | |
|---|---|---|
| 0-Jan-00 | 0.00 | 1 |
| 14-May-98 | 0.00 | 1 |

max r2: 0.209

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.000 | 0.00000 | 7.44 |
| 0.003 | -0.00012 | 11.60 |
| 0.001 | -0.00010 | 10.90 |
| 0.001 | -0.00006 | 9.63 |
| 0.001 | -0.00010 | 10.97 |
| 0.001 | -0.00010 | 11.10 |
| 0.001 | -0.00009 | 10.81 |
| 0.000 | -0.00006 | 9.67 |
| 0.000 | -0.00002 | 8.21 |
| 0.001 | 0.00007 | 5.16 |
| 0.004 | 0.00018 | 1.05 |
| 0.011 | 0.00033 | -4.26 |
| 0.030 | 0.00058 | -12.99 |
| 0.038 | 0.00066 | -15.97 |
| 0.000 | -0.00002 | 8.49 |
| 0.014 | -0.00012 | 12.02 |
| 0.058 | -0.00024 | 16.13 |
| 0.133 | -0.00035 | 20.33 |
| 0.209 | -0.00046 | 24.32 |

r2 Slope, m

**Concentration over time**

**0.00001 0.000004**

**0.000 0.00000**

**Load over time**

**0.007 0.00016**

**0.000 0.00000**

max r2: 0.887

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.007 | 0.00016 | -1.76 |
| 0.080 | 0.00061 | -17.48 |
| 0.034 | 0.00048 | -12.76 |
| 0.060 | 0.00063 | -18.17 |
| 0.080 | 0.00074 | -22.02 |
| 0.088 | 0.00080 | -23.92 |
| 0.096 | 0.00085 | -25.90 |
| 0.094 | 0.00086 | -26.31 |
| 0.101 | 0.00093 | -28.55 |
| 0.105 | 0.00098 | -30.37 |
| 0.096 | 0.00097 | -30.14 |
| 0.097 | 0.00102 | -31.84 |
| 0.105 | 0.00112 | -35.44 |
| 0.187 | 0.00142 | -46.05 |
| 0.295 | 0.00084 | -25.39 |
| 0.720 | 0.00111 | -34.93 |
| 0.850 | 0.00123 | -39.40 |
| 0.844 | 0.00118 | -37.46 |
| 0.887 | 0.00128 | -41.02 |

**dZn**

**LN Analysis**

**Load**

| | |
|---|---|
| **Avg:** | **71** |
| **SD:** | **58** |
| **CV:** | **0.81** |
| **Min:** | **1** |
| **Max:** | **219** |
| **Median:** | **47** |

**u=mLn(Load)+**

update for r2, EV, CV: $r^2$=0.807, EV=9

| | |
|---|---|
| r2 | u,lnLoad |
| slope, m | |
| intercept, b | |
| N | |
| E[Load] | |
| SD[Load] | |
| CV[Load] | |

| Date | dZn Load lbs/day Ranked |
|---|---|
| update and rank for new data | |
| 13-May-95 | 1 |
| 4-Oct-91 | 16 |
| 27-Jun-95 | 30 |
| 15-Aug-94 | 30 |
| 25-Jul-95 | 34 |
| 20-Jul-94 | 36 |
| 14-Aug-95 | 38 |
| 8-Sep-94 | 39 |
| 13-Sep-95 | 41 |
| 15-Aug-94 | 42 |
| 4-Oct-94 | 45 |
| 20-Jul-94 | 47 |
| 11-Jul-95 | 49 |
| 23-Jun-94 | 49 |
| 7-Jun-94 | 51 |
| 12-Jun-95 | 64 |
| 12-Nov-97 | 73 |
| 19-May-94 | 84 |
| 4-May-94 | 139 |
| 23-May-95 | 162 |
| 14-May-98 | 173 |
| 16-May-91 | 180 |
| 9-May-95 | 219 |

update for EV, CV

**NM293**

**dZn**

**Load Data, EV=71 lbs/day CV=.81**

**Load Data-based LN**

| u | ln dZn Load | dZn Load |
|---|---|---|
| 3 | 6.2 | 469 |
| 0 | 4.01 | 55 |
| -3 | 1.88 | 7 |

**}+ b:**

**9.6 lbs/day CV=1.74; max r2=0.94**

| | | | |
|---|---|---|---|
| 0.807 | u | lnLoad | Load |
| 0.847 | 3 | 7.45 | 1714 |
| -3.307 | 0 | 3.90 | 50 |
| 23 | -3 | 0.36 | 1 |
| 99.6 | Parameter Estimates | | |
| 173 | from LN regression | | |
| 1.74 | update graph label | | |

| | | | | max r2 |
|---|---|---|---|---|
| N: 23 | | | | 0.944 |
| **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| 1 | 0.0269 | -1.929 | 0.367 | 0.807 |
| 2 | 0.0699 | -1.477 | 2.777 | 0.926 |
| 3 | 0.1129 | -1.211 | 3.396 | 0.913 |
| 4 | 0.1559 | -1.011 | 3.405 | 0.919 |
| 5 | 0.1989 | -0.845 | 3.519 | 0.918 |
| 6 | 0.2419 | -0.700 | 3.581 | 0.921 |
| 7 | 0.2849 | -0.568 | 3.627 | 0.923 |
| 8 | 0.3280 | -0.446 | 3.653 | 0.925 |
| 9 | 0.3710 | -0.329 | 3.711 | 0.923 |
| 10 | 0.4140 | -0.217 | 3.744 | 0.920 |
| 11 | 0.4570 | -0.108 | 3.805 | 0.914 |
| 12 | 0.5000 | 0.000 | 3.853 | 0.905 |
| 13 | 0.5430 | 0.108 | 3.890 | 0.893 |
| 14 | 0.5860 | 0.217 | 3.900 | 0.873 |
| 15 | 0.6290 | 0.329 | 3.935 | 0.845 |
| 16 | 0.6720 | 0.446 | 4.164 | 0.818 |
| 17 | 0.7151 | 0.568 | 4.294 | 0.772 |
| 18 | 0.7581 | 0.700 | 4.434 | 0.722 |
| 19 | 0.8011 | 0.845 | 4.933 | 0.944 |
| 20 | 0.8441 | 1.011 | 5.085 | |
| 21 | 0.8871 | 1.211 | 5.155 | |
| 22 | 0.9301 | 1.477 | 5.191 | |
| 23 | 0.9731 | 1.929 | 5.387 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dZn** | | **NM293** | | |
| **LN Analysis** | | **dZn** | | |
| **Concentration** | | **Conc. Data, EV=2,377 ug/L CV=.40** | | |
| **Avg:** | **2,377** | **Data-based LN** | | |
| **SD:** | **946** | u | ln[dZn] | [dZn] |
| **CV:** | **0.40** | 3 | 8.9 | 6975 |
| **Min:** | **37** | 0 | 7.70 | 2209 |
| **Max:** | **4,380** | -3 | 6.55 | 700 |
| **Median:** | **2,410** | | | |

**u=mLn{Conc.}+b:**

update for r2, EV, CV: **$r^2$=0.533, EV=4667.4 ug/L CV=2.16; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.533 | u | lnConc. | Conc. |
| slope, m: | 0.759 | 3 | 11.53 | 101992 |
| intercept, b: | -5.755 | 0 | 7.58 | 1960 |
| N: 23 | | -3 | 3.63 | 38 |
| E[Conc]: | 4667.4 | Parameter Estimates | | |
| SD[Conc]: | 10087 | from LN regression | | |
| CV[Conc]: | 2.16 | update graph label | | |

N: 23

| Date | dZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.987 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-May-95 | 37 | 1 | 0.0269 | -1.929 | 3.611 | 0.533 |
| 14-May-98 | 1230 | 2 | 0.0699 | -1.477 | 7.115 | 0.974 |
| 16-May-91 | 1310 | 3 | 0.1129 | -1.211 | 7.178 | 0.969 |
| 23-May-95 | 1490 | 4 | 0.1559 | -1.011 | 7.307 | 0.968 |
| 19-May-94 | 1500 | 5 | 0.1989 | -0.845 | 7.313 | 0.964 |
| 12-Jun-95 | 1600 | 6 | 0.2419 | -0.700 | 7.378 | 0.971 |
| 27-Jun-95 | 1900 | 7 | 0.2849 | -0.568 | 7.550 | 0.987 |
| 7-Jun-94 | 1990 | 8 | 0.3280 | -0.446 | 7.596 | 0.986 |
| 23-Jun-94 | 2160 | 9 | 0.3710 | -0.329 | 7.678 | 0.986 |
| 9-May-95 | 2290 | 10 | 0.4140 | -0.217 | 7.736 | 0.984 |
| 11-Jul-95 | 2330 | 11 | 0.4570 | -0.108 | 7.754 | 0.983 |
| 4-Oct-91 | 2410 | 12 | 0.5000 | 0.000 | 7.787 | 0.981 |
| 20-Jul-94 | 2490 | 13 | 0.5430 | 0.108 | 7.820 | 0.979 |
| 20-Jul-94 | 2490 | 14 | 0.5860 | 0.217 | 7.820 | 0.977 |
| 25-Jul-95 | 2550 | 15 | 0.6290 | 0.329 | 7.844 | 0.973 |
| 4-May-94 | 2710 | 16 | 0.6720 | 0.446 | 7.905 | 0.971 |
| 8-Sep-94 | 2990 | 17 | 0.7151 | 0.568 | 8.003 | 0.965 |
| 15-Aug-94 | 3010 | 18 | 0.7581 | 0.700 | 8.010 | 0.972 |
| 15-Aug-94 | 3010 | 19 | 0.8011 | 0.845 | 8.010 | 0.966 |
| 14-Aug-95 | 3360 | 20 | 0.8441 | 1.011 | 8.120 | |
| 4-Oct-94 | 3480 | 21 | 0.8871 | 1.211 | 8.155 | |
| 13-Sep-95 | 3960 | 22 | 0.9301 | 1.477 | 8.284 | |
| 12-Nov-97 | 4380 | 23 | 0.9731 | 1.929 | 8.385 | |

update for EV, CV:

**dZn**
**LN Analysis**
**Discharge, Q**

**NM293**
**dZn**
**Q Data, EV=7 cfs CV=1.04**
**Q Data-based LN**

| | | u | lnQ | Q |
|---|---|---|---|---|
| **Avg:** | **7** | u | lnQ | Q |
| **SD:** | **7** | 3 | 4.2 | 65 |
| **CV:** | **1.04** | 0 | 1.61 | 5 |
| **Min:** | **1** | -3 | -0.95 | 0.4 |
| **Max:** | **26** | | | |
| **Median:** | **4** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.918, EV=7.5 cfs CV=1.25; max r2=0.96**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.918 | u | lnQ | Q |
| slope, m: | 1.029 | 3 | 4.47 | 87 |
| intercept, b: | -1.594 | 0 | 1.55 | 5 |
| N: | 23 | -3 | -1.37 | 0.3 |
| E[Q]: | 7.5 | Parameter Estimates | | |
| SD[Q]: | 9 | from LN regression | | |
| CV[Q]: | 1.25 | update graph label | | |

N: 23

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.957 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.24 | 1 | 0.0269 | -1.929 | 0.215 | 0.918 |
| 15-Aug-94 | 1.86 | 2 | 0.0699 | -1.477 | 0.621 | 0.921 |
| 13-Sep-95 | 1.92 | 3 | 0.1129 | -1.211 | 0.652 | 0.934 |
| 14-Aug-95 | 2.08 | 4 | 0.1559 | -1.011 | 0.732 | 0.941 |
| 8-Sep-94 | 2.4 | 5 | 0.1989 | -0.845 | 0.875 | 0.946 |
| 4-Oct-94 | 2.4 | 6 | 0.2419 | -0.700 | 0.875 | 0.954 |
| 25-Jul-95 | 2.46 | 7 | 0.2849 | -0.568 | 0.900 | 0.957 |
| 15-Aug-94 | 2.61 | 8 | 0.3280 | -0.446 | 0.959 | 0.957 |
| 20-Jul-94 | 2.68 | 9 | 0.3710 | -0.329 | 0.986 | 0.955 |
| 27-Jun-95 | 2.92 | 10 | 0.4140 | -0.217 | 1.072 | 0.950 |
| 12-Nov-97 | 3.11 | 11 | 0.4570 | -0.108 | 1.135 | 0.943 |
| 20-Jul-94 | 3.52 | 12 | 0.5000 | 0.000 | 1.258 | 0.933 |
| 11-Jul-95 | 3.9 | 13 | 0.5430 | 0.108 | 1.361 | 0.920 |
| 23-Jun-94 | 4.25 | 14 | 0.5860 | 0.217 | 1.447 | 0.905 |
| 7-Jun-94 | 4.78 | 15 | 0.6290 | 0.329 | 1.564 | 0.888 |
| 13-May-95 | 7.25 | 16 | 0.6720 | 0.446 | 1.981 | 0.878 |
| 12-Jun-95 | 7.47 | 17 | 0.7151 | 0.568 | 2.011 | 0.845 |
| 4-May-94 | 9.52 | 18 | 0.7581 | 0.700 | 2.253 | 0.802 |
| 19-May-94 | 10.44 | 19 | 0.8011 | 0.845 | 2.346 | 0.726 |
| 9-May-95 | 17.74 | 20 | 0.8441 | 1.011 | 2.876 | |
| 23-May-95 | 20.15 | 21 | 0.8871 | 1.211 | 3.003 | |
| 16-May-91 | 25.5 | 22 | 0.9301 | 1.477 | 3.239 | |
| 14-May-98 | 26.2 | 23 | 0.9731 | 1.929 | 3.266 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** NM293 **Date:** 3-Jun-00

**Chemical:** tCd **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,746 | 7 | 17 | 0.5 | 0.00 | 0.00 | 0.00 |
| **SD:** | 589 | 7 | 15 | 0.4 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.06 | 0.90 | 0.91 | | | |
| **Min:** | 33,374 | 1 | 4 | 0.1 | -0.78 | -0.86 | -0.96 |
| **Max:** | 36,114 | 26 | 79 | 2 | 2.59 | 4.14 | 3.16 |
| **Median:** | 34,720 | 3 | 13 | 0.3 | -0.50 | -0.25 | -0.49 |

| tCd | NM293 | | : Concentration v. Discharge, Q | | | Q = mTime +b | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.0767)** | | update r2 | 0.08 | 0.0767 | | r2: 0.001 | 0.001 |
| r2 Q,[COC]: | 0.08 | [tCd] | Q | | | m: -0.0004 | -0.00004 |
| slope, m: | -0.6 | 20 | 1.2 | | | b: 22 | 2.79 |
| intercept, b: | 20.7 | 17 | 7.0 | | | | |
| N: 24 | | 6 | 26 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.206)** | | update r2 | 0.21 | 0.206 | | | |
| r2 lnQ,ln[COC]: | 0.21 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m: | -0.30 | 2.99 | 0.22 | 20 | 1 | | |
| intercept, b: | 3.06 | 2.48 | 1.95 | 12 | 7 | | |
| N: 24 | | 2.08 | 3.27 | 8 | 26 | | |

**N= 24**

| | Sampling Date | Q Discharge cfs | tCd Concentration ug/L | tCd Load lbs/day | Ln Q | Ln tCd Conc. | Ln tCd Load | tCd NM293 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | for graph 0 | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 25.5 | 3.7 | 0.5 | 3.24 | 1.31 | -0.68 | 2.49 | -0.86 | 0.10 |
| MFG | 4-Oct-91 | 1.24 | 9 | 0.1 | 0.22 | 2.20 | -2.81 | -0.78 | -0.51 | -0.96 |
| IDEQ | 4-May-94 | 9.52 | 21 | 1.1 | 2.25 | 3.04 | 0.07 | 0.34 | 0.28 | 1.45 |
| IDEQ | 19-May-94 | 10.44 | 11 | 0.6 | 2.35 | 2.40 | -0.48 | 0.46 | -0.38 | 0.36 |
| IDEQ | 7-Jun-94 | 4.78 | 13 | 0.3 | 1.56 | 2.56 | -1.10 | -0.30 | -0.25 | -0.31 |
| IDEQ | 23-Jun-94 | 4.25 | 12 | 0.3 | 1.45 | 2.48 | -1.29 | -0.37 | -0.31 | -0.45 |
| IDEQ | 20-Jul-94 | 2.68 | 13 | 0.2 | 0.99 | 2.56 | -1.67 | -0.58 | -0.25 | -0.66 |
| IDEQ | 20-Jul-94 | 3.52 | 13 | 0.2 | 1.26 | 2.56 | -1.40 | -0.47 | -0.25 | -0.52 |
| IDEQ | 15-Aug-94 | 2.61 | 16 | 0.2 | 0.96 | 2.77 | -1.49 | -0.59 | -0.05 | -0.57 |
| IDEQ | 15-Aug-94 | 1.86 | 16 | 0.2 | 0.62 | 2.77 | -1.83 | -0.69 | -0.05 | -0.72 |
| IDEQ | 8-Sep-94 | 2.4 | 13 | 0.2 | 0.88 | 2.56 | -1.78 | -0.62 | -0.25 | -0.70 |
| IDEQ | 4-Oct-94 | 2.4 | 14 | 0.2 | 0.88 | 2.64 | -1.71 | -0.62 | -0.18 | -0.67 |
| IDEQ | 9-May-95 | 17.74 | 12 | 1.1 | 2.88 | 2.48 | 0.14 | 1.45 | -0.31 | 1.62 |
| IDEQ | 13-May-95 | 7.25 | 46 | 1.8 | 1.98 | 3.83 | 0.58 | 0.03 | 1.94 | 3.16 |
| IDEQ | 23-May-95 | 20.15 | 9.8 | 1.1 | 3.00 | 2.28 | 0.06 | 1.77 | -0.46 | 1.42 |
| IDEQ | 12-Jun-95 | 7.47 | 8.9 | 0.4 | 2.01 | 2.19 | -1.03 | 0.06 | -0.52 | -0.25 |
| IDEQ | 27-Jun-95 | 2.92 | 11 | 0.2 | 1.07 | 2.40 | -1.76 | -0.55 | -0.38 | -0.69 |
| IDEQ | 11-Jul-95 | 3.9 | 12 | 0.3 | 1.36 | 2.48 | -1.38 | -0.42 | -0.31 | -0.51 |
| IDEQ | 25-Jul-95 | 2.46 | 13 | 0.2 | 0.90 | 2.56 | -1.76 | -0.61 | -0.25 | -0.69 |
| IDEQ | 14-Aug-95 | 2.08 | 16 | 0.2 | 0.73 | 2.77 | -1.72 | -0.66 | -0.05 | -0.68 |
| IDEQ | 13-Sep-95 | 1.92 | 18 | 0.2 | 0.65 | 2.89 | -1.68 | -0.69 | 0.08 | -0.66 |
| URS | 12-Nov-97 | 3.11 | 15.8 | 0.3 | 1.13 | 2.76 | -1.33 | -0.53 | -0.06 | -0.48 |
| URS | 14-May-98 | 26.2 | 5.4 | 0.8 | 3.27 | 1.69 | -0.27 | 2.59 | -0.75 | 0.70 |
| URS | 15-Nov-98 | 1.792 | 79.3 | 0.8 | 0.58 | 4.37 | -0.27 | -0.70 | 4.14 | 0.71 |

tCd

**Concentration over time analysis**

| | tCd | NM293 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.208** | **0.00045** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 1.99 | 7 | | |
| mid: | 20-Jan-95 | 2.60 | 13 | | |
| last: | 15-Nov-98 | 3.22 | 25 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | tCd | NM293 | | | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.091** | **0.00041** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | -1.68 | 0.2 | | |
| mid: | 20-Jan-95 | -1.12 | 0.3 | | |
| last: | 15-Nov-98 | -0.54 | 0.6 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

| | max r2: 0.208 | | | max r2: 0.846 | | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | *only on* >4 data points: delete last 4 rows | | |
| | 0.208 | 0.00045 | -13.04 | 0.091 | 0.00041 | -15.47 |
| | 0.088 | 0.00030 | -7.66 | 0.167 | 0.00064 | -23.33 |
| | 0.056 | 0.00027 | -6.80 | 0.055 | 0.00039 | -14.51 |
| | 0.075 | 0.00032 | -8.40 | 0.103 | 0.00051 | -18.85 |
| | 0.066 | 0.00030 | -7.89 | 0.139 | 0.00059 | -21.83 |
| | 0.064 | 0.00030 | -7.92 | 0.147 | 0.00062 | -22.90 |
| | 0.058 | 0.00030 | -7.62 | 0.146 | 0.00063 | -23.32 |
| | 0.055 | 0.00029 | -7.57 | 0.129 | 0.00060 | -22.14 |
| | 0.052 | 0.00029 | -7.50 | 0.121 | 0.00060 | -21.94 |
| | 0.058 | 0.00032 | -8.44 | 0.108 | 0.00057 | -21.17 |
| | 0.066 | 0.00035 | -9.66 | 0.078 | 0.00049 | -18.19 |
| | 0.062 | 0.00036 | -9.82 | 0.048 | 0.00039 | -14.58 |
| | 0.063 | 0.00038 | -10.52 | 0.022 | 0.00027 | -10.25 |
| | 0.056 | 0.00036 | -9.91 | 0.061 | 0.00042 | -15.69 |
| | 0.160 | 0.00055 | -16.80 | 0.248 | 0.00069 | -25.35 |
| | 0.139 | 0.00052 | -15.76 | 0.678 | 0.00095 | -34.77 |
| | 0.107 | 0.00046 | -13.52 | 0.815 | 0.00108 | -39.21 |
| | 0.083 | 0.00042 | -12.09 | 0.797 | 0.00107 | -38.86 |
| | 0.061 | 0.00038 | -10.73 | 0.846 | 0.00117 | -42.72 |
| | 0.040 | 0.00034 | -9.35 | 0.817 | 0.00119 | -43.20 |

update for EV, CV:

**tCd** **NM293**

**LN Analysis** **tCd**

**Load** **Load Data, EV=0.465 lbs/day CV=0.906**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **0.5** | **Load Data-based LN** | | |
| **SD:** | **0.4** | u | ln tCd Load | tCd Load |
| **CV:** | **0.91** | 3 | 1.3 | 4 |
| **Min:** | **0.1** | 0 | -1.07 | 0.34 |
| **Max:** | **2** | -3 | -3.39 | 0.03 |
| **Median:** | **0.3** | | | |
| | | 0 | 0.465 | |
| | | 0.91 | 0.906 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.928, EV=0.488lbs/day CV=1.09; max r2=0.96**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.928 | u | lnLoad | Load | |
| slope, m: | 1.130 | 3 | 1.55 | 5 | |
| intercept, b: | 1.252 | 0 | -1.11 | 0.33 | |
| N: | 24 | -3 | -3.76 | 0.02 | |
| E[Load]: | 0.5 | Parameter Estimates | | | 0.928 |
| SD[Load]: | 1 | from LN regression | | | 0.5 |
| CV[Load]: | 1.09 | update graph label | | | 1.1 |
| | | | | | max r2 |
| | N: 24 | | | | 0.964 |

| Date | tCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 0.1 | 1 | 0.0258 | -1.947 | -2.813 | 0.928 |
| 15-Aug-94 | 0.2 | 2 | 0.0670 | -1.498 | -1.832 | 0.912 |
| 8-Sep-94 | 0.2 | 3 | 0.1082 | -1.236 | -1.785 | 0.931 |
| 25-Jul-95 | 0.2 | 4 | 0.1495 | -1.039 | -1.760 | 0.945 |
| 27-Jun-95 | 0.2 | 5 | 0.1907 | -0.875 | -1.756 | 0.955 |
| 14-Aug-95 | 0.2 | 6 | 0.2320 | -0.732 | -1.720 | 0.961 |
| 4-Oct-94 | 0.2 | 7 | 0.2732 | -0.603 | -1.711 | 0.964 |
| 13-Sep-95 | 0.2 | 8 | 0.3144 | -0.483 | -1.682 | 0.963 |
| 20-Jul-94 | 0.2 | 9 | 0.3557 | -0.370 | -1.674 | 0.960 |
| 15-Aug-94 | 0.2 | 10 | 0.3969 | -0.261 | -1.493 | 0.954 |
| 20-Jul-94 | 0.2 | 11 | 0.4381 | -0.156 | -1.402 | 0.949 |
| 11-Jul-95 | 0.3 | 12 | 0.4794 | -0.052 | -1.379 | 0.942 |
| 12-Nov-97 | 0.3 | 13 | 0.5206 | 0.052 | -1.330 | 0.932 |
| 23-Jun-94 | 0.3 | 14 | 0.5619 | 0.156 | -1.293 | 0.920 |
| 7-Jun-94 | 0.3 | 15 | 0.6031 | 0.261 | -1.096 | 0.915 |
| 12-Jun-95 | 0.4 | 16 | 0.6443 | 0.370 | -1.028 | 0.907 |
| 16-May-91 | 0.5 | 17 | 0.6856 | 0.483 | -0.678 | 0.939 |
| 19-May-94 | 0.6 | 18 | 0.7268 | 0.603 | -0.482 | 0.938 |
| 14-May-98 | 0.8 | 19 | 0.7680 | 0.732 | -0.273 | 0.925 |
| 15-Nov-98 | 0.8 | 20 | 0.8093 | 0.875 | -0.268 | 0.900 |
| 23-May-95 | 1.1 | 21 | 0.8505 | 1.039 | 0.061 | |
| 4-May-94 | 1.1 | 22 | 0.8918 | 1.236 | 0.073 | |
| 9-May-95 | 1.1 | 23 | 0.9330 | 1.498 | 0.136 | |
| 13-May-95 | 1.8 | 24 | 0.9742 | 1.947 | 0.585 | |

update for EV, CV

| | | | | | |
|---|---|---|---|---|---|
| **tCd** | | NM293 | | 17 | 16.7 |
| **LN Analysis** | | tCd | | 0.90 | 0.902 |

**Concentration**

**Conc. Data, EV=16.7 ug/L CV=0.902**

| | | Data-based LN | | |
|---|---|---|---|---|
| **Avg:** | **17** | u | ln[tCd] | [tCd] |
| **SD:** | **15** | 3 | 4.8 | 126 |
| **CV:** | **0.90** | 0 | 2.52 | 12 |
| **Min:** | **4** | -3 | 0.21 | 1 |
| **Max:** | **79** | | | |
| **Median:** | **13** | | | |

**u=mLn{Conc.}+b:**

update for r2, EV, CV: **r2=0.837, EV=17 ug/L CV=0.754; max r2=0.96**

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.837 | 0.837 |
| | | | | 17.0 | 17 |
| | | | | 0.754 | 0.754 |
| | r2 u,lnConc: | 0.837 | u | lnConc. | Conc. |
| | slope, m: | 1.491 | 3 | 4.62 | 102 |
| | intercept, b. | -3.888 | 0 | 2.61 | 14 |
| | N: | 24 | -3 | 0.60 | 2 |
| 0.928 | E[Conc]: | 17.0 | Parameter Estimates | | |
| 0.488 | SD[Conc]: | 13 | from LN regression | | |
| 1.09 | CV[Conc]: | 0.75 | update graph label | | |

N: 24

| Date | tCd Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.958 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-91 | 3.7 | 1 | 0.0258 | -1.947 | 1.308 | 0.837 |
| 14-May-98 | 5.4 | 2 | 0.0670 | -1.498 | 1.686 | 0.800 |
| 12-Jun-95 | 8.9 | 3 | 0.1082 | -1.236 | 2.186 | 0.767 |
| 4-Oct-91 | 9 | 4 | 0.1495 | -1.039 | 2.197 | 0.764 |
| 23-May-95 | 9.8 | 5 | 0.1907 | -0.875 | 2.282 | 0.755 |
| 19-May-94 | 11 | 6 | 0.2320 | -0.732 | 2.398 | 0.750 |
| 27-Jun-95 | 11 | 7 | 0.2732 | -0.603 | 2.398 | 0.758 |
| 23-Jun-94 | 12 | 8 | 0.3144 | -0.483 | 2.485 | 0.761 |
| 9-May-95 | 12 | 9 | 0.3557 | -0.370 | 2.485 | 0.775 |
| 11-Jul-95 | 12 | 10 | 0.3969 | -0.261 | 2.485 | 0.787 |
| 7-Jun-94 | 13 | 11 | 0.4381 | -0.156 | 2.565 | 0.795 |
| 20-Jul-94 | 13 | 12 | 0.4794 | -0.052 | 2.565 | 0.815 |
| 20-Jul-94 | 13 | 13 | 0.5206 | 0.052 | 2.565 | 0.833 |
| 8-Sep-94 | 13 | 14 | 0.5619 | 0.156 | 2.565 | 0.848 |
| 25-Jul-95 | 13 | 15 | 0.6031 | 0.261 | 2.565 | 0.857 |
| 4-Oct-94 | 14 | 16 | 0.6443 | 0.370 | 2.639 | 0.860 |
| 12-Nov-97 | 15.8 | 17 | 0.6856 | 0.483 | 2.760 | 0.868 |
| 15-Aug-94 | 16 | 18 | 0.7268 | 0.603 | 2.773 | 0.901 |
| 15-Aug-94 | 16 | 19 | 0.7680 | 0.732 | 2.773 | 0.935 |
| 14-Aug-95 | 16 | 20 | 0.8093 | 0.875 | 2.773 | 0.958 |
| 13-Sep-95 | 18 | 21 | 0.8505 | 1.039 | 2.890 | |
| 4-May-94 | 21 | 22 | 0.8918 | 1.236 | 3.045 | |
| 13-May-95 | 46 | 23 | 0.9330 | 1.498 | 3.829 | |
| 15-Nov-98 | 79.3 | 24 | 0.9742 | 1.947 | 4.373 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **NM293** | | | 7 | 7.01 |
| **LN Analysis** | | **tCd** | | | 1.06 | 1.06 |
| **Discharge, Q** | | **Q Data, EV=7.01 cfs CV=1.06** | | | | |
| **Avg:** | 7 | **Q Data-based LN** | | | | |
| **SD:** | 7 | u | lnQ | Q | | |
| **CV:** | 1.06 | 3 | 4.2 | 65 | | |
| **Min:** | 1 | 0 | 1.57 | 5 | | |
| **Max:** | 26 | -3 | -1.03 | 0.4 | | |
| **Median:** | 3 | | | | | |
| | | | | | 0.913 | 0.913 |
| | | | | | 7.3 | 7.28 |
| | | **u=mLn(Q)+b:** | | | 1.26 | 1.26 |

update for r2, EV, CV: **r2=0.913, EV=7.28 cfs CV=1.26; max r2=0.96**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.913 | u | lnQ | Q |
| slope, m: | 1.025 | 3 | 4.44 | 85 |
| intercept, b: | -1.546 | 0 | 1.51 | 5 |
| N: | 24 | -3 | -1.42 | 0.2 |
| E[Q]: | 7.3 | Parameter Estimates | | |
| SD[Q]: | 9 | from LN regression | | |
| CV[Q]: | 1.26 | update graph label | | |

N: 24

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.958 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.24 | 1 | 0.0258 | -1.947 | 0.215 | 0.913 |
| 15-Nov-98 | 1.792 | 2 | 0.0670 | -1.498 | 0.583 | 0.918 |
| 15-Aug-94 | 1.86 | 3 | 0.1082 | -1.236 | 0.621 | 0.933 |
| 13-Sep-95 | 1.92 | 4 | 0.1495 | -1.039 | 0.652 | 0.942 |
| 14-Aug-95 | 2.08 | 5 | 0.1907 | -0.875 | 0.732 | 0.946 |
| 8-Sep-94 | 2.4 | 6 | 0.2320 | -0.732 | 0.875 | 0.949 |
| 4-Oct-94 | 2.4 | 7 | 0.2732 | -0.603 | 0.875 | 0.955 |
| 25-Jul-95 | 2.46 | 8 | 0.3144 | -0.483 | 0.900 | 0.958 |
| 15-Aug-94 | 2.61 | 9 | 0.3557 | -0.370 | 0.959 | 0.957 |
| 20-Jul-94 | 2.68 | 10 | 0.3969 | -0.261 | 0.986 | 0.955 |
| 27-Jun-95 | 2.92 | 11 | 0.4381 | -0.156 | 1.072 | 0.949 |
| 12-Nov-97 | 3.11 | 12 | 0.4794 | -0.052 | 1.135 | 0.941 |
| 20-Jul-94 | 3.52 | 13 | 0.5206 | 0.052 | 1.258 | 0.931 |
| 11-Jul-95 | 3.9 | 14 | 0.5619 | 0.156 | 1.361 | 0.919 |
| 23-Jun-94 | 4.25 | 15 | 0.6031 | 0.261 | 1.447 | 0.903 |
| 7-Jun-94 | 4.78 | 16 | 0.6443 | 0.370 | 1.564 | 0.887 |
| 13-May-95 | 7.25 | 17 | 0.6856 | 0.483 | 1.981 | 0.877 |
| 12-Jun-95 | 7.47 | 18 | 0.7268 | 0.603 | 2.011 | 0.843 |
| 4-May-94 | 9.52 | 19 | 0.7680 | 0.732 | 2.253 | 0.801 |
| 19-May-94 | 10.44 | 20 | 0.8093 | 0.875 | 2.346 | 0.725 |
| 9-May-95 | 17.74 | 21 | 0.8505 | 1.039 | 2.876 | |
| 23-May-95 | 20.15 | 22 | 0.8918 | 1.236 | 3.003 | |
| 16-May-91 | 25.5 | 23 | 0.9330 | 1.498 | 3.239 | |
| 14-May-98 | 26.2 | 24 | 0.9742 | 1.947 | 3.266 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM293 | **Date:** | 13-Jun-00 |
| **Chemical:** | tPb | **Analyst:** | J.MacLachlan |
| **Notes:** | | | |
| Input Discharge and Concentration Data below (in red) | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,746 | 7 | 25 | 1 | 0.00 | 0.00 | 0.00 |
| **SD:** | 589 | 7 | 23 | 1 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.06 | 0.94 | 1.37 | | | |
| **Min:** | 33,374 | 1 | 11 | 0.1 | -0.78 | -0.59 | -0.62 |
| **Max:** | 36,114 | 26 | 126 | 5 | 2.59 | 4.38 | 3.99 |
| **Median:** | 34,720 | 3 | 18 | 0.3 | -0.50 | -0.29 | -0.43 |

| tPb NM293 | | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.00863)** | | update r2 | **0.01** | 0.00863 | | r2: | 0.001 | 0.001 |
| r2 Q,[COC]: | 0.01 | [tPb] | Q | | | m: | -0.0004 | -0.00004 |
| slope, m: | -0.3 | 26 | 1.2 | | | b: | 22 | 2.79 |
| intercept, b: | 26.6 | 25 | 7.0 | | | | | |
| N: 24 | | 19 | 26 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.0403)** | | update r2 | 0.04 | 0.0403 | | | | |
| r2 lnQ,ln[COC]: | 0.04 | ln[tPb] | ln Q | [tPb] | Q | | | |
| slope, m: | -0.12 | 3.16 | 0.22 | 24 | 1 | | | |
| intercept, b: | 3.19 | 2.96 | 1.95 | 19 | 7 | | | |
| N: 24 | | 2.80 | 3.27 | 17 | 26 | | | |

**N= 24**

| | Sampling Date | Q Discharge | tPb Concentration | tPb Load | Ln Q | Ln tPb Conc. | Ln tPb Load | for graph: tPb NM293 0 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 25.5 | 15 | 2.1 | 3.24 | 2.71 | 0.72 | 2.49 | -0.42 | 1.05 |
| MFG | 4-Oct-91 | 1.24 | 19 | 0.1 | 0.22 | 2.94 | -2.07 | -0.78 | -0.24 | -0.62 |
| IDEQ | 4-May-94 | 9.52 | 16.6 | 0.9 | 2.25 | 2.81 | -0.16 | 0.34 | -0.35 | 0.01 |
| IDEQ | 19-May-94 | 10.44 | 13 | 0.7 | 2.35 | 2.56 | -0.31 | 0.46 | -0.50 | -0.10 |
| IDEQ | 7-Jun-94 | 4.78 | 12 | 0.3 | 1.56 | 2.48 | -1.18 | -0.30 | -0.55 | -0.46 |
| IDEQ | 23-Jun-94 | 4.25 | 18 | 0.4 | 1.45 | 2.89 | -0.89 | -0.37 | -0.29 | -0.37 |
| IDEQ | 20-Jul-94 | 2.68 | 18 | 0.3 | 0.99 | 2.89 | -1.35 | -0.58 | -0.29 | -0.51 |
| IDEQ | 20-Jul-94 | 3.52 | 18 | 0.3 | 1.26 | 2.89 | -1.08 | -0.47 | -0.29 | -0.44 |
| IDEQ | 15-Aug-94 | 2.61 | 23 | 0.3 | 0.96 | 3.14 | -1.13 | -0.59 | -0.07 | -0.45 |
| IDEQ | 15-Aug-94 | 1.86 | 23 | 0.2 | 0.62 | 3.14 | -1.47 | -0.69 | -0.07 | -0.53 |
| IDEQ | 8-Sep-94 | 2.4 | 20 | 0.3 | 0.88 | 3.00 | -1.35 | -0.62 | -0.20 | -0.51 |
| IDEQ | 4-Oct-94 | 2.4 | 27 | 0.3 | 0.88 | 3.30 | -1.05 | -0.62 | 0.10 | -0.43 |
| IDEQ | 9-May-95 | 17.74 | 57 | 5.4 | 2.88 | 4.04 | 1.69 | 1.45 | 1.40 | 3.99 |
| IDEQ | 13-May-95 | 7.25 | 23 | 0.9 | 1.98 | 3.14 | -0.11 | 0.03 | -0.07 | 0.05 |
| IDEQ | 23-May-95 | 20.15 | 14 | 1.5 | 3.00 | 2.64 | 0.42 | 1.77 | -0.46 | 0.59 |
| IDEQ | 12-Jun-95 | 7.47 | 14 | 0.6 | 2.01 | 2.64 | -0.58 | 0.06 | -0.46 | -0.24 |
| IDEQ | 27-Jun-95 | 2.92 | 11 | 0.2 | 1.07 | 2.40 | -1.76 | -0.55 | -0.59 | -0.58 |
| IDEQ | 11-Jul-95 | 3.9 | 15 | 0.3 | 1.36 | 2.71 | -1.16 | -0.42 | -0.42 | -0.46 |
| IDEQ | 25-Jul-95 | 2.46 | 16 | 0.2 | 0.90 | 2.77 | -1.55 | -0.61 | -0.37 | -0.55 |
| IDEQ | 14-Aug-95 | 2.08 | 20 | 0.2 | 0.73 | 3.00 | -1.50 | -0.66 | -0.20 | -0.54 |
| IDEQ | 13-Sep-95 | 1.92 | 37 | 0.4 | 0.65 | 3.61 | -0.96 | -0.69 | 0.54 | -0.40 |
| URS | 12-Nov-97 | 3.11 | 15.6 | 0.3 | 1.13 | 2.75 | -1.34 | -0.53 | -0.39 | -0.50 |
| URS | 14-May-98 | 26.2 | 19.7 | 2.8 | 3.27 | 2.98 | 1.02 | 2.59 | -0.21 | 1.68 |
| URS | 15-Nov-98 | 1.792 | 126 | 1.2 | 0.58 | 4.84 | 0.19 | -0.70 | 4.38 | 0.32 |

tPb

**Concentration over time analysis**

| | tPb | NM293 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.167** | **0.00036** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 2.52 | 12 | | |
| mid: | 20-Jan-95 | 3.00 | 20 | | |
| last: | 15-Nov-98 | 3.50 | 33 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | tPb | NM293 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.041** | **0.00032** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | -1.15 | 0.3 | | |
| mid: | 20-Jan-95 | -0.71 | 0.5 | | |
| last: | 15-Nov-98 | -0.27 | 0.8 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

| | max r2: | 0.369 | | max r2: | 0.613 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | *only on >4 data points: delete last 4 rows* | | | *only on >4 data points: delete last 4 rows* | | |
| | 0.167 | 0.00036 | -9.44 | 0.041 | 0.00032 | -11.87 |
| | 0.162 | 0.00040 | -10.93 | 0.188 | 0.00074 | -26.60 |
| | 0.205 | 0.00053 | -15.42 | 0.113 | 0.00064 | -23.12 |
| | 0.199 | 0.00053 | -15.41 | 0.139 | 0.00072 | -25.87 |
| | 0.179 | 0.00050 | -14.50 | 0.164 | 0.00079 | -28.43 |
| | 0.155 | 0.00046 | -13.11 | 0.155 | 0.00078 | -28.08 |
| | 0.149 | 0.00046 | -13.08 | 0.156 | 0.00080 | -28.78 |
| | 0.141 | 0.00046 | -13.00 | 0.140 | 0.00077 | -27.56 |
| | 0.133 | 0.00046 | -12.89 | 0.131 | 0.00076 | -27.33 |
| | 0.142 | 0.00049 | -13.94 | 0.119 | 0.00074 | -26.67 |
| | 0.153 | 0.00053 | -15.31 | 0.093 | 0.00066 | -23.84 |
| | 0.154 | 0.00055 | -16.08 | 0.068 | 0.00058 | -20.84 |
| | 0.189 | 0.00064 | -19.22 | 0.052 | 0.00053 | -18.95 |
| | 0.337 | 0.00079 | -24.80 | 0.208 | 0.00085 | -30.59 |
| | 0.369 | 0.00085 | -26.88 | 0.277 | 0.00099 | -35.43 |
| | 0.346 | 0.00083 | -26.31 | 0.515 | 0.00126 | -45.32 |
| | 0.316 | 0.00081 | -25.41 | 0.613 | 0.00142 | -51.10 |
| | 0.254 | 0.00070 | -21.69 | 0.572 | 0.00135 | -48.45 |
| | 0.197 | 0.00064 | -19.19 | 0.570 | 0.00143 | -51.19 |
| | 0.120 | 0.00053 | -15.23 | 0.493 | 0.00137 | -49.08 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **tPb** | | **NM293** | | |
| **LN Analysis** | | **tPb** | | |
| **Load** | | **Load Data, EV=0.843 lbs/day CV=1.37** | | |
| **Avg:** | **1** | **Load Data-based LN** | | |
| **SD:** | **1** | u | ln tPb Load | tPb Load |
| **CV:** | **1.37** | 3 | 2.4 | 11 |
| **Min:** | **0.1** | 0 | -0.70 | 0.5 |
| **Max:** | **5** | -3 | -3.78 | 0.02 |
| **Median:** | **0.3** | | | |
| | | 1 | 0.843 | |
| | | 1.37 | 1.37 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.911, EV=0.838lbs/day CV=1.37; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.911 | u | lnLoad | Load |
| slope, m: | 0.973 | 3 | 2.38 | 11 |
| intercept, b: | 0.686 | 0 | -0.71 | 0.5 |
| N: | 24 | -3 | -3.79 | 0.02 |
| E[Load]: | 0.8 | Parameter Estimates | | 0.911 |
| SD[Load]: | 1 | from LN regression | | 0.8 |
| CV[Load]: | 1.37 | update graph label | | 1.4 |
| | | | | max r2 |
| | | N: 24 | | 0.998 |

| Date | tPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 0.1 | 1 | 0.0258 | -1.947 | -2.066 | 0.911 |
| 27-Jun-95 | 0.2 | 2 | 0.0670 | -1.498 | -1.756 | 0.916 |
| 25-Jul-95 | 0.2 | 3 | 0.1082 | -1.236 | -1.552 | 0.925 |
| 14-Aug-95 | 0.2 | 4 | 0.1495 | -1.039 | -1.497 | 0.938 |
| 15-Aug-94 | 0.2 | 5 | 0.1907 | -0.875 | -1.469 | 0.949 |
| 8-Sep-94 | 0.3 | 6 | 0.2320 | -0.732 | -1.354 | 0.957 |
| 20-Jul-94 | 0.3 | 7 | 0.2732 | -0.603 | -1.349 | 0.967 |
| 12-Nov-97 | 0.3 | 8 | 0.3144 | -0.483 | -1.343 | 0.974 |
| 7-Jun-94 | 0.3 | 9 | 0.3557 | -0.370 | -1.176 | 0.977 |
| 11-Jul-95 | 0.3 | 10 | 0.3969 | -0.261 | -1.156 | 0.985 |
| 15-Aug-94 | 0.3 | 11 | 0.4381 | -0.156 | -1.130 | 0.990 |
| 20-Jul-94 | 0.3 | 12 | 0.4794 | -0.052 | -1.076 | 0.993 |
| 4-Oct-94 | 0.3 | 13 | 0.5206 | 0.052 | -1.054 | 0.994 |
| 13-Sep-95 | 0.4 | 14 | 0.5619 | 0.156 | -0.962 | 0.992 |
| 23-Jun-94 | 0.4 | 15 | 0.6031 | 0.261 | -0.888 | 0.991 |
| 12-Jun-95 | 0.6 | 16 | 0.6443 | 0.370 | -0.575 | 0.996 |
| 19-May-94 | 0.7 | 17 | 0.6856 | 0.483 | -0.314 | 0.996 |
| 4-May-94 | 0.9 | 18 | 0.7268 | 0.603 | -0.162 | 0.995 |
| 13-May-95 | 0.9 | 19 | 0.7680 | 0.732 | -0.109 | 0.996 |
| 15-Nov-98 | 1.2 | 20 | 0.8093 | 0.875 | 0.195 | 0.998 |
| 23-May-95 | 1.5 | 21 | 0.8505 | 1.039 | 0.417 | |
| 16-May-91 | 2.1 | 22 | 0.8918 | 1.236 | 0.722 | |
| 14-May-98 | 2.8 | 23 | 0.9330 | 1.498 | 1.021 | |
| 9-May-95 | 5.4 | 24 | 0.9742 | 1.947 | 1.694 | |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tPb** | | NM293 | | 25 | 24.6 |
| **LN Analysis** | | tPb | | 0.94 | 0.939 |
| **Concentration** | | **Conc. Data, EV=24.6 ug/L CV=0.939** | | | |
| **Avg:** | **25** | **Data-based LN** | | | |
| **SD:** | **23** | u | ln[tPb] | [tPb] | |
| **CV:** | **0.94** | 3 | 5.3 | 195 | |
| **Min:** | **11** | 0 | 2.89 | 18 | |
| **Max:** | **126** | -3 | 0.50 | 2 | |
| **Median:** | **18** | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.770 | 0.77 |
| | **u=mLn{Conc.}+b:** | | | | 24.6 | 24.6 |
| update for r2, EV, CV: | **r2=0.77, EV=24.6 ug/L CV=0.687; max r2=0.99** | | | | 0.687 | 0.687 |
| | r2 u,lnConc: | 0.770 | u | lnConc. | Conc. | |
| | slope, m: | 1.609 | 3 | 4.87 | 131 | |
| | intercept, b: | -4.844 | 0 | 3.01 | 20 | |
| | N: | 24 | -3 | 1.15 | 3 | |
| 0.911 | E[Conc]: | 24.6 | Parameter Estimates | | | |
| 0.838 | SD[Conc]: | 17 | from LN regression | | | |
| 1.37 | CV[Conc]: | 0.69 | update graph label | | | |

| | tPb | N: 24 | | | | max r2 0.995 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| **Date** | **ug/L Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 27-Jun-95 | 11 | 1 | 0.0258 | -1.947 | 2.398 | 0.770 |
| 7-Jun-94 | 12 | 2 | 0.0670 | -1.498 | 2.485 | 0.777 |
| 19-May-94 | 13 | 3 | 0.1082 | -1.236 | 2.565 | 0.780 |
| 23-May-95 | 14 | 4 | 0.1495 | -1.039 | 2.639 | 0.785 |
| 12-Jun-95 | 14 | 5 | 0.1907 | -0.875 | 2.639 | 0.794 |
| 16-May-91 | 15 | 6 | 0.2320 | -0.732 | 2.708 | 0.798 |
| 11-Jul-95 | 15 | 7 | 0.2732 | -0.603 | 2.708 | 0.807 |
| 12-Nov-97 | 15.6 | 8 | 0.3144 | -0.483 | 2.747 | 0.812 |
| 25-Jul-95 | 16 | 9 | 0.3557 | -0.370 | 2.773 | 0.818 |
| 4-May-94 | 16.6 | 10 | 0.3969 | -0.261 | 2.809 | 0.824 |
| 23-Jun-94 | 18 | 11 | 0.4381 | -0.156 | 2.890 | 0.831 |
| 20-Jul-94 | 18 | 12 | 0.4794 | -0.052 | 2.890 | 0.849 |
| 20-Jul-94 | 18 | 13 | 0.5206 | 0.052 | 2.890 | 0.865 |
| 4-Oct-91 | 19 | 14 | 0.5619 | 0.156 | 2.944 | 0.876 |
| 14-May-98 | 19.7 | 15 | 0.6031 | 0.261 | 2.981 | 0.892 |
| 8-Sep-94 | 20 | 16 | 0.6443 | 0.370 | 2.996 | 0.912 |
| 14-Aug-95 | 20 | 17 | 0.6856 | 0.483 | 2.996 | 0.930 |
| 15-Aug-94 | 23 | 18 | 0.7268 | 0.603 | 3.135 | 0.939 |
| 15-Aug-94 | 23 | 19 | 0.7680 | 0.732 | 3.135 | 0.971 |
| 13-May-95 | 23 | 20 | 0.8093 | 0.875 | 3.135 | 0.995 |
| 4-Oct-94 | 27 | 21 | 0.8505 | 1.039 | 3.296 | |
| 13-Sep-95 | 37 | 22 | 0.8918 | 1.236 | 3.611 | |
| 9-May-95 | 57 | 23 | 0.9330 | 1.498 | 4.043 | |
| 15-Nov-98 | 126 | 24 | 0.9742 | 1.947 | 4.836 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **NM293** | | | 7 | 7.01 |
| **LN Analysis** | | **tPb** | | | 1.06 | 1.06 |
| **Discharge, Q** | | **Q Data, EV=7.01 cfs CV=1.06** | | | | |
| **Avg:** | **7** | **Q Data-based LN** | | | | |
| **SD:** | **7** | u | lnQ | Q | | |
| **CV:** | **1.06** | 3 | 4.2 | 65 | | |
| **Min:** | **1** | 0 | 1.57 | 5 | | |
| **Max:** | **26** | -3 | -1.03 | 0 | | |
| **Median:** | **3** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.913 | 0.913 |
| | | | | | 7.3 | 7.28 |
| **u=mLn(Q)+b:** | | | | | 1.26 | 1.26 |

update for r2, EV, CV: **r2=0.913, EV=7.28 cfs CV=1.26; max r2=0.96**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnQ: | 0.913 | u | lnQ | Q | |
| slope, m: | 1.025 | 3 | 4.44 | 85 | |
| intercept, b: | -1.546 | 0 | 1.51 | 5 | |
| N: | 24 | -3 | -1.42 | 0.2 | |
| E[Q]: | 7.3 | Parameter Estimates | | | |
| SD[Q]: | 9 | from LN regression | | | |
| CV[Q]: | 1.26 | update graph label | | | |

| | Q | N: 24 | | | | max r2 0.958 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.24 | 1 | 0.0258 | -1.947 | 0.215 | 0.913 |
| 15-Nov-98 | 1.792 | 2 | 0.0670 | -1.498 | 0.583 | 0.918 |
| 15-Aug-94 | 1.86 | 3 | 0.1082 | -1.236 | 0.621 | 0.933 |
| 13-Sep-95 | 1.92 | 4 | 0.1495 | -1.039 | 0.652 | 0.942 |
| 14-Aug-95 | 2.08 | 5 | 0.1907 | -0.875 | 0.732 | 0.946 |
| 8-Sep-94 | 2.4 | 6 | 0.2320 | -0.732 | 0.875 | 0.949 |
| 4-Oct-94 | 2.4 | 7 | 0.2732 | -0.603 | 0.875 | 0.955 |
| 25-Jul-95 | 2.46 | 8 | 0.3144 | -0.483 | 0.900 | 0.958 |
| 15-Aug-94 | 2.61 | 9 | 0.3557 | -0.370 | 0.959 | 0.957 |
| 20-Jul-94 | 2.68 | 10 | 0.3969 | -0.261 | 0.986 | 0.955 |
| 27-Jun-95 | 2.92 | 11 | 0.4381 | -0.156 | 1.072 | 0.949 |
| 12-Nov-97 | 3.11 | 12 | 0.4794 | -0.052 | 1.135 | 0.941 |
| 20-Jul-94 | 3.52 | 13 | 0.5206 | 0.052 | 1.258 | 0.931 |
| 11-Jul-95 | 3.9 | 14 | 0.5619 | 0.156 | 1.361 | 0.919 |
| 23-Jun-94 | 4.25 | 15 | 0.6031 | 0.261 | 1.447 | 0.903 |
| 7-Jun-94 | 4.78 | 16 | 0.6443 | 0.370 | 1.564 | 0.887 |
| 13-May-95 | 7.25 | 17 | 0.6856 | 0.483 | 1.981 | 0.877 |
| 12-Jun-95 | 7.47 | 18 | 0.7268 | 0.603 | 2.011 | 0.843 |
| 4-May-94 | 9.52 | 19 | 0.7680 | 0.732 | 2.253 | 0.801 |
| 19-May-94 | 10.44 | 20 | 0.8093 | 0.875 | 2.346 | 0.725 |
| 9-May-95 | 17.74 | 21 | 0.8505 | 1.039 | 2.876 | |
| 23-May-95 | 20.15 | 22 | 0.8918 | 1.236 | 3.003 | |
| 16-May-91 | 25.5 | 23 | 0.9330 | 1.498 | 3.239 | |
| 14-May-98 | 26.2 | 24 | 0.9742 | 1.947 | 3.266 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM293 | **Date:** | 2-Jun-00 |
| **Chemical:** | tZn | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,746 | 7 | 3,255 | 89 | 0.00 | 0.00 | 0.00 |
| **SD:** | 589 | 7 | 2,911 | 81 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.06 | 0.89 | 0.91 | | | |
| **Min:** | 33,374 | 1 | 1,250 | 15.5 | -0.78 | -0.69 | -0.91 |
| **Max:** | 36,114 | 26 | 15,100 | 355 | 2.59 | 4.07 | 3.29 |
| **Median:** | 34,720 | 3 | 2,440 | 48 | -0.50 | -0.28 | -0.51 |

| tZn | NM293 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.083)** | | update r2 | 0.08 | 0.083 | r2: | 0.001 | 0.001 |
| r2 Q,[COC]: | 0.08 | [tZn] | Q | | m: | -0.0004 | -0.00004 |
| slope, m: | -113.0 | 3,907 | 1.2 | | b: | 22 | 2.79 |
| intercept, b: | 4047.2 | 3,255 | 7.0 | | | | |
| N: 24 | | 1,085 | 26 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.251)** | | update r2 | 0.25 | 0.251 | | | |
| r2 lnQ,ln[COC]: | 0.25 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m: | -0.32 | 8.29 | 0.22 | 3,994 | 1 | | |
| intercept, b: | 8.36 | 7.74 | 1.95 | 2,309 | 7 | | |
| N: 24 | | 7.33 | 3.27 | 1,521 | 26 | | |

**N= 24**

| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | tZn NM293 Standardized Values = (x - Avg)/SD Q | for graph 0 Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 25.5 | 1250 | 171 | 3.24 | 7.13 | 5.14 | 2.49 | -0.69 | 1.02 |
| MFG | 4-Oct-91 | 1.24 | 2330 | 16 | 0.22 | 7.75 | 2.74 | -0.78 | -0.32 | -0.91 |
| IDEQ | 4-May-94 | 9.52 | 2630 | 135 | 2.25 | 7.87 | 4.90 | 0.34 | -0.21 | 0.56 |
| IDEQ | 19-May-94 | 10.44 | 1430 | 80 | 2.35 | 7.27 | 4.39 | 0.46 | -0.63 | -0.11 |
| IDEQ | 7-Jun-94 | 4.78 | 1960 | 50 | 1.56 | 7.58 | 3.92 | -0.30 | -0.44 | -0.48 |
| IDEQ | 23-Jun-94 | 4.25 | 2100 | 48 | 1.45 | 7.65 | 3.87 | -0.37 | -0.40 | -0.51 |
| IDEQ | 20-Jul-94 | 2.68 | 2420 | 35 | 0.99 | 7.79 | 3.55 | -0.58 | -0.29 | -0.67 |
| IDEQ | 20-Jul-94 | 3.52 | 2420 | 46 | 1.26 | 7.79 | 3.82 | -0.47 | -0.29 | -0.54 |
| IDEQ | 15-Aug-94 | 2.61 | 2990 | 42 | 0.96 | 8.00 | 3.74 | -0.59 | -0.09 | -0.58 |
| IDEQ | 15-Aug-94 | 1.86 | 2990 | 30 | 0.62 | 8.00 | 3.40 | -0.69 | -0.09 | -0.73 |
| IDEQ | 8-Sep-94 | 2.4 | 2890 | 37 | 0.88 | 7.97 | 3.62 | -0.62 | -0.13 | -0.64 |
| IDEQ | 4-Oct-94 | 2.4 | 3330 | 43 | 0.88 | 8.11 | 3.76 | -0.62 | 0.03 | -0.57 |
| IDEQ | 9-May-95 | 17.74 | 2460 | 235 | 2.88 | 7.81 | 5.46 | 1.45 | -0.27 | 1.80 |
| IDEQ | 13-May-95 | 7.25 | 9110 | 355 | 1.98 | 9.12 | 5.87 | 0.03 | 2.01 | 3.29 |
| IDEQ | 23-May-95 | 20.15 | 1450 | 157 | 3.00 | 7.28 | 5.06 | 1.77 | -0.62 | 0.84 |
| IDEQ | 12-Jun-95 | 7.47 | 1610 | 65 | 2.01 | 7.38 | 4.17 | 0.06 | -0.57 | -0.30 |
| IDEQ | 27-Jun-95 | 2.92 | 1870 | 29 | 1.07 | 7.53 | 3.38 | -0.55 | -0.48 | -0.74 |
| IDEQ | 11-Jul-95 | 3.9 | 2260 | 47 | 1.36 | 7.72 | 3.86 | -0.42 | -0.34 | -0.52 |
| IDEQ | 25-Jul-95 | 2.46 | 2530 | 33 | 0.90 | 7.84 | 3.51 | -0.61 | -0.25 | -0.69 |
| IDEQ | 14-Aug-95 | 2.08 | 3280 | 37 | 0.73 | 8.10 | 3.60 | -0.66 | 0.01 | -0.65 |
| IDEQ | 13-Sep-95 | 1.92 | 3920 | 40 | 0.65 | 8.27 | 3.70 | -0.69 | 0.23 | -0.60 |
| URS | 12-Nov-97 | 3.11 | 4450 | 74 | 1.13 | 8.40 | 4.31 | -0.53 | 0.41 | -0.18 |
| URS | 14-May-98 | 26.2 | 1340 | 189 | 3.27 | 7.20 | 5.24 | 2.59 | -0.66 | 1.23 |
| URS | 15-Nov-98 | 1.792 | 15100 | 146 | 0.58 | 9.62 | 4.98 | -0.70 | 4.07 | 0.70 |

tZn

**Concentration over time analysis**

| | tZn | NM293 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | Concentration over time | |
| | LnConc.=mTime+b All data r2, m: | | | 0.204 | 0.00043 |
| | Time | Ln[COC] | [COC] | | |
| first | 16-May-91 | 7.30 | 1,475 | | |
| mid | 20-Jan-95 | 7.87 | 2,622 | | |
| last | 15-Nov-98 | 8.47 | 4,761 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | tZn | NM293 | | Load over time | |
|---|---|---|---|---|---|
| | LnLoad=mTime+b All data r2, m: | | | 0.089 | 0.00039 |
| | Time | LnLoad | Load | | |
| first | 16-May-91 | 3.63 | 38 | | |
| mid | 20-Jan-95 | 4.16 | 64 | | |
| last | 15-Nov-98 | 4.70 | 110 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

| | max r2: 0.289 | | | max r2: 0.904 | | |
|---|---|---|---|---|---|---|
| | Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | | |
| | r2 | slope | intercept | r2 | slope | intercept |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.204 | 0.00043 | -6.98 | 0.089 | 0.00039 | -9.41 |
| | 0.141 | 0.00039 | -5.68 | 0.255 | 0.00073 | -21.35 |
| | 0.162 | 0.00049 | -9.18 | 0.149 | 0.00060 | -16.88 |
| | 0.166 | 0.00051 | -9.69 | 0.199 | 0.00070 | -20.14 |
| | 0.141 | 0.00046 | -8.07 | 0.223 | 0.00075 | -22.00 |
| | 0.126 | 0.00044 | -7.36 | 0.220 | 0.00076 | -22.33 |
| | 0.114 | 0.00042 | -6.78 | 0.214 | 0.00076 | -22.48 |
| | 0.108 | 0.00042 | -6.65 | 0.192 | 0.00073 | -21.22 |
| | 0.100 | 0.00041 | -6.50 | 0.180 | 0.00072 | -20.93 |
| | 0.105 | 0.00044 | -7.32 | 0.162 | 0.00069 | -20.05 |
| | 0.112 | 0.00047 | -8.40 | 0.125 | 0.00061 | -16.93 |
| | 0.117 | 0.00050 | -9.49 | 0.094 | 0.00053 | -14.24 |
| | 0.137 | 0.00057 | -11.89 | 0.066 | 0.00046 | -11.62 |
| | 0.130 | 0.00056 | -11.70 | 0.137 | 0.00062 | -17.48 |
| | 0.289 | 0.00076 | -18.95 | 0.438 | 0.00090 | -27.50 |
| | 0.249 | 0.00069 | -16.45 | 0.796 | 0.00112 | -35.46 |
| | 0.204 | 0.00062 | -13.71 | 0.889 | 0.00123 | -39.40 |
| | 0.155 | 0.00054 | -10.94 | 0.882 | 0.00118 | -37.71 |
| | 0.111 | 0.00047 | -8.58 | 0.904 | 0.00126 | -40.57 |
| | 0.065 | 0.00040 | -5.79 | 0.879 | 0.00124 | -39.64 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **tZn** | | NM293 | | |
| **LN Analysis** | | tZn | | |
| **Load** | | **Load Data, EV=89.2 lbs/day CV=0.907** | | |
| **Avg:** | **89** | **Load Data-based LN** | | |
| **SD:** | **81** | u | ln tZn Load | tZn Load |
| **CV:** | **0.91** | 3 | 6.5 | 675 |
| **Min:** | **15.5** | 0 | 4.19 | 66 |
| **Max:** | **355** | -3 | 1.87 | 6.5 |
| **Median:** | **48** | | | |
| | | 89 | 89.2 | |
| | | 0.91 | 0.907 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.929, EV=92.3lbs/day CV=1.02; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.929 | u | lnLoad | Load |
| slope, m: | 1.182 | 3 | 6.71 | 817 |
| intercept, b: | -4.924 | 0 | 4.17 | 65 |
| N: | 24 | -3 | 1.63 | 5.1 |
| E[Load]: | 92.3 | Parameter Estimates | | |
| SD[Load]: | 94 | from LN regression | | |
| CV[Load] | 1.02 | update graph label | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | 0.929 |
| | | | | | | 92.3 |
| | | | | | | 1.0 |
| | | | | | | max r2 |
| | tZn | N: 24 | | | | 0.984 |
| | Load | i | i-3/8 / N+1/4 | u | Lu | r2 |
| **Date** | **lbs/day Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| update and rank for new data | | | | | | |
| 4-Oct-91 | **16** | 1 | 0.0258 | -1.947 | 2.744 | 0.929 |
| 27-Jun-95 | **29** | 2 | 0.0670 | -1.498 | 3.380 | 0.918 |
| 15-Aug-94 | **30** | 3 | 0.1082 | -1.236 | 3.399 | 0.932 |
| 25-Jul-95 | **33** | 4 | 0.1495 | -1.039 | 3.511 | 0.937 |
| 20-Jul-94 | **35** | 5 | 0.1907 | -0.875 | 3.552 | 0.945 |
| 14-Aug-95 | **37** | 6 | 0.2320 | -0.732 | 3.603 | 0.950 |
| 8-Sep-94 | **37** | 7 | 0.2732 | -0.603 | 3.619 | 0.954 |
| 13-Sep-95 | **40** | 8 | 0.3144 | -0.483 | 3.701 | 0.955 |
| 15-Aug-94 | **42** | 9 | 0.3557 | -0.370 | 3.737 | 0.956 |
| 4-Oct-94 | **43** | 10 | 0.3969 | -0.261 | 3.761 | 0.954 |
| 20-Jul-94 | **46** | 11 | 0.4381 | -0.156 | 3.825 | 0.950 |
| 11-Jul-95 | **47** | 12 | 0.4794 | -0.052 | 3.859 | 0.943 |
| 23-Jun-94 | **48** | 13 | 0.5206 | 0.052 | 3.872 | 0.934 |
| 7-Jun-94 | **50** | 14 | 0.5619 | 0.156 | 3.920 | 0.924 |
| 12-Jun-95 | **65** | 15 | 0.6031 | 0.261 | 4.170 | 0.923 |
| 12-Nov-97 | **74** | 16 | 0.6443 | 0.370 | 4.310 | 0.915 |
| 19-May-94 | **80** | 17 | 0.6856 | 0.483 | 4.386 | 0.909 |
| 4-May-94 | **135** | 18 | 0.7268 | 0.603 | 4.903 | 0.981 |
| 15-Nov-98 | **146** | 19 | 0.7680 | 0.732 | 4.981 | 0.981 |
| 23-May-95 | **157** | 20 | 0.8093 | 0.875 | 5.057 | 0.984 |
| 16-May-91 | **171** | 21 | 0.8505 | 1.039 | 5.145 | |
| 14-May-98 | **189** | 22 | 0.8918 | 1.236 | 5.241 | |
| 9-May-95 | **235** | 23 | 0.9330 | 1.498 | 5.459 | |
| 13-May-95 | **355** | 24 | 0.9742 | 1.947 | 5.873 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **tZn** | | NM293 | 3,255 | 3260 |
| **LN Analysis** | | tZn | 0.89 | 0.894 |
| **Concentration** | | **Conc. Data, EV=3260 ug/L CV=0.894** | | |
| **Avg:** | 3,255 | **Data-based LN** | | |
| **SD:** | 2,911 | u | ln[tZn] | [tZn] |
| **CV:** | 0.89 | 3 | 10.1 | 24200 |
| **Min:** | 1,250 | 0 | 7.79 | 2426 |
| **Max:** | 15,100 | -3 | 5.49 | 243 |
| **Median:** | 2,440 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.860 | 0.86 |
| | **u=mLn(Conc.)+b:** | | | | 3244.1 | 3240 |
| update for r2, EV, CV: | **r2=0.86, EV=3240 ug/L CV=0.704; max r2=0.96** | | | | 0.704 | 0.704 |
| | r2 u,lnConc: | 0.860 | u | lnConc. | Conc. | |
| | slope, m: | 1.576 | 3 | 9.79 | 17800 | |
| | intercept, b: | -12.423 | 0 | 7.88 | 2652 | |
| | N: | 24 | -3 | 5.98 | 395 | |
| 0.929 | E[Conc]: | 3244.1 | Parameter Estimates | | | |
| 92.3 | SD[Conc]: | 2284 | from LN regression | | | |
| 1.02 | CV[Conc]: | 0.70 | update graph label | | | |

| | tZn | N: 24 | | | | max r2 0.964 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| **Date** | **ug/L Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 16-May-91 | 1250 | 1 | 0.0258 | -1.947 | 7.131 | 0.860 |
| 14-May-98 | 1340 | 2 | 0.0670 | -1.498 | 7.200 | 0.866 |
| 19-May-94 | 1430 | 3 | 0.1082 | -1.236 | 7.265 | 0.863 |
| 23-May-95 | 1450 | 4 | 0.1495 | -1.039 | 7.279 | 0.857 |
| 12-Jun-95 | 1610 | 5 | 0.1907 | -0.875 | 7.384 | 0.844 |
| 27-Jun-95 | 1870 | 6 | 0.2320 | -0.732 | 7.534 | 0.834 |
| 7-Jun-94 | 1960 | 7 | 0.2732 | -0.603 | 7.581 | 0.832 |
| 23-Jun-94 | 2100 | 8 | 0.3144 | -0.483 | 7.650 | 0.831 |
| 11-Jul-95 | 2260 | 9 | 0.3557 | -0.370 | 7.723 | 0.834 |
| 4-Oct-91 | 2330 | 10 | 0.3969 | -0.261 | 7.754 | 0.843 |
| 20-Jul-94 | 2420 | 11 | 0.4381 | -0.156 | 7.792 | 0.854 |
| 20-Jul-94 | 2420 | 12 | 0.4794 | -0.052 | 7.792 | 0.868 |
| 9-May-95 | 2460 | 13 | 0.5206 | 0.052 | 7.808 | 0.878 |
| 25-Jul-95 | 2530 | 14 | 0.5619 | 0.156 | 7.836 | 0.886 |
| 4-May-94 | 2630 | 15 | 0.6031 | 0.261 | 7.875 | 0.893 |
| 8-Sep-94 | 2890 | 16 | 0.6443 | 0.370 | 7.969 | 0.899 |
| 15-Aug-94 | 2990 | 17 | 0.6856 | 0.483 | 8.003 | 0.918 |
| 15-Aug-94 | 2990 | 18 | 0.7268 | 0.603 | 8.003 | 0.939 |
| 14-Aug-95 | 3280 | 19 | 0.7680 | 0.732 | 8.096 | 0.948 |
| 4-Oct-94 | 3330 | 20 | 0.8093 | 0.875 | 8.111 | 0.964 |
| 13-Sep-95 | 3920 | 21 | 0.8505 | 1.039 | 8.274 | |
| 12-Nov-97 | 4450 | 22 | 0.8918 | 1.236 | 8.401 | |
| 13-May-95 | 9110 | 23 | 0.9330 | 1.498 | 9.117 | |
| 15-Nov-98 | 15100 | 24 | 0.9742 | 1.947 | 9.622 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **NM293** | | | 7 | 7.01 |
| **LN Analysis** | | **tZn** | | | 1.06 | 1.06 |
| **Discharge, Q** | | **Q Data, EV=7.01 cfs CV=1.06** | | | | |
| **Avg:** | 7 | **Q Data-based LN** | | | | |
| **SD:** | 7 | u | lnQ | Q | | |
| **CV:** | 1.06 | 3 | 4.2 | 65 | | |
| **Min:** | 1 | 0 | 1.57 | 5 | | |
| **Max:** | 26 | -3 | -1.03 | 0 | | |
| **Median:** | 3 | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.913 | 0.913 |
| | | | | | 7.3 | 7.28 |
| **u=mLn(Q)+b:** | | | | | 1.26 | 1.26 |
| update for r2, EV, CV: | **r2=0.913, EV=7.28 cfs CV=1.26; max r2=0.96** | | | | | |
| r2 u,lnQ: | 0.913 | u | lnQ | Q | | |
| slope, m: | 1.025 | 3 | 4.44 | 85 | | |
| intercept, b: | -1.546 | 0 | 1.51 | 5 | | |
| N: | 24 | -3 | -1.42 | 0 | | |
| E[Q]: | 7.3 | Parameter Estimates | | | | |
| SD[Q]: | 9 | from LN regression | | | | |
| CV[Q]: | 1.26 | update graph label | | | | |

| | Q | N: 24 | | | | max r2 0.958 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.24 | 1 | 0.0258 | -1.947 | 0.215 | 0.913 |
| 15-Nov-98 | 1.792 | 2 | 0.0670 | -1.498 | 0.583 | 0.918 |
| 15-Aug-94 | 1.86 | 3 | 0.1082 | -1.236 | 0.621 | 0.933 |
| 13-Sep-95 | 1.92 | 4 | 0.1495 | -1.039 | 0.652 | 0.942 |
| 14-Aug-95 | 2.08 | 5 | 0.1907 | -0.875 | 0.732 | 0.946 |
| 8-Sep-94 | 2.4 | 6 | 0.2320 | -0.732 | 0.875 | 0.949 |
| 4-Oct-94 | 2.4 | 7 | 0.2732 | -0.603 | 0.875 | 0.955 |
| 25-Jul-95 | 2.46 | 8 | 0.3144 | -0.483 | 0.900 | 0.958 |
| 15-Aug-94 | 2.61 | 9 | 0.3557 | -0.370 | 0.959 | 0.957 |
| 20-Jul-94 | 2.68 | 10 | 0.3969 | -0.261 | 0.986 | 0.955 |
| 27-Jun-95 | 2.92 | 11 | 0.4381 | -0.156 | 1.072 | 0.949 |
| 12-Nov-97 | 3.11 | 12 | 0.4794 | -0.052 | 1.135 | 0.941 |
| 20-Jul-94 | 3.52 | 13 | 0.5206 | 0.052 | 1.258 | 0.931 |
| 11-Jul-95 | 3.9 | 14 | 0.5619 | 0.156 | 1.361 | 0.919 |
| 23-Jun-94 | 4.25 | 15 | 0.6031 | 0.261 | 1.447 | 0.903 |
| 7-Jun-94 | 4.78 | 16 | 0.6443 | 0.370 | 1.564 | 0.887 |
| 13-May-95 | 7.25 | 17 | 0.6856 | 0.483 | 1.981 | 0.877 |
| 12-Jun-95 | 7.47 | 18 | 0.7268 | 0.603 | 2.011 | 0.843 |
| 4-May-94 | 9.52 | 19 | 0.7680 | 0.732 | 2.253 | 0.801 |
| 19-May-94 | 10.44 | 20 | 0.8093 | 0.875 | 2.346 | 0.725 |
| 9-May-95 | 17.74 | 21 | 0.8505 | 1.039 | 2.876 | |
| 23-May-95 | 20.15 | 22 | 0.8918 | 1.236 | 3.003 | |
| 16-May-91 | 25.5 | 23 | 0.9330 | 1.498 | 3.239 | |
| 14-May-98 | 26.2 | 24 | 0.9742 | 1.947 | 3.266 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM295 | **Date:** | 29-May-00 |
| **Chemical:** | dCd | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,750 | 10 | 15 | 0.6 | 0.00 | 0.00 | 0.00 |
| **SD:** | 673 | 9 | 11 | 0.4 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.91 | 0.74 | 0.62 | | | |
| **Min:** | 33,374 | 2 | 4 | 0.1 | -0.90 | -1.01 | -1.33 |
| **Max:** | 36,114 | 32 | 60 | 1.4 | 2.28 | 3.85 | 2.21 |
| **Median:** | 34,695 | 6 | 14 | 0.6 | -0.50 | -0.17 | -0.01 |

**dCd NM295 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.19)** update r2

| | | [dCd] | Q |
|---|---|---|---|
| r2 Q,[COC]: | 0.19 | | |
| slope, m: | -0.5 | 20 | 1.9 |
| intercept, b: | 20.9 | 15 | 10.3 |
| N: 18 | | 4 | 32 |

**LnConc. = mLn(Q)+b (r2=0.40)** update r2

| | | ln[dCd] | ln Q | [dCd] | Q |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.40 | | | | |
| slope, m: | -0.37 | 3.04 | 0.66 | 21 | 2 |
| intercept, b: | 3.29 | 2.42 | 2.33 | 11 | 10 |
| N: 18 | | 2.00 | 3.45 | 7 | 32 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2: | 0.002 | 0.000002 |
| m: | -0.0006 | -0.000002 |
| b: | 31 | 1.99 |

**LnQ = mTime +b**

for graph 0

N= 18

| | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd NM295 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 31.2 | 3.8 | 0.6 | 3.44 | 1.34 | -0.45 | 2.25 | -1.01 | 0.10 |
| MFG | 4-Oct-91 | 1.93 | 10.5 | 0.1 | 0.66 | 2.35 | -2.22 | -0.90 | -0.43 | -1.33 |
| IDEQ | 3-May-94 | 12.78 | 20.6 | 1.4 | 2.55 | 3.03 | 0.35 | 0.27 | 0.45 | 2.21 |
| IDEQ | 19-May-94 | 14.91 | 10 | 0.8 | 2.70 | 2.30 | -0.22 | 0.50 | -0.47 | 0.55 |
| IDEQ | 7-Jun-94 | 8.14 | 15 | 0.7 | 2.10 | 2.71 | -0.42 | -0.23 | -0.04 | 0.16 |
| IDEQ | 20-Jul-94 | 3.57 | 15 | 0.3 | 1.27 | 2.71 | -1.24 | -0.72 | -0.04 | -0.84 |
| IDEQ | 20-Jul-94 | 3.65 | 15 | 0.3 | 1.29 | 2.71 | -1.22 | -0.71 | -0.04 | -0.82 |
| IDEQ | 15-Aug-94 | 2.53 | 17 | 0.2 | 0.93 | 2.83 | -1.46 | -0.83 | 0.14 | -1.00 |
| IDEQ | 15-Aug-94 | 2.41 | 17 | 0.2 | 0.88 | 2.83 | -1.51 | -0.84 | 0.14 | -1.02 |
| IDEQ | 9-May-95 | 15.49 | 13 | 1.1 | 2.74 | 2.56 | 0.08 | 0.56 | -0.21 | 1.31 |
| IDEQ | 23-May-95 | 19.6 | 9.3 | 1.0 | 2.98 | 2.23 | -0.02 | 1.00 | -0.53 | 1.03 |
| IDEQ | 12-Jun-95 | 16.75 | 8.7 | 0.8 | 2.82 | 2.16 | -0.24 | 0.70 | -0.59 | 0.50 |
| IDEQ | 27-Jun-95 | 5.26 | 13 | 0.4 | 1.66 | 2.56 | -1.00 | -0.54 | -0.21 | -0.63 |
| IDEQ | 11-Jul-95 | 3.82 | 12 | 0.2 | 1.34 | 2.48 | -1.40 | -0.69 | -0.30 | -0.95 |
| IDEQ | 25-Jul-95 | 2.8 | 14 | 0.2 | 1.03 | 2.64 | -1.56 | -0.80 | -0.12 | -1.05 |
| URS | 12-Nov-97 | 5.89 | 17.5 | 0.6 | 1.77 | 2.86 | -0.59 | -0.47 | 0.18 | -0.12 |
| URS | 15-May-98 | 31.5 | 6.5 | 1.1 | 3.45 | 1.87 | 0.10 | 2.28 | -0.78 | 1.36 |
| URS | 15-Nov-98 | 2.51 | 59.5 | 0.8 | 0.92 | 4.09 | -0.22 | -0.83 | 3.85 | 0.55 |

dCd

**Concentration over time analysis** r2 Slope, m

| | | | | | |
|---|---|---|---|---|---|
| | dCd | NM295 | | Concentration over time | |
| | LnConc.=mTime+b All data r2, m: | | | 0.237 | 0.00039 |
| | Time | Ln[COC] | [COC] | | |
| first: | 16-May-91 | 2.03 | 8 | | |
| mid: | 26-Dec-94 | 2.55 | 13 | | |
| last: | 15-Nov-98 | 3.10 | 22 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | | | | | |
|---|---|---|---|---|---|
| | dCd | NM295 | | Load over time | |
| | LnLoad=mTime+b All data r2, m: | | | 0.135 | 0.00039 |
| | Time | LnLoad | Load | | |
| first: | 16-May-91 | -1.27 | 0.3 | | |
| mid: | 26-Dec-94 | -0.76 | 0.5 | | |
| last: | 15-Nov-98 | -0.21 | 1 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

| | | | | | |
|---|---|---|---|---|---|
| max r2: | 0.241 | | max r2: | 0.912 | |
| Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | | |
| r2 | slope | intercept | r2 | slope | intercept |
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.237 | 0.00039 | -10.96 | 0.135 | 0.00039 | -14.20 |
| 0.085 | 0.00022 | -5.14 | 0.232 | 0.00058 | -21.02 |
| 0.062 | 0.00022 | -5.16 | 0.081 | 0.00036 | -13.06 |
| 0.095 | 0.00028 | -7.13 | 0.179 | 0.00049 | -18.02 |
| 0.076 | 0.00025 | -6.18 | 0.254 | 0.00059 | -21.47 |
| 0.085 | 0.00028 | -7.06 | 0.324 | 0.00068 | -24.75 |
| 0.097 | 0.00031 | -8.08 | 0.298 | 0.00066 | -24.06 |
| 0.113 | 0.00035 | -9.49 | 0.266 | 0.00064 | -23.24 |
| 0.155 | 0.00043 | -12.38 | 0.204 | 0.00055 | -20.09 |
| 0.229 | 0.00056 | -17.00 | 0.114 | 0.00040 | -14.57 |
| 0.241 | 0.00059 | -18.30 | 0.239 | 0.00056 | -20.29 |
| 0.205 | 0.00056 | -17.14 | 0.478 | 0.00077 | -27.85 |
| 0.146 | 0.00048 | -14.33 | 0.838 | 0.00103 | -37.42 |
| 0.136 | 0.00052 | -15.54 | 0.912 | 0.00119 | -43.06 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | **NM295** | | |
| **LN Analysis** | | **dCd** | | |
| **Load** | | **Load Data, EV=1 lbs/day CV=.62** | | |
| **Avg:** | **1** | **Load Data-based LN** | | |
| **SD:** | **0.4** | u | ln dCd Load | dCd Load |
| **CV:** | **0.62** | 3 | 1.0 | 3 |
| **Min:** | **0.1** | 0 | -0.67 | 1 |
| **Max:** | **1** | -3 | -2.38 | 0.1 |
| **Median:** | **1** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.948, EV=0.6 lbs/day CV=0.91; max r2=0.96**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.948 | u | lnLoad | Load |
| slope, m: | 1.283 | 3 | 1.60 | 5 |
| intercept, b: | 0.945 | 0 | -0.74 | 0.5 |
| N: | 18 | -3 | -3.07 | 0.05 |
| E[Load]: | 0.6 | Parameter Estimates | | |
| SD[Load]: | 1 | from LN regression | | |
| CV[Load]: | 0.91 | update graph label | | |

| | dCd | N: 18 | | | | max r2 0.964 |
|---|---|---|---|---|---|---|
| **Date** | **Load lbs/day Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | **r2 forward** |
| update and rank for new data | | | | | | |
| 4-Oct-91 | **0.1** | 1 | 0.0342 | -1.822 | -2.216 | 0.948 |
| 25-Jul-95 | **0.2** | 2 | 0.0890 | -1.347 | -1.556 | 0.933 |
| 15-Aug-94 | **0.2** | 3 | 0.1438 | -1.063 | -1.512 | 0.927 |
| 15-Aug-94 | **0.2** | 4 | 0.1986 | -0.847 | -1.464 | 0.914 |
| 11-Jul-95 | **0.2** | 5 | 0.2534 | -0.664 | -1.400 | 0.897 |
| 20-Jul-94 | **0.3** | 6 | 0.3082 | -0.501 | -1.244 | 0.881 |
| 20-Jul-94 | **0.3** | 7 | 0.3630 | -0.350 | -1.222 | 0.864 |
| 27-Jun-95 | **0.4** | 8 | 0.4178 | -0.208 | -1.000 | 0.888 |
| 12-Nov-97 | **0.6** | 9 | 0.4726 | -0.069 | -0.590 | 0.964 |
| 16-May-91 | **0.6** | 10 | 0.5274 | 0.069 | -0.450 | 0.963 |
| 7-Jun-94 | **0.7** | 11 | 0.5822 | 0.208 | -0.420 | 0.954 |
| 12-Jun-95 | **0.8** | 12 | 0.6370 | 0.350 | -0.243 | 0.951 |
| 19-May-94 | **0.8** | 13 | 0.6918 | 0.501 | -0.220 | 0.944 |
| 15-Nov-98 | **0.8** | 14 | 0.7466 | 0.664 | -0.219 | 0.923 |
| 23-May-95 | **1.0** | 15 | 0.8014 | 0.847 | -0.020 | |
| 9-May-95 | **1.1** | 16 | 0.8562 | 1.063 | 0.080 | |
| 15-May-98 | **1.1** | 17 | 0.9110 | 1.347 | 0.097 | |
| 3-May-94 | **1.4** | 18 | 0.9658 | 1.822 | 0.348 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | **NM295** | | |
| **LN Analysis** | | **dCd** | | |
| **Concentration** | | **Conc. Data, EV=15 ug/L CV=.74** | | |
| **Avg:** | **15** | **Data-based LN** | | |
| **SD:** | **11** | u | ln[dCd] | [dCd] |
| **CV:** | **0.74** | 3 | 4.5 | 90 |
| **Min:** | **4** | 0 | 2.52 | 12 |
| **Max:** | **60** | -3 | 0.53 | 2 |
| **Median:** | **14** | | | |

**u=mLn{Conc.}+b:**

update for r2, EV, CV: **$r^2$=0.876, EV=15.8 ug/L CV=0.68; max r2=0.88**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.876 | u | lnConc. | Conc. |
| slope, m: | 1.624 | 3 | 4.42 | 83 |
| intercept, b: | -4.174 | 0 | 2.57 | 13 |
| N: | 18 | -3 | 0.72 | 2 |
| E[Conc]: | 15.8 | Parameter Estimates | | |
| SD[Conc]: | 11 | from LN regression | | |
| CV[Conc]: | 0.68 | update graph label | | |

| | dCd | N: 18 | | | | max r2 0.876 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 16-May-91 | 3.8 | 1 | 0.0342 | -1.822 | 1.335 | 0.876 |
| 15-May-98 | 6.5 | 2 | 0.0890 | -1.347 | 1.872 | 0.845 |
| 12-Jun-95 | 8.7 | 3 | 0.1438 | -1.063 | 2.163 | 0.812 |
| 23-May-95 | 9.3 | 4 | 0.1986 | -0.847 | 2.230 | 0.796 |
| 19-May-94 | 10 | 5 | 0.2534 | -0.664 | 2.303 | 0.776 |
| 4-Oct-91 | 10.5 | 6 | 0.3082 | -0.501 | 2.351 | 0.756 |
| 11-Jul-95 | 12 | 7 | 0.3630 | -0.350 | 2.485 | 0.732 |
| 9-May-95 | 13 | 8 | 0.4178 | -0.208 | 2.565 | 0.724 |
| 27-Jun-95 | 13 | 9 | 0.4726 | -0.069 | 2.565 | 0.729 |
| 25-Jul-95 | 14 | 10 | 0.5274 | 0.069 | 2.639 | 0.724 |
| 7-Jun-94 | 15 | 11 | 0.5822 | 0.208 | 2.708 | 0.733 |
| 20-Jul-94 | 15 | 12 | 0.6370 | 0.350 | 2.708 | 0.764 |
| 20-Jul-94 | 15 | 13 | 0.6918 | 0.501 | 2.708 | 0.788 |
| 15-Aug-94 | 17 | 14 | 0.7466 | 0.664 | 2.833 | 0.798 |
| 15-Aug-94 | 17 | 15 | 0.8014 | 0.847 | 2.833 | |
| 12-Nov-97 | 17.5 | 16 | 0.8562 | 1.063 | 2.862 | |
| 3-May-94 | 20.6 | 17 | 0.9110 | 1.347 | 3.025 | |
| 15-Nov-98 | 59.5 | 18 | 0.9658 | 1.822 | 4.086 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | NM295 | | |
| **LN Analysis** | | dCd | | |
| **Discharge, Q** | | **Q Data, EV=10 cfs CV=0.91** | | |
| **Avg:** | **10** | **Q Data-based LN** | | |
| **SD:** | **9** | u | lnQ | Q |
| **CV:** | **0.91** | 3 | 4.4 | 78 |
| **Min:** | **2** | 0 | 2.03 | 8 |
| **Max:** | **32** | -3 | -0.30 | 1 |
| **Median:** | **6** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.930, EV=11.4 cfs CV=1.34; max r2=0.95**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.930 | u | lnQ | Q |
| slope, m: | 0.987 | 3 | 4.96 | 142 |
| intercept, b: | -1.893 | 0 | 1.92 | 7 |
| N: 18 | | -3 | -1.12 | 0.3 |
| E[Q]: | 11.4 | Parameter Estimates | | |
| SD[Q]: | 15 | from LN regression | | |
| CV[Q]: | 1.34 | update graph label | | |

N: 18

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.950 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.93 | 1 | 0.0342 | -1.822 | 0.658 | 0.930 |
| 15-Aug-94 | 2.41 | 2 | 0.0890 | -1.347 | 0.880 | 0.942 |
| 15-Nov-98 | 2.51 | 3 | 0.1438 | -1.063 | 0.920 | 0.950 |
| 15-Aug-94 | 2.53 | 4 | 0.1986 | -0.847 | 0.928 | 0.949 |
| 25-Jul-95 | 2.8 | 5 | 0.2534 | -0.664 | 1.030 | 0.940 |
| 20-Jul-94 | 3.57 | 6 | 0.3082 | -0.501 | 1.273 | 0.929 |
| 20-Jul-94 | 3.65 | 7 | 0.3630 | -0.350 | 1.295 | 0.915 |
| 11-Jul-95 | 3.82 | 8 | 0.4178 | -0.208 | 1.340 | 0.899 |
| 27-Jun-95 | 5.26 | 9 | 0.4726 | -0.069 | 1.660 | 0.891 |
| 12-Nov-97 | 5.89 | 10 | 0.5274 | 0.069 | 1.773 | 0.875 |
| 7-Jun-94 | 8.14 | 11 | 0.5822 | 0.208 | 2.097 | 0.890 |
| 3-May-94 | 12.78 | 12 | 0.6370 | 0.350 | 2.548 | 0.914 |
| 19-May-94 | 14.91 | 13 | 0.6918 | 0.501 | 2.702 | 0.886 |
| 9-May-95 | 15.49 | 14 | 0.7466 | 0.664 | 2.740 | 0.862 |
| 12-Jun-95 | 16.75 | 15 | 0.8014 | 0.847 | 2.818 | |
| 23-May-95 | 19.6 | 16 | 0.8562 | 1.063 | 2.976 | |
| 16-May-91 | 31.2 | 17 | 0.9110 | 1.347 | 3.440 | |
| 15-May-98 | 31.5 | 18 | 0.9658 | 1.822 | 3.450 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM295 | **Date:** | 30-May-00 |
| **Chemical:** | dPb | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,750 | 10 | 14 | 0.6 | 0.00 | 0.00 | 0.00 |
| **SD:** | 673 | 9 | 7 | 0.4 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.91 | 0.54 | 0.70 | | | |
| **Min:** | 33,374 | 2 | 7 | 0.1 | -0.90 | -0.90 | -1.24 |
| **Max:** | 36,114 | 32 | 42 | 1.3 | 2.28 | 3.79 | 1.84 |
| **Median:** | 34,695 | 6 | 13 | 0.4 | -0.50 | -0.09 | -0.31 |

**dPb NM295 : Concentration v. Discharge, Q** — **Q = mTime +b** — **LnQ = mTime +b**

| **Conc. = mQ+b (r2=0.10)** | | update r2 | | | r2: | 0.002 | 0.000002 |
|---|---|---|---|---|---|---|---|
| r2 Q,[COC]: | 0.10 | [dPb] | Q | | m: | -0.0006 | -0.000002 |
| slope, m: | -0.3 | 16 | 1.9 | | b: | 31 | 1.99 |
| intercept, b: | 16.3 | 13 | 10.3 | | | | |
| N: 17 | | 7 | 32 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.12)** | | update r2 | | | | | |
| r2 lnQ,ln[COC]: | 0.12 | ln[dPb] | ln Q | [dPb] | Q | | |
| slope, m: | -0.15 | 2.70 | 0.66 | 15 | 2 | | |
| intercept, b. | 2.80 | 2.46 | 2.33 | 12 | 10 | | |
| N: 17 | | 2.29 | 3.45 | 10 | 32 | | |

**N= 18**

| | Sampling Date | Q Discharge | dPb Concentration | dPb Load | Ln Q | Ln dPb Conc. | Ln dPb Load | dPb NM295 Standardized Values = (x - Avg)/SD Q | for graph 0 Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| *MFG* | *16-May-91* | *31.2* | | | 3.44 | | | 2.25 | | |
| MFG | 4-Oct-91 | 1.93 | 7 | 0.1 | 0.66 | 1.95 | -2.62 | -0.90 | -0.90 | -1.24 |
| IDEQ | 3-May-94 | 12.78 | 13 | 0.9 | 2.55 | 2.56 | -0.11 | 0.27 | -0.09 | 0.84 |
| IDEQ | 19-May-94 | 14.91 | 13 | 1.0 | 2.70 | 2.56 | 0.04 | 0.50 | -0.09 | 1.21 |
| IDEQ | 7-Jun-94 | 8.14 | 12 | 0.5 | 2.10 | 2.48 | -0.64 | -0.23 | -0.22 | -0.09 |
| IDEQ | 20-Jul-94 | 3.57 | 11 | 0.2 | 1.27 | 2.40 | -1.55 | -0.72 | -0.36 | -0.89 |
| IDEQ | 20-Jul-94 | 3.65 | 11 | 0.2 | 1.29 | 2.40 | -1.53 | -0.71 | -0.36 | -0.88 |
| IDEQ | 15-Aug-94 | 2.53 | 16 | 0.2 | 0.93 | 2.77 | -1.52 | -0.83 | 0.32 | -0.87 |
| IDEQ | 15-Aug-94 | 2.41 | 16 | 0.2 | 0.88 | 2.77 | -1.57 | -0.84 | 0.32 | -0.90 |
| IDEQ | 9-May-95 | 15.49 | 13 | 1.1 | 2.74 | 2.56 | 0.08 | 0.56 | -0.09 | 1.32 |
| IDEQ | 23-May-95 | 19.6 | 11 | 1.2 | 2.98 | 2.40 | 0.15 | 1.00 | -0.36 | 1.51 |
| IDEQ | 12-Jun-95 | 16.75 | 10 | 0.9 | 2.82 | 2.30 | -0.10 | 0.70 | -0.49 | 0.86 |
| IDEQ | 27-Jun-95 | 5.26 | 10 | 0.3 | 1.66 | 2.30 | -1.26 | -0.54 | -0.49 | -0.71 |
| IDEQ | 11-Jul-95 | 3.82 | 13 | 0.3 | 1.34 | 2.56 | -1.32 | -0.69 | -0.09 | -0.75 |
| IDEQ | 25-Jul-95 | 2.8 | 13 | 0.2 | 1.03 | 2.56 | -1.63 | -0.80 | -0.09 | -0.93 |
| URS | 12-Nov-97 | 5.89 | 13.9 | 0.4 | 1.77 | 2.63 | -0.82 | -0.47 | 0.03 | -0.31 |
| URS | 15-May-98 | 31.5 | 7.6 | 1.3 | 3.45 | 2.03 | 0.25 | 2.28 | -0.82 | 1.84 |
| URS | 15-Nov-98 | 2.51 | 41.7 | 0.6 | 0.92 | 3.73 | -0.57 | -0.83 | 3.79 | 0.00 |

dPb

**Concentration over time analysis**

| | dPb | NM295 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.220** | **0.00029** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 2.11 | 8 | | |
| mid: | 26-Dec-94 | 2.49 | 12 | | |
| last: | 15-Nov-98 | 2.90 | 18 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | dPb | NM295 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.230** | **0.00065** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | -1.81 | 0.2 | | |
| mid: | 26-Dec-94 | -0.96 | 0.4 | | |
| last: | 15-Nov-98 | -0.04 | 1.0 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

| | max r2: | 0.227 | | max r2: | 0.695 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.220 | 0.00029 | -7.53 | 0.230 | 0.00065 | -23.41 |
| | 0.220 | 0.00029 | -7.53 | 0.230 | 0.00065 | -23.41 |
| | 0.109 | 0.00022 | -5.21 | 0.068 | 0.00035 | -13.11 |
| | 0.115 | 0.00023 | -5.64 | 0.111 | 0.00045 | -16.53 |
| | 0.122 | 0.00025 | -6.16 | 0.199 | 0.00059 | -21.45 |
| | 0.119 | 0.00026 | -6.37 | 0.237 | 0.00066 | -24.05 |
| | 0.106 | 0.00025 | -6.08 | 0.200 | 0.00061 | -22.06 |
| | 0.090 | 0.00024 | -5.69 | 0.154 | 0.00053 | -19.44 |
| | 0.133 | 0.00030 | -8.00 | 0.101 | 0.00043 | -15.71 |
| | 0.210 | 0.00040 | -11.69 | 0.035 | 0.00025 | -9.26 |
| | 0.227 | 0.00044 | -12.86 | 0.098 | 0.00040 | -14.85 |
| | 0.213 | 0.00044 | -13.05 | 0.292 | 0.00065 | -23.76 |
| | 0.174 | 0.00042 | -12.13 | 0.695 | 0.00097 | -35.22 |
| | 0.114 | 0.00036 | -10.21 | 0.686 | 0.00104 | -37.73 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dPb** | | **NM295** | | |
| **LN Analysis** | | **dPb** | | |
| **Load** | | **Load Data, EV=0.6 lbs/day CV=.70** | | |
| **Avg:** | **0.6** | **Load Data-based LN** | | |
| **SD:** | **0.4** | u | ln dPb Load | dPb Load |
| **CV:** | **0.70** | 3 | 1.1 | 3 |
| **Min:** | **0.1** | 0 | -0.77 | 0.5 |
| **Max:** | **1.3** | -3 | -2.67 | 0.1 |
| **Median:** | **0.4** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.924, EV=0.6lbs/day CV=1.08; max r2=0.95**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.924 | u | lnLoad | Load |
| slope, m: | 1.135 | 3 | 1.76 | 6 |
| intercept, b: | 1.005 | 0 | -0.89 | 0.4 |
| N: | 17 | -3 | -3.53 | 0.03 |
| E[Load]: | 0.6 | Parameter Estimates | | |
| SD[Load]: | 1 | from LN regression | | |
| CV[Load]: | 1.08 | update graph label | | |

N: 18

| Date | dPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.946 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | **0.1** | 1 | 0.0342 | -1.822 | -2.622 | 0.924 |
| 25-Jul-95 | **0.2** | 2 | 0.0890 | -1.347 | -1.630 | 0.904 |
| 15-Aug-94 | **0.2** | 3 | 0.1438 | -1.063 | -1.573 | 0.907 |
| 20-Jul-94 | **0.2** | 4 | 0.1986 | -0.847 | -1.555 | 0.903 |
| 20-Jul-94 | **0.2** | 5 | 0.2534 | -0.664 | -1.532 | 0.888 |
| 15-Aug-94 | **0.2** | 6 | 0.3082 | -0.501 | -1.524 | 0.862 |
| *16-May-91* | | 7 | 0.3630 | -0.350 | | |
| 11-Jul-95 | **0.3** | 8 | 0.4178 | -0.208 | -1.320 | 0.824 |
| 27-Jun-95 | **0.3** | 9 | 0.4726 | -0.069 | -1.262 | 0.793 |
| 12-Nov-97 | **0.4** | 10 | 0.5274 | 0.069 | -0.820 | 0.806 |
| 7-Jun-94 | **0.5** | 11 | 0.5822 | 0.208 | -0.643 | 0.770 |
| 15-Nov-98 | **0.6** | 12 | 0.6370 | 0.350 | -0.574 | 0.721 |
| 3-May-94 | **0.9** | 13 | 0.6918 | 0.501 | -0.112 | 0.946 |
| 12-Jun-95 | **0.9** | 14 | 0.7466 | 0.664 | -0.104 | 0.923 |
| 19-May-94 | **1.0** | 15 | 0.8014 | 0.847 | 0.042 | |
| 9-May-95 | **1.1** | 16 | 0.8562 | 1.063 | 0.080 | |
| 23-May-95 | **1.2** | 17 | 0.9110 | 1.347 | 0.148 | |
| 15-May-98 | **1.3** | 18 | 0.9658 | 1.822 | 0.253 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dPb** | | NM295 | | |
| **LN Analysis** | | dPb | | |
| **Concentration** | | Conc. Data, EV=14 ug/L CV=.54 | | |
| **Avg:** | **14** | Data-based LN | | |
| **SD:** | **7** | u | ln[dPb] | [dPb] |
| **CV:** | **0.54** | 3 | 4.0 | 55 |
| **Min:** | **7** | 0 | 2.49 | 12 |
| **Max:** | **42** | -3 | 0.96 | 3 |
| **Median:** | **13** | | | |

**u=mLn[Conc.]+b:**

update for r2, EV, CV: **$r^2$=0.790, EV=13.4 ug/L CV=0.52; max r2=0.83**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.790 | u | lnConc. | Conc. |
| slope, m: | 2.033 | 3 | 3.95 | 52 |
| intercept, b: | -5.034 | 0 | 2.48 | 12 |
| N. 17 | | -3 | 1.00 | 3 |
| E[Conc] | 13.4 | Parameter Estimates | | |
| SD[Conc] | 7 | from LN regression | | |
| CV[Conc] | 0.52 | update graph label | | |

| Date | dPb Concentration ug/L Ranked | N. 18 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.830 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| *16-May-91* | | 1 | 0.0342 | -1.822 | | |
| 4-Oct-91 | 7 | 2 | 0.0890 | -1.347 | 1.946 | 0.790 |
| 15-May-98 | 7.6 | 3 | 0.1438 | -1.063 | 2.028 | 0.752 |
| 12-Jun-95 | 10 | 4 | 0.1986 | -0.847 | 2.303 | 0.708 |
| 27-Jun-95 | 10 | 5 | 0.2534 | -0.664 | 2.303 | 0.703 |
| 20-Jul-94 | 11 | 6 | 0.3082 | -0.501 | 2.398 | 0.688 |
| 20-Jul-94 | 11 | 7 | 0.3630 | -0.350 | 2.398 | 0.692 |
| 23-May-95 | 11 | 8 | 0.4178 | -0.208 | 2.398 | 0.689 |
| 7-Jun-94 | 12 | 9 | 0.4726 | -0.069 | 2.485 | 0.673 |
| 3-May-94 | 13 | 10 | 0.5274 | 0.069 | 2.565 | 0.679 |
| 19-May-94 | 13 | 11 | 0.5822 | 0.208 | 2.565 | 0.718 |
| 9-May-95 | 13 | 12 | 0.6370 | 0.350 | 2.565 | 0.758 |
| 11-Jul-95 | 13 | 13 | 0.6918 | 0.501 | 2.565 | 0.796 |
| 25-Jul-95 | 13 | 14 | 0.7466 | 0.664 | 2.565 | 0.830 |
| 12-Nov-97 | 13.9 | 15 | 0.8014 | 0.847 | 2.632 | |
| 15-Aug-94 | 16 | 16 | 0.8562 | 1.063 | 2.773 | |
| 15-Aug-94 | 16 | 17 | 0.9110 | 1.347 | 2.773 | |
| 15-Nov-98 | 41.7 | 18 | 0.9658 | 1.822 | 3.731 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dPb** | | *NM295* | | |
| **LN Analysis** | | **dPb** | | |
| **Discharge, Q** | | **Q Data, EV=10 cfs CV=0.91** | | |
| **Avg:** | **10** | **Q Data-based LN** | | |
| **SD:** | **9** | u | lnQ | Q |
| **CV:** | **0.91** | 3 | 4.4 | 78 |
| **Min:** | **2** | 0 | 2.03 | 8 |
| **Max:** | **32** | -3 | -0.30 | 1 |
| **Median:** | **6** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.930, EV=11.4 cfs CV=1.34; max r2=0.95**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.930 | u | lnQ | Q |
| slope, m: | 0.987 | 3 | 4.96 | 142 |
| intercept, b: | -1.893 | 0 | 1.92 | 7 |
| N: | 18 | -3 | -1.12 | 0.3 |
| E[Q]: | 11.4 | Parameter Estimates | | |
| SD[Q]: | 15 | from LN regression | | |
| CV[Q]: | 1.34 | update graph label | | |

N: 18

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.950 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.93 | 1 | 0.0342 | -1.822 | 0.658 | 0.930 |
| 15-Aug-94 | 2.41 | 2 | 0.0890 | -1.347 | 0.880 | 0.942 |
| 15-Nov-98 | 2.51 | 3 | 0.1438 | -1.063 | 0.920 | 0.950 |
| 15-Aug-94 | 2.53 | 4 | 0.1986 | -0.847 | 0.928 | 0.949 |
| 25-Jul-95 | 2.8 | 5 | 0.2534 | -0.664 | 1.030 | 0.940 |
| 20-Jul-94 | 3.57 | 6 | 0.3082 | -0.501 | 1.273 | 0.929 |
| 20-Jul-94 | 3.65 | 7 | 0.3630 | -0.350 | 1.295 | 0.915 |
| 11-Jul-95 | 3.82 | 8 | 0.4178 | -0.208 | 1.340 | 0.899 |
| 27-Jun-95 | 5.26 | 9 | 0.4726 | -0.069 | 1.660 | 0.891 |
| 12-Nov-97 | 5.89 | 10 | 0.5274 | 0.069 | 1.773 | 0.875 |
| 7-Jun-94 | 8.14 | 11 | 0.5822 | 0.208 | 2.097 | 0.890 |
| 3-May-94 | 12.78 | 12 | 0.6370 | 0.350 | 2.548 | 0.914 |
| 19-May-94 | 14.91 | 13 | 0.6918 | 0.501 | 2.702 | 0.886 |
| 9-May-95 | 15.49 | 14 | 0.7466 | 0.664 | 2.740 | 0.862 |
| 12-Jun-95 | 16.75 | 15 | 0.8014 | 0.847 | 2.818 | |
| 23-May-95 | 19.6 | 16 | 0.8562 | 1.063 | 2.976 | |
| *16-May-91* | *31.2* | 17 | 0.9110 | 1.347 | 3.440 | |
| 15-May-98 | 31.5 | 18 | 0.9658 | 1.822 | 3.450 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM295 | **Date:** | 29-May-00 |
| **Chemical:** | dZn | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,750 | 10 | 2,972 | 116 | 0.00 | 0.00 | 0.00 |
| **SD:** | 673 | 9 | 2,265 | 69 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.91 | 0.76 | 0.60 | | | |
| **Min:** | 33,374 | 2 | 1,390 | 31 | -0.90 | -0.70 | -1.22 |
| **Max:** | 36,114 | 32 | 11,800 | 236 | 2.28 | 3.90 | 1.73 |
| **Median:** | 34,695 | 6 | 2,595 | 114 | -0.50 | -0.17 | -0.03 |

| dZn | NM295 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.18)** | | update r2 | | | r2: | 0.002 | 0.000002 |
| r2 Q,[COC]: | 0.18 | [dZn] | Q | | m: | -0.0006 | -0.000002 |
| slope, m: | -103.9 | 3,838 | 1.9 | | b: | 31 | 1.99 |
| intercept, b: | 4038.1 | 2,972 | 10.3 | | | | |
| N: 18 | | 765 | 32 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.48)** | | update r2 | | | | | |
| r2 lnQ,ln[COC]: | 0.48 | ln[dZn] | ln Q | [dZn] | Q | | |
| slope, m: | -0.36 | 8.31 | 0.66 | 4,046 | 2 | | |
| intercept, b: | 8.55 | 7.70 | 2.33 | 2,201 | 10 | | |
| N: 18 | | 7.29 | 3.45 | 1,463 | 32 | | |

**N= 18**

| | | | | | | | | dZn | for graph 0 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | NM295 | | |
| | Sampling Date | Q Discharge | dZn Concentration | dZn Load | Ln Q | Ln dZn Conc. | Ln dZn Load | Standardized Values = (x - Avg)/SD | | |
| update for new data | | cfs | ug/L | lbs/day | | | | Q | Conc | Load |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 31.2 | 1390 | 233 | 3.44 | 7.24 | 5.45 | 2.25 | -0.70 | 1.70 |
| MFG | 4-Oct-91 | 1.93 | 2960 | 31 | 0.66 | 7.99 | 3.43 | -0.90 | -0.01 | -1.22 |
| IDEQ | 3-May-94 | 12.78 | 2710 | 186 | 2.55 | 7.90 | 5.23 | 0.27 | -0.12 | 1.02 |
| IDEQ | 19-May-94 | 14.91 | 1660 | 133 | 2.70 | 7.41 | 4.89 | 0.50 | -0.58 | 0.25 |
| IDEQ | 7-Jun-94 | 8.14 | 2160 | 95 | 2.10 | 7.68 | 4.55 | -0.23 | -0.36 | -0.30 |
| IDEQ | 20-Jul-94 | 3.57 | 2720 | 52 | 1.27 | 7.91 | 3.96 | -0.72 | -0.11 | -0.91 |
| IDEQ | 20-Jul-94 | 3.65 | 2720 | 53 | 1.29 | 7.91 | 3.98 | -0.71 | -0.11 | -0.90 |
| IDEQ | 15-Aug-94 | 2.53 | 3320 | 45 | 0.93 | 8.11 | 3.81 | -0.83 | 0.15 | -1.02 |
| IDEQ | 15-Aug-94 | 2.41 | 3320 | 43 | 0.88 | 8.11 | 3.76 | -0.84 | 0.15 | -1.05 |
| IDEQ | 9-May-95 | 15.49 | 2420 | 202 | 2.74 | 7.79 | 5.31 | 0.56 | -0.24 | 1.24 |
| IDEQ | 23-May-95 | 19.6 | 1610 | 170 | 2.98 | 7.38 | 5.13 | 1.00 | -0.60 | 0.78 |
| IDEQ | 12-Jun-95 | 16.75 | 1740 | 157 | 2.82 | 7.46 | 5.05 | 0.70 | -0.54 | 0.59 |
| IDEQ | 27-Jun-95 | 5.26 | 2060 | 58 | 1.66 | 7.63 | 4.07 | -0.54 | -0.40 | -0.83 |
| IDEQ | 11-Jul-95 | 3.82 | 2480 | 51 | 1.34 | 7.82 | 3.93 | -0.69 | -0.22 | -0.93 |
| IDEQ | 25-Jul-95 | 2.8 | 2730 | 41 | 1.03 | 7.91 | 3.72 | -0.80 | -0.11 | -1.07 |
| URS | 12-Nov-97 | 5.89 | 4300 | 136 | 1.77 | 8.37 | 4.91 | -0.47 | 0.59 | 0.30 |
| URS | 15-May-98 | 31.5 | 1390 | 236 | 3.45 | 7.24 | 5.46 | 2.28 | -0.70 | 1.73 |
| URS | 15-Nov-98 | 2.51 | 11800 | 159 | 0.92 | 9.38 | 5.07 | -0.83 | 3.90 | 0.63 |

**dZn**

**Concentration over time analysis** r2 Slope, m

| | dZn | NM295 | | Concentration over time | |
|---|---|---|---|---|---|
| | LnConc.=mTime+b All data r2, m: | | | 0.178 | 0.00030 |
| | Time | Ln[COC] | [COC] | | |
| first: | 16-May-91 | 7.43 | 1,689 | | |
| mid: | 26-Dec-94 | 7.83 | 2,514 | | |
| last: | 15-Nov-98 | 8.26 | 3,855 | | |
| | LnConc.=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | dZn | NM295 | | Load over time | |
|---|---|---|---|---|---|
| | LnLoad=mTime+b All data r2, m: | | | 0.089 | 0.00030 |
| | Time | LnLoad | Load | | |
| first: | 16-May-91 | 4.13 | 62 | | |
| mid: | 26-Dec-94 | 4.52 | 92 | | |
| last: | 15-Nov-98 | 4.95 | 141 | | |
| | LnLoad=mTime+b >'96 r2, m: | | | 0.000 | 0.00000 |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

max r2: 0.336 max r2: 0.903

| Forward time Regression on Ln Concentration(t) | | | Forward time Regression on Ln Load(t) | | |
|---|---|---|---|---|---|
| r2 | slope | intercept | r2 | slope | intercept |
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.178 | 0.00030 | -2.62 | 0.089 | 0.00030 | -5.85 |
| 0.106 | 0.00025 | -0.99 | 0.315 | 0.00061 | -16.87 |
| 0.183 | 0.00040 | -6.08 | 0.197 | 0.00053 | -13.98 |
| 0.197 | 0.00043 | -6.98 | 0.296 | 0.00064 | -17.87 |
| 0.167 | 0.00039 | -5.77 | 0.373 | 0.00073 | -21.06 |
| 0.154 | 0.00039 | -5.57 | 0.410 | 0.00079 | -23.26 |
| 0.163 | 0.00041 | -6.51 | 0.381 | 0.00077 | -22.49 |
| 0.177 | 0.00045 | -7.82 | 0.346 | 0.00074 | -21.57 |
| 0.233 | 0.00054 | -11.11 | 0.285 | 0.00067 | -18.82 |
| 0.327 | 0.00069 | -16.38 | 0.193 | 0.00053 | -13.95 |
| 0.336 | 0.00073 | -17.68 | 0.338 | 0.00069 | -19.67 |
| 0.288 | 0.00067 | -15.85 | 0.543 | 0.00088 | -26.56 |
| 0.228 | 0.00061 | -13.59 | 0.898 | 0.00116 | -36.69 |
| 0.168 | 0.00056 | -11.89 | 0.903 | 0.00124 | -39.41 |

update for EV, CV:

| **dZn** | | **NM295** | | |
|---|---|---|---|---|
| **LN Analysis** | | **dZn** | | |
| **Load** | | **Load Data, EV=116 lbs/day CV=.60** | | |
| **Avg:** | **116** | **Load Data-based LN** | | |
| **SD:** | **69** | u | ln dZn Load | dZn Load |
| **CV:** | **0.60** | 3 | 6.3 | 523 |
| **Min:** | **31** | 0 | 4.60 | 99 |
| **Max:** | **236** | -3 | 2.93 | 19 |
| **Median:** | **114** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.909, EV=124.9 lbs/day CV=0.88; max r2=0.94**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.909 | u | lnLoad | Load |
| slope, m: | 1.317 | 3 | 6.82 | 913 |
| intercept, b: | -5.979 | 0 | 4.54 | 94 |
| N: | 18 | -3 | 2.26 | 10 |
| E[Load]: | 124.9 | Parameter Estimates | | |
| SD[Load]: | 110 | from LN regression | | |
| CV[Load]: | 0.88 | update graph label | | |

| | | N: 18 | | | | max r2 0.944 |
|---|---|---|---|---|---|---|
| **Date** | **dZn Load lbs/day Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | **r2 forward** |
| update and rank for new data | | | | | | |
| 4-Oct-91 | **31** | 1 | 0.0342 | -1.822 | 3.425 | 0.909 |
| 25-Jul-95 | **41** | 2 | 0.0890 | -1.347 | 3.717 | 0.896 |
| 15-Aug-94 | **43** | 3 | 0.1438 | -1.063 | 3.762 | 0.886 |
| 15-Aug-94 | **45** | 4 | 0.1986 | -0.847 | 3.811 | 0.867 |
| 11-Jul-95 | **51** | 5 | 0.2534 | -0.664 | 3.931 | 0.842 |
| 20-Jul-94 | **52** | 6 | 0.3082 | -0.501 | 3.956 | 0.811 |
| 20-Jul-94 | **53** | 7 | 0.3630 | -0.350 | 3.978 | 0.775 |
| 27-Jun-95 | **58** | 8 | 0.4178 | -0.208 | 4.066 | 0.754 |
| 7-Jun-94 | **95** | 9 | 0.4726 | -0.069 | 4.550 | 0.865 |
| 19-May-94 | **133** | 10 | 0.5274 | 0.069 | 4.892 | 0.944 |
| 12-Nov-97 | **136** | 11 | 0.5822 | 0.208 | 4.915 | 0.930 |
| 12-Jun-95 | **157** | 12 | 0.6370 | 0.350 | 5.055 | 0.928 |
| 15-Nov-98 | **159** | 13 | 0.6918 | 0.501 | 5.071 | 0.905 |
| 23-May-95 | **170** | 14 | 0.7466 | 0.664 | 5.134 | 0.869 |
| 3-May-94 | **186** | 15 | 0.8014 | 0.847 | 5.228 | |
| 9-May-95 | **202** | 16 | 0.8562 | 1.063 | 5.307 | |
| 16-May-91 | **233** | 17 | 0.9110 | 1.347 | 5.452 | |
| 15-May-98 | **236** | 18 | 0.9658 | 1.822 | 5.462 | |

update for EV, CV:
NM295
dZn
Conc. Data, EV=2,972 ug/L CV=.76
Data-based LN

| | | u | ln{dZn} | {dZn} |
|---|---|---|---|---|
| dZn | | | | |
| LN Analysis | | | | |
| **Concentration** | | | | |
| Avg: | 2,972 | | | |
| SD: | 2,265 | 3 | 9.8 | 18000 |
| CV: | 0.76 | 0 | 7.77 | 2363 |
| Min: | 1,390 | -3 | 5.74 | 310 |
| Max: | 11,800 | | | |
| Median: | 2,595 | | | |

**u=mLn{Conc.}+b:**

update for r2, EV, CV: $r^2$=0.836, EV=2995.2 ug/L CV=0.61; max r2=0.87

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.836 | u | lnConc. | Conc. |
| slope, m: | 1.777 | 3 | 9.53 | 13835 |
| intercept, b. | -13.940 | 0 | 7.85 | 2556 |
| N: 18 | | -3 | 6.16 | 472 |
| E[Conc]: | 2995.2 | Parameter Estimates | | |
| SD[Conc]. | 1829 | from LN regression | | |
| CV[Conc]. | 0.61 | update graph label | | |

N: 18

| Date | dZn Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.867 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-91 | 1390 | 1 | 0.0342 | -1.822 | 7.237 | 0.836 |
| 15-May-98 | 1390 | 2 | 0.0890 | -1.347 | 7.237 | 0.841 |
| 23-May-95 | 1610 | 3 | 0.1438 | -1.063 | 7.384 | 0.823 |
| 19-May-94 | 1660 | 4 | 0.1986 | -0.847 | 7.415 | 0.812 |
| 12-Jun-95 | 1740 | 5 | 0.2534 | -0.664 | 7.462 | 0.792 |
| 27-Jun-95 | 2060 | 6 | 0.3082 | -0.501 | 7.630 | 0.766 |
| 7-Jun-94 | 2160 | 7 | 0.3630 | -0.350 | 7.678 | 0.756 |
| 9-May-95 | 2420 | 8 | 0.4178 | -0.208 | 7.792 | 0.745 |
| 11-Jul-95 | 2480 | 9 | 0.4726 | -0.069 | 7.816 | 0.753 |
| 3-May-94 | 2710 | 10 | 0.5274 | 0.069 | 7.905 | 0.762 |
| 20-Jul-94 | 2720 | 11 | 0.5822 | 0.208 | 7.908 | 0.795 |
| 20-Jul-94 | 2720 | 12 | 0.6370 | 0.350 | 7.908 | 0.828 |
| 25-Jul-95 | 2730 | 13 | 0.6918 | 0.501 | 7.912 | 0.854 |
| 4-Oct-91 | 2960 | 14 | 0.7466 | 0.664 | 7.993 | 0.867 |
| 15-Aug-94 | 3320 | 15 | 0.8014 | 0.847 | 8.108 | |
| 15-Aug-94 | 3320 | 16 | 0.8562 | 1.063 | 8.108 | |
| 12-Nov-97 | 4300 | 17 | 0.9110 | 1.347 | 8.366 | |
| 15-Nov-98 | 11800 | 18 | 0.9658 | 1.822 | 9.376 | |

update for EV, CV:

**dZn** NM295
**LN Analysis** dZn
**Discharge, Q** Q Data, EV=10 cfs CV=0.91

| | | Q Data-based LN | | |
|---|---|---|---|---|
| **Avg:** | **10** | u | lnQ | Q |
| **SD:** | **9** | 3 | 4.4 | 78 |
| **CV:** | **0.91** | 0 | 2.03 | 8 |
| **Min:** | **2** | -3 | -0.30 | 1 |
| **Max:** | **32** | | | |
| **Median:** | **6** | | | |

**u=mLn{Q}+b:**

update for r2, EV, CV: **r2=0.930, EV=11.4 cfs CV=1.34; max r2=0.95**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.930 | u | lnQ | Q |
| slope, m: | 0.987 | 3 | 4.96 | 142 |
| intercept, b. | -1.893 | 0 | 1.92 | 7 |
| N: 18 | | -3 | -1.12 | 0.3 |
| E[Q]: | 11.4 | Parameter Estimates | | |
| SD[Q]: | 15 | from LN regression | | |
| CV[Q]: | 1.34 | update graph label | | |

N: 18

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.950 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.93 | 1 | 0.0342 | -1.822 | 0.658 | 0.930 |
| 15-Aug-94 | 2.41 | 2 | 0.0890 | -1.347 | 0.880 | 0.942 |
| 15-Nov-98 | 2.51 | 3 | 0.1438 | -1.063 | 0.920 | 0.950 |
| 15-Aug-94 | 2.53 | 4 | 0.1986 | -0.847 | 0.928 | 0.949 |
| 25-Jul-95 | 2.8 | 5 | 0.2534 | -0.664 | 1.030 | 0.940 |
| 20-Jul-94 | 3.57 | 6 | 0.3082 | -0.501 | 1.273 | 0.929 |
| 20-Jul-94 | 3.65 | 7 | 0.3630 | -0.350 | 1.295 | 0.915 |
| 11-Jul-95 | 3.82 | 8 | 0.4178 | -0.208 | 1.340 | 0.899 |
| 27-Jun-95 | 5.26 | 9 | 0.4726 | -0.069 | 1.660 | 0.891 |
| 12-Nov-97 | 5.89 | 10 | 0.5274 | 0.069 | 1.773 | 0.875 |
| 7-Jun-94 | 8.14 | 11 | 0.5822 | 0.208 | 2.097 | 0.890 |
| 3-May-94 | 12.78 | 12 | 0.6370 | 0.350 | 2.548 | 0.914 |
| 19-May-94 | 14.91 | 13 | 0.6918 | 0.501 | 2.702 | 0.886 |
| 9-May-95 | 15.49 | 14 | 0.7466 | 0.664 | 2.740 | 0.862 |
| 12-Jun-95 | 16.75 | 15 | 0.8014 | 0.847 | 2.818 | |
| 23-May-95 | 19.6 | 16 | 0.8562 | 1.063 | 2.976 | |
| 16-May-91 | 31.2 | 17 | 0.9110 | 1.347 | 3.440 | |
| 15-May-98 | 31.5 | 18 | 0.9658 | 1.822 | 3.450 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** NM295 **Date:** 3-Jun-00

**Chemical:** tCd **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,750 | 10 | 15 | 1 | 0.00 | 0.00 | 0.00 |
| **SD:** | 673 | 9 | 11 | 0.4 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.91 | 0.74 | 0.61 | | | |
| **Min:** | 33,374 | 2 | 4 | 0.1 | -0.90 | -1.00 | -1.35 |
| **Max:** | 36,114 | 32 | 59 | 1 | 2.28 | 3.88 | 1.79 |
| **Median:** | 34,695 | 6 | 14 | 1 | -0.50 | -0.16 | -0.09 |

| tCd | NM295 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.186)** | | update r2 | 0.19 | 0.186 | r2: | 0.002 | 0.000002 |
| r2 Q,[COC]: | 0.19 | | [tCd] | Q | m: | -0.0006 | -0.000002 |
| slope, m: | -0.5 | | 20 | 1.9 | b: | 31 | 1.99 |
| intercept, b: | 20.7 | | 15 | 10.3 | | | |
| N: 18 | | | 4 | 32 | | | |
| **LnConc. = mLn(Q)+b (r2=0.389)** | | | update r2 | 0.39 | 0.389 | | |
| r2 lnQ,ln[COC]: | 0.39 | | ln[tCd] | ln Q | [tCd] | Q | |
| slope, m: | -0.36 | | 3.02 | 0.66 | 21 | 2 | |
| intercept, b: | 3.26 | | 2.42 | 2.33 | 11 | 10 | |
| N: 18 | | | 2.02 | 3.45 | 8 | 32 | |

**N= 18**

| | Sampling Date | Q Discharge cfs | tCd Concentration ug/L | tCd Load lbs/day | Ln Q | Ln tCd Conc. | Ln tCd Load | for graph 0 tCd NM295 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 31.2 | 4 | 0.7 | 3.44 | 1.39 | -0.40 | 2.25 | -1.00 | 0.19 |
| MFG | 4-Oct-91 | 1.93 | 10.1 | 0.1 | 0.66 | 2.31 | -2.26 | -0.90 | -0.46 | -1.35 |
| IDEQ | 3-May-94 | 12.78 | 18.3 | 1.3 | 2.55 | 2.91 | 0.23 | 0.27 | 0.26 | 1.79 |
| IDEQ | 19-May-94 | 14.91 | 12 | 1.0 | 2.70 | 2.48 | -0.04 | 0.50 | -0.29 | 0.99 |
| IDEQ | 7-Jun-94 | 8.14 | 14 | 0.6 | 2.10 | 2.64 | -0.49 | -0.23 | -0.11 | 0.04 |
| IDEQ | 20-Jul-94 | 3.57 | 15 | 0.3 | 1.27 | 2.71 | -1.24 | -0.72 | -0.03 | -0.85 |
| IDEQ | 20-Jul-94 | 3.65 | 15 | 0.3 | 1.29 | 2.71 | -1.22 | -0.71 | -0.03 | -0.83 |
| IDEQ | 15-Aug-94 | 2.53 | 18 | 0.2 | 0.93 | 2.89 | -1.41 | -0.83 | 0.24 | -0.97 |
| IDEQ | 15-Aug-94 | 2.41 | 18 | 0.2 | 0.88 | 2.89 | -1.46 | -0.84 | 0.24 | -1.00 |
| IDEQ | 9-May-95 | 15.49 | 13 | 1.1 | 2.74 | 2.56 | 0.08 | 0.56 | -0.20 | 1.32 |
| IDEQ | 23-May-95 | 19.6 | 10.3 | 1.1 | 2.98 | 2.33 | 0.08 | 1.00 | -0.44 | 1.33 |
| IDEQ | 12-Jun-95 | 16.75 | 8.5 | 0.8 | 2.82 | 2.14 | -0.27 | 0.70 | -0.60 | 0.45 |
| IDEQ | 27-Jun-95 | 5.26 | 11 | 0.3 | 1.66 | 2.40 | -1.17 | -0.54 | -0.38 | -0.79 |
| IDEQ | 11-Jul-95 | 3.82 | 12 | 0.2 | 1.34 | 2.48 | -1.40 | -0.69 | -0.29 | -0.96 |
| IDEQ | 25-Jul-95 | 2.8 | 14 | 0.2 | 1.03 | 2.64 | -1.56 | -0.80 | -0.11 | -1.06 |
| URS | 12-Nov-97 | 5.89 | 16.4 | 0.5 | 1.77 | 2.80 | -0.65 | -0.47 | 0.10 | -0.22 |
| URS | 15-May-98 | 31.5 | 6.5 | 1.1 | 3.45 | 1.87 | 0.10 | 2.28 | -0.78 | 1.37 |
| URS | 15-Nov-98 | 2.51 | 59.4 | 0.8 | 0.92 | 4.08 | -0.22 | -0.83 | 3.88 | 0.55 |

tCd

**Concentration over time analysis**

| | tCd | NM295 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.230** | **0.00037** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 2.05 | 8 | | |
| mid: | 26-Dec-94 | 2.55 | 13 | | |
| last: | 15-Nov-98 | 3.08 | 22 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | tCd | NM295 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.123** | **0.00037** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | -1.25 | 0 | | |
| mid: | 26-Dec-94 | -0.76 | 0 | | |
| last: | 15-Nov-98 | -0.23 | 1 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

| | max r2: | 0.243 | | max r2: | 0.901 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.230 | 0.00037 | -10.44 | 0.123 | 0.00037 | -13.67 |
| | 0.082 | 0.00022 | -4.88 | 0.223 | 0.00057 | -20.76 |
| | 0.052 | 0.00020 | -4.40 | 0.071 | 0.00033 | -12.30 |
| | 0.073 | 0.00024 | -5.84 | 0.147 | 0.00046 | -16.73 |
| | 0.066 | 0.00024 | -5.64 | 0.240 | 0.00058 | -20.93 |
| | 0.070 | 0.00025 | -6.16 | 0.297 | 0.00066 | -23.85 |
| | 0.080 | 0.00028 | -7.13 | 0.270 | 0.00064 | -23.11 |
| | 0.094 | 0.00032 | -8.47 | 0.239 | 0.00061 | -22.22 |
| | 0.142 | 0.00041 | -11.71 | 0.182 | 0.00053 | -19.42 |
| | 0.229 | 0.00055 | -16.89 | 0.103 | 0.00039 | -14.46 |
| | 0.243 | 0.00059 | -18.31 | 0.218 | 0.00056 | -20.29 |
| | 0.224 | 0.00059 | -18.24 | 0.499 | 0.00080 | -28.95 |
| | 0.167 | 0.00052 | -15.75 | 0.874 | 0.00107 | -38.85 |
| | 0.130 | 0.00050 | -15.13 | 0.901 | 0.00118 | -42.66 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **tCd** | | **NM295** | | |
| **LN Analysis** | | **tCd** | | |
| **Load** | | **Load Data, EV=0.6 lbs/day CV=0.611** | | |
| **Avg:** | **1** | **Load Data-based LN** | | |
| **SD:** | **0** | u | ln tCd Load | tCd Load |
| **CV:** | **0.61** | 3 | 1.0 | 3 |
| **Min:** | **0.1** | 0 | -0.67 | 1 |
| **Max:** | **1** | -3 | -2.36 | 0.1 |
| **Median:** | **1** | | | |
| | | 1 | 0.6 | |
| | | 0.61 | 0.611 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.929, EV=0.655lbs/day CV=0.937; max r2=0.93**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.929 | u | lnLoad | Load |
| slope, m: | 1.259 | 3 | 1.64 | 5 |
| intercept, b: | 0.930 | 0 | -0.74 | 0 |
| N: | 18 | -3 | -3.12 | 0.0 |
| E[Load]: | 0.7 | Parameter Estimates | | |
| SD[Load]: | 1 | from LN regression | | |
| CV[Load]: | 0.94 | update graph label | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | 0.929 |
| | | | | | | 0.7 |
| | | | | | | 0.9 |
| | | | | | | max r2 |
| | **tCd** | N: 18 | | | | 0.929 |
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| update and rank for new data | | | | | | |
| 4-Oct-91 | **0.1** | 1 | 0.0342 | -1.822 | -2.255 | 0.929 |
| 25-Jul-95 | **0.2** | 2 | 0.0890 | -1.347 | -1.556 | 0.910 |
| 15-Aug-94 | **0.2** | 3 | 0.1438 | -1.063 | -1.455 | 0.899 |
| 15-Aug-94 | **0.2** | 4 | 0.1986 | -0.847 | -1.406 | 0.885 |
| 11-Jul-95 | **0.2** | 5 | 0.2534 | -0.664 | -1.400 | 0.863 |
| 20-Jul-94 | **0.3** | 6 | 0.3082 | -0.501 | -1.244 | 0.837 |
| 20-Jul-94 | **0.3** | 7 | 0.3630 | -0.350 | -1.222 | 0.805 |
| 27-Jun-95 | **0.3** | 8 | 0.4178 | -0.208 | -1.167 | 0.785 |
| 12-Nov-97 | **0.5** | 9 | 0.4726 | -0.069 | -0.655 | 0.875 |
| 7-Jun-94 | **0.6** | 10 | 0.5274 | 0.069 | -0.489 | 0.872 |
| 16-May-91 | **0.7** | 11 | 0.5822 | 0.208 | -0.398 | 0.852 |
| 12-Jun-95 | **0.8** | 12 | 0.6370 | 0.350 | -0.267 | 0.834 |
| 15-Nov-98 | **0.8** | 13 | 0.6918 | 0.501 | -0.220 | 0.789 |
| 19-May-94 | **1.0** | 14 | 0.7466 | 0.664 | -0.038 | 0.870 |
| 9-May-95 | **1.1** | 15 | 0.8014 | 0.847 | 0.080 | |
| 23-May-95 | **1.1** | 16 | 0.8562 | 1.063 | 0.083 | |
| 15-May-98 | **1.1** | 17 | 0.9110 | 1.347 | 0.097 | |
| 3-May-94 | **1.3** | 18 | 0.9658 | 1.822 | 0.230 | |

| | | update for EV, CV: | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **NM295** | | 15 | 15.3 | |
| **LN Analysis** | | **tCd** | | 0.74 | 0.742 | |
| **Concentration** | | **Conc. Data, EV=15.3 ug/L CV=0.742** | | | | |
| **Avg:** | **15** | **Data-based LN** | | | | |
| **SD:** | **11** | u | ln[tCd] | [tCd] | | |
| **CV:** | **0.74** | 3 | 4.5 | 90 | | |
| **Min:** | **4** | 0 | 2.51 | 12 | | |
| **Max:** | **59** | -3 | 0.52 | 2 | | |
| **Median:** | **14** | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | 0.861 | 0.861 |
| | **u=mLn{Conc.}+b:** | | | | | 15.7 | 15.7 |
| update for r2, EV, CV: | **r2=0.861, EV=15.7 ug/L CV=0.666; max r2=0.86** | | | | | 0.666 | 0.666 |
| | r2 u,lnConc: | 0.861 | u | lnConc. | Conc. | | |
| | slope, m: | 1.651 | 3 | 4.39 | 80 | | |
| | intercept, b: | -4.241 | 0 | 2.57 | 13 | | |
| | N: | 18 | -3 | 0.75 | 2 | | |
| 0.929 | E[Conc]: | 15.7 | Parameter Estimates | | | | |
| 0.655 | SD[Conc]: | 10 | from LN regression | | | | |
| 0.937 | CV[Conc]: | 0.67 | update graph label | | | | |

| | tCd | N: 18 | | | | max r2 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | 0.861 r2 |
| **Date** | **ug/L Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 16-May-91 | 4 | 1 | 0.0342 | -1.822 | 1.386 | 0.861 |
| 15-May-98 | 6.5 | 2 | 0.0890 | -1.347 | 1.872 | 0.823 |
| 12-Jun-95 | 8.5 | 3 | 0.1438 | -1.063 | 2.140 | 0.785 |
| 4-Oct-91 | 10.1 | 4 | 0.1986 | -0.847 | 2.313 | 0.760 |
| 23-May-95 | 10.3 | 5 | 0.2534 | -0.664 | 2.332 | 0.751 |
| 27-Jun-95 | 11 | 6 | 0.3082 | -0.501 | 2.398 | 0.736 |
| 19-May-94 | 12 | 7 | 0.3630 | -0.350 | 2.485 | 0.722 |
| 11-Jul-95 | 12 | 8 | 0.4178 | -0.208 | 2.485 | 0.719 |
| 9-May-95 | 13 | 9 | 0.4726 | -0.069 | 2.565 | 0.706 |
| 7-Jun-94 | 14 | 10 | 0.5274 | 0.069 | 2.639 | 0.703 |
| 25-Jul-95 | 14 | 11 | 0.5822 | 0.208 | 2.639 | 0.716 |
| 20-Jul-94 | 15 | 12 | 0.6370 | 0.350 | 2.708 | 0.719 |
| 20-Jul-94 | 15 | 13 | 0.6918 | 0.501 | 2.708 | 0.739 |
| 12-Nov-97 | 16.4 | 14 | 0.7466 | 0.664 | 2.797 | 0.742 |
| 15-Aug-94 | 18 | 15 | 0.8014 | 0.847 | 2.890 | |
| 15-Aug-94 | 18 | 16 | 0.8562 | 1.063 | 2.890 | |
| 3-May-94 | 18.3 | 17 | 0.9110 | 1.347 | 2.907 | |
| 15-Nov-98 | 59.4 | 18 | 0.9658 | 1.822 | 4.084 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **NM295** | | | 10 | 10.3 |
| **LN Analysis** | | **tCd** | | | 0.91 | 0.907 |
| **Discharge, Q** | | **Q Data, EV=10.3 cfs CV=0.907** | | | | |
| **Avg:** | **10** | **Q Data-based LN** | | | | |
| **SD:** | **9** | u | lnQ | Q | | |
| **CV:** | **0.91** | 3 | 4.4 | 78 | | |
| **Min:** | **2** | 0 | 2.03 | 8 | | |
| **Max:** | **32** | -3 | -0.30 | 1 | | |
| **Median:** | **6** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.930 | 0.93 |
| | | | | | 11.4 | 11.4 |
| **u=mLn(Q)+b:** | | | | | 1.34 | 1.34 |

update for r2, EV, CV: **r2=0.93, EV=11.4 cfs CV=1.34; max r2=0.95**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnQ: | 0.930 | u | lnQ | Q | |
| slope, m: | 0.987 | 3 | 4.96 | 142 | |
| intercept, b: | -1.893 | 0 | 1.92 | 7 | |
| N: | 18 | -3 | -1.12 | 0 | |
| E[Q]: | 11.4 | Parameter Estimates | | | |
| SD[Q]: | 15 | from LN regression | | | |
| CV[Q]: | 1.34 | update graph label | | | |

| | Q | N: 18 | | | | max r2 0.950 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.93 | 1 | 0.0342 | -1.822 | 0.658 | 0.930 |
| 15-Aug-94 | 2.41 | 2 | 0.0890 | -1.347 | 0.880 | 0.942 |
| 15-Nov-98 | 2.51 | 3 | 0.1438 | -1.063 | 0.920 | 0.950 |
| 15-Aug-94 | 2.53 | 4 | 0.1986 | -0.847 | 0.928 | 0.949 |
| 25-Jul-95 | 2.8 | 5 | 0.2534 | -0.664 | 1.030 | 0.940 |
| 20-Jul-94 | 3.57 | 6 | 0.3082 | -0.501 | 1.273 | 0.929 |
| 20-Jul-94 | 3.65 | 7 | 0.3630 | -0.350 | 1.295 | 0.915 |
| 11-Jul-95 | 3.82 | 8 | 0.4178 | -0.208 | 1.340 | 0.899 |
| 27-Jun-95 | 5.26 | 9 | 0.4726 | -0.069 | 1.660 | 0.891 |
| 12-Nov-97 | 5.89 | 10 | 0.5274 | 0.069 | 1.773 | 0.875 |
| 7-Jun-94 | 8.14 | 11 | 0.5822 | 0.208 | 2.097 | 0.890 |
| 3-May-94 | 12.78 | 12 | 0.6370 | 0.350 | 2.548 | 0.914 |
| 19-May-94 | 14.91 | 13 | 0.6918 | 0.501 | 2.702 | 0.886 |
| 9-May-95 | 15.49 | 14 | 0.7466 | 0.664 | 2.740 | 0.862 |
| 12-Jun-95 | 16.75 | 15 | 0.8014 | 0.847 | 2.818 | |
| 23-May-95 | 19.6 | 16 | 0.8562 | 1.063 | 2.976 | |
| 16-May-91 | 31.2 | 17 | 0.9110 | 1.347 | 3.440 | |
| 15-May-98 | 31.5 | 18 | 0.9658 | 1.822 | 3.450 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** NM295 **Date:** 13-Jun-00
**Chemical:** tPb **Analyst:** J.MacLachlan
**Notes:**
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,750 | 10 | 23 | 1 | 0.00 | 0.00 | 0.00 |
| **SD:** | 673 | 9 | 14 | 1 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.91 | 0.59 | 0.84 | | | |
| **Min:** | 33,374 | 2 | 13 | 0.2 | -0.90 | -0.73 | -0.98 |
| **Max:** | 36,114 | 32 | 74 | 3 | 2.28 | 3.78 | 2.09 |
| **Median:** | 34,695 | 6 | 20 | 1 | -0.50 | -0.22 | -0.57 |

| tPb | NM295 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.0495)** | | update r2 | 0.05 | 0.0495 | r2: | 0.002 | 0.000002 |
| r2 Q,[COC]: | 0.05 | [tPb] | Q | | m: | -0.0006 | -0.000002 |
| slope, m: | -0.3 | 26 | 1.9 | | b: | 31 | 1.99 |
| intercept, b: | 26.3 | 23 | 10.3 | | | | |
| N: 18 | | 16 | 32 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.0742)** | | update r2 | | 0.07 | 0.0742 | | |
| r2 lnQ,ln[COC]: | 0.07 | ln[tPb] | ln Q | [tPb] | Q | | |
| slope, m: | -0.12 | 3.18 | 0.66 | 24 | 2 | | |
| intercept, b: | 3.26 | 2.98 | 2.33 | 20 | 10 | | |
| N: 18 | | 2.85 | 3.45 | 17 | 32 | | |

**N= 18**

| | Sampling Date | Q Discharge | tPb Concentration | tPb Load | Ln Q | Ln tPb Conc. | Ln tPb Load | tPb NM295 Standardized Values = (x - Avg)/SD Q | for graph 0 Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| URS | 16-May-91 | 31.2 | 16 | 2.7 | 3.44 | 2.77 | 0.99 | 2.25 | -0.51 | 1.67 |
| URS | 4-Oct-91 | 1.93 | 19 | 0.2 | 0.66 | 2.94 | -1.62 | -0.90 | -0.29 | -0.98 |
| URS | 3-May-94 | 12.78 | 22.3 | 1.5 | 2.55 | 3.10 | 0.43 | 0.27 | -0.05 | 0.44 |
| MFG | 19-May-94 | 14.91 | 24 | 1.9 | 2.70 | 3.18 | 0.66 | 0.50 | 0.08 | 0.86 |
| MFG | 7-Jun-94 | 8.14 | 15 | 0.7 | 2.10 | 2.71 | -0.42 | -0.23 | -0.59 | -0.49 |
| IDEQ | 20-Jul-94 | 3.57 | 20 | 0.4 | 1.27 | 3.00 | -0.96 | -0.72 | -0.22 | -0.78 |
| IDEQ | 20-Jul-94 | 3.65 | 20 | 0.4 | 1.29 | 3.00 | -0.93 | -0.71 | -0.22 | -0.77 |
| IDEQ | 15-Aug-94 | 2.53 | 24 | 0.3 | 0.93 | 3.18 | -1.12 | -0.83 | 0.08 | -0.84 |
| IDEQ | 15-Aug-94 | 2.41 | 24 | 0.3 | 0.88 | 3.18 | -1.17 | -0.84 | 0.08 | -0.85 |
| IDEQ | 9-May-95 | 15.49 | 37 | 3.1 | 2.74 | 3.61 | 1.13 | 0.56 | 1.03 | 2.09 |
| IDEQ | 23-May-95 | 19.6 | 23 | 2.4 | 2.98 | 3.14 | 0.89 | 1.00 | 0.00 | 1.39 |
| IDEQ | 12-Jun-95 | 16.75 | 14 | 1.3 | 2.82 | 2.64 | 0.23 | 0.70 | -0.66 | 0.15 |
| IDEQ | 27-Jun-95 | 5.26 | 13 | 0.4 | 1.66 | 2.56 | -1.00 | -0.54 | -0.73 | -0.79 |
| IDEQ | 11-Jul-95 | 3.82 | 20 | 0.4 | 1.34 | 3.00 | -0.89 | -0.69 | -0.22 | -0.75 |
| IDEQ | 25-Jul-95 | 2.8 | 18 | 0.3 | 1.03 | 2.89 | -1.31 | -0.80 | -0.36 | -0.90 |
| IDEQ | 12-Nov-97 | 5.89 | 15.8 | 0.5 | 1.77 | 2.76 | -0.69 | -0.47 | -0.53 | -0.65 |
| IDEQ | 15-May-98 | 31.5 | 13.9 | 2.4 | 3.45 | 2.63 | 0.86 | 2.28 | -0.67 | 1.32 |
| IDEQ | 15-Nov-98 | 2.51 | 74.4 | 1.0 | 0.92 | 4.31 | 0.00 | -0.83 | 3.78 | -0.12 |

tPb

**Concentration over time analysis**

| | tPb | NM295 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.081** | **0.00017** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 2.80 | 16 | | |
| mid: | 26-Dec-94 | 3.02 | 21 | | |
| last: | 15-Nov-98 | 3.26 | 26 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | tPb | NM295 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.016** | **0.00017** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | -0.50 | 1 | | |
| mid: | 26-Dec-94 | -0.28 | 1 | | |
| last: | 15-Nov-98 | -0.05 | 1 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

| | max r2: 0.289 | | | max r2: 0.652 | | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.081 | 0.00017 | -2.82 | 0.016 | 0.00017 | -6.05 |
| | 0.058 | 0.00016 | -2.58 | 0.132 | 0.00052 | -18.46 |
| | 0.060 | 0.00020 | -3.82 | 0.043 | 0.00033 | -11.72 |
| | 0.067 | 0.00021 | -4.41 | 0.073 | 0.00043 | -15.30 |
| | 0.083 | 0.00024 | -5.47 | 0.140 | 0.00058 | -20.76 |
| | 0.061 | 0.00021 | -4.35 | 0.147 | 0.00062 | -22.04 |
| | 0.059 | 0.00022 | -4.51 | 0.123 | 0.00058 | -20.49 |
| | 0.058 | 0.00022 | -4.74 | 0.096 | 0.00052 | -18.49 |
| | 0.076 | 0.00027 | -6.43 | 0.055 | 0.00040 | -14.14 |
| | 0.107 | 0.00035 | -9.12 | 0.012 | 0.00019 | -6.69 |
| | 0.227 | 0.00049 | -14.19 | 0.086 | 0.00045 | -16.18 |
| | 0.289 | 0.00058 | -17.39 | 0.328 | 0.00078 | -28.10 |
| | 0.248 | 0.00056 | -16.68 | 0.652 | 0.00111 | -39.78 |
| | 0.167 | 0.00048 | -13.89 | 0.622 | 0.00115 | -41.41 |

update for EV, CV:

**tPb** **NM295**
**LN Analysis** **tPb**

**Load** **Load Data, EV=1.12 lbs/day CV=0.844**

| | | **Load Data-based LN** | | |
|---|---|---|---|---|
| **Avg:** | **1** | u | ln tPb Load | tPb Load |
| **SD:** | **1** | 3 | 2.0 | 8 |
| **CV:** | **0.84** | 0 | -0.16 | 1 |
| **Min:** | **0.2** | -3 | -2.36 | 0.1 |
| **Max:** | **3** | | | |
| **Median:** | **1** | | | |
| | | 1 | 1.12 | |
| | | 0.84 | 0.844 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.921, EV=1.25lbs/day CV=1.3; max r2=0.92**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.921 | u | lnLoad | Load |
| slope, m: | 1.006 | 3 | 2.71 | 15 |
| intercept, b: | 0.276 | 0 | -0.27 | 1 |
| N: | 18 | -3 | -3.25 | 0.04 |
| E[Load]: | 1.2 | Parameter Estimates | | |
| SD[Load]: | 2 | from LN regression | | |
| CV[Load]: | 1.30 | update graph label | | |

| | | N: 18 | | | | max r2 |
|---|---|---|---|---|---|---|
| | **tPb** | | | | | 0.921 |
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 4-Oct-91 | 0.2 | 1 | 0.0342 | -1.822 | -1.623 | 0.921 |
| 25-Jul-95 | 0.3 | 2 | 0.0890 | -1.347 | -1.305 | 0.920 |
| 15-Aug-94 | 0.3 | 3 | 0.1438 | -1.063 | -1.167 | 0.921 |
| 15-Aug-94 | 0.3 | 4 | 0.1986 | -0.847 | -1.119 | 0.919 |
| 27-Jun-95 | 0.4 | 5 | 0.2534 | -0.664 | -1.000 | 0.910 |
| 20-Jul-94 | 0.4 | 6 | 0.3082 | -0.501 | -0.957 | 0.897 |
| 20-Jul-94 | 0.4 | 7 | 0.3630 | -0.350 | -0.935 | 0.878 |
| 11-Jul-95 | 0.4 | 8 | 0.4178 | -0.208 | -0.889 | 0.853 |
| 12-Nov-97 | 0.5 | 9 | 0.4726 | -0.069 | -0.692 | 0.833 |
| 7-Jun-94 | 0.7 | 10 | 0.5274 | 0.069 | -0.420 | 0.828 |
| 15-Nov-98 | 1.0 | 11 | 0.5822 | 0.208 | 0.005 | 0.858 |
| 12-Jun-95 | 1.3 | 12 | 0.6370 | 0.350 | 0.232 | 0.857 |
| 3-May-94 | 1.5 | 13 | 0.6918 | 0.501 | 0.427 | 0.860 |
| 19-May-94 | 1.9 | 14 | 0.7466 | 0.664 | 0.655 | |
| 15-May-98 | 2.4 | 15 | 0.8014 | 0.847 | 0.857 | |
| 23-May-95 | 2.4 | 16 | 0.8562 | 1.063 | 0.886 | |
| 16-May-91 | 2.7 | 17 | 0.9110 | 1.347 | 0.988 | |
| 9-May-95 | 3.1 | 18 | 0.9658 | 1.822 | 1.126 | |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tPb** | | NM295 | | 23 | 23 |
| **LN Analysis** | | tPb | | 0.59 | 0.593 |

**Concentration**

**Conc. Data, EV=23 ug/L CV=0.593**

| | | Data-based LN | | |
|---|---|---|---|---|
| **Avg:** | **23** | u | ln[tPb] | [tPb] |
| **SD:** | **14** | 3 | 4.6 | 103 |
| **CV:** | **0.59** | 0 | 2.98 | 20 |
| **Min:** | **13** | -3 | 1.34 | 4 |
| **Max:** | **74** | | | |
| **Median:** | **20** | | | |

**u=mLn(Conc.)+b:** 0.807 0.807

update for r2, EV, CV: **r2=0.807, EV=23.2 ug/L CV=0.503; max r2=0.89** 23.2 23.2 / 0.503 0.503

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.807 | u | lnConc. | Conc. |
| slope, m: | 2.104 | 3 | 4.46 | 86 |
| intercept, b: | -6.382 | 0 | 3.03 | 21 |
| N: | 18 | -3 | 1.61 | 5 |
| E[Conc] | 23.2 | Parameter Estimates | | |
| SD[Conc] | 12 | from LN regression | | |
| CV[Conc] | 0.50 | update graph label | | |

0.921
1.25
1.3

| Date | tPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting potato | u y-axis | Ln x-axis | max r2 0.889 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | N: 18 | | | |
| 27-Jun-95 | 13 | 1 | 0.0342 | -1.822 | 2.565 | 0.807 |
| 15-May-98 | 13.9 | 2 | 0.0890 | -1.347 | 2.632 | 0.817 |
| 12-Jun-95 | 14 | 3 | 0.1438 | -1.063 | 2.639 | 0.820 |
| 7-Jun-94 | 15 | 4 | 0.1986 | -0.847 | 2.708 | 0.811 |
| 12-Nov-97 | 15.8 | 5 | 0.2534 | -0.664 | 2.760 | 0.803 |
| 16-May-91 | 16 | 6 | 0.3082 | -0.501 | 2.773 | 0.795 |
| 25-Jul-95 | 18 | 7 | 0.3630 | -0.350 | 2.890 | 0.778 |
| 4-Oct-91 | 19 | 8 | 0.4178 | -0.208 | 2.944 | 0.779 |
| 20-Jul-94 | 20 | 9 | 0.4726 | -0.069 | 2.996 | 0.788 |
| 20-Jul-94 | 20 | 10 | 0.5274 | 0.069 | 2.996 | 0.807 |
| 11-Jul-95 | 20 | 11 | 0.5822 | 0.208 | 2.996 | 0.818 |
| 3-May-94 | 22.3 | 12 | 0.6370 | 0.350 | 3.105 | 0.817 |
| 23-May-95 | 23 | 13 | 0.6918 | 0.501 | 3.135 | 0.849 |
| 19-May-94 | 24 | 14 | 0.7466 | 0.664 | 3.178 | 0.889 |
| 15-Aug-94 | 24 | 15 | 0.8014 | 0.847 | 3.178 | |
| 15-Aug-94 | 24 | 16 | 0.8562 | 1.063 | 3.178 | |
| 9-May-95 | 37 | 17 | 0.9110 | 1.347 | 3.611 | |
| 15-Nov-98 | 74.4 | 18 | 0.9658 | 1.822 | 4.309 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **NM295** | | | 10 | 10.3 |
| **LN Analysis** | | **tPb** | | | 0.91 | 0.907 |
| **Discharge, Q** | | **Q Data, EV=10.3 cfs CV=0.907** | | | | |
| **Avg:** | **10** | **Q Data-based LN** | | | | |
| **SD:** | **9** | u | lnQ | Q | | |
| **CV:** | **0.91** | 3 | 4.4 | 78 | | |
| **Min:** | **2** | 0 | 2.03 | 8 | | |
| **Max:** | **32** | -3 | -0.30 | 1 | | |
| **Median:** | **6** | | | | | |

| | | |
|---|---|---|
| | 0.930 | 0.93 |
| | 11.4 | 11.4 |
| **u=mLn(Q)+b:** | 1.34 | 1.34 |

update for r2, EV, CV: **r2=0.93, EV=11.4 cfs CV=1.34; max r2=0.95**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.930 | u | lnQ | Q |
| slope, m: | 0.987 | 3 | 4.96 | 142 |
| intercept, b: | -1.893 | 0 | 1.92 | 7 |
| N: | 18 | -3 | -1.12 | 0.3 |
| E[Q]: | 11.4 | Parameter Estimates | | |
| SD[Q]: | 15 | from LN regression | | |
| CV[Q]: | 1.34 | update graph label | | |

| | Q | N: 18 | | | | max r2 0.950 |
|---|---|---|---|---|---|---|
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.93 | 1 | 0.0342 | -1.822 | 0.658 | 0.930 |
| 15-Aug-94 | 2.41 | 2 | 0.0890 | -1.347 | 0.880 | 0.942 |
| 15-Nov-98 | 2.51 | 3 | 0.1438 | -1.063 | 0.920 | 0.950 |
| 15-Aug-94 | 2.53 | 4 | 0.1986 | -0.847 | 0.928 | 0.949 |
| 25-Jul-95 | 2.8 | 5 | 0.2534 | -0.664 | 1.030 | 0.940 |
| 20-Jul-94 | 3.57 | 6 | 0.3082 | -0.501 | 1.273 | 0.929 |
| 20-Jul-94 | 3.65 | 7 | 0.3630 | -0.350 | 1.295 | 0.915 |
| 11-Jul-95 | 3.82 | 8 | 0.4178 | -0.208 | 1.340 | 0.899 |
| 27-Jun-95 | 5.26 | 9 | 0.4726 | -0.069 | 1.660 | 0.891 |
| 12-Nov-97 | 5.89 | 10 | 0.5274 | 0.069 | 1.773 | 0.875 |
| 7-Jun-94 | 8.14 | 11 | 0.5822 | 0.208 | 2.097 | 0.890 |
| 3-May-94 | 12.78 | 12 | 0.6370 | 0.350 | 2.548 | 0.914 |
| 19-May-94 | 14.91 | 13 | 0.6918 | 0.501 | 2.702 | 0.886 |
| 9-May-95 | 15.49 | 14 | 0.7466 | 0.664 | 2.740 | 0.862 |
| 12-Jun-95 | 16.75 | 15 | 0.8014 | 0.847 | 2.818 | |
| 23-May-95 | 19.6 | 16 | 0.8562 | 1.063 | 2.976 | |
| 16-May-91 | 31.2 | 17 | 0.9110 | 1.347 | 3.440 | |
| 15-May-98 | 31.5 | 18 | 0.9658 | 1.822 | 3.450 | |

**Secondary Scale For LN graphs**

| s | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM295 | **Date:** | 3-Jun-00 |
| **Chemical:** | tZn | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,750 | 10 | 2,947 | 116 | 0.00 | 0.00 | 0.00 |
| **SD:** | 673 | 9 | 2,333 | 74 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.91 | 0.79 | 0.64 | | | |
| **Min:** | 33,374 | 2 | 1,330 | 28.7 | -0.90 | -0.69 | -1.19 |
| **Max:** | 36,114 | 32 | 12,100 | 266 | 2.28 | 3.92 | 2.02 |
| **Median:** | 34,695 | 6 | 2,610 | 107 | -0.50 | -0.14 | -0.13 |

| tZn | NM295 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.157)** | | update r2 | **0.16** | 0.157 | r2: | 0.002 | 0.000002 |
| r2 Q,[COC]: | 0.16 | [tZn] | Q | | m: | -0.0006 | -0.000002 |
| slope, m: | -99.4 | 3,776 | 1.9 | | b: | 31 | 1.99 |
| intercept, b: | 3967.8 | 2,947 | 10.3 | | | | |
| N: 18 | | 836 | 32 | | | | |
| **LnConc. = mLn{Q}+b (r2=0.416)** | | update r2 | | 0.42 | 0.416 | | |
| r2 lnQ,ln[COC]: | 0.42 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m: | -0.34 | 8.26 | 0.66 | 3,879 | 2 | | |
| intercept, b: | 8.49 | 7.69 | 2.33 | 2,191 | 10 | | |
| N: 18 | | 7.31 | 3.45 | 1,494 | 32 | | |

**N= 18**

| | Sampling Date | Q Discharge cfs | tZn Concentration ug/L | tZn Load lbs/day | Ln Q | Ln tZn Conc. | Ln tZn Load | tZn NM295 Standardized Values = (x - Avg)/SD Q | for graph 0 Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 31.2 | 1330 | 223 | 3.44 | 7.19 | 5.41 | 2.25 | -0.69 | 1.44 |
| MFG | 4-Oct-91 | 1.93 | 2760 | 29 | 0.66 | 7.92 | 3.36 | -0.90 | -0.08 | -1.19 |
| IDEQ | 3-May-94 | 12.78 | 2610 | 179 | 2.55 | 7.87 | 5.19 | 0.27 | -0.14 | 0.85 |
| IDEQ | 19-May-94 | 14.91 | 1550 | 124 | 2.70 | 7.35 | 4.82 | 0.50 | -0.60 | 0.11 |
| IDEQ | 7-Jun-94 | 8.14 | 2050 | 90 | 2.10 | 7.63 | 4.50 | -0.23 | -0.38 | -0.36 |
| IDEQ | 20-Jul-94 | 3.57 | 2650 | 51 | 1.27 | 7.88 | 3.93 | -0.72 | -0.13 | -0.89 |
| IDEQ | 20-Jul-94 | 3.65 | 2650 | 52 | 1.29 | 7.88 | 3.95 | -0.71 | -0.13 | -0.87 |
| IDEQ | 15-Aug-94 | 2.53 | 3230 | 44 | 0.93 | 8.08 | 3.78 | -0.83 | 0.12 | -0.98 |
| IDEQ | 15-Aug-94 | 2.41 | 3230 | 42 | 0.88 | 8.08 | 3.73 | -0.84 | 0.12 | -1.01 |
| IDEQ | 9-May-95 | 15.49 | 2720 | 227 | 2.74 | 7.91 | 5.42 | 0.56 | -0.10 | 1.49 |
| IDEQ | 23-May-95 | 19.6 | 1580 | 167 | 2.98 | 7.37 | 5.12 | 1.00 | -0.59 | 0.68 |
| IDEQ | 12-Jun-95 | 16.75 | 1750 | 158 | 2.82 | 7.47 | 5.06 | 0.70 | -0.51 | 0.56 |
| IDEQ | 27-Jun-95 | 5.26 | 1990 | 56 | 1.66 | 7.60 | 4.03 | -0.54 | -0.41 | -0.81 |
| IDEQ | 11-Jul-95 | 3.82 | 2390 | 49 | 1.34 | 7.78 | 3.89 | -0.69 | -0.24 | -0.91 |
| IDEQ | 25-Jul-95 | 2.8 | 2610 | 39 | 1.03 | 7.87 | 3.67 | -0.80 | -0.14 | -1.04 |
| URS | 12-Nov-97 | 5.89 | 4280 | 136 | 1.77 | 8.36 | 4.91 | -0.47 | 0.57 | 0.26 |
| URS | 15-May-98 | 31.5 | 1570 | 266 | 3.45 | 7.36 | 5.58 | 2.28 | -0.59 | 2.02 |
| URS | 15-Nov-98 | 2.51 | 12100 | 163 | 0.92 | 9.40 | 5.10 | -0.83 | 3.92 | 0.64 |

tZn

**Concentration over time analysis**

| | tZn | NM295 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.233** | **0.00035** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 7.35 | 1,563 | | |
| mid: | 26-Dec-94 | 7.81 | 2,473 | | |
| last: | 15-Nov-98 | 8.31 | 4,049 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

**Load over time analysis**

| | tZn | NM295 | | | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.109** | **0.00035** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | 4.05 | 57 | | |
| mid: | 26-Dec-94 | 4.51 | 91 | | |
| last: | 15-Nov-98 | 5.00 | 148 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 15-Nov-98 | 0.00 | 1 | | |

| | max r2: 0.407 | | | max r2: 0.887 | | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.233 | 0.00035 | -4.24 | 0.109 | 0.00035 | -7.47 |
| | 0.155 | 0.00031 | -2.89 | 0.337 | 0.00067 | -18.77 |
| | 0.240 | 0.00046 | -8.14 | 0.220 | 0.00059 | -16.04 |
| | 0.253 | 0.00048 | -9.02 | 0.314 | 0.00070 | -19.91 |
| | 0.218 | 0.00044 | -7.66 | 0.379 | 0.00078 | -22.95 |
| | 0.200 | 0.00044 | -7.33 | 0.408 | 0.00084 | -25.02 |
| | 0.209 | 0.00046 | -8.25 | 0.380 | 0.00082 | -24.23 |
| | 0.222 | 0.00050 | -9.53 | 0.345 | 0.00079 | -23.28 |
| | 0.280 | 0.00059 | -12.76 | 0.286 | 0.00071 | -20.47 |
| | 0.375 | 0.00073 | -17.93 | 0.196 | 0.00058 | -15.50 |
| | 0.407 | 0.00079 | -20.12 | 0.362 | 0.00076 | -22.11 |
| | 0.359 | 0.00075 | -18.37 | 0.552 | 0.00095 | -29.08 |
| | 0.300 | 0.00069 | -16.52 | 0.884 | 0.00125 | -39.61 |
| | 0.231 | 0.00065 | -14.91 | 0.887 | 0.00133 | -42.43 |

update for EV, CV:

**tZn**
**LN Analysis**

**Load**

| | |
|---|---|
| **Avg:** | **116** |
| **SD:** | **74** |
| **CV:** | **0.64** |
| **Min:** | **28.7** |
| **Max:** | **266** |
| **Median:** | **107** |

**NM295**
**tZn**

**Load Data, EV=116 lbs/day CV=0.636**
**Load Data-based LN**

| u | ln tZn Load | tZn Load |
|---|---|---|
| 3 | 6.3 | 564 |
| 0 | 4.59 | 98 |
| -3 | 2.84 | 17.1 |
| 116 | 116 | |
| 0.64 | 0.636 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.923, EV=126lbs/day CV=0.925; max r2=0.96**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.923 | u | lnLoad | Load | |
| slope, m: | 1.272 | 3 | 6.88 | 977 | |
| intercept, b: | -5.756 | 0 | 4.53 | 92 | |
| N: | 18 | -3 | 2.17 | 8.7 | |
| E[Load]: | 125.8 | Parameter Estimates | | | 0.923 |
| SD[Load]: | 116 | from LN regression | | | 125.8 |
| CV[Load]: | 0.93 | update graph label | | | 0.9 |
| | | | | | max r2 |
| | N: 18 | | | | 0.955 |

| Date | tZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | **29** | 1 | 0.0342 | -1.822 | 3.355 | 0.923 |
| 25-Jul-95 | **39** | 2 | 0.0890 | -1.347 | 3.672 | 0.912 |
| 15-Aug-94 | **42** | 3 | 0.1438 | -1.063 | 3.735 | 0.905 |
| 15-Aug-94 | **44** | 4 | 0.1986 | -0.847 | 3.783 | 0.891 |
| 11-Jul-95 | **49** | 5 | 0.2534 | -0.664 | 3.894 | 0.870 |
| 20-Jul-94 | **51** | 6 | 0.3082 | -0.501 | 3.930 | 0.845 |
| 20-Jul-94 | **52** | 7 | 0.3630 | -0.350 | 3.952 | 0.816 |
| 27-Jun-95 | **56** | 8 | 0.4178 | -0.208 | 4.031 | 0.800 |
| 7-Jun-94 | **90** | 9 | 0.4726 | -0.069 | 4.497 | 0.892 |
| 19-May-94 | **124** | 10 | 0.5274 | 0.069 | 4.823 | 0.955 |
| 12-Nov-97 | **136** | 11 | 0.5822 | 0.208 | 4.910 | 0.951 |
| 12-Jun-95 | **158** | 12 | 0.6370 | 0.350 | 5.061 | 0.945 |
| 15-Nov-98 | **163** | 13 | 0.6918 | 0.501 | 5.096 | 0.934 |
| 23-May-95 | **167** | 14 | 0.7466 | 0.664 | 5.116 | 0.911 |
| 3-May-94 | **179** | 15 | 0.8014 | 0.847 | 5.190 | |
| 16-May-91 | **223** | 16 | 0.8562 | 1.063 | 5.408 | |
| 9-May-95 | **227** | 17 | 0.9110 | 1.347 | 5.424 | |
| 15-May-98 | **266** | 18 | 0.9658 | 1.822 | 5.584 | |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | NM295 | | 2,947 | 2950 |
| **LN Analysis** | | tZn | | 0.79 | 0.792 |
| **Concentration** | | **Conc. Data, EV=2950 ug/L CV=0.792** | | | |
| **Avg:** | **2,947** | **Data-based LN** | | | |
| **SD:** | **2,333** | u | ln[tZn] | [tZn] | |
| **CV:** | **0.79** | 3 | 9.8 | 18733 | |
| **Min:** | **1,330** | 0 | 7.75 | 2311 | |
| **Max:** | **12,100** | -3 | 5.65 | 285 | |
| **Median:** | **2,610** | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.815 | 0.815 |
| | **u=mLn(Conc.)+b:** | | | | 2972.3 | 2970 |
| update for r2, EV, CV: | **r2=0.815, EV=2970 ug/L CV=0.624; max r2=0.88** | | | | 0.624 | 0.624 |
| | r2 u,lnConc: | 0.815 | u | lnConc. | Conc. | |
| | slope, m: | 1.743 | 3 | 9.55 | 14099 | |
| | intercept, b: | -13.650 | 0 | 7.83 | 2521 | |
| | N: | 18 | -3 | 6.11 | 451 | |
| 0.923 | E[Conc]: | 2972.3 | Parameter Estimates | | | |
| 126 | SD[Conc]: | 1856 | from LN regression | | | |
| 0.925 | CV[Conc]: | 0.62 | update graph label | | | |

| | tZn | N: 18 | | | | max r2 0.883 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L | rank | plotting points | y-axis | x-axis | forward |
| | Ranked | | | | | |
| update and rank for new data | | | | | | |
| 16-May-91 | 1330 | 1 | 0.0342 | -1.822 | 7.193 | 0.815 |
| 19-May-94 | 1550 | 2 | 0.0890 | -1.347 | 7.346 | 0.810 |
| 15-May-98 | 1570 | 3 | 0.1438 | -1.063 | 7.359 | 0.810 |
| 23-May-95 | 1580 | 4 | 0.1986 | -0.847 | 7.365 | 0.797 |
| 12-Jun-95 | 1750 | 5 | 0.2534 | -0.664 | 7.467 | 0.773 |
| 27-Jun-95 | 1990 | 6 | 0.3082 | -0.501 | 7.596 | 0.750 |
| 7-Jun-94 | 2050 | 7 | 0.3630 | -0.350 | 7.626 | 0.737 |
| 11-Jul-95 | 2390 | 8 | 0.4178 | -0.208 | 7.779 | 0.718 |
| 3-May-94 | 2610 | 9 | 0.4726 | -0.069 | 7.867 | 0.726 |
| 25-Jul-95 | 2610 | 10 | 0.5274 | 0.069 | 7.867 | 0.759 |
| 20-Jul-94 | 2650 | 11 | 0.5822 | 0.208 | 7.882 | 0.791 |
| 20-Jul-94 | 2650 | 12 | 0.6370 | 0.350 | 7.882 | 0.825 |
| 9-May-95 | 2720 | 13 | 0.6918 | 0.501 | 7.908 | 0.854 |
| 4-Oct-91 | 2760 | 14 | 0.7466 | 0.664 | 7.923 | 0.883 |
| 15-Aug-94 | 3230 | 15 | 0.8014 | 0.847 | 8.080 | |
| 15-Aug-94 | 3230 | 16 | 0.8562 | 1.063 | 8.080 | |
| 12-Nov-97 | 4280 | 17 | 0.9110 | 1.347 | 8.362 | |
| 15-Nov-98 | 12100 | 18 | 0.9658 | 1.822 | 9.401 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **NM295** | | | 10 | 10.3 |
| **LN Analysis** | | **tZn** | | | 0.91 | 0.907 |
| **Discharge, Q** | | **Q Data, EV=10.3 cfs CV=0.907** | | | | |
| **Avg:** | **10** | **Q Data-based LN** | | | | |
| **SD:** | **9** | u | lnQ | Q | | |
| **CV:** | **0.91** | 3 | 4.4 | 78 | | |
| **Min:** | **2** | 0 | 2.03 | 8 | | |
| **Max:** | **32** | -3 | -0.30 | 1 | | |
| **Median:** | **6** | | | | | |
| | | | | | 0.930 | 0.93 |
| | | | | | 11.4 | 11.4 |
| | **u=mLn(Q)+b:** | | | | 1.34 | 1.34 |

update for r2, EV, CV: **r2=0.93, EV=11.4 cfs CV=1.34; max r2=0.95**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.930 | u | lnQ | Q |
| slope, m: | 0.987 | 3 | 4.96 | 142 |
| intercept, b. | -1.893 | 0 | 1.92 | 7 |
| N: | 18 | -3 | -1.12 | 0 |
| E[Q]: | 11.4 | Parameter Estimates | | |
| SD[Q]: | 15 | from LN regression | | |
| CV[Q]: | 1.34 | update graph label | | |

N: 18

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.950 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.93 | 1 | 0.0342 | -1.822 | 0.658 | 0.930 |
| 15-Aug-94 | 2.41 | 2 | 0.0890 | -1.347 | 0.880 | 0.942 |
| 15-Nov-98 | 2.51 | 3 | 0.1438 | -1.063 | 0.920 | 0.950 |
| 15-Aug-94 | 2.53 | 4 | 0.1986 | -0.847 | 0.928 | 0.949 |
| 25-Jul-95 | 2.8 | 5 | 0.2534 | -0.664 | 1.030 | 0.940 |
| 20-Jul-94 | 3.57 | 6 | 0.3082 | -0.501 | 1.273 | 0.929 |
| 20-Jul-94 | 3.65 | 7 | 0.3630 | -0.350 | 1.295 | 0.915 |
| 11-Jul-95 | 3.82 | 8 | 0.4178 | -0.208 | 1.340 | 0.899 |
| 27-Jun-95 | 5.26 | 9 | 0.4726 | -0.069 | 1.660 | 0.891 |
| 12-Nov-97 | 5.89 | 10 | 0.5274 | 0.069 | 1.773 | 0.875 |
| 7-Jun-94 | 8.14 | 11 | 0.5822 | 0.208 | 2.097 | 0.890 |
| 3-May-94 | 12.78 | 12 | 0.6370 | 0.350 | 2.548 | 0.914 |
| 19-May-94 | 14.91 | 13 | 0.6918 | 0.501 | 2.702 | 0.886 |
| 9-May-95 | 15.49 | 14 | 0.7466 | 0.664 | 2.740 | 0.862 |
| 12-Jun-95 | 16.75 | 15 | 0.8014 | 0.847 | 2.818 | |
| 23-May-95 | 19.6 | 16 | 0.8562 | 1.063 | 2.976 | |
| 16-May-91 | 31.2 | 17 | 0.9110 | 1.347 | 3.440 | |
| 15-May-98 | 31.5 | 18 | 0.9658 | 1.822 | 3.450 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** NM296 **Date:** 29-May-00

**Chemical:** dCd **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,108 | 9 | 32 | 1 | 0.00 | 0.00 | 0.00 |
| **SD:** | 612 | 7 | 14 | 1 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.76 | 0.45 | 0.64 | | | |
| **Min:** | 33,374 | 1 | 7 | 0.3 | -1.09 | -1.74 | -1.26 |
| **Max:** | 36,135 | 31 | 92 | 4 | 3.14 | 4.14 | 3.15 |
| **Median:** | 35,042 | 7 | 32 | 1 | -0.35 | -0.02 | -0.21 |

**dCd NM296 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

**Conc. = mQ+b (r2=0.22)** update r2 r2: 0.037 0.009

| | | | | | |
|---|---|---|---|---|---|
| r2 Q,[COC]: | 0.22 | [dCd] | Q | m: | -0.0022 -0.00011 |
| slope, m: | -1.0 | 40 | 1.5 | b: | 86 5.85 |
| intercept, b: | 41.1 | 32 | 9.1 | | |
| N: 54 | | 11 | 31 | | |

**LnConc. = mLn(Q)+b (r2=0.28)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.28 | ln[dCd] | ln Q | [dCd] | Q |
| slope, m: | -0.37 | 3.94 | 0.39 | 52 | 1 |
| intercept, b: | 4.09 | 3.28 | 2.21 | 27 | 9 |
| N: 54 | | 2.83 | 3.43 | 17 | 31 |

**N= 54**

| | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd NM296 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | for graph 0 |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 30.9 | 7.2 | 1.2 | 3.43 | 1.97 | 0.18 | 3.14 | -1.74 | -0.15 |
| MFG | 4-Oct-91 | 1.48 | 31.6 | 0.3 | 0.39 | 3.45 | -1.38 | -1.09 | -0.05 | -1.26 |
| IDEQ | 6-Apr-94 | 19.24 | 35 | 3.6 | 2.96 | 3.56 | 1.29 | 1.46 | 0.19 | 2.68 |
| IDEQ | 3-May-94 | 16.55 | 28.3 | 2.5 | 2.81 | 3.34 | 0.92 | 1.07 | -0.28 | 1.39 |
| IDEQ | 19-May-94 | 15.13 | 20 | 1.6 | 2.72 | 3.00 | 0.49 | 0.87 | -0.86 | 0.35 |
| IDEQ | 7-Jun-94 | 10 | 26 | 1.4 | 2.30 | 3.26 | 0.34 | 0.13 | -0.44 | 0.08 |
| IDEQ | 23-Jun-94 | 5.45 | 28 | 0.8 | 1.70 | 3.33 | -0.20 | -0.52 | -0.30 | -0.59 |
| IDEQ | 20-Jul-94 | 4.11 | 32 | 0.7 | 1.41 | 3.47 | -0.35 | -0.72 | -0.02 | -0.73 |
| IDEQ | 20-Jul-94 | 3.15 | 32 | 0.5 | 1.15 | 3.47 | -0.61 | -0.85 | -0.02 | -0.92 |
| IDEQ | 15-Aug-94 | 3.89 | 36 | 0.8 | 1.36 | 3.58 | -0.28 | -0.75 | 0.26 | -0.67 |
| IDEQ | 15-Aug-94 | 12.31 | 36 | 2.4 | 2.51 | 3.58 | 0.87 | 0.46 | 0.26 | 1.23 |
| IDEQ | 8-Sep-94 | 3.29 | 36 | 0.6 | 1.19 | 3.58 | -0.45 | -0.83 | 0.26 | -0.81 |
| IDEQ | 4-Oct-94 | 3.29 | 37 | 0.7 | 1.19 | 3.61 | -0.42 | -0.83 | 0.32 | -0.79 |
| IDEQ | 15-Nov-94 | 3.57 | 54 | 1.0 | 1.27 | 3.99 | 0.04 | -0.79 | 1.51 | -0.34 |
| IDEQ | 13-Dec-94 | 3.57 | 57 | 1.1 | 1.27 | 4.04 | 0.09 | -0.79 | 1.71 | -0.27 |
| IDEQ | 9-Feb-95 | 5.61 | 58 | 1.8 | 1.72 | 4.06 | 0.56 | -0.50 | 1.78 | 0.49 |
| IDEQ | 22-Mar-95 | 14.68 | 51 | 4.0 | 2.69 | 3.93 | 1.39 | 0.80 | 1.30 | 3.15 |
| IDEQ | 13-Apr-95 | 10 | 46 | 2.5 | 2.30 | 3.83 | 0.91 | 0.13 | 0.95 | 1.34 |
| IDEQ | 25-Apr-95 | 7.26 | 44 | 1.7 | 1.98 | 3.78 | 0.54 | -0.26 | 0.81 | 0.46 |
| IDEQ | 9-May-95 | 20.44 | 18 | 2.0 | 3.02 | 2.89 | 0.68 | 1.63 | -0.99 | 0.76 |
| IDEQ | 23-May-95 | 29.49 | 14 | 2.2 | 3.38 | 2.64 | 0.80 | 2.94 | -1.27 | 1.04 |
| IDEQ | 12-Jun-95 | 7.69 | 13 | 0.5 | 2.04 | 2.56 | -0.62 | -0.20 | -1.34 | -0.93 |
| IDEQ | 27-Jun-95 | 6.47 | 18 | 0.6 | 1.87 | 2.89 | -0.47 | -0.38 | -0.99 | -0.82 |
| IDEQ | 11-Jul-95 | 4.23 | 23 | 0.5 | 1.44 | 3.14 | -0.65 | -0.70 | -0.65 | -0.94 |
| IDEQ | 25-Jul-95 | 3.68 | 28 | 0.6 | 1.30 | 3.33 | -0.59 | -0.78 | -0.30 | -0.91 |
| IDEQ | 18-Oct-95 | 5.01 | 46 | 1.2 | 1.61 | 3.83 | 0.22 | -0.59 | 0.95 | -0.10 |
| IDEQ | 21-Nov-95 | 13.4 | 26 | 1.9 | 2.60 | 3.26 | 0.63 | 0.62 | -0.44 | 0.64 |
| IDEQ | 27-Dec-95 | 10.9 | 34 | 2.0 | 2.39 | 3.53 | 0.69 | 0.26 | 0.12 | 0.78 |
| IDEQ | 17-Jan-96 | 6.86 | 42 | 1.6 | 1.93 | 3.74 | 0.44 | -0.32 | 0.67 | 0.26 |
| IDEQ | 28-Mar-96 | 8.39 | 27 | 1.2 | 2.13 | 3.30 | 0.20 | -0.10 | -0.37 | -0.13 |
| IDEQ | 8-May-96 | 15.1 | 25 | 2.0 | 2.71 | 3.22 | 0.71 | 0.87 | -0.51 | 0.82 |
| IDEQ | 19-Jun-96 | 19.2 | 12 | 1.2 | 2.95 | 2.48 | 0.21 | 1.46 | -1.41 | -0.10 |
| IDEQ | 24-Jul-96 | 5.01 | 24 | 0.6 | 1.61 | 3.18 | -0.44 | -0.59 | -0.58 | -0.80 |
| IDEQ | 21-Aug-96 | 4.6 | 29 | 0.7 | 1.53 | 3.37 | -0.33 | -0.65 | -0.23 | -0.71 |
| IDEQ | 27-Nov-96 | 3.11 | 43 | 0.7 | 1.13 | 3.76 | -0.33 | -0.86 | 0.74 | -0.71 |
| IDEQ | 13-Dec-96 | 16.1 | 44 | 3.8 | 2.78 | 3.78 | 1.34 | 1.01 | 0.81 | 2.90 |
| IDEQ | 30-Jan-97 | 3.68 | 41 | 0.8 | 1.30 | 3.71 | -0.21 | -0.78 | 0.60 | -0.60 |
| IDEQ | 19-Feb-97 | 5.01 | 38 | 1.0 | 1.61 | 3.64 | 0.02 | -0.59 | 0.39 | -0.36 |
| IDEQ | 26-Mar-97 | 11.9 | 39 | 2.5 | 2.48 | 3.66 | 0.92 | 0.40 | 0.46 | 1.36 |
| IDEQ | 16-Apr-97 | 7.48 | 33 | 1.3 | 2.01 | 3.50 | 0.28 | -0.23 | 0.05 | 0.00 |
| IDEQ | 24-Jun-97 | 12.3 | 8 | 0.5 | 2.51 | 2.08 | -0.64 | 0.46 | -1.69 | -0.93 |
| IDEQ | 23-Jul-97 | 7.06 | 15 | 0.6 | 1.95 | 2.71 | -0.56 | -0.29 | -1.20 | -0.89 |
| URS | 12-Nov-97 | 4.15 | 41.4 | 0.9 | 1.42 | 3.72 | -0.08 | -0.71 | 0.63 | -0.47 |
| IDEQ | 26-Nov-97 | 3.2 | 34 | 0.6 | 1.16 | 3.53 | -0.54 | -0.85 | 0.12 | -0.87 |
| IDEQ | 17-Dec-97 | 3.38 | 36 | 0.7 | 1.22 | 3.58 | -0.42 | -0.82 | 0.26 | -0.79 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 25-Feb-98 | 7.48 | 32 | 1.3 | 2.01 | 3.47 | 0.25 | -0.23 | -0.02 | -0.05 |
| IDEQ | 20-Mar-98 | 4.73 | 32 | 0.8 | 1.55 | 3.47 | -0.21 | -0.63 | -0.02 | -0.60 |
| URS | 16-May-98 | 28 | 11.9 | 1.8 | 3.33 | 2.48 | 0.58 | 2.72 | -1.42 | 0.54 |
| IDEQ | 26-Jun-98 | 12.3 | 19 | 1.3 | 2.51 | 2.94 | 0.23 | 0.46 | -0.92 | -0.08 |
| IDEQ | 26-Jun-98 | 12.3 | 20 | 1.3 | 2.51 | 3.00 | 0.28 | 0.46 | -0.86 | -0.01 |
| IDEQ | 28-Jul-98 | 4.11 | 27 | 0.6 | 1.41 | 3.30 | -0.52 | -0.72 | -0.37 | -0.86 |
| IDEQ | 24-Sep-98 | 3.38 | 29 | 0.5 | 1.22 | 3.37 | -0.64 | -0.82 | -0.23 | -0.94 |
| IDEQ | 8-Oct-98 | 3.29 | 36 | 0.6 | 1.19 | 3.58 | -0.45 | -0.83 | 0.26 | -0.81 |
| URS | 6-Dec-98 | 3.86 | 91.9 | 1.9 | 1.35 | 4.52 | 0.65 | -0.75 | 4.14 | 0.68 |

**dCd**

**Concentration over time analysis**

| | dCd | NM296 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.006** | **0.00006** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 3.26 | 26 | | |
| mid: | 9-Dec-95 | 3.37 | 29 | | |
| last: | 6-Dec-98 | 3.44 | 31 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.846** | **0.00838** |
| | 26-Jun-98 | 2.90 | 18 | | |
| | 6-Dec-98 | 4.27 | 71 | | |

**Load over time analysis**

| | dCd | NM296 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.002** | **-0.00005** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | 0.18 | 1.2 | | |
| mid: | 9-Dec-95 | 0.10 | 1.1 | | |
| last: | 6-Dec-98 | 0.05 | 1.1 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.067** | **0.00229** |
| | 26-Jun-98 | -0.31 | 0.7 | | |
| | 6-Dec-98 | 0.06 | 1.1 | | |

| | | | | | |
|---|---|---|---|---|---|
| max r2: | 0.913 | | max r2: | 0.173 | |
| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.006 | 0.00006 | 1.13 | 0.002 | -0.00005 | 1.76 |
| 0.007 | -0.00007 | 5.80 | 0.002 | -0.00005 | 1.77 |
| 0.008 | -0.00007 | 6.02 | 0.042 | -0.00023 | 8.06 |
| 0.006 | -0.00007 | 5.82 | 0.025 | -0.00017 | 6.14 |
| 0.007 | -0.00007 | 6.02 | 0.015 | -0.00013 | 4.76 |
| 0.012 | -0.00010 | 6.95 | 0.011 | -0.00012 | 4.14 |
| 0.015 | -0.00011 | 7.41 | 0.009 | -0.00010 | 3.77 |
| 0.017 | -0.00012 | 7.75 | 0.012 | -0.00013 | 4.54 |
| 0.017 | -0.00013 | 7.82 | 0.019 | -0.00016 | 5.72 |
| 0.016 | -0.00013 | 7.89 | 0.035 | -0.00022 | 7.74 |
| 0.014 | -0.00012 | 7.66 | 0.046 | -0.00026 | 9.13 |
| 0.012 | -0.00011 | 7.40 | 0.031 | -0.00021 | 7.55 |
| 0.010 | -0.00010 | 7.09 | 0.049 | -0.00027 | 9.59 |
| 0.007 | -0.00009 | 6.64 | 0.071 | -0.00033 | 11.80 |
| 0.002 | -0.00004 | 4.95 | 0.079 | -0.00036 | 12.79 |
| 0.000 | 0.00001 | 2.84 | 0.085 | -0.00038 | 13.70 |
| 0.005 | -0.00008 | 0.49 | 0.074 | -0.00037 | 13.08 |
| 0.016 | 0.00014 | -1.68 | 0.043 | -0.00027 | 9.56 |
| 0.030 | 0.00020 | -3.77 | 0.025 | -0.00020 | 7.23 |
| 0.051 | 0.00026 | -6.05 | 0.016 | -0.00016 | 5.86 |
| 0.039 | 0.00024 | -5.09 | 0.006 | -0.00010 | 3.67 |
| 0.021 | 0.00017 | -2.82 | 0.000 | -0.00001 | 0.52 |
| 0.005 | 0.00009 | 0.28 | 0.005 | -0.00010 | 3.53 |
| 0.000 | 0.00003 | 2.40 | 0.016 | -0.00018 | 6.42 |
| 0.000 | -0.00001 | 3.62 | 0.047 | -0.00031 | 11.11 |
| 0.000 | -0.00001 | 3.88 | 0.101 | -0.00047 | 16.76 |
| 0.002 | 0.00007 | 0.86 | 0.101 | -0.00049 | 17.67 |
| 0.002 | 0.00006 | 1.26 | 0.075 | -0.00044 | 15.67 |
| 0.004 | 0.00010 | -0.37 | 0.045 | -0.00035 | 12.51 |
| 0.017 | 0.00022 | -4.45 | 0.029 | -0.00029 | 10.53 |
| 0.018 | 0.00024 | -5.13 | 0.024 | -0.00029 | 10.18 |
| 0.016 | 0.00024 | -5.11 | 0.004 | -0.00012 | 4.31 |
| 0.000 | 0.00000 | 3.39 | 0.001 | -0.00006 | 2.22 |
| 0.001 | -0.00007 | 5.98 | 0.010 | -0.00022 | 7.70 |
| 0.002 | -0.00009 | 6.77 | 0.028 | -0.00039 | 13.85 |
| 0.000 | 0.00004 | 1.96 | 0.055 | -0.00057 | 20.53 |
| 0.009 | 0.00024 | -5.29 | 0.001 | -0.00005 | 1.71 |
| 0.031 | 0.00047 | -13.57 | 0.003 | -0.00014 | 4.80 |
| 0.070 | 0.00077 | -24.17 | 0.002 | -0.00012 | 4.20 |
| 0.147 | 0.00122 | -40.51 | 0.053 | 0.00058 | -20.83 |
| 0.253 | 0.00183 | -62.54 | 0.173 | 0.00117 | -42.04 |
| 0.096 | 0.00107 | -34.95 | 0.102 | 0.00098 | -35.43 |
| 0.016 | 0.00049 | -14.20 | 0.038 | 0.00069 | -24.76 |
| 0.061 | 0.00104 | -33.96 | 0.047 | 0.00085 | -30.64 |
| 0.119 | 0.00168 | -56.95 | 0.004 | 0.00027 | -9.76 |

| | | | | | |
|---|---|---|---|---|---|
| 0.288 | 0.00320 | -111.82 | 0.021 | -0.00075 | 26.84 |
| 0.478 | 0.00488 | -172.50 | 0.003 | -0.00034 | 12.35 |
| 0.913 | 0.00855 | -304.51 | 0.039 | -0.00149 | 53.84 |
| 0.874 | 0.00825 | -293.71 | 0.006 | 0.00064 | -23.11 |
| 0.846 | 0.00838 | -298.51 | 0.067 | 0.00229 | -82.84 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | **NM296** | | |
| **LN Analysis** | | **dCd** | | |
| **Load** | | **Load Data, EV=1.3 lbs/day CV=.64** | | |
| **Avg:** | **1.3** | **Load Data-based LN** | | |
| **SD:** | **0.9** | u | ln dCd Load | dCd Load |
| **CV:** | **0.64** | 3 | 1.9 | 7 |
| **Min:** | **0.3** | 0 | 0.11 | 1.1 |
| **Max:** | **4.0** | -3 | -1.65 | 0.2 |
| **Median:** | **1.1** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.965, EV=1.3 lbs/day CV=0.70; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.965 | u | lnLoad | Load |
| slope, m: | 1.580 | 3 | 2.00 | 7 |
| intercept, b: | -0.157 | 0 | 0.10 | 1 |
| N: | 54 | -3 | -1.80 | 0.2 |
| E[Load]: | 1.3 | Parameter Estimates | | |
| SD[Load]: | 1 | from LN regression | | |
| CV[Load]: | 0.70 | update graph label | | |

| Date | dCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.981 r2 forward |
|---|---|---|---|---|---|---|
| | | N: 54 | | | | |
| update and rank for new data | | | | | | |
| 4-Oct-91 | 0.3 | 1 | 0.0115 | -2.273 | -1.380 | 0.965 |
| 11-Jul-95 | 0.5 | 2 | 0.0300 | -1.881 | -0.647 | 0.962 |
| 24-Sep-98 | 0.5 | 3 | 0.0484 | -1.661 | -0.640 | 0.970 |
| 24-Jun-97 | 0.5 | 4 | 0.0668 | -1.500 | -0.636 | 0.975 |
| 12-Jun-95 | 0.5 | 5 | 0.0853 | -1.371 | -0.620 | 0.978 |
| 20-Jul-94 | 0.5 | 6 | 0.1037 | -1.261 | -0.612 | 0.980 |
| 25-Jul-95 | 0.6 | 7 | 0.1221 | -1.164 | -0.590 | 0.981 |
| 23-Jul-97 | 0.6 | 8 | 0.1406 | -1.078 | -0.563 | 0.981 |
| 26-Nov-97 | 0.6 | 9 | 0.1590 | -0.999 | -0.536 | 0.981 |
| 28-Jul-98 | 0.6 | 10 | 0.1774 | -0.925 | -0.516 | 0.980 |
| 27-Jun-95 | 0.6 | 11 | 0.1959 | -0.857 | -0.468 | 0.980 |
| 8-Sep-94 | 0.6 | 12 | 0.2143 | -0.792 | -0.451 | 0.979 |
| 8-Oct-98 | 0.6 | 13 | 0.2327 | -0.730 | -0.451 | 0.978 |
| 24-Jul-96 | 0.6 | 14 | 0.2512 | -0.671 | -0.436 | 0.977 |
| 17-Dec-97 | 0.7 | 15 | 0.2696 | -0.614 | -0.424 | 0.975 |
| 4-Oct-94 | 0.7 | 16 | 0.2880 | -0.559 | -0.423 | 0.974 |
| 20-Jul-94 | 0.7 | 17 | 0.3065 | -0.506 | -0.346 | 0.973 |
| 21-Aug-96 | 0.7 | 18 | 0.3249 | -0.454 | -0.332 | 0.972 |
| 27-Nov-96 | 0.7 | 19 | 0.3433 | -0.403 | -0.329 | 0.971 |
| 15-Aug-94 | 0.8 | 20 | 0.3618 | -0.354 | -0.283 | 0.972 |
| 30-Jan-97 | 0.8 | 21 | 0.3802 | -0.305 | -0.209 | 0.972 |
| 20-Mar-98 | 0.8 | 22 | 0.3986 | -0.257 | -0.205 | 0.972 |
| 23-Jun-94 | 0.8 | 23 | 0.4171 | -0.209 | -0.197 | 0.973 |
| 12-Nov-97 | 0.9 | 24 | 0.4355 | -0.162 | -0.079 | 0.977 |
| 19-Feb-97 | 1.0 | 25 | 0.4539 | -0.116 | 0.024 | 0.978 |
| 15-Nov-94 | 1.0 | 26 | 0.4724 | -0.069 | 0.036 | 0.976 |
| 13-Dec-94 | 1.1 | 27 | 0.4908 | -0.023 | 0.091 | 0.975 |
| 16-May-91 | 1.2 | 28 | 0.5092 | 0.023 | 0.180 | 0.974 |
| 28-Mar-96 | 1.2 | 29 | 0.5276 | 0.069 | 0.198 | 0.972 |
| 19-Jun-96 | 1.2 | 30 | 0.5461 | 0.116 | 0.215 | 0.971 |
| 18-Oct-95 | 1.2 | 31 | 0.5645 | 0.162 | 0.215 | 0.968 |
| 26-Jun-98 | 1.3 | 32 | 0.5829 | 0.209 | 0.229 | 0.966 |
| 25-Feb-98 | 1.3 | 33 | 0.6014 | 0.257 | 0.253 | 0.964 |
| 26-Jun-98 | 1.3 | 34 | 0.6198 | 0.305 | 0.280 | 0.961 |
| 16-Apr-97 | 1.3 | 35 | 0.6382 | 0.354 | 0.284 | 0.959 |
| 7-Jun-94 | 1.4 | 36 | 0.6567 | 0.403 | 0.336 | 0.958 |
| 17-Jan-96 | 1.6 | 37 | 0.6751 | 0.454 | 0.438 | 0.958 |
| 19-May-94 | 1.6 | 38 | 0.6935 | 0.506 | 0.487 | 0.953 |
| 25-Apr-95 | 1.7 | 39 | 0.7120 | 0.559 | 0.542 | 0.949 |
| 9-Feb-95 | 1.8 | 40 | 0.7304 | 0.614 | 0.560 | 0.945 |
| 16-May-98 | 1.8 | 41 | 0.7488 | 0.671 | 0.584 | 0.939 |
| 21-Nov-95 | 1.9 | 42 | 0.7673 | 0.730 | 0.628 | 0.933 |
| 6-Dec-98 | 1.9 | 43 | 0.7857 | 0.792 | 0.646 | 0.926 |
| 9-May-95 | 2.0 | 44 | 0.8041 | 0.857 | 0.683 | 0.917 |
| 27-Dec-95 | 2.0 | 45 | 0.8226 | 0.925 | 0.690 | 0.907 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8-May-96 | 2.0 | 46 | 0.8410 | 0.999 | 0.709 | 0.890 |
| 23-May-95 | 2.2 | 47 | 0.8594 | 1.078 | 0.798 | 0.866 |
| 15-Aug-94 | 2.4 | 48 | 0.8779 | 1.164 | 0.869 | 0.836 |
| 13-Apr-95 | 2.5 | 49 | 0.8963 | 1.261 | 0.906 | 0.803 |
| 26-Mar-97 | 2.5 | 50 | 0.9147 | 1.371 | 0.915 | 0.750 |
| 3-May-94 | 2.5 | 51 | 0.9332 | 1.500 | 0.924 | |
| 6-Apr-94 | 3.6 | 52 | 0.9516 | 1.661 | 1.287 | |
| 13-Dec-96 | 3.8 | 53 | 0.9700 | 1.881 | 1.338 | |
| 22-Mar-95 | 4.0 | 54 | 0.9885 | 2.273 | 1.393 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | NM296 | | |
| **LN Analysis** | | **dCd** | | |
| **Concentration** | | **Conc. Data, EV=32 ug/L CV=.45** | | |
| **Avg:** | **32** | **Data-based LN** | | |
| **SD:** | **14** | u | ln[dCd] | [dCd] |
| **CV:** | **0.45** | 3 | 4.7 | 106 |
| **Min:** | **7** | 0 | 3.39 | 30 |
| **Max:** | **92** | -3 | 2.11 | 8 |
| **Median:** | **32** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **$r^2$=0.942, EV=33.2 ug/L CV=.55; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.942 | u | lnConc. | Conc. |
| slope, m: | 1.947 | 3 | 4.91 | 136 |
| intercept, b: | -6.560 | 0 | 3.37 | 29 |
| N: | 54 | -3 | 1.83 | 6 |
| E[Conc]: | 33.2 | Parameter Estimates | | |
| SD[Conc]: | 18 | from LN regression | | |
| CV[Conc]: | 0.55 | update graph label | | |

| Date | dCd Concentration ug/L Ranked | N: 54 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Lu x-axis | max r2 0.970 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-91 | 7.2 | 1 | 0.0115 | -2.273 | 1.974 | 0.942 |
| 24-Jun-97 | 8 | 2 | 0.0300 | -1.881 | 2.079 | 0.941 |
| 16-May-98 | 11.9 | 3 | 0.0484 | -1.661 | 2.477 | 0.951 |
| 19-Jun-96 | 12 | 4 | 0.0668 | -1.500 | 2.485 | 0.949 |
| 12-Jun-95 | 13 | 5 | 0.0853 | -1.371 | 2.565 | 0.951 |
| 23-May-95 | 14 | 6 | 0.1037 | -1.261 | 2.639 | 0.954 |
| 23-Jul-97 | 15 | 7 | 0.1221 | -1.164 | 2.708 | 0.959 |
| 9-May-95 | 18 | 8 | 0.1406 | -1.078 | 2.890 | 0.965 |
| 27-Jun-95 | 18 | 9 | 0.1590 | -0.999 | 2.890 | 0.964 |
| 26-Jun-98 | 19 | 10 | 0.1774 | -0.925 | 2.944 | 0.965 |
| 19-May-94 | 20 | 11 | 0.1959 | -0.857 | 2.996 | 0.966 |
| 26-Jun-98 | 20 | 12 | 0.2143 | -0.792 | 2.996 | 0.967 |
| 11-Jul-95 | 23 | 13 | 0.2327 | -0.730 | 3.135 | 0.970 |
| 24-Jul-96 | 24 | 14 | 0.2512 | -0.671 | 3.178 | 0.968 |
| 8-May-96 | 25 | 15 | 0.2696 | -0.614 | 3.219 | 0.967 |
| 7-Jun-94 | 26 | 16 | 0.2880 | -0.559 | 3.258 | 0.965 |
| 21-Nov-95 | 26 | 17 | 0.3065 | -0.506 | 3.258 | 0.963 |
| 28-Mar-96 | 27 | 18 | 0.3249 | -0.454 | 3.296 | 0.961 |
| 28-Jul-98 | 27 | 19 | 0.3433 | -0.403 | 3.296 | 0.959 |
| 23-Jun-94 | 28 | 20 | 0.3618 | -0.354 | 3.332 | 0.957 |
| 25-Jul-95 | 28 | 21 | 0.3802 | -0.305 | 3.332 | 0.955 |
| 3-May-94 | 28.3 | 22 | 0.3986 | -0.257 | 3.343 | 0.952 |
| 21-Aug-96 | 29 | 23 | 0.4171 | -0.209 | 3.367 | 0.949 |
| 24-Sep-98 | 29 | 24 | 0.4355 | -0.162 | 3.367 | 0.946 |
| 4-Oct-91 | 31.6 | 25 | 0.4539 | -0.116 | 3.453 | 0.943 |
| 20-Jul-94 | 32 | 26 | 0.4724 | -0.069 | 3.466 | 0.943 |
| 20-Jul-94 | 32 | 27 | 0.4908 | -0.023 | 3.466 | 0.943 |
| 25-Feb-98 | 32 | 28 | 0.5092 | 0.023 | 3.466 | 0.942 |
| 20-Mar-98 | 32 | 29 | 0.5276 | 0.069 | 3.466 | 0.940 |
| 16-Apr-97 | 33 | 30 | 0.5461 | 0.116 | 3.497 | 0.937 |
| 27-Dec-95 | 34 | 31 | 0.5645 | 0.162 | 3.526 | 0.935 |
| 26-Nov-97 | 34 | 32 | 0.5829 | 0.209 | 3.526 | 0.934 |
| 6-Apr-94 | 35 | 33 | 0.6014 | 0.257 | 3.555 | 0.932 |
| 15-Aug-94 | 36 | 34 | 0.6198 | 0.305 | 3.584 | 0.932 |
| 15-Aug-94 | 36 | 35 | 0.6382 | 0.354 | 3.584 | 0.934 |
| 8-Sep-94 | 36 | 36 | 0.6567 | 0.403 | 3.584 | 0.935 |
| 17-Dec-97 | 36 | 37 | 0.6751 | 0.454 | 3.584 | 0.934 |
| 8-Oct-98 | 36 | 38 | 0.6935 | 0.506 | 3.584 | 0.931 |
| 4-Oct-94 | 37 | 39 | 0.7120 | 0.559 | 3.611 | 0.925 |
| 19-Feb-97 | 38 | 40 | 0.7304 | 0.614 | 3.638 | 0.919 |
| 26-Mar-97 | 39 | 41 | 0.7488 | 0.671 | 3.664 | 0.913 |
| 30-Jan-97 | 41 | 42 | 0.7673 | 0.730 | 3.714 | 0.907 |
| 12-Nov-97 | 41.4 | 43 | 0.7857 | 0.792 | 3.723 | 0.909 |
| 17-Jan-96 | 42 | 44 | 0.8041 | 0.857 | 3.738 | 0.910 |
| 27-Nov-96 | 43 | 45 | 0.8226 | 0.925 | 3.761 | 0.909 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25-Apr-95 | 44 | 46 | 0.8410 | 0.999 | 3.784 | 0.910 |
| 13-Dec-96 | 44 | 47 | 0.8594 | 1.078 | 3.784 | 0.912 |
| 13-Apr-95 | 46 | 48 | 0.8779 | 1.164 | 3.829 | 0.904 |
| 18-Oct-95 | 46 | 49 | 0.8963 | 1.261 | 3.829 | 0.899 |
| 22-Mar-95 | 51 | 50 | 0.9147 | 1.371 | 3.932 | 0.869 |
| 15-Nov-94 | 54 | 51 | 0.9332 | 1.500 | 3.989 | |
| 13-Dec-94 | 57 | 52 | 0.9516 | 1.661 | 4.043 | |
| 9-Feb-95 | 58 | 53 | 0.9700 | 1.881 | 4.060 | |
| 6-Dec-98 | 91.9 | 54 | 0.9885 | 2.273 | 4.521 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | **NM296** | | |
| **LN Analysis** | | **dCd** | | |
| **Discharge, Q** | | **Q Data, EV=9 cfs CV=0.76** | | |
| **Avg:** | 9 | **Q Data-based LN** | | |
| **SD:** | 7 | u | lnQ | Q |
| **CV:** | **0.76** | 3 | 4.0 | 55 |
| **Min:** | 1 | 0 | 1.98 | 7 |
| **Max:** | 31 | -3 | -0.06 | 1 |
| **Median:** | 7 | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.952, EV=9.3 cfs CV=0.85; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.952 | u | lnQ | Q |
| slope, m: | 1.358 | 3 | 4.16 | 64 |
| intercept, b: | -2.654 | 0 | 1.95 | 7 |
| N: | 54 | -3 | -0.26 | 0.8 |
| E[Q]: | 9.3 | Parameter Estimates | | |
| SD[Q]: | 8 | from LN regression | | |
| CV[Q]: | 0.85 | update graph label | | |

| | Q | N: 54 | | | | max r2 0.978 |
|---|---|---|---|---|---|---|
| | Discharge | i | i-3/8 / N+1/4 | u | Ln | r2 |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.48 | 1 | 0.0115 | -2.273 | 0.392 | 0.952 |
| 27-Nov-96 | 3.11 | 2 | 0.0300 | -1.881 | 1.135 | 0.947 |
| 20-Jul-94 | 3.15 | 3 | 0.0484 | -1.661 | 1.147 | 0.958 |
| 26-Nov-97 | 3.2 | 4 | 0.0668 | -1.500 | 1.163 | 0.965 |
| 8-Sep-94 | 3.29 | 5 | 0.0853 | -1.371 | 1.191 | 0.969 |
| 4-Oct-94 | 3.29 | 6 | 0.1037 | -1.261 | 1.191 | 0.973 |
| 8-Oct-98 | 3.29 | 7 | 0.1221 | -1.164 | 1.191 | 0.976 |
| 17-Dec-97 | 3.38 | 8 | 0.1406 | -1.078 | 1.218 | 0.977 |
| 24-Sep-98 | 3.38 | 9 | 0.1590 | -0.999 | 1.218 | 0.978 |
| 15-Nov-94 | 3.57 | 10 | 0.1774 | -0.925 | 1.273 | 0.978 |
| 13-Dec-94 | 3.57 | 11 | 0.1959 | -0.857 | 1.273 | 0.978 |
| 25-Jul-95 | 3.68 | 12 | 0.2143 | -0.792 | 1.303 | 0.978 |
| 30-Jan-97 | 3.68 | 13 | 0.2327 | -0.730 | 1.303 | 0.977 |
| 6-Dec-98 | 3.86 | 14 | 0.2512 | -0.671 | 1.351 | 0.976 |
| 15-Aug-94 | 3.89 | 15 | 0.2696 | -0.614 | 1.358 | 0.975 |
| 20-Jul-94 | 4.11 | 16 | 0.2880 | -0.559 | 1.413 | 0.973 |
| 28-Jul-98 | 4.11 | 17 | 0.3065 | -0.506 | 1.413 | 0.972 |
| 12-Nov-97 | 4.15 | 18 | 0.3249 | -0.454 | 1.423 | 0.970 |
| 11-Jul-95 | 4.23 | 19 | 0.3433 | -0.403 | 1.442 | 0.968 |
| 21-Aug-96 | 4.6 | 20 | 0.3618 | -0.354 | 1.526 | 0.967 |
| 20-Mar-98 | 4.73 | 21 | 0.3802 | -0.305 | 1.554 | 0.965 |
| 18-Oct-95 | 5.01 | 22 | 0.3986 | -0.257 | 1.611 | 0.964 |
| 24-Jul-96 | 5.01 | 23 | 0.4171 | -0.209 | 1.611 | 0.962 |
| 19-Feb-97 | 5.01 | 24 | 0.4355 | -0.162 | 1.611 | 0.961 |
| 23-Jun-94 | 5.45 | 25 | 0.4539 | -0.116 | 1.696 | 0.962 |
| 9-Feb-95 | 5.61 | 26 | 0.4724 | -0.069 | 1.725 | 0.962 |
| 27-Jun-95 | 6.47 | 27 | 0.4908 | -0.023 | 1.867 | 0.964 |
| 17-Jan-96 | 6.86 | 28 | 0.5092 | 0.023 | 1.926 | 0.962 |
| 23-Jul-97 | 7.06 | 29 | 0.5276 | 0.069 | 1.954 | 0.959 |
| 25-Apr-95 | 7.26 | 30 | 0.5461 | 0.116 | 1.982 | 0.957 |
| 16-Apr-97 | 7.48 | 31 | 0.5645 | 0.162 | 2.012 | 0.955 |
| 25-Feb-98 | 7.48 | 32 | 0.5829 | 0.209 | 2.012 | 0.954 |
| 12-Jun-95 | 7.69 | 33 | 0.6014 | 0.257 | 2.040 | 0.956 |
| 28-Mar-96 | 8.39 | 34 | 0.6198 | 0.305 | 2.127 | 0.963 |
| 7-Jun-94 | 10 | 35 | 0.6382 | 0.354 | 2.303 | 0.968 |
| 13-Apr-95 | 10 | 36 | 0.6567 | 0.403 | 2.303 | 0.965 |
| 27-Dec-95 | 10.9 | 37 | 0.6751 | 0.454 | 2.389 | 0.963 |
| 26-Mar-97 | 11.9 | 38 | 0.6935 | 0.506 | 2.477 | 0.959 |
| 24-Jun-97 | 12.3 | 39 | 0.7120 | 0.559 | 2.510 | 0.957 |
| 26-Jun-98 | 12.3 | 40 | 0.7304 | 0.614 | 2.510 | 0.955 |
| 26-Jun-98 | 12.3 | 41 | 0.7488 | 0.671 | 2.510 | 0.950 |
| 15-Aug-94 | 12.31 | 42 | 0.7673 | 0.730 | 2.510 | 0.943 |
| 21-Nov-95 | 13.4 | 43 | 0.7857 | 0.792 | 2.595 | 0.937 |
| 22-Mar-95 | 14.68 | 44 | 0.8041 | 0.857 | 2.686 | 0.928 |
| 8-May-96 | 15.1 | 45 | 0.8226 | 0.925 | 2.715 | 0.918 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19-May-94 | 15.13 | 46 | 0.8410 | 0.999 | 2.717 | 0.905 |
| 13-Dec-96 | 16.1 | 47 | 0.8594 | 1.078 | 2.779 | 0.885 |
| 3-May-94 | 16.55 | 48 | 0.8779 | 1.164 | 2.806 | 0.856 |
| 19-Jun-96 | 19.2 | 49 | 0.8963 | 1.261 | 2.955 | 0.816 |
| 6-Apr-94 | 19.24 | 50 | 0.9147 | 1.371 | 2.957 | 0.759 |
| 9-May-95 | 20.44 | 51 | 0.9332 | 1.500 | 3.017 | |
| 16-May-98 | 28 | 52 | 0.9516 | 1.661 | 3.332 | |
| 23-May-95 | 29.49 | 53 | 0.9700 | 1.881 | 3.384 | |
| 16-May-91 | 30.9 | 54 | 0.9885 | 2.273 | 3.431 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **NM296** | **Date:** | **30-May-00** |
| **Chemical:** | **dPb** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,108 | 9 | 65 | 3 | 0.00 | 0.00 | 0.00 |
| **SD:** | 612 | 7 | 32 | 2 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.76 | 0.49 | 0.72 | | | |
| **Min:** | 33,374 | 1 | 4 | 0.4 | -1.09 | -1.90 | -1.21 |
| **Max:** | 36,135 | 31 | 156 | 11 | 3.14 | 2.83 | 4.20 |
| **Median:** | 35,042 | 7 | 60 | 2 | -0.35 | -0.17 | -0.20 |

**dPb NM296 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.21)** update r2

| | | [dPb] | Q |
|---|---|---|---|
| r2 Q,[COC]: | 0.21 | | |
| slope, m: | -2.1 | 81 | 1.5 |
| intercept, b: | 84.1 | 65 | 9.1 |
| N: 54 | | 19 | 31 |

**LnConc. = mLn(Q)+b (r2=0.27)** update r2

| | | ln[dPb] | ln Q | [dPb] | Q |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.27 | | | | |
| slope, m: | -0.44 | 4.72 | 0.39 | 113 | 1 |
| intercept, b: | 4.90 | 3.92 | 2.21 | 50 | 9 |
| N: 54 | | 3.38 | 3.43 | 29 | 31 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2: | 0.037 | 0.009 |
| m: | -0.0022 | -0.00011 |
| b: | 86 | 5.85 |

**LnQ = mTime +b**

for graph 0

**N= 54**

| update for new data | Sampling Date | Q Discharge cfs | dPb Concentration ug/L | dPb Load lbs/day | Ln Q | Ln dPb Conc. | Ln dPb Load | dPb NM296 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 30.9 | 4 | 0.7 | 3.43 | 1.39 | -0.41 | 3.14 | -1.90 | -1.04 |
| MFG | 4-Oct-91 | 1.48 | 44 | 0.4 | 0.39 | 3.78 | -1.05 | -1.09 | -0.65 | -1.21 |
| IDEQ | 6-Apr-94 | 19.24 | 102 | 10.6 | 2.96 | 4.62 | 2.36 | 1.46 | 1.15 | 4.20 |
| IDEQ | 3-May-94 | 16.55 | 64.3 | 5.7 | 2.81 | 4.16 | 1.74 | 1.07 | -0.02 | 1.64 |
| IDEQ | 19-May-94 | 15.13 | 53 | 4.3 | 2.72 | 3.97 | 1.46 | 0.87 | -0.37 | 0.89 |
| IDEQ | 7-Jun-94 | 10 | 70 | 3.8 | 2.30 | 4.25 | 1.33 | 0.13 | 0.15 | 0.60 |
| IDEQ | 23-Jun-94 | 5.45 | 85 | 2.5 | 1.70 | 4.44 | 0.91 | -0.52 | 0.62 | -0.08 |
| IDEQ | 20-Jul-94 | 4.11 | 108 | 2.4 | 1.41 | 4.68 | 0.87 | -0.72 | 1.34 | -0.13 |
| IDEQ | 20-Jul-94 | 3.15 | 108 | 1.8 | 1.15 | 4.68 | 0.60 | -0.85 | 1.34 | -0.43 |
| IDEQ | 15-Aug-94 | 3.89 | 117 | 2.4 | 1.36 | 4.76 | 0.90 | -0.75 | 1.62 | -0.10 |
| IDEQ | 15-Aug-94 | 12.31 | 117 | 7.7 | 2.51 | 4.76 | 2.05 | 0.46 | 1.62 | 2.71 |
| IDEQ | 8-Sep-94 | 3.29 | 127 | 2.2 | 1.19 | 4.84 | 0.81 | -0.83 | 1.93 | -0.21 |
| IDEQ | 4-Oct-94 | 3.29 | 99 | 1.8 | 1.19 | 4.60 | 0.56 | -0.83 | 1.06 | -0.47 |
| IDEQ | 15-Nov-94 | 3.57 | 154 | 3.0 | 1.27 | 5.04 | 1.08 | -0.79 | 2.77 | 0.17 |
| IDEQ | 13-Dec-94 | 3.57 | 156 | 3.0 | 1.27 | 5.05 | 1.10 | -0.79 | 2.83 | 0.19 |
| IDEQ | 9-Feb-95 | 5.61 | 102 | 3.1 | 1.72 | 4.62 | 1.12 | -0.50 | 1.15 | 0.23 |
| IDEQ | 22-Mar-95 | 14.68 | 72 | 5.7 | 2.69 | 4.28 | 1.74 | 0.80 | 0.22 | 1.62 |
| IDEQ | 13-Apr-95 | 10 | 64 | 3.4 | 2.30 | 4.16 | 1.24 | 0.13 | -0.03 | 0.43 |
| IDEQ | 25-Apr-95 | 7.26 | 64 | 2.5 | 1.98 | 4.16 | 0.92 | -0.26 | -0.03 | -0.07 |
| IDEQ | 9-May-95 | 20.44 | 37 | 4.1 | 3.02 | 3.61 | 1.40 | 1.63 | -0.87 | 0.76 |
| IDEQ | 23-May-95 | 29.49 | 30 | 4.8 | 3.38 | 3.40 | 1.56 | 2.94 | -1.09 | 1.12 |
| IDEQ | 12-Jun-95 | 7.69 | 34 | 1.4 | 2.04 | 3.53 | 0.34 | -0.20 | -0.97 | -0.65 |
| IDEQ | 27-Jun-95 | 6.47 | 48 | 1.7 | 1.87 | 3.87 | 0.51 | -0.38 | -0.53 | -0.51 |
| IDEQ | 11-Jul-95 | 4.23 | 44 | 1.0 | 1.44 | 3.78 | 0.00 | -0.70 | -0.65 | -0.87 |
| IDEQ | 25-Jul-95 | 3.68 | 59 | 1.2 | 1.30 | 4.08 | 0.16 | -0.78 | -0.19 | -0.78 |
| IDEQ | 18-Oct-95 | 5.01 | 84 | 2.3 | 1.61 | 4.43 | 0.82 | -0.59 | 0.59 | -0.20 |
| IDEQ | 21-Nov-95 | 13.4 | 50 | 3.6 | 2.60 | 3.91 | 1.28 | 0.62 | -0.47 | 0.51 |
| IDEQ | 27-Dec-95 | 10.9 | 55 | 3.2 | 2.39 | 4.01 | 1.17 | 0.26 | -0.31 | 0.31 |
| IDEQ | 17-Jan-96 | 6.86 | 72 | 2.7 | 1.93 | 4.28 | 0.98 | -0.32 | 0.22 | 0.01 |
| IDEQ | 28-Mar-96 | 8.39 | 50 | 2.3 | 2.13 | 3.91 | 0.81 | -0.10 | -0.47 | -0.20 |
| IDEQ | 8-May-96 | 15.1 | 37 | 3.0 | 2.71 | 3.61 | 1.10 | 0.87 | -0.87 | 0.20 |
| IDEQ | 19-Jun-96 | 19.2 | 26 | 2.7 | 2.95 | 3.26 | 0.99 | 1.46 | -1.21 | 0.03 |
| IDEQ | 24-Jul-96 | 5.01 | 41 | 1.1 | 1.61 | 3.71 | 0.10 | -0.59 | -0.75 | -0.81 |
| IDEQ | 21-Aug-96 | 4.6 | 60 | 1.5 | 1.53 | 4.09 | 0.40 | -0.65 | -0.16 | -0.61 |
| IDEQ | 27-Nov-96 | 3.11 | 84 | 1.4 | 1.13 | 4.43 | 0.34 | -0.86 | 0.59 | -0.65 |
| IDEQ | 13-Dec-96 | 16.1 | 85 | 7.4 | 2.78 | 4.44 | 2.00 | 1.01 | 0.62 | 2.50 |
| IDEQ | 30-Jan-97 | 3.68 | 66 | 1.3 | 1.30 | 4.19 | 0.27 | -0.78 | 0.03 | -0.70 |
| IDEQ | 19-Feb-97 | 5.01 | 58 | 1.6 | 1.61 | 4.06 | 0.45 | -0.59 | -0.22 | -0.57 |
| IDEQ | 26-Mar-97 | 11.9 | 55 | 3.5 | 2.48 | 4.01 | 1.26 | 0.40 | -0.31 | 0.47 |
| IDEQ | 16-Apr-97 | 7.48 | 46 | 1.9 | 2.01 | 3.83 | 0.62 | -0.23 | -0.59 | -0.42 |
| IDEQ | 24-Jun-97 | 12.3 | 20 | 1.3 | 2.51 | 3.00 | 0.28 | 0.46 | -1.40 | -0.69 |
| IDEQ | 23-Jul-97 | 7.06 | 32 | 1.2 | 1.95 | 3.47 | 0.20 | -0.29 | -1.03 | -0.75 |
| URS | 12-Nov-97 | 4.15 | 68.3 | 1.5 | 1.42 | 4.22 | 0.42 | -0.71 | 0.10 | -0.59 |
| IDEQ | 26-Nov-97 | 3.2 | 62 | 1.1 | 1.16 | 4.13 | 0.07 | -0.85 | -0.09 | -0.83 |
| IDEQ | 17-Dec-97 | 3.38 | 60 | 1.1 | 1.22 | 4.09 | 0.09 | -0.82 | -0.16 | -0.82 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 25-Feb-98 | 7.48 | 56 | 2.3 | 2.01 | 4.03 | 0.81 | -0.23 | -0.28 | -0.20 |
| IDEQ | 20-Mar-98 | 4.73 | 58 | 1.5 | 1.55 | 4.06 | 0.39 | -0.63 | -0.22 | -0.61 |
| URS | 16-May-98 | 28 | 21.3 | 3.2 | 3.33 | 3.06 | 1.17 | 2.72 | -1.36 | 0.30 |
| IDEQ | 26-Jun-98 | 12.3 | 30 | 2.0 | 2.51 | 3.40 | 0.69 | 0.46 | -1.09 | -0.34 |
| IDEQ | 26-Jun-98 | 12.3 | 32 | 2.1 | 2.51 | 3.47 | 0.75 | 0.46 | -1.03 | -0.27 |
| IDEQ | 28-Jul-98 | 4.11 | 35 | 0.8 | 1.41 | 3.56 | -0.26 | -0.72 | -0.93 | -0.99 |
| IDEQ | 24-Sep-98 | 3.38 | 53 | 1.0 | 1.22 | 3.97 | -0.04 | -0.82 | -0.37 | -0.89 |
| IDEQ | 8-Oct-98 | 3.29 | 64 | 1.1 | 1.19 | 4.16 | 0.12 | -0.83 | -0.03 | -0.80 |
| URS | 6-Dec-98 | 3.86 | 89.8 | 1.9 | 1.35 | 4.50 | 0.62 | -0.75 | 0.77 | -0.41 |

**dPb**

**Concentration over time analysis** r2 Slope, m

**dPb NM296** **Concentration over time**

**LnConc.=mTime+b All data r2, m:** **0.004** **-0.00006**

| | Time | Ln[COC] | [COC] |
|---|---|---|---|
| first: | 16-May-91 | 4.13 | 62 |
| mid: | 9-Dec-95 | 4.04 | 57 |
| last: | 6-Dec-98 | 3.97 | 53 |

**LnConc.=mTime+b >'96 r2, m:** **0.983** **0.00666**

| | | |
|---|---|---|
| 26-Jun-98 | 3.41 | 30 |
| 6-Dec-98 | 4.50 | 90 |

**Load over time analysis**

**dPb NM296** **Load over time**

**LnLoad=mTime+b All data r2, m:** **0.026** **-0.00017**

| | Time | LnLoad | Load |
|---|---|---|---|
| first: | 16-May-91 | 1.06 | 3 |
| mid: | 9-Dec-95 | 0.77 | 2 |
| last: | 6-Dec-98 | 0.59 | 2 |

**LnLoad=mTime+b >'96 r2, m:** **0.007** **0.00057**

| | | |
|---|---|---|
| 26-Jun-98 | 0.20 | 1 |
| 6-Dec-98 | 0.29 | 1 |

max r2: 0.989 max r2: 0.291

**Forward time Regression on Ln Concentration(t)** **Forward time Regression on Ln Load(t)**

| r2 | slope | intercept | r2 | slope | intercept |
|---|---|---|---|---|---|
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.004 | -0.00006 | 6.07 | 0.026 | -0.00017 | 6.70 |
| 0.167 | -0.00034 | 16.05 | 0.085 | -0.00032 | 12.02 |
| 0.235 | -0.00044 | 19.50 | 0.291 | -0.00059 | 21.53 |
| 0.220 | -0.00043 | 19.09 | 0.262 | -0.00053 | 19.41 |
| 0.224 | -0.00044 | 19.54 | 0.238 | -0.00050 | 18.28 |
| 0.240 | -0.00046 | 20.42 | 0.219 | -0.00048 | 17.61 |
| 0.241 | -0.00047 | 20.77 | 0.203 | -0.00047 | 17.13 |
| 0.232 | -0.00047 | 20.72 | 0.204 | -0.00048 | 17.50 |
| 0.212 | -0.00045 | 20.08 | 0.206 | -0.00049 | 17.98 |
| 0.191 | -0.00043 | 19.34 | 0.225 | -0.00052 | 19.19 |
| 0.166 | -0.00040 | 18.29 | 0.227 | -0.00054 | 19.76 |
| 0.139 | -0.00037 | 17.07 | 0.187 | -0.00047 | 17.22 |
| 0.109 | -0.00032 | 15.41 | 0.192 | -0.00049 | 17.91 |
| 0.087 | -0.00029 | 14.26 | 0.214 | -0.00053 | 19.42 |
| 0.052 | -0.00022 | 11.55 | 0.204 | -0.00053 | 19.39 |
| 0.021 | -0.00013 | 8.41 | 0.192 | -0.00053 | 19.27 |
| 0.006 | -0.00007 | 6.36 | 0.178 | -0.00052 | 18.95 |
| 0.002 | -0.00004 | 5.24 | 0.141 | -0.00045 | 16.47 |
| 0.000 | -0.00001 | 4.37 | 0.120 | -0.00042 | 15.37 |
| 0.000 | 0.00001 | 3.35 | 0.112 | -0.00041 | 15.27 |
| 0.000 | -0.00001 | 4.38 | 0.082 | -0.00035 | 13.14 |
| 0.006 | -0.00007 | 6.54 | 0.047 | -0.00026 | 9.88 |
| 0.017 | -0.00013 | 8.52 | 0.064 | -0.00032 | 11.77 |
| 0.020 | -0.00015 | 9.14 | 0.073 | -0.00035 | 13.16 |
| 0.029 | -0.00018 | 10.42 | 0.132 | -0.00049 | 17.91 |
| 0.023 | -0.00017 | 10.10 | 0.202 | -0.00063 | 22.97 |
| 0.007 | -0.00009 | 7.26 | 0.202 | -0.00066 | 24.07 |
| 0.007 | -0.00010 | 7.47 | 0.160 | -0.00060 | 21.88 |
| 0.004 | -0.00009 | 6.95 | 0.123 | -0.00054 | 19.82 |
| 0.000 | 0.00000 | 3.77 | 0.099 | -0.00051 | 18.74 |
| 0.000 | 0.00002 | 3.32 | 0.087 | -0.00051 | 18.62 |
| 0.001 | -0.00006 | 5.87 | 0.054 | -0.00041 | 15.28 |
| 0.028 | -0.00026 | 13.19 | 0.030 | -0.00032 | 12.01 |
| 0.049 | -0.00037 | 17.11 | 0.068 | -0.00051 | 18.84 |
| 0.040 | -0.00036 | 16.81 | 0.093 | -0.00065 | 23.89 |
| 0.012 | -0.00020 | 11.16 | 0.127 | -0.00082 | 29.73 |
| 0.000 | 0.00003 | 2.82 | 0.021 | -0.00026 | 9.82 |
| 0.011 | 0.00021 | -3.75 | 0.040 | -0.00040 | 14.62 |
| 0.034 | 0.00040 | -10.68 | 0.049 | -0.00048 | 17.68 |
| 0.071 | 0.00065 | -19.57 | 0.000 | 0.00001 | 0.11 |
| 0.102 | 0.00090 | -28.42 | 0.010 | 0.00023 | -7.92 |
| 0.010 | 0.00028 | -6.05 | 0.005 | 0.00019 | -6.53 |
| 0.005 | -0.00023 | 12.08 | 0.000 | -0.00003 | 1.52 |
| 0.003 | 0.00018 | -2.47 | 0.000 | -0.00001 | 0.85 |
| 0.036 | 0.00075 | -23.24 | 0.026 | -0.00065 | 23.94 |

| | | | | | |
|---|---|---|---|---|---|
| 0.160 | 0.00193 | -65.65 | 0.173 | -0.00202 | 73.01 |
| 0.367 | 0.00341 | -119.15 | 0.107 | -0.00181 | 65.70 |
| 0.989 | 0.00691 | -245.12 | 0.198 | -0.00313 | 113.24 |
| 0.987 | 0.00669 | -237.18 | 0.020 | -0.00092 | 33.42 |
| 0.983 | 0.00666 | -236.02 | 0.007 | 0.00057 | -20.35 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dPb** | | **NM296** | | |
| **LN Analysis** | | **dPb** | | |
| **Load** | | **Load Data, EV=3 lbs/day CV=.72** | | |
| **Avg:** | **3** | **Load Data-based LN** | | |
| **SD:** | **2** | u | ln dPb Load | dPb Load |
| **CV:** | **0.72** | 3 | 2.7 | 15 |
| **Min:** | **0.4** | 0 | 0.76 | 2 |
| **Max:** | **11** | -3 | -1.17 | 0.3 |
| **Median:** | **2** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.987, EV=2.7 lbs/day CV=0.74; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.987 | u | lnLoad | Load |
| slope, m: | 1.512 | 3 | 2.75 | 16 |
| intercept, b: | -1.153 | 0 | 0.76 | 2 |
| N: | 54 | -3 | -1.22 | 0.3 |
| E[Load]: | 2.7 | Parameter Estimates | | |
| SD[Load]: | 2 | from LN regression | | |
| CV[Load]: | 0.74 | update graph label | | |

| Date | dPb Load lbs/day Ranked | N: 54 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.992 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | **0.4** | 1 | 0.0115 | -2.273 | -1.049 | 0.987 |
| 16-May-91 | **0.7** | 2 | 0.0300 | -1.881 | -0.408 | 0.991 |
| 28-Jul-98 | **0.8** | 3 | 0.0484 | -1.661 | -0.256 | 0.990 |
| 24-Sep-98 | **1.0** | 4 | 0.0668 | -1.500 | -0.037 | 0.990 |
| 11-Jul-95 | **1.0** | 5 | 0.0853 | -1.371 | 0.001 | 0.991 |
| 26-Nov-97 | **1.1** | 6 | 0.1037 | -1.261 | 0.065 | 0.991 |
| 17-Dec-97 | **1.1** | 7 | 0.1221 | -1.164 | 0.087 | 0.992 |
| 24-Jul-96 | **1.1** | 8 | 0.1406 | -1.078 | 0.100 | 0.992 |
| 8-Oct-98 | **1.1** | 9 | 0.1590 | -0.999 | 0.125 | 0.992 |
| 25-Jul-95 | **1.2** | 10 | 0.1774 | -0.925 | 0.155 | 0.992 |
| 23-Jul-97 | **1.2** | 11 | 0.1959 | -0.857 | 0.195 | 0.992 |
| 30-Jan-97 | **1.3** | 12 | 0.2143 | -0.792 | 0.268 | 0.991 |
| 24-Jun-97 | **1.3** | 13 | 0.2327 | -0.730 | 0.280 | 0.991 |
| 27-Nov-96 | **1.4** | 14 | 0.2512 | -0.671 | 0.340 | 0.990 |
| 12-Jun-95 | **1.4** | 15 | 0.2696 | -0.614 | 0.341 | 0.990 |
| 20-Mar-98 | **1.5** | 16 | 0.2880 | -0.559 | 0.389 | 0.990 |
| 21-Aug-96 | **1.5** | 17 | 0.3065 | -0.506 | 0.395 | 0.989 |
| 12-Nov-97 | **1.5** | 18 | 0.3249 | -0.454 | 0.422 | 0.989 |
| 19-Feb-97 | **1.6** | 19 | 0.3433 | -0.403 | 0.447 | 0.988 |
| 27-Jun-95 | **1.7** | 20 | 0.3618 | -0.354 | 0.513 | 0.987 |
| 4-Oct-94 | **1.8** | 21 | 0.3802 | -0.305 | 0.561 | 0.986 |
| 20-Jul-94 | **1.8** | 22 | 0.3986 | -0.257 | 0.604 | 0.986 |
| 16-Apr-97 | **1.9** | 23 | 0.4171 | -0.209 | 0.616 | 0.985 |
| 6-Dec-98 | **1.9** | 24 | 0.4355 | -0.162 | 0.623 | 0.984 |
| 26-Jun-98 | **2.0** | 25 | 0.4539 | -0.116 | 0.686 | 0.983 |
| 26-Jun-98 | **2.1** | 26 | 0.4724 | -0.069 | 0.750 | 0.982 |
| 8-Sep-94 | **2.2** | 27 | 0.4908 | -0.023 | 0.810 | 0.982 |
| 25-Feb-98 | **2.3** | 28 | 0.5092 | 0.023 | 0.813 | 0.984 |
| 28-Mar-96 | **2.3** | 29 | 0.5276 | 0.069 | 0.814 | 0.985 |
| 18-Oct-95 | **2.3** | 30 | 0.5461 | 0.116 | 0.817 | 0.985 |
| 20-Jul-94 | **2.4** | 31 | 0.5645 | 0.162 | 0.870 | 0.984 |
| 15-Aug-94 | **2.4** | 32 | 0.5829 | 0.209 | 0.896 | 0.984 |
| 23-Jun-94 | **2.5** | 33 | 0.6014 | 0.257 | 0.913 | 0.984 |
| 25-Apr-95 | **2.5** | 34 | 0.6198 | 0.305 | 0.916 | 0.983 |
| 17-Jan-96 | **2.7** | 35 | 0.6382 | 0.354 | 0.977 | 0.982 |
| 19-Jun-96 | **2.7** | 36 | 0.6567 | 0.403 | 0.988 | 0.981 |
| 15-Nov-94 | **3.0** | 37 | 0.6751 | 0.454 | 1.084 | 0.980 |
| 13-Dec-94 | **3.0** | 38 | 0.6935 | 0.506 | 1.097 | 0.983 |
| 8-May-96 | **3.0** | 39 | 0.7120 | 0.559 | 1.101 | 0.985 |
| 9-Feb-95 | **3.1** | 40 | 0.7304 | 0.614 | 1.124 | 0.985 |
| 16-May-98 | **3.2** | 41 | 0.7488 | 0.671 | 1.166 | 0.985 |
| 27-Dec-95 | **3.2** | 42 | 0.7673 | 0.730 | 1.171 | 0.985 |
| 13-Apr-95 | **3.4** | 43 | 0.7857 | 0.792 | 1.236 | 0.984 |
| 26-Mar-97 | **3.5** | 44 | 0.8041 | 0.857 | 1.259 | 0.983 |
| 21-Nov-95 | **3.6** | 45 | 0.8226 | 0.925 | 1.282 | 0.981 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 7-Jun-94 | 3.8 | 46 | 0.8410 | 0.999 | 1.326 | 0.977 |
| 9-May-95 | 4.1 | 47 | 0.8594 | 1.078 | 1.403 | 0.973 |
| 19-May-94 | 4.3 | 48 | 0.8779 | 1.164 | 1.462 | 0.967 |
| 23-May-95 | 4.8 | 49 | 0.8963 | 1.261 | 1.560 | 0.963 |
| 22-Mar-95 | 5.7 | 50 | 0.9147 | 1.371 | 1.738 | 0.958 |
| 3-May-94 | 5.7 | 51 | 0.9332 | 1.500 | 1.745 | |
| 13-Dec-96 | 7.4 | 52 | 0.9516 | 1.661 | 1.996 | |
| 15-Aug-94 | 7.7 | 53 | 0.9700 | 1.881 | 2.048 | |
| 6-Apr-94 | 10.6 | 54 | 0.9885 | 2.273 | 2.357 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dPb** | | **NM296** | | |
| **LN Analysis** | | **dPb** | | |
| **Concentration** | | **Conc. Data, EV=65 ug/L CV=.49** | | |
| **Avg:** | **65** | **Data-based LN** | | |
| **SD:** | **32** | u | ln[dPb] | [dPb] |
| **CV:** | **0.49** | 3 | 5.5 | 237 |
| **Min:** | **4** | 0 | 4.07 | 58 |
| **Max:** | **156** | -3 | 2.66 | 14 |
| **Median:** | **60** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **$r^2$=0.884, EV=69.7 ug/L CV=0.72; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.884 | u | lnConc. | Conc. |
| slope, m: | 1.541 | 3 | 5.98 | 396 |
| intercept, b: | -6.214 | 0 | 4.03 | 56 |
| N: | 54 | -3 | 2.09 | 8 |
| E[Conc]: | 69.7 | Parameter Estimates | | |
| SD[Conc]: | 50 | from LN regression | | |
| CV[Conc]: | 0.72 | update graph label | | |

| Date | dPb Concentration ug/L Ranked | i rank (N: 54) | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.988 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-91 | 4 | 1 | 0.0115 | -2.273 | 1.386 | 0.884 |
| 24-Jun-97 | 20 | 2 | 0.0300 | -1.881 | 2.996 | 0.986 |
| 16-May-98 | 21.3 | 3 | 0.0484 | -1.661 | 3.059 | 0.986 |
| 19-Jun-96 | 26 | 4 | 0.0668 | -1.500 | 3.258 | 0.988 |
| 23-May-95 | 30 | 5 | 0.0853 | -1.371 | 3.401 | 0.987 |
| 26-Jun-98 | 30 | 6 | 0.1037 | -1.261 | 3.401 | 0.987 |
| 23-Jul-97 | 32 | 7 | 0.1221 | -1.164 | 3.466 | 0.986 |
| 26-Jun-98 | 32 | 8 | 0.1406 | -1.078 | 3.466 | 0.985 |
| 12-Jun-95 | 34 | 9 | 0.1590 | -0.999 | 3.526 | 0.985 |
| 28-Jul-98 | 35 | 10 | 0.1774 | -0.925 | 3.555 | 0.985 |
| 9-May-95 | 37 | 11 | 0.1959 | -0.857 | 3.611 | 0.985 |
| 8-May-96 | 37 | 12 | 0.2143 | -0.792 | 3.611 | 0.985 |
| 24-Jul-96 | 41 | 13 | 0.2327 | -0.730 | 3.714 | 0.986 |
| 4-Oct-91 | 44 | 14 | 0.2512 | -0.671 | 3.784 | 0.985 |
| 11-Jul-95 | 44 | 15 | 0.2696 | -0.614 | 3.784 | 0.984 |
| 16-Apr-97 | 46 | 16 | 0.2880 | -0.559 | 3.829 | 0.983 |
| 27-Jun-95 | 48 | 17 | 0.3065 | -0.506 | 3.871 | 0.982 |
| 21-Nov-95 | 50 | 18 | 0.3249 | -0.454 | 3.912 | 0.981 |
| 28-Mar-96 | 50 | 19 | 0.3433 | -0.403 | 3.912 | 0.981 |
| 19-May-94 | 53 | 20 | 0.3618 | -0.354 | 3.970 | 0.980 |
| 24-Sep-98 | 53 | 21 | 0.3802 | -0.305 | 3.970 | 0.979 |
| 27-Dec-95 | 55 | 22 | 0.3986 | -0.257 | 4.007 | 0.979 |
| 26-Mar-97 | 55 | 23 | 0.4171 | -0.209 | 4.007 | 0.978 |
| 25-Feb-98 | 56 | 24 | 0.4355 | -0.162 | 4.025 | 0.977 |
| 19-Feb-97 | 58 | 25 | 0.4539 | -0.116 | 4.060 | 0.976 |
| 20-Mar-98 | 58 | 26 | 0.4724 | -0.069 | 4.060 | 0.976 |
| 25-Jul-95 | 59 | 27 | 0.4908 | -0.023 | 4.078 | 0.975 |
| 21-Aug-96 | 60 | 28 | 0.5092 | 0.023 | 4.094 | 0.974 |
| 17-Dec-97 | 60 | 29 | 0.5276 | 0.069 | 4.094 | 0.972 |
| 26-Nov-97 | 62 | 30 | 0.5461 | 0.116 | 4.127 | 0.970 |
| 13-Apr-95 | 64 | 31 | 0.5645 | 0.162 | 4.159 | 0.968 |
| 25-Apr-95 | 64 | 32 | 0.5829 | 0.209 | 4.159 | 0.966 |
| 8-Oct-98 | 64 | 33 | 0.6014 | 0.257 | 4.159 | 0.963 |
| 3-May-94 | 64.3 | 34 | 0.6198 | 0.305 | 4.164 | 0.960 |
| 30-Jan-97 | 66 | 35 | 0.6382 | 0.354 | 4.190 | 0.958 |
| 12-Nov-97 | 68.3 | 36 | 0.6567 | 0.403 | 4.224 | 0.956 |
| 7-Jun-94 | 70 | 37 | 0.6751 | 0.454 | 4.248 | 0.953 |
| 22-Mar-95 | 72 | 38 | 0.6935 | 0.506 | 4.277 | 0.952 |
| 17-Jan-96 | 72 | 39 | 0.7120 | 0.559 | 4.277 | 0.951 |
| 18-Oct-95 | 84 | 40 | 0.7304 | 0.614 | 4.431 | 0.961 |
| 27-Nov-96 | 84 | 41 | 0.7488 | 0.671 | 4.431 | 0.957 |
| 23-Jun-94 | 85 | 42 | 0.7673 | 0.730 | 4.443 | 0.952 |
| 13-Dec-96 | 85 | 43 | 0.7857 | 0.792 | 4.443 | 0.946 |
| 6-Dec-98 | 89.8 | 44 | 0.8041 | 0.857 | 4.498 | 0.946 |
| 4-Oct-94 | 99 | 45 | 0.8226 | 0.925 | 4.595 | 0.944 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6-Apr-94 | 102 | 46 | 0.8410 | 0.999 | 4.625 | 0.936 |
| 9-Feb-95 | 102 | 47 | 0.8594 | 1.078 | 4.625 | 0.928 |
| 20-Jul-94 | 108 | 48 | 0.8779 | 1.164 | 4.682 | 0.910 |
| 20-Jul-94 | 108 | 49 | 0.8963 | 1.261 | 4.682 | 0.892 |
| 15-Aug-94 | 117 | 50 | 0.9147 | 1.371 | 4.762 | 0.851 |
| 15-Aug-94 | 117 | 51 | 0.9332 | 1.500 | 4.762 | |
| 8-Sep-94 | 127 | 52 | 0.9516 | 1.661 | 4.844 | |
| 15-Nov-94 | 154 | 53 | 0.9700 | 1.881 | 5.037 | |
| 13-Dec-94 | 156 | 54 | 0.9885 | 2.273 | 5.050 | |

update for EV, CV.

**dPb**
**LN Analysis**

**Discharge, Q**

**NM296**
**dPb**
**Q Data, EV=9 cfs CV=0.76**

| | | Q Data-based LN | | |
|---|---|---|---|---|
| **Avg:** | 9 | u | lnQ | Q |
| **SD:** | 7 | 3 | 4.0 | 55 |
| **CV:** | 0.76 | 0 | 1.98 | 7 |
| **Min:** | 1 | -3 | -0.06 | 1 |
| **Max:** | 31 | | | |
| **Median:** | 7 | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.952, EV=9.3 cfs CV=0.85; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.952 | u | lnQ | Q |
| slope, m: | 1.358 | 3 | 4.16 | 64 |
| intercept, b: | -2.654 | 0 | 1.95 | 7 |
| N: | 54 | -3 | -0.26 | 0.8 |
| E[Q]: | 9.3 | Parameter Estimates | | |
| SD[Q]: | 8 | from LN regression | | |
| CV[Q]: | 0.85 | update graph label | | |

N: 54

max r2 0.978

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.48 | 1 | 0.0115 | -2.273 | 0.392 | 0.952 |
| 27-Nov-96 | 3.11 | 2 | 0.0300 | -1.881 | 1.135 | 0.947 |
| 20-Jul-94 | 3.15 | 3 | 0.0484 | -1.661 | 1.147 | 0.958 |
| 26-Nov-97 | 3.2 | 4 | 0.0668 | -1.500 | 1.163 | 0.965 |
| 8-Sep-94 | 3.29 | 5 | 0.0853 | -1.371 | 1.191 | 0.969 |
| 4-Oct-94 | 3.29 | 6 | 0.1037 | -1.261 | 1.191 | 0.973 |
| 8-Oct-98 | 3.29 | 7 | 0.1221 | -1.164 | 1.191 | 0.976 |
| 17-Dec-97 | 3.38 | 8 | 0.1406 | -1.078 | 1.218 | 0.977 |
| 24-Sep-98 | 3.38 | 9 | 0.1590 | -0.999 | 1.218 | 0.978 |
| 15-Nov-94 | 3.57 | 10 | 0.1774 | -0.925 | 1.273 | 0.978 |
| 13-Dec-94 | 3.57 | 11 | 0.1959 | -0.857 | 1.273 | 0.978 |
| 25-Jul-95 | 3.68 | 12 | 0.2143 | -0.792 | 1.303 | 0.978 |
| 30-Jan-97 | 3.68 | 13 | 0.2327 | -0.730 | 1.303 | 0.977 |
| 6-Dec-98 | 3.86 | 14 | 0.2512 | -0.671 | 1.351 | 0.976 |
| 15-Aug-94 | 3.89 | 15 | 0.2696 | -0.614 | 1.358 | 0.975 |
| 20-Jul-94 | 4.11 | 16 | 0.2880 | -0.559 | 1.413 | 0.973 |
| 28-Jul-98 | 4.11 | 17 | 0.3065 | -0.506 | 1.413 | 0.972 |
| 12-Nov-97 | 4.15 | 18 | 0.3249 | -0.454 | 1.423 | 0.970 |
| 11-Jul-95 | 4.23 | 19 | 0.3433 | -0.403 | 1.442 | 0.968 |
| 21-Aug-96 | 4.6 | 20 | 0.3618 | -0.354 | 1.526 | 0.967 |
| 20-Mar-98 | 4.73 | 21 | 0.3802 | -0.305 | 1.554 | 0.965 |
| 18-Oct-95 | 5.01 | 22 | 0.3986 | -0.257 | 1.611 | 0.964 |
| 24-Jul-96 | 5.01 | 23 | 0.4171 | -0.209 | 1.611 | 0.962 |
| 19-Feb-97 | 5.01 | 24 | 0.4355 | -0.162 | 1.611 | 0.961 |
| 23-Jun-94 | 5.45 | 25 | 0.4539 | -0.116 | 1.696 | 0.962 |
| 9-Feb-95 | 5.61 | 26 | 0.4724 | -0.069 | 1.725 | 0.962 |
| 27-Jun-95 | 6.47 | 27 | 0.4908 | -0.023 | 1.867 | 0.964 |
| 17-Jan-96 | 6.86 | 28 | 0.5092 | 0.023 | 1.926 | 0.962 |
| 23-Jul-97 | 7.06 | 29 | 0.5276 | 0.069 | 1.954 | 0.959 |
| 25-Apr-95 | 7.26 | 30 | 0.5461 | 0.116 | 1.982 | 0.957 |
| 16-Apr-97 | 7.48 | 31 | 0.5645 | 0.162 | 2.012 | 0.955 |
| 25-Feb-98 | 7.48 | 32 | 0.5829 | 0.209 | 2.012 | 0.954 |
| 12-Jun-95 | 7.69 | 33 | 0.6014 | 0.257 | 2.040 | 0.956 |
| 28-Mar-96 | 8.39 | 34 | 0.6198 | 0.305 | 2.127 | 0.963 |
| 7-Jun-94 | 10 | 35 | 0.6382 | 0.354 | 2.303 | 0.968 |
| 13-Apr-95 | 10 | 36 | 0.6567 | 0.403 | 2.303 | 0.965 |
| 27-Dec-95 | 10.9 | 37 | 0.6751 | 0.454 | 2.389 | 0.963 |
| 26-Mar-97 | 11.9 | 38 | 0.6935 | 0.506 | 2.477 | 0.959 |
| 24-Jun-97 | 12.3 | 39 | 0.7120 | 0.559 | 2.510 | 0.957 |
| 26-Jun-98 | 12.3 | 40 | 0.7304 | 0.614 | 2.510 | 0.955 |
| 26-Jun-98 | 12.3 | 41 | 0.7488 | 0.671 | 2.510 | 0.950 |
| 15-Aug-94 | 12.31 | 42 | 0.7673 | 0.730 | 2.510 | 0.943 |
| 21-Nov-95 | 13.4 | 43 | 0.7857 | 0.792 | 2.595 | 0.937 |
| 22-Mar-95 | 14.68 | 44 | 0.8041 | 0.857 | 2.686 | 0.928 |
| 8-May-96 | 15.1 | 45 | 0.8226 | 0.925 | 2.715 | 0.918 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19-May-94 | 15.13 | 46 | 0.8410 | 0.999 | 2.717 | 0.905 |
| 13-Dec-96 | 16.1 | 47 | 0.8594 | 1.078 | 2.779 | 0.885 |
| 3-May-94 | 16.55 | 48 | 0.8779 | 1.164 | 2.806 | 0.856 |
| 19-Jun-96 | 19.2 | 49 | 0.8963 | 1.261 | 2.955 | 0.816 |
| 6-Apr-94 | 19.24 | 50 | 0.9147 | 1.371 | 2.957 | 0.759 |
| 9-May-95 | 20.44 | 51 | 0.9332 | 1.500 | 3.017 | |
| 16-May-98 | 28 | 52 | 0.9516 | 1.661 | 3.332 | |
| 23-May-95 | 29.49 | 53 | 0.9700 | 1.881 | 3.384 | |
| 16-May-91 | 30.9 | 54 | 0.9885 | 2.273 | 3.431 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **NM296** | **Date:** | **29-May-00** |
| **Chemical:** | **dZn** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,108 | 9 | 5,979 | 247 | 0.00 | 0.00 | 0.00 |
| **SD:** | 612 | 7 | 2,800 | 165 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.76 | 0.47 | 0.67 | | | |
| **Min:** | 33,374 | 1 | 1,500 | 51 | -1.09 | -1.60 | -1.19 |
| **Max:** | 36,135 | 31 | 17,100 | 761 | 3.14 | 3.97 | 3.12 |
| **Median:** | 35,042 | 7 | 5,900 | 199 | -0.35 | -0.03 | -0.29 |

| dZn | NM296 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.18)** | | update r2 | | | r2: | 0.037 | 0.009 |
| r2 Q,[COC]: | 0.18 | [dZn] | Q | | m: | -0.0022 | -0.00011 |
| slope, m: | -173.3 | 7,298 | 1.5 | | b: | 86 | 5.85 |
| intercept, b: | 7554.4 | 5,979 | 9.1 | | | | |
| N: 54 | | 2,200 | 31 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.26)** | | update r2 | | | | | |
| r2 lnQ,ln[COC]: | 0.26 | ln[dZn] | ln Q | [dZn] | Q | | |
| slope, m: | -0.35 | 9.13 | 0.39 | 9,233 | 1 | | |
| intercept, b: | 9.27 | 8.50 | 2.21 | 4,913 | 9 | | |
| N: 54 | | 8.07 | 3.43 | 3,210 | 31 | | |

| | | | | | | | | | for graph 0 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | dZn | NM296 | |
| **N= 54** | | | | | | | | **Standardized Values** | | |
| | **Sampling Date** | **Q Discharge** | **dZn Concentration** | **dZn Load** | **Ln Q** | **Ln dZn Conc.** | **Ln dZn Load** | **= (x - Avg)/SD** | | |
| update for new data | | **cfs** | **ug/L** | **lbs/day** | | | | **Q** | **Conc** | **Load** |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 30.9 | 2190 | 364 | 3.43 | 7.69 | 5.90 | 3.14 | -1.35 | 0.71 |
| MFG | 4-Oct-91 | 1.48 | 6450 | 51 | 0.39 | 8.77 | 3.94 | -1.09 | 0.17 | -1.19 |
| IDEQ | 6-Apr-94 | 19.24 | 6680 | 691 | 2.96 | 8.81 | 6.54 | 1.46 | 0.25 | 2.70 |
| IDEQ | 3-May-94 | 16.55 | 3970 | 353 | 2.81 | 8.29 | 5.87 | 1.07 | -0.72 | 0.65 |
| IDEQ | 19-May-94 | 15.13 | 2630 | 214 | 2.72 | 7.87 | 5.37 | 0.87 | -1.20 | -0.20 |
| IDEQ | 7-Jun-94 | 10 | 3640 | 196 | 2.30 | 8.20 | 5.28 | 0.13 | -0.84 | -0.31 |
| IDEQ | 23-Jun-94 | 5.45 | 4270 | 125 | 1.70 | 8.36 | 4.83 | -0.52 | -0.61 | -0.74 |
| IDEQ | 20-Jul-94 | 4.11 | 5060 | 112 | 1.41 | 8.53 | 4.72 | -0.72 | -0.33 | -0.82 |
| IDEQ | 20-Jul-94 | 3.15 | 5060 | 86 | 1.15 | 8.53 | 4.45 | -0.85 | -0.33 | -0.98 |
| IDEQ | 15-Aug-94 | 3.89 | 5960 | 125 | 1.36 | 8.69 | 4.83 | -0.75 | -0.01 | -0.75 |
| IDEQ | 15-Aug-94 | 12.31 | 5960 | 395 | 2.51 | 8.69 | 5.98 | 0.46 | -0.01 | 0.90 |
| IDEQ | 8-Sep-94 | 3.29 | 6010 | 106 | 1.19 | 8.70 | 4.67 | -0.83 | 0.01 | -0.86 |
| IDEQ | 4-Oct-94 | 3.29 | 6930 | 123 | 1.19 | 8.84 | 4.81 | -0.83 | 0.34 | -0.76 |
| IDEQ | 15-Nov-94 | 3.57 | 9620 | 185 | 1.27 | 9.17 | 5.22 | -0.79 | 1.30 | -0.38 |
| IDEQ | 13-Dec-94 | 3.57 | 11800 | 227 | 1.27 | 9.38 | 5.42 | -0.79 | 2.08 | -0.13 |
| IDEQ | 9-Feb-95 | 5.61 | 11100 | 335 | 1.72 | 9.31 | 5.81 | -0.50 | 1.83 | 0.53 |
| IDEQ | 22-Mar-95 | 14.68 | 9630 | 761 | 2.69 | 9.17 | 6.63 | 0.80 | 1.30 | 3.12 |
| IDEQ | 13-Apr-95 | 10 | 9140 | 492 | 2.30 | 9.12 | 6.20 | 0.13 | 1.13 | 1.49 |
| IDEQ | 25-Apr-95 | 7.26 | 9180 | 359 | 1.98 | 9.12 | 5.88 | -0.26 | 1.14 | 0.68 |
| IDEQ | 9-May-95 | 20.44 | 3250 | 357 | 3.02 | 8.09 | 5.88 | 1.63 | -0.97 | 0.67 |
| IDEQ | 23-May-95 | 29.49 | 2270 | 360 | 3.38 | 7.73 | 5.89 | 2.94 | -1.32 | 0.69 |
| IDEQ | 12-Jun-95 | 7.69 | 2800 | 116 | 2.04 | 7.94 | 4.75 | -0.20 | -1.14 | -0.80 |
| IDEQ | 27-Jun-95 | 6.47 | 3650 | 127 | 1.87 | 8.20 | 4.84 | -0.38 | -0.83 | -0.73 |
| IDEQ | 11-Jul-95 | 4.23 | 4360 | 99 | 1.44 | 8.38 | 4.60 | -0.70 | -0.58 | -0.90 |
| IDEQ | 25-Jul-95 | 3.68 | 5120 | 101 | 1.30 | 8.54 | 4.62 | -0.78 | -0.31 | -0.89 |
| IDEQ | 18-Oct-95 | 5.01 | 8350 | 225 | 1.61 | 9.03 | 5.42 | -0.59 | 0.85 | -0.14 |
| IDEQ | 21-Nov-95 | 13.4 | 5180 | 373 | 2.60 | 8.55 | 5.92 | 0.62 | -0.29 | 0.77 |
| IDEQ | 27-Dec-95 | 10.9 | 6180 | 362 | 2.39 | 8.73 | 5.89 | 0.26 | 0.07 | 0.70 |
| IDEQ | 17-Jan-96 | 6.86 | 6730 | 248 | 1.93 | 8.81 | 5.51 | -0.32 | 0.27 | 0.01 |
| IDEQ | 28-Mar-96 | 8.39 | 5250 | 237 | 2.13 | 8.57 | 5.47 | -0.10 | -0.26 | -0.06 |
| IDEQ | 8-May-96 | 15.1 | 4760 | 387 | 2.71 | 8.47 | 5.96 | 0.87 | -0.44 | 0.85 |
| IDEQ | 19-Jun-96 | 19.2 | 1960 | 202 | 2.95 | 7.58 | 5.31 | 1.46 | -1.44 | -0.27 |
| IDEQ | 24-Jul-96 | 5.01 | 3570 | 96 | 1.61 | 8.18 | 4.57 | -0.59 | -0.86 | -0.92 |
| IDEQ | 21-Aug-96 | 4.6 | 4710 | 117 | 1.53 | 8.46 | 4.76 | -0.65 | -0.45 | -0.79 |
| IDEQ | 27-Nov-96 | 3.11 | 8910 | 149 | 1.13 | 9.09 | 5.00 | -0.86 | 1.05 | -0.60 |
| IDEQ | 13-Dec-96 | 16.1 | 8470 | 734 | 2.78 | 9.04 | 6.60 | 1.01 | 0.89 | 2.96 |
| IDEQ | 30-Jan-97 | 3.68 | 7600 | 150 | 1.30 | 8.94 | 5.01 | -0.78 | 0.58 | -0.59 |
| IDEQ | 19-Feb-97 | 5.01 | 7270 | 196 | 1.61 | 8.89 | 5.28 | -0.59 | 0.46 | -0.31 |
| IDEQ | 26-Mar-97 | 11.9 | 7200 | 461 | 2.48 | 8.88 | 6.13 | 0.40 | 0.44 | 1.30 |
| IDEQ | 16-Apr-97 | 7.48 | 6090 | 245 | 2.01 | 8.71 | 5.50 | -0.23 | 0.04 | -0.01 |
| IDEQ | 24-Jun-97 | 12.3 | 1500 | 99 | 2.51 | 7.31 | 4.60 | 0.46 | -1.60 | -0.90 |
| IDEQ | 23-Jul-97 | 7.06 | 3070 | 117 | 1.95 | 8.03 | 4.76 | -0.29 | -1.04 | -0.79 |
| URS | 12-Nov-97 | 4.15 | 8180 | 183 | 1.42 | 9.01 | 5.21 | -0.71 | 0.79 | -0.39 |
| IDEQ | 26-Nov-97 | 3.2 | 7110 | 122 | 1.16 | 8.87 | 4.81 | -0.85 | 0.40 | -0.76 |
| IDEQ | 17-Dec-97 | 3.38 | 7220 | 131 | 1.22 | 8.88 | 4.88 | -0.82 | 0.44 | -0.71 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 25-Feb-98 | 7.48 | 6480 | 261 | 2.01 | 8.78 | 5.56 | -0.25 | 0.18 | 0.08 |
| IDEQ | 20-Mar-98 | 4.73 | 5540 | 141 | 1.55 | 8.62 | 4.95 | -0.63 | -0.16 | -0.65 |
| URS | 16-May-98 | 28 | 3410 | 514 | 3.33 | 8.13 | 6.24 | 2.72 | -0.92 | 1.62 |
| IDEQ | 26-Jun-98 | 12.3 | 3460 | 229 | 2.51 | 8.15 | 5.43 | 0.46 | -0.90 | -0.11 |
| IDEQ | 26-Jun-98 | 12.3 | 3490 | 231 | 2.51 | 8.16 | 5.44 | 0.46 | -0.89 | -0.10 |
| IDEQ | 28-Jul-98 | 4.11 | 4660 | 103 | 1.41 | 8.45 | 4.64 | -0.72 | -0.47 | -0.88 |
| IDEQ | 24-Sep-98 | 3.38 | 5840 | 106 | 1.22 | 8.67 | 4.67 | -0.82 | -0.05 | -0.86 |
| IDEQ | 8-Oct-98 | 3.29 | 6870 | 122 | 1.19 | 8.83 | 4.80 | -0.83 | 0.32 | -0.76 |
| URS | 6-Dec-98 | 3.86 | 17100 | 355 | 1.35 | 9.75 | 5.87 | -0.75 | 3.97 | 0.66 |

**dZn**

**Concentration over time analysis** r2 Slope, m

**dZn NM296** **Concentration over time**

**LnConc.=mTime+b All data r2, m:** **0.012** **0.00009**

| | Time | Ln[COC] | [COC] |
|---|---|---|---|
| first: | 16-May-91 | 8.44 | 4,619 |
| mid: | 9-Dec-95 | 8.58 | 5,333 |
| last: | 6-Dec-98 | 8.68 | 5,861 |

**LnConc.=mTime+b >'96 r2, m:** **0.909** **0.00900**

| | | |
|---|---|---|
| 26-Jun-98 | 8.07 | 3,202 |
| 6-Dec-98 | 9.54 | 13,883 |

**Load over time analysis**

**dZn NM296** **Load over time**

**LnLoad=mTime+b All data r2, m:** **0.001** **-0.00002**

| | Time | LnLoad | Load |
|---|---|---|---|
| first: | 16-May-91 | 5.36 | 213 |
| mid: | 9-Dec-95 | 5.32 | 204 |
| last: | 6-Dec-98 | 5.29 | 199 |

**LnLoad=mTime+b >'96 r2, m:** **0.114** **0.00291**

| | | |
|---|---|---|
| 26-Jun-98 | 4.86 | 129 |
| 6-Dec-98 | 5.33 | 207 |

max r2: 0.923 max r2: 0.117

**Forward time Regression on Ln Concentration(t)** **Forward time Regression on Ln Load(t)**

| r2 | slope | intercept | r2 | slope | intercept |
|---|---|---|---|---|---|
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.012 | 0.00009 | 5.56 | 0.001 | -0.00002 | 6.19 |
| 0.000 | 0.00001 | 8.27 | 0.001 | 0.00003 | 4.24 |
| 0.001 | 0.00003 | 7.53 | 0.012 | -0.00012 | 9.56 |
| 0.002 | 0.00004 | 7.09 | 0.003 | -0.00006 | 7.40 |
| 0.001 | 0.00003 | 7.64 | 0.001 | -0.00003 | 6.38 |
| 0.000 | -0.00001 | 9.10 | 0.001 | -0.00003 | 6.29 |
| 0.002 | -0.00004 | 10.02 | 0.001 | -0.00003 | 6.37 |
| 0.004 | -0.00006 | 10.68 | 0.003 | -0.00006 | 7.46 |
| 0.005 | -0.00007 | 11.01 | 0.007 | -0.00010 | 8.92 |
| 0.006 | -0.00008 | 11.39 | 0.020 | -0.00017 | 11.24 |
| 0.006 | -0.00008 | 11.39 | 0.031 | -0.00021 | 12.86 |
| 0.006 | -0.00008 | 11.39 | 0.021 | -0.00018 | 11.55 |
| 0.005 | -0.00008 | 11.36 | 0.038 | -0.00024 | 13.87 |
| 0.003 | -0.00006 | 10.89 | 0.058 | -0.00030 | 16.05 |
| 0.000 | -0.00002 | 9.32 | 0.066 | -0.00033 | 17.17 |
| 0.002 | 0.00005 | 6.87 | 0.068 | -0.00035 | 17.73 |
| 0.011 | 0.00012 | 4.41 | 0.058 | -0.00033 | 17.00 |
| 0.025 | 0.00018 | 2.17 | 0.030 | -0.00023 | 13.41 |
| 0.046 | 0.00025 | -0.19 | 0.014 | -0.00016 | 10.81 |
| 0.078 | 0.00032 | -2.95 | 0.006 | -0.00010 | 8.96 |
| 0.063 | 0.00030 | -1.98 | 0.001 | -0.00004 | 6.78 |
| 0.035 | 0.00022 | 0.80 | 0.001 | 0.00003 | 4.14 |
| 0.017 | 0.00015 | 3.15 | 0.001 | -0.00003 | 6.39 |
| 0.008 | 0.00011 | 4.66 | 0.004 | -0.00010 | 8.68 |
| 0.005 | 0.00009 | 5.52 | 0.021 | -0.00022 | 13.01 |
| 0.004 | 0.00009 | 5.57 | 0.057 | -0.00037 | 18.45 |
| 0.015 | 0.00017 | 2.40 | 0.058 | -0.00039 | 19.21 |
| 0.016 | 0.00019 | 1.97 | 0.035 | -0.00031 | 16.38 |
| 0.023 | 0.00024 | 0.06 | 0.015 | -0.00022 | 12.93 |
| 0.039 | 0.00033 | -3.22 | 0.010 | -0.00018 | 11.75 |
| 0.043 | 0.00037 | -4.68 | 0.006 | -0.00015 | 10.63 |
| 0.042 | 0.00039 | -5.39 | 0.000 | 0.00003 | 4.03 |
| 0.005 | 0.00013 | 3.99 | 0.001 | 0.00007 | 2.81 |
| 0.000 | -0.00001 | 9.00 | 0.005 | -0.00015 | 10.73 |
| 0.002 | -0.00009 | 11.97 | 0.026 | -0.00039 | 19.05 |
| 0.001 | 0.00007 | 6.25 | 0.046 | -0.00055 | 24.82 |
| 0.013 | 0.00027 | -1.05 | 0.000 | -0.00002 | 5.95 |
| 0.036 | 0.00048 | -8.67 | 0.002 | -0.00013 | 9.70 |
| 0.077 | 0.00077 | -18.97 | 0.002 | -0.00012 | 9.39 |
| 0.150 | 0.00118 | -33.90 | 0.039 | 0.00054 | -14.22 |
| 0.243 | 0.00173 | -53.44 | 0.117 | 0.00106 | -32.94 |
| 0.076 | 0.00087 | -22.76 | 0.054 | 0.00079 | -23.24 |
| 0.006 | 0.00028 | -1.20 | 0.014 | 0.00047 | -11.76 |
| 0.041 | 0.00078 | -19.35 | 0.018 | 0.00059 | -16.03 |
| 0.108 | 0.00145 | -43.40 | 0.000 | 0.00004 | 3.79 |

| | | | | | |
|---|---|---|---|---|---|
| 0.296 | 0.00293 | -96.82 | 0.029 | -0.00102 | 41.84 |
| 0.531 | 0.00463 | -158.04 | 0.007 | -0.00060 | 26.81 |
| 0.887 | 0.00761 | -265.39 | 0.078 | -0.00243 | 92.96 |
| 0.923 | 0.00876 | -307.12 | 0.022 | 0.00116 | -36.53 |
| 0.909 | 0.00900 | -315.63 | 0.114 | 0.00291 | -99.96 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dZn** | | **NM296** | | |
| **LN Analysis** | | **dZn** | | |
| **Load** | | **Load Data, EV=247 lbs/day CV=.67** | | |
| **Avg:** | **247** | **Load Data-based LN** | | |
| **SD:** | **165** | u | ln dZn Load | dZn Load |
| **CV:** | **0.67** | 3 | 7.1 | 1266 |
| **Min:** | **51** | 0 | 5.33 | 206 |
| **Max:** | **761** | -3 | 3.51 | 34 |
| **Median:** | **199** | | | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.961, EV=250.8 lbs/day CV=0.72; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.961 | u | lnLoad | Load |
| slope, m: | 1.551 | 3 | 7.25 | 1410 |
| intercept, b: | -8.245 | 0 | 5.32 | 204 |
| N: | 54 | -3 | 3.38 | 29 |
| E[Load]: | 250.8 | Parameter Estimates | | |
| SD[Load]: | 180 | from LN regression | | |
| CV[Load]: | 0.72 | update graph label | | |

N: 54

| Date | dZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.973 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | **51** | 1 | 0.0115 | -2.273 | 3.939 | 0.961 |
| 20-Jul-94 | **86** | 2 | 0.0300 | -1.881 | 4.451 | 0.957 |
| 24-Jul-96 | **96** | 3 | 0.0484 | -1.661 | 4.567 | 0.961 |
| 11-Jul-95 | **99** | 4 | 0.0668 | -1.500 | 4.597 | 0.966 |
| 24-Jun-97 | **99** | 5 | 0.0853 | -1.371 | 4.598 | 0.970 |
| 25-Jul-95 | **101** | 6 | 0.1037 | -1.261 | 4.619 | 0.971 |
| 28-Jul-98 | **103** | 7 | 0.1221 | -1.164 | 4.635 | 0.973 |
| 24-Sep-98 | **106** | 8 | 0.1406 | -1.078 | 4.665 | 0.973 |
| 8-Sep-94 | **106** | 9 | 0.1590 | -0.999 | 4.667 | 0.973 |
| 20-Jul-94 | **112** | 10 | 0.1774 | -0.925 | 4.717 | 0.972 |
| 12-Jun-95 | **116** | 11 | 0.1959 | -0.857 | 4.752 | 0.972 |
| 21-Aug-96 | **117** | 12 | 0.2143 | -0.792 | 4.758 | 0.971 |
| 23-Jul-97 | **117** | 13 | 0.2327 | -0.730 | 4.759 | 0.970 |
| 8-Oct-98 | **122** | 14 | 0.2512 | -0.671 | 4.801 | 0.968 |
| 26-Nov-97 | **122** | 15 | 0.2696 | -0.614 | 4.807 | 0.967 |
| 4-Oct-94 | **123** | 16 | 0.2880 | -0.559 | 4.809 | 0.965 |
| 15-Aug-94 | **125** | 17 | 0.3065 | -0.506 | 4.826 | 0.962 |
| 23-Jun-94 | **125** | 18 | 0.3249 | -0.454 | 4.830 | 0.961 |
| 27-Jun-95 | **127** | 19 | 0.3433 | -0.403 | 4.845 | 0.959 |
| 17-Dec-97 | **131** | 20 | 0.3618 | -0.354 | 4.877 | 0.959 |
| 20-Mar-98 | **141** | 21 | 0.3802 | -0.305 | 4.949 | 0.960 |
| 27-Nov-96 | **149** | 22 | 0.3986 | -0.257 | 5.004 | 0.959 |
| 30-Jan-97 | **150** | 23 | 0.4171 | -0.209 | 5.014 | 0.959 |
| 12-Nov-97 | **183** | 24 | 0.4355 | -0.162 | 5.207 | 0.961 |
| 15-Nov-94 | **185** | 25 | 0.4539 | -0.116 | 5.219 | 0.958 |
| 7-Jun-94 | **196** | 26 | 0.4724 | -0.069 | 5.277 | 0.956 |
| 19-Feb-97 | **196** | 27 | 0.4908 | -0.023 | 5.278 | 0.953 |
| 19-Jun-96 | **202** | 28 | 0.5092 | 0.023 | 5.311 | 0.949 |
| 19-May-94 | **214** | 29 | 0.5276 | 0.069 | 5.366 | 0.946 |
| 18-Oct-95 | **225** | 30 | 0.5461 | 0.116 | 5.416 | 0.942 |
| 13-Dec-94 | **227** | 31 | 0.5645 | 0.162 | 5.423 | 0.938 |
| 26-Jun-98 | **229** | 32 | 0.5829 | 0.209 | 5.434 | 0.933 |
| 26-Jun-98 | **231** | 33 | 0.6014 | 0.257 | 5.442 | 0.927 |
| 28-Mar-96 | **237** | 34 | 0.6198 | 0.305 | 5.468 | 0.922 |
| 16-Apr-97 | **245** | 35 | 0.6382 | 0.354 | 5.502 | 0.917 |
| 17-Jan-96 | **248** | 36 | 0.6567 | 0.403 | 5.515 | 0.913 |
| 25-Feb-98 | **261** | 37 | 0.6751 | 0.454 | 5.564 | 0.912 |
| 9-Feb-95 | **335** | 38 | 0.6935 | 0.506 | 5.814 | 0.912 |
| 3-May-94 | **353** | 39 | 0.7120 | 0.559 | 5.868 | 0.911 |
| 6-Dec-98 | **355** | 40 | 0.7304 | 0.614 | 5.872 | 0.918 |
| 9-May-95 | **357** | 41 | 0.7488 | 0.671 | 5.879 | 0.923 |
| 25-Apr-95 | **359** | 42 | 0.7673 | 0.730 | 5.882 | 0.927 |
| 23-May-95 | **360** | 43 | 0.7857 | 0.792 | 5.887 | 0.928 |
| 27-Dec-95 | **362** | 44 | 0.8041 | 0.857 | 5.893 | 0.925 |
| 16-May-91 | **364** | 45 | 0.8226 | 0.925 | 5.897 | 0.918 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 21-Nov-95 | 373 | 46 | 0.8410 | 0.999 | 5.923 | 0.904 |
| 8-May-96 | 387 | 47 | 0.8594 | 1.078 | 5.958 | 0.883 |
| 15-Aug-94 | 395 | 48 | 0.8779 | 1.164 | 5.978 | 0.854 |
| 26-Mar-97 | 461 | 49 | 0.8963 | 1.261 | 6.133 | 0.823 |
| 13-Apr-95 | 492 | 50 | 0.9147 | 1.371 | 6.198 | 0.757 |
| 16-May-98 | 514 | 51 | 0.9332 | 1.500 | 6.242 | |
| 6-Apr-94 | 691 | 52 | 0.9516 | 1.661 | 6.539 | |
| 13-Dec-96 | 734 | 53 | 0.9700 | 1.881 | 6.598 | |
| 22-Mar-95 | 761 | 54 | 0.9885 | 2.273 | 6.634 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dZn** | | **NM296** | | |
| **LN Analysis** | | **dZn** | | |
| **Concentration** | | **Conc. Data, EV=5,979 ug/L CV=.47** | | |
| **Avg:** | **5,979** | **Data-based LN** | | |
| **SD:** | **2,800** | u | ln[dZn] | [dZn] |
| **CV:** | **0.47** | 3 | 9.9 | 20594 |
| **Min:** | **1,500** | 0 | 8.60 | 5415 |
| **Max:** | **17,100** | -3 | 7.26 | 1424 |
| **Median:** | **5,900** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **$r^2$=0.982, EV=6067.8 ug/L CV=.53; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.982 | u | lnConc. | Conc. |
| slope, m: | 2.013 | 3 | 10.08 | 23801 |
| intercept, b: | -17.289 | 0 | 8.59 | 5364 |
| N: | 54 | -3 | 7.10 | 1209 |
| E[Conc]: | 6067.8 | Parameter Estimates | | |
| SD[Conc]: | 3210 | from LN regression | | |
| CV[Conc]: | 0.53 | update graph label | | |

| | | N: 54 | | | | max r2 0.984 |
|---|---|---|---|---|---|---|
| | **dZn Concentration** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **ug/L Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 24-Jun-97 | 1500 | 1 | 0.0115 | -2.273 | 7.313 | 0.982 |
| 19-Jun-96 | 1960 | 2 | 0.0300 | -1.881 | 7.581 | 0.983 |
| 16-May-91 | 2190 | 3 | 0.0484 | -1.661 | 7.692 | 0.982 |
| 23-May-95 | 2270 | 4 | 0.0668 | -1.500 | 7.728 | 0.982 |
| 19-May-94 | 2630 | 5 | 0.0853 | -1.371 | 7.875 | 0.984 |
| 12-Jun-95 | 2800 | 6 | 0.1037 | -1.261 | 7.937 | 0.983 |
| 23-Jul-97 | 3070 | 7 | 0.1221 | -1.164 | 8.029 | 0.983 |
| 9-May-95 | 3250 | 8 | 0.1406 | -1.078 | 8.086 | 0.982 |
| 16-May-98 | 3410 | 9 | 0.1590 | -0.999 | 8.134 | 0.981 |
| 26-Jun-98 | 3460 | 10 | 0.1774 | -0.925 | 8.149 | 0.980 |
| 26-Jun-98 | 3490 | 11 | 0.1959 | -0.857 | 8.158 | 0.979 |
| 24-Jul-96 | 3570 | 12 | 0.2143 | -0.792 | 8.180 | 0.979 |
| 7-Jun-94 | 3640 | 13 | 0.2327 | -0.730 | 8.200 | 0.979 |
| 27-Jun-95 | 3650 | 14 | 0.2512 | -0.671 | 8.202 | 0.980 |
| 3-May-94 | 3970 | 15 | 0.2696 | -0.614 | 8.287 | 0.983 |
| 23-Jun-94 | 4270 | 16 | 0.2880 | -0.559 | 8.359 | 0.983 |
| 11-Jul-95 | 4360 | 17 | 0.3065 | -0.506 | 8.380 | 0.983 |
| 28-Jul-98 | 4660 | 18 | 0.3249 | -0.454 | 8.447 | 0.982 |
| 21-Aug-96 | 4710 | 19 | 0.3433 | -0.403 | 8.457 | 0.981 |
| 8-May-96 | 4760 | 20 | 0.3618 | -0.354 | 8.468 | 0.980 |
| 20-Jul-94 | 5060 | 21 | 0.3802 | -0.305 | 8.529 | 0.979 |
| 20-Jul-94 | 5060 | 22 | 0.3986 | -0.257 | 8.529 | 0.977 |
| 25-Jul-95 | 5120 | 23 | 0.4171 | -0.209 | 8.541 | 0.976 |
| 21-Nov-95 | 5180 | 24 | 0.4355 | -0.162 | 8.553 | 0.975 |
| 28-Mar-96 | 5250 | 25 | 0.4539 | -0.116 | 8.566 | 0.973 |
| 20-Mar-98 | 5540 | 26 | 0.4724 | -0.069 | 8.620 | 0.971 |
| 24-Sep-98 | 5840 | 27 | 0.4908 | -0.023 | 8.672 | 0.969 |
| 15-Aug-94 | 5960 | 28 | 0.5092 | 0.023 | 8.693 | 0.969 |
| 15-Aug-94 | 5960 | 29 | 0.5276 | 0.069 | 8.693 | 0.969 |
| 8-Sep-94 | 6010 | 30 | 0.5461 | 0.116 | 8.701 | 0.968 |
| 16-Apr-97 | 6090 | 31 | 0.5645 | 0.162 | 8.714 | 0.966 |
| 27-Dec-95 | 6180 | 32 | 0.5829 | 0.209 | 8.729 | 0.964 |
| 4-Oct-91 | 6450 | 33 | 0.6014 | 0.257 | 8.772 | 0.962 |
| 25-Feb-98 | 6480 | 34 | 0.6198 | 0.305 | 8.776 | 0.961 |
| 6-Apr-94 | 6680 | 35 | 0.6382 | 0.354 | 8.807 | 0.959 |
| 17-Jan-96 | 6730 | 36 | 0.6567 | 0.403 | 8.814 | 0.958 |
| 8-Oct-98 | 6870 | 37 | 0.6751 | 0.454 | 8.835 | 0.957 |
| 4-Oct-94 | 6930 | 38 | 0.6935 | 0.506 | 8.844 | 0.956 |
| 26-Nov-97 | 7110 | 39 | 0.7120 | 0.559 | 8.869 | 0.953 |
| 26-Mar-97 | 7200 | 40 | 0.7304 | 0.614 | 8.882 | 0.951 |
| 17-Dec-97 | 7220 | 41 | 0.7488 | 0.671 | 8.885 | 0.948 |
| 19-Feb-97 | 7270 | 42 | 0.7673 | 0.730 | 8.892 | 0.942 |
| 30-Jan-97 | 7600 | 43 | 0.7857 | 0.792 | 8.936 | 0.934 |
| 12-Nov-97 | 8180 | 44 | 0.8041 | 0.857 | 9.009 | 0.925 |
| 18-Oct-95 | 8350 | 45 | 0.8226 | 0.925 | 9.030 | 0.924 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 13-Dec-96 | 8470 | 46 | 0.8410 | 0.999 | 9.044 | 0.923 |
| 27-Nov-96 | 8910 | 47 | 0.8594 | 1.078 | 9.095 | 0.920 |
| 13-Apr-95 | 9140 | 48 | 0.8779 | 1.164 | 9.120 | 0.929 |
| 25-Apr-95 | 9180 | 49 | 0.8963 | 1.261 | 9.125 | 0.945 |
| 15-Nov-94 | 9620 | 50 | 0.9147 | 1.371 | 9.172 | 0.950 |
| 22-Mar-95 | 9630 | 51 | 0.9332 | 1.500 | 9.173 | |
| 9-Feb-95 | 11100 | 52 | 0.9516 | 1.661 | 9.315 | |
| 13-Dec-94 | 11800 | 53 | 0.9700 | 1.881 | 9.376 | |
| 6-Dec-98 | 17100 | 54 | 0.9885 | 2.273 | 9.747 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dZn** | | NM296 | | |
| **LN Analysis** | | dZn | | |
| **Discharge, Q** | | Q Data, EV=9 cfs CV=0.76 | | |
| **Avg:** | 9 | Q Data-based LN | | |
| **SD:** | 7 | u | lnQ | Q |
| **CV:** | 0.76 | 3 | 4.0 | 55 |
| **Min:** | 1 | 0 | 1.98 | 7 |
| **Max:** | 31 | -3 | -0.06 | 1 |
| **Median:** | 7 | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.952, EV=9.3 cfs CV=0.85; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.952 | u | lnQ | Q |
| slope, m: | 1.358 | 3 | 4.16 | 64 |
| intercept, b: | -2.654 | 0 | 1.95 | 7 |
| N: | 54 | -3 | -0.26 | 1 |
| E[Q]: | 9.3 | Parameter Estimates | | |
| SD[Q]: | 8 | from LN regression | | |
| CV[Q]: | 0.85 | update graph label | | |

| Date | Q Discharge cfs Ranked | N: 54 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.978 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.48 | 1 | 0.0115 | -2.273 | 0.392 | 0.952 |
| 27-Nov-96 | 3.11 | 2 | 0.0300 | -1.881 | 1.135 | 0.947 |
| 20-Jul-94 | 3.15 | 3 | 0.0484 | -1.661 | 1.147 | 0.958 |
| 26-Nov-97 | 3.2 | 4 | 0.0668 | -1.500 | 1.163 | 0.965 |
| 8-Sep-94 | 3.29 | 5 | 0.0853 | -1.371 | 1.191 | 0.969 |
| 4-Oct-94 | 3.29 | 6 | 0.1037 | -1.261 | 1.191 | 0.973 |
| 8-Oct-98 | 3.29 | 7 | 0.1221 | -1.164 | 1.191 | 0.976 |
| 17-Dec-97 | 3.38 | 8 | 0.1406 | -1.078 | 1.218 | 0.977 |
| 24-Sep-98 | 3.38 | 9 | 0.1590 | -0.999 | 1.218 | 0.978 |
| 15-Nov-94 | 3.57 | 10 | 0.1774 | -0.925 | 1.273 | 0.978 |
| 13-Dec-94 | 3.57 | 11 | 0.1959 | -0.857 | 1.273 | 0.978 |
| 25-Jul-95 | 3.68 | 12 | 0.2143 | -0.792 | 1.303 | 0.978 |
| 30-Jan-97 | 3.68 | 13 | 0.2327 | -0.730 | 1.303 | 0.977 |
| 6-Dec-98 | 3.86 | 14 | 0.2512 | -0.671 | 1.351 | 0.976 |
| 15-Aug-94 | 3.89 | 15 | 0.2696 | -0.614 | 1.358 | 0.975 |
| 20-Jul-94 | 4.11 | 16 | 0.2880 | -0.559 | 1.413 | 0.973 |
| 28-Jul-98 | 4.11 | 17 | 0.3065 | -0.506 | 1.413 | 0.972 |
| 12-Nov-97 | 4.15 | 18 | 0.3249 | -0.454 | 1.423 | 0.970 |
| 11-Jul-95 | 4.23 | 19 | 0.3433 | -0.403 | 1.442 | 0.968 |
| 21-Aug-96 | 4.6 | 20 | 0.3618 | -0.354 | 1.526 | 0.967 |
| 20-Mar-98 | 4.73 | 21 | 0.3802 | -0.305 | 1.554 | 0.965 |
| 18-Oct-95 | 5.01 | 22 | 0.3986 | -0.257 | 1.611 | 0.964 |
| 24-Jul-96 | 5.01 | 23 | 0.4171 | -0.209 | 1.611 | 0.962 |
| 19-Feb-97 | 5.01 | 24 | 0.4355 | -0.162 | 1.611 | 0.961 |
| 23-Jun-94 | 5.45 | 25 | 0.4539 | -0.116 | 1.696 | 0.962 |
| 9-Feb-95 | 5.61 | 26 | 0.4724 | -0.069 | 1.725 | 0.962 |
| 27-Jun-95 | 6.47 | 27 | 0.4908 | -0.023 | 1.867 | 0.964 |
| 17-Jan-96 | 6.86 | 28 | 0.5092 | 0.023 | 1.926 | 0.962 |
| 23-Jul-97 | 7.06 | 29 | 0.5276 | 0.069 | 1.954 | 0.959 |
| 25-Apr-95 | 7.26 | 30 | 0.5461 | 0.116 | 1.982 | 0.957 |
| 16-Apr-97 | 7.48 | 31 | 0.5645 | 0.162 | 2.012 | 0.955 |
| 25-Feb-98 | 7.48 | 32 | 0.5829 | 0.209 | 2.012 | 0.954 |
| 12-Jun-95 | 7.69 | 33 | 0.6014 | 0.257 | 2.040 | 0.956 |
| 28-Mar-96 | 8.39 | 34 | 0.6198 | 0.305 | 2.127 | 0.963 |
| 7-Jun-94 | 10 | 35 | 0.6382 | 0.354 | 2.303 | 0.968 |
| 13-Apr-95 | 10 | 36 | 0.6567 | 0.403 | 2.303 | 0.965 |
| 27-Dec-95 | 10.9 | 37 | 0.6751 | 0.454 | 2.389 | 0.963 |
| 26-Mar-97 | 11.9 | 38 | 0.6935 | 0.506 | 2.477 | 0.959 |
| 24-Jun-97 | 12.3 | 39 | 0.7120 | 0.559 | 2.510 | 0.957 |
| 26-Jun-98 | 12.3 | 40 | 0.7304 | 0.614 | 2.510 | 0.955 |
| 26-Jun-98 | 12.3 | 41 | 0.7488 | 0.671 | 2.510 | 0.950 |
| 15-Aug-94 | 12.31 | 42 | 0.7673 | 0.730 | 2.510 | 0.943 |
| 21-Nov-95 | 13.4 | 43 | 0.7857 | 0.792 | 2.595 | 0.937 |
| 22-Mar-95 | 14.68 | 44 | 0.8041 | 0.857 | 2.686 | 0.928 |
| 8-May-96 | 15.1 | 45 | 0.8226 | 0.925 | 2.715 | 0.918 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19-May-94 | 15.13 | 46 | 0.8410 | 0.999 | 2.717 | 0.905 |
| 13-Dec-96 | 16.1 | 47 | 0.8594 | 1.078 | 2.779 | 0.885 |
| 3-May-94 | 16.55 | 48 | 0.8779 | 1.164 | 2.806 | 0.856 |
| 19-Jun-96 | 19.2 | 49 | 0.8963 | 1.261 | 2.955 | 0.816 |
| 6-Apr-94 | 19.24 | 50 | 0.9147 | 1.371 | 2.957 | 0.759 |
| 9-May-95 | 20.44 | 51 | 0.9332 | 1.500 | 3.017 | |
| 16-May-98 | 28 | 52 | 0.9516 | 1.661 | 3.332 | |
| 23-May-95 | 29.49 | 53 | 0.9700 | 1.881 | 3.384 | |
| 16-May-91 | 30.9 | 54 | 0.9885 | 2.273 | 3.431 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Caudidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | NM296 | **Date:** 3-Jun-00 |
| **Chemical:** | tCd | **Analyst:** J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | |
| **Input Discharge and Concentration Data below (in red)** | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,091 | 9 | 32 | 1 | 0.00 | 0.00 | 0.00 |
| **SD:** | 606 | 7 | 14 | 1 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.78 | 0.43 | 0.64 | | | |
| **Min:** | 33,374 | 1 | 8 | 0.2 | -1.08 | -1.78 | -1.27 |
| **Max:** | 36,135 | 31 | 91 | 4 | 3.12 | 4.20 | 2.90 |
| **Median:** | 35,024 | 6 | 33 | 1 | -0.37 | 0.04 | -0.32 |

| tCd | NM296 | | : Concentration v. Discharge, Q | | Q = mTime +b | LnQ = mTime +b |
|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.224)** | | update r2 | 0.22 | 0.224 | r2: 0.044 | 0.015 |
| r2 Q,[COC]: | 0.22 | [tCd] | Q | | m: -0.0024 | -0.00014 |
| slope, m: | -0.9 | 40 | 1.5 | | b: 94 | 6.88 |
| intercept, b: | 40.9 | 32 | 9.0 | | | |
| N: 53 | | 12 | 31 | | | |
| **LnConc. = mLn(Q)+b (r2=0.28)** | | update r2 | 0.28 | 0.28 | | |
| r2 lnQ,ln[COC]: | 0.28 | ln[tCd] | ln Q | [tCd] | Q | |
| slope, m: | -0.36 | 3.94 | 0.39 | 51 | 1 | |
| intercept, b: | 4.08 | 3.28 | 2.20 | 27 | 9 | |
| N: 53 | | 2.84 | 3.43 | 17 | 31 | |

**N= 53**

| | Sampling Date | Q Discharge | tCd Concentration | tCd Load | Ln Q | Ln tCd Conc. | Ln tCd Load | for graph 0 tCd NM296 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 30.9 | 7.5 | 1.2 | 3.43 | 2.01 | 0.22 | 3.12 | -1.78 | -0.09 |
| MFG | 4-Oct-91 | 1.48 | 31.2 | 0.2 | 0.39 | 3.44 | -1.39 | -1.08 | -0.09 | -1.27 |
| IDEQ | 6-Apr-94 | 19.24 | 36 | 3.7 | 2.96 | 3.58 | 1.32 | 1.46 | 0.26 | 2.83 |
| IDEQ | 3-May-94 | 16.55 | 27.3 | 2.4 | 2.81 | 3.31 | 0.89 | 1.07 | -0.37 | 1.30 |
| IDEQ | 19-May-94 | 15.13 | 19 | 1.5 | 2.72 | 2.94 | 0.44 | 0.87 | -0.96 | 0.26 |
| IDEQ | 7-Jun-94 | 10 | 24 | 1.3 | 2.30 | 3.18 | 0.26 | 0.14 | -0.60 | -0.04 |
| IDEQ | 23-Jun-94 | 5.45 | 27 | 0.8 | 1.70 | 3.30 | -0.23 | -0.51 | -0.39 | -0.63 |
| IDEQ | 20-Jul-94 | 4.11 | 33 | 0.7 | 1.41 | 3.50 | -0.32 | -0.70 | 0.04 | -0.70 |
| IDEQ | 20-Jul-94 | 3.15 | 33 | 0.6 | 1.15 | 3.50 | -0.58 | -0.84 | 0.04 | -0.90 |
| IDEQ | 15-Aug-94 | 3.89 | 38 | 0.8 | 1.36 | 3.64 | -0.23 | -0.73 | 0.40 | -0.62 |
| IDEQ | 15-Aug-94 | 12.31 | 38 | 2.5 | 2.51 | 3.64 | 0.92 | 0.47 | 0.40 | 1.40 |
| IDEQ | 8-Sep-94 | 3.29 | 38 | 0.7 | 1.19 | 3.64 | -0.40 | -0.82 | 0.40 | -0.77 |
| IDEQ | 4-Oct-94 | 3.29 | 38 | 0.7 | 1.19 | 3.64 | -0.40 | -0.82 | 0.40 | -0.77 |
| IDEQ | 15-Nov-94 | 3.57 | 50 | 1.0 | 1.27 | 3.91 | -0.04 | -0.78 | 1.26 | -0.43 |
| IDEQ | 13-Dec-94 | 3.57 | 55 | 1.1 | 1.27 | 4.01 | 0.05 | -0.78 | 1.62 | -0.32 |
| IDEQ | 9-Feb-95 | 5.61 | 55 | 1.7 | 1.72 | 4.01 | 0.51 | -0.49 | 1.62 | 0.39 |
| IDEQ | 22-Mar-95 | 14.68 | 48 | 3.8 | 2.69 | 3.87 | 1.33 | 0.81 | 1.12 | 2.90 |
| IDEQ | 13-Apr-95 | 10 | 47 | 2.5 | 2.30 | 3.85 | 0.93 | 0.14 | 1.04 | 1.42 |
| IDEQ | 25-Apr-95 | 7.26 | 44 | 1.7 | 1.98 | 3.78 | 0.54 | -0.25 | 0.83 | 0.46 |
| IDEQ | 9-May-95 | 20.44 | 19 | 2.1 | 3.02 | 2.94 | 0.74 | 1.63 | -0.96 | 0.90 |
| IDEQ | 23-May-95 | 29.49 | 14 | 2.2 | 3.38 | 2.64 | 0.80 | 2.92 | -1.32 | 1.06 |
| IDEQ | 12-Jun-95 | 7.69 | 14 | 0.6 | 2.04 | 2.64 | -0.55 | -0.19 | -1.32 | -0.88 |
| IDEQ | 27-Jun-95 | 6.47 | 22 | 0.8 | 1.87 | 3.09 | -0.27 | -0.37 | -0.74 | -0.66 |
| IDEQ | 11-Jul-95 | 4.23 | 22 | 0.5 | 1.44 | 3.09 | -0.69 | -0.69 | -0.74 | -0.97 |
| IDEQ | 25-Jul-95 | 3.68 | 28 | 0.6 | 1.30 | 3.33 | -0.59 | -0.76 | -0.32 | -0.91 |
| IDEQ | 18-Oct-95 | 5.01 | 45 | 1.2 | 1.61 | 3.81 | 0.19 | -0.57 | 0.90 | -0.13 |
| IDEQ | 21-Nov-95 | 13.4 | 28 | 2.0 | 2.60 | 3.33 | 0.70 | 0.62 | -0.32 | 0.82 |
| IDEQ | 27-Dec-95 | 10.9 | 38 | 2.2 | 2.39 | 3.64 | 0.80 | 0.27 | 0.40 | 1.06 |
| IDEQ | 17-Jan-96 | 6.86 | 40 | 1.5 | 1.93 | 3.69 | 0.39 | -0.31 | 0.54 | 0.18 |
| IDEQ | 28-Mar-96 | 8.39 | 27 | 1.2 | 2.13 | 3.30 | 0.20 | -0.09 | -0.39 | -0.12 |
| IDEQ | 8-May-96 | 15.1 | 26 | 2.1 | 2.71 | 3.26 | 0.75 | 0.87 | -0.46 | 0.93 |
| IDEQ | 19-Jun-96 | 19.2 | 12 | 1.2 | 2.95 | 2.48 | 0.21 | 1.45 | -1.46 | -0.10 |
| IDEQ | 24-Jul-96 | 5.01 | 23 | 0.6 | 1.61 | 3.14 | -0.48 | -0.57 | -0.67 | -0.83 |
| IDEQ | 21-Aug-96 | 4.6 | 29 | 0.7 | 1.53 | 3.37 | -0.33 | -0.63 | -0.24 | -0.71 |
| IDEQ | 27-Nov-96 | 3.11 | 42 | 0.7 | 1.13 | 3.74 | -0.35 | -0.85 | 0.69 | -0.73 |
| IDEQ | 13-Dec-96 | 16.1 | 41 | 3.6 | 2.78 | 3.71 | 1.27 | 1.01 | 0.61 | 2.62 |
| IDEQ | 30-Jan-97 | 3.68 | 42 | 0.8 | 1.30 | 3.74 | -0.18 | -0.76 | 0.69 | -0.58 |
| IDEQ | 19-Feb-97 | 5.01 | 37 | 1.0 | 1.61 | 3.61 | 0.00 | -0.57 | 0.33 | -0.39 |
| IDEQ | 26-Mar-97 | 11.9 | 40 | 2.6 | 2.48 | 3.69 | 0.94 | 0.41 | 0.54 | 1.45 |
| IDEQ | 16-Apr-97 | 7.48 | 33 | 1.3 | 2.01 | 3.50 | 0.28 | -0.22 | 0.04 | 0.00 |
| IDEQ | 24-Jun-97 | 12.3 | 8.5 | 0.6 | 2.51 | 2.14 | -0.58 | 0.47 | -1.71 | -0.90 |
| IDEQ | 23-Jul-97 | 7.06 | 15 | 0.6 | 1.95 | 2.71 | -0.56 | -0.28 | -1.24 | -0.89 |
| URS | 12-Nov-97 | 4.15 | 38 | 0.8 | 1.42 | 3.64 | -0.16 | -0.70 | 0.40 | -0.56 |
| IDEQ | 26-Nov-97 | 3.2 | 34 | 0.6 | 1.16 | 3.53 | -0.54 | -0.83 | 0.11 | -0.87 |
| IDEQ | 17-Dec-97 | 3.38 | 36 | 0.7 | 1.22 | 3.58 | -0.42 | -0.81 | 0.26 | -0.79 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 25-Feb-98 | 7.48 | 33 | 1.3 | 2.01 | 3.50 | 0.28 | -0.22 | 0.04 | 0.00 |
| IDEQ | 20-Mar-98 | 4.73 | 32 | 0.8 | 1.55 | 3.47 | -0.21 | -0.61 | -0.03 | -0.60 |
| URS | 16-May-98 | 28 | 10 | 1.5 | 3.33 | 2.30 | 0.41 | 2.71 | -1.60 | 0.21 |
| IDEQ | 26-Jun-98 | 12.3 | 19 | 1.3 | 2.51 | 2.94 | 0.23 | 0.47 | -0.96 | -0.08 |
| IDEQ | 28-Jul-98 | 4.11 | 27 | 0.6 | 1.41 | 3.30 | -0.52 | -0.70 | -0.39 | -0.86 |
| IDEQ | 24-Sep-98 | 3.38 | 29 | 0.5 | 1.22 | 3.37 | -0.64 | -0.81 | -0.24 | -0.94 |
| IDEQ | 8-Oct-98 | 3.29 | 34 | 0.6 | 1.19 | 3.53 | -0.51 | -0.82 | 0.11 | -0.85 |
| URS | 6-Dec-98 | 3.86 | 91.1 | 1.9 | 1.35 | 4.51 | 0.64 | -0.74 | 4.20 | 0.67 |

tCd

**Concentration over time analysis**

| tCd NM296 | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| **LnConc.=mTime+b All data r2, m:** | | | | **0.007** | **0.00007** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 3.26 | 26 | | |
| mid: | 21-Nov-95 | 3.37 | 29 | | |
| last: | 6-Dec-98 | 3.45 | 31 | | |
| **LnConc.=mTime+b >'96 r2, m:** | | | | **0.000** | **0.00000** |
| | 28-Jul-98 | 0.00 | 1 | | |
| | 6-Dec-98 | 0.00 | 1 | | |

**Load over time analysis**

| tCd NM296 | | | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| **LnLoad=mTime+b All data r2, m:** | | | | **0.005** | **-0.00007** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | 0.22 | 1 | | |
| mid: | 21-Nov-95 | 0.10 | 1 | | |
| last: | 6-Dec-98 | 0.02 | 1 | | |
| **LnLoad=mTime+b >'96 r2, m:** | | | | **0.000** | **0.00000** |
| | 28-Jul-98 | 0.00 | 1 | | |
| | 6-Dec-98 | 0.00 | 1 | | |

| max r2: 0.909 | | | max r2: 0.146 | | |
|---|---|---|---|---|---|
| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points: delete last 4 rows | | | only on >4 data points. delete last 4 rows | | |
| 0.007 | 0.00007 | 1.01 | 0.005 | -0.00007 | 2.66 |
| 0.007 | -0.00006 | 5.69 | 0.005 | -0.00007 | 2.66 |
| 0.007 | -0.00007 | 5.97 | 0.056 | -0.00026 | 9.39 |
| 0.006 | -0.00007 | 5.71 | 0.036 | -0.00021 | 7.40 |
| 0.007 | -0.00007 | 5.99 | 0.025 | -0.00017 | 6.10 |
| 0.013 | -0.00010 | 7.07 | 0.020 | -0.00016 | 5.61 |
| 0.018 | -0.00012 | 7.74 | 0.018 | -0.00015 | 5.46 |
| 0.021 | -0.00014 | 8.21 | 0.024 | -0.00018 | 6.41 |
| 0.020 | -0.00014 | 8.25 | 0.034 | -0.00021 | 7.63 |
| 0.020 | -0.00014 | 8.29 | 0.053 | -0.00027 | 9.70 |
| 0.016 | -0.00013 | 7.96 | 0.067 | -0.00031 | 11.08 |
| 0.013 | -0.00012 | 7.57 | 0.048 | -0.00026 | 9.40 |
| 0.010 | -0.00011 | 7.12 | 0.068 | -0.00032 | 11.41 |
| 0.007 | -0.00009 | 6.60 | 0.093 | -0.00038 | 13.68 |
| 0.002 | -0.00005 | 5.12 | 0.106 | -0.00042 | 15.01 |
| 0.000 | 0.00001 | 3.11 | 0.116 | -0.00045 | 16.17 |
| 0.004 | 0.00007 | 0.93 | 0.106 | -0.00044 | 15.83 |
| 0.012 | 0.00012 | -1.01 | 0.072 | -0.00035 | 12.57 |
| 0.025 | 0.00018 | -3.14 | 0.049 | -0.00029 | 10.26 |
| 0.044 | 0.00024 | -5.38 | 0.036 | -0.00025 | 9.04 |
| 0.034 | 0.00022 | -4.51 | 0.020 | -0.00019 | 6.76 |
| 0.016 | 0.00015 | -2.08 | 0.006 | -0.00011 | 3.75 |
| 0.003 | 0.00007 | 0.87 | 0.019 | -0.00019 | 6.70 |
| 0.001 | 0.00004 | 2.07 | 0.030 | -0.00025 | 8.81 |
| 0.000 | -0.00001 | 3.58 | 0.072 | -0.00039 | 14.03 |
| 0.000 | -0.00001 | 3.89 | 0.138 | -0.00056 | 20.06 |
| 0.002 | 0.00007 | 0.98 | 0.142 | -0.00060 | 21.36 |
| 0.002 | 0.00007 | 0.91 | 0.107 | -0.00053 | 19.02 |
| 0.008 | 0.00014 | -1.67 | 0.065 | -0.00042 | 15.09 |
| 0.022 | 0.00025 | -5.56 | 0.048 | -0.00038 | 13.62 |
| 0.023 | 0.00027 | -6.37 | 0.041 | -0.00038 | 13.41 |
| 0.022 | 0.00029 | -6.89 | 0.012 | -0.00020 | 7.14 |
| 0.001 | 0.00005 | 1.55 | 0.005 | -0.00014 | 5.06 |
| 0.000 | -0.00003 | 4.47 | 0.022 | -0.00032 | 11.24 |
| 0.000 | -0.00005 | 5.06 | 0.047 | -0.00050 | 17.66 |
| 0.001 | 0.00008 | 0.34 | 0.082 | -0.00069 | 24.82 |
| 0.011 | 0.00026 | -5.98 | 0.009 | -0.00020 | 7.08 |
| 0.035 | 0.00050 | -14.70 | 0.015 | -0.00028 | 10.07 |
| 0.071 | 0.00078 | -24.79 | 0.013 | -0.00029 | 10.34 |
| 0.152 | 0.00125 | -41.68 | 0.031 | 0.00041 | -15.03 |
| 0.257 | 0.00187 | -63.71 | 0.146 | 0.00100 | -35.92 |
| 0.108 | 0.00116 | -38.38 | 0.093 | 0.00088 | -31.63 |
| 0.024 | 0.00061 | -18.50 | 0.035 | 0.00062 | -22.31 |
| 0.059 | 0.00105 | -34.35 | 0.038 | 0.00072 | -26.09 |
| 0.109 | 0.00165 | -56.02 | 0.002 | 0.00020 | -7.34 |

| | | | | | |
|---|---|---|---|---|---|
| 0.256 | 0.00312 | -108.99 | 0.020 | -0.00070 | 25.03 |
| 0.445 | 0.00492 | -173.83 | 0.000 | 0.00003 | -1.20 |
| 0.909 | 0.00926 | -330.26 | 0.007 | -0.00062 | 22.22 |
| 0.843 | 0.00849 | -302.41 | 0.074 | 0.00240 | -86.75 |

update for EV, CV:

**tCd** NM296
**LN Analysis** tCd

**Load** **Load Data, EV=1.32 lbs/day CV=0.641**

| | | Load Data-based LN | | |
|---|---|---|---|---|
| **Avg:** | **1** | u | ln tCd Load | tCd Load |
| **SD:** | **1** | 3 | 1.9 | 6 |
| **CV:** | **0.64** | 0 | 0.11 | 1 |
| **Min:** | **0.2** | -3 | -1.65 | 0.2 |
| **Max:** | **4** | | | |
| **Median:** | **1** | | | |

| | |
|---|---|
| 1 | 1.32 |
| 0.64 | 0.641 |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **r2=0.964, EV=1.35lbs/day CV=0.703; max r2=0.98**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.964 | u | lnLoad | Load | |
| slope, m: | 1.578 | 3 | 2.00 | 7 | |
| intercept, b: | -0.151 | 0 | 0.10 | 1 | |
| N: | 53 | -3 | -1.81 | 0.2 | |
| E[Load]: | 1.3 | Parameter Estimates | | | 0.964 |
| SD[Load]: | 1 | from LN regression | | | 1.3 |
| CV[Load]: | 0.70 | update graph label | | | 0.7 |
| | | | | | max r2 |
| | N: 53 | | | | 0.981 |

| Date | tCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 0.2 | 1 | 0.0117 | -2.266 | -1.393 | 0.964 |
| 11-Jul-95 | 0.5 | 2 | 0.0305 | -1.873 | -0.692 | 0.960 |
| 24-Sep-98 | 0.5 | 3 | 0.0493 | -1.652 | -0.640 | 0.966 |
| 25-Jul-95 | 0.6 | 4 | 0.0681 | -1.490 | -0.590 | 0.971 |
| 20-Jul-94 | 0.6 | 5 | 0.0869 | -1.360 | -0.581 | 0.975 |
| 24-Jun-97 | 0.6 | 6 | 0.1056 | -1.250 | -0.575 | 0.978 |
| 23-Jul-97 | 0.6 | 7 | 0.1244 | -1.153 | -0.563 | 0.980 |
| 12-Jun-95 | 0.6 | 8 | 0.1432 | -1.066 | -0.546 | 0.980 |
| 26-Nov-97 | 0.6 | 9 | 0.1620 | -0.986 | -0.536 | 0.981 |
| 28-Jul-98 | 0.6 | 10 | 0.1808 | -0.913 | -0.516 | 0.980 |
| 8-Oct-98 | 0.6 | 11 | 0.1995 | -0.843 | -0.508 | 0.980 |
| 24-Jul-96 | 0.6 | 12 | 0.2183 | -0.778 | -0.478 | 0.978 |
| 17-Dec-97 | 0.7 | 13 | 0.2371 | -0.716 | -0.424 | 0.977 |
| 8-Sep-94 | 0.7 | 14 | 0.2559 | -0.656 | -0.397 | 0.976 |
| 4-Oct-94 | 0.7 | 15 | 0.2746 | -0.599 | -0.397 | 0.975 |
| 27-Nov-96 | 0.7 | 16 | 0.2934 | -0.543 | -0.353 | 0.973 |
| 21-Aug-96 | 0.7 | 17 | 0.3122 | -0.490 | -0.332 | 0.972 |
| 20-Jul-94 | 0.7 | 18 | 0.3310 | -0.437 | -0.315 | 0.970 |
| 27-Jun-95 | 0.8 | 19 | 0.3498 | -0.386 | -0.267 | 0.968 |
| 23-Jun-94 | 0.8 | 20 | 0.3685 | -0.336 | -0.234 | 0.967 |
| 15-Aug-94 | 0.8 | 21 | 0.3873 | -0.286 | -0.229 | 0.965 |
| 20-Mar-98 | 0.8 | 22 | 0.4061 | -0.238 | -0.205 | 0.964 |
| 30-Jan-97 | 0.8 | 23 | 0.4249 | -0.189 | -0.184 | 0.963 |
| 12-Nov-97 | 0.8 | 24 | 0.4437 | -0.142 | -0.164 | 0.964 |
| 15-Nov-94 | 1.0 | 25 | 0.4624 | -0.094 | -0.040 | 0.967 |
| 19-Feb-97 | 1.0 | 26 | 0.4812 | -0.047 | -0.003 | 0.967 |
| 13-Dec-94 | 1.1 | 27 | 0.5000 | 0.000 | 0.055 | 0.966 |
| 18-Oct-95 | 1.2 | 28 | 0.5188 | 0.047 | 0.193 | 0.965 |
| 28-Mar-96 | 1.2 | 29 | 0.5376 | 0.094 | 0.198 | 0.963 |
| 19-Jun-96 | 1.2 | 30 | 0.5563 | 0.142 | 0.215 | 0.960 |
| 16-May-91 | 1.2 | 31 | 0.5751 | 0.189 | 0.221 | 0.957 |
| 26-Jun-98 | 1.3 | 32 | 0.5939 | 0.238 | 0.229 | 0.953 |
| 7-Jun-94 | 1.3 | 33 | 0.6127 | 0.286 | 0.256 | 0.950 |
| 16-Apr-97 | 1.3 | 34 | 0.6315 | 0.336 | 0.284 | 0.947 |
| 25-Feb-98 | 1.3 | 35 | 0.6502 | 0.386 | 0.284 | 0.943 |
| 17-Jan-96 | 1.5 | 36 | 0.6690 | 0.437 | 0.390 | 0.944 |
| 16-May-98 | 1.5 | 37 | 0.6878 | 0.490 | 0.410 | 0.939 |
| 19-May-94 | 1.5 | 38 | 0.7066 | 0.543 | 0.436 | 0.936 |
| 9-Feb-95 | 1.7 | 39 | 0.7254 | 0.599 | 0.507 | 0.934 |
| 25-Apr-95 | 1.7 | 40 | 0.7441 | 0.656 | 0.542 | 0.928 |
| 6-Dec-98 | 1.9 | 41 | 0.7629 | 0.716 | 0.638 | 0.923 |
| 21-Nov-95 | 2.0 | 42 | 0.7817 | 0.778 | 0.702 | 0.912 |
| 9-May-95 | 2.1 | 43 | 0.8005 | 0.843 | 0.737 | 0.900 |
| 8-May-96 | 2.1 | 44 | 0.8192 | 0.913 | 0.748 | 0.888 |
| 23-May-95 | 2.2 | 45 | 0.8380 | 0.986 | 0.798 | 0.868 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 27-Dec-95 | 2.2 | 46 | 0.8568 | 1.066 | 0.801 | 0.846 |
| 3-May-94 | 2.4 | 47 | 0.8756 | 1.153 | 0.888 | 0.808 |
| 15-Aug-94 | 2.5 | 48 | 0.8944 | 1.250 | 0.923 | 0.767 |
| 13-Apr-95 | 2.5 | 49 | 0.9131 | 1.360 | 0.928 | 0.704 |
| 26-Mar-97 | 2.6 | 50 | 0.9319 | 1.490 | 0.940 | |
| 13-Dec-96 | 3.6 | 51 | 0.9507 | 1.652 | 1.267 | |
| 6-Apr-94 | 3.7 | 52 | 0.9695 | 1.873 | 1.315 | |
| 22-Mar-95 | 3.8 | 53 | 0.9883 | 2.266 | 1.333 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **tCd** | | *NM296* | 32 | 32.4 |
| **LN Analysis** | | **tCd** | 0.43 | 0.431 |

**Concentration** — **Conc. Data, EV=32.4 ug/L CV=0.431**

| | | **Data-based LN** | | |
|---|---|---|---|---|
| **Avg:** | **32** | u | ln[tCd] | [tCd] |
| **SD:** | **14** | 3 | 4.6 | 103 |
| **CV:** | **0.43** | 0 | 3.39 | 30 |
| **Min:** | **8** | -3 | 2.15 | 9 |
| **Max:** | **91** | | | |
| **Median:** | **33** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **r2=0.926, EV=33.4 ug/L CV=0.547; max r2=0.96**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.926 | u | lnConc. | Conc. |
| slope, m: | 1.955 | 3 | 4.91 | 136 |
| intercept, b: | -6.602 | 0 | 3.38 | 29 |
| N: | 53 | -3 | 1.84 | 6 |
| E[Conc]: | 33.4 | Parameter Estimates | | |
| SD[Conc]: | 18 | from LN regression | | |
| CV[Conc]: | 0.55 | update graph label | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | 0.926 | 0.926 | |
| | | | | | 33.4 | 33.4 | |
| | | | | | 0.547 | 0.547 | |
| 0.964 | | | | | | | |
| 1.35 | | | | | | | |
| 0.703 | | | | | | | |

| | **tCd** | N: 53 | | | | max r2 0.956 |
|---|---|---|---|---|---|---|
| **Date** | **Concentration ug/L Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | **r2 forward** |
| update and rank for new data | | | | | | |
| 16-May-91 | 7.5 | 1 | 0.0117 | -2.266 | 2.015 | 0.926 |
| 24-Jun-97 | 8.5 | 2 | 0.0305 | -1.873 | 2.140 | 0.922 |
| 16-May-98 | 10 | 3 | 0.0493 | -1.652 | 2.303 | 0.926 |
| 19-Jun-96 | 12 | 4 | 0.0681 | -1.490 | 2.485 | 0.932 |
| 23-May-95 | 14 | 5 | 0.0869 | -1.360 | 2.639 | 0.936 |
| 12-Jun-95 | 14 | 6 | 0.1056 | -1.250 | 2.639 | 0.937 |
| 23-Jul-97 | 15 | 7 | 0.1244 | -1.153 | 2.708 | 0.944 |
| 19-May-94 | 19 | 8 | 0.1432 | -1.066 | 2.944 | 0.954 |
| 9-May-95 | 19 | 9 | 0.1620 | -0.986 | 2.944 | 0.952 |
| 26-Jun-98 | 19 | 10 | 0.1808 | -0.913 | 2.944 | 0.952 |
| 27-Jun-95 | 22 | 11 | 0.1995 | -0.843 | 3.091 | 0.956 |
| 11-Jul-95 | 22 | 12 | 0.2183 | -0.778 | 3.091 | 0.953 |
| 24-Jul-96 | 23 | 13 | 0.2371 | -0.716 | 3.135 | 0.952 |
| 7-Jun-94 | 24 | 14 | 0.2559 | -0.656 | 3.178 | 0.950 |
| 8-May-96 | 26 | 15 | 0.2746 | -0.599 | 3.258 | 0.947 |
| 23-Jun-94 | 27 | 16 | 0.2934 | -0.543 | 3.296 | 0.945 |
| 28-Mar-96 | 27 | 17 | 0.3122 | -0.490 | 3.296 | 0.942 |
| 28-Jul-98 | 27 | 18 | 0.3310 | -0.437 | 3.296 | 0.939 |
| 3-May-94 | 27.3 | 19 | 0.3498 | -0.386 | 3.307 | 0.935 |
| 25-Jul-95 | 28 | 20 | 0.3685 | -0.336 | 3.332 | 0.931 |
| 21-Nov-95 | 28 | 21 | 0.3873 | -0.286 | 3.332 | 0.927 |
| 21-Aug-96 | 29 | 22 | 0.4061 | -0.238 | 3.367 | 0.922 |
| 24-Sep-98 | 29 | 23 | 0.4249 | -0.189 | 3.367 | 0.917 |
| 4-Oct-91 | 31.2 | 24 | 0.4437 | -0.142 | 3.440 | 0.912 |
| 20-Mar-98 | 32 | 25 | 0.4624 | -0.094 | 3.466 | 0.908 |
| 20-Jul-94 | 33 | 26 | 0.4812 | -0.047 | 3.497 | 0.904 |
| 20-Jul-94 | 33 | 27 | 0.5000 | 0.000 | 3.497 | 0.903 |
| 16-Apr-97 | 33 | 28 | 0.5188 | 0.047 | 3.497 | 0.900 |
| 25-Feb-98 | 33 | 29 | 0.5376 | 0.094 | 3.497 | 0.896 |
| 26-Nov-97 | 34 | 30 | 0.5563 | 0.142 | 3.526 | 0.890 |
| 8-Oct-98 | 34 | 31 | 0.5751 | 0.189 | 3.526 | 0.885 |
| 6-Apr-94 | 36 | 32 | 0.5939 | 0.238 | 3.584 | 0.878 |
| 17-Dec-97 | 36 | 33 | 0.6127 | 0.286 | 3.584 | 0.878 |
| 19-Feb-97 | 37 | 34 | 0.6315 | 0.336 | 3.611 | 0.876 |
| 15-Aug-94 | 38 | 35 | 0.6502 | 0.386 | 3.638 | 0.878 |
| 15-Aug-94 | 38 | 36 | 0.6690 | 0.437 | 3.638 | 0.884 |
| 8-Sep-94 | 38 | 37 | 0.6878 | 0.490 | 3.638 | 0.889 |
| 4-Oct-94 | 38 | 38 | 0.7066 | 0.543 | 3.638 | 0.892 |
| 27-Dec-95 | 38 | 39 | 0.7254 | 0.599 | 3.638 | 0.892 |
| 12-Nov-97 | 38 | 40 | 0.7441 | 0.656 | 3.638 | 0.889 |
| 17-Jan-96 | 40 | 41 | 0.7629 | 0.716 | 3.689 | 0.881 |
| 26-Mar-97 | 40 | 42 | 0.7817 | 0.778 | 3.689 | 0.883 |
| 13-Dec-96 | 41 | 43 | 0.8005 | 0.843 | 3.714 | 0.879 |
| 27-Nov-96 | 42 | 44 | 0.8192 | 0.913 | 3.738 | 0.876 |
| 30-Jan-97 | 42 | 45 | 0.8380 | 0.986 | 3.738 | 0.876 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25-Apr-95 | 44 | 46 | 0.8568 | 1.066 | 3.784 | 0.867 |
| 18-Oct-95 | 45 | 47 | 0.8756 | 1.153 | 3.807 | 0.865 |
| 13-Apr-95 | 47 | 48 | 0.8944 | 1.250 | 3.850 | 0.862 |
| 22-Mar-95 | 48 | 49 | 0.9131 | 1.360 | 3.871 | 0.872 |
| 15-Nov-94 | 50 | 50 | 0.9319 | 1.490 | 3.912 | |
| 13-Dec-94 | 55 | 51 | 0.9507 | 1.652 | 4.007 | |
| 9-Feb-95 | 55 | 52 | 0.9695 | 1.873 | 4.007 | |
| 6-Dec-98 | 91.1 | 53 | 0.9883 | 2.266 | 4.512 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **NM296** | | | 9 | 9.03 |
| **LN Analysis** | | **tCd** | | | 0.78 | 0.775 |
| **Discharge, Q** | | **Q Data, EV=9.03 cfs CV=0.775** | | | | |
| **Avg:** | **9** | **Q Data-based LN** | | | | |
| **SD:** | **7** | u | lnQ | Q | | |
| **CV:** | **0.78** | 3 | 4.0 | 56 | | |
| **Min:** | **1** | 0 | 1.96 | 7 | | |
| **Max:** | **31** | -3 | -0.09 | 1 | | |
| **Median:** | **6** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.950 | 0.95 |
| | | | | 9.2 | 9.19 |
| **u=mLn(Q)+b:** | | | | 0.85 | 0.854 |
| update for r2, EV, CV: | **r2=0.95, EV=9.19 cfs CV=0.854; max r2=0.98** | | | | |
| r2 u,lnQ: | 0.950 | u | lnQ | Q | |
| slope, m: | 1.351 | 3 | 4.16 | 64 | |
| intercept, b: | -2.626 | 0 | 1.94 | 7 | |
| N: | 53 | -3 | -0.28 | 1 | |
| E[Q]: | 9.2 | Parameter Estimates | | | |
| SD[Q]: | 8 | from LN regression | | | |
| CV[Q]: | 0.85 | update graph label | | | |

| | | | | | | max r2 |
|---|---|---|---|---|---|---|
| | **Q** | N: 53 | | | | 0.979 |
| | **Discharge** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **cfs** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.48 | 1 | 0.0117 | -2.266 | 0.392 | 0.950 |
| 27-Nov-96 | 3.11 | 2 | 0.0305 | -1.873 | 1.135 | 0.945 |
| 20-Jul-94 | 3.15 | 3 | 0.0493 | -1.652 | 1.147 | 0.956 |
| 26-Nov-97 | 3.2 | 4 | 0.0681 | -1.490 | 1.163 | 0.963 |
| 8-Sep-94 | 3.29 | 5 | 0.0869 | -1.360 | 1.191 | 0.969 |
| 4-Oct-94 | 3.29 | 6 | 0.1056 | -1.250 | 1.191 | 0.973 |
| 8-Oct-98 | 3.29 | 7 | 0.1244 | -1.153 | 1.191 | 0.976 |
| 17-Dec-97 | 3.38 | 8 | 0.1432 | -1.066 | 1.218 | 0.977 |
| 24-Sep-98 | 3.38 | 9 | 0.1620 | -0.986 | 1.218 | 0.979 |
| 15-Nov-94 | 3.57 | 10 | 0.1808 | -0.913 | 1.273 | 0.979 |
| 13-Dec-94 | 3.57 | 11 | 0.1995 | -0.843 | 1.273 | 0.979 |
| 25-Jul-95 | 3.68 | 12 | 0.2183 | -0.778 | 1.303 | 0.979 |
| 30-Jan-97 | 3.68 | 13 | 0.2371 | -0.716 | 1.303 | 0.979 |
| 6-Dec-98 | 3.86 | 14 | 0.2559 | -0.656 | 1.351 | 0.978 |
| 15-Aug-94 | 3.89 | 15 | 0.2746 | -0.599 | 1.358 | 0.976 |
| 20-Jul-94 | 4.11 | 16 | 0.2934 | -0.543 | 1.413 | 0.975 |
| 28-Jul-98 | 4.11 | 17 | 0.3122 | -0.490 | 1.413 | 0.974 |
| 12-Nov-97 | 4.15 | 18 | 0.3310 | -0.437 | 1.423 | 0.972 |
| 11-Jul-95 | 4.23 | 19 | 0.3498 | -0.386 | 1.442 | 0.971 |
| 21-Aug-96 | 4.6 | 20 | 0.3685 | -0.336 | 1.526 | 0.969 |
| 20-Mar-98 | 4.73 | 21 | 0.3873 | -0.286 | 1.554 | 0.967 |
| 18-Oct-95 | 5.01 | 22 | 0.4061 | -0.238 | 1.611 | 0.966 |
| 24-Jul-96 | 5.01 | 23 | 0.4249 | -0.189 | 1.611 | 0.964 |
| 19-Feb-97 | 5.01 | 24 | 0.4437 | -0.142 | 1.611 | 0.963 |
| 23-Jun-94 | 5.45 | 25 | 0.4624 | -0.094 | 1.696 | 0.963 |
| 9-Feb-95 | 5.61 | 26 | 0.4812 | -0.047 | 1.725 | 0.963 |
| 27-Jun-95 | 6.47 | 27 | 0.5000 | 0.000 | 1.867 | 0.964 |
| 17-Jan-96 | 6.86 | 28 | 0.5188 | 0.047 | 1.926 | 0.962 |
| 23-Jul-97 | 7.06 | 29 | 0.5376 | 0.094 | 1.954 | 0.959 |
| 25-Apr-95 | 7.26 | 30 | 0.5563 | 0.142 | 1.982 | 0.957 |
| 16-Apr-97 | 7.48 | 31 | 0.5751 | 0.189 | 2.012 | 0.954 |
| 25-Feb-98 | 7.48 | 32 | 0.5939 | 0.238 | 2.012 | 0.953 |
| 12-Jun-95 | 7.69 | 33 | 0.6127 | 0.286 | 2.040 | 0.955 |
| 28-Mar-96 | 8.39 | 34 | 0.6315 | 0.336 | 2.127 | 0.961 |
| 7-Jun-94 | 10 | 35 | 0.6502 | 0.386 | 2.303 | 0.967 |
| 13-Apr-95 | 10 | 36 | 0.6690 | 0.437 | 2.303 | 0.964 |
| 27-Dec-95 | 10.9 | 37 | 0.6878 | 0.490 | 2.389 | 0.962 |
| 26-Mar-97 | 11.9 | 38 | 0.7066 | 0.543 | 2.477 | 0.959 |
| 24-Jun-97 | 12.3 | 39 | 0.7254 | 0.599 | 2.510 | 0.955 |
| 26-Jun-98 | 12.3 | 40 | 0.7441 | 0.656 | 2.510 | 0.950 |
| 15-Aug-94 | 12.31 | 41 | 0.7629 | 0.716 | 2.510 | 0.944 |
| 21-Nov-95 | 13.4 | 42 | 0.7817 | 0.778 | 2.595 | 0.937 |
| 22-Mar-95 | 14.68 | 43 | 0.8005 | 0.843 | 2.686 | 0.928 |
| 8-May-96 | 15.1 | 44 | 0.8192 | 0.913 | 2.715 | 0.918 |
| 19-May-94 | 15.13 | 45 | 0.8380 | 0.986 | 2.717 | 0.905 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 13-Dec-96 | 16.1 | 46 | 0.8568 | 1.066 | 2.779 | 0.885 |
| 3-May-94 | 16.55 | 47 | 0.8756 | 1.153 | 2.806 | 0.856 |
| 19-Jun-96 | 19.2 | 48 | 0.8944 | 1.250 | 2.955 | 0.816 |
| 6-Apr-94 | 19.24 | 49 | 0.9131 | 1.360 | 2.957 | 0.759 |
| 9-May-95 | 20.44 | 50 | 0.9319 | 1.490 | 3.017 | |
| 16-May-98 | 28 | 51 | 0.9507 | 1.652 | 3.332 | |
| 23-May-95 | 29.49 | 52 | 0.9695 | 1.873 | 3.384 | |
| 16-May-91 | 30.9 | 53 | 0.9883 | 2.266 | 3.431 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | see comment |
|---|---|
| **Station:** NM296 | **Date:** 13-Jun-00 |
| **Chemical:** tPb | **Analyst:** J.MacLachlan |
| **Notes:** | |
| Input Discharge and Concentration Data below (in red) | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,108 | 9 | 90 | 4 | 0.00 | 0.00 | 0.00 |
| **SD:** | 612 | 7 | 42 | 3 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.76 | 0.46 | 0.70 | | | |
| **Min:** | 33,374 | 1 | 24 | 0.8 | -1.09 | -1.60 | -1.11 |
| **Max:** | 36,135 | 31 | 193 | 12 | 3.14 | 2.46 | 3.37 |
| **Median:** | 35,042 | 7 | 80 | 3 | -0.35 | -0.24 | -0.31 |

| tPb NM296 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.208)** | | update r2 | 0.21 | 0.208 | r2: | 0.037 | 0.009 |
| r2 Q,[COC]: | 0.21 | [tPb] | Q | | m: | -0.0022 | -0.00011 |
| slope, m: | -2.7 | 111 | 1.5 | | b: | 86 | 5.85 |
| intercept, b: | 115.3 | 90 | 9.1 | | | | |
| N: 54 | | 31 | 31 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.294)** | | update r2 | 0.29 | 0.294 | | | |
| r2 lnQ,ln[COC]: | 0.29 | ln[tPb] | ln Q | [tPb] | Q | | |
| slope, m: | -0.38 | 4.99 | 0.39 | 146 | 1 | | |
| intercept, b: | 5.14 | 4.30 | 2.21 | 73 | 9 | | |
| N: 54 | | 3.83 | 3.43 | 46 | 31 | | |

**N= 54**

| | Sampling Date | Q Discharge cfs | tPb Concentration ug/L | tPb Load lbs/day | Ln Q | Ln tPb Conc. | Ln tPb Load | tPb NM296 Standardized Values = (x - Avg)/SD Q | for graph 0 Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 30.9 | 24 | 4.0 | 3.43 | 3.18 | 1.38 | 3.14 | -1.60 | 0.11 |
| MFG | 4-Oct-91 | 1.48 | 106 | 0.8 | 0.39 | 4.66 | -0.17 | -1.09 | 0.37 | -1.11 |
| IDEQ | 6-Apr-94 | 19.24 | 120 | 12.4 | 2.96 | 4.79 | 2.52 | 1.46 | 0.71 | 3.37 |
| IDEQ | 3-May-94 | 16.55 | 78.3 | 7.0 | 2.81 | 4.36 | 1.94 | 1.07 | -0.29 | 1.26 |
| IDEQ | 19-May-94 | 15.13 | 63 | 5.1 | 2.72 | 4.14 | 1.63 | 0.87 | -0.66 | 0.55 |
| IDEQ | 7-Jun-94 | 10 | 88 | 4.7 | 2.30 | 4.48 | 1.55 | 0.13 | -0.06 | 0.40 |
| IDEQ | 23-Jun-94 | 5.45 | 94 | 2.8 | 1.70 | 4.54 | 1.01 | -0.52 | 0.09 | -0.37 |
| IDEQ | 20-Jul-94 | 4.11 | 143 | 3.2 | 1.41 | 4.96 | 1.15 | -0.72 | 1.26 | -0.21 |
| IDEQ | 20-Jul-94 | 3.15 | 143 | 2.4 | 1.15 | 4.96 | 0.89 | -0.85 | 1.26 | -0.50 |
| IDEQ | 15-Aug-94 | 3.89 | 153 | 3.2 | 1.36 | 5.03 | 1.16 | -0.75 | 1.50 | -0.20 |
| IDEQ | 15-Aug-94 | 12.31 | 153 | 10.1 | 2.51 | 5.03 | 2.32 | 0.46 | 1.50 | 2.49 |
| IDEQ | 8-Sep-94 | 3.29 | 158 | 2.8 | 1.19 | 5.06 | 1.03 | -0.83 | 1.62 | -0.35 |
| IDEQ | 4-Oct-94 | 3.29 | 158 | 2.8 | 1.19 | 5.06 | 1.03 | -0.83 | 1.62 | -0.35 |
| IDEQ | 15-Nov-94 | 3.57 | 193 | 3.7 | 1.27 | 5.26 | 1.31 | -0.79 | 2.46 | 0.00 |
| IDEQ | 13-Dec-94 | 3.57 | 187 | 3.6 | 1.27 | 5.23 | 1.28 | -0.79 | 2.32 | -0.05 |
| IDEQ | 9-Feb-95 | 5.61 | 137 | 4.1 | 1.72 | 4.92 | 1.42 | -0.50 | 1.12 | 0.16 |
| IDEQ | 22-Mar-95 | 14.68 | 118 | 9.3 | 2.69 | 4.77 | 2.23 | 0.80 | 0.66 | 2.17 |
| IDEQ | 13-Apr-95 | 10 | 100 | 5.4 | 2.30 | 4.61 | 1.68 | 0.13 | 0.23 | 0.65 |
| IDEQ | 25-Apr-95 | 7.26 | 77 | 3.0 | 1.98 | 4.34 | 1.10 | -0.26 | -0.32 | -0.27 |
| IDEQ | 9-May-95 | 20.44 | 82 | 9.0 | 3.02 | 4.41 | 2.20 | 1.63 | -0.20 | 2.06 |
| IDEQ | 23-May-95 | 29.49 | 46 | 7.3 | 3.38 | 3.83 | 1.99 | 2.94 | -1.07 | 1.39 |
| IDEQ | 12-Jun-95 | 7.69 | 46 | 1.9 | 2.04 | 3.83 | 0.64 | -0.20 | -1.07 | -0.70 |
| IDEQ | 27-Jun-95 | 6.47 | 70 | 2.4 | 1.87 | 4.25 | 0.89 | -0.38 | -0.49 | -0.49 |
| IDEQ | 11-Jul-95 | 4.23 | 74 | 1.7 | 1.44 | 4.30 | 0.52 | -0.70 | -0.39 | -0.78 |
| IDEQ | 25-Jul-95 | 3.68 | 85 | 1.7 | 1.30 | 4.44 | 0.52 | -0.78 | -0.13 | -0.79 |
| IDEQ | 18-Oct-95 | 5.01 | 108 | 2.9 | 1.61 | 4.68 | 1.07 | -0.59 | 0.42 | -0.31 |
| IDEQ | 21-Nov-95 | 13.4 | 66 | 4.8 | 2.60 | 4.19 | 1.56 | 0.62 | -0.59 | 0.41 |
| IDEQ | 27-Dec-95 | 10.9 | 69 | 4.0 | 2.39 | 4.23 | 1.40 | 0.26 | -0.51 | 0.13 |
| IDEQ | 17-Jan-96 | 6.86 | 93 | 3.4 | 1.93 | 4.53 | 1.23 | -0.32 | 0.06 | -0.11 |
| IDEQ | 28-Mar-96 | 8.39 | 59 | 2.7 | 2.13 | 4.08 | 0.98 | -0.10 | -0.75 | -0.41 |
| IDEQ | 8-May-96 | 15.1 | 50 | 4.1 | 2.71 | 3.91 | 1.40 | 0.87 | -0.97 | 0.14 |
| IDEQ | 19-Jun-96 | 19.2 | 33 | 3.4 | 2.95 | 3.50 | 1.23 | 1.46 | -1.38 | -0.12 |
| IDEQ | 24-Jul-96 | 5.01 | 70 | 1.9 | 1.61 | 4.25 | 0.63 | -0.59 | -0.49 | -0.71 |
| IDEQ | 21-Aug-96 | 4.6 | 92 | 2.3 | 1.53 | 4.52 | 0.82 | -0.65 | 0.04 | -0.56 |
| IDEQ | 27-Nov-96 | 3.11 | 152 | 2.5 | 1.13 | 5.02 | 0.93 | -0.86 | 1.48 | -0.45 |
| IDEQ | 13-Dec-96 | 16.1 | 134 | 11.6 | 2.78 | 4.90 | 2.45 | 1.01 | 1.05 | 3.06 |
| IDEQ | 30-Jan-97 | 3.68 | 94 | 1.9 | 1.30 | 4.54 | 0.62 | -0.78 | 0.09 | -0.72 |
| IDEQ | 19-Feb-97 | 5.01 | 75 | 2.0 | 1.61 | 4.32 | 0.70 | -0.59 | -0.37 | -0.65 |
| IDEQ | 26-Mar-97 | 11.9 | 84 | 5.4 | 2.48 | 4.43 | 1.68 | 0.40 | -0.15 | 0.65 |
| IDEQ | 16-Apr-97 | 7.48 | 74 | 3.0 | 2.01 | 4.30 | 1.09 | -0.23 | -0.39 | -0.28 |
| IDEQ | 24-Jun-97 | 12.3 | 30 | 2.0 | 2.51 | 3.40 | 0.69 | 0.46 | -1.45 | -0.67 |
| IDEQ | 23-Jul-97 | 7.06 | 42 | 1.6 | 1.95 | 3.74 | 0.47 | -0.29 | -1.16 | -0.82 |
| URS | 12-Nov-97 | 4.15 | 80.5 | 1.8 | 1.42 | 4.39 | 0.59 | -0.71 | -0.24 | -0.74 |
| IDEQ | 26-Nov-97 | 3.2 | 63 | 1.1 | 1.16 | 4.14 | 0.08 | -0.85 | -0.66 | -1.02 |
| IDEQ | 17-Dec-97 | 3.38 | 70 | 1.3 | 1.22 | 4.25 | 0.24 | -0.82 | -0.49 | -0.94 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 25-Feb-98 | 7.48 | 66 | 2.7 | 2.01 | 4.19 | 0.98 | -0.23 | -0.59 | -0.41 |
| IDEQ | 20-Mar-98 | 4.73 | 101 | 2.6 | 1.55 | 4.62 | 0.94 | -0.63 | 0.25 | -0.44 |
| URS | 16-May-98 | 28 | 26.8 | 4.0 | 3.33 | 3.29 | 1.49 | 2.72 | -1.53 | 0.13 |
| IDEQ | 26-Jun-98 | 12.3 | 41 | 2.7 | 2.51 | 3.71 | 1.00 | 0.46 | -1.19 | -0.39 |
| IDEQ | 26-Jun-98 | 12.3 | 44 | 2.9 | 2.51 | 3.78 | 1.07 | 0.46 | -1.11 | -0.31 |
| IDEQ | 28-Jul-98 | 4.11 | 80 | 1.8 | 1.41 | 4.38 | 0.57 | -0.72 | -0.25 | -0.75 |
| IDEQ | 24-Sep-98 | 3.38 | 62 | 1.1 | 1.22 | 4.13 | 0.12 | -0.82 | -0.68 | -1.00 |
| IDEQ | 8-Oct-98 | 3.29 | 67 | 1.2 | 1.19 | 4.20 | 0.17 | -0.83 | -0.56 | -0.98 |
| URS | 6-Dec-98 | 3.86 | 160 | 3.3 | 1.35 | 5.08 | 1.20 | -0.75 | 1.67 | -0.15 |

**tPb**

**Concentration over time analysis**

| | tPb | NM296 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.063** | **-0.00020** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 4.74 | 115 | | |
| mid: | 9-Dec-95 | 4.41 | 82 | | |
| last: | 6-Dec-98 | 4.19 | 66 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.646** | **0.00602** |
| | 26-Jun-98 | 3.85 | 47 | | |
| | 6-Dec-98 | 4.83 | 125 | | |

**Load over time analysis**

| | tPb | NM296 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.102** | **-0.00031** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | 1.66 | 5 | | |
| mid: | 9-Dec-95 | 1.14 | 3 | | |
| last: | 6-Dec-98 | 0.80 | 2 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **-0.00006** |
| | 26-Jun-98 | 0.63 | 2 | | |
| | 6-Dec-98 | 0.62 | 2 | | |

max r2: 0.810

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.063 | -0.00020 | 11.46 |
| 0.196 | -0.00036 | 17.14 |
| 0.204 | -0.00040 | 18.52 |
| 0.194 | -0.00040 | 18.36 |
| 0.204 | -0.00042 | 19.02 |
| 0.229 | -0.00045 | 20.18 |
| 0.235 | -0.00046 | 20.73 |
| 0.238 | -0.00048 | 21.17 |
| 0.220 | -0.00046 | 20.66 |
| 0.201 | -0.00045 | 20.08 |
| 0.179 | -0.00042 | 19.23 |
| 0.154 | -0.00039 | 18.24 |
| 0.128 | -0.00036 | 17.00 |
| 0.101 | -0.00032 | 15.55 |
| 0.068 | -0.00025 | 13.27 |
| 0.038 | -0.00018 | 10.75 |
| 0.020 | -0.00013 | 9.00 |
| 0.010 | -0.00009 | 7.54 |
| 0.004 | -0.00006 | 6.44 |
| 0.003 | -0.00005 | 6.14 |
| 0.001 | -0.00004 | 5.52 |
| 0.007 | -0.00009 | 7.34 |
| 0.019 | -0.00015 | 9.52 |
| 0.021 | -0.00016 | 9.97 |
| 0.020 | -0.00017 | 10.20 |
| 0.014 | -0.00015 | 9.55 |
| 0.004 | -0.00008 | 7.11 |
| 0.005 | -0.00010 | 7.64 |
| 0.005 | -0.00010 | 7.92 |
| 0.001 | -0.00004 | 5.54 |
| 0.002 | -0.00008 | 6.91 |
| 0.010 | -0.00017 | 10.36 |
| 0.061 | -0.00043 | 19.51 |
| 0.072 | -0.00050 | 22.03 |
| 0.057 | -0.00048 | 21.30 |
| 0.014 | -0.00023 | 12.61 |
| 0.001 | 0.00005 | 2.25 |
| 0.015 | 0.00026 | -5.15 |
| 0.034 | 0.00043 | -11.15 |
| 0.089 | 0.00076 | -23.06 |
| 0.171 | 0.00120 | -39.03 |
| 0.069 | 0.00080 | -24.51 |
| 0.020 | 0.00049 | -13.50 |
| 0.054 | 0.00090 | -28.23 |
| 0.069 | 0.00119 | -38.52 |

max r2: 0.251

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.102 | -0.00031 | 12.09 |
| 0.104 | -0.00034 | 13.11 |
| 0.251 | -0.00055 | 20.55 |
| 0.222 | -0.00050 | 18.68 |
| 0.201 | -0.00047 | 17.76 |
| 0.187 | -0.00046 | 17.37 |
| 0.176 | -0.00045 | 17.08 |
| 0.187 | -0.00048 | 17.95 |
| 0.192 | -0.00050 | 18.57 |
| 0.213 | -0.00053 | 19.93 |
| 0.219 | -0.00056 | 20.70 |
| 0.182 | -0.00049 | 18.40 |
| 0.194 | -0.00052 | 19.50 |
| 0.207 | -0.00056 | 20.72 |
| 0.204 | -0.00057 | 21.11 |
| 0.203 | -0.00058 | 21.62 |
| 0.193 | -0.00058 | 21.59 |
| 0.155 | -0.00050 | 18.77 |
| 0.131 | -0.00046 | 17.44 |
| 0.132 | -0.00048 | 18.06 |
| 0.088 | -0.00038 | 14.28 |
| 0.050 | -0.00028 | 10.68 |
| 0.069 | -0.00033 | 12.76 |
| 0.077 | -0.00037 | 13.99 |
| 0.116 | -0.00047 | 17.69 |
| 0.174 | -0.00060 | 22.43 |
| 0.180 | -0.00065 | 23.92 |
| 0.144 | -0.00059 | 22.05 |
| 0.118 | -0.00056 | 20.79 |
| 0.102 | -0.00055 | 20.52 |
| 0.106 | -0.00060 | 22.21 |
| 0.077 | -0.00053 | 19.78 |
| 0.058 | -0.00049 | 18.33 |
| 0.087 | -0.00064 | 23.76 |
| 0.106 | -0.00077 | 28.37 |
| 0.112 | -0.00085 | 31.17 |
| 0.013 | -0.00024 | 9.25 |
| 0.025 | -0.00035 | 13.22 |
| 0.035 | -0.00046 | 17.22 |
| 0.002 | 0.00011 | -3.37 |
| 0.042 | 0.00054 | -18.53 |
| 0.057 | 0.00071 | -24.98 |
| 0.037 | 0.00069 | -24.06 |
| 0.032 | 0.00071 | -24.90 |
| 0.003 | -0.00022 | 8.67 |

| | | | | | |
|---|---|---|---|---|---|
| 0.138 | 0.00207 | -70.47 | 0.156 | -0.00187 | 68.19 |
| 0.210 | 0.00304 | -105.27 | 0.154 | -0.00219 | 79.57 |
| 0.810 | 0.00715 | -253.39 | 0.168 | -0.00289 | 104.96 |
| 0.725 | 0.00643 | -227.32 | 0.027 | -0.00118 | 43.27 |
| 0.646 | 0.00602 | -212.75 | 0.000 | -0.00006 | 2.92 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **tPb** | | **NM296** | | |
| **LN Analysis** | | **tPb** | | |
| **Load** | | **Load Data, EV=3.71 lbs/day CV=0.696** | | |
| **Avg:** | **4** | **Load Data-based LN** | | |
| **SD:** | **3** | u | ln tPb Load | tPb Load |
| **CV:** | **0.70** | 3 | 3.0 | 20 |
| **Min:** | **0.8** | 0 | 1.11 | 3 |
| **Max:** | **12** | -3 | -0.77 | 0.5 |
| **Median:** | **3** | | | |
| | | 4 | 3.71 | |
| | | 0.70 | 0.696 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.979, EV=3.72lbs/day CV=0.686; max r2=0.98**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.979 | u | lnLoad | Load | |
| slope, m: | 1.610 | 3 | 2.99 | 20 | |
| intercept, b: | -1.805 | 0 | 1.12 | 3 | |
| N: | 54 | -3 | -0.74 | 0.5 | |
| E[Load]: | 3.7 | Parameter Estimates | | | 0.979 |
| SD[Load]: | 3 | from LN regression | | | 3.7 |
| CV[Load]: | 0.69 | update graph label | | | 0.7 |
| | | | | | max r2 |
| | | N: 54 | | | 0.979 |

| Date | tPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 0.8 | 1 | 0.0115 | -2.273 | -0.170 | 0.979 |
| 26-Nov-97 | 1.1 | 2 | 0.0300 | -1.881 | 0.081 | 0.977 |
| 24-Sep-98 | 1.1 | 3 | 0.0484 | -1.661 | 0.120 | 0.976 |
| 8-Oct-98 | 1.2 | 4 | 0.0668 | -1.500 | 0.171 | 0.975 |
| 17-Dec-97 | 1.3 | 5 | 0.0853 | -1.371 | 0.241 | 0.973 |
| 23-Jul-97 | 1.6 | 6 | 0.1037 | -1.261 | 0.467 | 0.971 |
| 25-Jul-95 | 1.7 | 7 | 0.1221 | -1.164 | 0.520 | 0.971 |
| 11-Jul-95 | 1.7 | 8 | 0.1406 | -1.078 | 0.521 | 0.971 |
| 28-Jul-98 | 1.8 | 9 | 0.1590 | -0.999 | 0.570 | 0.971 |
| 12-Nov-97 | 1.8 | 10 | 0.1774 | -0.925 | 0.586 | 0.970 |
| 30-Jan-97 | 1.9 | 11 | 0.1959 | -0.857 | 0.621 | 0.970 |
| 24-Jul-96 | 1.9 | 12 | 0.2143 | -0.792 | 0.635 | 0.969 |
| 12-Jun-95 | 1.9 | 13 | 0.2327 | -0.730 | 0.643 | 0.967 |
| 24-Jun-97 | 2.0 | 14 | 0.2512 | -0.671 | 0.686 | 0.966 |
| 19-Feb-97 | 2.0 | 15 | 0.2696 | -0.614 | 0.704 | 0.964 |
| 21-Aug-96 | 2.3 | 16 | 0.2880 | -0.559 | 0.823 | 0.962 |
| 20-Jul-94 | 2.4 | 17 | 0.3065 | -0.506 | 0.885 | 0.962 |
| 27-Jun-95 | 2.4 | 18 | 0.3249 | -0.454 | 0.891 | 0.963 |
| 27-Nov-96 | 2.5 | 19 | 0.3433 | -0.403 | 0.933 | 0.963 |
| 20-Mar-98 | 2.6 | 20 | 0.3618 | -0.354 | 0.944 | 0.965 |
| 25-Feb-98 | 2.7 | 21 | 0.3802 | -0.305 | 0.977 | 0.966 |
| 28-Mar-96 | 2.7 | 22 | 0.3986 | -0.257 | 0.980 | 0.967 |
| 26-Jun-98 | 2.7 | 23 | 0.4171 | -0.209 | 0.998 | 0.968 |
| 23-Jun-94 | 2.8 | 24 | 0.4355 | -0.162 | 1.014 | 0.969 |
| 8-Sep-94 | 2.8 | 25 | 0.4539 | -0.116 | 1.028 | 0.970 |
| 4-Oct-94 | 2.8 | 26 | 0.4724 | -0.069 | 1.028 | 0.970 |
| 18-Oct-95 | 2.9 | 27 | 0.4908 | -0.023 | 1.069 | 0.970 |
| 26-Jun-98 | 2.9 | 28 | 0.5092 | 0.023 | 1.069 | 0.970 |
| 16-Apr-97 | 3.0 | 29 | 0.5276 | 0.069 | 1.091 | 0.969 |
| 25-Apr-95 | 3.0 | 30 | 0.5461 | 0.116 | 1.101 | 0.968 |
| 20-Jul-94 | 3.2 | 31 | 0.5645 | 0.162 | 1.151 | 0.966 |
| 15-Aug-94 | 3.2 | 32 | 0.5829 | 0.209 | 1.164 | 0.965 |
| 6-Dec-98 | 3.3 | 33 | 0.6014 | 0.257 | 1.201 | 0.963 |
| 19-Jun-96 | 3.4 | 34 | 0.6198 | 0.305 | 1.226 | 0.961 |
| 17-Jan-96 | 3.4 | 35 | 0.6382 | 0.354 | 1.233 | 0.958 |
| 13-Dec-94 | 3.6 | 36 | 0.6567 | 0.403 | 1.279 | 0.955 |
| 15-Nov-94 | 3.7 | 37 | 0.6751 | 0.454 | 1.310 | 0.951 |
| 16-May-91 | 4.0 | 38 | 0.6935 | 0.506 | 1.384 | 0.946 |
| 16-May-98 | 4.0 | 39 | 0.7120 | 0.559 | 1.396 | 0.943 |
| 27-Dec-95 | 4.0 | 40 | 0.7304 | 0.614 | 1.398 | 0.938 |
| 8-May-96 | 4.1 | 41 | 0.7488 | 0.671 | 1.402 | 0.931 |
| 9-Feb-95 | 4.1 | 42 | 0.7673 | 0.730 | 1.419 | 0.922 |
| 7-Jun-94 | 4.7 | 43 | 0.7857 | 0.792 | 1.555 | 0.914 |
| 21-Nov-95 | 4.8 | 44 | 0.8041 | 0.857 | 1.560 | 0.901 |
| 19-May-94 | 5.1 | 45 | 0.8226 | 0.925 | 1.635 | 0.886 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 26-Mar-97 | 5.4 | 46 | 0.8410 | 0.999 | 1.682 | 0.866 |
| 13-Apr-95 | 5.4 | 47 | 0.8594 | 1.078 | 1.683 | 0.844 |
| 3-May-94 | 7.0 | 48 | 0.8779 | 1.164 | 1.942 | 0.894 |
| 23-May-95 | 7.3 | 49 | 0.8963 | 1.261 | 1.988 | 0.875 |
| 9-May-95 | 9.0 | 50 | 0.9147 | 1.371 | 2.199 | 0.947 |
| 22-Mar-95 | 9.3 | 51 | 0.9332 | 1.500 | 2.232 | |
| 15-Aug-94 | 10.1 | 52 | 0.9516 | 1.661 | 2.316 | |
| 13-Dec-96 | 11.6 | 53 | 0.9700 | 1.881 | 2.452 | |
| 6-Apr-94 | 12.4 | 54 | 0.9885 | 2.273 | 2.519 | |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tPb** | | NM296 | | 90 | 90.4 |
| **LN Analysis** | | tPb | | 0.46 | 0.46 |

**Concentration**

**Conc. Data, EV=90.4 ug/L CV=0.46**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **90** | **Data-based LN** | | |
| **SD:** | **42** | u | ln[tPb] | [tPb] |
| **CV:** | **0.46** | 3 | 5.7 | 306 |
| **Min:** | **24** | 0 | 4.41 | 82 |
| **Max:** | **193** | -3 | 3.09 | 22 |
| **Median:** | **80** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **r2=0.064, EV=587 ug/L CV=7.2; max r2=0.84**

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.064 | 0.064 |
| | | | | 587.5 | 587 |
| | | | | 7.201 | 7.2 |
| | r2 u,lnConc: | 0.064 | u | lnConc. | Conc. |
| | slope, m: | -0.502 | 3 | -1.58 | 0 |
| | intercept, b: | 2.205 | 0 | 4.39 | 81 |
| | N: | 54 | -3 | 10.37 | 31815 |
| 0.979 | E[Conc] | 587.5 | Parameter Estimates | | |
| 3.72 | SD[Conc]: | 4231 | from LN regression | | |
| 0.686 | CV[Conc]: | 7.20 | update graph label | | |

N: 54

| Date | tPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.840 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-91 | 24 | 1 | 0.0115 | -2.273 | 3.178 | 0.064 |
| 4-Oct-91 | 106 | 2 | 0.0300 | -1.881 | 4.663 | 0.165 |
| 6-Apr-94 | 120 | 3 | 0.0484 | -1.661 | 4.787 | 0.163 |
| 3-May-94 | 78.3 | 4 | 0.0668 | -1.500 | 4.361 | 0.152 |
| 19-May-94 | 63 | 5 | 0.0853 | -1.371 | 4.143 | 0.166 |
| 7-Jun-94 | 88 | 6 | 0.1037 | -1.261 | 4.477 | 0.196 |
| 23-Jun-94 | 94 | 7 | 0.1221 | -1.164 | 4.543 | 0.204 |
| 20-Jul-94 | 143 | 8 | 0.1406 | -1.078 | 4.963 | 0.208 |
| 20-Jul-94 | 143 | 9 | 0.1590 | -0.999 | 4.963 | 0.189 |
| 15-Aug-94 | 153 | 10 | 0.1774 | -0.925 | 5.030 | 0.168 |
| 15-Aug-94 | 153 | 11 | 0.1959 | -0.857 | 5.030 | 0.145 |
| 8-Sep-94 | 158 | 12 | 0.2143 | -0.792 | 5.063 | 0.121 |
| 4-Oct-94 | 158 | 13 | 0.2327 | -0.730 | 5.063 | 0.096 |
| 15-Nov-94 | 193 | 14 | 0.2512 | -0.671 | 5.263 | 0.072 |
| 13-Dec-94 | 187 | 15 | 0.2696 | -0.614 | 5.231 | 0.043 |
| 9-Feb-95 | 137 | 16 | 0.2880 | -0.559 | 4.920 | 0.019 |
| 22-Mar-95 | 118 | 17 | 0.3065 | -0.506 | 4.771 | 0.007 |
| 13-Apr-95 | 100 | 18 | 0.3249 | -0.454 | 4.605 | 0.001 |
| 25-Apr-95 | 77 | 19 | 0.3433 | -0.403 | 4.344 | 0.000 |
| 9-May-95 | 82 | 20 | 0.3618 | -0.354 | 4.407 | 0.000 |
| 23-May-95 | 46 | 21 | 0.3802 | -0.305 | 3.829 | 0.001 |
| 12-Jun-95 | 46 | 22 | 0.3986 | -0.257 | 3.829 | 0.000 |
| 27-Jun-95 | 70 | 23 | 0.4171 | -0.209 | 4.248 | 0.002 |
| 11-Jul-95 | 74 | 24 | 0.4355 | -0.162 | 4.304 | 0.003 |
| 25-Jul-95 | 85 | 25 | 0.4539 | -0.116 | 4.443 | 0.002 |
| 18-Oct-95 | 108 | 26 | 0.4724 | -0.069 | 4.682 | 0.001 |
| 21-Nov-95 | 66 | 27 | 0.4908 | -0.023 | 4.190 | 0.001 |
| 27-Dec-95 | 69 | 28 | 0.5092 | 0.023 | 4.234 | 0.001 |
| 17-Jan-96 | 93 | 29 | 0.5276 | 0.069 | 4.533 | 0.001 |
| 28-Mar-96 | 59 | 30 | 0.5461 | 0.116 | 4.078 | 0.005 |
| 8-May-96 | 50 | 31 | 0.5645 | 0.162 | 3.912 | 0.003 |
| 19-Jun-96 | 33 | 32 | 0.5829 | 0.209 | 3.497 | 0.000 |
| 24-Jul-96 | 70 | 33 | 0.6014 | 0.257 | 4.248 | 0.006 |
| 21-Aug-96 | 92 | 34 | 0.6198 | 0.305 | 4.522 | 0.007 |
| 27-Nov-96 | 152 | 35 | 0.6382 | 0.354 | 5.024 | 0.002 |
| 13-Dec-96 | 134 | 36 | 0.6567 | 0.403 | 4.898 | 0.005 |
| 30-Jan-97 | 94 | 37 | 0.6751 | 0.454 | 4.543 | 0.042 |
| 19-Feb-97 | 75 | 38 | 0.6935 | 0.506 | 4.317 | 0.086 |
| 26-Mar-97 | 84 | 39 | 0.7120 | 0.559 | 4.431 | 0.118 |
| 16-Apr-97 | 74 | 40 | 0.7304 | 0.614 | 4.304 | 0.185 |
| 24-Jun-97 | 30 | 41 | 0.7488 | 0.671 | 3.401 | 0.251 |
| 23-Jul-97 | 42 | 42 | 0.7673 | 0.730 | 3.738 | 0.176 |
| 12-Nov-97 | 80.5 | 43 | 0.7857 | 0.792 | 4.388 | 0.129 |
| 26-Nov-97 | 63 | 44 | 0.8041 | 0.857 | 4.143 | 0.201 |
| 17-Dec-97 | 70 | 45 | 0.8226 | 0.925 | 4.248 | 0.230 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25-Feb-98 | 66 | 46 | 0.8410 | 0.999 | 4.190 | 0.304 |
| 20-Mar-98 | 101 | 47 | 0.8594 | 1.078 | 4.615 | 0.385 |
| 16-May-98 | 26.8 | 48 | 0.8779 | 1.164 | 3.288 | 0.840 |
| 26-Jun-98 | 41 | 49 | 0.8963 | 1.261 | 3.714 | 0.805 |
| 26-Jun-98 | 44 | 50 | 0.9147 | 1.371 | 3.784 | 0.743 |
| 28-Jul-98 | 80 | 51 | 0.9332 | 1.500 | 4.382 | |
| 24-Sep-98 | 62 | 52 | 0.9516 | 1.661 | 4.127 | |
| 8-Oct-98 | 67 | 53 | 0.9700 | 1.881 | 4.205 | |
| 6-Dec-98 | 160 | 54 | 0.9885 | 2.273 | 5.075 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **NM296** | | | 9 | 9.09 |
| **LN Analysis** | | **tPb** | | | 0.76 | 0.765 |
| **Discharge, Q** | | **Q Data, EV=9.09 cfs CV=0.765** | | | | |
| **Avg:** | 9 | **Q Data-based LN** | | | | |
| **SD:** | 7 | u | lnQ | Q | | |
| **CV:** | 0.76 | 3 | 4.0 | 55 | | |
| **Min:** | 1 | 0 | 1.98 | 7 | | |
| **Max:** | 31 | -3 | -0.06 | 1 | | |
| **Median:** | 7 | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.952 | 0.952 |
| | | | | | 9.3 | 9.26 |
| **u=mLn(Q)+b:** | | | | | 0.85 | 0.849 |

update for r2, EV, CV: **r2=0.952, EV=9.26 cfs CV=0.849; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.952 | u | lnQ | Q |
| slope, m: | 1.358 | 3 | 4.16 | 64 |
| intercept, b: | -2.654 | 0 | 1.95 | 7 |
| N: | 54 | -3 | -0.26 | 1 |
| E[Q]: | 9.3 | Parameter Estimates | | |
| SD[Q]: | 8 | from LN regression | | |
| CV[Q]: | 0.85 | update graph label | | |

N: 54 — max r2 = 0.978

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.48 | 1 | 0.0115 | -2.273 | 0.392 | 0.952 |
| 27-Nov-96 | 3.11 | 2 | 0.0300 | -1.881 | 1.135 | 0.947 |
| 20-Jul-94 | 3.15 | 3 | 0.0484 | -1.661 | 1.147 | 0.958 |
| 26-Nov-97 | 3.2 | 4 | 0.0668 | -1.500 | 1.163 | 0.965 |
| 8-Sep-94 | 3.29 | 5 | 0.0853 | -1.371 | 1.191 | 0.969 |
| 4-Oct-94 | 3.29 | 6 | 0.1037 | -1.261 | 1.191 | 0.973 |
| 8-Oct-98 | 3.29 | 7 | 0.1221 | -1.164 | 1.191 | 0.976 |
| 17-Dec-97 | 3.38 | 8 | 0.1406 | -1.078 | 1.218 | 0.977 |
| 24-Sep-98 | 3.38 | 9 | 0.1590 | -0.999 | 1.218 | 0.978 |
| 15-Nov-94 | 3.57 | 10 | 0.1774 | -0.925 | 1.273 | 0.978 |
| 13-Dec-94 | 3.57 | 11 | 0.1959 | -0.857 | 1.273 | 0.978 |
| 25-Jul-95 | 3.68 | 12 | 0.2143 | -0.792 | 1.303 | 0.978 |
| 30-Jan-97 | 3.68 | 13 | 0.2327 | -0.730 | 1.303 | 0.977 |
| 6-Dec-98 | 3.86 | 14 | 0.2512 | -0.671 | 1.351 | 0.976 |
| 15-Aug-94 | 3.89 | 15 | 0.2696 | -0.614 | 1.358 | 0.975 |
| 20-Jul-94 | 4.11 | 16 | 0.2880 | -0.559 | 1.413 | 0.973 |
| 28-Jul-98 | 4.11 | 17 | 0.3065 | -0.506 | 1.413 | 0.972 |
| 12-Nov-97 | 4.15 | 18 | 0.3249 | -0.454 | 1.423 | 0.970 |
| 11-Jul-95 | 4.23 | 19 | 0.3433 | -0.403 | 1.442 | 0.968 |
| 21-Aug-96 | 4.6 | 20 | 0.3618 | -0.354 | 1.526 | 0.967 |
| 20-Mar-98 | 4.73 | 21 | 0.3802 | -0.305 | 1.554 | 0.965 |
| 18-Oct-95 | 5.01 | 22 | 0.3986 | -0.257 | 1.611 | 0.964 |
| 24-Jul-96 | 5.01 | 23 | 0.4171 | -0.209 | 1.611 | 0.962 |
| 19-Feb-97 | 5.01 | 24 | 0.4355 | -0.162 | 1.611 | 0.961 |
| 23-Jun-94 | 5.45 | 25 | 0.4539 | -0.116 | 1.696 | 0.962 |
| 9-Feb-95 | 5.61 | 26 | 0.4724 | -0.069 | 1.725 | 0.962 |
| 27-Jun-95 | 6.47 | 27 | 0.4908 | -0.023 | 1.867 | 0.964 |
| 17-Jan-96 | 6.86 | 28 | 0.5092 | 0.023 | 1.926 | 0.962 |
| 23-Jul-97 | 7.06 | 29 | 0.5276 | 0.069 | 1.954 | 0.959 |
| 25-Apr-95 | 7.26 | 30 | 0.5461 | 0.116 | 1.982 | 0.957 |
| 16-Apr-97 | 7.48 | 31 | 0.5645 | 0.162 | 2.012 | 0.955 |
| 25-Feb-98 | 7.48 | 32 | 0.5829 | 0.209 | 2.012 | 0.954 |
| 12-Jun-95 | 7.69 | 33 | 0.6014 | 0.257 | 2.040 | 0.956 |
| 28-Mar-96 | 8.39 | 34 | 0.6198 | 0.305 | 2.127 | 0.963 |
| 7-Jun-94 | 10 | 35 | 0.6382 | 0.354 | 2.303 | 0.968 |
| 13-Apr-95 | 10 | 36 | 0.6567 | 0.403 | 2.303 | 0.965 |
| 27-Dec-95 | 10.9 | 37 | 0.6751 | 0.454 | 2.389 | 0.963 |
| 26-Mar-97 | 11.9 | 38 | 0.6935 | 0.506 | 2.477 | 0.959 |
| 24-Jun-97 | 12.3 | 39 | 0.7120 | 0.559 | 2.510 | 0.957 |
| 26-Jun-98 | 12.3 | 40 | 0.7304 | 0.614 | 2.510 | 0.955 |
| 26-Jun-98 | 12.3 | 41 | 0.7488 | 0.671 | 2.510 | 0.950 |
| 15-Aug-94 | 12.31 | 42 | 0.7673 | 0.730 | 2.510 | 0.943 |
| 21-Nov-95 | 13.4 | 43 | 0.7857 | 0.792 | 2.595 | 0.937 |
| 22-Mar-95 | 14.68 | 44 | 0.8041 | 0.857 | 2.686 | 0.928 |
| 8-May-96 | 15.1 | 45 | 0.8226 | 0.925 | 2.715 | 0.918 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19-May-94 | 15.13 | 46 | 0.8410 | 0.999 | 2.717 | 0.905 |
| 13-Dec-96 | 16.1 | 47 | 0.8594 | 1.078 | 2.779 | 0.885 |
| 3-May-94 | 16.55 | 48 | 0.8779 | 1.164 | 2.806 | 0.856 |
| 19-Jun-96 | 19.2 | 49 | 0.8963 | 1.261 | 2.955 | 0.816 |
| 6-Apr-94 | 19.24 | 50 | 0.9147 | 1.371 | 2.957 | 0.759 |
| 9-May-95 | 20.44 | 51 | 0.9332 | 1.500 | 3.017 | |
| 16-May-98 | 28 | 52 | 0.9516 | 1.661 | 3.332 | |
| 23-May-95 | 29.49 | 53 | 0.9700 | 1.881 | 3.384 | |
| 16-May-91 | 30.9 | 54 | 0.9885 | 2.273 | 3.431 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequency secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **NM296** | **Date:** | **3-Jun-00** |
| **Chemical:** | **tZn** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,108 | 9 | 5,873 | 243 | 0.00 | 0.00 | 0.00 |
| **SD:** | 612 | 7 | 2,779 | 162 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 0.76 | 0.47 | 0.67 | | | |
| **Min:** | 33,374 | 1 | 1,540 | 48.6 | -1.09 | -1.56 | -1.20 |
| **Max:** | 36,135 | 31 | 17,200 | 776 | 3.14 | 4.08 | 3.29 |
| **Median:** | 35,042 | 7 | 5,815 | 196 | -0.35 | -0.02 | -0.29 |

| tZn | NM296 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.18)** | | update r2 | 0.18 | 0.18 | r2: | 0.037 | 0.009 |
| r2 Q,[COC]: | 0.18 | [tZn] | Q | | m: | -0.0022 | -0.00011 |
| slope, m: | -169.7 | 7,164 | 1.5 | | b: | 86 | 5.85 |
| intercept, b: | 7414.9 | 5,873 | 9.1 | | | | |
| N: | 54 | 2,172 | 31 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.253)** | | update r2 | | 0.25 | 0.253 | | |
| r2 lnQ,ln[COC]: | 0.25 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m: | -0.34 | 9.11 | 0.39 | 9,010 | 1 | | |
| intercept, b: | 9.24 | 8.48 | 2.21 | 4,827 | 9 | | |
| N: | 54 | 8.06 | 3.43 | 3,170 | 31 | | |

**N= 54**

| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | for graph 0 tZn NM296 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 30.9 | 2090 | 347 | 3.43 | 7.64 | 5.85 | 3.14 | -1.36 | 0.64 |
| MFG | 4-Oct-91 | 1.48 | 6100 | 49 | 0.39 | 8.72 | 3.88 | -1.09 | 0.08 | -1.20 |
| IDEQ | 6-Apr-94 | 19.24 | 6450 | 668 | 2.96 | 8.77 | 6.50 | 1.46 | 0.21 | 2.62 |
| IDEQ | 3-May-94 | 16.55 | 3830 | 341 | 2.81 | 8.25 | 5.83 | 1.07 | -0.74 | 0.60 |
| IDEQ | 19-May-94 | 15.13 | 2600 | 212 | 2.72 | 7.86 | 5.35 | 0.87 | -1.18 | -0.19 |
| IDEQ | 7-Jun-94 | 10 | 3420 | 184 | 2.30 | 8.14 | 5.21 | 0.13 | -0.88 | -0.36 |
| IDEQ | 23-Jun-94 | 5.45 | 4210 | 123 | 1.70 | 8.35 | 4.82 | -0.52 | -0.60 | -0.74 |
| IDEQ | 20-Jul-94 | 4.11 | 5000 | 111 | 1.41 | 8.52 | 4.71 | -0.72 | -0.31 | -0.82 |
| IDEQ | 20-Jul-94 | 3.15 | 5000 | 85 | 1.15 | 8.52 | 4.44 | -0.85 | -0.31 | -0.98 |
| IDEQ | 15-Aug-94 | 3.89 | 5880 | 123 | 1.36 | 8.68 | 4.81 | -0.75 | 0.00 | -0.74 |
| IDEQ | 15-Aug-94 | 12.31 | 5880 | 389 | 2.51 | 8.68 | 5.96 | 0.46 | 0.00 | 0.90 |
| IDEQ | 8-Sep-94 | 3.29 | 5830 | 103 | 1.19 | 8.67 | 4.64 | -0.83 | -0.02 | -0.86 |
| IDEQ | 4-Oct-94 | 3.29 | 6730 | 119 | 1.19 | 8.81 | 4.78 | -0.83 | 0.31 | -0.77 |
| IDEQ | 15-Nov-94 | 3.57 | 9660 | 186 | 1.27 | 9.18 | 5.22 | -0.79 | 1.36 | -0.36 |
| IDEQ | 13-Dec-94 | 3.57 | 11100 | 213 | 1.27 | 9.31 | 5.36 | -0.79 | 1.88 | -0.18 |
| IDEQ | 9-Feb-95 | 5.61 | 10800 | 326 | 1.72 | 9.29 | 5.79 | -0.50 | 1.77 | 0.51 |
| IDEQ | 22-Mar-95 | 14.68 | 9820 | 776 | 2.69 | 9.19 | 6.65 | 0.80 | 1.42 | 3.29 |
| IDEQ | 13-Apr-95 | 10 | 8870 | 477 | 2.30 | 9.09 | 6.17 | 0.13 | 1.08 | 1.45 |
| IDEQ | 25-Apr-95 | 7.26 | 9750 | 381 | 1.98 | 9.19 | 5.94 | -0.26 | 1.40 | 0.85 |
| IDEQ | 9-May-95 | 20.44 | 3510 | 386 | 3.02 | 8.16 | 5.96 | 1.63 | -0.85 | 0.88 |
| IDEQ | 23-May-95 | 29.49 | 2280 | 362 | 3.38 | 7.73 | 5.89 | 2.94 | -1.29 | 0.73 |
| IDEQ | 12-Jun-95 | 7.69 | 2810 | 116 | 2.04 | 7.94 | 4.76 | -0.20 | -1.10 | -0.78 |
| IDEQ | 27-Jun-95 | 6.47 | 3670 | 128 | 1.87 | 8.21 | 4.85 | -0.38 | -0.79 | -0.71 |
| IDEQ | 11-Jul-95 | 4.23 | 4230 | 96 | 1.44 | 8.35 | 4.57 | -0.70 | -0.59 | -0.91 |
| IDEQ | 25-Jul-95 | 3.68 | 5050 | 100 | 1.30 | 8.53 | 4.60 | -0.78 | -0.30 | -0.88 |
| IDEQ | 18-Oct-95 | 5.01 | 7970 | 215 | 1.61 | 8.98 | 5.37 | -0.59 | 0.75 | -0.17 |
| IDEQ | 21-Nov-95 | 13.4 | 5200 | 375 | 2.60 | 8.56 | 5.93 | 0.62 | -0.24 | 0.81 |
| IDEQ | 27-Dec-95 | 10.9 | 6070 | 356 | 2.39 | 8.71 | 5.87 | 0.26 | 0.07 | 0.70 |
| IDEQ | 17-Jan-96 | 6.86 | 6860 | 253 | 1.93 | 8.83 | 5.53 | -0.32 | 0.36 | 0.06 |
| IDEQ | 28-Mar-96 | 8.39 | 5070 | 229 | 2.13 | 8.53 | 5.43 | -0.10 | -0.29 | -0.09 |
| IDEQ | 8-May-96 | 15.1 | 4560 | 370 | 2.71 | 8.43 | 5.91 | 0.87 | -0.47 | 0.79 |
| IDEQ | 19-Jun-96 | 19.2 | 1930 | 199 | 2.95 | 7.57 | 5.30 | 1.46 | -1.42 | -0.27 |
| IDEQ | 24-Jul-96 | 5.01 | 3530 | 95 | 1.61 | 8.17 | 4.56 | -0.59 | -0.84 | -0.91 |
| IDEQ | 21-Aug-96 | 4.6 | 4640 | 115 | 1.53 | 8.44 | 4.74 | -0.65 | -0.44 | -0.79 |
| IDEQ | 27-Nov-96 | 3.11 | 8610 | 144 | 1.13 | 9.06 | 4.97 | -0.86 | 0.98 | -0.61 |
| IDEQ | 13-Dec-96 | 16.1 | 8260 | 715 | 2.78 | 9.02 | 6.57 | 1.01 | 0.86 | 2.92 |
| IDEQ | 30-Jan-97 | 3.68 | 7500 | 148 | 1.30 | 8.92 | 5.00 | -0.78 | 0.59 | -0.58 |
| IDEQ | 19-Feb-97 | 5.01 | 7130 | 192 | 1.61 | 8.87 | 5.26 | -0.59 | 0.45 | -0.31 |
| IDEQ | 26-Mar-97 | 11.9 | 7130 | 456 | 2.48 | 8.87 | 6.12 | 0.40 | 0.45 | 1.32 |
| IDEQ | 16-Apr-97 | 7.48 | 6090 | 245 | 2.01 | 8.71 | 5.50 | -0.23 | 0.08 | 0.01 |
| IDEQ | 24-Jun-97 | 12.3 | 1540 | 102 | 2.51 | 7.34 | 4.62 | 0.46 | -1.56 | -0.87 |
| IDEQ | 23-Jul-97 | 7.06 | 2950 | 112 | 1.95 | 7.99 | 4.72 | -0.29 | -1.05 | -0.81 |
| URS | 12-Nov-97 | 4.15 | 8080 | 180 | 1.42 | 9.00 | 5.20 | -0.71 | 0.79 | -0.39 |
| IDEQ | 26-Nov-97 | 3.2 | 6820 | 117 | 1.16 | 8.83 | 4.77 | -0.85 | 0.34 | -0.78 |
| IDEQ | 17-Dec-97 | 3.38 | 6930 | 126 | 1.22 | 8.84 | 4.84 | -0.82 | 0.38 | -0.72 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 25-Feb-98 | 7.48 | 6470 | 260 | 2.01 | 8.77 | 5.56 | -0.23 | 0.21 | 0.11 |
| IDEQ | 20-Mar-98 | 4.73 | 5410 | 138 | 1.55 | 8.60 | 4.92 | -0.63 | -0.17 | -0.65 |
| URS | 16-May-98 | 28 | 2970 | 447 | 3.33 | 8.00 | 6.10 | 2.72 | -1.04 | 1.36 |
| IDEQ | 26-Jun-98 | 12.3 | 3400 | 225 | 2.51 | 8.13 | 5.42 | 0.46 | -0.89 | -0.11 |
| IDEQ | 26-Jun-98 | 12.3 | 3510 | 232 | 2.51 | 8.16 | 5.45 | 0.46 | -0.85 | -0.07 |
| IDEQ | 28-Jul-98 | 4.11 | 4650 | 103 | 1.41 | 8.44 | 4.63 | -0.72 | -0.44 | -0.87 |
| IDEQ | 24-Sep-98 | 3.38 | 5800 | 105 | 1.22 | 8.67 | 4.66 | -0.82 | -0.03 | -0.85 |
| IDEQ | 8-Oct-98 | 3.29 | 6290 | 111 | 1.19 | 8.75 | 4.71 | -0.83 | 0.13 | -0.81 |
| URS | 6-Dec-98 | 3.86 | 17200 | 357 | 1.35 | 9.73 | 5.88 | -0.75 | 4.08 | 0.70 |

**tZn**

**Concentration over time analysis**

| | tZn | NM296 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.012** | **0.00009** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 8.42 | 4,537 | | |
| mid: | 9-Dec-95 | 8.56 | 5,236 | | |
| last: | 6-Dec-98 | 8.66 | 5,751 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.880** | **0.00886** |
| | 26-Jun-98 | 8.07 | 3,182 | | |
| | 6-Dec-98 | 9.51 | 13,487 | | |

**Load over time analysis**

| | tZn | NM296 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.001** | **-0.00003** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | 5.34 | 209 | | |
| mid: | 9-Dec-95 | 5.30 | 200 | | |
| last: | 6-Dec-98 | 5.27 | 195 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.097** | **0.00278** |
| | 26-Jun-98 | 4.85 | 128 | | |
| | 6-Dec-98 | 5.30 | 201 | | |

max r2: 0.900

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.012 | 0.00009 | 5.55 |
| 0.000 | 0.00001 | 8.37 |
| 0.001 | 0.00002 | 7.81 |
| 0.001 | 0.00003 | 7.41 |
| 0.000 | 0.00002 | 8.01 |
| 0.001 | -0.00002 | 9.48 |
| 0.003 | -0.00005 | 10.51 |
| 0.006 | -0.00007 | 11.19 |
| 0.007 | -0.00008 | 11.54 |
| 0.009 | -0.00009 | 11.94 |
| 0.009 | -0.00009 | 11.96 |
| 0.008 | -0.00010 | 11.99 |
| 0.008 | -0.00010 | 12.04 |
| 0.006 | -0.00009 | 11.65 |
| 0.001 | -0.00004 | 10.07 |
| 0.000 | 0.00002 | 7.81 |
| 0.006 | 0.00009 | 5.45 |
| 0.018 | 0.00015 | 3.17 |
| 0.035 | 0.00021 | 0.92 |
| 0.067 | 0.00030 | -2.05 |
| 0.056 | 0.00028 | -1.39 |
| 0.030 | 0.00020 | 1.32 |
| 0.014 | 0.00014 | 3.60 |
| 0.007 | 0.00010 | 5.01 |
| 0.003 | 0.00007 | 5.96 |
| 0.003 | 0.00007 | 6.02 |
| 0.012 | 0.00015 | 3.07 |
| 0.013 | 0.00017 | 2.53 |
| 0.020 | 0.00022 | 0.66 |
| 0.037 | 0.00032 | -2.91 |
| 0.040 | 0.00036 | -4.22 |
| 0.038 | 0.00037 | -4.65 |
| 0.003 | 0.00011 | 4.75 |
| 0.000 | -0.00003 | 9.74 |
| 0.003 | -0.00011 | 12.72 |
| 0.000 | 0.00004 | 7.26 |
| 0.010 | 0.00024 | 0.17 |
| 0.031 | 0.00045 | -7.41 |
| 0.069 | 0.00073 | -17.54 |
| 0.139 | 0.00114 | -32.50 |
| 0.234 | 0.00170 | -52.47 |
| 0.076 | 0.00090 | -23.65 |
| 0.007 | 0.00030 | -1.95 |
| 0.044 | 0.00083 | -21.15 |
| 0.108 | 0.00149 | -45.15 |

max r2: 0.117

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.001 | -0.00003 | 6.18 |
| 0.001 | 0.00003 | 4.33 |
| 0.013 | -0.00013 | 9.84 |
| 0.004 | -0.00007 | 7.73 |
| 0.001 | -0.00004 | 6.76 |
| 0.001 | -0.00004 | 6.67 |
| 0.002 | -0.00004 | 6.87 |
| 0.004 | -0.00008 | 7.98 |
| 0.010 | -0.00012 | 9.45 |
| 0.024 | -0.00018 | 11.79 |
| 0.036 | -0.00023 | 13.43 |
| 0.025 | -0.00019 | 12.15 |
| 0.044 | -0.00026 | 14.55 |
| 0.066 | -0.00032 | 16.81 |
| 0.074 | -0.00036 | 17.91 |
| 0.078 | -0.00038 | 18.68 |
| 0.068 | -0.00036 | 18.04 |
| 0.038 | -0.00026 | 14.40 |
| 0.020 | -0.00019 | 11.92 |
| 0.010 | -0.00013 | 9.86 |
| 0.002 | -0.00006 | 7.37 |
| 0.000 | 0.00002 | 4.66 |
| 0.001 | -0.00005 | 6.85 |
| 0.005 | -0.00011 | 9.04 |
| 0.024 | -0.00023 | 13.45 |
| 0.063 | -0.00038 | 18.90 |
| 0.065 | -0.00041 | 19.88 |
| 0.039 | -0.00033 | 16.94 |
| 0.018 | -0.00023 | 13.53 |
| 0.011 | -0.00019 | 12.06 |
| 0.007 | -0.00016 | 11.09 |
| 0.000 | 0.00001 | 4.77 |
| 0.000 | 0.00005 | 3.57 |
| 0.006 | -0.00017 | 11.47 |
| 0.029 | -0.00041 | 19.80 |
| 0.052 | -0.00058 | 25.83 |
| 0.001 | -0.00006 | 7.18 |
| 0.004 | -0.00016 | 10.96 |
| 0.003 | -0.00016 | 10.82 |
| 0.035 | 0.00050 | -12.81 |
| 0.117 | 0.00103 | -31.97 |
| 0.060 | 0.00082 | -24.12 |
| 0.016 | 0.00049 | -12.50 |
| 0.022 | 0.00064 | -17.83 |
| 0.000 | 0.00009 | 2.04 |

| | | | | | |
|---|---|---|---|---|---|
| 0.286 | 0.00297 | -98.42 | 0.028 | -0.00097 | 40.24 |
| 0.532 | 0.00478 | -163.38 | 0.004 | -0.00045 | 21.47 |
| 0.898 | 0.00789 | -275.63 | 0.065 | -0.00215 | 82.72 |
| 0.900 | 0.00866 | -303.38 | 0.017 | 0.00105 | -32.79 |
| 0.880 | 0.00886 | -310.67 | 0.097 | 0.00278 | -95.00 |

update for EV, CV:

**tZn**
**LN Analysis**
**Load**

NM296
tZn
**Load Data, EV=243 lbs/day CV=0.666**
**Load Data-based LN**

| | |
|---|---|
| **Avg:** | **243** |
| **SD:** | **162** |
| **CV:** | **0.67** |
| **Min:** | **48.6** |
| **Max:** | **776** |
| **Median:** | **196** |

| u | ln tZn Load | tZn Load |
|---|---|---|
| 3 | 7.1 | 1246 |
| 0 | 5.31 | 202 |
| -3 | 3.49 | 32.8 |
| 243 | | 243 |
| 0.67 | | 0.666 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.96, EV=247lbs/day CV=0.722; max r2=0.97**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.960 | u | lnLoad | Load | |
| slope, m: | 1.543 | 3 | 7.24 | 1397 | |
| intercept, b: | -8.177 | 0 | 5.30 | 200 | |
| N: | 54 | -3 | 3.35 | 28.6 | |
| E[Load]: | 246.7 | Parameter Estimates | | | 0.960 |
| SD[Load]: | 178 | from LN regression | | | 246.7 |
| CV[Load]: | 0.72 | update graph label | | | 0.7 |
| | | | | | max r2 |
| | | N: 54 | | | 0.974 |

| Date | tZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 49 | 1 | 0.0115 | -2.273 | 3.883 | 0.960 |
| 20-Jul-94 | 85 | 2 | 0.0300 | -1.881 | 4.440 | 0.956 |
| 24-Jul-96 | 95 | 3 | 0.0484 | -1.661 | 4.555 | 0.960 |
| 11-Jul-95 | 96 | 4 | 0.0668 | -1.500 | 4.567 | 0.965 |
| 25-Jul-95 | 100 | 5 | 0.0853 | -1.371 | 4.605 | 0.968 |
| 24-Jun-97 | 102 | 6 | 0.1037 | -1.261 | 4.624 | 0.971 |
| 28-Jul-98 | 103 | 7 | 0.1221 | -1.164 | 4.633 | 0.973 |
| 8-Sep-94 | 103 | 8 | 0.1406 | -1.078 | 4.637 | 0.974 |
| 24-Sep-98 | 105 | 9 | 0.1590 | -0.999 | 4.658 | 0.974 |
| 20-Jul-94 | 111 | 10 | 0.1774 | -0.925 | 4.706 | 0.973 |
| 8-Oct-98 | 111 | 11 | 0.1959 | -0.857 | 4.713 | 0.973 |
| 23-Jul-97 | 112 | 12 | 0.2143 | -0.792 | 4.719 | 0.972 |
| 21-Aug-96 | 115 | 13 | 0.2327 | -0.730 | 4.743 | 0.971 |
| 12-Jun-95 | 116 | 14 | 0.2512 | -0.671 | 4.756 | 0.969 |
| 26-Nov-97 | 117 | 15 | 0.2696 | -0.614 | 4.766 | 0.967 |
| 4-Oct-94 | 119 | 16 | 0.2880 | -0.559 | 4.780 | 0.965 |
| 15-Aug-94 | 123 | 17 | 0.3065 | -0.506 | 4.813 | 0.964 |
| 23-Jun-94 | 123 | 18 | 0.3249 | -0.454 | 4.816 | 0.962 |
| 17-Dec-97 | 126 | 19 | 0.3433 | -0.403 | 4.836 | 0.960 |
| 27-Jun-95 | 128 | 20 | 0.3618 | -0.354 | 4.850 | 0.960 |
| 20-Mar-98 | 138 | 21 | 0.3802 | -0.305 | 4.925 | 0.961 |
| 27-Nov-96 | 144 | 22 | 0.3986 | -0.257 | 4.970 | 0.961 |
| 30-Jan-97 | 148 | 23 | 0.4171 | -0.209 | 5.001 | 0.961 |
| 12-Nov-97 | 180 | 24 | 0.4355 | -0.162 | 5.195 | 0.963 |
| 7-Jun-94 | 184 | 25 | 0.4539 | -0.116 | 5.215 | 0.961 |
| 15-Nov-94 | 186 | 26 | 0.4724 | -0.069 | 5.223 | 0.958 |
| 19-Feb-97 | 192 | 27 | 0.4908 | -0.023 | 5.258 | 0.955 |
| 19-Jun-96 | 199 | 28 | 0.5092 | 0.023 | 5.295 | 0.952 |
| 19-May-94 | 212 | 29 | 0.5276 | 0.069 | 5.355 | 0.949 |
| 13-Dec-94 | 213 | 30 | 0.5461 | 0.116 | 5.362 | 0.945 |
| 18-Oct-95 | 215 | 31 | 0.5645 | 0.162 | 5.370 | 0.941 |
| 26-Jun-98 | 225 | 32 | 0.5829 | 0.209 | 5.416 | 0.938 |
| 28-Mar-96 | 229 | 33 | 0.6014 | 0.257 | 5.433 | 0.933 |
| 26-Jun-98 | 232 | 34 | 0.6198 | 0.305 | 5.448 | 0.929 |
| 16-Apr-97 | 245 | 35 | 0.6382 | 0.354 | 5.502 | 0.927 |
| 17-Jan-96 | 253 | 36 | 0.6567 | 0.403 | 5.534 | 0.923 |
| 25-Feb-98 | 260 | 37 | 0.6751 | 0.454 | 5.562 | 0.921 |
| 9-Feb-95 | 326 | 38 | 0.6935 | 0.506 | 5.787 | 0.923 |
| 3-May-94 | 341 | 39 | 0.7120 | 0.559 | 5.832 | 0.920 |
| 16-May-91 | 347 | 40 | 0.7304 | 0.614 | 5.851 | 0.921 |
| 27-Dec-95 | 356 | 41 | 0.7488 | 0.671 | 5.875 | 0.922 |
| 6-Dec-98 | 357 | 42 | 0.7673 | 0.730 | 5.878 | 0.926 |
| 23-May-95 | 362 | 43 | 0.7857 | 0.792 | 5.891 | 0.927 |
| 8-May-96 | 370 | 44 | 0.8041 | 0.857 | 5.915 | 0.926 |
| 21-Nov-95 | 375 | 45 | 0.8226 | 0.925 | 5.927 | 0.924 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25-Apr-95 | 381 | 46 | 0.8410 | 0.999 | 5.942 | 0.919 |
| 9-May-95 | 386 | 47 | 0.8594 | 1.078 | 5.956 | 0.907 |
| 15-Aug-94 | 389 | 48 | 0.8779 | 1.164 | 5.965 | 0.886 |
| 16-May-98 | 447 | 49 | 0.8963 | 1.261 | 6.103 | 0.853 |
| 26-Mar-97 | 456 | 50 | 0.9147 | 1.371 | 6.124 | 0.807 |
| 13-Apr-95 | 477 | 51 | 0.9332 | 1.500 | 6.168 | |
| 6-Apr-94 | 668 | 52 | 0.9516 | 1.661 | 6.504 | |
| 13-Dec-96 | 715 | 53 | 0.9700 | 1.881 | 6.573 | |
| 22-Mar-95 | 776 | 54 | 0.9885 | 2.273 | 6.654 | |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | NM296 | | 5,873 | 5870 |
| **LN Analysis** | | tZn | | 0.47 | 0.473 |
| **Concentration** | | **Conc. Data, EV=5870 ug/L CV=0.473** | | | |
| **Avg:** | **5,873** | **Data-based LN** | | | |
| **SD:** | **2,779** | u | ln[tZn] | [tZn] | |
| **CV:** | **0.47** | 3 | 9.9 | 20445 | |
| **Min:** | **1,540** | 0 | 8.58 | 5309 | |
| **Max:** | **17,200** | -3 | 7.23 | 1378 | |
| **Median:** | **5,815** | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.983 | 0.983 |
| | **u=mLn{Conc.}+b:** | | | 5954.2 | 5950 |
| update for r2, EV, CV: | **r2=0.983, EV=5950 ug/L CV=0.528; max r2=0.98** | | | 0.528 | 0.528 |
| | r2 u,lnConc: 0.983 | u | lnConc. | Conc. | |
| | slope, m: 2.017 | 3 | 10.06 | 23306 | |
| | intercept, b: -17.281 | 0 | 8.57 | 5265 | |
| | N: 54 | -3 | 7.08 | 1190 | |
| 0.96 | E[Conc]: 5954.2 | Parameter Estimates | | | |
| 247 | SD[Conc]: 3144 | from LN regression | | | |
| 0.722 | CV[Conc]. 0.53 | update graph label | | | |

| | | N: 54 | | | | max r2 0.983 |
|---|---|---|---|---|---|---|
| | **tZn Concentration ug/L Ranked** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 24-Jun-97 | 1540 | 1 | 0.0115 | -2.273 | 7.340 | 0.983 |
| 19-Jun-96 | 1930 | 2 | 0.0300 | -1.881 | 7.565 | 0.983 |
| 16-May-91 | 2090 | 3 | 0.0484 | -1.661 | 7.645 | 0.982 |
| 23-May-95 | 2280 | 4 | 0.0668 | -1.500 | 7.732 | 0.982 |
| 19-May-94 | 2600 | 5 | 0.0853 | -1.371 | 7.863 | 0.983 |
| 12-Jun-95 | 2810 | 6 | 0.1037 | -1.261 | 7.941 | 0.983 |
| 23-Jul-97 | 2950 | 7 | 0.1221 | -1.164 | 7.990 | 0.982 |
| 16-May-98 | 2970 | 8 | 0.1406 | -1.078 | 7.996 | 0.981 |
| 26-Jun-98 | 3400 | 9 | 0.1590 | -0.999 | 8.132 | 0.981 |
| 7-Jun-94 | 3420 | 10 | 0.1774 | -0.925 | 8.137 | 0.980 |
| 9-May-95 | 3510 | 11 | 0.1959 | -0.857 | 8.163 | 0.979 |
| 26-Jun-98 | 3510 | 12 | 0.2143 | -0.792 | 8.163 | 0.978 |
| 24-Jul-96 | 3530 | 13 | 0.2327 | -0.730 | 8.169 | 0.978 |
| 27-Jun-95 | 3670 | 14 | 0.2512 | -0.671 | 8.208 | 0.979 |
| 3-May-94 | 3830 | 15 | 0.2696 | -0.614 | 8.251 | 0.980 |
| 23-Jun-94 | 4210 | 16 | 0.2880 | -0.559 | 8.345 | 0.981 |
| 11-Jul-95 | 4230 | 17 | 0.3065 | -0.506 | 8.350 | 0.980 |
| 8-May-96 | 4560 | 18 | 0.3249 | -0.454 | 8.425 | 0.979 |
| 21-Aug-96 | 4640 | 19 | 0.3433 | -0.403 | 8.442 | 0.978 |
| 28-Jul-98 | 4650 | 20 | 0.3618 | -0.354 | 8.445 | 0.977 |
| 20-Jul-94 | 5000 | 21 | 0.3802 | -0.305 | 8.517 | 0.976 |
| 20-Jul-94 | 5000 | 22 | 0.3986 | -0.257 | 8.517 | 0.975 |
| 25-Jul-95 | 5050 | 23 | 0.4171 | -0.209 | 8.527 | 0.973 |
| 28-Mar-96 | 5070 | 24 | 0.4355 | -0.162 | 8.531 | 0.971 |
| 21-Nov-95 | 5200 | 25 | 0.4539 | -0.116 | 8.556 | 0.970 |
| 20-Mar-98 | 5410 | 26 | 0.4724 | -0.069 | 8.596 | 0.968 |
| 24-Sep-98 | 5800 | 27 | 0.4908 | -0.023 | 8.666 | 0.966 |
| 8-Sep-94 | 5830 | 28 | 0.5092 | 0.023 | 8.671 | 0.966 |
| 15-Aug-94 | 5880 | 29 | 0.5276 | 0.069 | 8.679 | 0.966 |
| 15-Aug-94 | 5880 | 30 | 0.5461 | 0.116 | 8.679 | 0.966 |
| 27-Dec-95 | 6070 | 31 | 0.5645 | 0.162 | 8.711 | 0.964 |
| 16-Apr-97 | 6090 | 32 | 0.5829 | 0.209 | 8.714 | 0.964 |
| 4-Oct-91 | 6100 | 33 | 0.6014 | 0.257 | 8.716 | 0.962 |
| 8-Oct-98 | 6290 | 34 | 0.6198 | 0.305 | 8.747 | 0.960 |
| 6-Apr-94 | 6450 | 35 | 0.6382 | 0.354 | 8.772 | 0.958 |
| 25-Feb-98 | 6470 | 36 | 0.6567 | 0.403 | 8.775 | 0.956 |
| 4-Oct-94 | 6730 | 37 | 0.6751 | 0.454 | 8.814 | 0.953 |
| 26-Nov-97 | 6820 | 38 | 0.6935 | 0.506 | 8.828 | 0.952 |
| 17-Jan-96 | 6860 | 39 | 0.7120 | 0.559 | 8.833 | 0.950 |
| 17-Dec-97 | 6930 | 40 | 0.7304 | 0.614 | 8.844 | 0.946 |
| 19-Feb-97 | 7130 | 41 | 0.7488 | 0.671 | 8.872 | 0.941 |
| 26-Mar-97 | 7130 | 42 | 0.7673 | 0.730 | 8.872 | 0.935 |
| 30-Jan-97 | 7500 | 43 | 0.7857 | 0.792 | 8.923 | 0.925 |
| 18-Oct-95 | 7970 | 44 | 0.8041 | 0.857 | 8.983 | 0.915 |
| 12-Nov-97 | 8080 | 45 | 0.8226 | 0.925 | 8.997 | 0.911 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 13-Dec-96 | 8260 | 46 | 0.8410 | 0.999 | 9.019 | 0.902 |
| 27-Nov-96 | 8610 | 47 | 0.8594 | 1.078 | 9.061 | 0.889 |
| 13-Apr-95 | 8870 | 48 | 0.8779 | 1.164 | 9.090 | 0.877 |
| 15-Nov-94 | 9660 | 49 | 0.8963 | 1.261 | 9.176 | 0.859 |
| 25-Apr-95 | 9750 | 50 | 0.9147 | 1.371 | 9.185 | 0.887 |
| 22-Mar-95 | 9820 | 51 | 0.9332 | 1.500 | 9.192 | |
| 9-Feb-95 | 10800 | 52 | 0.9516 | 1.661 | 9.287 | |
| 13-Dec-94 | 11100 | 53 | 0.9700 | 1.881 | 9.315 | |
| 6-Dec-98 | 17200 | 54 | 0.9885 | 2.273 | 9.753 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **NM296** | | | 9 | 9.09 |
| **LN Analysis** | | **tZn** | | | 0.76 | 0.765 |
| **Discharge, Q** | | **Q Data, EV=9.09 cfs CV=0.765** | | | | |
| **Avg:** | **9** | **Q Data-based LN** | | | | |
| **SD:** | **7** | u | lnQ | Q | | |
| **CV:** | **0.76** | 3 | 4.0 | 55 | | |
| **Min:** | **1** | 0 | 1.98 | 7 | | |
| **Max:** | **31** | -3 | -0.06 | 1 | | |
| **Median:** | **7** | | | | | |
| | | | | | 0.952 | 0.952 |
| | | | | | 9.3 | 9.26 |
| | | **u=mLn(Q)+b:** | | | 0.85 | 0.849 |

update for r2, EV, CV: **r2=0.952, EV=9.26 cfs CV=0.849; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.952 | u | lnQ | Q |
| slope, m: | 1.358 | 3 | 4.16 | 64 |
| intercept, b: | -2.654 | 0 | 1.95 | 7 |
| N: | 54 | -3 | -0.26 | 1 |
| E[Q]: | 9.3 | Parameter Estimates | | |
| SD[Q]: | 8 | from LN regression | | |
| CV[Q]: | 0.85 | update graph label | | |

N: 54 — max r2: 0.978

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 1.48 | 1 | 0.0115 | -2.273 | 0.392 | 0.952 |
| 27-Nov-96 | 3.11 | 2 | 0.0300 | -1.881 | 1.135 | 0.947 |
| 20-Jul-94 | 3.15 | 3 | 0.0484 | -1.661 | 1.147 | 0.958 |
| 26-Nov-97 | 3.2 | 4 | 0.0668 | -1.500 | 1.163 | 0.965 |
| 8-Sep-94 | 3.29 | 5 | 0.0853 | -1.371 | 1.191 | 0.969 |
| 4-Oct-94 | 3.29 | 6 | 0.1037 | -1.261 | 1.191 | 0.973 |
| 8-Oct-98 | 3.29 | 7 | 0.1221 | -1.164 | 1.191 | 0.976 |
| 17-Dec-97 | 3.38 | 8 | 0.1406 | -1.078 | 1.218 | 0.977 |
| 24-Sep-98 | 3.38 | 9 | 0.1590 | -0.999 | 1.218 | 0.978 |
| 15-Nov-94 | 3.57 | 10 | 0.1774 | -0.925 | 1.273 | 0.978 |
| 13-Dec-94 | 3.57 | 11 | 0.1959 | -0.857 | 1.273 | 0.978 |
| 25-Jul-95 | 3.68 | 12 | 0.2143 | -0.792 | 1.303 | 0.978 |
| 30-Jan-97 | 3.68 | 13 | 0.2327 | -0.730 | 1.303 | 0.977 |
| 6-Dec-98 | 3.86 | 14 | 0.2512 | -0.671 | 1.351 | 0.976 |
| 15-Aug-94 | 3.89 | 15 | 0.2696 | -0.614 | 1.358 | 0.975 |
| 20-Jul-94 | 4.11 | 16 | 0.2880 | -0.559 | 1.413 | 0.973 |
| 28-Jul-98 | 4.11 | 17 | 0.3065 | -0.506 | 1.413 | 0.972 |
| 12-Nov-97 | 4.15 | 18 | 0.3249 | -0.454 | 1.423 | 0.970 |
| 11-Jul-95 | 4.23 | 19 | 0.3433 | -0.403 | 1.442 | 0.968 |
| 21-Aug-96 | 4.6 | 20 | 0.3618 | -0.354 | 1.526 | 0.967 |
| 20-Mar-98 | 4.73 | 21 | 0.3802 | -0.305 | 1.554 | 0.965 |
| 18-Oct-95 | 5.01 | 22 | 0.3986 | -0.257 | 1.611 | 0.964 |
| 24-Jul-96 | 5.01 | 23 | 0.4171 | -0.209 | 1.611 | 0.962 |
| 19-Feb-97 | 5.01 | 24 | 0.4355 | -0.162 | 1.611 | 0.961 |
| 23-Jun-94 | 5.45 | 25 | 0.4539 | -0.116 | 1.696 | 0.962 |
| 9-Feb-95 | 5.61 | 26 | 0.4724 | -0.069 | 1.725 | 0.962 |
| 27-Jun-95 | 6.47 | 27 | 0.4908 | -0.023 | 1.867 | 0.964 |
| 17-Jan-96 | 6.86 | 28 | 0.5092 | 0.023 | 1.926 | 0.962 |
| 23-Jul-97 | 7.06 | 29 | 0.5276 | 0.069 | 1.954 | 0.959 |
| 25-Apr-95 | 7.26 | 30 | 0.5461 | 0.116 | 1.982 | 0.957 |
| 16-Apr-97 | 7.48 | 31 | 0.5645 | 0.162 | 2.012 | 0.955 |
| 25-Feb-98 | 7.48 | 32 | 0.5829 | 0.209 | 2.012 | 0.954 |
| 12-Jun-95 | 7.69 | 33 | 0.6014 | 0.257 | 2.040 | 0.956 |
| 28-Mar-96 | 8.39 | 34 | 0.6198 | 0.305 | 2.127 | 0.963 |
| 7-Jun-94 | 10 | 35 | 0.6382 | 0.354 | 2.303 | 0.968 |
| 13-Apr-95 | 10 | 36 | 0.6567 | 0.403 | 2.303 | 0.965 |
| 27-Dec-95 | 10.9 | 37 | 0.6751 | 0.454 | 2.389 | 0.963 |
| 26-Mar-97 | 11.9 | 38 | 0.6935 | 0.506 | 2.477 | 0.959 |
| 24-Jun-97 | 12.3 | 39 | 0.7120 | 0.559 | 2.510 | 0.957 |
| 26-Jun-98 | 12.3 | 40 | 0.7304 | 0.614 | 2.510 | 0.955 |
| 26-Jun-98 | 12.3 | 41 | 0.7488 | 0.671 | 2.510 | 0.950 |
| 15-Aug-94 | 12.31 | 42 | 0.7673 | 0.730 | 2.510 | 0.943 |
| 21-Nov-95 | 13.4 | 43 | 0.7857 | 0.792 | 2.595 | 0.937 |
| 22-Mar-95 | 14.68 | 44 | 0.8041 | 0.857 | 2.686 | 0.928 |
| 8-May-96 | 15.1 | 45 | 0.8226 | 0.925 | 2.715 | 0.918 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19-May-94 | 15.13 | 46 | 0.8410 | 0.999 | 2.717 | 0.905 |
| 13-Dec-96 | 16.1 | 47 | 0.8594 | 1.078 | 2.779 | 0.885 |
| 3-May-94 | 16.55 | 48 | 0.8779 | 1.164 | 2.806 | 0.856 |
| 19-Jun-96 | 19.2 | 49 | 0.8963 | 1.261 | 2.955 | 0.816 |
| 6-Apr-94 | 19.24 | 50 | 0.9147 | 1.371 | 2.957 | 0.759 |
| 9-May-95 | 20.44 | 51 | 0.9332 | 1.500 | 3.017 | |
| 16-May-98 | 28 | 52 | 0.9516 | 1.661 | 3.332 | |
| 23-May-95 | 29.49 | 53 | 0.9700 | 1.881 | 3.384 | |
| 16-May-91 | 30.9 | 54 | 0.9885 | 2.273 | 3.431 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** NM298 **Date:** 22-Jun-00
**Chemical:** dCd **Analyst:** J.MacLachlan
**Notes:**
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,124 | 9 | 40 | 1 | 0.00 | 0.00 | 0.00 |
| **SD:** | 793 | 12 | 18 | 1 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.33 | 0.45 | 0.83 | | | |
| **Min:** | 34,269 | 2 | 6 | 0.3 | -0.59 | -1.92 | -0.91 |
| **Max:** | 36,404 | 56 | 90 | 6 | 3.96 | 2.75 | 4.61 |
| **Median:** | 34,752 | 4 | 42 | 1 | -0.40 | 0.06 | -0.32 |

| dCd NM298 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.328)** | | update r2 | 0.33 | 0.328 | r2: | 0.168 | 0.103 |
| r2 Q,[COC]: | 0.33 | | [dCd] | Q | m: | 0.0061 | 0.00037 |
| slope, m: | -0.9 | | 46 | 1.9 | b: | -205 | -11.48 |
| intercept, b: | 48.1 | | 40 | 8.9 | | | |
| N: 50 | | | -1 | 56 | | | |
| **LnConc. = mLn(Q)+b (r2=0.513)** | | | update r2 | 0.51 | 0.513 | | |
| r2 lnQ,ln[COC]: | 0.51 | | ln[dCd] | ln Q | [dCd] | Q | |
| slope, m: | -0.43 | | 4.01 | 0.64 | 55 | 2 | |
| intercept, b: | 4.28 | | 3.34 | 2.18 | 28 | 9 | |
| N: 50 | | | 2.56 | 4.02 | 13 | 56 | |

**N= 50**

| update for new data | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | for graph 0 dCd NM298 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 27-Oct-93 | 2.48 | 33 | 0.4 | 0.91 | 3.50 | -0.82 | -0.54 | -0.41 | -0.79 |
| IDEQ | 2-Dec-93 | 2.48 | 32 | 0.4 | 0.91 | 3.47 | -0.85 | -0.54 | -0.46 | -0.80 |
| IDEQ | 16-Dec-93 | 2.02 | 47 | 0.5 | 0.70 | 3.85 | -0.67 | -0.58 | 0.37 | -0.72 |
| IDEQ | 16-Dec-93 | 2.47 | 47 | 0.6 | 0.90 | 3.85 | -0.47 | -0.54 | 0.37 | -0.61 |
| IDEQ | 24-Jan-94 | 2.69 | 38 | 0.5 | 0.99 | 3.64 | -0.60 | -0.52 | -0.13 | -0.68 |
| IDEQ | 24-Jan-94 | 2.14 | 38 | 0.4 | 0.76 | 3.64 | -0.83 | -0.57 | -0.13 | -0.79 |
| IDEQ | 18-Feb-94 | 2.28 | 50 | 0.6 | 0.82 | 3.91 | -0.49 | -0.56 | 0.54 | -0.62 |
| IDEQ | 8-Mar-94 | 4.28 | 44 | 1.0 | 1.45 | 3.78 | 0.01 | -0.39 | 0.20 | -0.24 |
| IDEQ | 24-Mar-94 | 4.66 | 50 | 1.3 | 1.54 | 3.91 | 0.23 | -0.36 | 0.54 | -0.02 |
| IDEQ | 24-Mar-94 | 4.67 | 50 | 1.3 | 1.54 | 3.91 | 0.23 | -0.36 | 0.54 | -0.01 |
| IDEQ | 7-Apr-94 | 8.51 | 39 | 1.8 | 2.14 | 3.66 | 0.58 | -0.03 | -0.07 | 0.49 |
| IDEQ | 4-May-94 | 10.58 | 30 | 1.7 | 2.36 | 3.40 | 0.54 | 0.14 | -0.57 | 0.41 |
| IDEQ | 19-May-94 | 12.08 | 23 | 1.5 | 2.49 | 3.14 | 0.40 | 0.27 | -0.96 | 0.21 |
| IDEQ | 7-Jun-94 | 7.8 | 28 | 1.2 | 2.05 | 3.33 | 0.16 | -0.09 | -0.68 | -0.09 |
| IDEQ | 23-Jun-94 | 5.29 | 30 | 0.9 | 1.67 | 3.40 | -0.16 | -0.30 | -0.57 | -0.40 |
| IDEQ | 20-Jul-94 | 3.32 | 35 | 0.6 | 1.20 | 3.56 | -0.47 | -0.47 | -0.30 | -0.61 |
| IDEQ | 20-Jul-94 | 4.72 | 35 | 0.9 | 1.55 | 3.56 | -0.12 | -0.35 | -0.30 | -0.36 |
| IDEQ | 15-Aug-94 | 2.93 | 42 | 0.7 | 1.08 | 3.74 | -0.41 | -0.50 | 0.09 | -0.58 |
| IDEQ | 15-Aug-94 | 2.06 | 42 | 0.5 | 0.72 | 3.74 | -0.76 | -0.58 | 0.09 | -0.76 |
| IDEQ | 8-Sep-94 | 2.58 | 41 | 0.6 | 0.95 | 3.71 | -0.56 | -0.53 | 0.04 | -0.66 |
| IDEQ | 4-Oct-94 | 2.58 | 46 | 0.6 | 0.95 | 3.83 | -0.45 | -0.53 | 0.31 | -0.60 |
| IDEQ | 15-Nov-94 | 2.1 | 90 | 1.0 | 0.74 | 4.50 | 0.02 | -0.57 | 2.75 | -0.24 |
| IDEQ | 13-Dec-94 | 2.48 | 85 | 1.1 | 0.91 | 4.44 | 0.13 | -0.54 | 2.48 | -0.13 |
| IDEQ | 10-Jan-95 | 4.1 | 67 | 1.5 | 1.41 | 4.20 | 0.39 | -0.40 | 1.48 | 0.20 |
| IDEQ | 9-Feb-95 | 6.85 | 54 | 2.0 | 1.92 | 3.99 | 0.69 | -0.17 | 0.76 | 0.68 |
| IDEQ | 7-Mar-95 | 6.85 | 50 | 1.8 | 1.92 | 3.91 | 0.61 | -0.17 | 0.54 | 0.54 |
| IDEQ | 13-Apr-95 | 10.13 | 48 | 2.6 | 2.32 | 3.87 | 0.96 | 0.11 | 0.43 | 1.27 |
| IDEQ | 25-Apr-95 | 7.15 | 46 | 1.8 | 1.97 | 3.83 | 0.57 | -0.15 | 0.31 | 0.47 |
| IDEQ | 9-May-95 | 12.08 | 20 | 1.3 | 2.49 | 3.00 | 0.26 | 0.27 | -1.13 | 0.03 |
| IDEQ | 23-May-95 | 25.86 | 15 | 2.1 | 3.25 | 2.71 | 0.74 | 1.44 | -1.40 | 0.77 |
| IDEQ | 12-Jun-95 | 6.85 | 17 | 0.6 | 1.92 | 2.83 | -0.47 | -0.17 | -1.29 | -0.61 |
| IDEQ | 27-Jun-95 | 2.19 | 26 | 0.3 | 0.78 | 3.26 | -1.18 | -0.57 | -0.79 | -0.91 |
| IDEQ | 13-Sep-95 | 4.28 | 47 | 1.1 | 1.45 | 3.85 | 0.08 | -0.39 | 0.37 | -0.18 |
| URS | 12-Nov-97 | 3.92 | 48.4 | 1.0 | 1.37 | 3.88 | 0.02 | -0.42 | 0.45 | -0.24 |
| URS | 14-May-98 | 55.6 | 10.5 | 3.1 | 4.02 | 2.35 | 1.14 | 3.96 | -1.65 | 1.77 |
| USGS | 27-Oct-98 | 2.1 | 40 | 0.5 | 0.74 | 3.69 | -0.79 | -0.57 | -0.02 | -0.78 |
| USGS | 19-Nov-98 | 1.9 | 67 | 0.7 | 0.64 | 4.20 | -0.38 | -0.59 | 1.48 | -0.56 |
| USGS | 10-Dec-98 | 2 | 83 | 0.9 | 0.69 | 4.42 | -0.11 | -0.58 | 2.36 | -0.36 |
| IDEQ | 15-Jan-99 | 3.32005516 | 51 | 0.9 | 1.20 | 3.93 | -0.09 | -0.47 | 0.59 | -0.34 |
| USGS | 21-Jan-99 | 3.3 | 52 | 0.9 | 1.19 | 3.95 | -0.08 | -0.47 | 0.65 | -0.33 |
| IDEQ | 23-Feb-99 | 1.934382724 | 50 | 0.5 | 0.66 | 3.91 | -0.65 | -0.59 | 0.54 | -0.71 |
| IDEQ | 8-Mar-99 | 2.281431698 | 46 | 0.6 | 0.82 | 3.83 | -0.57 | -0.56 | 0.31 | -0.67 |
| USGS | 22-Mar-99 | 17 | 44 | 4.0 | 2.83 | 3.78 | 1.39 | 0.69 | 0.20 | 2.61 |
| USGS | 20-Apr-99 | 30 | 38 | 6.1 | 3.40 | 3.64 | 1.81 | 1.79 | -0.13 | 4.61 |
| USGS | 5-May-99 | 22 | 27 | 3.2 | 3.09 | 3.30 | 1.16 | 1.11 | -0.74 | 1.82 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USGS | 23-May-99 | 45 | 9.9 | 2.4 | 3.81 | 2.29 | 0.87 | 3.06 | -1.69 | 1.07 |
| USGS | 15-Jun-99 | 45 | 5.7 | 1.4 | 3.81 | 1.74 | 0.32 | 3.06 | -1.92 | 0.10 |
| USGS | 7-Jul-99 | 16 | 11 | 0.9 | 2.77 | 2.40 | -0.05 | 0.60 | -1.63 | -0.31 |
| USGS | 4-Aug-99 | 6.2 | 20 | 0.7 | 1.82 | 3.00 | -0.40 | -0.23 | -1.13 | -0.57 |
| USGS | 1-Sep-99 | 3 | 28 | 0.5 | 1.10 | 3.33 | -0.79 | -0.50 | -0.68 | -0.78 |

**dCd**

**Concentration over time analysis**

| | dCd | NM298 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.073** | **-0.00019** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 27-Oct-93 | 3.73 | 42 | | |
| mid: | 22-Feb-95 | 3.64 | 38 | | |
| last: | 1-Sep-99 | 3.33 | 28 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **#DIV/0!** | **#DIV/0!** |
| | 1-Sep-99 | #DIV/0! | #DIV/0! | | |
| | 1-Sep-99 | #DIV/0! | #DIV/0! | | |

**Load over time analysis**

| | dCd | NM298 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.051** | **0.00019** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 27-Oct-93 | -0.16 | 1 | | |
| mid: | 22-Feb-95 | -0.07 | 1 | | |
| last: | 1-Sep-99 | 0.24 | 1 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **#DIV/0!** | **#DIV/0!** |
| | 1-Sep-99 | #DIV/0! | #DIV/0! | | |
| | 1-Sep-99 | #DIV/0! | #DIV/0! | | |

max r2: #DIV/0!

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.073 | -0.00019 | 10.18 |
| 0.076 | -0.00019 | 10.42 |
| 0.080 | -0.00020 | 10.70 |
| 0.076 | -0.00020 | 10.59 |
| 0.072 | -0.00020 | 10.47 |
| 0.072 | -0.00020 | 10.57 |
| 0.073 | -0.00020 | 10.68 |
| 0.067 | -0.00020 | 10.46 |
| 0.064 | -0.00019 | 10.38 |
| 0.058 | -0.00019 | 10.12 |
| 0.052 | -0.00018 | 9.84 |
| 0.051 | -0.00018 | 9.87 |
| 0.056 | -0.00019 | 10.28 |
| 0.069 | -0.00021 | 11.13 |
| 0.077 | -0.00023 | 11.77 |
| 0.085 | -0.00025 | 12.36 |
| 0.089 | -0.00026 | 12.74 |
| 0.093 | -0.00027 | 13.18 |
| 0.091 | -0.00027 | 13.31 |
| 0.089 | -0.00028 | 13.45 |
| 0.087 | -0.00028 | 13.67 |
| 0.081 | -0.00028 | 13.61 |
| 0.054 | -0.00023 | 11.71 |
| 0.030 | -0.00017 | 9.56 |
| 0.014 | -0.00012 | 7.67 |
| 0.005 | -0.00007 | 6.07 |
| 0.001 | -0.00003 | 4.30 |
| 0.001 | 0.00003 | 2.16 |
| 0.008 | 0.00011 | -0.60 |
| 0.003 | 0.00007 | 0.87 |
| 0.002 | -0.00007 | 5.85 |
| 0.029 | -0.00029 | 13.87 |
| 0.074 | -0.00062 | 25.68 |
| 0.096 | -0.00144 | 55.51 |
| 0.077 | -0.00180 | 68.42 |
| 0.501 | -0.00571 | 210.45 |
| 0.557 | -0.00669 | 245.99 |
| 0.520 | -0.00695 | 255.48 |
| 0.430 | -0.00656 | 241.26 |
| 0.380 | -0.00658 | 242.08 |
| 0.303 | -0.00644 | 236.77 |
| 0.211 | -0.00564 | 207.97 |
| 0.103 | -0.00420 | 155.59 |
| 0.005 | -0.00095 | 37.16 |
| 0.098 | 0.00443 | -158.23 |

max r2: #DIV/0!

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.051 | 0.00019 | -6.52 |
| 0.041 | 0.00017 | -5.85 |
| 0.032 | 0.00015 | -5.10 |
| 0.025 | 0.00013 | -4.49 |
| 0.020 | 0.00012 | -4.03 |
| 0.015 | 0.00010 | -3.41 |
| 0.008 | 0.00007 | -2.45 |
| 0.005 | 0.00006 | -1.83 |
| 0.004 | 0.00005 | -1.76 |
| 0.005 | 0.00006 | -1.97 |
| 0.006 | 0.00007 | -2.19 |
| 0.010 | 0.00009 | -2.94 |
| 0.015 | 0.00011 | -3.69 |
| 0.020 | 0.00012 | -4.32 |
| 0.022 | 0.00013 | -4.63 |
| 0.019 | 0.00013 | -4.44 |
| 0.013 | 0.00011 | -3.68 |
| 0.011 | 0.00010 | -3.46 |
| 0.006 | 0.00008 | -2.62 |
| 0.001 | 0.00003 | -0.84 |
| 0.000 | -0.00002 | 0.76 |
| 0.004 | -0.00006 | 2.36 |
| 0.006 | -0.00008 | 2.99 |
| 0.007 | -0.00009 | 3.43 |
| 0.005 | -0.00008 | 3.11 |
| 0.001 | -0.00004 | 1.64 |
| 0.000 | 0.00000 | 0.05 |
| 0.007 | 0.00010 | -3.61 |
| 0.019 | 0.00019 | -6.63 |
| 0.030 | 0.00025 | -9.06 |
| 0.087 | 0.00048 | -17.24 |
| 0.065 | 0.00049 | -17.49 |
| 0.000 | 0.00003 | -0.93 |
| 0.000 | -0.00010 | 3.72 |
| 0.005 | -0.00051 | 18.64 |
| 0.032 | 0.00157 | -56.74 |
| 0.003 | 0.00049 | -17.75 |
| 0.002 | -0.00042 | 15.34 |
| 0.012 | -0.00129 | 46.99 |
| 0.034 | -0.00236 | 86.08 |
| 0.085 | -0.00431 | 156.90 |
| 0.310 | -0.00870 | 316.15 |
| 0.926 | -0.01606 | 583.76 |
| 0.968 | -0.01856 | 674.88 |
| 0.987 | -0.01662 | 604.19 |

| | | | | | |
|---|---|---|---|---|---|
| 0.740 | 0.01344 | -486.13 | 0.982 | -0.01602 | 582.17 |
| 0.966 | 0.02032 | -736.34 | 0.996 | -0.01407 | 511.56 |
| 0.975 | 0.01668 | -603.99 | 0.999 | -0.01321 | 480.05 |
| 1.000 | 0.01202 | -434.13 | 1.000 | -0.01391 | 505.57 |
| #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |

update for EV, CV:

**dCd**
**LN Analysis**

## Load

**NM298**
**dCd**

**Load Data, EV=1.27 lbs/day CV=0.831**

**Load Data-based LN**

| | | u | ln dCd Load | dCd Load |
|---|---|---|---|---|
| **Avg:** | **1** | 3 | 2.2 | 9 |
| **SD:** | **1** | 0 | -0.02 | 1 |
| **CV:** | **0.83** | -3 | -2.20 | 0.1 |
| **Min:** | **0.3** | | | |
| **Max:** | **6** | | | |
| **Median:** | **1** | | | |

| | |
|---|---|
| 1 | 1.27 |
| 0.83 | 0.831 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.966, EV=1.27lbs/day CV=0.774; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.966 | u | lnLoad | Load |
| slope, m: | 1.459 | 3 | 2.06 | 8 |
| intercept, b: | -0.002 | 0 | 0.00 | 1 |
| N: | 50 | -3 | -2.05 | 0.1 |

| | | | |
|---|---|---|---|
| E[Load]: | 1.3 | Parameter Estimates | 0.966 |
| SD[Load]: | 1 | from LN regression | 1.3 |
| CV[Load]: | 0.77 | update graph label | 0.8 |
| | | | max r2 |
| | N: 50 | | #DIV/0! |

| Date | dCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Jun-95 | 0.3 | 1 | 0.0124 | -2.243 | -1.183 | 0.966 |
| 2-Dec-93 | 0.4 | 2 | 0.0323 | -1.847 | -0.851 | 0.968 |
| 24-Jan-94 | 0.4 | 3 | 0.0522 | -1.624 | -0.827 | 0.977 |
| 27-Oct-93 | 0.4 | 4 | 0.0721 | -1.460 | -0.820 | 0.982 |
| 27-Oct-98 | 0.5 | 5 | 0.0920 | -1.328 | -0.794 | 0.985 |
| 1-Sep-99 | 0.5 | 6 | 0.1119 | -1.216 | -0.794 | 0.987 |
| 15-Aug-94 | 0.5 | 7 | 0.1318 | -1.118 | -0.765 | 0.988 |
| 16-Dec-93 | 0.5 | 8 | 0.1517 | -1.029 | -0.672 | 0.988 |
| 23-Feb-99 | 0.5 | 9 | 0.1716 | -0.948 | -0.653 | 0.989 |
| 24-Jan-94 | 0.5 | 10 | 0.1915 | -0.872 | -0.598 | 0.990 |
| 8-Mar-99 | 0.6 | 11 | 0.2114 | -0.801 | -0.572 | 0.991 |
| 8-Sep-94 | 0.6 | 12 | 0.2313 | -0.734 | -0.564 | 0.991 |
| 18-Feb-94 | 0.6 | 13 | 0.2512 | -0.671 | -0.489 | 0.991 |
| 16-Dec-93 | 0.6 | 14 | 0.2711 | -0.609 | -0.471 | 0.992 |
| 20-Jul-94 | 0.6 | 15 | 0.2910 | -0.550 | -0.470 | 0.992 |
| 12-Jun-95 | 0.6 | 16 | 0.3109 | -0.493 | -0.468 | 0.992 |
| 4-Oct-94 | 0.6 | 17 | 0.3308 | -0.438 | -0.449 | 0.991 |
| 15-Aug-94 | 0.7 | 18 | 0.3507 | -0.383 | -0.412 | 0.991 |
| 4-Aug-99 | 0.7 | 19 | 0.3706 | -0.330 | -0.405 | 0.990 |
| 19-Nov-98 | 0.7 | 20 | 0.3905 | -0.278 | -0.379 | 0.990 |
| 23-Jun-94 | 0.9 | 21 | 0.4104 | -0.226 | -0.158 | 0.990 |
| 20-Jul-94 | 0.9 | 22 | 0.4303 | -0.175 | -0.118 | 0.991 |
| 10-Dec-98 | 0.9 | 23 | 0.4502 | -0.125 | -0.113 | 0.992 |
| 15-Jan-99 | 0.9 | 24 | 0.4701 | -0.075 | -0.093 | 0.993 |
| 21-Jan-99 | 0.9 | 25 | 0.4900 | -0.025 | -0.080 | 0.993 |
| 7-Jul-99 | 0.9 | 26 | 0.5100 | 0.025 | -0.055 | 0.993 |
| 8-Mar-94 | 1.0 | 27 | 0.5299 | 0.075 | 0.013 | 0.993 |
| 15-Nov-94 | 1.0 | 28 | 0.5498 | 0.125 | 0.017 | 0.994 |
| 12-Nov-97 | 1.0 | 29 | 0.5697 | 0.175 | 0.021 | 0.993 |
| 13-Sep-95 | 1.1 | 30 | 0.5896 | 0.226 | 0.079 | 0.993 |
| 13-Dec-94 | 1.1 | 31 | 0.6095 | 0.278 | 0.126 | 0.992 |
| 7-Jun-94 | 1.2 | 32 | 0.6294 | 0.330 | 0.161 | 0.992 |
| 24-Mar-94 | 1.3 | 33 | 0.6493 | 0.383 | 0.226 | 0.991 |
| 24-Mar-94 | 1.3 | 34 | 0.6692 | 0.438 | 0.228 | 0.992 |
| 9-May-95 | 1.3 | 35 | 0.6891 | 0.493 | 0.262 | 0.991 |
| 15-Jun-99 | 1.4 | 36 | 0.7090 | 0.550 | 0.322 | 0.990 |
| 10-Jan-95 | 1.5 | 37 | 0.7289 | 0.609 | 0.391 | 0.988 |
| 19-May-94 | 1.5 | 38 | 0.7488 | 0.671 | 0.402 | 0.988 |
| 4-May-94 | 1.7 | 39 | 0.7687 | 0.734 | 0.535 | 0.986 |
| 25-Apr-95 | 1.8 | 40 | 0.7886 | 0.801 | 0.571 | 0.988 |
| 7-Apr-94 | 1.8 | 41 | 0.8085 | 0.872 | 0.580 | 0.991 |
| 7-Mar-95 | 1.8 | 42 | 0.8284 | 0.948 | 0.611 | 0.990 |
| 9-Feb-95 | 2.0 | 43 | 0.8483 | 1.029 | 0.688 | 0.988 |
| 23-May-95 | 2.1 | 44 | 0.8682 | 1.118 | 0.736 | 0.985 |
| 23-May-99 | 2.4 | 45 | 0.8881 | 1.216 | 0.874 | 0.981 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 13-Apr-95 | 2.6 | 46 | 0.9080 | 1.328 | 0.962 | 0.975 |
| 14-May-98 | 3.1 | 47 | 0.9279 | 1.460 | 1.144 | 0.964 |
| 5-May-99 | 3.2 | 48 | 0.9478 | 1.624 | 1.162 | 1.000 |
| 22-Mar-99 | 4.0 | 49 | 0.9677 | 1.847 | 1.392 | 1.000 |
| 20-Apr-99 | 6.1 | 50 | 0.9876 | 2.243 | 1.814 | #DIV/0! |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | **NM298** | 40 | 40.3 |
| **LN Analysis** | | **dCd** | 0.45 | 0.447 |
| **Concentration** | | **Conc. Data, EV=40.3 ug/L CV=0.447** | | |
| **Avg:** | **40** | **Data-based LN** | | |
| **SD:** | **18** | u | ln[dCd] | [dCd] |
| **CV:** | **0.45** | 3 | 4.9 | 133 |
| **Min:** | **6** | 0 | 3.61 | 37 |
| **Max:** | **90** | -3 | 2.32 | 10 |
| **Median:** | **42** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **r2=0.893, EV=42.7 ug/L CV=0.663; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| | | | 0.893 | 0.893 |
| | | | 42.7 | 42.7 |
| | | | 0.663 | 0.663 |
| r2 u,lnConc: | 0.893 | u | lnConc. | Conc. |
| slope, m: | 1.657 | 3 | 5.38 | 217 |
| intercept, b: | -5.918 | 0 | 3.57 | 36 |
| N: | 50 | -3 | 1.76 | 6 |
| E[Conc]: | 42.7 | Parameter Estimates | | |
| SD[Conc]: | 28 | from LN regression | | |
| CV[Conc]: | 0.66 | update graph label | | |

0.966
1.27
0.774

N: 50

| Date | dCd Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 15-Jun-99 | 5.7 | 1 | 0.0124 | -2.243 | 1.740 | 0.893 |
| 23-May-99 | 9.9 | 2 | 0.0323 | -1.847 | 2.293 | 0.899 |
| 14-May-98 | 10.5 | 3 | 0.0522 | -1.624 | 2.351 | 0.896 |
| 7-Jul-99 | 11 | 4 | 0.0721 | -1.460 | 2.398 | 0.902 |
| 23-May-95 | 15 | 5 | 0.0920 | -1.328 | 2.708 | 0.924 |
| 12-Jun-95 | 17 | 6 | 0.1119 | -1.216 | 2.833 | 0.932 |
| 9-May-95 | 20 | 7 | 0.1318 | -1.118 | 2.996 | 0.939 |
| 4-Aug-99 | 20 | 8 | 0.1517 | -1.029 | 2.996 | 0.941 |
| 19-May-94 | 23 | 9 | 0.1716 | -0.948 | 3.135 | 0.948 |
| 27-Jun-95 | 26 | 10 | 0.1915 | -0.872 | 3.258 | 0.950 |
| 5-May-99 | 27 | 11 | 0.2114 | -0.801 | 3.296 | 0.948 |
| 7-Jun-94 | 28 | 12 | 0.2313 | -0.734 | 3.332 | 0.946 |
| 1-Sep-99 | 28 | 13 | 0.2512 | -0.671 | 3.332 | 0.943 |
| 4-May-94 | 30 | 14 | 0.2711 | -0.609 | 3.401 | 0.942 |
| 23-Jun-94 | 30 | 15 | 0.2910 | -0.550 | 3.401 | 0.938 |
| 2-Dec-93 | 32 | 16 | 0.3109 | -0.493 | 3.466 | 0.937 |
| 27-Oct-93 | 33 | 17 | 0.3308 | -0.438 | 3.497 | 0.933 |
| 20-Jul-94 | 35 | 18 | 0.3507 | -0.383 | 3.555 | 0.929 |
| 20-Jul-94 | 35 | 19 | 0.3706 | -0.330 | 3.555 | 0.924 |
| 24-Jan-94 | 38 | 20 | 0.3905 | -0.278 | 3.638 | 0.919 |
| 24-Jan-94 | 38 | 21 | 0.4104 | -0.226 | 3.638 | 0.916 |
| 20-Apr-99 | 38 | 22 | 0.4303 | -0.175 | 3.638 | 0.911 |
| 7-Apr-94 | 39 | 23 | 0.4502 | -0.125 | 3.664 | 0.906 |
| 27-Oct-98 | 40 | 24 | 0.4701 | -0.075 | 3.689 | 0.900 |
| 8-Sep-94 | 41 | 25 | 0.4900 | -0.025 | 3.714 | 0.895 |
| 15-Aug-94 | 42 | 26 | 0.5100 | 0.025 | 3.738 | 0.891 |
| 15-Aug-94 | 42 | 27 | 0.5299 | 0.075 | 3.738 | 0.887 |
| 8-Mar-94 | 44 | 28 | 0.5498 | 0.125 | 3.784 | 0.882 |
| 22-Mar-99 | 44 | 29 | 0.5697 | 0.175 | 3.784 | 0.882 |
| 4-Oct-94 | 46 | 30 | 0.5896 | 0.226 | 3.829 | 0.879 |
| 25-Apr-95 | 46 | 31 | 0.6095 | 0.278 | 3.829 | 0.884 |
| 8-Mar-99 | 46 | 32 | 0.6294 | 0.330 | 3.829 | 0.887 |
| 16-Dec-93 | 47 | 33 | 0.6493 | 0.383 | 3.850 | 0.889 |
| 16-Dec-93 | 47 | 34 | 0.6692 | 0.438 | 3.850 | 0.893 |
| 13-Sep-95 | 47 | 35 | 0.6891 | 0.493 | 3.850 | 0.895 |
| 13-Apr-95 | 48 | 36 | 0.7090 | 0.550 | 3.871 | 0.895 |
| 12-Nov-97 | 48.4 | 37 | 0.7289 | 0.609 | 3.879 | 0.896 |
| 18-Feb-94 | 50 | 38 | 0.7488 | 0.671 | 3.912 | 0.896 |
| 24-Mar-94 | 50 | 39 | 0.7687 | 0.734 | 3.912 | 0.902 |
| 24-Mar-94 | 50 | 40 | 0.7886 | 0.801 | 3.912 | 0.904 |
| 7-Mar-95 | 50 | 41 | 0.8085 | 0.872 | 3.912 | 0.900 |
| 23-Feb-99 | 50 | 42 | 0.8284 | 0.948 | 3.912 | 0.889 |
| 15-Jan-99 | 51 | 43 | 0.8483 | 1.029 | 3.932 | 0.866 |
| 21-Jan-99 | 52 | 44 | 0.8682 | 1.118 | 3.951 | 0.832 |
| 9-Feb-95 | 54 | 45 | 0.8881 | 1.216 | 3.989 | 0.788 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10-Jan-95 | 67 | 46 | 0.9080 | 1.328 | 4.205 | 0.790 |
| 19-Nov-98 | 67 | 47 | 0.9279 | 1.460 | 4.205 | 0.690 |
| 10-Dec-98 | 83 | 48 | 0.9478 | 1.624 | 4.419 | 0.994 |
| 13-Dec-94 | 85 | 49 | 0.9677 | 1.847 | 4.443 | 1.000 |
| 15-Nov-94 | 90 | 50 | 0.9876 | 2.243 | 4.500 | #DIV/0! |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **dCd** | | **NM298** | | | 9 | 8.88 |
| **LN Analysis** | | **dCd** | | | 1.33 | 1.33 |

## Discharge, Q

**Q Data, EV=8.88 cfs CV=1.33**

| | |
|---|---|
| **Avg:** | **9** |
| **SD:** | **12** |
| **CV:** | **1.33** |
| **Min:** | **2** |
| **Max:** | **56** |
| **Median:** | **4** |

**Q Data-based LN**

| | u | lnQ | Q |
|---|---|---|---|
| | 3 | 4.7 | 110 |
| | 0 | 1.68 | 5 |
| | -3 | -1.35 | 0 |

| | | |
|---|---|---|
| | 0.887 | 0.887 |
| | 8.7 | 8.72 |
| **u=mLn{Q}+b:** | 1.33 | 1.33 |

update for r2, EV, CV: **r2=0.887, EV=8.72 cfs CV=1.33; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.887 | u | lnQ | Q |
| slope, m: | 0.990 | 3 | 4.69 | 108 |
| intercept, b: | -1.638 | 0 | 1.66 | 5 |
| N: | 50 | -3 | -1.38 | 0 |
| E[Q]: | 8.7 | Parameter Estmates | | |
| SD[Q]: | 12 | from LN regression | | |
| CV[Q]: | 1.33 | update graph label | | |

| Date | Q Discharge cfs Ranked | N: 50 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 19-Nov-98 | 1.9 | 1 | 0.0124 | -2.243 | 0.642 | 0.887 |
| 23-Feb-99 | 1.934382724 | 2 | 0.0323 | -1.847 | 0.660 | 0.912 |
| 10-Dec-98 | 2 | 3 | 0.0522 | -1.624 | 0.693 | 0.927 |
| 16-Dec-93 | 2.02 | 4 | 0.0721 | -1.460 | 0.703 | 0.938 |
| 15-Aug-94 | 2.06 | 5 | 0.0920 | -1.328 | 0.723 | 0.947 |
| 15-Nov-94 | 2.1 | 6 | 0.1119 | -1.216 | 0.742 | 0.954 |
| 27-Oct-98 | 2.1 | 7 | 0.1318 | -1.118 | 0.742 | 0.960 |
| 24-Jan-94 | 2.14 | 8 | 0.1517 | -1.029 | 0.761 | 0.964 |
| 27-Jun-95 | 2.19 | 9 | 0.1716 | -0.948 | 0.784 | 0.968 |
| 18-Feb-94 | 2.28 | 10 | 0.1915 | -0.872 | 0.824 | 0.972 |
| 8-Mar-99 | 2.281431698 | 11 | 0.2114 | -0.801 | 0.825 | 0.975 |
| 16-Dec-93 | 2.47 | 12 | 0.2313 | -0.734 | 0.904 | 0.977 |
| 27-Oct-93 | 2.48 | 13 | 0.2512 | -0.671 | 0.908 | 0.980 |
| 2-Dec-93 | 2.48 | 14 | 0.2711 | -0.609 | 0.908 | 0.982 |
| 13-Dec-94 | 2.48 | 15 | 0.2910 | -0.550 | 0.908 | 0.983 |
| 8-Sep-94 | 2.58 | 16 | 0.3109 | -0.493 | 0.948 | 0.984 |
| 4-Oct-94 | 2.58 | 17 | 0.3308 | -0.438 | 0.948 | 0.984 |
| 24-Jan-94 | 2.69 | 18 | 0.3507 | -0.383 | 0.990 | 0.984 |
| 15-Aug-94 | 2.93 | 19 | 0.3706 | -0.330 | 1.075 | 0.983 |
| 1-Sep-99 | 3 | 20 | 0.3905 | -0.278 | 1.099 | 0.983 |
| 21-Jan-99 | 3.3 | 21 | 0.4104 | -0.226 | 1.194 | 0.982 |
| 20-Jul-94 | 3.32 | 22 | 0.4303 | -0.175 | 1.200 | 0.982 |
| 15-Jan-99 | 3.32005516 | 23 | 0.4502 | -0.125 | 1.200 | 0.981 |
| 12-Nov-97 | 3.92 | 24 | 0.4701 | -0.075 | 1.366 | 0.980 |
| 10-Jan-95 | 4.1 | 25 | 0.4900 | -0.025 | 1.411 | 0.979 |
| 8-Mar-94 | 4.28 | 26 | 0.5100 | 0.025 | 1.454 | 0.979 |
| 13-Sep-95 | 4.28 | 27 | 0.5299 | 0.075 | 1.454 | 0.978 |
| 24-Mar-94 | 4.66 | 28 | 0.5498 | 0.125 | 1.539 | 0.976 |
| 24-Mar-94 | 4.67 | 29 | 0.5697 | 0.175 | 1.541 | 0.975 |
| 20-Jul-94 | 4.72 | 30 | 0.5896 | 0.226 | 1.552 | 0.973 |
| 23-Jun-94 | 5.29 | 31 | 0.6095 | 0.278 | 1.666 | 0.971 |
| 4-Aug-99 | 6.2 | 32 | 0.6294 | 0.330 | 1.825 | 0.968 |
| 9-Feb-95 | 6.85 | 33 | 0.6493 | 0.383 | 1.924 | 0.965 |
| 7-Mar-95 | 6.85 | 34 | 0.6692 | 0.438 | 1.924 | 0.964 |
| 12-Jun-95 | 6.85 | 35 | 0.6891 | 0.493 | 1.924 | 0.960 |
| 25-Apr-95 | 7.15 | 36 | 0.7090 | 0.550 | 1.967 | 0.955 |
| 7-Jun-94 | 7.8 | 37 | 0.7289 | 0.609 | 2.054 | 0.951 |
| 7-Apr-94 | 8.51 | 38 | 0.7488 | 0.671 | 2.141 | 0.945 |
| 13-Apr-95 | 10.13 | 39 | 0.7687 | 0.734 | 2.316 | 0.939 |
| 4-May-94 | 10.58 | 40 | 0.7886 | 0.801 | 2.359 | 0.929 |
| 19-May-94 | 12.08 | 41 | 0.8085 | 0.872 | 2.492 | 0.919 |
| 9-May-95 | 12.08 | 42 | 0.8284 | 0.948 | 2.492 | 0.904 |
| 7-Jul-99 | 16 | 43 | 0.8483 | 1.029 | 2.773 | 0.902 |
| 22-Mar-99 | 17 | 44 | 0.8682 | 1.118 | 2.833 | 0.881 |
| 5-May-99 | 22 | 45 | 0.8881 | 1.216 | 3.091 | 0.873 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 23-May-95 | 25.86 | 46 | 0.9080 | 1.328 | 3.253 | 0.836 |
| 20-Apr-99 | 30 | 47 | 0.9279 | 1.460 | 3.401 | 0.769 |
| 23-May-99 | 45 | 48 | 0.9478 | 1.624 | 3.807 | 0.873 |
| 15-Jun-99 | 45 | 49 | 0.9677 | 1.847 | 3.807 | 1.000 |
| 14-May-98 | 55.6 | 50 | 0.9876 | 2.243 | 4.018 | #DIV/0! |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | NM298 | **Date:** 22-Jun-00 |
| **Chemical:** | dPb | **Analyst:** J.MacLachlan |
| **Notes:** | | |

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,124 | 9 | 127 | 4 | 0.00 | 0.00 | 0.00 |
| **SD:** | 793 | 12 | 65 | 3 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.33 | 0.51 | 0.67 | | | |
| **Min:** | 34,269 | 2 | 31 | 1.1 | -0.59 | -1.47 | -1.09 |
| **Max:** | 36,404 | 56 | 378 | 11 | 3.96 | 3.85 | 2.72 |
| **Median:** | 34,752 | 4 | 113 | 3 | -0.40 | -0.22 | -0.32 |

| dPb NM298 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.268)** | | update r2 | 0.27 | 0.268 | r2: | 0.168 | 0.103 |
| r2 Q,[COC]: | 0.27 | [dPb] | Q | | m: | 0.0061 | 0.00037 |
| slope, m: | -2.9 | 147 | 1.9 | | b: | -205 | -11.48 |
| intercept, b: | 152.2 | 127 | 8.9 | | | | |
| N: 50 | | -7 | 56 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.497)** | | update r2 | 0.50 | 0.497 | | | |
| r2 lnQ,ln[COC]: | 0.50 | ln[dPb] | ln Q | [dPb] | Q | | |
| slope, m: | -0.40 | 5.12 | 0.64 | 167 | 2 | | |
| intercept, b: | 5.38 | 4.50 | 2.18 | 90 | 9 | | |
| N: 50 | | 3.77 | 4.02 | 43 | 56 | | |

**N= 50**

| | Sampling Date | Q Discharge | dPb Concentration | dPb Load | Ln Q | Ln dPb Conc. | Ln dPb Load | for graph 0 dPb NM298 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 27-Oct-93 | 2.48 | 103 | 1.4 | 0.91 | 4.63 | 0.32 | -0.54 | -0.36 | -0.97 |
| IDEQ | 2-Dec-93 | 2.48 | 92 | 1.2 | 0.91 | 4.52 | 0.20 | -0.54 | -0.53 | -1.02 |
| IDEQ | 16-Dec-93 | 2.02 | 156 | 1.7 | 0.70 | 5.05 | 0.53 | -0.58 | 0.45 | -0.85 |
| IDEQ | 16-Dec-93 | 2.47 | 156 | 2.1 | 0.90 | 5.05 | 0.73 | -0.54 | 0.45 | -0.70 |
| IDEQ | 24-Jan-94 | 2.69 | 198 | 2.9 | 0.99 | 5.29 | 1.05 | -0.52 | 1.09 | -0.40 |
| IDEQ | 24-Jan-94 | 2.14 | 198 | 2.3 | 0.76 | 5.29 | 0.82 | -0.57 | 1.09 | -0.62 |
| IDEQ | 18-Feb-94 | 2.28 | 171 | 2.1 | 0.82 | 5.14 | 0.74 | -0.56 | 0.68 | -0.69 |
| IDEQ | 8-Mar-94 | 4.28 | 153 | 3.5 | 1.45 | 5.03 | 1.26 | -0.39 | 0.40 | -0.15 |
| IDEQ | 24-Mar-94 | 4.66 | 172 | 4.3 | 1.54 | 5.15 | 1.46 | -0.36 | 0.69 | 0.15 |
| IDEQ | 24-Mar-94 | 4.67 | 172 | 4.3 | 1.54 | 5.15 | 1.46 | -0.36 | 0.69 | 0.16 |
| IDEQ | 7-Apr-94 | 8.51 | 132 | 6.0 | 2.14 | 4.88 | 1.80 | -0.03 | 0.08 | 0.81 |
| IDEQ | 4-May-94 | 10.58 | 89 | 5.1 | 2.36 | 4.49 | 1.62 | 0.14 | -0.58 | 0.44 |
| IDEQ | 19-May-94 | 12.08 | 78 | 5.1 | 2.49 | 4.36 | 1.62 | 0.27 | -0.75 | 0.44 |
| IDEQ | 7-Jun-94 | 7.8 | 100 | 4.2 | 2.05 | 4.61 | 1.43 | -0.09 | -0.41 | 0.11 |
| IDEQ | 23-Jun-94 | 5.29 | 105 | 3.0 | 1.67 | 4.65 | 1.09 | -0.30 | -0.33 | -0.35 |
| IDEQ | 20-Jul-94 | 3.32 | 116 | 2.1 | 1.20 | 4.75 | 0.73 | -0.47 | -0.17 | -0.70 |
| IDEQ | 20-Jul-94 | 4.72 | 116 | 2.9 | 1.55 | 4.75 | 1.08 | -0.35 | -0.17 | -0.37 |
| IDEQ | 15-Aug-94 | 2.93 | 134 | 2.1 | 1.08 | 4.90 | 0.75 | -0.50 | 0.11 | -0.69 |
| IDEQ | 15-Aug-94 | 2.06 | 134 | 1.5 | 0.72 | 4.90 | 0.40 | -0.58 | 0.11 | -0.93 |
| IDEQ | 8-Sep-94 | 2.58 | 138 | 1.9 | 0.95 | 4.93 | 0.65 | -0.53 | 0.17 | -0.76 |
| IDEQ | 4-Oct-94 | 2.58 | 184 | 2.6 | 0.95 | 5.21 | 0.94 | -0.53 | 0.88 | -0.52 |
| IDEQ | 15-Nov-94 | 2.1 | 378 | 4.3 | 0.74 | 5.93 | 1.45 | -0.57 | 3.85 | 0.14 |
| IDEQ | 13-Dec-94 | 2.48 | 329 | 4.4 | 0.91 | 5.80 | 1.48 | -0.54 | 3.10 | 0.18 |
| IDEQ | 10-Jan-95 | 4.1 | 169 | 3.7 | 1.41 | 5.13 | 1.32 | -0.40 | 0.65 | -0.07 |
| IDEQ | 9-Feb-95 | 6.85 | 197 | 7.3 | 1.92 | 5.28 | 1.98 | -0.17 | 1.08 | 1.28 |
| IDEQ | 7-Mar-95 | 6.85 | 153 | 5.6 | 1.92 | 5.03 | 1.73 | -0.17 | 0.40 | 0.66 |
| IDEQ | 13-Apr-95 | 10.13 | 155 | 8.4 | 2.32 | 5.04 | 2.13 | 0.11 | 0.43 | 1.73 |
| IDEQ | 25-Apr-95 | 7.15 | 121 | 4.7 | 1.97 | 4.80 | 1.54 | -0.15 | -0.09 | 0.28 |
| IDEQ | 9-May-95 | 12.08 | 100 | 6.5 | 2.49 | 4.61 | 1.87 | 0.27 | -0.41 | 0.99 |
| IDEQ | 23-May-95 | 25.86 | 78 | 10.9 | 3.25 | 4.36 | 2.38 | 1.44 | -0.75 | 2.65 |
| IDEQ | 12-Jun-95 | 6.85 | 90 | 3.3 | 1.92 | 4.50 | 1.20 | -0.17 | -0.56 | -0.23 |
| IDEQ | 27-Jun-95 | 2.19 | 106 | 1.2 | 0.78 | 4.66 | 0.22 | -0.57 | -0.32 | -1.02 |
| IDEQ | 13-Sep-95 | 4.28 | 221 | 5.1 | 1.45 | 5.40 | 1.63 | -0.39 | 1.44 | 0.45 |
| URS | 12-Nov-97 | 3.92 | 124 | 2.6 | 1.37 | 4.82 | 0.96 | -0.42 | -0.04 | -0.49 |
| URS | 14-May-98 | 55.6 | 36.9 | 11.0 | 4.02 | 3.61 | 2.40 | 3.96 | -1.38 | 2.72 |
| USGS | 27-Oct-98 | 2.1 | 93 | 1.1 | 0.74 | 4.53 | 0.05 | -0.57 | -0.52 | -1.09 |
| USGS | 19-Nov-98 | 1.9 | 109 | 1.1 | 0.64 | 4.69 | 0.11 | -0.59 | -0.27 | -1.07 |
| USGS | 10-Dec-98 | 2 | 138 | 1.5 | 0.69 | 4.93 | 0.40 | -0.58 | 0.17 | -0.93 |
| IDEQ | 15-Jan-99 | 3.32005516 | 105 | 1.9 | 1.20 | 4.65 | 0.63 | -0.47 | -0.33 | -0.78 |
| USGS | 21-Jan-99 | 3.3 | 105 | 1.9 | 1.19 | 4.65 | 0.62 | -0.47 | -0.33 | -0.78 |
| IDEQ | 23-Feb-99 | 1.934382724 | 106 | 1.1 | 0.66 | 4.66 | 0.10 | -0.59 | -0.32 | -1.07 |
| IDEQ | 8-Mar-99 | 2.281431698 | 105 | 1.3 | 0.82 | 4.65 | 0.25 | -0.56 | -0.33 | -1.00 |
| USGS | 22-Mar-99 | 17 | 85 | 7.8 | 2.83 | 4.44 | 2.05 | 0.69 | -0.64 | 1.47 |
| USGS | 20-Apr-99 | 30 | 59 | 9.5 | 3.40 | 4.08 | 2.25 | 1.79 | -1.04 | 2.14 |
| USGS | 5-May-99 | 22 | 46 | 5.4 | 3.09 | 3.83 | 1.69 | 1.11 | -1.24 | 0.58 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USGS | 23-May-99 | 45 | 33 | 8.0 | 3.81 | 3.50 | 2.08 | 3.06 | -1.44 | 1.55 |
| USGS | 15-Jun-99 | 45 | 31 | 7.5 | 3.81 | 3.43 | 2.02 | 3.06 | -1.47 | 1.37 |
| USGS | 7-Jul-99 | 16 | 37 | 3.2 | 2.77 | 3.61 | 1.16 | 0.60 | -1.38 | -0.28 |
| USGS | 4-Aug-99 | 6.2 | 59 | 2.0 | 1.82 | 4.08 | 0.68 | -0.23 | -1.04 | -0.74 |
| USGS | 1-Sep-99 | 3 | 74 | 1.2 | 1.10 | 4.30 | 0.18 | -0.50 | -0.81 | -1.04 |

**dPb**

**Concentration over time analysis**

| | dPb | NM298 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.391** | **-0.00041** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 27-Oct-93 | 5.07 | 159 | | |
| mid: | 22-Feb-95 | 4.87 | 130 | | |
| last: | 1-Sep-99 | 4.19 | 66 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **#DIV/0!** | **#DIV/0!** |
| | 1-Sep-99 | #DIV/0! | #DIV/0! | | |
| | 1-Sep-99 | #DIV/0! | #DIV/0! | | |

**Load over time analysis**

| | dPb | NM298 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.002** | **-0.00004** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 27-Oct-93 | 1.18 | 3 | | |
| mid: | 22-Feb-95 | 1.16 | 3 | | |
| last: | 1-Sep-99 | 1.10 | 3 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **#DIV/0!** | **#DIV/0!** |
| | 1-Sep-99 | #DIV/0! | #DIV/0! | | |
| | 1-Sep-99 | #DIV/0! | #DIV/0! | | |

max r2: #DIV/0!

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.391 | -0.00041 | 19.22 |
| 0.405 | -0.00043 | 19.66 |
| 0.426 | -0.00044 | 20.23 |
| 0.422 | -0.00044 | 20.27 |
| 0.417 | -0.00044 | 20.32 |
| 0.405 | -0.00044 | 20.08 |
| 0.392 | -0.00043 | 19.83 |
| 0.382 | -0.00043 | 19.71 |
| 0.376 | -0.00043 | 19.71 |
| 0.365 | -0.00042 | 19.56 |
| 0.352 | -0.00042 | 19.39 |
| 0.350 | -0.00042 | 19.56 |
| 0.373 | -0.00044 | 20.31 |
| 0.410 | -0.00047 | 21.33 |
| 0.429 | -0.00049 | 22.06 |
| 0.446 | -0.00051 | 22.79 |
| 0.456 | -0.00053 | 23.40 |
| 0.469 | -0.00055 | 24.12 |
| 0.471 | -0.00056 | 24.61 |
| 0.475 | -0.00058 | 25.20 |
| 0.476 | -0.00060 | 25.79 |
| 0.458 | -0.00059 | 25.71 |
| 0.420 | -0.00054 | 23.63 |
| 0.375 | -0.00048 | 21.48 |
| 0.342 | -0.00046 | 20.92 |
| 0.294 | -0.00043 | 19.64 |
| 0.257 | -0.00041 | 18.96 |
| 0.212 | -0.00038 | 17.94 |
| 0.186 | -0.00037 | 17.82 |
| 0.183 | -0.00040 | 18.89 |
| 0.232 | -0.00051 | 22.80 |
| 0.281 | -0.00067 | 28.43 |
| 0.346 | -0.00098 | 39.73 |
| 0.157 | -0.00120 | 47.87 |
| 0.082 | -0.00118 | 46.94 |
| 0.503 | -0.00364 | 136.32 |
| 0.526 | -0.00411 | 153.36 |
| 0.502 | -0.00437 | 162.55 |
| 0.404 | -0.00403 | 150.54 |
| 0.335 | -0.00386 | 144.25 |
| 0.234 | -0.00346 | 129.65 |
| 0.116 | -0.00244 | 92.65 |
| 0.004 | -0.00044 | 19.85 |
| 0.155 | 0.00268 | -93.61 |
| 0.517 | 0.00553 | -197.11 |

max r2: #DIV/0!

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.002 | -0.00004 | 2.51 |
| 0.006 | -0.00006 | 3.39 |
| 0.012 | -0.00009 | 4.43 |
| 0.019 | -0.00011 | 5.20 |
| 0.024 | -0.00013 | 5.82 |
| 0.027 | -0.00014 | 6.11 |
| 0.033 | -0.00016 | 6.70 |
| 0.041 | -0.00018 | 7.42 |
| 0.042 | -0.00018 | 7.57 |
| 0.040 | -0.00018 | 7.47 |
| 0.037 | -0.00017 | 7.36 |
| 0.030 | -0.00016 | 6.75 |
| 0.025 | -0.00015 | 6.34 |
| 0.020 | -0.00013 | 5.88 |
| 0.018 | -0.00013 | 5.66 |
| 0.020 | -0.00014 | 5.99 |
| 0.028 | -0.00016 | 6.98 |
| 0.031 | -0.00018 | 7.47 |
| 0.042 | -0.00021 | 8.69 |
| 0.069 | -0.00027 | 10.90 |
| 0.095 | -0.00033 | 12.88 |
| 0.115 | -0.00037 | 14.47 |
| 0.115 | -0.00038 | 14.91 |
| 0.114 | -0.00040 | 15.34 |
| 0.120 | -0.00042 | 16.36 |
| 0.097 | -0.00039 | 15.21 |
| 0.083 | -0.00038 | 14.71 |
| 0.051 | -0.00031 | 12.16 |
| 0.042 | -0.00030 | 11.79 |
| 0.020 | -0.00022 | 8.96 |
| 0.000 | 0.00004 | -0.28 |
| 0.003 | 0.00011 | -2.94 |
| 0.017 | -0.00033 | 13.12 |
| 0.001 | 0.00014 | -3.91 |
| 0.000 | 0.00011 | -2.84 |
| 0.169 | 0.00364 | -130.87 |
| 0.106 | 0.00307 | -110.38 |
| 0.046 | 0.00217 | -77.59 |
| 0.012 | 0.00124 | -43.74 |
| 0.001 | 0.00036 | -11.75 |
| 0.010 | -0.00134 | 49.78 |
| 0.159 | -0.00549 | 200.84 |
| 0.793 | -0.01229 | 448.02 |
| 0.857 | -0.01494 | 544.11 |
| 0.823 | -0.01552 | 565.31 |

| | | | | | |
|---|---|---|---|---|---|
| 0.891 | 0.00910 | -326.97 | 0.959 | -0.02036 | 741.34 |
| 0.978 | 0.01177 | -424.31 | 0.959 | -0.02262 | 823.59 |
| 0.962 | 0.01238 | -446.25 | 1.000 | -0.01751 | 637.79 |
| 1.000 | 0.00809 | -290.21 | 1.000 | -0.01784 | 649.48 |
| #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |

update for EV, CV:

**dPb** **NM298**

**LN Analysis** **dPb**

**Load** **Load Data, EV=3.91 lbs/day CV=0.67**

**Load Data-based LN**

| | | u | ln dPb Load | dPb Load |
|---|---|---|---|---|
| **Avg:** | **4** | | | |
| **SD:** | **3** | u | ln dPb Load | dPb Load |
| **CV:** | **0.67** | 3 | 3.0 | 20 |
| **Min:** | **1.1** | 0 | 1.18 | 3 |
| **Max:** | **11** | -3 | -0.65 | 0.5 |
| **Median:** | **3** | | | |
| | | 4 | 3.91 | |
| | | 0.67 | 0.67 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.972, EV=4.01lbs/day CV=0.792; max r2=0.99**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.972 | u | lnLoad | Load | |
| slope, m: | 1.433 | 3 | 3.24 | 25 | |
| intercept, b: | -1.641 | 0 | 1.15 | 3 | |
| N: | 50 | -3 | -0.95 | 0.4 | |
| E[Load]: | 4.0 | Parameter Estimates | | | 0.972 |
| SD[Load]: | 3 | from LN regression | | | 4.0 |
| CV[Load]: | 0.79 | update graph label | | | 0.8 |
| | | | | | max r2 |
| | N: 50 | | | | #DIV/0! |

| Date | dPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Oct-98 | 1.1 | 1 | 0.0124 | -2.243 | 0.049 | 0.972 |
| 23-Feb-99 | 1.1 | 2 | 0.0323 | -1.847 | 0.098 | 0.980 |
| 19-Nov-98 | 1.1 | 3 | 0.0522 | -1.624 | 0.108 | 0.983 |
| 1-Sep-99 | 1.2 | 4 | 0.0721 | -1.460 | 0.178 | 0.983 |
| 2-Dec-93 | 1.2 | 5 | 0.0920 | -1.328 | 0.205 | 0.982 |
| 27-Jun-95 | 1.2 | 6 | 0.1119 | -1.216 | 0.222 | 0.981 |
| 8-Mar-99 | 1.3 | 7 | 0.1318 | -1.118 | 0.254 | 0.980 |
| 27-Oct-93 | 1.4 | 8 | 0.1517 | -1.029 | 0.318 | 0.979 |
| 10-Dec-98 | 1.5 | 9 | 0.1716 | -0.948 | 0.395 | 0.977 |
| 15-Aug-94 | 1.5 | 10 | 0.1915 | -0.872 | 0.395 | 0.976 |
| 16-Dec-93 | 1.7 | 11 | 0.2114 | -0.801 | 0.528 | 0.975 |
| 21-Jan-99 | 1.9 | 12 | 0.2313 | -0.734 | 0.623 | 0.973 |
| 15-Jan-99 | 1.9 | 13 | 0.2512 | -0.671 | 0.629 | 0.972 |
| 8-Sep-94 | 1.9 | 14 | 0.2711 | -0.609 | 0.650 | 0.970 |
| 4-Aug-99 | 2.0 | 15 | 0.2910 | -0.550 | 0.677 | 0.968 |
| 20-Jul-94 | 2.1 | 16 | 0.3109 | -0.493 | 0.728 | 0.966 |
| 16-Dec-93 | 2.1 | 17 | 0.3308 | -0.438 | 0.729 | 0.964 |
| 18-Feb-94 | 2.1 | 18 | 0.3507 | -0.383 | 0.741 | 0.963 |
| 15-Aug-94 | 2.1 | 19 | 0.3706 | -0.330 | 0.748 | 0.963 |
| 24-Jan-94 | 2.3 | 20 | 0.3905 | -0.278 | 0.824 | 0.966 |
| 4-Oct-94 | 2.6 | 21 | 0.4104 | -0.226 | 0.938 | 0.968 |
| 12-Nov-97 | 2.6 | 22 | 0.4303 | -0.175 | 0.961 | 0.967 |
| 24-Jan-94 | 2.9 | 23 | 0.4502 | -0.125 | 1.053 | 0.968 |
| 20-Jul-94 | 2.9 | 24 | 0.4701 | -0.075 | 1.080 | 0.967 |
| 23-Jun-94 | 3.0 | 25 | 0.4900 | -0.025 | 1.095 | 0.966 |
| 7-Jul-99 | 3.2 | 26 | 0.5100 | 0.025 | 1.158 | 0.967 |
| 12-Jun-95 | 3.3 | 27 | 0.5299 | 0.075 | 1.199 | 0.967 |
| 8-Mar-94 | 3.5 | 28 | 0.5498 | 0.125 | 1.259 | 0.968 |
| 10-Jan-95 | 3.7 | 29 | 0.5697 | 0.175 | 1.316 | 0.967 |
| 7-Jun-94 | 4.2 | 30 | 0.5896 | 0.226 | 1.434 | 0.966 |
| 15-Nov-94 | 4.3 | 31 | 0.6095 | 0.278 | 1.452 | 0.963 |
| 24-Mar-94 | 4.3 | 32 | 0.6294 | 0.330 | 1.461 | 0.960 |
| 24-Mar-94 | 4.3 | 33 | 0.6493 | 0.383 | 1.464 | 0.956 |
| 13-Dec-94 | 4.4 | 34 | 0.6692 | 0.438 | 1.479 | 0.953 |
| 25-Apr-95 | 4.7 | 35 | 0.6891 | 0.493 | 1.538 | 0.950 |
| 4-May-94 | 5.1 | 36 | 0.7090 | 0.550 | 1.623 | 0.947 |
| 19-May-94 | 5.1 | 37 | 0.7289 | 0.609 | 1.623 | 0.940 |
| 13-Sep-95 | 5.1 | 38 | 0.7488 | 0.671 | 1.627 | 0.933 |
| 5-May-99 | 5.4 | 39 | 0.7687 | 0.734 | 1.695 | 0.932 |
| 7-Mar-95 | 5.6 | 40 | 0.7886 | 0.801 | 1.730 | 0.928 |
| 7-Apr-94 | 6.0 | 41 | 0.8085 | 0.872 | 1.799 | 0.932 |
| 9-May-95 | 6.5 | 42 | 0.8284 | 0.948 | 1.872 | 0.936 |
| 9-Feb-95 | 7.3 | 43 | 0.8483 | 1.029 | 1.982 | 0.936 |
| 15-Jun-99 | 7.5 | 44 | 0.8682 | 1.118 | 2.016 | 0.921 |
| 22-Mar-99 | 7.8 | 45 | 0.8881 | 1.216 | 2.051 | 0.898 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 23-May-99 | **8.0** | 46 | 0.9080 | 1.328 | 2.078 | 0.860 |
| 13-Apr-95 | **8.4** | 47 | 0.9279 | 1.460 | 2.134 | 0.793 |
| 20-Apr-99 | **9.5** | 48 | 0.9478 | 1.624 | 2.254 | 0.702 |
| 23-May-95 | **10.9** | 49 | 0.9677 | 1.847 | 2.384 | 1.000 |
| 14-May-98 | **11.0** | 50 | 0.9876 | 2.243 | 2.401 | #DIV/0! |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **dPb** | | **NM298** | | 127 | 127 |
| **LN Analysis** | | **dPb** | | 0.51 | 0.515 |
| **Concentration** | | **Conc. Data, EV=127 ug/L CV=0.515** | | | |
| **Avg:** | **127** | **Data-based LN** | | | |
| **SD:** | **65** | u | ln[dPb] | [dPb] | |
| **CV:** | **0.51** | 3 | 6.2 | 483 | |
| **Min:** | **31** | 0 | 4.73 | 113 | |
| **Max:** | **378** | -3 | 3.27 | 26 | |
| **Median:** | **113** | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.953 | 0.953 |
| | **u=mLn(Conc.)+b:** | | | | 130.0 | 130 |
| update for r2, EV, CV: | **r2=0.953, EV=130 ug/L CV=0.597; max r2=0.99** | | | | 0.597 | 0.597 |
| | r2 u,lnConc: | 0.953 | u | lnConc. | Conc. | |
| | slope, m: | 1.812 | 3 | 6.37 | 584 | |
| | intercept, b: | -8.543 | 0 | 4.71 | 112 | |
| | N: 50 | | -3 | 3.06 | 21 | |
| 0.972 | E[Conc]: | 130.0 | Parameter Estimates | | | |
| 4.01 | SD[Conc]: | 78 | from LN regression | | | |
| 0.792 | CV[Conc]: | 0.60 | update graph label | | | |

| | dPb | N: 50 | | | | max r2 #DIV/0! |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| **Date** | **ug/L** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 15-Jun-99 | 31 | 1 | 0.0124 | -2.243 | 3.434 | 0.953 |
| 23-May-99 | 33 | 2 | 0.0323 | -1.847 | 3.497 | 0.948 |
| 14-May-98 | 36.9 | 3 | 0.0522 | -1.624 | 3.608 | 0.947 |
| 7-Jul-99 | 37 | 4 | 0.0721 | -1.460 | 3.611 | 0.949 |
| 5-May-99 | 46 | 5 | 0.0920 | -1.328 | 3.829 | 0.963 |
| 20-Apr-99 | 59 | 6 | 0.1119 | -1.216 | 4.078 | 0.971 |
| 4-Aug-99 | 59 | 7 | 0.1318 | -1.118 | 4.078 | 0.970 |
| 1-Sep-99 | 74 | 8 | 0.1517 | -1.029 | 4.304 | 0.973 |
| 19-May-94 | 78 | 9 | 0.1716 | -0.948 | 4.357 | 0.971 |
| 23-May-95 | 78 | 10 | 0.1915 | -0.872 | 4.357 | 0.969 |
| 22-Mar-99 | 85 | 11 | 0.2114 | -0.801 | 4.443 | 0.967 |
| 4-May-94 | 89 | 12 | 0.2313 | -0.734 | 4.489 | 0.966 |
| 12-Jun-95 | 90 | 13 | 0.2512 | -0.671 | 4.500 | 0.965 |
| 2-Dec-93 | 92 | 14 | 0.2711 | -0.609 | 4.522 | 0.964 |
| 27-Oct-98 | 93 | 15 | 0.2910 | -0.550 | 4.533 | 0.963 |
| 7-Jun-94 | 100 | 16 | 0.3109 | -0.493 | 4.605 | 0.961 |
| 9-May-95 | 100 | 17 | 0.3308 | -0.438 | 4.605 | 0.961 |
| 27-Oct-93 | 103 | 18 | 0.3507 | -0.383 | 4.635 | 0.961 |
| 23-Jun-94 | 105 | 19 | 0.3706 | -0.330 | 4.654 | 0.961 |
| 15-Jan-99 | 105 | 20 | 0.3905 | -0.278 | 4.654 | 0.961 |
| 21-Jan-99 | 105 | 21 | 0.4104 | -0.226 | 4.654 | 0.960 |
| 8-Mar-99 | 105 | 22 | 0.4303 | -0.175 | 4.654 | 0.959 |
| 27-Jun-95 | 106 | 23 | 0.4502 | -0.125 | 4.663 | 0.956 |
| 23-Feb-99 | 106 | 24 | 0.4701 | -0.075 | 4.663 | 0.953 |
| 19-Nov-98 | 109 | 25 | 0.4900 | -0.025 | 4.691 | 0.949 |
| 20-Jul-94 | 116 | 26 | 0.5100 | 0.025 | 4.754 | 0.946 |
| 20-Jul-94 | 116 | 27 | 0.5299 | 0.075 | 4.754 | 0.942 |
| 25-Apr-95 | 121 | 28 | 0.5498 | 0.125 | 4.796 | 0.937 |
| 12-Nov-97 | 124 | 29 | 0.5697 | 0.175 | 4.820 | 0.933 |
| 7-Apr-94 | 132 | 30 | 0.5896 | 0.226 | 4.883 | 0.928 |
| 15-Aug-94 | 134 | 31 | 0.6095 | 0.278 | 4.898 | 0.925 |
| 15-Aug-94 | 134 | 32 | 0.6294 | 0.330 | 4.898 | 0.922 |
| 8-Sep-94 | 138 | 33 | 0.6493 | 0.383 | 4.927 | 0.917 |
| 10-Dec-98 | 138 | 34 | 0.6692 | 0.438 | 4.927 | 0.912 |
| 8-Mar-94 | 153 | 35 | 0.6891 | 0.493 | 5.030 | 0.904 |
| 7-Mar-95 | 153 | 36 | 0.7090 | 0.550 | 5.030 | 0.908 |
| 13-Apr-95 | 155 | 37 | 0.7289 | 0.609 | 5.043 | 0.910 |
| 16-Dec-93 | 156 | 38 | 0.7488 | 0.671 | 5.050 | 0.911 |
| 16-Dec-93 | 156 | 39 | 0.7687 | 0.734 | 5.050 | 0.909 |
| 10-Jan-95 | 169 | 40 | 0.7886 | 0.801 | 5.130 | 0.901 |
| 18-Feb-94 | 171 | 41 | 0.8085 | 0.872 | 5.142 | 0.908 |
| 24-Mar-94 | 172 | 42 | 0.8284 | 0.948 | 5.147 | 0.914 |
| 24-Mar-94 | 172 | 43 | 0.8483 | 1.029 | 5.147 | 0.914 |
| 4-Oct-94 | 184 | 44 | 0.8682 | 1.118 | 5.215 | 0.903 |
| 9-Feb-95 | 197 | 45 | 0.8881 | 1.216 | 5.283 | 0.898 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 24-Jan-94 | 198 | 46 | 0.9080 | 1.328 | 5.288 | 0.911 |
| 24-Jan-94 | 198 | 47 | 0.9279 | 1.460 | 5.288 | 0.900 |
| 13-Sep-95 | 221 | 48 | 0.9478 | 1.624 | 5.398 | 0.826 |
| 13-Dec-94 | 329 | 49 | 0.9677 | 1.847 | 5.796 | 1.000 |
| 15-Nov-94 | 378 | 50 | 0.9876 | 2.243 | 5.935 | #DIV/0! |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **dPb** | | **NM298** | | | 9 | 8.88 |
| **LN Analysis** | | **dPb** | | | 1.33 | 1.33 |
| **Discharge, Q** | | **Q Data, EV=8.88 cfs CV=1.33** | | | | |
| **Avg:** | 9 | **Q Data-based LN** | | | | |
| **SD:** | 12 | u | lnQ | Q | | |
| **CV:** | 1.33 | 3 | 4.7 | 110 | | |
| **Min:** | 2 | 0 | 1.68 | 5 | | |
| **Max:** | 56 | -3 | -1.35 | 0 | | |
| **Median:** | 4 | | | | | |
| | | | | | 0.887 | 0.887 |
| | | | | | 8.7 | 8.72 |
| **u=mLn(Q)+b:** | | | | | 1.33 | 1.33 |

update for r2, EV, CV: **r2=0.887, EV=8.72 cfs CV=1.33; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.887 | u | lnQ | Q |
| slope, m: | 0.990 | 3 | 4.69 | 108 |
| intercept, b: | -1.638 | 0 | 1.66 | 5 |
| N: | 50 | -3 | -1.38 | 0 |
| E[Q]: | 8.7 | Parameter Estimates | | |
| SD[Q]: | 12 | from LN regression | | |
| CV[Q]: | 1.33 | update graph label | | |

N: 50

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 19-Nov-98 | 1.9 | 1 | 0.0124 | -2.243 | 0.642 | 0.887 |
| 23-Feb-99 | 1.934382724 | 2 | 0.0323 | -1.847 | 0.660 | 0.912 |
| 10-Dec-98 | 2 | 3 | 0.0522 | -1.624 | 0.693 | 0.927 |
| 16-Dec-93 | 2.02 | 4 | 0.0721 | -1.460 | 0.703 | 0.938 |
| 15-Aug-94 | 2.06 | 5 | 0.0920 | -1.328 | 0.723 | 0.947 |
| 15-Nov-94 | 2.1 | 6 | 0.1119 | -1.216 | 0.742 | 0.954 |
| 27-Oct-98 | 2.1 | 7 | 0.1318 | -1.118 | 0.742 | 0.960 |
| 24-Jan-94 | 2.14 | 8 | 0.1517 | -1.029 | 0.761 | 0.964 |
| 27-Jun-95 | 2.19 | 9 | 0.1716 | -0.948 | 0.784 | 0.968 |
| 18-Feb-94 | 2.28 | 10 | 0.1915 | -0.872 | 0.824 | 0.972 |
| 8-Mar-99 | 2.281431698 | 11 | 0.2114 | -0.801 | 0.825 | 0.975 |
| 16-Dec-93 | 2.47 | 12 | 0.2313 | -0.734 | 0.904 | 0.977 |
| 27-Oct-93 | 2.48 | 13 | 0.2512 | -0.671 | 0.908 | 0.980 |
| 2-Dec-93 | 2.48 | 14 | 0.2711 | -0.609 | 0.908 | 0.982 |
| 13-Dec-94 | 2.48 | 15 | 0.2910 | -0.550 | 0.908 | 0.983 |
| 8-Sep-94 | 2.58 | 16 | 0.3109 | -0.493 | 0.948 | 0.984 |
| 4-Oct-94 | 2.58 | 17 | 0.3308 | -0.438 | 0.948 | 0.984 |
| 24-Jan-94 | 2.69 | 18 | 0.3507 | -0.383 | 0.990 | 0.984 |
| 15-Aug-94 | 2.93 | 19 | 0.3706 | -0.330 | 1.075 | 0.983 |
| 1-Sep-99 | 3 | 20 | 0.3905 | -0.278 | 1.099 | 0.983 |
| 21-Jan-99 | 3.3 | 21 | 0.4104 | -0.226 | 1.194 | 0.982 |
| 20-Jul-94 | 3.32 | 22 | 0.4303 | -0.175 | 1.200 | 0.982 |
| 15-Jan-99 | 3.32005516 | 23 | 0.4502 | -0.125 | 1.200 | 0.981 |
| 12-Nov-97 | 3.92 | 24 | 0.4701 | -0.075 | 1.366 | 0.980 |
| 10-Jan-95 | 4.1 | 25 | 0.4900 | -0.025 | 1.411 | 0.979 |
| 8-Mar-94 | 4.28 | 26 | 0.5100 | 0.025 | 1.454 | 0.979 |
| 13-Sep-95 | 4.28 | 27 | 0.5299 | 0.075 | 1.454 | 0.978 |
| 24-Mar-94 | 4.66 | 28 | 0.5498 | 0.125 | 1.539 | 0.976 |
| 24-Mar-94 | 4.67 | 29 | 0.5697 | 0.175 | 1.541 | 0.975 |
| 20-Jul-94 | 4.72 | 30 | 0.5896 | 0.226 | 1.552 | 0.973 |
| 23-Jun-94 | 5.29 | 31 | 0.6095 | 0.278 | 1.666 | 0.971 |
| 4-Aug-99 | 6.2 | 32 | 0.6294 | 0.330 | 1.825 | 0.968 |
| 9-Feb-95 | 6.85 | 33 | 0.6493 | 0.383 | 1.924 | 0.965 |
| 7-Mar-95 | 6.85 | 34 | 0.6692 | 0.438 | 1.924 | 0.964 |
| 12-Jun-95 | 6.85 | 35 | 0.6891 | 0.493 | 1.924 | 0.960 |
| 25-Apr-95 | 7.15 | 36 | 0.7090 | 0.550 | 1.967 | 0.955 |
| 7-Jun-94 | 7.8 | 37 | 0.7289 | 0.609 | 2.054 | 0.951 |
| 7-Apr-94 | 8.51 | 38 | 0.7488 | 0.671 | 2.141 | 0.945 |
| 13-Apr-95 | 10.13 | 39 | 0.7687 | 0.734 | 2.316 | 0.939 |
| 4-May-94 | 10.58 | 40 | 0.7886 | 0.801 | 2.359 | 0.929 |
| 19-May-94 | 12.08 | 41 | 0.8085 | 0.872 | 2.492 | 0.919 |
| 9-May-95 | 12.08 | 42 | 0.8284 | 0.948 | 2.492 | 0.904 |
| 7-Jul-99 | 16 | 43 | 0.8483 | 1.029 | 2.773 | 0.902 |
| 22-Mar-99 | 17 | 44 | 0.8682 | 1.118 | 2.833 | 0.881 |
| 5-May-99 | 22 | 45 | 0.8881 | 1.216 | 3.091 | 0.873 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 23-May-95 | 25.86 | 46 | 0.9080 | 1.328 | 3.253 | 0.836 |
| 20-Apr-99 | 30 | 47 | 0.9279 | 1.460 | 3.401 | 0.769 |
| 23-May-99 | 45 | 48 | 0.9478 | 1.624 | 3.807 | 0.873 |
| 15-Jun-99 | 45 | 49 | 0.9677 | 1.847 | 3.807 | 1.000 |
| 14-May-98 | 55.6 | 50 | 0.9876 | 2.243 | 4.018 | #DIV/0! |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | **NM298** | **Date:** 22-Jun-00 |
| **Chemical:** | **dZn** | **Analyst:** J.MacLachlan |
| **Notes:** | | |

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,124 | 9 | 6,710 | 211 | 0.00 | 0.00 | 0.00 |
| **SD:** | 793 | 12 | 2,997 | 180 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.33 | 0.45 | 0.85 | | | |
| **Min:** | 34,269 | 2 | 867 | 44.8 | -0.59 | -1.95 | -0.93 |
| **Max:** | 36,404 | 56 | 14,000 | 1,006 | 3.96 | 2.43 | 4.42 |
| **Median:** | 34,752 | 4 | 7,075 | 157 | -0.40 | 0.12 | -0.30 |

| dZn | NM298 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.33)** | | update r2 | 0.33 | 0.33 | r2: | 0.168 | 0.103 |
| r2 Q,[COC]: | 0.33 | [dZn] | Q | | m: | 0.0061 | 0.00037 |
| slope, m: | -145.9 | 7,729 | 1.9 | | b: | -205 | -11.48 |
| intercept, b: | 8006.3 | 6,710 | 8.9 | | | | |
| N: 50 | | -106 | 56 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.499)** | | update r2 | 0.50 | 0.499 | | | |
| r2 lnQ,ln[COC]: | 0.50 | ln[dZn] | ln Q | [dZn] | Q | | |
| slope, m: | -0.44 | 9.12 | 0.64 | 9,176 | 2 | | |
| intercept, b: | 9.41 | 8.44 | 2.18 | 4,639 | 9 | | |
| N: 50 | | 7.63 | 4.02 | 2,061 | 56 | | |

**N= 50**

| update for new data | Sampling Date | Q Discharge cfs | dZn Concentration ug/L | dZn Load lbs/day | Ln Q | Ln dZn Conc. | Ln dZn Load | for graph 0 dZn NM298 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 27-Oct-93 | 2.48 | 5650 | 75.4 | 0.91 | 8.64 | 4.32 | -0.54 | -0.35 | -0.76 |
| IDEQ | 2-Dec-93 | 2.48 | 6270 | 83.7 | 0.91 | 8.74 | 4.43 | -0.54 | -0.15 | -0.71 |
| IDEQ | 16-Dec-93 | 2.02 | 7540 | 81.9 | 0.70 | 8.93 | 4.41 | -0.58 | 0.28 | -0.72 |
| IDEQ | 16-Dec-93 | 2.47 | 7540 | 100.2 | 0.90 | 8.93 | 4.61 | -0.54 | 0.28 | -0.62 |
| IDEQ | 24-Jan-94 | 2.69 | 8770 | 126.9 | 0.99 | 9.08 | 4.84 | -0.52 | 0.69 | -0.47 |
| IDEQ | 24-Jan-94 | 2.14 | 8770 | 101.0 | 0.76 | 9.08 | 4.61 | -0.57 | 0.69 | -0.61 |
| IDEQ | 18-Feb-94 | 2.28 | 8070 | 99.0 | 0.82 | 9.00 | 4.60 | -0.56 | 0.45 | -0.62 |
| IDEQ | 8-Mar-94 | 4.28 | 7240 | 166.7 | 1.45 | 8.89 | 5.12 | -0.39 | 0.18 | -0.25 |
| IDEQ | 24-Mar-94 | 4.66 | 8030 | 201.3 | 1.54 | 8.99 | 5.30 | -0.36 | 0.44 | -0.06 |
| IDEQ | 24-Mar-94 | 4.67 | 8030 | 201.8 | 1.54 | 8.99 | 5.31 | -0.36 | 0.44 | -0.05 |
| IDEQ | 7-Apr-94 | 8.51 | 6990 | 320.0 | 2.14 | 8.85 | 5.77 | -0.03 | 0.09 | 0.61 |
| IDEQ | 4-May-94 | 10.58 | 4110 | 233.9 | 2.36 | 8.32 | 5.46 | 0.14 | -0.87 | 0.13 |
| IDEQ | 19-May-94 | 12.08 | 2820 | 183.3 | 2.49 | 7.94 | 5.21 | 0.27 | -1.30 | -0.16 |
| IDEQ | 7-Jun-94 | 7.8 | 3890 | 163.2 | 2.05 | 8.27 | 5.10 | -0.09 | -0.94 | -0.27 |
| IDEQ | 23-Jun-94 | 5.29 | 4470 | 127.2 | 1.67 | 8.41 | 4.85 | -0.30 | -0.75 | -0.47 |
| IDEQ | 20-Jul-94 | 3.32 | 5250 | 93.8 | 1.20 | 8.57 | 4.54 | -0.47 | -0.49 | -0.65 |
| IDEQ | 20-Jul-94 | 4.72 | 5250 | 133.3 | 1.55 | 8.57 | 4.89 | -0.35 | -0.49 | -0.43 |
| IDEQ | 15-Aug-94 | 2.93 | 6040 | 95.2 | 1.08 | 8.71 | 4.56 | -0.50 | -0.22 | -0.65 |
| IDEQ | 15-Aug-94 | 2.06 | 6040 | 66.9 | 0.72 | 8.71 | 4.20 | -0.58 | -0.22 | -0.80 |
| IDEQ | 8-Sep-94 | 2.58 | 6150 | 85.4 | 0.95 | 8.72 | 4.45 | -0.53 | -0.19 | -0.70 |
| IDEQ | 4-Oct-94 | 2.58 | 7850 | 109.0 | 0.95 | 8.97 | 4.69 | -0.53 | 0.38 | -0.57 |
| IDEQ | 15-Nov-94 | 2.1 | 11400 | 128.8 | 0.74 | 9.34 | 4.86 | -0.57 | 1.56 | -0.46 |
| IDEQ | 13-Dec-94 | 2.48 | 12400 | 165.4 | 0.91 | 9.43 | 5.11 | -0.54 | 1.90 | -0.25 |
| IDEQ | 10-Jan-95 | 4.1 | 9680 | 213.5 | 1.41 | 9.18 | 5.36 | -0.40 | 0.99 | 0.01 |
| IDEQ | 9-Feb-95 | 6.85 | 10600 | 390.6 | 1.92 | 9.27 | 5.97 | -0.17 | 1.30 | 1.00 |
| IDEQ | 7-Mar-95 | 6.85 | 8590 | 316.6 | 1.92 | 9.06 | 5.76 | -0.17 | 0.63 | 0.59 |
| IDEQ | 13-Apr-95 | 10.13 | 9160 | 499.2 | 2.32 | 9.12 | 6.21 | 0.11 | 0.82 | 1.60 |
| IDEQ | 25-Apr-95 | 7.15 | 8960 | 344.7 | 1.97 | 9.10 | 5.84 | -0.15 | 0.75 | 0.74 |
| IDEQ | 9-May-95 | 12.08 | 3390 | 220.3 | 2.49 | 8.13 | 5.40 | 0.27 | -1.11 | 0.05 |
| IDEQ | 23-May-95 | 25.86 | 2350 | 326.9 | 3.25 | 7.76 | 5.79 | 1.44 | -1.45 | 0.64 |
| IDEQ | 12-Jun-95 | 6.85 | 2890 | 106.5 | 1.92 | 7.97 | 4.67 | -0.17 | -1.27 | -0.58 |
| IDEQ | 27-Jun-95 | 2.19 | 3800 | 44.8 | 0.78 | 8.24 | 3.80 | -0.57 | -0.97 | -0.93 |
| IDEQ | 13-Sep-95 | 4.28 | 7160 | 164.9 | 1.45 | 8.88 | 5.11 | -0.39 | 0.15 | -0.26 |
| URS | 12-Nov-97 | 3.92 | 8700 | 183.5 | 1.37 | 9.07 | 5.21 | -0.42 | 0.66 | -0.15 |
| URS | 14-May-98 | 55.6 | 2060 | 616.2 | 4.02 | 7.63 | 6.42 | 3.96 | -1.55 | 2.25 |
| USGS | 27-Oct-98 | 2.1 | 7160 | 80.9 | 0.74 | 8.88 | 4.39 | -0.57 | 0.15 | -0.73 |
| USGS | 19-Nov-98 | 1.9 | 12600 | 128.8 | 0.64 | 9.44 | 4.86 | -0.59 | 1.96 | -0.46 |
| USGS | 10-Dec-98 | 2 | 14000 | 150.6 | 0.69 | 9.55 | 5.01 | -0.58 | 2.43 | -0.34 |
| IDEQ | 15-Jan-99 | 3.32005516 | 9600 | 171.5 | 1.20 | 9.17 | 5.14 | -0.47 | 0.96 | -0.22 |
| USGS | 21-Jan-99 | 3.3 | 9330 | 165.6 | 1.19 | 9.14 | 5.11 | -0.47 | 0.87 | -0.25 |
| IDEQ | 23-Feb-99 | 1.934382724 | 8690 | 90.4 | 0.66 | 9.07 | 4.50 | -0.59 | 0.66 | -0.67 |
| IDEQ | 8-Mar-99 | 2.281431698 | 8580 | 105.3 | 0.82 | 9.06 | 4.66 | -0.56 | 0.62 | -0.59 |
| USGS | 22-Mar-99 | 17 | 6950 | 635.6 | 2.83 | 8.85 | 6.45 | 0.69 | 0.08 | 2.36 |
| USGS | 20-Apr-99 | 30 | 6230 | 1005.5 | 3.40 | 8.74 | 6.91 | 1.79 | -0.16 | 4.42 |
| USGS | 5-May-99 | 22 | 4540 | 537.4 | 3.09 | 8.42 | 6.29 | 1.11 | -0.72 | 1.82 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USGS | 23-May-99 | 45 | 1600 | 387.4 | 3.81 | 7.38 | 5.96 | 3.06 | -1.70 | 0.98 |
| USGS | 15-Jun-99 | 45 | 867 | 209.9 | 3.81 | 6.77 | 5.35 | 3.06 | -1.95 | -0.81 |
| USGS | 7-Jul-99 | 16 | 1660 | 142.9 | 2.77 | 7.41 | 4.96 | 0.60 | -1.68 | -0.38 |
| USGS | 4-Aug-99 | 6.2 | 2980 | 99.4 | 1.82 | 8.00 | 4.60 | -0.23 | -1.24 | -0.62 |
| USGS | 1-Sep-99 | 3 | 4820 | 77.8 | 1.10 | 8.48 | 4.35 | -0.50 | -0.63 | -0.74 |

**dZn**

**Concentration over time analysis**

**dZn NM298**

**LnConc.=mTime+b All data r2, m:**

| | Time | Ln[COC] | [COC] |
|---|---|---|---|
| first: | 27-Oct-93 | 8.82 | 6,746 |
| mid: | 22-Feb-95 | 8.74 | 6,231 |
| last: | 1-Sep-99 | 8.47 | 4,749 |

**LnConc.=mTime+b >'96 r2, m:**

| | | |
|---|---|---|
| 1-Sep-99 | #DIV/0! | #DIV/0! |
| 1-Sep-99 | #DIV/0! | #DIV/0! |

r2 Slope, m

**Concentration over time**

**0.051 -0.00016**

**#DIV/0! #DIV/0!**

**Load over time analysis**

**dZn NM298**

**LnLoad=mTime+b All data r2, m:**

| | Time | LnLoad | Load |
|---|---|---|---|
| first: | 27-Oct-93 | 4.93 | 138 |
| mid: | 22-Feb-95 | 5.03 | 153 |
| last: | 1-Sep-99 | 5.37 | 216 |

**LnLoad=mTime+b >'96 r2, m:**

| | | |
|---|---|---|
| 1-Sep-99 | #DIV/0! | #DIV/0! |
| 1-Sep-99 | #DIV/0! | #DIV/0! |

**Load over time**

**0.064 0.00021**

**#DIV/0! #DIV/0!**

max r2: #DIV/0!

**Forward time Regression on Ln Concentration(t)**

max r2: #DIV/0!

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept | r2 | slope | intercept |
|---|---|---|---|---|---|
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.051 | -0.00016 | 14.45 | 0.064 | 0.00021 | -2.26 |
| 0.053 | -0.00017 | 14.63 | 0.054 | 0.00019 | -1.64 |
| 0.053 | -0.00017 | 14.71 | 0.046 | 0.00018 | -1.09 |
| 0.050 | -0.00017 | 14.59 | 0.037 | 0.00016 | -0.48 |
| 0.047 | -0.00016 | 14.47 | 0.031 | 0.00015 | -0.03 |
| 0.041 | -0.00016 | 14.16 | 0.028 | 0.00014 | 0.19 |
| 0.036 | -0.00015 | 13.82 | 0.023 | 0.00013 | 0.70 |
| 0.032 | -0.00014 | 13.56 | 0.017 | 0.00011 | 1.27 |
| 0.029 | -0.00014 | 13.40 | 0.017 | 0.00011 | 1.25 |
| 0.025 | -0.00013 | 13.08 | 0.019 | 0.00012 | 1.00 |
| 0.021 | -0.00012 | 12.74 | 0.020 | 0.00013 | 0.71 |
| 0.018 | -0.00011 | 12.55 | 0.030 | 0.00015 | -0.26 |
| 0.023 | -0.00013 | 13.11 | 0.035 | 0.00017 | -0.86 |
| 0.036 | -0.00016 | 14.30 | 0.037 | 0.00018 | -1.15 |
| 0.046 | -0.00018 | 15.12 | 0.037 | 0.00018 | -1.28 |
| 0.054 | -0.00020 | 15.79 | 0.033 | 0.00017 | -1.01 |
| 0.059 | -0.00021 | 16.26 | 0.024 | 0.00015 | -0.16 |
| 0.064 | -0.00023 | 16.80 | 0.021 | 0.00014 | 0.16 |
| 0.066 | -0.00024 | 17.13 | 0.013 | 0.00011 | 1.21 |
| 0.068 | -0.00025 | 17.51 | 0.003 | 0.00006 | 3.22 |
| 0.070 | -0.00026 | 17.91 | 0.000 | 0.00001 | 5.00 |
| 0.063 | -0.00026 | 17.74 | 0.001 | -0.00003 | 6.50 |
| 0.046 | -0.00022 | 16.52 | 0.004 | -0.00007 | 7.80 |
| 0.027 | -0.00017 | 14.78 | 0.007 | -0.00009 | 8.64 |
| 0.016 | -0.00014 | 13.42 | 0.007 | -0.00010 | 8.85 |
| 0.005 | -0.00008 | 11.38 | 0.002 | -0.00005 | 6.95 |
| 0.001 | -0.00003 | 9.59 | 0.000 | 0.00000 | 5.35 |
| 0.001 | 0.00004 | 6.95 | 0.008 | 0.00011 | 1.17 |
| 0.012 | 0.00014 | 3.37 | 0.027 | 0.00022 | -2.67 |
| 0.006 | 0.00011 | 4.55 | 0.040 | 0.00029 | -5.38 |
| 0.001 | -0.00003 | 9.75 | 0.099 | 0.00051 | -13.33 |
| 0.018 | -0.00024 | 17.17 | 0.079 | 0.00054 | -14.19 |
| 0.068 | -0.00062 | 30.94 | 0.000 | 0.00003 | 4.34 |
| 0.129 | -0.00176 | 72.39 | 0.008 | -0.00042 | 20.61 |
| 0.117 | -0.00233 | 92.96 | 0.023 | -0.00105 | 43.18 |
| 0.525 | -0.00629 | 236.70 | 0.014 | 0.00099 | -30.49 |
| 0.577 | -0.00732 | 273.99 | 0.000 | -0.00014 | 10.25 |
| 0.535 | -0.00754 | 281.83 | 0.010 | -0.00100 | 41.69 |
| 0.455 | -0.00729 | 272.89 | 0.032 | -0.00202 | 78.61 |
| 0.397 | -0.00721 | 269.83 | 0.056 | -0.00299 | 113.83 |
| 0.317 | -0.00700 | 262.33 | 0.113 | -0.00488 | 182.46 |
| 0.223 | -0.00616 | 231.78 | 0.355 | -0.00921 | 339.96 |
| 0.100 | -0.00429 | 163.96 | 0.912 | -0.01615 | 592.13 |
| 0.006 | -0.00113 | 49.04 | 0.954 | -0.01875 | 686.76 |
| 0.084 | 0.00436 | -150.52 | 0.967 | -0.01669 | 611.89 |

| | | | | | |
|---|---|---|---|---|---|
| 0.720 | 0.01393 | -498.72 | 0.954 | -0.01553 | 569.58 |
| 0.986 | 0.02174 | -782.79 | 0.979 | -0.01266 | 465.11 |
| 0.997 | 0.01903 | -684.45 | 0.988 | -0.01086 | 399.59 |
| 1.000 | 0.01717 | -616.69 | 1.000 | -0.00875 | 323.00 |
| #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |

update for EV, CV:

**dZn**
**LN Analysis**

**Load**

| | |
|---|---|
| **Avg:** | **211** |
| **SD:** | **180** |
| **CV:** | **0.85** |
| **Min:** | **44.8** |
| **Max:** | **1,006** |
| **Median:** | **157** |

**NM298**
**dZn**
**Load Data, EV=211 lbs/day CV=0.85**
**Load Data-based LN**

| u | ln dZn Load | dZn Load |
|---|---|---|
| 3 | 7.3 | 1471 |
| 0 | 5.08 | 161 |
| -3 | 2.87 | 17.6 |

| | |
|---|---|
| 211 | 211 |
| 0.85 | 0.85 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.954, EV=210lbs/day CV=0.787; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.954 | u | lnLoad | Load |
| slope, m: | 1.441 | 3 | 7.19 | 1324 |
| intercept, b: | -7.358 | 0 | 5.11 | 165 |
| N: | 50 | -3 | 3.02 | 20.6 |
| E[Load]: | 210.0 | Parameter Estimates | | |
| SD[Load]: | 165 | from LN regression | | |
| CV[Load]: | 0.79 | update graph label | | |

| | |
|---|---|
| | 0.954 |
| | 210.0 |
| | 0.8 |
| | max r2 |
| | #DIV/0! |

| | |
|---|---|
| 0.954 | |
| 210 | |
| 0.787 | |

N: 50

| Date | dZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 13-Feb-00 | **44.8** | 1 | 0.0124 | -2.243 | 3.802 | 0.954 |
| 6-Mar-00 | **66.9** | 2 | 0.0323 | -1.847 | 4.204 | 0.952 |
| 15-Mar-00 | **75.4** | 3 | 0.0522 | -1.624 | 4.323 | 0.957 |
| 17-Mar-00 | **77.8** | 4 | 0.0721 | -1.460 | 4.354 | 0.963 |
| 20-Mar-00 | **80.9** | 5 | 0.0920 | -1.328 | 4.393 | 0.967 |
| 21-Mar-00 | **81.9** | 6 | 0.1119 | -1.216 | 4.406 | 0.970 |
| 23-Mar-00 | **83.7** | 7 | 0.1318 | -1.118 | 4.427 | 0.973 |
| 25-Mar-00 | **85.4** | 8 | 0.1517 | -1.029 | 4.447 | 0.975 |
| 30-Mar-00 | **90.4** | 9 | 0.1716 | -0.948 | 4.505 | 0.976 |
| 2-Apr-00 | **93.8** | 10 | 0.1915 | -0.872 | 4.541 | 0.977 |
| 4-Apr-00 | **95.2** | 11 | 0.2114 | -0.801 | 4.556 | 0.979 |
| 7-Apr-00 | **99.0** | 12 | 0.2313 | -0.734 | 4.595 | 0.980 |
| 8-Apr-00 | **99.4** | 13 | 0.2512 | -0.671 | 4.599 | 0.982 |
| 9-Apr-00 | **100.2** | 14 | 0.2711 | -0.609 | 4.607 | 0.982 |
| 9-Apr-00 | **101.0** | 15 | 0.2910 | -0.550 | 4.615 | 0.982 |
| 14-Apr-00 | **105.3** | 16 | 0.3109 | -0.493 | 4.657 | 0.982 |
| 15-Apr-00 | **106.5** | 17 | 0.3308 | -0.438 | 4.668 | 0.981 |
| 17-Apr-00 | **109.0** | 18 | 0.3507 | -0.383 | 4.691 | 0.980 |
| 5-May-00 | **126.9** | 19 | 0.3706 | -0.330 | 4.844 | 0.979 |
| 6-May-00 | **127.2** | 20 | 0.3905 | -0.278 | 4.846 | 0.980 |
| 7-May-00 | **128.8** | 21 | 0.4104 | -0.226 | 4.858 | 0.980 |
| 7-May-00 | **128.8** | 22 | 0.4303 | -0.175 | 4.858 | 0.980 |
| 12-May-00 | **133.3** | 23 | 0.4502 | -0.125 | 4.893 | 0.979 |
| 21-May-00 | **142.9** | 24 | 0.4701 | -0.075 | 4.962 | 0.978 |
| 29-May-00 | **150.6** | 25 | 0.4900 | -0.025 | 5.015 | 0.977 |
| 11-Jun-00 | **163.2** | 26 | 0.5100 | 0.025 | 5.095 | 0.977 |
| 12-Jun-00 | **164.9** | 27 | 0.5299 | 0.075 | 5.105 | 0.980 |
| 13-Jun-00 | **165.4** | 28 | 0.5498 | 0.125 | 5.109 | 0.981 |
| 13-Jun-00 | **165.6** | 29 | 0.5697 | 0.175 | 5.110 | 0.982 |
| 14-Jun-00 | **166.7** | 30 | 0.5896 | 0.226 | 5.116 | 0.981 |
| 19-Jun-00 | **171.5** | 31 | 0.6095 | 0.278 | 5.144 | 0.979 |
| 1-Jul-00 | **183.3** | 32 | 0.6294 | 0.330 | 5.211 | 0.978 |
| 1-Jul-00 | **183.5** | 33 | 0.6493 | 0.383 | 5.212 | 0.976 |
| 19-Jul-00 | **201.3** | 34 | 0.6692 | 0.438 | 5.305 | 0.973 |
| 19-Jul-00 | **201.8** | 35 | 0.6891 | 0.493 | 5.307 | 0.971 |
| 27-Jul-00 | **209.9** | 36 | 0.7090 | 0.550 | 5.347 | 0.968 |
| 31-Jul-00 | **213.5** | 37 | 0.7289 | 0.609 | 5.364 | 0.964 |
| 7-Aug-00 | **220.3** | 38 | 0.7488 | 0.671 | 5.395 | 0.961 |
| 20-Aug-00 | **233.9** | 39 | 0.7687 | 0.734 | 5.455 | 0.964 |
| 11-Nov-00 | **316.6** | 40 | 0.7886 | 0.801 | 5.758 | 0.975 |
| 15-Nov-00 | **320.0** | 41 | 0.8085 | 0.872 | 5.768 | 0.975 |
| 21-Nov-00 | **326.9** | 42 | 0.8284 | 0.948 | 5.790 | 0.971 |
| 9-Dec-00 | **344.7** | 43 | 0.8483 | 1.029 | 5.843 | 0.965 |
| 21-Jan-01 | **387.4** | 44 | 0.8682 | 1.118 | 5.959 | 0.957 |
| 24-Jan-01 | **390.6** | 45 | 0.8881 | 1.216 | 5.968 | 0.944 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 13-May-01 | 499.2 | 46 | 0.9080 | 1.328 | 6.213 | 0.943 |
| 20-Jun-01 | 537.4 | 47 | 0.9279 | 1.460 | 6.287 | 0.931 |
| 7-Sep-01 | 616.2 | 48 | 0.9478 | 1.624 | 6.424 | 0.908 |
| 26-Sep-01 | 635.6 | 49 | 0.9677 | 1.847 | 6.455 | 1.000 |
| 1-Oct-02 | 1005.5 | 50 | 0.9876 | 2.243 | 6.913 | #DIV/0! |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **dZn** | | **NM298** | | 6,710 | 6710 |
| **LN Analysis** | | **dZn** | | 0.45 | 0.447 |
| **Concentration** | | **Conc. Data, EV=6710 ug/L CV=0.447** | | | |
| **Avg:** | **6,710** | **Data-based LN** | | | |
| **SD:** | **2,997** | u | ln[dZn] | [dZn] | |
| **CV:** | **0.45** | 3 | 10.0 | 22027 | |
| **Min:** | **867** | 0 | 8.72 | 6127 | |
| **Max:** | **14,000** | -3 | 7.44 | 1704 | |
| **Median:** | **7,075** | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.903 | 0.903 |
| **u=mLn(Conc.)+b:** | | | | 7135.6 | 7140 |
| update for r2, EV, CV: | **r2=0.903, EV=7140 ug/L CV=0.694; max r2=0.99** | | | 0.694 | 0.694 |
| r2 u,lnConc: | 0.903 | u | lnConc. | Conc. | |
| slope, m: | 1.594 | 3 | 10.56 | 38477 | |
| intercept, b: | -13.833 | 0 | 8.68 | 5861 | |
| N: | 50 | -3 | 6.79 | 893 | |
| E[Conc]: | 7135.6 | Parameter Estimates | | | |
| SD[Conc]: | 4954 | from LN regression | | | |
| CV[Conc]: | 0.69 | update graph label | | | |

| Date | dZn Concentration ug/L Ranked | N: 50 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Jul-00 | 867 | 1 | 0.0124 | -2.243 | 6.765 | 0.903 |
| 21-Jan-01 | 1600 | 2 | 0.0323 | -1.847 | 7.378 | 0.911 |
| 21-May-00 | 1660 | 3 | 0.0522 | -1.624 | 7.415 | 0.907 |
| 7-Sep-01 | 2060 | 4 | 0.0721 | -1.460 | 7.630 | 0.913 |
| 21-Nov-00 | 2350 | 5 | 0.0920 | -1.328 | 7.762 | 0.917 |
| 1-Jul-00 | 2820 | 6 | 0.1119 | -1.216 | 7.944 | 0.921 |
| 15-Apr-00 | 2890 | 7 | 0.1318 | -1.118 | 7.969 | 0.920 |
| 8-Apr-00 | 2980 | 8 | 0.1517 | -1.029 | 8.000 | 0.924 |
| 7-Aug-00 | 3390 | 9 | 0.1716 | -0.948 | 8.129 | 0.933 |
| 13-Feb-00 | 3800 | 10 | 0.1915 | -0.872 | 8.243 | 0.939 |
| 11-Jun-00 | 3890 | 11 | 0.2114 | -0.801 | 8.266 | 0.941 |
| 20-Aug-00 | 4110 | 12 | 0.2313 | -0.734 | 8.321 | 0.946 |
| 6-May-00 | 4470 | 13 | 0.2512 | -0.671 | 8.405 | 0.952 |
| 20-Jun-01 | 4540 | 14 | 0.2711 | -0.609 | 8.421 | 0.955 |
| 17-Mar-00 | 4820 | 15 | 0.2910 | -0.550 | 8.481 | 0.962 |
| 2-Apr-00 | 5250 | 16 | 0.3109 | -0.493 | 8.566 | 0.968 |
| 12-May-00 | 5250 | 17 | 0.3308 | -0.438 | 8.566 | 0.970 |
| 15-Mar-00 | 5650 | 18 | 0.3507 | -0.383 | 8.639 | 0.975 |
| 4-Apr-00 | 6040 | 19 | 0.3706 | -0.330 | 8.706 | 0.976 |
| 6-Mar-00 | 6040 | 20 | 0.3905 | -0.278 | 8.706 | 0.975 |
| 25-Mar-00 | 6150 | 21 | 0.4104 | -0.226 | 8.724 | 0.974 |
| 1-Oct-02 | 6230 | 22 | 0.4303 | -0.175 | 8.737 | 0.974 |
| 23-Mar-00 | 6270 | 23 | 0.4502 | -0.125 | 8.744 | 0.975 |
| 26-Sep-01 | 6950 | 24 | 0.4701 | -0.075 | 8.846 | 0.979 |
| 15-Nov-00 | 6990 | 25 | 0.4900 | -0.025 | 8.852 | 0.978 |
| 12-Jun-00 | 7160 | 26 | 0.5100 | 0.025 | 8.876 | 0.976 |
| 20-Mar-00 | 7160 | 27 | 0.5299 | 0.075 | 8.876 | 0.974 |
| 14-Jun-00 | 7240 | 28 | 0.5498 | 0.125 | 8.887 | 0.972 |
| 21-Mar-00 | 7540 | 29 | 0.5697 | 0.175 | 8.928 | 0.970 |
| 9-Apr-00 | 7540 | 30 | 0.5896 | 0.226 | 8.928 | 0.968 |
| 17-Apr-00 | 7850 | 31 | 0.6095 | 0.278 | 8.968 | 0.965 |
| 19-Jul-00 | 8030 | 32 | 0.6294 | 0.330 | 8.991 | 0.963 |
| 19-Jul-00 | 8030 | 33 | 0.6493 | 0.383 | 8.991 | 0.962 |
| 7-Apr-00 | 8070 | 34 | 0.6692 | 0.438 | 8.996 | 0.959 |
| 14-Apr-00 | 8580 | 35 | 0.6891 | 0.493 | 9.057 | 0.955 |
| 11-Nov-00 | 8590 | 36 | 0.7090 | 0.550 | 9.058 | 0.960 |
| 30-Mar-00 | 8690 | 37 | 0.7289 | 0.609 | 9.070 | 0.963 |
| 1-Jul-00 | 8700 | 38 | 0.7488 | 0.671 | 9.071 | 0.967 |
| 5-May-00 | 8770 | 39 | 0.7687 | 0.734 | 9.079 | 0.967 |
| 9-Apr-00 | 8770 | 40 | 0.7886 | 0.801 | 9.079 | 0.966 |
| 9-Dec-00 | 8960 | 41 | 0.8085 | 0.872 | 9.101 | 0.961 |
| 13-May-01 | 9160 | 42 | 0.8284 | 0.948 | 9.123 | 0.954 |
| 13-Jun-00 | 9330 | 43 | 0.8483 | 1.029 | 9.141 | 0.945 |
| 19-Jun-00 | 9600 | 44 | 0.8682 | 1.118 | 9.170 | 0.931 |
| 31-Jul-00 | 9680 | 45 | 0.8881 | 1.216 | 9.178 | 0.911 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 24-Jan-01 | 10600 | 46 | 0.9080 | 1.328 | 9.269 | 0.934 |
| 7-May-00 | 11400 | 47 | 0.9279 | 1.460 | 9.341 | 0.946 |
| 13-Jun-00 | 12400 | 48 | 0.9478 | 1.624 | 9.425 | 0.942 |
| 7-May-00 | 12600 | 49 | 0.9677 | 1.847 | 9.441 | 1.000 |
| 29-May-00 | 14000 | 50 | 0.9876 | 2.243 | 9.547 | #DIV/0! |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **dZn** | | **NM298** | | | 9 | 8.88 |
| **LN Analysis** | | **dZn** | | | 1.33 | 1.33 |
| **Discharge, Q** | | **Q Data, EV=8.88 cfs CV=1.33** | | | | |
| **Avg:** | 9 | **Q Data-based LN** | | | | |
| **SD:** | 12 | u | lnQ | Q | | |
| **CV:** | 1.33 | 3 | 4.7 | 110 | | |
| **Min:** | 2 | 0 | 1.68 | 5 | | |
| **Max:** | 56 | -3 | -1.35 | 0 | | |
| **Median:** | 4 | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.887 | 0.887 |
| | | | | | 8.7 | 8.72 |
| **u=mLn(Q)+b:** | | | | | 1.33 | 1.33 |

update for r2, EV, CV: **r2=0.887, EV=8.72 cfs CV=1.33; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.887 | u | lnQ | Q |
| slope, m: | 0.990 | 3 | 4.69 | 108 |
| intercept, b: | -1.638 | 0 | 1.66 | 5 |
| N: | 50 | -3 | -1.38 | 0 |
| E[Q]: | 8.7 | Parameter Estimates | | |
| SD[Q]: | 12 | from LN regression | | |
| CV[Q]: | 1.33 | update graph label | | |

N: 50

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 7-May-00 | 1.9 | 1 | 0.0124 | -2.243 | 0.642 | 0.887 |
| 30-Mar-00 | 1.934382724 | 2 | 0.0323 | -1.847 | 0.660 | 0.912 |
| 29-May-00 | 2 | 3 | 0.0522 | -1.624 | 0.693 | 0.927 |
| 21-Mar-00 | 2.02 | 4 | 0.0721 | -1.460 | 0.703 | 0.938 |
| 6-Mar-00 | 2.06 | 5 | 0.0920 | -1.328 | 0.723 | 0.947 |
| 7-May-00 | 2.1 | 6 | 0.1119 | -1.216 | 0.742 | 0.954 |
| 20-Mar-00 | 2.1 | 7 | 0.1318 | -1.118 | 0.742 | 0.960 |
| 9-Apr-00 | 2.14 | 8 | 0.1517 | -1.029 | 0.761 | 0.964 |
| 13-Feb-00 | 2.19 | 9 | 0.1716 | -0.948 | 0.784 | 0.968 |
| 7-Apr-00 | 2.28 | 10 | 0.1915 | -0.872 | 0.824 | 0.972 |
| 14-Apr-00 | 2.281431698 | 11 | 0.2114 | -0.801 | 0.825 | 0.975 |
| 9-Apr-00 | 2.47 | 12 | 0.2313 | -0.734 | 0.904 | 0.977 |
| 15-Mar-00 | 2.48 | 13 | 0.2512 | -0.671 | 0.908 | 0.980 |
| 23-Mar-00 | 2.48 | 14 | 0.2711 | -0.609 | 0.908 | 0.982 |
| 13-Jun-00 | 2.48 | 15 | 0.2910 | -0.550 | 0.908 | 0.983 |
| 25-Mar-00 | 2.58 | 16 | 0.3109 | -0.493 | 0.948 | 0.984 |
| 17-Apr-00 | 2.58 | 17 | 0.3308 | -0.438 | 0.948 | 0.984 |
| 5-May-00 | 2.69 | 18 | 0.3507 | -0.383 | 0.990 | 0.984 |
| 4-Apr-00 | 2.93 | 19 | 0.3706 | -0.330 | 1.075 | 0.983 |
| 17-Mar-00 | 3 | 20 | 0.3905 | -0.278 | 1.099 | 0.983 |
| 13-Jun-00 | 3.3 | 21 | 0.4104 | -0.226 | 1.194 | 0.982 |
| 2-Apr-00 | 3.32 | 22 | 0.4303 | -0.175 | 1.200 | 0.982 |
| 19-Jun-00 | 3.32005516 | 23 | 0.4502 | -0.125 | 1.200 | 0.981 |
| 1-Jul-00 | 3.92 | 24 | 0.4701 | -0.075 | 1.366 | 0.980 |
| 31-Jul-00 | 4.1 | 25 | 0.4900 | -0.025 | 1.411 | 0.979 |
| 14-Jun-00 | 4.28 | 26 | 0.5100 | 0.025 | 1.454 | 0.979 |
| 12-Jun-00 | 4.28 | 27 | 0.5299 | 0.075 | 1.454 | 0.978 |
| 19-Jul-00 | 4.66 | 28 | 0.5498 | 0.125 | 1.539 | 0.976 |
| 19-Jul-00 | 4.67 | 29 | 0.5697 | 0.175 | 1.541 | 0.975 |
| 12-May-00 | 4.72 | 30 | 0.5896 | 0.226 | 1.552 | 0.973 |
| 6-May-00 | 5.29 | 31 | 0.6095 | 0.278 | 1.666 | 0.971 |
| 8-Apr-00 | 6.2 | 32 | 0.6294 | 0.330 | 1.825 | 0.968 |
| 24-Jan-01 | 6.85 | 33 | 0.6493 | 0.383 | 1.924 | 0.965 |
| 11-Nov-00 | 6.85 | 34 | 0.6692 | 0.438 | 1.924 | 0.964 |
| 15-Apr-00 | 6.85 | 35 | 0.6891 | 0.493 | 1.924 | 0.960 |
| 9-Dec-00 | 7.15 | 36 | 0.7090 | 0.550 | 1.967 | 0.955 |
| 11-Jun-00 | 7.8 | 37 | 0.7289 | 0.609 | 2.054 | 0.951 |
| 15-Nov-00 | 8.51 | 38 | 0.7488 | 0.671 | 2.141 | 0.945 |
| 13-May-01 | 10.13 | 39 | 0.7687 | 0.734 | 2.316 | 0.939 |
| 20-Aug-00 | 10.58 | 40 | 0.7886 | 0.801 | 2.359 | 0.929 |
| 1-Jul-00 | 12.08 | 41 | 0.8085 | 0.872 | 2.492 | 0.919 |
| 7-Aug-00 | 12.08 | 42 | 0.8284 | 0.948 | 2.492 | 0.904 |
| 21-May-00 | 16 | 43 | 0.8483 | 1.029 | 2.773 | 0.902 |
| 26-Sep-01 | 17 | 44 | 0.8682 | 1.118 | 2.833 | 0.881 |
| 20-Jun-01 | 22 | 45 | 0.8881 | 1.216 | 3.091 | 0.873 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 21-Nov-00 | 25.86 | 46 | 0.9080 | 1.328 | 3.253 | 0.836 |
| 1-Oct-02 | 30 | 47 | 0.9279 | 1.460 | 3.401 | 0.769 |
| 21-Jan-01 | 45 | 48 | 0.9478 | 1.624 | 3.807 | 0.873 |
| 27-Jul-00 | 45 | 49 | 0.9677 | 1.847 | 3.807 | 1.000 |
| 7-Sep-01 | 55.6 | 50 | 0.9876 | 2.243 | 4.018 | #DIV/0! |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | **NM298** | **Date:** 22-Jun-00 |
| **Chemical:** | **tCd** | **Analyst:** J.MacLachlan |
| **Notes:** | | |
| **Input Discharge and Concentration Data below (in red)** | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,104 | 9 | 39 | 1 | 0.00 | 0.00 | 0.00 |
| **SD:** | 788 | 12 | 17 | 1 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.32 | 0.44 | 0.85 | | | |
| **Min:** | 34,269 | 2 | 6 | 0.3 | -0.60 | -1.92 | -0.89 |
| **Max:** | 36,404 | 56 | 92 | 6 | 3.92 | 3.06 | 4.60 |
| **Median:** | 34,739 | 4 | 42 | 1 | -0.40 | 0.17 | -0.33 |

| tCd NM298 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.316)** | update r2 | **0.32** | 0.316 | r2: | 0.188 | 0.129 |
| r2 Q,[COC]: | 0.32 | [tCd] | Q | m: | 0.0065 | 0.00042 |
| slope, m: | -0.8 | 45 | 1.9 | b: | -220 | -13.07 |
| intercept, b: | 46.5 | 39 | 9.0 | | | |
| N: 49 | | 1 | 56 | | | |
| **LnConc. = mLn(Q)+b (r2=0.491)** | update r2 | | 0.49 | 0.491 | | |
| r2 lnQ,ln[COC]: | 0.49 | ln[tCd] | ln Q | [tCd] | Q | |
| slope, m: | -0.41 | 3.96 | 0.66 | 53 | 2 | |
| intercept, b: | 4.23 | 3.33 | 2.20 | 28 | 9 | |
| N: 49 | | 2.59 | 4.02 | 13 | 56 | |

| | | | | | | | | | for graph | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | tCd | 0 | |
| N= 49 | | | | | | | | NM298 | | |
| | Sampling Date | Q Discharge | tCd Concentration | tCd Load | Ln Q | Ln tCd Conc. | Ln tCd Load | Standardized Values = (x - Avg)/SD Q | Conc | Load |
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| IDEQ | 27-Oct-93 | 2.48 | 31 | 0.4 | 0.91 | 3.43 | -0.88 | -0.55 | -0.47 | -0.79 |
| IDEQ | 2-Dec-93 | 2.48 | 30 | 0.4 | 0.91 | 3.40 | -0.92 | -0.55 | -0.53 | -0.81 |
| IDEQ | 16-Dec-93 | 2.02 | 43 | 0.5 | 0.70 | 3.76 | -0.76 | -0.59 | 0.23 | -0.74 |
| IDEQ | 16-Dec-93 | 2.47 | 43 | 0.6 | 0.90 | 3.76 | -0.56 | -0.55 | 0.23 | -0.65 |
| IDEQ | 24-Jan-94 | 2.69 | 38 | 0.5 | 0.99 | 3.64 | -0.60 | -0.53 | -0.06 | -0.67 |
| IDEQ | 24-Jan-94 | 2.14 | 38 | 0.4 | 0.76 | 3.64 | -0.83 | -0.58 | -0.06 | -0.77 |
| IDEQ | 18-Feb-94 | 2.28 | 51 | 0.6 | 0.82 | 3.93 | -0.47 | -0.57 | 0.69 | -0.60 |
| IDEQ | 8-Mar-94 | 4.28 | 48 | 1.1 | 1.45 | 3.87 | 0.10 | -0.40 | 0.52 | -0.16 |
| IDEQ | 24-Mar-94 | 4.66 | 48 | 1.2 | 1.54 | 3.87 | 0.19 | -0.37 | 0.52 | -0.07 |
| IDEQ | 24-Mar-94 | 4.67 | 48 | 1.2 | 1.54 | 3.87 | 0.19 | -0.37 | 0.52 | -0.07 |
| IDEQ | 7-Apr-94 | 8.51 | 39 | 1.8 | 2.14 | 3.66 | 0.58 | -0.04 | -0.01 | 0.47 |
| IDEQ | 4-May-94 | 10.58 | 28 | 1.6 | 2.36 | 3.33 | 0.47 | 0.13 | -0.64 | 0.29 |
| IDEQ | 19-May-94 | 12.08 | 19 | 1.2 | 2.49 | 2.94 | 0.21 | 0.26 | -1.16 | -0.04 |
| IDEQ | 7-Jun-94 | 7.8 | 27 | 1.1 | 2.05 | 3.30 | 0.12 | -0.10 | -0.70 | -0.13 |
| IDEQ | 23-Jun-94 | 5.29 | 29 | 0.8 | 1.67 | 3.37 | -0.19 | -0.31 | -0.58 | -0.42 |
| IDEQ | 20-Jul-94 | 3.32 | 36 | 0.6 | 1.20 | 3.58 | -0.44 | -0.48 | -0.18 | -0.58 |
| IDEQ | 20-Jul-94 | 4.72 | 36 | 0.9 | 1.55 | 3.58 | -0.09 | -0.36 | -0.18 | -0.33 |
| IDEQ | 15-Aug-94 | 2.93 | 42 | 0.7 | 1.08 | 3.74 | -0.41 | -0.51 | 0.17 | -0.56 |
| IDEQ | 15-Aug-94 | 2.06 | 42 | 0.5 | 0.72 | 3.74 | -0.76 | -0.59 | 0.17 | -0.75 |
| IDEQ | 8-Sep-94 | 2.58 | 40 | 0.6 | 0.95 | 3.69 | -0.59 | -0.54 | 0.05 | -0.66 |
| IDEQ | 4-Oct-94 | 2.58 | 46 | 0.6 | 0.95 | 3.83 | -0.45 | -0.54 | 0.40 | -0.59 |
| IDEQ | 15-Nov-94 | 2.1 | 92 | 1.0 | 0.74 | 4.52 | 0.04 | -0.58 | 3.06 | -0.22 |
| IDEQ | 13-Dec-94 | 2.48 | 78 | 1.0 | 0.91 | 4.36 | 0.04 | -0.55 | 2.25 | -0.22 |
| IDEQ | 10-Jan-95 | 4.1 | 60 | 1.3 | 1.41 | 4.09 | 0.28 | -0.41 | 1.21 | 0.04 |
| IDEQ | 9-Feb-95 | 6.85 | 58 | 2.1 | 1.92 | 4.06 | 0.76 | -0.18 | 1.09 | 0.79 |
| IDEQ | 7-Mar-95 | 6.85 | 48 | 1.8 | 1.92 | 3.87 | 0.57 | -0.18 | 0.52 | 0.45 |
| IDEQ | 13-Apr-95 | 10.13 | 48 | 2.6 | 2.32 | 3.87 | 0.96 | 0.09 | 0.52 | 1.23 |
| IDEQ | 25-Apr-95 | 7.15 | 46 | 1.8 | 1.97 | 3.83 | 0.57 | -0.16 | 0.40 | 0.45 |
| IDEQ | 9-May-95 | 12.08 | 20 | 1.3 | 2.49 | 3.00 | 0.26 | 0.26 | -1.11 | 0.02 |
| IDEQ | 23-May-95 | 25.86 | 15 | 2.1 | 3.25 | 2.71 | 0.74 | 1.42 | -1.40 | 0.74 |
| IDEQ | 12-Jun-95 | 6.85 | 16 | 0.6 | 1.92 | 2.77 | -0.53 | -0.18 | -1.34 | -0.63 |
| IDEQ | 27-Jun-95 | 2.19 | 26 | 0.3 | 0.78 | 3.26 | -1.18 | -0.58 | -0.76 | -0.89 |
| IDEQ | 13-Sep-95 | 4.28 | 46 | 1.1 | 1.45 | 3.83 | 0.06 | -0.40 | 0.40 | -0.20 |
| URS | 12-Nov-97 | 3.92 | 42.7 | 0.9 | 1.37 | 3.75 | -0.10 | -0.43 | 0.21 | -0.35 |
| URS | 14-May-98 | 55.6 | 10.5 | 3.1 | 4.02 | 2.35 | 1.14 | 3.92 | -1.66 | 1.71 |
| USGS | 27-Oct-98 | 2.1 | 42 | 0.5 | 0.74 | 3.74 | -0.75 | -0.58 | 0.17 | -0.74 |
| USGS | 10-Dec-98 | 2 | 80 | 0.9 | 0.69 | 4.38 | -0.15 | -0.59 | 2.37 | -0.38 |
| IDEQ | 15-Jan-99 | 3.32005516 | 52 | 0.9 | 1.20 | 3.95 | -0.07 | -0.48 | 0.75 | -0.32 |
| USGS | 21-Jan-99 | 3.3 | 49 | 0.9 | 1.19 | 3.89 | -0.14 | -0.48 | 0.57 | -0.37 |
| IDEQ | 23-Feb-99 | 1.934382724 | 50 | 0.5 | 0.66 | 3.91 | -0.65 | -0.60 | 0.63 | -0.69 |
| IDEQ | 8-Mar-99 | 2.281431698 | 47 | 0.6 | 0.82 | 3.85 | -0.55 | -0.57 | 0.46 | -0.64 |
| USGS | 22-Mar-99 | 17 | 43 | 3.9 | 2.83 | 3.76 | 1.37 | 0.67 | 0.23 | 2.44 |
| USGS | 20-Apr-99 | 30 | 39 | 6.3 | 3.40 | 3.66 | 1.84 | 1.76 | -0.01 | 4.60 |
| USGS | 5-May-99 | 22 | 27 | 3.2 | 3.09 | 3.30 | 1.16 | 1.09 | -0.70 | 1.76 |
| USGS | 23-May-99 | 45 | 12 | 2.9 | 3.81 | 2.48 | 1.07 | 3.03 | -1.57 | 1.49 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USGS | 15-Jun-99 | 45 | 6 | 1.5 | 3.81 | 1.79 | 0.37 | 3.03 | -1.92 | 0.16 |
| USGS | 7-Jul-99 | 16 | 10.7 | 0.9 | 2.77 | 2.37 | -0.03 | 0.59 | -1.64 | -0.33 |
| USGS | 4-Aug-99 | 6.2 | 20.8 | 0.7 | 1.82 | 3.03 | -0.37 | -0.24 | -1.06 | -0.54 |
| USGS | 1-Sep-99 | 3 | 29.2 | 0.5 | 1.10 | 3.37 | -0.75 | -0.51 | -0.57 | -0.74 |

**tCd**

**Concentration over time analysis**

| | tCd | NM298 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.077** | **-0.00019** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 27-Oct-93 | 3.70 | 41 | | |
| mid: | 9-Feb-95 | 3.61 | 37 | | |
| last: | 1-Sep-99 | 3.30 | 27 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 1-Sep-99 | 0.00 | 1 | | |

**Load over time analysis**

| | tCd | NM298 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.074** | **0.00023** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 27-Oct-93 | -0.20 | 1 | | |
| mid: | 9-Feb-95 | -0.09 | 1 | | |
| last: | 1-Sep-99 | 0.29 | 1 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 1-Sep-99 | 0.00 | 1 | | |

max r2: #DIV/0!

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.077 | -0.00019 | 10.23 |
| 0.082 | -0.00020 | 10.51 |
| 0.087 | -0.00021 | 10.82 |
| 0.085 | -0.00021 | 10.78 |
| 0.082 | -0.00020 | 10.73 |
| 0.081 | -0.00021 | 10.81 |
| 0.081 | -0.00021 | 10.90 |
| 0.074 | -0.00020 | 10.63 |
| 0.069 | -0.00020 | 10.42 |
| 0.063 | -0.00019 | 10.17 |
| 0.057 | -0.00018 | 9.91 |
| 0.055 | -0.00018 | 9.90 |
| 0.061 | -0.00019 | 10.36 |
| 0.083 | -0.00023 | 11.47 |
| 0.091 | -0.00024 | 12.14 |
| 0.101 | -0.00026 | 12.77 |
| 0.103 | -0.00027 | 13.07 |
| 0.106 | -0.00028 | 13.43 |
| 0.103 | -0.00028 | 13.51 |
| 0.099 | -0.00028 | 13.61 |
| 0.098 | -0.00029 | 13.82 |
| 0.090 | -0.00029 | 13.70 |
| 0.060 | -0.00023 | 11.66 |
| 0.034 | -0.00018 | 9.67 |
| 0.018 | -0.00013 | 8.05 |
| 0.006 | -0.00008 | 6.13 |
| 0.001 | -0.00003 | 4.40 |
| 0.001 | 0.00003 | 2.14 |
| 0.010 | 0.00011 | -0.80 |
| 0.004 | 0.00008 | 0.39 |
| 0.001 | -0.00004 | 4.91 |
| 0.028 | -0.00026 | 12.83 |
| 0.067 | -0.00054 | 22.97 |
| 0.063 | -0.00108 | 42.62 |
| 0.044 | -0.00130 | 50.54 |
| 0.465 | -0.00547 | 201.65 |
| 0.516 | -0.00663 | 244.00 |
| 0.427 | -0.00628 | 230.99 |
| 0.373 | -0.00624 | 229.69 |
| 0.307 | -0.00624 | 229.80 |
| 0.215 | -0.00550 | 202.87 |
| 0.105 | -0.00407 | 150.91 |
| 0.007 | -0.00113 | 43.92 |
| 0.086 | 0.00402 | -143.50 |
| 0.638 | 0.01229 | -444.15 |

max r2: #DIV/0!

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.074 | 0.00023 | -8.07 |
| 0.062 | 0.00021 | -7.36 |
| 0.051 | 0.00019 | -6.58 |
| 0.042 | 0.00017 | -5.90 |
| 0.035 | 0.00015 | -5.38 |
| 0.028 | 0.00014 | -4.78 |
| 0.019 | 0.00011 | -3.86 |
| 0.014 | 0.00010 | -3.28 |
| 0.014 | 0.00010 | -3.37 |
| 0.015 | 0.00010 | -3.56 |
| 0.016 | 0.00011 | -3.78 |
| 0.023 | 0.00013 | -4.58 |
| 0.029 | 0.00015 | -5.28 |
| 0.033 | 0.00016 | -5.67 |
| 0.035 | 0.00017 | -5.96 |
| 0.031 | 0.00016 | -5.75 |
| 0.024 | 0.00015 | -5.06 |
| 0.022 | 0.00014 | -4.94 |
| 0.015 | 0.00012 | -4.14 |
| 0.005 | 0.00007 | -2.42 |
| 0.001 | 0.00003 | -0.83 |
| 0.000 | -0.00001 | 0.71 |
| 0.001 | -0.00003 | 1.21 |
| 0.002 | -0.00004 | 1.81 |
| 0.001 | -0.00004 | 1.76 |
| 0.000 | 0.00001 | 0.00 |
| 0.001 | 0.00005 | -1.50 |
| 0.014 | 0.00015 | -5.23 |
| 0.030 | 0.00024 | -8.35 |
| 0.043 | 0.00031 | -10.92 |
| 0.108 | 0.00054 | -19.32 |
| 0.079 | 0.00054 | -19.26 |
| 0.002 | 0.00010 | -3.25 |
| 0.000 | 0.00001 | -0.09 |
| 0.010 | -0.00072 | 26.34 |
| 0.022 | 0.00139 | -50.33 |
| 0.000 | -0.00010 | 3.85 |
| 0.007 | -0.00100 | 36.72 |
| 0.024 | -0.00202 | 73.69 |
| 0.077 | -0.00412 | 149.92 |
| 0.298 | -0.00855 | 311.05 |
| 0.909 | -0.01593 | 579.08 |
| 0.963 | -0.01875 | 681.63 |
| 0.969 | -0.01702 | 618.92 |
| 0.953 | -0.01717 | 624.16 |

| | | | | | |
|---|---|---|---|---|---|
| 0.975 | 0.02052 | -743.65 | 0.982 | -0.01387 | 504.25 |
| 0.966 | 0.01793 | -649.19 | 0.992 | -0.01197 | 434.85 |
| 1.000 | 0.01211 | -437.65 | 1.000 | -0.01381 | 502.04 |
| #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |

update for EV, CV:

**tCd**
**LN Analysis**
**Load**

**NM298**
**tCd**
**Load Data, EV=1.28 lbs/day CV=0.853**
**Load Data-based LN**

| | | u | ln tCd Load | tCd Load |
|---|---|---|---|---|
| **Avg:** | **1** | 3 | 2.2 | 9 |
| **SD:** | **1** | 0 | -0.03 | 1 |
| **CV:** | **0.85** | -3 | -2.25 | 0.1 |
| **Min:** | **0.3** | | | |
| **Max:** | **6** | | | |
| **Median:** | **1** | | | |

| | |
|---|---|
| 1 | 1.28 |
| 0.85 | 0.853 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.965, EV=1.27lbs/day CV=0.794; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.965 | u | lnLoad | Load |
| slope, m: | 1.431 | 3 | 2.09 | 8 |
| intercept, b: | 0.006 | 0 | 0.00 | 1 |
| N: | 49 | -3 | -2.10 | 0.1 |
| E[Load]: | 1.3 | Parameter Estimates | | |
| SD[Load]: | 1 | from LN regression | | |
| CV[Load]: | 0.79 | update graph label | | |

0.965
1.3
0.8
max r2
#DIV/0!

N: 49

| Date | tCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Jun-95 | 0.3 | 1 | 0.0127 | -2.236 | -1.183 | 0.965 |
| 2-Dec-93 | 0.4 | 2 | 0.0330 | -1.838 | -0.916 | 0.969 |
| 27-Oct-93 | 0.4 | 3 | 0.0533 | -1.614 | -0.883 | 0.975 |
| 24-Jan-94 | 0.4 | 4 | 0.0736 | -1.449 | -0.827 | 0.979 |
| 15-Aug-94 | 0.5 | 5 | 0.0939 | -1.317 | -0.765 | 0.982 |
| 16-Dec-93 | 0.5 | 6 | 0.1142 | -1.204 | -0.761 | 0.985 |
| 1-Sep-99 | 0.5 | 7 | 0.1345 | -1.105 | -0.752 | 0.987 |
| 27-Oct-98 | 0.5 | 8 | 0.1548 | -1.016 | -0.745 | 0.987 |
| 23-Feb-99 | 0.5 | 9 | 0.1751 | -0.934 | -0.653 | 0.987 |
| 24-Jan-94 | 0.5 | 10 | 0.1954 | -0.858 | -0.598 | 0.988 |
| 8-Sep-94 | 0.6 | 11 | 0.2157 | -0.787 | -0.588 | 0.989 |
| 16-Dec-93 | 0.6 | 12 | 0.2360 | -0.719 | -0.560 | 0.989 |
| 8-Mar-99 | 0.6 | 13 | 0.2563 | -0.655 | -0.550 | 0.989 |
| 12-Jun-95 | 0.6 | 14 | 0.2766 | -0.593 | -0.528 | 0.989 |
| 18-Feb-94 | 0.6 | 15 | 0.2970 | -0.533 | -0.469 | 0.988 |
| 4-Oct-94 | 0.6 | 16 | 0.3173 | -0.475 | -0.449 | 0.988 |
| 20-Jul-94 | 0.6 | 17 | 0.3376 | -0.419 | -0.442 | 0.987 |
| 15-Aug-94 | 0.7 | 18 | 0.3579 | -0.364 | -0.412 | 0.986 |
| 4-Aug-99 | 0.7 | 19 | 0.3782 | -0.310 | -0.366 | 0.986 |
| 23-Jun-94 | 0.8 | 20 | 0.3985 | -0.257 | -0.192 | 0.985 |
| 10-Dec-98 | 0.9 | 21 | 0.4188 | -0.205 | -0.150 | 0.985 |
| 21-Jan-99 | 0.9 | 22 | 0.4391 | -0.153 | -0.139 | 0.987 |
| 12-Nov-97 | 0.9 | 23 | 0.4594 | -0.102 | -0.105 | 0.987 |
| 20-Jul-94 | 0.9 | 24 | 0.4797 | -0.051 | -0.090 | 0.988 |
| 7-Jul-99 | 0.9 | 25 | 0.5000 | 0.000 | -0.082 | 0.988 |
| 15-Jan-99 | 0.9 | 26 | 0.5203 | 0.051 | -0.074 | 0.988 |
| 15-Nov-94 | 1.0 | 27 | 0.5406 | 0.102 | 0.039 | 0.987 |
| 13-Dec-94 | 1.0 | 28 | 0.5609 | 0.153 | 0.040 | 0.989 |
| 13-Sep-95 | 1.1 | 29 | 0.5812 | 0.205 | 0.058 | 0.989 |
| 8-Mar-94 | 1.1 | 30 | 0.6015 | 0.257 | 0.100 | 0.988 |
| 7-Jun-94 | 1.1 | 31 | 0.6218 | 0.310 | 0.125 | 0.988 |
| 24-Mar-94 | 1.2 | 32 | 0.6421 | 0.364 | 0.185 | 0.987 |
| 24-Mar-94 | 1.2 | 33 | 0.6624 | 0.419 | 0.187 | 0.987 |
| 19-May-94 | 1.2 | 34 | 0.6827 | 0.475 | 0.211 | 0.986 |
| 9-May-95 | 1.3 | 35 | 0.7030 | 0.533 | 0.262 | 0.984 |
| 10-Jan-95 | 1.3 | 36 | 0.7234 | 0.593 | 0.280 | 0.982 |
| 15-Jun-99 | 1.5 | 37 | 0.7437 | 0.655 | 0.373 | 0.981 |
| 4-May-94 | 1.6 | 38 | 0.7640 | 0.719 | 0.466 | 0.979 |
| 7-Mar-95 | 1.8 | 39 | 0.7843 | 0.787 | 0.570 | 0.976 |
| 25-Apr-95 | 1.8 | 40 | 0.8046 | 0.858 | 0.571 | 0.974 |
| 7-Apr-94 | 1.8 | 41 | 0.8249 | 0.934 | 0.580 | 0.969 |
| 23-May-95 | 2.1 | 42 | 0.8452 | 1.016 | 0.736 | 0.967 |
| 9-Feb-95 | 2.1 | 43 | 0.8655 | 1.105 | 0.760 | 0.958 |
| 13-Apr-95 | 2.6 | 44 | 0.8858 | 1.204 | 0.962 | 0.951 |
| 23-May-99 | 2.9 | 45 | 0.9061 | 1.317 | 1.067 | 0.943 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 14-May-98 | 3.1 | 46 | 0.9264 | 1.449 | 1.144 | 0.954 |
| 5-May-99 | 3.2 | 47 | 0.9467 | 1.614 | 1.162 | 0.996 |
| 22-Mar-99 | 3.9 | 48 | 0.9670 | 1.838 | 1.369 | 1.000 |
| 20-Apr-99 | 6.3 | 49 | 0.9873 | 2.236 | 1.840 | #DIV/0! |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **tCd** | | **NM298** | 39 | 39.1 |
| **LN Analysis** | | **tCd** | 0.44 | 0.442 |
| **Concentration** | | **Conc. Data, EV=39.1 ug/L CV=0.442** | | |
| **Avg:** | **39** | **Data-based LN** | | |
| **SD:** | **17** | u | ln[tCd] | [tCd] |
| **CV:** | **0.44** | 3 | 4.8 | 127 |
| **Min:** | **6** | 0 | 3.58 | 36 |
| **Max:** | **92** | -3 | 2.31 | 10 |
| **Median:** | **42** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **r2=0.896, EV=41.2 ug/L CV=0.641; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.896 | u | lnConc. | Conc. |
| slope, m: | 1.705 | 3 | 5.31 | 201 |
| intercept, b: | -6.043 | 0 | 3.55 | 35 |
| N: | 49 | -3 | 1.79 | 6 |
| E[Conc]: | 41.2 | Parameter Estimates | | |
| SD[Conc]: | 26 | from LN regression | | |
| CV[Conc]: | 0.64 | update graph label | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | 0.896 | 0.896 |
| | | | | | | 41.2 | 41.2 |
| | | | | | | 0.641 | 0.641 |
| 0.965 | | | | | | | |
| 1.27 | | | | | | | |
| 0.794 | | | | | | | |

| Date | tCd Concentration ug/L Ranked | N: 49 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 15-Jun-99 | 6 | 1 | 0.0127 | -2.236 | 1.792 | 0.896 |
| 14-May-98 | 10.5 | 2 | 0.0330 | -1.838 | 2.351 | 0.901 |
| 7-Jul-99 | 10.7 | 3 | 0.0533 | -1.614 | 2.370 | 0.896 |
| 23-May-99 | 12 | 4 | 0.0736 | -1.449 | 2.485 | 0.900 |
| 23-May-95 | 15 | 5 | 0.0939 | -1.317 | 2.708 | 0.911 |
| 12-Jun-95 | 16 | 6 | 0.1142 | -1.204 | 2.773 | 0.915 |
| 19-May-94 | 19 | 7 | 0.1345 | -1.105 | 2.944 | 0.924 |
| 9-May-95 | 20 | 8 | 0.1548 | -1.016 | 2.996 | 0.926 |
| 4-Aug-99 | 20.8 | 9 | 0.1751 | -0.934 | 3.035 | 0.931 |
| 27-Jun-95 | 26 | 10 | 0.1954 | -0.858 | 3.258 | 0.940 |
| 7-Jun-94 | 27 | 11 | 0.2157 | -0.787 | 3.296 | 0.936 |
| 5-May-99 | 27 | 12 | 0.2360 | -0.719 | 3.296 | 0.933 |
| 4-May-94 | 28 | 13 | 0.2563 | -0.655 | 3.332 | 0.930 |
| 23-Jun-94 | 29 | 14 | 0.2766 | -0.593 | 3.367 | 0.927 |
| 1-Sep-99 | 29.2 | 15 | 0.2970 | -0.533 | 3.374 | 0.923 |
| 2-Dec-93 | 30 | 16 | 0.3173 | -0.475 | 3.401 | 0.922 |
| 27-Oct-93 | 31 | 17 | 0.3376 | -0.419 | 3.434 | 0.920 |
| 20-Jul-94 | 36 | 18 | 0.3579 | -0.364 | 3.584 | 0.919 |
| 20-Jul-94 | 36 | 19 | 0.3782 | -0.310 | 3.584 | 0.914 |
| 24-Jan-94 | 38 | 20 | 0.3985 | -0.257 | 3.638 | 0.909 |
| 24-Jan-94 | 38 | 21 | 0.4188 | -0.205 | 3.638 | 0.906 |
| 7-Apr-94 | 39 | 22 | 0.4391 | -0.153 | 3.664 | 0.902 |
| 20-Apr-99 | 39 | 23 | 0.4594 | -0.102 | 3.664 | 0.899 |
| 8-Sep-94 | 40 | 24 | 0.4797 | -0.051 | 3.689 | 0.894 |
| 15-Aug-94 | 42 | 25 | 0.5000 | 0.000 | 3.738 | 0.891 |
| 15-Aug-94 | 42 | 26 | 0.5203 | 0.051 | 3.738 | 0.893 |
| 27-Oct-98 | 42 | 27 | 0.5406 | 0.102 | 3.738 | 0.894 |
| 12-Nov-97 | 42.7 | 28 | 0.5609 | 0.153 | 3.754 | 0.893 |
| 16-Dec-93 | 43 | 29 | 0.5812 | 0.205 | 3.761 | 0.893 |
| 16-Dec-93 | 43 | 30 | 0.6015 | 0.257 | 3.761 | 0.893 |
| 22-Mar-99 | 43 | 31 | 0.6218 | 0.310 | 3.761 | 0.890 |
| 4-Oct-94 | 46 | 32 | 0.6421 | 0.364 | 3.829 | 0.885 |
| 25-Apr-95 | 46 | 33 | 0.6624 | 0.419 | 3.829 | 0.893 |
| 13-Sep-95 | 46 | 34 | 0.6827 | 0.475 | 3.829 | 0.899 |
| 8-Mar-99 | 47 | 35 | 0.7030 | 0.533 | 3.850 | 0.902 |
| 8-Mar-94 | 48 | 36 | 0.7234 | 0.593 | 3.871 | 0.910 |
| 24-Mar-94 | 48 | 37 | 0.7437 | 0.655 | 3.871 | 0.923 |
| 24-Mar-94 | 48 | 38 | 0.7640 | 0.719 | 3.871 | 0.934 |
| 7-Mar-95 | 48 | 39 | 0.7843 | 0.787 | 3.871 | 0.942 |
| 13-Apr-95 | 48 | 40 | 0.8046 | 0.858 | 3.871 | 0.945 |
| 21-Jan-99 | 49 | 41 | 0.8249 | 0.934 | 3.892 | 0.942 |
| 23-Feb-99 | 50 | 42 | 0.8452 | 1.016 | 3.912 | 0.936 |
| 18-Feb-94 | 51 | 43 | 0.8655 | 1.105 | 3.932 | 0.925 |
| 15-Jan-99 | 52 | 44 | 0.8858 | 1.204 | 3.951 | 0.902 |
| 9-Feb-95 | 58 | 45 | 0.9061 | 1.317 | 4.060 | 0.872 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10-Jan-95 | 60 | 46 | 0.9264 | 1.449 | 4.094 | 0.808 |
| 13-Dec-94 | 78 | 47 | 0.9467 | 1.614 | 4.357 | 0.951 |
| 10-Dec-98 | 80 | 48 | 0.9670 | 1.838 | 4.382 | 1.000 |
| 15-Nov-94 | 92 | 49 | 0.9873 | 2.236 | 4.522 | #DIV/0! |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **NM298** | | | 9 | 9.02 |
| **LN Analysis** | | **tCd** | | | 1.32 | 1.32 |
| **Discharge, Q** | | **Q Data, EV=9.02 cfs CV=1.32** | | | | |
| **Avg:** | **9** | **Q Data-based LN** | | | | |
| **SD:** | **12** | u | lnQ | Q | | |
| **CV:** | **1.32** | 3 | 4.7 | 111 | | |
| **Min:** | **2** | 0 | 1.70 | 5 | | |
| **Max:** | **56** | -3 | -1.31 | 0 | | |
| **Median:** | **4** | | | | | |
| | | | | | 0.889 | 0.889 |
| | | | | | 8.9 | 8.88 |
| **u=mLn(Q)+b:** | | | | | 1.33 | 1.33 |

update for r2, EV, CV: **r2=0.889, EV=8.88 cfs CV=1.33; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.889 | u | lnQ | Q |
| slope, m: | 0.993 | 3 | 4.70 | 110 |
| intercept, b: | -1.664 | 0 | 1.68 | 5 |
| N: | 49 | -3 | -1.35 | 0 |
| E[Q]: | 8.9 | Parameter Estimates | | |
| SD[Q]: | 12 | from LN regression | | |
| CV[Q]: | 1.33 | update graph label | | |

N: 49

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 23-Feb-99 | 1.934382724 | 1 | 0.0127 | -2.236 | 0.660 | 0.889 |
| 10-Dec-98 | 2 | 2 | 0.0330 | -1.838 | 0.693 | 0.914 |
| 16-Dec-93 | 2.02 | 3 | 0.0533 | -1.614 | 0.703 | 0.929 |
| 15-Aug-94 | 2.06 | 4 | 0.0736 | -1.449 | 0.723 | 0.940 |
| 15-Nov-94 | 2.1 | 5 | 0.0939 | -1.317 | 0.742 | 0.949 |
| 27-Oct-98 | 2.1 | 6 | 0.1142 | -1.204 | 0.742 | 0.956 |
| 24-Jan-94 | 2.14 | 7 | 0.1345 | -1.105 | 0.761 | 0.961 |
| 27-Jun-95 | 2.19 | 8 | 0.1548 | -1.016 | 0.784 | 0.966 |
| 18-Feb-94 | 2.28 | 9 | 0.1751 | -0.934 | 0.824 | 0.970 |
| 8-Mar-99 | 2.281431698 | 10 | 0.1954 | -0.858 | 0.825 | 0.973 |
| 16-Dec-93 | 2.47 | 11 | 0.2157 | -0.787 | 0.904 | 0.975 |
| 27-Oct-93 | 2.48 | 12 | 0.2360 | -0.719 | 0.908 | 0.979 |
| 2-Dec-93 | 2.48 | 13 | 0.2563 | -0.655 | 0.908 | 0.981 |
| 13-Dec-94 | 2.48 | 14 | 0.2766 | -0.593 | 0.908 | 0.983 |
| 8-Sep-94 | 2.58 | 15 | 0.2970 | -0.533 | 0.948 | 0.983 |
| 4-Oct-94 | 2.58 | 16 | 0.3173 | -0.475 | 0.948 | 0.984 |
| 24-Jan-94 | 2.69 | 17 | 0.3376 | -0.419 | 0.990 | 0.983 |
| 15-Aug-94 | 2.93 | 18 | 0.3579 | -0.364 | 1.075 | 0.983 |
| 1-Sep-99 | 3 | 19 | 0.3782 | -0.310 | 1.099 | 0.983 |
| 21-Jan-99 | 3.3 | 20 | 0.3985 | -0.257 | 1.194 | 0.982 |
| 20-Jul-94 | 3.32 | 21 | 0.4188 | -0.205 | 1.200 | 0.982 |
| 15-Jan-99 | 3.32005516 | 22 | 0.4391 | -0.153 | 1.200 | 0.981 |
| 12-Nov-97 | 3.92 | 23 | 0.4594 | -0.102 | 1.366 | 0.980 |
| 10-Jan-95 | 4.1 | 24 | 0.4797 | -0.051 | 1.411 | 0.979 |
| 8-Mar-94 | 4.28 | 25 | 0.5000 | 0.000 | 1.454 | 0.979 |
| 13-Sep-95 | 4.28 | 26 | 0.5203 | 0.051 | 1.454 | 0.978 |
| 24-Mar-94 | 4.66 | 27 | 0.5406 | 0.102 | 1.539 | 0.977 |
| 24-Mar-94 | 4.67 | 28 | 0.5609 | 0.153 | 1.541 | 0.975 |
| 20-Jul-94 | 4.72 | 29 | 0.5812 | 0.205 | 1.552 | 0.973 |
| 23-Jun-94 | 5.29 | 30 | 0.6015 | 0.257 | 1.666 | 0.971 |
| 4-Aug-99 | 6.2 | 31 | 0.6218 | 0.310 | 1.825 | 0.968 |
| 9-Feb-95 | 6.85 | 32 | 0.6421 | 0.364 | 1.924 | 0.966 |
| 7-Mar-95 | 6.85 | 33 | 0.6624 | 0.419 | 1.924 | 0.964 |
| 12-Jun-95 | 6.85 | 34 | 0.6827 | 0.475 | 1.924 | 0.960 |
| 25-Apr-95 | 7.15 | 35 | 0.7030 | 0.533 | 1.967 | 0.956 |
| 7-Jun-94 | 7.8 | 36 | 0.7234 | 0.593 | 2.054 | 0.951 |
| 7-Apr-94 | 8.51 | 37 | 0.7437 | 0.655 | 2.141 | 0.945 |
| 13-Apr-95 | 10.13 | 38 | 0.7640 | 0.719 | 2.316 | 0.939 |
| 4-May-94 | 10.58 | 39 | 0.7843 | 0.787 | 2.359 | 0.930 |
| 19-May-94 | 12.08 | 40 | 0.8046 | 0.858 | 2.492 | 0.919 |
| 9-May-95 | 12.08 | 41 | 0.8249 | 0.934 | 2.492 | 0.904 |
| 7-Jul-99 | 16 | 42 | 0.8452 | 1.016 | 2.773 | 0.903 |
| 22-Mar-99 | 17 | 43 | 0.8655 | 1.105 | 2.833 | 0.881 |
| 5-May-99 | 22 | 44 | 0.8858 | 1.204 | 3.091 | 0.874 |
| 23-May-95 | 25.86 | 45 | 0.9061 | 1.317 | 3.253 | 0.836 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 20-Apr-99 | 30 | 46 | 0.9264 | 1.449 | 3.401 | 0.770 |
| 23-May-99 | 45 | 47 | 0.9467 | 1.614 | 3.807 | 0.873 |
| 15-Jun-99 | 45 | 48 | 0.9670 | 1.838 | 3.807 | 1.000 |
| 14-May-98 | 55.6 | 49 | 0.9873 | 2.236 | 4.018 | #DIV/0! |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** NM298 **Date:** 26-Jun-00
**Chemical:** tPb **Analyst:** J.Johnston
**Notes:**
Input Discharge and Concentration Data below (in red)

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| Avg: | 35,124 | 9 | 264 | 10 | 0.00 | 0.00 | 0.00 |
| SD: | 793 | 12 | 542 | 18 | 1.00 | 1.00 | 1.00 |
| CV: | 0.02 | 1.33 | 2.05 | 1.86 | | | |
| Min: | 34,269 | 2 | 48 | 1.2 | -0.59 | -0.40 | -0.47 |
| Max: | 36,404 | 56 | 4,000 | 109 | 3.96 | 6.90 | 5.56 |
| Median: | 34,752 | 4 | 162 | 4 | -0.40 | -0.19 | -0.30 |

tPb NM298 : Concentration v. Discharge, Q — Q = mTime +b — LnQ = mTime +b

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Conc. = mQ+b (r2=0.0076) | update r2 | 0.01 | 0.0076 | | r2: | 0.168 | 0.103 |
| r2 Q,[COC]: | 0.01 | [tPb] | Q | | m: | 0.0061 | 0.00037 |
| slope, m: | -4.0 | 292 | 1.9 | | b: | -205 | -11.48 |
| intercept, b: | 299.2 | 264 | 8.9 | | | | |
| N: 50 | | 77 | 56 | | | | |
| LnConc. = mLn(Q)+b (r2=0.0833) | update r2 | | 0.08 | 0.0833 | | | |
| r2 lnQ,ln[COC]: | 0.08 | ln[tPb] | ln Q | [tPb] | Q | | |
| slope, m: | -0.21 | 5.38 | 0.64 | 218 | 2 | | |
| intercept, b: | 5.52 | 5.06 | 2.18 | 157 | 9 | | |
| N: 50 | | 4.67 | 4.02 | 107 | 56 | | |

N= 50

| update for new data | Sampling Date | Q Discharge cfs | tPb Concentration ug/L | tPb Load lbs/day | Ln Q | Ln tPb Conc. | Ln tPb Load | tPb NM298 Standardized Values = (x - Avg)/SD for graph 0 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DATA: | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | Q | Conc | Load |
| IDEQ | 27-Oct-93 | 2.48 | 268 | 3.6 | 0.91 | 5.59 | 1.27 | -0.54 | 0.01 | -0.34 |
| IDEQ | 2-Dec-93 | 2.48 | 114 | 1.5 | 0.91 | 4.74 | 0.42 | -0.54 | -0.28 | -0.45 |
| IDEQ | 16-Dec-93 | 2.02 | 280 | 3.0 | 0.70 | 5.63 | 1.11 | -0.58 | 0.03 | -0.37 |
| IDEQ | 16-Dec-93 | 2.47 | 280 | 3.7 | 0.90 | 5.63 | 1.31 | -0.54 | 0.03 | -0.33 |
| IDEQ | 24-Jan-94 | 2.69 | 290 | 4.2 | 0.99 | 5.67 | 1.43 | -0.52 | 0.05 | -0.30 |
| IDEQ | 24-Jan-94 | 2.14 | 290 | 3.3 | 0.76 | 5.67 | 1.21 | -0.57 | 0.05 | -0.35 |
| IDEQ | 18-Feb-94 | 2.28 | 224 | 2.7 | 0.82 | 5.41 | 1.01 | -0.56 | -0.07 | -0.38 |
| IDEQ | 8-Mar-94 | 4.28 | 362 | 8.3 | 1.45 | 5.89 | 2.12 | -0.39 | 0.18 | -0.07 |
| IDEQ | 24-Mar-94 | 4.66 | 252 | 6.3 | 1.54 | 5.53 | 1.84 | -0.36 | -0.02 | -0.18 |
| IDEQ | 24-Mar-94 | 4.67 | 252 | 6.3 | 1.54 | 5.53 | 1.85 | -0.36 | -0.02 | -0.18 |
| IDEQ | 7-Apr-94 | 8.51 | 159 | 7.3 | 2.14 | 5.07 | 1.99 | -0.03 | -0.19 | -0.13 |
| IDEQ | 4-May-94 | 10.58 | 103 | 5.9 | 2.36 | 4.63 | 1.77 | 0.14 | -0.30 | -0.21 |
| IDEQ | 19-May-94 | 12.08 | 70 | 4.5 | 2.49 | 4.25 | 1.51 | 0.27 | -0.36 | -0.28 |
| IDEQ | 7-Jun-94 | 7.8 | 106 | 4.4 | 2.05 | 4.66 | 1.49 | -0.09 | -0.29 | -0.29 |
| IDEQ | 23-Jun-94 | 5.29 | 128 | 3.6 | 1.67 | 4.85 | 1.29 | -0.30 | -0.25 | -0.33 |
| IDEQ | 20-Jul-94 | 3.32 | 166 | 3.0 | 1.20 | 5.11 | 1.09 | -0.47 | -0.18 | -0.37 |
| IDEQ | 20-Jul-94 | 4.72 | 166 | 4.2 | 1.55 | 5.11 | 1.44 | -0.35 | -0.18 | -0.30 |
| IDEQ | 15-Aug-94 | 2.93 | 158 | 2.5 | 1.08 | 5.06 | 0.91 | -0.50 | -0.20 | -0.40 |
| IDEQ | 15-Aug-94 | 2.06 | 158 | 1.8 | 0.72 | 5.06 | 0.56 | -0.58 | -0.20 | -0.44 |
| IDEQ | 8-Sep-94 | 2.58 | 153 | 2.1 | 0.95 | 5.03 | 0.75 | -0.53 | -0.20 | -0.42 |
| IDEQ | 4-Oct-94 | 2.58 | 239 | 3.3 | 0.95 | 5.48 | 1.20 | -0.53 | -0.05 | -0.35 |
| IDEQ | 15-Nov-94 | 2.1 | 4000 | 45.2 | 0.74 | 8.29 | 3.81 | -0.57 | 6.90 | 1.99 |
| IDEQ | 13-Dec-94 | 2.48 | 352 | 4.7 | 0.91 | 5.86 | 1.55 | -0.54 | 0.16 | -0.27 |
| IDEQ | 10-Jan-95 | 4.1 | 375 | 8.3 | 1.41 | 5.93 | 2.11 | -0.40 | 0.21 | -0.07 |
| IDEQ | 9-Feb-95 | 6.85 | 234 | 8.6 | 1.92 | 5.46 | 2.15 | -0.17 | -0.05 | -0.05 |
| IDEQ | 7-Mar-95 | 6.85 | 206 | 7.6 | 1.92 | 5.33 | 2.03 | -0.17 | -0.11 | -0.11 |
| IDEQ | 13-Apr-95 | 10.13 | 190 | 10.4 | 2.32 | 5.25 | 2.34 | 0.11 | -0.14 | 0.04 |
| IDEQ | 25-Apr-95 | 7.15 | 164 | 6.3 | 1.97 | 5.10 | 1.84 | -0.15 | -0.18 | -0.18 |
| IDEQ | 9-May-95 | 12.08 | 178 | 11.6 | 2.49 | 5.18 | 2.45 | 0.27 | -0.16 | 0.11 |
| IDEQ | 23-May-95 | 25.86 | 108 | 15.0 | 3.25 | 4.68 | 2.71 | 1.44 | -0.29 | 0.30 |
| IDEQ | 12-Jun-95 | 6.85 | 102 | 3.8 | 1.92 | 4.62 | 1.32 | -0.17 | -0.30 | -0.33 |
| IDEQ | 27-Jun-95 | 2.19 | 134 | 1.6 | 0.78 | 4.90 | 0.46 | -0.57 | -0.24 | -0.45 |
| IDEQ | 13-Sep-95 | 4.28 | 274 | 6.3 | 1.45 | 5.61 | 1.84 | -0.39 | 0.02 | -0.18 |
| URS | 12-Nov-97 | 3.92 | 138 | 2.9 | 1.37 | 4.93 | 1.07 | -0.42 | -0.23 | -0.37 |
| URS | 14-May-98 | 55.6 | 48.2 | 14.4 | 4.02 | 3.88 | 2.67 | 3.96 | -0.40 | 0.27 |
| USGS | 27-Oct-98 | 2.1 | 110 | 1.2 | 0.74 | 4.70 | 0.22 | -0.57 | -0.28 | -0.47 |
| USGS | 19-Nov-98 | 1.9 | 150 | 1.5 | 0.64 | 5.01 | 0.43 | -0.59 | -0.21 | -0.45 |
| USGS | 10-Dec-98 | 2 | 200 | 2.2 | 0.69 | 5.30 | 0.77 | -0.58 | -0.12 | -0.42 |
| IDEQ | 15-Jan-99 | 3.32005516 | 140 | 2.5 | 1.20 | 4.94 | 0.92 | -0.47 | -0.23 | -0.40 |
| USGS | 21-Jan-99 | 3.3 | 140 | 2.5 | 1.19 | 4.94 | 0.91 | -0.47 | -0.23 | -0.40 |
| IDEQ | 23-Feb-99 | 1.934382724 | 132 | 1.4 | 0.66 | 4.88 | 0.32 | -0.59 | -0.24 | -0.46 |
| IDEQ | 8-Mar-99 | 2.281431698 | 114 | 1.4 | 0.82 | 4.74 | 0.34 | -0.56 | -0.28 | -0.46 |
| USGS | 22-Mar-99 | 17 | 220 | 20.1 | 2.83 | 5.39 | 3.00 | 0.69 | -0.08 | 0.59 |
| USGS | 20-Apr-99 | 30 | 400 | 64.6 | 3.40 | 5.99 | 4.17 | 1.79 | 0.25 | 3.08 |
| USGS | 5-May-99 | 22 | 85 | 10.1 | 3.09 | 4.44 | 2.31 | 1.11 | -0.33 | 0.03 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USGS | 23-May-99 | 45 | 450 | 108.9 | 3.81 | 6.11 | 4.69 | 3.06 | 0.34 | 5.56 |
| USGS | 15-Jun-99 | 45 | 93 | 22.5 | 3.81 | 4.53 | 3.11 | 3.06 | -0.32 | 0.72 |
| USGS | 7-Jul-99 | 16 | 50.4 | 4.3 | 2.77 | 3.92 | 1.47 | 0.60 | -0.39 | -0.29 |
| USGS | 4-Aug-99 | 6.2 | 82.5 | 2.8 | 1.82 | 4.41 | 1.01 | -0.23 | -0.33 | -0.38 |
| USGS | 1-Sep-99 | 3 | 95.5 | 1.5 | 1.10 | 4.56 | 0.43 | -0.50 | -0.31 | -0.45 |

**tPb**

**Concentration over time analysis**

| | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **tPb** | **NM298** | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.102** | **-0.00027** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 27-Oct-93 | 5.40 | 222 | | |
| mid: | 22-Feb-95 | 5.27 | 195 | | |
| last: | 1-Sep-99 | 4.82 | 124 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 1-Sep-99 | 0.00 | 1 | | |
| | 1-Sep-99 | 0.00 | 1 | | |

**Load over time analysis**

| | | | | | |
|---|---|---|---|---|---|
| | **tPb** | **NM298** | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.007** | **0.00010** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 27-Oct-93 | 1.51 | 5 | | |
| mid: | 22-Feb-95 | 1.56 | 5 | | |
| last: | 1-Sep-99 | 1.73 | 6 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 1-Sep-99 | 0.00 | 1 | | |
| | 1-Sep-99 | 0.00 | 1 | | |

max r2: 0.348

**Forward time Regression on Ln Concentration(t)**

| **r2** | **slope** | **intercept** |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.102 | -0.00027 | 14.78 |
| 0.097 | -0.00027 | 14.59 |
| 0.109 | -0.00029 | 15.25 |
| 0.103 | -0.00028 | 15.02 |
| 0.096 | -0.00027 | 14.76 |
| 0.089 | -0.00026 | 14.44 |
| 0.081 | -0.00025 | 14.08 |
| 0.078 | -0.00025 | 14.00 |
| 0.066 | -0.00023 | 13.32 |
| 0.061 | -0.00022 | 13.02 |
| 0.055 | -0.00022 | 12.70 |
| 0.057 | -0.00022 | 12.98 |
| 0.069 | -0.00025 | 13.92 |
| 0.096 | -0.00029 | 15.55 |
| 0.114 | -0.00033 | 16.69 |
| 0.129 | -0.00035 | 17.65 |
| 0.135 | -0.00037 | 18.25 |
| 0.143 | -0.00039 | 18.94 |
| 0.153 | -0.00041 | 19.82 |
| 0.166 | -0.00044 | 20.85 |
| 0.182 | -0.00048 | 22.11 |
| 0.178 | -0.00049 | 22.45 |
| 0.125 | -0.00029 | 15.22 |
| 0.090 | -0.00024 | 13.58 |
| 0.051 | -0.00018 | 11.33 |
| 0.033 | -0.00015 | 10.17 |
| 0.020 | -0.00012 | 9.18 |
| 0.011 | -0.00009 | 8.23 |
| 0.007 | -0.00008 | 7.69 |
| 0.001 | -0.00004 | 6.32 |
| 0.007 | -0.00010 | 8.46 |
| 0.029 | -0.00023 | 13.33 |
| 0.053 | -0.00042 | 20.12 |
| 0.003 | 0.00019 | -1.86 |
| 0.010 | 0.00051 | -13.59 |
| 0.067 | -0.00160 | 62.97 |
| 0.118 | -0.00236 | 90.40 |
| 0.137 | -0.00285 | 108.19 |
| 0.110 | -0.00286 | 108.66 |
| 0.130 | -0.00346 | 130.40 |
| 0.165 | -0.00453 | 169.17 |
| 0.215 | -0.00585 | 217.26 |
| 0.348 | -0.00863 | 318.45 |
| 0.325 | -0.00989 | 364.12 |
| 0.134 | -0.00609 | 225.94 |

max r2: 0.901

**Forward time Regression on Ln Load(t)**

| **r2** | **slope** | **intercept** |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.007 | 0.00010 | -1.93 |
| 0.006 | 0.00009 | -1.68 |
| 0.002 | 0.00006 | -0.55 |
| 0.001 | 0.00005 | -0.06 |
| 0.001 | 0.00004 | 0.26 |
| 0.001 | 0.00003 | 0.46 |
| 0.000 | 0.00002 | 0.95 |
| 0.000 | 0.00000 | 1.71 |
| 0.000 | 0.00001 | 1.17 |
| 0.000 | 0.00002 | 0.94 |
| 0.000 | 0.00003 | 0.67 |
| 0.001 | 0.00004 | 0.18 |
| 0.001 | 0.00005 | -0.05 |
| 0.001 | 0.00004 | 0.09 |
| 0.001 | 0.00004 | 0.29 |
| 0.000 | 0.00002 | 0.84 |
| 0.000 | 0.00000 | 1.83 |
| 0.000 | -0.00002 | 2.30 |
| 0.001 | -0.00006 | 3.90 |
| 0.007 | -0.00013 | 6.55 |
| 0.016 | -0.00021 | 9.21 |
| 0.025 | -0.00026 | 11.20 |
| 0.007 | -0.00013 | 6.51 |
| 0.009 | -0.00016 | 7.44 |
| 0.006 | -0.00014 | 6.76 |
| 0.004 | -0.00011 | 5.74 |
| 0.002 | -0.00009 | 4.94 |
| 0.000 | -0.00002 | 2.45 |
| 0.000 | 0.00000 | 1.65 |
| 0.004 | 0.00015 | -3.62 |
| 0.029 | 0.00045 | -14.62 |
| 0.030 | 0.00054 | -18.03 |
| 0.003 | 0.00023 | -6.48 |
| 0.032 | 0.00153 | -53.64 |
| 0.022 | 0.00180 | -63.37 |
| 0.131 | 0.00568 | -204.22 |
| 0.082 | 0.00483 | -173.33 |
| 0.040 | 0.00369 | -131.95 |
| 0.014 | 0.00241 | -85.62 |
| 0.001 | 0.00076 | -25.60 |
| 0.009 | -0.00240 | 89.29 |
| 0.114 | -0.00890 | 325.44 |
| 0.565 | -0.02049 | 746.62 |
| 0.696 | -0.02751 | 1001.84 |
| 0.610 | -0.02714 | 988.35 |

| | | | | | |
|---|---|---|---|---|---|
| 0.331 | -0.01189 | 437.07 | 0.901 | -0.04135 | 1505.37 |

update for EV, CV:

**tPb**
**LN Analysis**

**Load**

| | |
|---|---|
| **Avg:** | **10** |
| **SD:** | **18** |
| **CV:** | **1.86** |
| **Min:** | **1.2** |
| **Max:** | **109** |
| **Median:** | **4** |

**NM298**
**tPb**
**Load Data, EV=9.6 lbs/day CV=1.86**
**Load Data-based LN**

| u | ln tPb Load | tPb Load |
|---|---|---|
| 3 | 5.2 | 178 |
| 0 | 1.51 | 5 |
| -3 | -2.16 | 0.1 |

| | |
|---|---|
| 10 | 9.6 |
| 1.86 | 1.86 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.922, EV=8.56lbs/day CV=1.41; max r2=0.98**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.922 | u | lnLoad | Load | |
| slope, m: | 0.956 | 3 | 4.74 | 114 | |
| intercept, b: | -1.530 | 0 | 1.60 | 5 | |
| N: | 50 | -3 | -1.54 | 0.2 | |
| E[Load]: | 8.6 | Parameter Estimates | | | 0.922 0.922 |
| SD[Load]: | 12 | from LN regression | | | 8.6 8.56 |
| CV[Load]: | 1.41 | update graph label | | | 1.4 1.41 |

max r2 0.979

| Date | tPb Load lbs/day Ranked | N: 50 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Oct-98 | 1.2 | 1 | 0.0124 | -2.243 | 0.217 | 0.922 |
| 23-Feb-99 | 1.4 | 2 | 0.0323 | -1.847 | 0.318 | 0.934 |
| 8-Mar-99 | 1.4 | 3 | 0.0522 | -1.624 | 0.336 | 0.940 |
| 2-Dec-93 | 1.5 | 4 | 0.0721 | -1.460 | 0.419 | 0.943 |
| 19-Nov-98 | 1.5 | 5 | 0.0920 | -1.328 | 0.427 | 0.945 |
| 1-Sep-99 | 1.5 | 6 | 0.1119 | -1.216 | 0.433 | 0.945 |
| 27-Jun-95 | 1.6 | 7 | 0.1318 | -1.118 | 0.457 | 0.944 |
| 15-Aug-94 | 1.8 | 8 | 0.1517 | -1.029 | 0.560 | 0.943 |
| 8-Sep-94 | 2.1 | 9 | 0.1716 | -0.948 | 0.753 | 0.941 |
| 10-Dec-98 | 2.2 | 10 | 0.1915 | -0.872 | 0.766 | 0.942 |
| 21-Jan-99 | 2.5 | 11 | 0.2114 | -0.801 | 0.910 | 0.942 |
| 15-Aug-94 | 2.5 | 12 | 0.2313 | -0.734 | 0.913 | 0.945 |
| 15-Jan-99 | 2.5 | 13 | 0.2512 | -0.671 | 0.917 | 0.946 |
| 18-Feb-94 | 2.7 | 14 | 0.2711 | -0.609 | 1.011 | 0.947 |
| 4-Aug-99 | 2.8 | 15 | 0.2910 | -0.550 | 1.012 | 0.949 |
| 12-Nov-97 | 2.9 | 16 | 0.3109 | -0.493 | 1.068 | 0.950 |
| 20-Jul-94 | 3.0 | 17 | 0.3308 | -0.438 | 1.087 | 0.951 |
| 16-Dec-93 | 3.0 | 18 | 0.3507 | -0.383 | 1.113 | 0.952 |
| 4-Oct-94 | 3.3 | 19 | 0.3706 | -0.330 | 1.199 | 0.952 |
| 24-Jan-94 | 3.3 | 20 | 0.3905 | -0.278 | 1.206 | 0.954 |
| 27-Oct-93 | 3.6 | 21 | 0.4104 | -0.226 | 1.274 | 0.955 |
| 23-Jun-94 | 3.6 | 22 | 0.4303 | -0.175 | 1.293 | 0.957 |
| 16-Dec-93 | 3.7 | 23 | 0.4502 | -0.125 | 1.314 | 0.958 |
| 12-Jun-95 | 3.8 | 24 | 0.4701 | -0.075 | 1.324 | 0.958 |
| 24-Jan-94 | 4.2 | 25 | 0.4900 | -0.025 | 1.434 | 0.958 |
| 20-Jul-94 | 4.2 | 26 | 0.5100 | 0.025 | 1.439 | 0.960 |
| 7-Jul-99 | 4.3 | 27 | 0.5299 | 0.075 | 1.468 | 0.960 |
| 7-Jun-94 | 4.4 | 28 | 0.5498 | 0.125 | 1.492 | 0.961 |
| 19-May-94 | 4.5 | 29 | 0.5697 | 0.175 | 1.515 | 0.960 |
| 13-Dec-94 | 4.7 | 30 | 0.5896 | 0.226 | 1.547 | 0.958 |
| 4-May-94 | 5.9 | 31 | 0.6095 | 0.278 | 1.769 | 0.956 |
| 25-Apr-95 | 6.3 | 32 | 0.6294 | 0.330 | 1.842 | 0.959 |
| 13-Sep-95 | 6.3 | 33 | 0.6493 | 0.383 | 1.842 | 0.965 |
| 24-Mar-94 | 6.3 | 34 | 0.6692 | 0.438 | 1.843 | 0.968 |
| 24-Mar-94 | 6.3 | 35 | 0.6891 | 0.493 | 1.846 | 0.970 |
| 7-Apr-94 | 7.3 | 36 | 0.7090 | 0.550 | 1.985 | 0.970 |
| 7-Mar-95 | 7.6 | 37 | 0.7289 | 0.609 | 2.027 | 0.973 |
| 10-Jan-95 | 8.3 | 38 | 0.7488 | 0.671 | 2.113 | 0.975 |
| 8-Mar-94 | 8.3 | 39 | 0.7687 | 0.734 | 2.121 | 0.979 |
| 9-Feb-95 | 8.6 | 40 | 0.7886 | 0.801 | 2.155 | 0.979 |
| 5-May-99 | 10.1 | 41 | 0.8085 | 0.872 | 2.309 | 0.978 |
| 13-Apr-95 | 10.4 | 42 | 0.8284 | 0.948 | 2.337 | 0.978 |
| 9-May-95 | 11.6 | 43 | 0.8483 | 1.029 | 2.448 | 0.974 |
| 14-May-98 | 14.4 | 44 | 0.8682 | 1.118 | 2.668 | 0.968 |
| 23-May-95 | 15.0 | 45 | 0.8881 | 1.216 | 2.710 | 0.962 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22-Mar-99 | 20.1 | 46 | 0.9080 | 1.328 | 3.002 | 0.949 |
| 15-Jun-99 | 22.5 | 47 | 0.9279 | 1.460 | 3.114 | |
| 15-Nov-94 | 45.2 | 48 | 0.9478 | 1.624 | 3.811 | |
| 20-Apr-99 | 64.6 | 49 | 0.9677 | 1.847 | 4.168 | |
| 23-May-99 | 108.9 | 50 | 0.9876 | 2.243 | 4.691 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **tPb** | | **NM298** | 264 | 264 |
| **LN Analysis** | | **tPb** | 2.05 | 2.05 |

**Concentration** — **Conc. Data, EV=264 ug/L CV=2.05**

| | | **Data-based LN** | | |
|---|---|---|---|---|
| **Avg:** | **264** | u | ln[tPb] | [tPb] |
| **SD:** | **542** | 3 | 8.6 | 5460 |
| **CV:** | **2.05** | 0 | 4.75 | 115 |
| **Min:** | **48** | -3 | 0.89 | 2 |
| **Max:** | **4,000** | | | |
| **Median:** | **162** | | | |

**u=mLn(Conc.)+b:** 0.854 0.854; 233.9 234; 0.875 0.875

update for r2, EV, CV: **r2=0.854, EV=234 ug/L CV=0.875; max r2=0.85**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.854 | u | lnConc. | Conc. |
| slope, m: | 1.326 | 3 | 7.43 | 1691 |
| intercept, b: | -6.855 | 0 | 5.17 | 176 |
| N: | 50 | -3 | 2.91 | 18 |
| E[Conc]: | 233.9 | Parameter Estimates | | |
| SD[Conc]: | 205 | from LN regression | | |
| CV[Conc]: | 0.88 | update graph label | | |

N: 50 — max r2 0.854

| Date | tPb Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 14-May-98 | 48.2 | 1 | 0.0124 | -2.243 | 3.875 | 0.854 |
| 7-Jul-99 | 50.4 | 2 | 0.0323 | -1.847 | 3.920 | 0.844 |
| 19-May-94 | 70 | 3 | 0.0522 | -1.624 | 4.248 | 0.831 |
| 4-Aug-99 | 82.5 | 4 | 0.0721 | -1.460 | 4.413 | 0.823 |
| 5-May-99 | 85 | 5 | 0.0920 | -1.328 | 4.443 | 0.818 |
| 15-Jun-99 | 93 | 6 | 0.1119 | -1.216 | 4.533 | 0.813 |
| 1-Sep-99 | 95.5 | 7 | 0.1318 | -1.118 | 4.559 | 0.809 |
| 12-Jun-95 | 102 | 8 | 0.1517 | -1.029 | 4.625 | 0.805 |
| 4-May-94 | 103 | 9 | 0.1716 | -0.948 | 4.635 | 0.802 |
| 7-Jun-94 | 106 | 10 | 0.1915 | -0.872 | 4.663 | 0.797 |
| 23-May-95 | 108 | 11 | 0.2114 | -0.801 | 4.682 | 0.793 |
| 27-Oct-98 | 110 | 12 | 0.2313 | -0.734 | 4.700 | 0.787 |
| 2-Dec-93 | 114 | 13 | 0.2512 | -0.671 | 4.736 | 0.781 |
| 8-Mar-99 | 114 | 14 | 0.2711 | -0.609 | 4.736 | 0.775 |
| 23-Jun-94 | 128 | 15 | 0.2910 | -0.550 | 4.852 | 0.767 |
| 23-Feb-99 | 132 | 16 | 0.3109 | -0.493 | 4.883 | 0.763 |
| 27-Jun-95 | 134 | 17 | 0.3308 | -0.438 | 4.898 | 0.760 |
| 12-Nov-97 | 138 | 18 | 0.3507 | -0.383 | 4.927 | 0.755 |
| 15-Jan-99 | 140 | 19 | 0.3706 | -0.330 | 4.942 | 0.751 |
| 21-Jan-99 | 140 | 20 | 0.3905 | -0.278 | 4.942 | 0.746 |
| 19-Nov-98 | 150 | 21 | 0.4104 | -0.226 | 5.011 | 0.740 |
| 8-Sep-94 | 153 | 22 | 0.4303 | -0.175 | 5.030 | 0.736 |
| 15-Aug-94 | 158 | 23 | 0.4502 | -0.125 | 5.063 | 0.731 |
| 15-Aug-94 | 158 | 24 | 0.4701 | -0.075 | 5.063 | 0.727 |
| 7-Apr-94 | 159 | 25 | 0.4900 | -0.025 | 5.069 | 0.721 |
| 25-Apr-95 | 164 | 26 | 0.5100 | 0.025 | 5.100 | 0.714 |
| 20-Jul-94 | 166 | 27 | 0.5299 | 0.075 | 5.112 | 0.706 |
| 20-Jul-94 | 166 | 28 | 0.5498 | 0.125 | 5.112 | 0.697 |
| 9-May-95 | 178 | 29 | 0.5697 | 0.175 | 5.182 | 0.686 |
| 13-Apr-95 | 190 | 30 | 0.5896 | 0.226 | 5.247 | 0.676 |
| 10-Dec-98 | 200 | 31 | 0.6095 | 0.278 | 5.298 | 0.669 |
| 7-Mar-95 | 206 | 32 | 0.6294 | 0.330 | 5.328 | 0.664 |
| 22-Mar-99 | 220 | 33 | 0.6493 | 0.383 | 5.394 | 0.659 |
| 18-Feb-94 | 224 | 34 | 0.6692 | 0.438 | 5.412 | 0.658 |
| 9-Feb-95 | 234 | 35 | 0.6891 | 0.493 | 5.455 | 0.657 |
| 4-Oct-94 | 239 | 36 | 0.7090 | 0.550 | 5.476 | 0.659 |
| 24-Mar-94 | 252 | 37 | 0.7289 | 0.609 | 5.529 | 0.661 |
| 24-Mar-94 | 252 | 38 | 0.7488 | 0.671 | 5.529 | 0.668 |
| 27-Oct-93 | 268 | 39 | 0.7687 | 0.734 | 5.591 | 0.672 |
| 13-Sep-95 | 274 | 40 | 0.7886 | 0.801 | 5.613 | 0.684 |
| 16-Dec-93 | 280 | 41 | 0.8085 | 0.872 | 5.635 | 0.697 |
| 16-Dec-93 | 280 | 42 | 0.8284 | 0.948 | 5.635 | 0.711 |
| 24-Jan-94 | 290 | 43 | 0.8483 | 1.029 | 5.670 | 0.722 |
| 24-Jan-94 | 290 | 44 | 0.8682 | 1.118 | 5.670 | 0.734 |
| 13-Dec-94 | 352 | 45 | 0.8881 | 1.216 | 5.864 | 0.736 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8-Mar-94 | 362 | 46 | 0.9080 | 1.328 | 5.892 | 0.779 |
| 10-Jan-95 | 375 | 47 | 0.9279 | 1.460 | 5.927 | |
| 20-Apr-99 | 400 | 48 | 0.9478 | 1.624 | 5.991 | |
| 23-May-99 | 450 | 49 | 0.9677 | 1.847 | 6.109 | |
| 15-Nov-94 | 4000 | 50 | 0.9876 | 2.243 | 8.294 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **NM298** | | | 9 | 8.88 |
| **LN Analysis** | | **tPb** | | | 1.33 | 1.33 |
| **Discharge, Q** | | **Q Data, EV=8.88 cfs CV=1.33** | | | | |
| **Avg:** | **9** | **Q Data-based LN** | | | | |
| **SD:** | **12** | u | lnQ | Q | | |
| **CV:** | **1.33** | 3 | 4.7 | 110 | | |
| **Min:** | **2** | 0 | 1.68 | 5 | | |
| **Max:** | **56** | -3 | -1.35 | 0.3 | | |
| **Median:** | **4** | | | | | |
| | | | | | 0.887 | 0.887 |
| | | | | | 8.7 | 8.72 |
| **u=mLn(Q)+b:** | | | | | 1.33 | 1.33 |

update for r2, EV, CV: **r2=0.887, EV=8.72 cfs CV=1.33; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.887 | u | lnQ | Q |
| slope, m: | 0.990 | 3 | 4.69 | 108 |
| intercept, b: | -1.638 | 0 | 1.66 | 5 |
| N: | 50 | -3 | -1.38 | 0.3 |
| E[Q]: | 8.7 | Parameter Estimates | | |
| SD[Q]: | 12 | from LN regression | | |
| CV[Q]: | 1.33 | update graph label | | |

| | Q | N: 50 | | | | max r2 0.984 |
|---|---|---|---|---|---|---|
| | Discharge | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | cfs Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 19-Nov-98 | 1.9 | 1 | 0.0124 | -2.243 | 0.642 | 0.887 |
| 23-Feb-99 | 1.934382724 | 2 | 0.0323 | -1.847 | 0.660 | 0.912 |
| 10-Dec-98 | 2 | 3 | 0.0522 | -1.624 | 0.693 | 0.927 |
| 16-Dec-93 | 2.02 | 4 | 0.0721 | -1.460 | 0.703 | 0.938 |
| 15-Aug-94 | 2.06 | 5 | 0.0920 | -1.328 | 0.723 | 0.947 |
| 15-Nov-94 | 2.1 | 6 | 0.1119 | -1.216 | 0.742 | 0.954 |
| 27-Oct-98 | 2.1 | 7 | 0.1318 | -1.118 | 0.742 | 0.960 |
| 24-Jan-94 | 2.14 | 8 | 0.1517 | -1.029 | 0.761 | 0.964 |
| 27-Jun-95 | 2.19 | 9 | 0.1716 | -0.948 | 0.784 | 0.968 |
| 18-Feb-94 | 2.28 | 10 | 0.1915 | -0.872 | 0.824 | 0.972 |
| 8-Mar-99 | 2.281431698 | 11 | 0.2114 | -0.801 | 0.825 | 0.975 |
| 16-Dec-93 | 2.47 | 12 | 0.2313 | -0.734 | 0.904 | 0.977 |
| 27-Oct-93 | 2.48 | 13 | 0.2512 | -0.671 | 0.908 | 0.980 |
| 2-Dec-93 | 2.48 | 14 | 0.2711 | -0.609 | 0.908 | 0.982 |
| 13-Dec-94 | 2.48 | 15 | 0.2910 | -0.550 | 0.908 | 0.983 |
| 8-Sep-94 | 2.58 | 16 | 0.3109 | -0.493 | 0.948 | 0.984 |
| 4-Oct-94 | 2.58 | 17 | 0.3308 | -0.438 | 0.948 | 0.984 |
| 24-Jan-94 | 2.69 | 18 | 0.3507 | -0.383 | 0.990 | 0.984 |
| 15-Aug-94 | 2.93 | 19 | 0.3706 | -0.330 | 1.075 | 0.983 |
| 1-Sep-99 | 3 | 20 | 0.3905 | -0.278 | 1.099 | 0.983 |
| 21-Jan-99 | 3.3 | 21 | 0.4104 | -0.226 | 1.194 | 0.982 |
| 20-Jul-94 | 3.32 | 22 | 0.4303 | -0.175 | 1.200 | 0.982 |
| 15-Jan-99 | 3.32005516 | 23 | 0.4502 | -0.125 | 1.200 | 0.981 |
| 12-Nov-97 | 3.92 | 24 | 0.4701 | -0.075 | 1.366 | 0.980 |
| 10-Jan-95 | 4.1 | 25 | 0.4900 | -0.025 | 1.411 | 0.979 |
| 8-Mar-94 | 4.28 | 26 | 0.5100 | 0.025 | 1.454 | 0.979 |
| 13-Sep-95 | 4.28 | 27 | 0.5299 | 0.075 | 1.454 | 0.978 |
| 24-Mar-94 | 4.66 | 28 | 0.5498 | 0.125 | 1.539 | 0.976 |
| 24-Mar-94 | 4.67 | 29 | 0.5697 | 0.175 | 1.541 | 0.975 |
| 20-Jul-94 | 4.72 | 30 | 0.5896 | 0.226 | 1.552 | 0.973 |
| 23-Jun-94 | 5.29 | 31 | 0.6095 | 0.278 | 1.666 | 0.971 |
| 4-Aug-99 | 6.2 | 32 | 0.6294 | 0.330 | 1.825 | 0.968 |
| 9-Feb-95 | 6.85 | 33 | 0.6493 | 0.383 | 1.924 | 0.965 |
| 7-Mar-95 | 6.85 | 34 | 0.6692 | 0.438 | 1.924 | 0.964 |
| 12-Jun-95 | 6.85 | 35 | 0.6891 | 0.493 | 1.924 | 0.960 |
| 25-Apr-95 | 7.15 | 36 | 0.7090 | 0.550 | 1.967 | 0.955 |
| 7-Jun-94 | 7.8 | 37 | 0.7289 | 0.609 | 2.054 | 0.951 |
| 7-Apr-94 | 8.51 | 38 | 0.7488 | 0.671 | 2.141 | 0.945 |
| 13-Apr-95 | 10.13 | 39 | 0.7687 | 0.734 | 2.316 | 0.939 |
| 4-May-94 | 10.58 | 40 | 0.7886 | 0.801 | 2.359 | 0.929 |
| 19-May-94 | 12.08 | 41 | 0.8085 | 0.872 | 2.492 | 0.919 |
| 9-May-95 | 12.08 | 42 | 0.8284 | 0.948 | 2.492 | 0.904 |
| 7-Jul-99 | 16 | 43 | 0.8483 | 1.029 | 2.773 | 0.902 |
| 22-Mar-99 | 17 | 44 | 0.8682 | 1.118 | 2.833 | 0.881 |
| 5-May-99 | 22 | 45 | 0.8881 | 1.216 | 3.091 | 0.873 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 23-May-95 | 25.86 | 46 | 0.9080 | 1.328 | 3.253 | 0.836 |
| 20-Apr-99 | 30 | 47 | 0.9279 | 1.460 | 3.401 | |
| 23-May-99 | 45 | 48 | 0.9478 | 1.624 | 3.807 | |
| 15-Jun-99 | 45 | 49 | 0.9677 | 1.847 | 3.807 | |
| 14-May-98 | 55.6 | 50 | 0.9876 | 2.243 | 4.018 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** NM298 **Date:** 22-Jun-00

**Chemical:** tZn **Analyst:** J.MacLachlan

**Notes:**

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,124 | 9 | 6,655 | 211 | 0.00 | 0.00 | 0.00 |
| **SD:** | 793 | 12 | 2,988 | 181 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.33 | 0.45 | 0.86 | | | |
| **Min:** | 34,269 | 2 | 850 | 43.8 | -0.59 | -1.94 | -0.93 |
| **Max:** | 36,404 | 56 | 15,000 | 1,001 | 3.96 | 2.79 | 4.36 |
| **Median:** | 34,752 | 4 | 6,865 | 157 | -0.40 | 0.07 | -0.30 |

| tZn NM298 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.315)** | | update r2 | **0.32** | 0.315 | r2: | 0.168 | 0.103 |
| r2 Q,[COC]: | 0.32 | [tZn] | Q | | m: | 0.0061 | 0.00037 |
| slope, m: | -142.1 | 7,647 | 1.9 | | b: | -205 | -11.48 |
| intercept, b: | 7916.9 | 6,655 | 8.9 | | | | |
| N: 50 | | 17 | 56 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.484)** | | update r2 | 0.48 | 0.484 | | | |
| r2 lnQ,ln[COC]: | 0.48 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m: | -0.43 | 9.10 | 0.64 | 8,999 | 2 | | |
| intercept, b: | 9.38 | 8.44 | 2.18 | 4,648 | 9 | | |
| N: 50 | | 7.66 | 4.02 | 2,118 | 56 | | |

**N= 50**

| update for new data | Sampling Date | Q Discharge cfs | tZn Concentration ug/L | tZn Load lbs/day | Ln Q | Ln tZn Conc. | Ln tZn Load | tZn NM298 Standardized Values = (x - Avg)/SD Q | Conc | Load | for graph 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | | |
| IDEQ | 27-Oct-93 | 2.48 | 5550 | 74.1 | 0.91 | 8.62 | 4.30 | -0.54 | -0.37 | -0.76 | |
| IDEQ | 2-Dec-93 | 2.48 | 6361 | 84.9 | 0.91 | 8.76 | 4.44 | -0.54 | -0.10 | -0.70 | |
| IDEQ | 16-Dec-93 | 2.02 | 7350 | 79.9 | 0.70 | 8.90 | 4.38 | -0.58 | 0.23 | -0.73 | |
| IDEQ | 16-Dec-93 | 2.47 | 7350 | 97.7 | 0.90 | 8.90 | 4.58 | -0.54 | 0.23 | -0.63 | |
| IDEQ | 24-Jan-94 | 2.69 | 8640 | 125.0 | 0.99 | 9.06 | 4.83 | -0.52 | 0.66 | -0.48 | |
| IDEQ | 24-Jan-94 | 2.14 | 8640 | 99.5 | 0.76 | 9.06 | 4.60 | -0.57 | 0.66 | -0.62 | |
| IDEQ | 18-Feb-94 | 2.28 | 7670 | 94.1 | 0.82 | 8.95 | 4.54 | -0.56 | 0.34 | -0.65 | |
| IDEQ | 8-Mar-94 | 4.28 | 7360 | 169.5 | 1.45 | 8.90 | 5.13 | -0.39 | 0.24 | -0.23 | |
| IDEQ | 24-Mar-94 | 4.66 | 7920 | 198.6 | 1.54 | 8.98 | 5.29 | -0.36 | 0.42 | -0.07 | |
| IDEQ | 24-Mar-94 | 4.67 | 7920 | 199.0 | 1.54 | 8.98 | 5.29 | -0.36 | 0.42 | -0.07 | |
| IDEQ | 7-Apr-94 | 8.51 | 6930 | 317.3 | 2.14 | 8.84 | 5.76 | -0.03 | 0.09 | 0.58 | |
| IDEQ | 4-May-94 | 10.58 | 3900 | 222.0 | 2.36 | 8.27 | 5.40 | 0.14 | -0.92 | 0.06 | |
| IDEQ | 19-May-94 | 12.08 | 2680 | 174.2 | 2.49 | 7.89 | 5.16 | 0.27 | -1.33 | -0.21 | |
| IDEQ | 7-Jun-94 | 7.8 | 3750 | 157.4 | 2.05 | 8.23 | 5.06 | -0.09 | -0.97 | -0.30 | |
| IDEQ | 23-Jun-94 | 5.29 | 4400 | 125.2 | 1.67 | 8.39 | 4.83 | -0.30 | -0.75 | -0.48 | |
| IDEQ | 20-Jul-94 | 3.32 | 5160 | 92.2 | 1.20 | 8.55 | 4.52 | -0.47 | -0.50 | -0.66 | |
| IDEQ | 20-Jul-94 | 4.72 | 5160 | 131.0 | 1.55 | 8.55 | 4.88 | -0.35 | -0.50 | -0.44 | |
| IDEQ | 15-Aug-94 | 2.93 | 5890 | 92.8 | 1.08 | 8.68 | 4.53 | -0.50 | -0.26 | -0.66 | |
| IDEQ | 15-Aug-94 | 2.06 | 5890 | 65.3 | 0.72 | 8.68 | 4.18 | -0.58 | -0.26 | -0.81 | |
| IDEQ | 8-Sep-94 | 2.58 | 6140 | 85.2 | 0.95 | 8.72 | 4.45 | -0.53 | -0.17 | -0.70 | |
| IDEQ | 4-Oct-94 | 2.58 | 7720 | 107.2 | 0.95 | 8.95 | 4.67 | -0.53 | 0.36 | -0.58 | |
| IDEQ | 15-Nov-94 | 2.1 | 11100 | 125.4 | 0.74 | 9.31 | 4.83 | -0.57 | 1.49 | -0.48 | |
| IDEQ | 13-Dec-94 | 2.48 | 12200 | 162.8 | 0.91 | 9.41 | 5.09 | -0.54 | 1.86 | -0.27 | |
| IDEQ | 10-Jan-95 | 4.1 | 9150 | 201.8 | 1.41 | 9.12 | 5.31 | -0.40 | 0.84 | -0.05 | |
| IDEQ | 9-Feb-95 | 6.85 | 10300 | 379.6 | 1.92 | 9.24 | 5.94 | -0.17 | 1.22 | 0.93 | |
| IDEQ | 7-Mar-95 | 6.85 | 8450 | 311.4 | 1.92 | 9.04 | 5.74 | -0.17 | 0.60 | 0.55 | |
| IDEQ | 13-Apr-95 | 10.13 | 9390 | 511.7 | 2.32 | 9.15 | 6.24 | 0.11 | 0.92 | 1.66 | |
| IDEQ | 25-Apr-95 | 7.15 | 9730 | 374.3 | 1.97 | 9.18 | 5.93 | -0.15 | 1.03 | 0.90 | |
| IDEQ | 9-May-95 | 12.08 | 3800 | 247.0 | 2.49 | 8.24 | 5.51 | 0.27 | -0.96 | 0.20 | |
| IDEQ | 23-May-95 | 25.86 | 2310 | 321.4 | 3.25 | 7.75 | 5.77 | 1.44 | -1.45 | 0.61 | |
| IDEQ | 12-Jun-95 | 6.85 | 2810 | 103.6 | 1.92 | 7.94 | 4.64 | -0.17 | -1.29 | -0.60 | |
| IDEQ | 27-Jun-95 | 2.19 | 3720 | 43.8 | 0.78 | 8.22 | 3.78 | -0.57 | -0.98 | -0.93 | |
| IDEQ | 13-Sep-95 | 4.28 | 6630 | 152.7 | 1.45 | 8.80 | 5.03 | -0.39 | -0.01 | -0.32 | |
| URS | 12-Nov-97 | 3.92 | 8450 | 178.2 | 1.37 | 9.04 | 5.18 | -0.42 | 0.60 | -0.18 | |
| URS | 14-May-98 | 55.6 | 2050 | 613.2 | 4.02 | 7.63 | 6.42 | 3.96 | -1.54 | 2.22 | |
| USGS | 27-Oct-98 | 2.1 | 7300 | 82.5 | 0.74 | 8.90 | 4.41 | -0.57 | 0.22 | -0.71 | |
| USGS | 19-Nov-98 | 1.9 | 12000 | 122.7 | 0.64 | 9.39 | 4.81 | -0.59 | 1.79 | -0.49 | |
| USGS | 10-Dec-98 | 2 | 15000 | 161.4 | 0.69 | 9.62 | 5.08 | -0.58 | 2.79 | -0.28 | |
| IDEQ | 15-Jan-99 | 3.32005516 | 9460 | 169.0 | 1.20 | 9.15 | 5.13 | -0.47 | 0.94 | -0.23 | |
| USGS | 21-Jan-99 | 3.3 | 9500 | 168.7 | 1.19 | 9.16 | 5.13 | -0.47 | 0.95 | -0.24 | |
| IDEQ | 23-Feb-99 | 1.934382724 | 8490 | 88.4 | 0.66 | 9.05 | 4.48 | -0.59 | 0.61 | -0.68 | |
| IDEQ | 8-Mar-99 | 2.281431698 | 8490 | 104.2 | 0.82 | 9.05 | 4.65 | -0.56 | 0.61 | -0.59 | |
| USGS | 22-Mar-99 | 17 | 6800 | 621.9 | 2.83 | 8.82 | 6.43 | 0.69 | 0.05 | 2.27 | |
| USGS | 20-Apr-99 | 30 | 6200 | 1000.7 | 3.40 | 8.73 | 6.91 | 1.79 | -0.15 | 4.36 | |
| USGS | 5-May-99 | 22 | 4500 | 532.6 | 3.09 | 8.41 | 6.28 | 1.11 | -0.72 | 1.77 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| USGS | 23-May-99 | 45 | 1900 | 460.0 | 3.81 | 7.55 | 6.13 | 3.06 | -1.59 | 1.37 |
| USGS | 15-Jun-99 | 45 | 850 | 205.8 | 3.81 | 6.75 | 5.33 | 3.06 | -1.94 | -0.03 |
| USGS | 7-Jul-99 | 16 | 1820 | 156.7 | 2.77 | 7.51 | 5.05 | 0.60 | -1.62 | -0.30 |
| USGS | 4-Aug-99 | 6.2 | 2910 | 97.1 | 1.82 | 7.98 | 4.58 | -0.23 | -1.25 | -0.63 |
| USGS | 1-Sep-99 | 3 | 5060 | 81.7 | 1.10 | 8.53 | 4.40 | -0.50 | -0.53 | -0.72 |

**tZn**

**Concentration over time analysis**

| | r2 | Slope, m |
|---|---|---|
| **Concentration over time** | | |
| **LnConc.=mTime+b All data r2, m:** | **0.041** | **-0.00015** |

| | Time | Ln[COC] | [COC] |
|---|---|---|---|
| first: | 27-Oct-93 | 8.80 | 6,606 |
| mid: | 22-Feb-95 | 8.73 | 6,156 |
| last: | 1-Sep-99 | 8.48 | 4,834 |

| | | | |
|---|---|---|---|
| **LnConc.=mTime+b >'96 r2, m:** | | **#DIV/0!** | **#DIV/0!** |
| | 1-Sep-99 | #DIV/0! | #DIV/0! |
| | 1-Sep-99 | #DIV/0! | #DIV/0! |

**Load over time analysis**

| | | |
|---|---|---|
| **Load over time** | | |
| **LnLoad=mTime+b All data r2, m:** | **0.073** | **0.00023** |

| | Time | LnLoad | Load |
|---|---|---|---|
| first: | 27-Oct-93 | 4.91 | 135 |
| mid: | 22-Feb-95 | 5.02 | 151 |
| last: | 1-Sep-99 | 5.39 | 220 |

| | | | |
|---|---|---|---|
| **LnLoad=mTime+b >'96 r2, m:** | | **#DIV/0!** | **#DIV/0!** |
| | 1-Sep-99 | #DIV/0! | #DIV/0! |
| | 1-Sep-99 | #DIV/0! | #DIV/0! |

max r2: #DIV/0!

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.041 | -0.00015 | 13.81 |
| 0.043 | -0.00015 | 13.99 |
| 0.043 | -0.00015 | 14.03 |
| 0.040 | -0.00015 | 13.92 |
| 0.038 | -0.00015 | 13.80 |
| 0.033 | -0.00014 | 13.48 |
| 0.028 | -0.00013 | 13.14 |
| 0.025 | -0.00012 | 12.91 |
| 0.022 | -0.00012 | 12.70 |
| 0.018 | -0.00011 | 12.38 |
| 0.015 | -0.00010 | 12.03 |
| 0.013 | -0.00009 | 11.82 |
| 0.017 | -0.00011 | 12.42 |
| 0.030 | -0.00014 | 13.67 |
| 0.040 | -0.00017 | 14.51 |
| 0.047 | -0.00018 | 15.19 |
| 0.052 | -0.00020 | 15.67 |
| 0.057 | -0.00021 | 16.21 |
| 0.060 | -0.00022 | 16.56 |
| 0.062 | -0.00023 | 16.98 |
| 0.064 | -0.00024 | 17.35 |
| 0.058 | -0.00024 | 17.20 |
| 0.042 | -0.00021 | 16.02 |
| 0.024 | -0.00016 | 14.30 |
| 0.014 | -0.00013 | 13.10 |
| 0.005 | -0.00007 | 11.17 |
| 0.001 | -0.00003 | 9.47 |
| 0.002 | 0.00005 | 6.75 |
| 0.016 | 0.00016 | 2.75 |
| 0.012 | 0.00015 | 3.09 |
| 0.000 | 0.00001 | 8.07 |
| 0.011 | -0.00019 | 15.22 |
| 0.055 | -0.00054 | 28.11 |
| 0.120 | -0.00166 | 68.72 |
| 0.110 | -0.00222 | 88.92 |
| 0.527 | -0.00615 | 231.40 |
| 0.577 | -0.00713 | 267.19 |
| 0.541 | -0.00742 | 277.67 |
| 0.452 | -0.00703 | 263.51 |
| 0.395 | -0.00696 | 260.84 |
| 0.309 | -0.00667 | 250.43 |
| 0.217 | -0.00588 | 221.70 |
| 0.096 | -0.00407 | 155.85 |
| 0.006 | -0.00112 | 48.53 |
| 0.076 | 0.00409 | -140.74 |

max r2: #DIV/0!

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.073 | 0.00023 | -2.90 |
| 0.063 | 0.00021 | -2.29 |
| 0.054 | 0.00020 | -1.77 |
| 0.046 | 0.00018 | -1.16 |
| 0.039 | 0.00017 | -0.70 |
| 0.035 | 0.00016 | -0.49 |
| 0.029 | 0.00015 | 0.01 |
| 0.023 | 0.00013 | 0.62 |
| 0.023 | 0.00013 | 0.56 |
| 0.025 | 0.00014 | 0.29 |
| 0.027 | 0.00015 | 0.00 |
| 0.037 | 0.00017 | -0.99 |
| 0.042 | 0.00019 | -1.54 |
| 0.044 | 0.00020 | -1.78 |
| 0.043 | 0.00020 | -1.88 |
| 0.039 | 0.00019 | -1.61 |
| 0.029 | 0.00017 | -0.75 |
| 0.025 | 0.00016 | -0.43 |
| 0.016 | 0.00013 | 0.64 |
| 0.005 | 0.00007 | 2.68 |
| 0.001 | 0.00002 | 4.44 |
| 0.000 | -0.00002 | 5.95 |
| 0.003 | -0.00006 | 7.31 |
| 0.005 | -0.00008 | 8.17 |
| 0.006 | -0.00009 | 8.54 |
| 0.001 | -0.00004 | 6.74 |
| 0.000 | 0.00000 | 5.22 |
| 0.009 | 0.00012 | 0.97 |
| 0.030 | 0.00024 | -3.29 |
| 0.051 | 0.00034 | -6.84 |
| 0.115 | 0.00056 | -15.01 |
| 0.094 | 0.00059 | -16.14 |
| 0.002 | 0.00011 | 1.50 |
| 0.004 | -0.00032 | 16.93 |
| 0.018 | -0.00093 | 39.13 |
| 0.018 | 0.00113 | -35.80 |
| 0.000 | 0.00005 | 3.46 |
| 0.008 | -0.00089 | 37.53 |
| 0.024 | -0.00176 | 69.24 |
| 0.047 | -0.00274 | 104.84 |
| 0.097 | -0.00455 | 170.56 |
| 0.335 | -0.00893 | 329.88 |
| 0.900 | -0.01592 | 584.01 |
| 0.952 | -0.01874 | 686.25 |
| 0.951 | -0.01696 | 621.67 |

| | | | | | |
|---|---|---|---|---|---|
| 0.620 | 0.01296 | -463.54 | 0.923 | -0.01650 | 604.76 |
| 0.975 | 0.02202 | -793.19 | 0.968 | -0.01237 | 454.71 |
| 0.998 | 0.01826 | -656.20 | 0.931 | -0.01163 | 427.84 |
| 1.000 | 0.01976 | -710.73 | 1.000 | -0.00617 | 228.97 |
| #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |

update for EV, CV:

**tZn**
**LN Analysis**
**NM298**
**tZn**

## Load

**Load Data, EV=211 lbs/day CV=0.856**

| | |
|---|---|
| **Avg:** | **211** |
| **SD:** | **181** |
| **CV:** | **0.86** |
| **Min:** | **43.8** |
| **Max:** | **1,001** |
| **Median:** | **157** |

**Load Data-based LN**

| u | ln tZn Load | tZn Load |
|---|---|---|
| 3 | 7.3 | 1485 |
| 0 | 5.08 | 161 |
| -3 | 2.86 | 17.4 |

| | |
|---|---|
| 211 | 211 |
| 0.86 | 0.856 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.95, EV=211lbs/day CV=0.803; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.950 | u | lnLoad | Load |
| slope, m: | 1.417 | 3 | 7.22 | 1363 |
| intercept, b: | -7.230 | 0 | 5.10 | 164 |
| N: | 50 | -3 | 2.98 | 19.8 |
| E[Load]: | 210.6 | Parameter Estimates | | |
| SD[Load]: | 169 | from LN regression | | |
| CV[Load]: | 0.80 | update graph label | | |

| | |
|---|---|
| 0.950 | 0.95 |
| 210.6 | 211 |
| 0.8 | 0.803 |

max r2
#DIV/0!

N: 50

| Date | tZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Jun-95 | **43.8** | 1 | 0.0124 | -2.243 | 3.780 | 0.950 |
| 15-Aug-94 | **65.3** | 2 | 0.0323 | -1.847 | 4.179 | 0.948 |
| 27-Oct-93 | **74.1** | 3 | 0.0522 | -1.624 | 4.305 | 0.952 |
| 16-Dec-93 | **79.9** | 4 | 0.0721 | -1.460 | 4.380 | 0.957 |
| 1-Sep-99 | **81.7** | 5 | 0.0920 | -1.328 | 4.403 | 0.963 |
| 27-Oct-98 | **82.5** | 6 | 0.1119 | -1.216 | 4.413 | 0.967 |
| 2-Dec-93 | **84.9** | 7 | 0.1318 | -1.118 | 4.441 | 0.970 |
| 8-Sep-94 | **85.2** | 8 | 0.1517 | -1.029 | 4.445 | 0.973 |
| 23-Feb-99 | **88.4** | 9 | 0.1716 | -0.948 | 4.481 | 0.975 |
| 20-Jul-94 | **92.2** | 10 | 0.1915 | -0.872 | 4.524 | 0.976 |
| 15-Aug-94 | **92.8** | 11 | 0.2114 | -0.801 | 4.531 | 0.978 |
| 18-Feb-94 | **94.1** | 12 | 0.2313 | -0.734 | 4.544 | 0.979 |
| 4-Aug-99 | **97.1** | 13 | 0.2512 | -0.671 | 4.575 | 0.979 |
| 16-Dec-93 | **97.7** | 14 | 0.2711 | -0.609 | 4.582 | 0.980 |
| 24-Jan-94 | **99.5** | 15 | 0.2910 | -0.550 | 4.600 | 0.979 |
| 12-Jun-95 | **103.6** | 16 | 0.3109 | -0.493 | 4.640 | 0.979 |
| 8-Mar-99 | **104.2** | 17 | 0.3308 | -0.438 | 4.646 | 0.978 |
| 4-Oct-94 | **107.2** | 18 | 0.3507 | -0.383 | 4.674 | 0.977 |
| 19-Nov-98 | **122.7** | 19 | 0.3706 | -0.330 | 4.809 | 0.975 |
| 24-Jan-94 | **125.0** | 20 | 0.3905 | -0.278 | 4.829 | 0.976 |
| 23-Jun-94 | **125.2** | 21 | 0.4104 | -0.226 | 4.830 | 0.975 |
| 15-Nov-94 | **125.4** | 22 | 0.4303 | -0.175 | 4.832 | 0.974 |
| 20-Jul-94 | **131.0** | 23 | 0.4502 | -0.125 | 4.875 | 0.973 |
| 13-Sep-95 | **152.7** | 24 | 0.4701 | -0.075 | 5.028 | 0.971 |
| 7-Jul-99 | **156.7** | 25 | 0.4900 | -0.025 | 5.054 | 0.973 |
| 7-Jun-94 | **157.4** | 26 | 0.5100 | 0.025 | 5.059 | 0.975 |
| 10-Dec-98 | **161.4** | 27 | 0.5299 | 0.075 | 5.084 | 0.975 |
| 13-Dec-94 | **162.8** | 28 | 0.5498 | 0.125 | 5.092 | 0.976 |
| 21-Jan-99 | **168.7** | 29 | 0.5697 | 0.175 | 5.128 | 0.976 |
| 15-Jan-99 | **169.0** | 30 | 0.5896 | 0.226 | 5.130 | 0.976 |
| 8-Mar-94 | **169.5** | 31 | 0.6095 | 0.278 | 5.133 | 0.974 |
| 19-May-94 | **174.2** | 32 | 0.6294 | 0.330 | 5.160 | 0.972 |
| 12-Nov-97 | **178.2** | 33 | 0.6493 | 0.383 | 5.183 | 0.969 |
| 24-Mar-94 | **198.6** | 34 | 0.6692 | 0.438 | 5.291 | 0.966 |
| 24-Mar-94 | **199.0** | 35 | 0.6891 | 0.493 | 5.293 | 0.963 |
| 10-Jan-95 | **201.8** | 36 | 0.7090 | 0.550 | 5.307 | 0.959 |
| 15-Jun-99 | **205.8** | 37 | 0.7289 | 0.609 | 5.327 | 0.956 |
| 4-May-94 | **222.0** | 38 | 0.7488 | 0.671 | 5.403 | 0.957 |
| 9-May-95 | **247.0** | 39 | 0.7687 | 0.734 | 5.509 | 0.963 |
| 7-Mar-95 | **311.4** | 40 | 0.7886 | 0.801 | 5.741 | 0.969 |
| 7-Apr-94 | **317.3** | 41 | 0.8085 | 0.872 | 5.760 | 0.964 |
| 23-May-95 | **321.4** | 42 | 0.8284 | 0.948 | 5.773 | 0.957 |
| 25-Apr-95 | **374.3** | 43 | 0.8483 | 1.029 | 5.925 | 0.955 |
| 9-Feb-95 | **379.6** | 44 | 0.8682 | 1.118 | 5.939 | 0.943 |
| 23-May-99 | **460.0** | 45 | 0.8881 | 1.216 | 6.131 | 0.937 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 13-Apr-95 | **511.7** | 46 | 0.9080 | 1.328 | 6.238 | 0.919 |
| 5-May-99 | **532.6** | 47 | 0.9279 | 1.460 | 6.278 | 0.916 |
| 14-May-98 | **613.2** | 48 | 0.9478 | 1.624 | 6.419 | 0.889 |
| 22-Mar-99 | **621.9** | 49 | 0.9677 | 1.847 | 6.433 | 1.000 |
| 20-Apr-99 | **1000.7** | 50 | 0.9876 | 2.243 | 6.908 | #DIV/0! |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | **NM298** | | 6,655 | 6660 |
| **LN Analysis** | | **tZn** | | 0.45 | 0.449 |
| **Concentration** | | **Conc. Data, EV=6660 ug/L CV=0.449** | | | |
| **Avg:** | **6,655** | **Data-based LN** | | | |
| **SD:** | **2,988** | u | ln[tZn] | [tZn] | |
| **CV:** | **0.45** | 3 | 10.0 | 21958 | |
| **Min:** | **850** | 0 | 8.71 | 6071 | |
| **Max:** | **15,000** | -3 | 7.43 | 1679 | |
| **Median:** | **6,865** | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.910 | 0.91 |
| **u=mLn(Conc.)+b:** | | | | 7039.5 | 7040 |
| update for r2, EV, CV: | **r2=0.91, EV=7040 ug/L CV=0.677; max r2=0.99** | | | 0.677 | 0.677 |
| r2 u,lnConc: | 0.910 | u | lnConc. | Conc. | |
| slope, m: | 1.628 | 3 | 10.51 | 36795 | |
| intercept, b: | -14.119 | 0 | 8.67 | 5830 | |
| N: | 50 | -3 | 6.83 | 924 | |
| E[Conc]: | 7039.5 | Parameter Estimates | | | |
| SD[Conc]: | 4765 | from LN regression | | | |
| CV[Conc]: | 0.68 | update graph label | | | |

| Date | tZn Concentration ug/L Ranked | N: 50 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 15-Jun-99 | 850 | 1 | 0.0124 | -2.243 | 6.745 | 0.910 |
| 7-Jul-99 | 1820 | 2 | 0.0323 | -1.847 | 7.507 | 0.924 |
| 23-May-99 | 1900 | 3 | 0.0522 | -1.624 | 7.550 | 0.918 |
| 14-May-98 | 2050 | 4 | 0.0721 | -1.460 | 7.626 | 0.917 |
| 23-May-95 | 2310 | 5 | 0.0920 | -1.328 | 7.745 | 0.921 |
| 19-May-94 | 2680 | 6 | 0.1119 | -1.216 | 7.894 | 0.925 |
| 12-Jun-95 | 2810 | 7 | 0.1318 | -1.118 | 7.941 | 0.927 |
| 4-Aug-99 | 2910 | 8 | 0.1517 | -1.029 | 7.976 | 0.933 |
| 27-Jun-95 | 3720 | 9 | 0.1716 | -0.948 | 8.221 | 0.945 |
| 7-Jun-94 | 3750 | 10 | 0.1915 | -0.872 | 8.230 | 0.944 |
| 9-May-95 | 3800 | 11 | 0.2114 | -0.801 | 8.243 | 0.946 |
| 4-May-94 | 3900 | 12 | 0.2313 | -0.734 | 8.269 | 0.952 |
| 23-Jun-94 | 4400 | 13 | 0.2512 | -0.671 | 8.389 | 0.963 |
| 5-May-99 | 4500 | 14 | 0.2711 | -0.609 | 8.412 | 0.967 |
| 1-Sep-99 | 5060 | 15 | 0.2910 | -0.550 | 8.529 | 0.975 |
| 20-Jul-94 | 5160 | 16 | 0.3109 | -0.493 | 8.549 | 0.976 |
| 20-Jul-94 | 5160 | 17 | 0.3308 | -0.438 | 8.549 | 0.977 |
| 27-Oct-93 | 5550 | 18 | 0.3507 | -0.383 | 8.622 | 0.982 |
| 15-Aug-94 | 5890 | 19 | 0.3706 | -0.330 | 8.681 | 0.984 |
| 15-Aug-94 | 5890 | 20 | 0.3905 | -0.278 | 8.681 | 0.983 |
| 8-Sep-94 | 6140 | 21 | 0.4104 | -0.226 | 8.723 | 0.984 |
| 20-Apr-99 | 6200 | 22 | 0.4303 | -0.175 | 8.732 | 0.983 |
| 2-Dec-93 | 6361 | 23 | 0.4502 | -0.125 | 8.758 | 0.984 |
| 13-Sep-95 | 6630 | 24 | 0.4701 | -0.075 | 8.799 | 0.984 |
| 22-Mar-99 | 6800 | 25 | 0.4900 | -0.025 | 8.825 | 0.983 |
| 7-Apr-94 | 6930 | 26 | 0.5100 | 0.025 | 8.844 | 0.982 |
| 27-Oct-98 | 7300 | 27 | 0.5299 | 0.075 | 8.896 | 0.980 |
| 16-Dec-93 | 7350 | 28 | 0.5498 | 0.125 | 8.902 | 0.980 |
| 16-Dec-93 | 7350 | 29 | 0.5697 | 0.175 | 8.902 | 0.980 |
| 8-Mar-94 | 7360 | 30 | 0.5896 | 0.226 | 8.904 | 0.978 |
| 18-Feb-94 | 7670 | 31 | 0.6095 | 0.278 | 8.945 | 0.976 |
| 4-Oct-94 | 7720 | 32 | 0.6294 | 0.330 | 8.952 | 0.975 |
| 24-Mar-94 | 7920 | 33 | 0.6493 | 0.383 | 8.977 | 0.973 |
| 24-Mar-94 | 7920 | 34 | 0.6692 | 0.438 | 8.977 | 0.971 |
| 7-Mar-95 | 8450 | 35 | 0.6891 | 0.493 | 9.042 | 0.968 |
| 12-Nov-97 | 8450 | 36 | 0.7090 | 0.550 | 9.042 | 0.974 |
| 23-Feb-99 | 8490 | 37 | 0.7289 | 0.609 | 9.047 | 0.977 |
| 8-Mar-99 | 8490 | 38 | 0.7488 | 0.671 | 9.047 | 0.978 |
| 24-Jan-94 | 8640 | 39 | 0.7687 | 0.734 | 9.064 | 0.977 |
| 24-Jan-94 | 8640 | 40 | 0.7886 | 0.801 | 9.064 | 0.976 |
| 10-Jan-95 | 9150 | 41 | 0.8085 | 0.872 | 9.122 | 0.971 |
| 13-Apr-95 | 9390 | 42 | 0.8284 | 0.948 | 9.147 | 0.972 |
| 15-Jan-99 | 9460 | 43 | 0.8483 | 1.029 | 9.155 | 0.977 |
| 21-Jan-99 | 9500 | 44 | 0.8682 | 1.118 | 9.159 | 0.978 |
| 25-Apr-95 | 9730 | 45 | 0.8881 | 1.216 | 9.183 | 0.971 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 9-Feb-95 | 10300 | 46 | 0.9080 | 1.328 | 9.240 | 0.963 |
| 15-Nov-94 | 11100 | 47 | 0.9279 | 1.460 | 9.315 | 0.945 |
| 19-Nov-98 | 12000 | 48 | 0.9478 | 1.624 | 9.393 | 0.914 |
| 13-Dec-94 | 12200 | 49 | 0.9677 | 1.847 | 9.409 | 1.000 |
| 10-Dec-98 | 15000 | 50 | 0.9876 | 2.243 | 9.616 | #DIV/0! |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **NM298** | | | 9 | 8.88 |
| **LN Analysis** | | **tZn** | | | 1.33 | 1.33 |
| **Discharge, Q** | | **Q Data, EV=8.88 cfs CV=1.33** | | | | |
| **Avg:** | 9 | **Q Data-based LN** | | | | |
| **SD:** | 12 | u | lnQ | Q | | |
| **CV:** | 1.33 | 3 | 4.7 | 110 | | |
| **Min:** | 2 | 0 | 1.68 | 5 | | |
| **Max:** | 56 | -3 | -1.35 | 0 | | |
| **Median:** | 4 | | | | | |
| | | | | | 0.887 | 0.887 |
| | | | | | 8.7 | 8.72 |
| | | **u=mLn{Q}+b:** | | | 1.33 | 1.33 |

update for r2, EV, CV: **r2=0.887, EV=8.72 cfs CV=1.33; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.887 | u | lnQ | Q |
| slope, m: | 0.990 | 3 | 4.69 | 108 |
| intercept, b: | -1.638 | 0 | 1.66 | 5 |
| N: | 50 | -3 | -1.38 | 0 |
| E[Q]: | 8.7 | Parameter Estimates | | |
| SD[Q]: | 12 | from LN regression | | |
| CV[Q]: | 1.33 | update graph label | | |

N: 50

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 19-Nov-98 | 1.9 | 1 | 0.0124 | -2.243 | 0.642 | 0.887 |
| 23-Feb-99 | 1.934382724 | 2 | 0.0323 | -1.847 | 0.660 | 0.912 |
| 10-Dec-98 | 2 | 3 | 0.0522 | -1.624 | 0.693 | 0.927 |
| 16-Dec-93 | 2.02 | 4 | 0.0721 | -1.460 | 0.703 | 0.938 |
| 15-Aug-94 | 2.06 | 5 | 0.0920 | -1.328 | 0.723 | 0.947 |
| 15-Nov-94 | 2.1 | 6 | 0.1119 | -1.216 | 0.742 | 0.954 |
| 27-Oct-98 | 2.1 | 7 | 0.1318 | -1.118 | 0.742 | 0.960 |
| 24-Jan-94 | 2.14 | 8 | 0.1517 | -1.029 | 0.761 | 0.964 |
| 27-Jun-95 | 2.19 | 9 | 0.1716 | -0.948 | 0.784 | 0.968 |
| 18-Feb-94 | 2.28 | 10 | 0.1915 | -0.872 | 0.824 | 0.972 |
| 8-Mar-99 | 2.281431698 | 11 | 0.2114 | -0.801 | 0.825 | 0.975 |
| 16-Dec-93 | 2.47 | 12 | 0.2313 | -0.734 | 0.904 | 0.977 |
| 27-Oct-93 | 2.48 | 13 | 0.2512 | -0.671 | 0.908 | 0.980 |
| 2-Dec-93 | 2.48 | 14 | 0.2711 | -0.609 | 0.908 | 0.982 |
| 13-Dec-94 | 2.48 | 15 | 0.2910 | -0.550 | 0.908 | 0.983 |
| 8-Sep-94 | 2.58 | 16 | 0.3109 | -0.493 | 0.948 | 0.984 |
| 4-Oct-94 | 2.58 | 17 | 0.3308 | -0.438 | 0.948 | 0.984 |
| 24-Jan-94 | 2.69 | 18 | 0.3507 | -0.383 | 0.990 | 0.984 |
| 15-Aug-94 | 2.93 | 19 | 0.3706 | -0.330 | 1.075 | 0.983 |
| 1-Sep-99 | 3 | 20 | 0.3905 | -0.278 | 1.099 | 0.983 |
| 21-Jan-99 | 3.3 | 21 | 0.4104 | -0.226 | 1.194 | 0.982 |
| 20-Jul-94 | 3.32 | 22 | 0.4303 | -0.175 | 1.200 | 0.982 |
| 15-Jan-99 | 3.32005516 | 23 | 0.4502 | -0.125 | 1.200 | 0.981 |
| 12-Nov-97 | 3.92 | 24 | 0.4701 | -0.075 | 1.366 | 0.980 |
| 10-Jan-95 | 4.1 | 25 | 0.4900 | -0.025 | 1.411 | 0.979 |
| 8-Mar-94 | 4.28 | 26 | 0.5100 | 0.025 | 1.454 | 0.979 |
| 13-Sep-95 | 4.28 | 27 | 0.5299 | 0.075 | 1.454 | 0.978 |
| 24-Mar-94 | 4.66 | 28 | 0.5498 | 0.125 | 1.539 | 0.976 |
| 24-Mar-94 | 4.67 | 29 | 0.5697 | 0.175 | 1.541 | 0.975 |
| 20-Jul-94 | 4.72 | 30 | 0.5896 | 0.226 | 1.552 | 0.973 |
| 23-Jun-94 | 5.29 | 31 | 0.6095 | 0.278 | 1.666 | 0.971 |
| 4-Aug-99 | 6.2 | 32 | 0.6294 | 0.330 | 1.825 | 0.968 |
| 9-Feb-95 | 6.85 | 33 | 0.6493 | 0.383 | 1.924 | 0.965 |
| 7-Mar-95 | 6.85 | 34 | 0.6692 | 0.438 | 1.924 | 0.964 |
| 12-Jun-95 | 6.85 | 35 | 0.6891 | 0.493 | 1.924 | 0.960 |
| 25-Apr-95 | 7.15 | 36 | 0.7090 | 0.550 | 1.967 | 0.955 |
| 7-Jun-94 | 7.8 | 37 | 0.7289 | 0.609 | 2.054 | 0.951 |
| 7-Apr-94 | 8.51 | 38 | 0.7488 | 0.671 | 2.141 | 0.945 |
| 13-Apr-95 | 10.13 | 39 | 0.7687 | 0.734 | 2.316 | 0.939 |
| 4-May-94 | 10.58 | 40 | 0.7886 | 0.801 | 2.359 | 0.929 |
| 19-May-94 | 12.08 | 41 | 0.8085 | 0.872 | 2.492 | 0.919 |
| 9-May-95 | 12.08 | 42 | 0.8284 | 0.948 | 2.492 | 0.904 |
| 7-Jul-99 | 16 | 43 | 0.8483 | 1.029 | 2.773 | 0.902 |
| 22-Mar-99 | 17 | 44 | 0.8682 | 1.118 | 2.833 | 0.881 |
| 5-May-99 | 22 | 45 | 0.8881 | 1.216 | 3.091 | 0.873 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 23-May-95 | 25.86 | 46 | 0.9080 | 1.328 | 3.253 | 0.836 |
| 20-Apr-99 | 30 | 47 | 0.9279 | 1.460 | 3.401 | 0.769 |
| 23-May-99 | 45 | 48 | 0.9478 | 1.624 | 3.807 | 0.873 |
| 15-Jun-99 | 45 | 49 | 0.9677 | 1.847 | 3.807 | 1.000 |
| 14-May-98 | 55.6 | 50 | 0.9876 | 2.243 | 4.018 | #DIV/0! |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **NM303** | **Date:** | **29-May-00** |
| **Chemical:** | **dCd** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,602 | 10 | 27 | 1.3 | 0.00 | 0.00 | 0.00 |
| **SD:** | 419 | 10 | 10 | 1.0 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 0.96 | 0.35 | 0.81 | | | |
| **Min:** | 33,374 | 2 | 7 | 0.3 | -0.82 | -2.06 | -0.97 |
| **Max:** | 35,929 | 45 | 62 | 6.5 | 3.47 | 3.61 | 5.13 |
| **Median:** | 34,561 | 6 | 28 | 1.0 | -0.47 | 0.03 | -0.26 |

**dCd NM303 : Concentration v. Discharge, Q**

**Conc. = mQ+b (r2=0.24)** update r2

| | | | |
|---|---|---|---|
| r2 Q,[COC]: | 0.24 | [dCd] | Q |
| slope, m: | -0.5 | 31 | 2.2 |
| intercept, b: | 32.1 | 27 | 10.4 |
| N: 42 | | 11 | 45 |

**LnConc. = mLn(Q)+b (r2=0.36)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.36 | ln[dCd] | ln Q | [dCd] | Q |
| slope, m: | -0.29 | 3.59 | 0.81 | 36 | 2 |
| intercept, b: | 3.82 | 3.14 | 2.34 | 23 | 10 |
| N: 42 | | 2.72 | 3.80 | 15 | 45 |

**Q = mTime +b**

| | | |
|---|---|---|
| r2: | 0.009 | 0.023 |
| m: | 0.0022 | 0.00028 |
| b: | -67 | -7.56 |

**LnQ = mTime +b**

**N= 42**

| | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd NM303 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | for graph 0 | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 39.6 | 7.3 | 1.6 | 3.68 | 1.99 | 0.44 | 2.94 | -2.06 | 0.29 |
| MFG | 4-Oct-91 | 2.24 | 22.6 | 0.3 | 0.81 | 3.12 | -1.30 | -0.82 | -0.48 | -0.97 |
| IDEQ | 28-Oct-93 | 3.76 | 29 | 0.6 | 1.32 | 3.37 | -0.53 | -0.66 | 0.19 | -0.66 |
| IDEQ | 2-Dec-93 | 3.88 | 23 | 0.5 | 1.36 | 3.14 | -0.73 | -0.65 | -0.43 | -0.77 |
| IDEQ | 16-Dec-93 | 3.64 | 33 | 0.6 | 1.29 | 3.50 | -0.44 | -0.68 | 0.60 | -0.60 |
| IDEQ | 16-Dec-93 | 3.63 | 33 | 0.6 | 1.29 | 3.50 | -0.44 | -0.68 | 0.60 | -0.60 |
| IDEQ | 24-Jan-94 | 4.85 | 24 | 0.6 | 1.58 | 3.18 | -0.47 | -0.55 | -0.33 | -0.62 |
| IDEQ | 24-Jan-94 | 5.03 | 24 | 0.6 | 1.62 | 3.18 | -0.43 | -0.54 | -0.33 | -0.60 |
| IDEQ | 18-Feb-94 | 3.76 | 29 | 0.6 | 1.32 | 3.37 | -0.53 | -0.66 | 0.19 | -0.66 |
| IDEQ | 8-Mar-94 | 7.65 | 26 | 1.1 | 2.03 | 3.26 | 0.07 | -0.27 | -0.12 | -0.19 |
| IDEQ | 8-Mar-94 | 11.87 | 26 | 1.7 | 2.47 | 3.26 | 0.51 | 0.15 | -0.12 | 0.39 |
| IDEQ | 24-Mar-94 | 9.34 | 23 | 1.2 | 2.23 | 3.14 | 0.14 | -0.10 | -0.43 | -0.10 |
| IDEQ | 24-Mar-94 | 12.9 | 23 | 1.6 | 2.56 | 3.14 | 0.47 | 0.26 | -0.43 | 0.33 |
| IDEQ | 7-Apr-94 | 10.32 | 23 | 1.3 | 2.33 | 3.14 | 0.24 | 0.00 | -0.43 | 0.01 |
| IDEQ | 4-May-94 | 17.19 | 22 | 2.0 | 2.84 | 3.09 | 0.71 | 0.69 | -0.54 | 0.75 |
| IDEQ | 19-May-94 | 16.61 | 18 | 1.6 | 2.81 | 2.89 | 0.48 | 0.63 | -0.95 | 0.34 |
| IDEQ | 7-Jun-94 | 11.81 | 24 | 1.5 | 2.47 | 3.18 | 0.42 | 0.15 | -0.33 | 0.26 |
| IDEQ | 23-Jun-94 | 7.65 | 24 | 1.0 | 2.03 | 3.18 | -0.01 | -0.27 | -0.33 | -0.27 |
| IDEQ | 20-Jul-94 | 4.85 | 28 | 0.7 | 1.58 | 3.33 | -0.31 | -0.55 | 0.08 | -0.52 |
| IDEQ | 20-Jul-94 | 4.33 | 28 | 0.7 | 1.47 | 3.33 | -0.43 | -0.61 | 0.08 | -0.60 |
| IDEQ | 15-Aug-94 | 4.27 | 28 | 0.6 | 1.45 | 3.33 | -0.44 | -0.61 | 0.08 | -0.61 |
| IDEQ | 15-Aug-94 | 2.68 | 28 | 0.4 | 0.99 | 3.33 | -0.91 | -0.77 | 0.08 | -0.84 |
| IDEQ | 8-Sep-94 | 4.27 | 34 | 0.8 | 1.45 | 3.53 | -0.25 | -0.61 | 0.70 | -0.47 |
| IDEQ | 4-Oct-94 | 4.27 | 32 | 0.7 | 1.45 | 3.47 | -0.31 | -0.61 | 0.50 | -0.52 |
| IDEQ | 15-Nov-94 | 4.7 | 62 | 1.6 | 1.55 | 4.13 | 0.45 | -0.57 | 3.61 | 0.30 |
| IDEQ | 13-Dec-94 | 4.41 | 54 | 1.3 | 1.48 | 3.99 | 0.25 | -0.60 | 2.78 | 0.02 |
| IDEQ | 10-Jan-95 | 5.52 | 44 | 1.3 | 1.71 | 3.78 | 0.27 | -0.49 | 1.74 | 0.04 |
| IDEQ | 9-Feb-95 | 13.52 | 30 | 2.2 | 2.60 | 3.40 | 0.78 | 0.32 | 0.29 | 0.90 |
| IDEQ | 7-Mar-95 | 10.67 | 31 | 1.8 | 2.37 | 3.43 | 0.58 | 0.03 | 0.39 | 0.51 |
| IDEQ | 22-Mar-95 | 44.83 | 27 | 6.5 | 3.80 | 3.30 | 1.87 | 3.47 | -0.02 | 5.13 |
| IDEQ | 13-Apr-95 | 17.8 | 29 | 2.8 | 2.88 | 3.37 | 1.02 | 0.75 | 0.19 | 1.48 |
| IDEQ | 25-Apr-95 | 13.52 | 28 | 2.0 | 2.60 | 3.33 | 0.71 | 0.32 | 0.08 | 0.76 |
| IDEQ | 9-May-95 | 26.15 | 17 | 2.4 | 3.26 | 2.83 | 0.87 | 1.59 | -1.06 | 1.10 |
| IDEQ | 23-May-95 | 22.71 | 14 | 1.7 | 3.12 | 2.64 | 0.54 | 1.24 | -1.37 | 0.44 |
| IDEQ | 12-Jun-95 | 9.03 | 17 | 0.8 | 2.20 | 2.83 | -0.19 | -0.13 | -1.06 | -0.43 |
| IDEQ | 27-Jun-95 | 5.89 | 18 | 0.6 | 1.77 | 2.89 | -0.56 | -0.45 | -0.95 | -0.68 |
| IDEQ | 11-Jul-95 | 5.01 | 22 | 0.6 | 1.61 | 3.09 | -0.52 | -0.54 | -0.54 | -0.66 |
| IDEQ | 25-Jul-95 | 4.01 | 28 | 0.6 | 1.39 | 3.33 | -0.50 | -0.64 | 0.08 | -0.64 |
| IDEQ | 14-Aug-95 | 3.11 | 33 | 0.6 | 1.13 | 3.50 | -0.59 | -0.73 | 0.60 | -0.70 |
| IDEQ | 13-Sep-95 | 2.66 | 34 | 0.5 | 0.98 | 3.53 | -0.72 | -0.77 | 0.70 | -0.76 |
| URS | 11-Nov-97 | 5.88 | 32.1 | 1.0 | 1.77 | 3.47 | 0.02 | -0.45 | 0.51 | -0.24 |
| URS | 14-May-98 | 35.3 | 10.2 | 1.9 | 3.56 | 2.32 | 0.66 | 2.51 | -1.76 | 0.66 |

dCd

**Concentration over time analysis**

| | dCd | NM303 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.011** | **0.00009** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 3.13 | 23 | | |
| mid: | 15-Aug-94 | 3.24 | 25 | | |
| last: | 14-May-98 | 3.36 | 29 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

**Load over time analysis**

| | dCd | NM303 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.061** | **0.00037** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | -0.43 | 1 | | |
| mid: | 15-Aug-94 | 0.01 | 1 | | |
| last: | 14-May-98 | 0.51 | 2 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

| | max r2: | 0.472 | | max r2: | 0.894 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.011 | 0.00009 | 0.10 | 0.061 | 0.00037 | -12.68 |
| | 0.034 | -0.00016 | 8.66 | 0.112 | 0.00056 | -19.22 |
| | 0.063 | -0.00024 | 11.52 | 0.046 | 0.00038 | -13.17 |
| | 0.061 | -0.00024 | 11.52 | 0.037 | 0.00034 | -11.81 |
| | 0.069 | -0.00026 | 12.21 | 0.026 | 0.00028 | -9.75 |
| | 0.062 | -0.00025 | 11.80 | 0.019 | 0.00025 | -8.46 |
| | 0.054 | -0.00023 | 11.35 | 0.013 | 0.00020 | -6.98 |
| | 0.060 | -0.00025 | 11.87 | 0.008 | 0.00016 | -5.37 |
| | 0.066 | -0.00026 | 12.46 | 0.004 | 0.00011 | -3.67 |
| | 0.064 | -0.00026 | 12.43 | 0.001 | 0.00005 | -1.53 |
| | 0.066 | -0.00027 | 12.75 | 0.001 | 0.00004 | -1.27 |
| | 0.069 | -0.00028 | 13.11 | 0.002 | 0.00008 | -2.56 |
| | 0.078 | -0.00031 | 13.94 | 0.002 | 0.00008 | -2.63 |
| | 0.090 | -0.00033 | 14.90 | 0.004 | 0.00012 | -4.00 |
| | 0.103 | -0.00036 | 15.94 | 0.005 | 0.00014 | -4.59 |
| | 0.121 | -0.00040 | 17.21 | 0.011 | 0.00021 | -7.12 |
| | 0.163 | -0.00046 | 19.44 | 0.017 | 0.00026 | -8.93 |
| | 0.181 | -0.00050 | 20.61 | 0.024 | 0.00031 | -10.67 |
| | 0.201 | -0.00053 | 21.89 | 0.023 | 0.00031 | -10.64 |
| | 0.207 | -0.00055 | 22.51 | 0.017 | 0.00027 | -9.24 |
| | 0.214 | -0.00057 | 23.25 | 0.010 | 0.00021 | -7.03 |
| | 0.220 | -0.00059 | 23.99 | 0.004 | 0.00013 | -4.52 |
| | 0.228 | -0.00062 | 24.88 | 0.000 | -0.00002 | 1.01 |
| | 0.218 | -0.00061 | 24.73 | 0.002 | -0.00010 | 3.61 |
| | 0.211 | -0.00062 | 24.82 | 0.009 | -0.00019 | 6.86 |
| | 0.179 | -0.00051 | 21.21 | 0.007 | -0.00017 | 6.19 |
| | 0.146 | -0.00042 | 17.90 | 0.007 | -0.00018 | 6.51 |
| | 0.115 | -0.00035 | 15.29 | 0.007 | -0.00018 | 6.73 |
| | 0.099 | -0.00032 | 14.40 | 0.003 | -0.00011 | 4.23 |
| | 0.081 | -0.00029 | 13.20 | 0.001 | -0.00007 | 2.52 |
| | 0.070 | -0.00027 | 12.53 | 0.013 | 0.00019 | -6.76 |
| | 0.054 | -0.00024 | 11.31 | 0.053 | 0.00036 | -12.58 |
| | 0.039 | -0.00020 | 10.00 | 0.120 | 0.00050 | -17.78 |
| | 0.060 | -0.00025 | 11.81 | 0.349 | 0.00072 | -25.43 |
| | 0.137 | -0.00036 | 15.70 | 0.781 | 0.00092 | -32.79 |
| | 0.224 | -0.00045 | 19.15 | 0.891 | 0.00102 | -36.06 |
| | 0.359 | -0.00058 | 23.58 | 0.889 | 0.00103 | -36.71 |
| | 0.472 | -0.00070 | 27.96 | 0.894 | 0.00107 | -38.13 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | **NM303** | | |
| **LN Analysis** | | **dCd** | | |
| **Load** | | **Load Data, EV=1.3 lbs/day CV=.8** | | |
| **Avg:** | **1.3** | **Load Data-based LN** | | |
| **SD:** | **1.0** | u | ln dCd Load | dCd Load |
| **CV:** | **0.8** | 3 | 2.1 | 8 |
| **Min:** | **0.3** | 0 | -0.02 | 1.0 |
| **Max:** | **6.5** | -3 | -2.15 | 0.1 |
| **Median:** | **1.0** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.953, EV=1.3 lbs/day CV=0.74; max r2=0.95**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.953 | u | lnLoad | Load |
| slope, m: | 1.517 | 3 | 2.00 | 7 |
| intercept, b: | -0.031 | 0 | 0.02 | 1 |
| N: | 42 | -3 | -1.96 | 0.1 |
| E[Load]: | 1.3 | Parameter Estimates | | |
| SD[Load]: | 1 | from LN regression | | |
| CV[Load]: | 0.74 | update graph label | | |

| | dCd Load | N: 42 i | | u | Ln | max r2 0.954 r2 |
|---|---|---|---|---|---|---|
| **Date** | **lbs/day Ranked** | **rank** | **i-3/8 / N+1/4 plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 4-Oct-91 | 0.3 | 1 | 0.0148 | -2.176 | -1.301 | 0.953 |
| 15-Aug-94 | 0.4 | 2 | 0.0385 | -1.769 | -0.907 | 0.947 |
| 2-Dec-93 | 0.5 | 3 | 0.0621 | -1.537 | -0.734 | 0.946 |
| 13-Sep-95 | 0.5 | 4 | 0.0858 | -1.367 | -0.720 | 0.949 |
| 14-Aug-95 | 0.6 | 5 | 0.1095 | -1.229 | -0.594 | 0.948 |
| 27-Jun-95 | 0.6 | 6 | 0.1331 | -1.112 | -0.561 | 0.951 |
| 28-Oct-93 | 0.6 | 7 | 0.1568 | -1.008 | -0.533 | 0.953 |
| 18-Feb-94 | 0.6 | 8 | 0.1805 | -0.914 | -0.533 | 0.954 |
| 11-Jul-95 | 0.6 | 9 | 0.2041 | -0.827 | -0.523 | 0.954 |
| 25-Jul-95 | 0.6 | 10 | 0.2278 | -0.746 | -0.504 | 0.953 |
| 24-Jan-94 | 0.6 | 11 | 0.2515 | -0.670 | -0.468 | 0.951 |
| 15-Aug-94 | 0.6 | 12 | 0.2751 | -0.597 | -0.441 | 0.948 |
| 16-Dec-93 | 0.6 | 13 | 0.2988 | -0.528 | -0.439 | 0.945 |
| 16-Dec-93 | 0.6 | 14 | 0.3225 | -0.461 | -0.437 | 0.941 |
| 24-Jan-94 | 0.6 | 15 | 0.3462 | -0.396 | -0.432 | 0.936 |
| 20-Jul-94 | 0.7 | 16 | 0.3698 | -0.332 | -0.427 | 0.932 |
| 20-Jul-94 | 0.7 | 17 | 0.3935 | -0.270 | -0.314 | 0.928 |
| 4-Oct-94 | 0.7 | 18 | 0.4172 | -0.209 | -0.308 | 0.922 |
| 8-Sep-94 | 0.8 | 19 | 0.4408 | -0.149 | -0.247 | 0.918 |
| 12-Jun-95 | 0.8 | 20 | 0.4645 | -0.089 | -0.191 | 0.913 |
| 23-Jun-94 | 1.0 | 21 | 0.4882 | -0.030 | -0.012 | 0.908 |
| 11-Nov-97 | 1.0 | 22 | 0.5118 | 0.030 | 0.015 | 0.900 |
| 8-Mar-94 | 1.1 | 23 | 0.5355 | 0.089 | 0.068 | 0.890 |
| 24-Mar-94 | 1.2 | 24 | 0.5592 | 0.149 | 0.145 | 0.879 |
| 7-Apr-94 | 1.3 | 25 | 0.5828 | 0.209 | 0.245 | 0.869 |
| 13-Dec-94 | 1.3 | 26 | 0.6065 | 0.270 | 0.248 | 0.861 |
| 10-Jan-95 | 1.3 | 27 | 0.6302 | 0.332 | 0.268 | 0.851 |
| 7-Jun-94 | 1.5 | 28 | 0.6538 | 0.396 | 0.422 | 0.837 |
| 16-May-91 | 1.6 | 29 | 0.6775 | 0.461 | 0.442 | 0.841 |
| 15-Nov-94 | 1.6 | 30 | 0.7012 | 0.528 | 0.450 | 0.847 |
| 24-Mar-94 | 1.6 | 31 | 0.7249 | 0.597 | 0.468 | 0.850 |
| 19-May-94 | 1.6 | 32 | 0.7485 | 0.670 | 0.475 | 0.853 |
| 8-Mar-94 | 1.7 | 33 | 0.7722 | 0.746 | 0.507 | 0.852 |
| 23-May-95 | 1.7 | 34 | 0.7959 | 0.827 | 0.537 | 0.851 |
| 7-Mar-95 | 1.8 | 35 | 0.8195 | 0.914 | 0.576 | 0.849 |
| 14-May-98 | 1.9 | 36 | 0.8432 | 1.008 | 0.661 | 0.847 |
| 4-May-94 | 2.0 | 37 | 0.8669 | 1.112 | 0.710 | 0.865 |
| 25-Apr-95 | 2.0 | 38 | 0.8905 | 1.229 | 0.711 | 0.898 |
| 9-Feb-95 | 2.2 | 39 | 0.9142 | 1.367 | 0.780 | |
| 9-May-95 | 2.4 | 40 | 0.9379 | 1.537 | 0.872 | |
| 13-Apr-95 | 2.8 | 41 | 0.9615 | 1.769 | 1.021 | |
| 22-Mar-95 | 6.5 | 42 | 0.9852 | 2.176 | 1.874 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | NM303 | | |
| **LN Analysis** | | dCd | | |
| **Concentration** | | Conc. Data, EV=27 ug/L CV=.35 | | |
| **Avg:** | 27 | Data-based LN | | |
| **SD:** | 10 | u | ln[dCd] | [dCd] |
| **CV:** | 0.35 | 3 | 4.3 | 72 |
| **Min:** | 7 | 0 | 3.24 | 26 |
| **Max:** | 62 | -3 | 2.21 | 9 |
| **Median:** | 28 | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **$r^2$=0.894, EV=27.7 ug/L CV=0.42; max r2=0.93**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.894 | u | lnConc. | Conc. |
| slope, m: | 2.473 | 3 | 4.45 | 86 |
| intercept, b: | -8.011 | 0 | 3.24 | 26 |
| N: | 42 | -3 | 2.03 | 8 |
| E[Conc]: | 27.7 | Parameter Estimates | | |
| SD[Conc]: | 12 | from LN regression | | |
| CV[Conc]: | 0.42 | update graph label | | |

| Date | dCd Concentration ug/L Ranked | i rank (N: 42) | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.934 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-91 | 7.3 | 1 | 0.0148 | -2.176 | 1.988 | 0.894 |
| 14-May-98 | 10.2 | 2 | 0.0385 | -1.769 | 2.322 | 0.914 |
| 23-May-95 | 14 | 3 | 0.0621 | -1.537 | 2.639 | 0.931 |
| 9-May-95 | 17 | 4 | 0.0858 | -1.367 | 2.833 | 0.929 |
| 12-Jun-95 | 17 | 5 | 0.1095 | -1.229 | 2.833 | 0.922 |
| 19-May-94 | 18 | 6 | 0.1331 | -1.112 | 2.890 | 0.916 |
| 27-Jun-95 | 18 | 7 | 0.1568 | -1.008 | 2.890 | 0.909 |
| 4-May-94 | 22 | 8 | 0.1805 | -0.914 | 3.091 | 0.903 |
| 11-Jul-95 | 22 | 9 | 0.2041 | -0.827 | 3.091 | 0.903 |
| 4-Oct-91 | 22.6 | 10 | 0.2278 | -0.746 | 3.118 | 0.900 |
| 2-Dec-93 | 23 | 11 | 0.2515 | -0.670 | 3.135 | 0.899 |
| 24-Mar-94 | 23 | 12 | 0.2751 | -0.597 | 3.135 | 0.899 |
| 24-Mar-94 | 23 | 13 | 0.2988 | -0.528 | 3.135 | 0.896 |
| 7-Apr-94 | 23 | 14 | 0.3225 | -0.461 | 3.135 | 0.892 |
| 24-Jan-94 | 24 | 15 | 0.3462 | -0.396 | 3.178 | 0.886 |
| 24-Jan-94 | 24 | 16 | 0.3698 | -0.332 | 3.178 | 0.883 |
| 7-Jun-94 | 24 | 17 | 0.3935 | -0.270 | 3.178 | 0.878 |
| 23-Jun-94 | 24 | 18 | 0.4172 | -0.209 | 3.178 | 0.870 |
| 8-Mar-94 | 26 | 19 | 0.4408 | -0.149 | 3.258 | 0.861 |
| 8-Mar-94 | 26 | 20 | 0.4645 | -0.089 | 3.258 | 0.859 |
| 22-Mar-95 | 27 | 21 | 0.4882 | -0.030 | 3.296 | 0.855 |
| 20-Jul-94 | 28 | 22 | 0.5118 | 0.030 | 3.332 | 0.856 |
| 20-Jul-94 | 28 | 23 | 0.5355 | 0.089 | 3.332 | 0.865 |
| 15-Aug-94 | 28 | 24 | 0.5592 | 0.149 | 3.332 | 0.872 |
| 15-Aug-94 | 28 | 25 | 0.5828 | 0.209 | 3.332 | 0.878 |
| 25-Apr-95 | 28 | 26 | 0.6065 | 0.270 | 3.332 | 0.882 |
| 25-Jul-95 | 28 | 27 | 0.6302 | 0.332 | 3.332 | 0.883 |
| 28-Oct-93 | 29 | 28 | 0.6538 | 0.396 | 3.367 | 0.880 |
| 18-Feb-94 | 29 | 29 | 0.6775 | 0.461 | 3.367 | 0.884 |
| 13-Apr-95 | 29 | 30 | 0.7012 | 0.528 | 3.367 | 0.884 |
| 9-Feb-95 | 30 | 31 | 0.7249 | 0.597 | 3.401 | 0.879 |
| 7-Mar-95 | 31 | 32 | 0.7485 | 0.670 | 3.434 | 0.878 |
| 4-Oct-94 | 32 | 33 | 0.7722 | 0.746 | 3.466 | 0.883 |
| 11-Nov-97 | 32.1 | 34 | 0.7959 | 0.827 | 3.469 | 0.897 |
| 16-Dec-93 | 33 | 35 | 0.8195 | 0.914 | 3.497 | 0.907 |
| 16-Dec-93 | 33 | 36 | 0.8432 | 1.008 | 3.497 | 0.925 |
| 14-Aug-95 | 33 | 37 | 0.8669 | 1.112 | 3.497 | 0.934 |
| 8-Sep-94 | 34 | 38 | 0.8905 | 1.229 | 3.526 | 0.925 |
| 13-Sep-95 | 34 | 39 | 0.9142 | 1.367 | 3.526 | |
| 10-Jan-95 | 44 | 40 | 0.9379 | 1.537 | 3.784 | |
| 13-Dec-94 | 54 | 41 | 0.9615 | 1.769 | 3.989 | |
| 15-Nov-94 | 62 | 42 | 0.9852 | 2.176 | 4.127 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | **NM303** | | |
| **LN Analysis** | | **dCd** | | |
| **Discharge, Q** | | **Q Data, EV=10 cfs CV=0.96** | | |
| **Avg:** | **10** | **Q Data-based LN** | | |
| **SD:** | **10** | u | lnQ | Q |
| **CV:** | **0.96** | 3 | 4.4 | 84 |
| **Min:** | **2** | 0 | 2.01 | 7 |
| **Max:** | **45** | -3 | -0.41 | 1 |
| **Median:** | **6** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.938, EV=10.4 cfs CV=0.98; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.938 | u | lnQ | Q |
| slope, m: | 1.219 | 3 | 4.47 | 87 |
| intercept, b: | -2.445 | 0 | 2.01 | 7 |
| N: | 42 | -3 | -0.46 | 0.6 |
| E[Q]: | 10.4 | Parameter Estimates | | |
| SD[Q]: | 10 | from LN regression | | |
| CV[Q]: | 0.98 | update graph label | | |

| Date | Q Discharge cfs Ranked | N: 42 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.983 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 2.24 | 1 | 0.0148 | -2.176 | 0.806 | 0.938 |
| 13-Sep-95 | 2.66 | 2 | 0.0385 | -1.769 | 0.978 | 0.945 |
| 15-Aug-94 | 2.68 | 3 | 0.0621 | -1.537 | 0.986 | 0.951 |
| 14-Aug-95 | 3.11 | 4 | 0.0858 | -1.367 | 1.135 | 0.952 |
| 16-Dec-93 | 3.63 | 5 | 0.1095 | -1.229 | 1.289 | 0.955 |
| 16-Dec-93 | 3.64 | 6 | 0.1331 | -1.112 | 1.292 | 0.962 |
| 28-Oct-93 | 3.76 | 7 | 0.1568 | -1.008 | 1.324 | 0.967 |
| 18-Feb-94 | 3.76 | 8 | 0.1805 | -0.914 | 1.324 | 0.971 |
| 2-Dec-93 | 3.88 | 9 | 0.2041 | -0.827 | 1.356 | 0.974 |
| 25-Jul-95 | 4.01 | 10 | 0.2278 | -0.746 | 1.389 | 0.977 |
| 15-Aug-94 | 4.27 | 11 | 0.2515 | -0.670 | 1.452 | 0.979 |
| 8-Sep-94 | 4.27 | 12 | 0.2751 | -0.597 | 1.452 | 0.981 |
| 4-Oct-94 | 4.27 | 13 | 0.2988 | -0.528 | 1.452 | 0.983 |
| 20-Jul-94 | 4.33 | 14 | 0.3225 | -0.461 | 1.466 | 0.983 |
| 13-Dec-94 | 4.41 | 15 | 0.3462 | -0.396 | 1.484 | 0.983 |
| 15-Nov-94 | 4.7 | 16 | 0.3698 | -0.332 | 1.548 | 0.982 |
| 24-Jan-94 | 4.85 | 17 | 0.3935 | -0.270 | 1.579 | 0.981 |
| 20-Jul-94 | 4.85 | 18 | 0.4172 | -0.209 | 1.579 | 0.980 |
| 11-Jul-95 | 5.01 | 19 | 0.4408 | -0.149 | 1.611 | 0.978 |
| 24-Jan-94 | 5.03 | 20 | 0.4645 | -0.089 | 1.615 | 0.976 |
| 10-Jan-95 | 5.52 | 21 | 0.4882 | -0.030 | 1.708 | 0.976 |
| 11-Nov-97 | 5.88 | 22 | 0.5118 | 0.030 | 1.772 | 0.975 |
| 27-Jun-95 | 5.89 | 23 | 0.5355 | 0.089 | 1.773 | 0.974 |
| 8-Mar-94 | 7.65 | 24 | 0.5592 | 0.149 | 2.035 | 0.979 |
| 23-Jun-94 | 7.65 | 25 | 0.5828 | 0.209 | 2.035 | 0.977 |
| 12-Jun-95 | 9.03 | 26 | 0.6065 | 0.270 | 2.201 | 0.975 |
| 24-Mar-94 | 9.34 | 27 | 0.6302 | 0.332 | 2.234 | 0.973 |
| 7-Apr-94 | 10.32 | 28 | 0.6538 | 0.396 | 2.334 | 0.969 |
| 7-Mar-95 | 10.67 | 29 | 0.6775 | 0.461 | 2.367 | 0.966 |
| 7-Jun-94 | 11.81 | 30 | 0.7012 | 0.528 | 2.469 | 0.962 |
| 8-Mar-94 | 11.87 | 31 | 0.7249 | 0.597 | 2.474 | 0.958 |
| 24-Mar-94 | 12.9 | 32 | 0.7485 | 0.670 | 2.557 | 0.952 |
| 9-Feb-95 | 13.52 | 33 | 0.7722 | 0.746 | 2.604 | 0.944 |
| 25-Apr-95 | 13.52 | 34 | 0.7959 | 0.827 | 2.604 | 0.933 |
| 19-May-94 | 16.61 | 35 | 0.8195 | 0.914 | 2.810 | 0.923 |
| 4-May-94 | 17.19 | 36 | 0.8432 | 1.008 | 2.844 | 0.905 |
| 13-Apr-95 | 17.8 | 37 | 0.8669 | 1.112 | 2.879 | 0.876 |
| 23-May-95 | 22.71 | 38 | 0.8905 | 1.229 | 3.123 | 0.873 |
| 9-May-95 | 26.15 | 39 | 0.9142 | 1.367 | 3.264 | |
| 14-May-98 | 35.3 | 40 | 0.9379 | 1.537 | 3.564 | |
| 16-May-91 | 39.6 | 41 | 0.9615 | 1.769 | 3.679 | |
| 22-Mar-95 | 44.83 | 42 | 0.9852 | 2.176 | 3.803 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM303 | **Date:** | 30-May-00 |
| **Chemical:** | dPb | **Analyst:** | J.Johnston |
| **Notes:** | | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,602 | 10 | 62 | 3 | 0.00 | 0.00 | 0.00 |
| **SD:** | 419 | 10 | 27 | 3 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 0.96 | 0.43 | 0.92 | | | |
| **Min:** | 33,374 | 2 | 12 | 0.2 | -0.82 | -1.87 | -1.02 |
| **Max:** | 35,929 | 45 | 148 | 16 | 3.47 | 3.25 | 4.20 |
| **Median:** | 34,561 | 6 | 60 | 2 | -0.47 | -0.08 | -0.29 |

**dPb NM303 : Concentration v. Discharge, Q** **Q = mTime +b** **LnQ = mTime +b**

**Conc. = mQ+b (r2=0.01)** update r2

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 Q,[COC]: | 0.01 | [dPb] | Q | r2: | 0.009 | 0.023 |
| slope, m: | -0.3 | 64 | 2.2 | m: | 0.0022 | 0.00028 |
| intercept, b: | 65.1 | 62 | 10.4 | b: | -67 | -7.56 |
| N: 42 | | 50 | 45 | | | |

**LnConc. = mLn(Q)+b (r2=0.0005)** update r2

| | | | | | |
|---|---|---|---|---|---|
| r2 lnQ,ln[COC]: | 0.0005 | ln[dPb] | ln Q | [dPb] | Q |
| slope, m: | 0.01 | 4.00 | 0.81 | 55 | 2 |
| intercept, b: | 3.99 | 4.02 | 2.34 | 56 | 10 |
| N: 42 | | 4.04 | 3.80 | 57 | 45 |

**N= 42**

| | Sampling Date | Q Discharge | dPb Concentration | dPb Load | Ln Q | Ln dPb Conc. | Ln dPb Load | dPb NM303 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 39.6 | 12 | 2.6 | 3.68 | 2.48 | 0.94 | 2.94 | -1.87 | -0.23 |
| MFG | 4-Oct-91 | 2.24 | 16 | 0.2 | 0.81 | 2.77 | -1.65 | -0.82 | -1.72 | -1.02 |
| IDEQ | 28-Oct-93 | 3.76 | 26 | 0.5 | 1.32 | 3.26 | -0.64 | -0.66 | -1.34 | -0.91 |
| IDEQ | 2-Dec-93 | 3.88 | 41 | 0.9 | 1.36 | 3.71 | -0.16 | -0.65 | -0.78 | -0.80 |
| IDEQ | 16-Dec-93 | 3.64 | 55 | 1.1 | 1.29 | 4.01 | 0.07 | -0.68 | -0.25 | -0.73 |
| IDEQ | 16-Dec-93 | 3.63 | 55 | 1.1 | 1.29 | 4.01 | 0.07 | -0.68 | -0.25 | -0.73 |
| IDEQ | 24-Jan-94 | 4.85 | 54 | 1.4 | 1.58 | 3.99 | 0.34 | -0.55 | -0.29 | -0.62 |
| IDEQ | 24-Jan-94 | 5.03 | 54 | 1.5 | 1.62 | 3.99 | 0.38 | -0.54 | -0.29 | -0.60 |
| IDEQ | 18-Feb-94 | 3.76 | 26 | 0.5 | 1.32 | 3.26 | -0.64 | -0.66 | -1.34 | -0.91 |
| IDEQ | 8-Mar-94 | 7.65 | 53 | 2.2 | 2.03 | 3.97 | 0.78 | -0.27 | -0.33 | -0.36 |
| IDEQ | 8-Mar-94 | 11.87 | 53 | 3.4 | 2.47 | 3.97 | 1.22 | 0.15 | -0.33 | 0.04 |
| IDEQ | 24-Mar-94 | 9.34 | 65 | 3.3 | 2.23 | 4.17 | 1.18 | -0.10 | 0.13 | 0.00 |
| IDEQ | 24-Mar-94 | 12.9 | 65 | 4.5 | 2.56 | 4.17 | 1.51 | 0.26 | 0.13 | 0.41 |
| IDEQ | 7-Apr-94 | 10.32 | 66 | 3.7 | 2.33 | 4.19 | 1.30 | 0.00 | 0.16 | 0.13 |
| IDEQ | 4-May-94 | 17.19 | 57 | 5.3 | 2.84 | 4.04 | 1.66 | 0.69 | -0.18 | 0.67 |
| IDEQ | 19-May-94 | 16.61 | 55 | 4.9 | 2.81 | 4.01 | 1.59 | 0.63 | -0.25 | 0.55 |
| IDEQ | 7-Jun-94 | 11.81 | 62 | 3.9 | 2.47 | 4.13 | 1.37 | 0.15 | 0.01 | 0.22 |
| IDEQ | 23-Jun-94 | 7.65 | 74 | 3.0 | 2.03 | 4.30 | 1.11 | -0.27 | 0.46 | -0.07 |
| IDEQ | 20-Jul-94 | 4.85 | 52 | 1.4 | 1.58 | 3.95 | 0.31 | -0.55 | -0.36 | -0.63 |
| IDEQ | 20-Jul-94 | 4.33 | 52 | 1.2 | 1.47 | 3.95 | 0.19 | -0.61 | -0.36 | -0.68 |
| IDEQ | 15-Aug-94 | 4.27 | 33 | 0.8 | 1.45 | 3.50 | -0.28 | -0.61 | -1.08 | -0.83 |
| IDEQ | 15-Aug-94 | 2.68 | 33 | 0.5 | 0.99 | 3.50 | -0.74 | -0.77 | -1.08 | -0.93 |
| IDEQ | 8-Sep-94 | 4.27 | 34 | 0.8 | 1.45 | 3.53 | -0.25 | -0.61 | -1.04 | -0.82 |
| IDEQ | 4-Oct-94 | 4.27 | 46 | 1.1 | 1.45 | 3.83 | 0.06 | -0.61 | -0.59 | -0.73 |
| IDEQ | 15-Nov-94 | 4.7 | 110 | 2.8 | 1.55 | 4.70 | 1.02 | -0.57 | 1.82 | -0.16 |
| IDEQ | 13-Dec-94 | 4.41 | 82 | 1.9 | 1.48 | 4.41 | 0.67 | -0.60 | 0.77 | -0.44 |
| IDEQ | 10-Jan-95 | 5.52 | 67 | 2.0 | 1.71 | 4.20 | 0.69 | -0.49 | 0.20 | -0.42 |
| IDEQ | 9-Feb-95 | 13.52 | 74 | 5.4 | 2.60 | 4.30 | 1.68 | 0.32 | 0.46 | 0.70 |
| IDEQ | 7-Mar-95 | 10.67 | 148 | 8.5 | 2.37 | 5.00 | 2.14 | 0.03 | 3.25 | 1.74 |
| IDEQ | 22-Mar-95 | 44.83 | 66 | 15.9 | 3.80 | 4.19 | 2.77 | 3.47 | 0.16 | 4.20 |
| IDEQ | 13-Apr-95 | 17.8 | 71 | 6.8 | 2.88 | 4.26 | 1.92 | 0.75 | 0.35 | 1.17 |
| IDEQ | 25-Apr-95 | 13.52 | 64 | 4.7 | 2.60 | 4.16 | 1.54 | 0.32 | 0.09 | 0.46 |
| IDEQ | 9-May-95 | 26.15 | 70 | 9.8 | 3.26 | 4.25 | 2.29 | 1.59 | 0.31 | 2.19 |
| IDEQ | 23-May-95 | 22.71 | 63 | 7.7 | 3.12 | 4.14 | 2.04 | 1.24 | 0.05 | 1.47 |
| IDEQ | 12-Jun-95 | 9.03 | 87 | 4.2 | 2.20 | 4.47 | 1.44 | -0.13 | 0.95 | 0.32 |
| IDEQ | 27-Jun-95 | 5.89 | 88 | 2.8 | 1.77 | 4.48 | 1.03 | -0.45 | 0.99 | -0.16 |
| IDEQ | 11-Jul-95 | 5.01 | 93 | 2.5 | 1.61 | 4.53 | 0.92 | -0.54 | 1.18 | -0.25 |
| IDEQ | 25-Jul-95 | 4.01 | 106 | 2.3 | 1.39 | 4.66 | 0.83 | -0.64 | 1.67 | -0.32 |
| IDEQ | 14-Aug-95 | 3.11 | 114 | 1.9 | 1.13 | 4.74 | 0.65 | -0.73 | 1.97 | -0.45 |
| IDEQ | 13-Sep-95 | 2.66 | 62 | 0.9 | 0.98 | 4.13 | -0.12 | -0.77 | 0.01 | -0.79 |
| URS | 11-Nov-97 | 5.88 | 56 | 1.8 | 1.77 | 4.03 | 0.57 | -0.45 | -0.21 | -0.50 |
| URS | 14-May-98 | 35.3 | 29.8 | 5.7 | 3.56 | 3.39 | 1.73 | 2.51 | -1.20 | 0.80 |

dPb

**Concentration over time analysis** r2 Slope, m

dPb NM303 **Concentration over time**

**LnConc.=mTime+b All data r2, m:** 0.242 0.00057

| | Time | Ln[COC] | [COC] |
|---|---|---|---|
| first: | 16-May-91 | 3.31 | 27 |
| mid: | 15-Aug-94 | 3.99 | 54 |
| last: | 14-May-98 | 4.78 | 119 |

**LnConc.=mTime+b >'96 r2, m:** 0.000 0.00000

| | | |
|---|---|---|
| 0-Jan-00 | 0.00 | 1 |
| 14-May-98 | 0.00 | 1 |

**Load over time analysis**

dPb NM303 **Load over time**

**LnLoad=mTime+b All data r2, m:** 0.150 0.00085

| | Time | LnLoad | Load |
|---|---|---|---|
| first. | 16-May-91 | -0.25 | 1 |
| mid | 15-Aug-94 | 0.76 | 2 |
| last. | 14-May-98 | 1.93 | 7 |

**LnLoad=mTime+b >'96 r2, m:** 0.000 0.00000

| | | |
|---|---|---|
| 0-Jan-00 | 0.00 | 1 |
| 14-May-98 | 0.00 | 1 |

max r2. 0.766 max r2: 0.402

| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
|---|---|---|---|---|---|
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.242 | 0.00057 | -15.84 | 0.150 | 0.00085 | -28.62 |
| 0.119 | 0.00040 | -9.63 | 0.201 | 0.00111 | -37.51 |
| 0.026 | 0.00018 | -2.27 | 0.100 | 0.00080 | -26.96 |
| 0.011 | 0.00011 | 0.15 | 0.078 | 0.00069 | -23.18 |
| 0.006 | 0.00008 | 1.23 | 0.064 | 0.00062 | -20.73 |
| 0.005 | 0.00008 | 1.49 | 0.053 | 0.00057 | -18.77 |
| 0.004 | 0.00007 | 1.77 | 0.041 | 0.00050 | -16.55 |
| 0.003 | 0.00006 | 2.13 | 0.034 | 0.00046 | -15.10 |
| 0.002 | 0.00005 | 2.54 | 0.028 | 0.00042 | -13.59 |
| 0.001 | -0.00004 | 5.43 | 0.013 | 0.00028 | -8.53 |
| 0.003 | -0.00006 | 6.11 | 0.011 | 0.00026 | -7.91 |
| 0.005 | -0.00008 | 6.88 | 0.013 | 0.00028 | -8.79 |
| 0.005 | -0.00008 | 6.97 | 0.015 | 0.00031 | -9.60 |
| 0.005 | -0.00008 | 7.07 | 0.021 | 0.00037 | -11.83 |
| 0.005 | -0.00008 | 7.11 | 0.026 | 0.00042 | -13.42 |
| 0.007 | -0.00010 | 7.75 | 0.037 | 0.00051 | -16.59 |
| 0.011 | -0.00013 | 8.60 | 0.051 | 0.00060 | -19.77 |
| 0.013 | -0.00014 | 9.01 | 0.061 | 0.00067 | -22.27 |
| 0.011 | -0.00013 | 8.67 | 0.067 | 0.00071 | -23.86 |
| 0.016 | -0.00016 | 9.85 | 0.057 | 0.00066 | -21.90 |
| 0.025 | -0.00020 | 11.25 | 0.043 | 0.00058 | -19.04 |
| 0.063 | -0.00031 | 14.98 | 0.024 | 0.00042 | -13.53 |
| 0.144 | -0.00044 | 19.46 | 0.004 | 0.00016 | -4.41 |
| 0.296 | -0.00057 | 24.29 | 0.001 | -0.00005 | 3.17 |
| 0.441 | -0.00068 | 27.94 | 0.013 | -0.00025 | 9.99 |
| 0.418 | -0.00065 | 26.98 | 0.019 | -0.00030 | 11.96 |
| 0.419 | -0.00066 | 27.40 | 0.036 | -0.00042 | 16.01 |
| 0.458 | -0.00070 | 28.85 | 0.062 | -0.00054 | 20.29 |
| 0.476 | -0.00073 | 29.79 | 0.056 | -0.00052 | 19.62 |
| 0.500 | -0.00065 | 27.06 | 0.040 | -0.00043 | 16.38 |
| 0.538 | -0.00069 | 28.32 | 0.014 | -0.00022 | 9.03 |
| 0.560 | -0.00071 | 29.27 | 0.004 | -0.00012 | 5.38 |
| 0.621 | -0.00076 | 31.05 | 0.001 | -0.00006 | 3.26 |
| 0.663 | -0.00081 | 32.59 | 0.011 | 0.00016 | -4.65 |
| 0.766 | -0.00088 | 35.37 | 0.095 | 0.00040 | -13.11 |
| 0.766 | -0.00090 | 36.09 | 0.215 | 0.00057 | -19.13 |
| 0.763 | -0.00093 | 36.87 | 0.299 | 0.00069 | -23.42 |
| 0.744 | -0.00094 | 37.20 | 0.402 | 0.00084 | -28.90 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dPb** | | **NM303** | | |
| **LN Analysis** | | **dPb** | | |
| **Load** | | **Load Data, EV=3 lbs/day CV=.92** | | |
| **Avg:** | **3** | **Load Data-based LN** | | |
| **SD:** | **3** | u | ln dPb Load | dPb Load |
| **CV:** | **0.92** | 3 | 3.2 | 25 |
| **Min:** | **0** | 0 | 0.87 | 2 |
| **Max:** | **16** | -3 | -1.48 | 0.2 |
| **Median:** | **2** | | | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.989, EV=3.5 lbs/day CV=1.22; max r2=0.995**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.989 | u | lnLoad | Load |
| slope, m: | 1.046 | 3 | 3.67 | 39 |
| intercept, b: | -0.835 | 0 | 0.80 | 2 |
| N: | 42 | -3 | -2.07 | 0.1 |
| E[Load]: | 3.5 | Parameter Estimates | | |
| SD[Load]: | 4 | from LN regression | | |
| CV[Load]. | 1.22 | update graph label | | |

| Date | dPb Load lbs/day Ranked | N: 42 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.995 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | **0.2** | 1 | 0.0148 | -2.176 | -1.646 | 0.989 |
| 15-Aug-94 | **0.5** | 2 | 0.0385 | -1.769 | -0.743 | 0.993 |
| 28-Oct-93 | **0.5** | 3 | 0.0621 | -1.537 | -0.643 | 0.993 |
| 18-Feb-94 | **0.5** | 4 | 0.0858 | -1.367 | -0.643 | 0.992 |
| 15-Aug-94 | **0.8** | 5 | 0.1095 | -1.229 | -0.277 | 0.993 |
| 8-Sep-94 | **0.8** | 6 | 0.1331 | -1.112 | -0.247 | 0.992 |
| 2-Dec-93 | **0.9** | 7 | 0.1568 | -1.008 | -0.156 | 0.992 |
| 13-Sep-95 | **0.9** | 8 | 0.1805 | -0.914 | -0.120 | 0.991 |
| 4-Oct-94 | **1.1** | 9 | 0.2041 | -0.827 | 0.055 | 0.991 |
| 16-Dec-93 | **1.1** | 10 | 0.2278 | -0.746 | 0.071 | 0.991 |
| 16-Dec-93 | **1.1** | 11 | 0.2515 | -0.670 | 0.074 | 0.990 |
| 20-Jul-94 | **1.2** | 12 | 0.2751 | -0.597 | 0.192 | 0.992 |
| 20-Jul-94 | **1.4** | 13 | 0.2988 | -0.528 | 0.305 | 0.992 |
| 24-Jan-94 | **1.4** | 14 | 0.3225 | -0.461 | 0.343 | 0.992 |
| 24-Jan-94 | **1.5** | 15 | 0.3462 | -0.396 | 0.379 | 0.993 |
| 11-Nov-97 | **1.8** | 16 | 0.3698 | -0.332 | 0.572 | 0.995 |
| 14-Aug-95 | **1.9** | 17 | 0.3935 | -0.270 | 0.646 | 0.994 |
| 13-Dec-94 | **1.9** | 18 | 0.4172 | -0.209 | 0.666 | 0.994 |
| 10-Jan-95 | **2.0** | 19 | 0.4408 | -0.149 | 0.688 | 0.994 |
| 8-Mar-94 | **2.2** | 20 | 0.4645 | -0.089 | 0.780 | 0.994 |
| 25-Jul-95 | **2.3** | 21 | 0.4882 | -0.030 | 0.827 | 0.993 |
| 11-Jul-95 | **2.5** | 22 | 0.5118 | 0.030 | 0.919 | 0.993 |
| 16-May-91 | **2.6** | 23 | 0.5355 | 0.089 | 0.939 | 0.993 |
| 15-Nov-94 | **2.8** | 24 | 0.5592 | 0.149 | 1.023 | 0.992 |
| 27-Jun-95 | **2.8** | 25 | 0.5828 | 0.209 | 1.026 | 0.991 |
| 23-Jun-94 | **3.0** | 26 | 0.6065 | 0.270 | 1.114 | 0.991 |
| 24-Mar-94 | **3.3** | 27 | 0.6302 | 0.332 | 1.184 | 0.990 |
| 8-Mar-94 | **3.4** | 28 | 0.6538 | 0.396 | 1.219 | 0.989 |
| 7-Apr-94 | **3.7** | 29 | 0.6775 | 0.461 | 1.299 | 0.988 |
| 7-Jun-94 | **3.9** | 30 | 0.7012 | 0.528 | 1.371 | 0.986 |
| 12-Jun-95 | **4.2** | 31 | 0.7249 | 0.597 | 1.441 | 0.984 |
| 24-Mar-94 | **4.5** | 32 | 0.7485 | 0.670 | 1.507 | 0.984 |
| 25-Apr-95 | **4.7** | 33 | 0.7722 | 0.746 | 1.538 | 0.985 |
| 19-May-94 | **4.9** | 34 | 0.7959 | 0.827 | 1.592 | 0.985 |
| 4-May-94 | **5.3** | 35 | 0.8195 | 0.914 | 1.662 | 0.984 |
| 9-Feb-95 | **5.4** | 36 | 0.8432 | 1.008 | 1.683 | 0.985 |
| 14-May-98 | **5.7** | 37 | 0.8669 | 1.112 | 1.733 | 0.981 |
| 13-Apr-95 | **6.8** | 38 | 0.8905 | 1.229 | 1.917 | 0.977 |
| 23-May-95 | **7.7** | 39 | 0.9142 | 1.367 | 2.041 | |
| 7-Mar-95 | **8.5** | 40 | 0.9379 | 1.537 | 2.140 | |
| 9-May-95 | **9.8** | 41 | 0.9615 | 1.769 | 2.287 | |
| 22-Mar-95 | **15.9** | 42 | 0.9852 | 2.176 | 2.767 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dPb** | | NM303 | | |
| **LN Analysis** | | dPb | | |
| **Concentration** | | Conc. Data, EV=62 ug/L CV=.43 | | |
| **Avg:** | **62** | **Data-based LN** | | |
| **SD:** | **27** | u | ln[dPb] | [dPb] |
| **CV:** | **0.43** | 3 | 5.3 | 195 |
| **Min:** | **12** | 0 | 4.04 | 57 |
| **Max:** | **148** | -3 | 2.80 | 16 |
| **Median:** | **60** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **$r^2$=0.920, EV=63.8 ug/L CV=0.57; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.920 | u | lnConc. | Conc. |
| slope, m: | 1.898 | 3 | 5.60 | 270 |
| intercept, b: | -7.624 | 0 | 4.02 | 56 |
| N: | 42 | -3 | 2.44 | 11 |
| E[Conc]: | 63.8 | Parameter Estimates | | |
| SD[Conc]: | 36 | from LN regression | | |
| CV[Conc]: | 0.57 | update graph label | | |

| Date | dPb Concentration ug/L Ranked | N: 42 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.985 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-91 | 12 | 1 | 0.0148 | -2.176 | 2.485 | 0.920 |
| 4-Oct-91 | 16 | 2 | 0.0385 | -1.769 | 2.773 | 0.930 |
| 28-Oct-93 | 26 | 3 | 0.0621 | -1.537 | 3.258 | 0.950 |
| 18-Feb-94 | 26 | 4 | 0.0858 | -1.367 | 3.258 | 0.947 |
| 14-May-98 | 29.8 | 5 | 0.1095 | -1.229 | 3.395 | 0.950 |
| 15-Aug-94 | 33 | 6 | 0.1331 | -1.112 | 3.497 | 0.951 |
| 15-Aug-94 | 33 | 7 | 0.1568 | -1.008 | 3.497 | 0.949 |
| 8-Sep-94 | 34 | 8 | 0.1805 | -0.914 | 3.526 | 0.954 |
| 2-Dec-93 | 41 | 9 | 0.2041 | -0.827 | 3.714 | 0.964 |
| 4-Oct-94 | 46 | 10 | 0.2278 | -0.746 | 3.829 | 0.963 |
| 20-Jul-94 | 52 | 11 | 0.2515 | -0.670 | 3.951 | 0.960 |
| 20-Jul-94 | 52 | 12 | 0.2751 | -0.597 | 3.951 | 0.964 |
| 8-Mar-94 | 53 | 13 | 0.2988 | -0.528 | 3.970 | 0.966 |
| 8-Mar-94 | 53 | 14 | 0.3225 | -0.461 | 3.970 | 0.969 |
| 24-Jan-94 | 54 | 15 | 0.3462 | -0.396 | 3.989 | 0.971 |
| 24-Jan-94 | 54 | 16 | 0.3698 | -0.332 | 3.989 | 0.973 |
| 16-Dec-93 | 55 | 17 | 0.3935 | -0.270 | 4.007 | 0.973 |
| 16-Dec-93 | 55 | 18 | 0.4172 | -0.209 | 4.007 | 0.974 |
| 19-May-94 | 55 | 19 | 0.4408 | -0.149 | 4.007 | 0.974 |
| 11-Nov-97 | 56 | 20 | 0.4645 | -0.089 | 4.025 | 0.972 |
| 4-May-94 | 57 | 21 | 0.4882 | -0.030 | 4.043 | 0.970 |
| 7-Jun-94 | 62 | 22 | 0.5118 | 0.030 | 4.127 | 0.968 |
| 13-Sep-95 | 62 | 23 | 0.5355 | 0.089 | 4.127 | 0.972 |
| 23-May-95 | 63 | 24 | 0.5592 | 0.149 | 4.143 | 0.974 |
| 25-Apr-95 | 64 | 25 | 0.5828 | 0.209 | 4.159 | 0.977 |
| 24-Mar-94 | 65 | 26 | 0.6065 | 0.270 | 4.174 | 0.980 |
| 24-Mar-94 | 65 | 27 | 0.6302 | 0.332 | 4.174 | 0.983 |
| 7-Apr-94 | 66 | 28 | 0.6538 | 0.396 | 4.190 | 0.985 |
| 22-Mar-95 | 66 | 29 | 0.6775 | 0.461 | 4.190 | 0.985 |
| 10-Jan-95 | 67 | 30 | 0.7012 | 0.528 | 4.205 | 0.984 |
| 9-May-95 | 70 | 31 | 0.7249 | 0.597 | 4.248 | 0.981 |
| 13-Apr-95 | 71 | 32 | 0.7485 | 0.670 | 4.263 | 0.979 |
| 23-Jun-94 | 74 | 33 | 0.7722 | 0.746 | 4.304 | 0.975 |
| 9-Feb-95 | 74 | 34 | 0.7959 | 0.827 | 4.304 | 0.970 |
| 13-Dec-94 | 82 | 35 | 0.8195 | 0.914 | 4.407 | 0.972 |
| 12-Jun-95 | 87 | 36 | 0.8432 | 1.008 | 4.466 | 0.965 |
| 27-Jun-95 | 88 | 37 | 0.8669 | 1.112 | 4.477 | 0.958 |
| 11-Jul-95 | 93 | 38 | 0.8905 | 1.229 | 4.533 | 0.942 |
| 25-Jul-95 | 106 | 39 | 0.9142 | 1.367 | 4.663 | |
| 15-Nov-94 | 110 | 40 | 0.9379 | 1.537 | 4.700 | |
| 14-Aug-95 | 114 | 41 | 0.9615 | 1.769 | 4.736 | |
| 7-Mar-95 | 148 | 42 | 0.9852 | 2.176 | 4.997 | |

update for EV, CV:

**dPb**
**LN Analysis**

## Discharge, Q

| | |
|---|---|
| **Avg:** | **10** |
| **SD:** | **10** |
| **CV:** | **0.96** |
| **Min:** | **2** |
| **Max:** | **45** |
| **Median:** | **6** |

**NM303**
**dPb**
**Q Data, EV=10 cfs CV=0.96**
**Q Data-based LN**

| u | lnQ | Q |
|---|---|---|
| 3 | 4.4 | 84 |
| 0 | 2.01 | 7 |
| -3 | -0.41 | 1 |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.938, EV=10.4 cfs CV=0.98; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.938 | u | lnQ | Q |
| slope, m: | 1.219 | 3 | 4.47 | 87 |
| intercept, b: | -2.445 | 0 | 2.01 | 7 |
| N: | 42 | -3 | -0.46 | 0.6 |
| E[Q]: | 10.4 | Parameter Estimates | | |
| SD[Q]: | 10 | from LN regression | | |
| CV[Q]: | 0.98 | update graph label | | |

N: 42

max r2 0.983

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 2.24 | 1 | 0.0148 | -2.176 | 0.806 | 0.938 |
| 13-Sep-95 | 2.66 | 2 | 0.0385 | -1.769 | 0.978 | 0.945 |
| 15-Aug-94 | 2.68 | 3 | 0.0621 | -1.537 | 0.986 | 0.951 |
| 14-Aug-95 | 3.11 | 4 | 0.0858 | -1.367 | 1.135 | 0.952 |
| 16-Dec-93 | 3.63 | 5 | 0.1095 | -1.229 | 1.289 | 0.955 |
| 16-Dec-93 | 3.64 | 6 | 0.1331 | -1.112 | 1.292 | 0.962 |
| 28-Oct-93 | 3.76 | 7 | 0.1568 | -1.008 | 1.324 | 0.967 |
| 18-Feb-94 | 3.76 | 8 | 0.1805 | -0.914 | 1.324 | 0.971 |
| 2-Dec-93 | 3.88 | 9 | 0.2041 | -0.827 | 1.356 | 0.974 |
| 25-Jul-95 | 4.01 | 10 | 0.2278 | -0.746 | 1.389 | 0.977 |
| 15-Aug-94 | 4.27 | 11 | 0.2515 | -0.670 | 1.452 | 0.979 |
| 8-Sep-94 | 4.27 | 12 | 0.2751 | -0.597 | 1.452 | 0.981 |
| 4-Oct-94 | 4.27 | 13 | 0.2988 | -0.528 | 1.452 | 0.983 |
| 20-Jul-94 | 4.33 | 14 | 0.3225 | -0.461 | 1.466 | 0.983 |
| 13-Dec-94 | 4.41 | 15 | 0.3462 | -0.396 | 1.484 | 0.983 |
| 15-Nov-94 | 4.7 | 16 | 0.3698 | -0.332 | 1.548 | 0.982 |
| 24-Jan-94 | 4.85 | 17 | 0.3935 | -0.270 | 1.579 | 0.981 |
| 20-Jul-94 | 4.85 | 18 | 0.4172 | -0.209 | 1.579 | 0.980 |
| 11-Jul-95 | 5.01 | 19 | 0.4408 | -0.149 | 1.611 | 0.978 |
| 24-Jan-94 | 5.03 | 20 | 0.4645 | -0.089 | 1.615 | 0.976 |
| 10-Jan-95 | 5.52 | 21 | 0.4882 | -0.030 | 1.708 | 0.976 |
| 11-Nov-97 | 5.88 | 22 | 0.5118 | 0.030 | 1.772 | 0.975 |
| 27-Jun-95 | 5.89 | 23 | 0.5355 | 0.089 | 1.773 | 0.974 |
| 8-Mar-94 | 7.65 | 24 | 0.5592 | 0.149 | 2.035 | 0.979 |
| 23-Jun-94 | 7.65 | 25 | 0.5828 | 0.209 | 2.035 | 0.977 |
| 12-Jun-95 | 9.03 | 26 | 0.6065 | 0.270 | 2.201 | 0.975 |
| 24-Mar-94 | 9.34 | 27 | 0.6302 | 0.332 | 2.234 | 0.973 |
| 7-Apr-94 | 10.32 | 28 | 0.6538 | 0.396 | 2.334 | 0.969 |
| 7-Mar-95 | 10.67 | 29 | 0.6775 | 0.461 | 2.367 | 0.966 |
| 7-Jun-94 | 11.81 | 30 | 0.7012 | 0.528 | 2.469 | 0.962 |
| 8-Mar-94 | 11.87 | 31 | 0.7249 | 0.597 | 2.474 | 0.958 |
| 24-Mar-94 | 12.9 | 32 | 0.7485 | 0.670 | 2.557 | 0.952 |
| 9-Feb-95 | 13.52 | 33 | 0.7722 | 0.746 | 2.604 | 0.944 |
| 25-Apr-95 | 13.52 | 34 | 0.7959 | 0.827 | 2.604 | 0.933 |
| 19-May-94 | 16.61 | 35 | 0.8195 | 0.914 | 2.810 | 0.923 |
| 4-May-94 | 17.19 | 36 | 0.8432 | 1.008 | 2.844 | 0.905 |
| 13-Apr-95 | 17.8 | 37 | 0.8669 | 1.112 | 2.879 | 0.876 |
| 23-May-95 | 22.71 | 38 | 0.8905 | 1.229 | 3.123 | 0.873 |
| 9-May-95 | 26.15 | 39 | 0.9142 | 1.367 | 3.264 | |
| 14-May-98 | 35.3 | 40 | 0.9379 | 1.537 | 3.564 | |
| 16-May-91 | 39.6 | 41 | 0.9615 | 1.769 | 3.679 | |
| 22-Mar-95 | 44.83 | 42 | 0.9852 | 2.176 | 3.803 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM303 | **Date:** | 29-May-00 |
| **Chemical:** | dZn | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,602 | 10 | 4,040 | 195 | 0.00 | 0.00 | 0.00 |
| **SD:** | 419 | 10 | 1,617 | 179 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 0.96 | 0.40 | 0.91 | | | |
| **Min:** | 33,374 | 2 | 400 | 20 | -0.82 | -2.25 | -0.98 |
| **Max:** | 35,929 | 45 | 8,680 | 1,068 | 3.47 | 2.87 | 4.88 |
| **Median:** | 34,561 | 6 | 4,025 | 125 | -0.47 | -0.01 | -0.39 |

**dZn NM303 : Concentration v. Discharge, Q**

| | | | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.12)** | update r2 | | | | r2: | 0.009 | 0.023 |
| r2 Q,[COC]: | 0.12 | [dZn] | Q | | m: | 0.0022 | 0.00028 |
| slope, m: | -55.9 | 4,494 | 2.2 | | b: | -67 | -7.56 |
| intercept, b: | 4618.9 | 4,040 | 10.4 | | | | |
| N: 42 | | 2,114 | 45 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.11)** | | update r2 | | | | | |
| r2 lnQ,ln[COC]: | 0.11 | ln[dZn] | ln Q | [dZn] | Q | | |
| slope, m: | -0.26 | 8.49 | 0.81 | 4,864 | 2 | | |
| intercept, b: | 8.70 | 8.10 | 2.34 | 3,286 | 10 | | |
| N: 42 | | 7.72 | 3.80 | 2,258 | 45 | | |

**N= 42**

| | Sampling Date | Q Discharge | dZn Concentration | dZn Load | Ln Q | Ln dZn Conc. | Ln dZn Load | for graph 0 dZn NM303 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 39.6 | 1880 | 401 | 3.68 | 7.54 | 5.99 | 2.94 | -1.34 | 1.15 |
| MFG | 4-Oct-91 | 2.24 | 3340 | 40 | 0.81 | 8.11 | 3.70 | -0.82 | -0.43 | -0.87 |
| IDEQ | 28-Oct-93 | 3.76 | 4910 | 99 | 1.32 | 8.50 | 4.60 | -0.66 | 0.54 | -0.54 |
| IDEQ | 2-Dec-93 | 3.88 | 4490 | 94 | 1.36 | 8.41 | 4.54 | -0.65 | 0.28 | -0.57 |
| IDEQ | 16-Dec-93 | 3.64 | 5280 | 103 | 1.29 | 8.57 | 4.64 | -0.68 | 0.77 | -0.52 |
| IDEQ | 16-Dec-93 | 3.63 | 5280 | 103 | 1.29 | 8.57 | 4.64 | -0.68 | 0.77 | -0.52 |
| IDEQ | 24-Jan-94 | 4.85 | 4460 | 116 | 1.58 | 8.40 | 4.76 | -0.55 | 0.26 | -0.44 |
| IDEQ | 24-Jan-94 | 5.03 | 4460 | 121 | 1.62 | 8.40 | 4.79 | -0.54 | 0.26 | -0.42 |
| IDEQ | 18-Feb-94 | 3.76 | 4610 | 93 | 1.32 | 8.44 | 4.54 | -0.66 | 0.35 | -0.57 |
| IDEQ | 8-Mar-94 | 7.65 | 4000 | 165 | 2.03 | 8.29 | 5.10 | -0.27 | -0.02 | -0.17 |
| IDEQ | 8-Mar-94 | 11.87 | 4000 | 255 | 2.47 | 8.29 | 5.54 | 0.15 | -0.02 | 0.34 |
| IDEQ | 24-Mar-94 | 9.34 | 400 | 20 | 2.23 | 5.99 | 3.00 | -0.10 | -2.25 | -0.98 |
| IDEQ | 24-Mar-94 | 12.9 | 400 | 28 | 2.56 | 5.99 | 3.32 | 0.26 | -2.25 | -0.94 |
| IDEQ | 7-Apr-94 | 10.32 | 4120 | 229 | 2.33 | 8.32 | 5.43 | 0.00 | 0.05 | 0.19 |
| IDEQ | 4-May-94 | 17.19 | 3390 | 314 | 2.84 | 8.13 | 5.75 | 0.69 | -0.40 | 0.66 |
| IDEQ | 19-May-94 | 16.61 | 2610 | 233 | 2.81 | 7.87 | 5.45 | 0.63 | -0.88 | 0.21 |
| IDEQ | 7-Jun-94 | 11.81 | 3380 | 215 | 2.47 | 8.13 | 5.37 | 0.15 | -0.41 | 0.11 |
| IDEQ | 23-Jun-94 | 7.65 | 3690 | 152 | 2.03 | 8.21 | 5.02 | -0.27 | -0.22 | -0.24 |
| IDEQ | 20-Jul-94 | 4.85 | 3620 | 94 | 1.58 | 8.19 | 4.55 | -0.55 | -0.26 | -0.57 |
| IDEQ | 20-Jul-94 | 4.33 | 3620 | 84 | 1.47 | 8.19 | 4.43 | -0.61 | -0.26 | -0.62 |
| IDEQ | 15-Aug-94 | 4.27 | 2750 | 63 | 1.45 | 7.92 | 4.15 | -0.61 | -0.80 | -0.74 |
| IDEQ | 15-Aug-94 | 2.68 | 2750 | 40 | 0.99 | 7.92 | 3.68 | -0.77 | -0.80 | -0.87 |
| IDEQ | 8-Sep-94 | 4.27 | 5600 | 129 | 1.45 | 8.63 | 4.86 | -0.61 | 0.96 | -0.37 |
| IDEQ | 4-Oct-94 | 4.27 | 4330 | 99 | 1.45 | 8.37 | 4.60 | -0.61 | 0.18 | -0.54 |
| IDEQ | 15-Nov-94 | 4.7 | 8120 | 205 | 1.55 | 9.00 | 5.32 | -0.57 | 2.52 | 0.06 |
| IDEQ | 13-Dec-94 | 4.41 | 8680 | 206 | 1.48 | 9.07 | 5.33 | -0.60 | 2.87 | 0.06 |
| IDEQ | 10-Jan-95 | 5.52 | 6430 | 191 | 1.71 | 8.77 | 5.25 | -0.49 | 1.48 | -0.03 |
| IDEQ | 9-Feb-95 | 13.52 | 4990 | 363 | 2.60 | 8.52 | 5.89 | 0.32 | 0.59 | 0.94 |
| IDEQ | 7-Mar-95 | 10.67 | 5060 | 290 | 2.37 | 8.53 | 5.67 | 0.03 | 0.63 | 0.53 |
| IDEQ | 22-Mar-95 | 44.83 | 4430 | 1068 | 3.80 | 8.40 | 6.97 | 3.47 | 0.24 | 4.88 |
| IDEQ | 13-Apr-95 | 17.8 | 5110 | 489 | 2.88 | 8.54 | 6.19 | 0.75 | 0.66 | 1.64 |
| IDEQ | 25-Apr-95 | 13.52 | 5150 | 375 | 2.60 | 8.55 | 5.93 | 0.32 | 0.69 | 1.00 |
| IDEQ | 9-May-95 | 26.15 | 2780 | 391 | 3.26 | 7.93 | 5.97 | 1.59 | -0.78 | 1.09 |
| IDEQ | 23-May-95 | 22.71 | 2150 | 263 | 3.12 | 7.67 | 5.57 | 1.24 | -1.17 | 0.38 |
| IDEQ | 12-Jun-95 | 9.03 | 2510 | 122 | 2.20 | 7.83 | 4.80 | -0.13 | -0.95 | -0.41 |
| IDEQ | 27-Jun-95 | 5.89 | 3270 | 104 | 1.77 | 8.09 | 4.64 | -0.45 | -0.48 | -0.51 |
| IDEQ | 11-Jul-95 | 5.01 | 3500 | 94 | 1.61 | 8.16 | 4.55 | -0.54 | -0.33 | -0.57 |
| IDEQ | 25-Jul-95 | 4.01 | 4050 | 87 | 1.39 | 8.31 | 4.47 | -0.64 | 0.01 | -0.60 |
| IDEQ | 14-Aug-95 | 3.11 | 4660 | 78 | 1.13 | 8.45 | 4.36 | -0.73 | 0.38 | -0.66 |
| IDEQ | 13-Sep-95 | 2.66 | 3920 | 56 | 0.98 | 8.27 | 4.03 | -0.77 | -0.07 | -0.78 |
| URS | 11-Nov-97 | 5.88 | 5610 | 177 | 1.77 | 8.63 | 5.18 | -0.45 | 0.97 | -0.10 |
| URS | 14-May-98 | 35.3 | 1890 | 359 | 3.56 | 7.54 | 5.88 | 2.51 | -1.33 | 0.91 |

**dZn**

**Concentration over time analysis**

**dZn NM303**

**LnConc.=mTime+b All data r2, m:**

| | Time | Ln[COC] | [COC] |
|---|---|---|---|
| first: | 16-May-91 | 8.00 | 2,978 |
| mid: | 15-Aug-94 | 8.18 | 3,556 |
| last: | 14-May-98 | 8.38 | 4,361 |

**LnConc.=mTime+b >'96 r2, m:**

| | | |
|---|---|---|
| 0-Jan-00 | 0.00 | 1 |
| 14-May-98 | 0.00 | 1 |

**Load over time analysis**

**dZn NM303**

**LnLoad=mTime+b All data r2, m:**

| | Time | LnLoad | Load |
|---|---|---|---|
| first: | 16-May-91 | 4.44 | 85 |
| mid: | 15-Aug-94 | 4.95 | 141 |
| last: | 14-May-98 | 5.53 | 252 |

**LnLoad=mTime+b >'96 r2, m:**

| | | |
|---|---|---|
| 0-Jan-00 | 0.00 | 1 |
| 14-May-98 | 0.00 | 1 |

max r2: 0.207

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.011 | 0.00015 | 3.02 |
| 0.001 | 0.00005 | 6.47 |
| 0.001 | 0.00004 | 6.72 |
| 0.002 | 0.00007 | 5.72 |
| 0.003 | 0.00009 | 4.97 |
| 0.005 | 0.00013 | 3.65 |
| 0.009 | 0.00017 | 2.17 |
| 0.011 | 0.00020 | 1.22 |
| 0.014 | 0.00023 | 0.16 |
| 0.019 | 0.00027 | -1.06 |
| 0.021 | 0.00029 | -1.87 |
| 0.025 | 0.00031 | -2.79 |
| 0.004 | 0.00010 | 4.75 |
| 0.019 | -0.00015 | 13.43 |
| 0.018 | -0.00015 | 13.47 |
| 0.023 | -0.00017 | 14.29 |
| 0.042 | -0.00023 | 16.29 |
| 0.052 | -0.00026 | 17.37 |
| 0.060 | -0.00028 | 18.16 |
| 0.069 | -0.00031 | 19.06 |
| 0.080 | -0.00034 | 20.13 |
| 0.117 | -0.00041 | 22.60 |
| 0.173 | -0.00049 | 25.56 |
| 0.157 | -0.00047 | 24.93 |
| 0.162 | -0.00049 | 25.59 |
| 0.129 | -0.00041 | 22.80 |
| 0.095 | -0.00032 | 19.31 |
| 0.067 | -0.00025 | 17.01 |
| 0.051 | -0.00022 | 15.81 |
| 0.035 | -0.00018 | 14.37 |
| 0.025 | -0.00015 | 13.40 |
| 0.011 | -0.00009 | 11.43 |
| 0.001 | -0.00002 | 8.95 |
| 0.004 | -0.00006 | 10.09 |
| 0.039 | -0.00016 | 13.62 |
| 0.110 | -0.00025 | 17.00 |
| 0.156 | -0.00031 | 19.07 |
| 0.207 | -0.00038 | 21.48 |

| r2 | Slope, m |
|---|---|
| **Concentration over time** | |
| **0.011** | **0.00015** |
| **0.000** | **0.00000** |
| **Load over time** | |
| **0.050** | **0.00043** |
| **0.000** | **0.00000** |

max r2: 0.891

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.050 | 0.00043 | -9.76 |
| 0.131 | 0.00076 | -21.41 |
| 0.083 | 0.00066 | -17.97 |
| 0.078 | 0.00065 | -17.61 |
| 0.072 | 0.00063 | -16.99 |
| 0.068 | 0.00062 | -16.60 |
| 0.063 | 0.00061 | -16.16 |
| 0.060 | 0.00061 | -16.01 |
| 0.058 | 0.00060 | -15.98 |
| 0.052 | 0.00058 | -15.02 |
| 0.055 | 0.00060 | -15.89 |
| 0.068 | 0.00068 | -18.46 |
| 0.041 | 0.00049 | -11.82 |
| 0.019 | 0.00031 | -5.46 |
| 0.024 | 0.00035 | -7.07 |
| 0.037 | 0.00044 | -10.05 |
| 0.046 | 0.00049 | -12.07 |
| 0.054 | 0.00055 | -13.91 |
| 0.055 | 0.00056 | -14.37 |
| 0.045 | 0.00051 | -12.69 |
| 0.033 | 0.00044 | -10.16 |
| 0.018 | 0.00032 | -5.91 |
| 0.002 | 0.00010 | 1.69 |
| 0.000 | 0.00004 | 3.81 |
| 0.001 | -0.00007 | 7.63 |
| 0.001 | -0.00007 | 7.78 |
| 0.001 | -0.00007 | 7.91 |
| 0.001 | -0.00009 | 8.46 |
| 0.000 | -0.00001 | 5.64 |
| 0.000 | 0.00005 | 3.69 |
| 0.026 | 0.00031 | -5.89 |
| 0.078 | 0.00050 | -12.45 |
| 0.167 | 0.00068 | -18.84 |
| 0.404 | 0.00091 | -27.15 |
| 0.743 | 0.00113 | -34.86 |
| 0.817 | 0.00122 | -38.22 |
| 0.859 | 0.00130 | -41.22 |
| 0.891 | 0.00140 | -44.62 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dZn** | | NM303 | | |
| **LN Analysis** | | **dZn** | | |
| **Load** | | **Load Data, EV=195 lbs/day CV=.91** | | |
| **Avg:** | **195** | **Load Data-based LN** | | |
| **SD:** | **179** | u | ln dZn Load | dZn Load |
| **CV:** | **0.91** | 3 | 7.3 | 1495 |
| **Min:** | **20** | 0 | 4.97 | 144 |
| **Max:** | **1,068** | -3 | 2.63 | 14 |
| **Median:** | **125** | | | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.978, EV=202.6 lbs/day CV=1.00; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.978 | u | lnLoad | Load |
| slope, m: | 1.198 | 3 | 7.47 | 1748 |
| intercept, b: | -5.948 | 0 | 4.96 | 143 |
| N: | 42 | -3 | 2.46 | 12 |
| E[Load]: | 202.6 | Parameter Estimates | | |
| SD[Load]: | 203 | from LN regression | | |
| CV[Load]: | 1.00 | update graph label | | |

| | dZn Load | N: 42 i | i-3/8 / N+1/4 | u | Ln | max r2 0.978 r2 |
|---|---|---|---|---|---|---|
| **Date** | **lbs/day Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 24-Mar-94 | **20** | 1 | 0.0148 | -2.176 | 3.001 | 0.978 |
| 24-Mar-94 | **28** | 2 | 0.0385 | -1.769 | 3.324 | 0.976 |
| 15-Aug-94 | **40** | 3 | 0.0621 | -1.537 | 3.680 | 0.976 |
| 4-Oct-91 | **40** | 4 | 0.0858 | -1.367 | 3.695 | 0.974 |
| 13-Sep-95 | **56** | 5 | 0.1095 | -1.229 | 4.027 | 0.973 |
| 15-Aug-94 | **63** | 6 | 0.1331 | -1.112 | 4.146 | 0.971 |
| 14-Aug-95 | **78** | 7 | 0.1568 | -1.008 | 4.356 | 0.969 |
| 20-Jul-94 | **84** | 8 | 0.1805 | -0.914 | 4.435 | 0.969 |
| 25-Jul-95 | **87** | 9 | 0.2041 | -0.827 | 4.470 | 0.970 |
| 18-Feb-94 | **93** | 10 | 0.2278 | -0.746 | 4.535 | 0.971 |
| 2-Dec-93 | **94** | 11 | 0.2515 | -0.670 | 4.540 | 0.973 |
| 11-Jul-95 | **94** | 12 | 0.2751 | -0.597 | 4.547 | 0.973 |
| 20-Jul-94 | **94** | 13 | 0.2988 | -0.528 | 4.548 | 0.973 |
| 28-Oct-93 | **99** | 14 | 0.3225 | -0.461 | 4.598 | 0.972 |
| 4-Oct-94 | **99** | 15 | 0.3462 | -0.396 | 4.600 | 0.970 |
| 16-Dec-93 | **103** | 16 | 0.3698 | -0.332 | 4.636 | 0.968 |
| 16-Dec-93 | **103** | 17 | 0.3935 | -0.270 | 4.639 | 0.965 |
| 27-Jun-95 | **104** | 18 | 0.4172 | -0.209 | 4.641 | 0.963 |
| 24-Jan-94 | **116** | 19 | 0.4408 | -0.149 | 4.757 | 0.961 |
| 24-Jan-94 | **121** | 20 | 0.4645 | -0.089 | 4.793 | 0.958 |
| 12-Jun-95 | **122** | 21 | 0.4882 | -0.030 | 4.804 | 0.954 |
| 8-Sep-94 | **129** | 22 | 0.5118 | 0.030 | 4.857 | 0.953 |
| 23-Jun-94 | **152** | 23 | 0.5355 | 0.089 | 5.023 | 0.952 |
| 8-Mar-94 | **165** | 24 | 0.5592 | 0.149 | 5.104 | 0.948 |
| 11-Nov-97 | **177** | 25 | 0.5828 | 0.209 | 5.179 | 0.943 |
| 10-Jan-95 | **191** | 26 | 0.6065 | 0.270 | 5.252 | 0.937 |
| 15-Nov-94 | **205** | 27 | 0.6302 | 0.332 | 5.325 | 0.931 |
| 13-Dec-94 | **206** | 28 | 0.6538 | 0.396 | 5.328 | 0.927 |
| 7-Jun-94 | **215** | 29 | 0.6775 | 0.461 | 5.370 | 0.919 |
| 7-Apr-94 | **229** | 30 | 0.7012 | 0.528 | 5.433 | 0.910 |
| 19-May-94 | **233** | 31 | 0.7249 | 0.597 | 5.452 | 0.900 |
| 8-Mar-94 | **255** | 32 | 0.7485 | 0.670 | 5.543 | 0.886 |
| 23-May-95 | **263** | 33 | 0.7722 | 0.746 | 5.571 | 0.872 |
| 7-Mar-95 | **290** | 34 | 0.7959 | 0.827 | 5.671 | 0.852 |
| 4-May-94 | **314** | 35 | 0.8195 | 0.914 | 5.748 | 0.834 |
| 14-May-98 | **359** | 36 | 0.8432 | 1.008 | 5.883 | 0.820 |
| 9-Feb-95 | **363** | 37 | 0.8669 | 1.112 | 5.894 | 0.849 |
| 25-Apr-95 | **375** | 38 | 0.8905 | 1.229 | 5.926 | 0.878 |
| 9-May-95 | **391** | 39 | 0.9142 | 1.367 | 5.969 | |
| 16-May-91 | **401** | 40 | 0.9379 | 1.537 | 5.993 | |
| 13-Apr-95 | **489** | 41 | 0.9615 | 1.769 | 6.193 | |
| 22-Mar-95 | **1068** | 42 | 0.9852 | 2.176 | 6.974 | |

update for EV, CV

| | | | | |
|---|---|---|---|---|
| **dZn** | | NM303 | | |
| **LN Analysis** | | dZn | | |
| **Concentration** | | Conc. Data, EV=4,040 ug/L CV=.40 | | |
| **Avg:** | **4,040** | **Data-based LN** | | |
| **SD:** | **1,617** | u | ln[dZn] | [dZn] |
| **CV:** | **0.40** | 3 | 9.4 | 11923 |
| **Min:** | **400** | 0 | 8.23 | 3751 |
| **Max:** | **8,680** | -3 | 7.07 | 1180 |
| **Median:** | **4,025** | | | |

**u=mLn[Conc.]+b:**

update for r2, EV, CV: $r^2$=0.747, EV=4591.9 ug/L CV=0.80; max r2=0.97

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.747 | u | lnConc. | Conc. |
| slope, m: | 1.415 | 3 | 10.30 | 29798 |
| intercept, b: | -11.580 | 0 | 8.18 | 3577 |
| N | 42 | -3 | 6.06 | 429 |
| E[Conc]. | 4591.9 | Parameter Estimates | | |
| SD[Conc] | 3695 | from LN regression | | |
| CV[Conc] | 0.80 | update graph label | | |

| Date | dZn Concentration ug/L Ranked | N: 42 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.970 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 24-Mar-94 | 400 | 1 | 0.0148 | -2.176 | 5.991 | 0.747 |
| 24-Mar-94 | 400 | 2 | 0.0385 | -1.769 | 5.991 | 0.750 |
| 16-May-91 | 1880 | 3 | 0.0621 | -1.537 | 7.539 | 0.959 |
| 14-May-98 | 1890 | 4 | 0.0858 | -1.367 | 7.544 | 0.958 |
| 23-May-95 | 2150 | 5 | 0.1095 | -1.229 | 7.673 | 0.965 |
| 12-Jun-95 | 2510 | 6 | 0.1331 | -1.112 | 7.828 | 0.970 |
| 19-May-94 | 2610 | 7 | 0.1568 | -1.008 | 7.867 | 0.968 |
| 15-Aug-94 | 2750 | 8 | 0.1805 | -0.914 | 7.919 | 0.967 |
| 15-Aug-94 | 2750 | 9 | 0.2041 | -0.827 | 7.919 | 0.965 |
| 9-May-95 | 2780 | 10 | 0.2278 | -0.746 | 7.930 | 0.965 |
| 27-Jun-95 | 3270 | 11 | 0.2515 | -0.670 | 8.093 | 0.968 |
| 4-Oct-91 | 3340 | 12 | 0.2751 | -0.597 | 8.114 | 0.966 |
| 7-Jun-94 | 3380 | 13 | 0.2988 | -0.528 | 8.126 | 0.964 |
| 4-May-94 | 3390 | 14 | 0.3225 | -0.461 | 8.129 | 0.961 |
| 11-Jul-95 | 3500 | 15 | 0.3462 | -0.396 | 8.161 | 0.958 |
| 20-Jul-94 | 3620 | 16 | 0.3698 | -0.332 | 8.194 | 0.955 |
| 20-Jul-94 | 3620 | 17 | 0.3935 | -0.270 | 8.194 | 0.951 |
| 23-Jun-94 | 3690 | 18 | 0.4172 | -0.209 | 8.213 | 0.947 |
| 13-Sep-95 | 3920 | 19 | 0.4408 | -0.149 | 8.274 | 0.943 |
| 8-Mar-94 | 4000 | 20 | 0.4645 | -0.089 | 8.294 | 0.940 |
| 8-Mar-94 | 4000 | 21 | 0.4882 | -0.030 | 8.294 | 0.938 |
| 25-Jul-95 | 4050 | 22 | 0.5118 | 0.030 | 8.306 | 0.934 |
| 7-Apr-94 | 4120 | 23 | 0.5355 | 0.089 | 8.324 | 0.929 |
| 4-Oct-94 | 4330 | 24 | 0.5592 | 0.149 | 8.373 | 0.923 |
| 22-Mar-95 | 4430 | 25 | 0.5828 | 0.209 | 8.396 | 0.922 |
| 24-Jan-94 | 4460 | 26 | 0.6065 | 0.270 | 8.403 | 0.923 |
| 24-Jan-94 | 4460 | 27 | 0.6302 | 0.332 | 8.403 | 0.923 |
| 2-Dec-93 | 4490 | 28 | 0.6538 | 0.396 | 8.410 | 0.919 |
| 18-Feb-94 | 4610 | 29 | 0.6775 | 0.461 | 8.436 | 0.914 |
| 14-Aug-95 | 4660 | 30 | 0.7012 | 0.528 | 8.447 | 0.909 |
| 28-Oct-93 | 4910 | 31 | 0.7249 | 0.597 | 8.499 | 0.902 |
| 9-Feb-95 | 4990 | 32 | 0.7485 | 0.670 | 8.515 | 0.906 |
| 7-Mar-95 | 5060 | 33 | 0.7722 | 0.746 | 8.529 | 0.913 |
| 13-Apr-95 | 5110 | 34 | 0.7959 | 0.827 | 8.539 | 0.921 |
| 25-Apr-95 | 5150 | 35 | 0.8195 | 0.914 | 8.547 | 0.927 |
| 16-Dec-93 | 5280 | 36 | 0.8432 | 1.008 | 8.572 | 0.927 |
| 16-Dec-93 | 5280 | 37 | 0.8669 | 1.112 | 8.572 | 0.927 |
| 8-Sep-94 | 5600 | 38 | 0.8905 | 1.229 | 8.631 | 0.906 |
| 11-Nov-97 | 5610 | 39 | 0.9142 | 1.367 | 8.632 | |
| 10-Jan-95 | 6430 | 40 | 0.9379 | 1.537 | 8.769 | |
| 15-Nov-94 | 8120 | 41 | 0.9615 | 1.769 | 9.002 | |
| 13-Dec-94 | 8680 | 42 | 0.9852 | 2.176 | 9.069 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dZn** | | **NM303** | | |
| **LN Analysis** | | **dZn** | | |
| **Discharge, Q** | | **Q Data, EV=10 cfs CV=0.96** | | |
| **Avg:** | **10** | **Q Data-based LN** | | |
| **SD:** | **10** | u | lnQ | Q |
| **CV:** | **0.96** | 3 | 4.4 | 84 |
| **Min:** | **2** | 0 | 2.01 | 7 |
| **Max:** | **45** | -3 | -0.41 | 1 |
| **Median:** | **6** | | | |

**u=mLn(Q)+b:**

update for r2, EV, CV: **r2=0.938, EV=10.4 cfs CV=0.98; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.938 | u | lnQ | Q |
| slope, m: | 1.219 | 3 | 4.47 | 87 |
| intercept, b: | -2.445 | 0 | 2.01 | 7 |
| N: | 42 | -3 | -0.46 | 1 |
| E[Q]: | 10.4 | Parameter Estimates | | |
| SD[Q]: | 10 | from LN regression | | |
| CV[Q]: | 0.98 | update graph label | | |

| Date | Q Discharge cfs Ranked | i rank (N: 42) | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.983 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 2.24 | 1 | 0.0148 | -2.176 | 0.806 | 0.938 |
| 13-Sep-95 | 2.66 | 2 | 0.0385 | -1.769 | 0.978 | 0.945 |
| 15-Aug-94 | 2.68 | 3 | 0.0621 | -1.537 | 0.986 | 0.951 |
| 14-Aug-95 | 3.11 | 4 | 0.0858 | -1.367 | 1.135 | 0.952 |
| 16-Dec-93 | 3.63 | 5 | 0.1095 | -1.229 | 1.289 | 0.955 |
| 16-Dec-93 | 3.64 | 6 | 0.1331 | -1.112 | 1.292 | 0.962 |
| 28-Oct-93 | 3.76 | 7 | 0.1568 | -1.008 | 1.324 | 0.967 |
| 18-Feb-94 | 3.76 | 8 | 0.1805 | -0.914 | 1.324 | 0.971 |
| 2-Dec-93 | 3.88 | 9 | 0.2041 | -0.827 | 1.356 | 0.974 |
| 25-Jul-95 | 4.01 | 10 | 0.2278 | -0.746 | 1.389 | 0.977 |
| 15-Aug-94 | 4.27 | 11 | 0.2515 | -0.670 | 1.452 | 0.979 |
| 8-Sep-94 | 4.27 | 12 | 0.2751 | -0.597 | 1.452 | 0.981 |
| 4-Oct-94 | 4.27 | 13 | 0.2988 | -0.528 | 1.452 | 0.983 |
| 20-Jul-94 | 4.33 | 14 | 0.3225 | -0.461 | 1.466 | 0.983 |
| 13-Dec-94 | 4.41 | 15 | 0.3462 | -0.396 | 1.484 | 0.983 |
| 15-Nov-94 | 4.7 | 16 | 0.3698 | -0.332 | 1.548 | 0.982 |
| 24-Jan-94 | 4.85 | 17 | 0.3935 | -0.270 | 1.579 | 0.981 |
| 20-Jul-94 | 4.85 | 18 | 0.4172 | -0.209 | 1.579 | 0.980 |
| 11-Jul-95 | 5.01 | 19 | 0.4408 | -0.149 | 1.611 | 0.978 |
| 24-Jan-94 | 5.03 | 20 | 0.4645 | -0.089 | 1.615 | 0.976 |
| 10-Jan-95 | 5.52 | 21 | 0.4882 | -0.030 | 1.708 | 0.976 |
| 11-Nov-97 | 5.88 | 22 | 0.5118 | 0.030 | 1.772 | 0.975 |
| 27-Jun-95 | 5.89 | 23 | 0.5355 | 0.089 | 1.773 | 0.974 |
| 8-Mar-94 | 7.65 | 24 | 0.5592 | 0.149 | 2.035 | 0.979 |
| 23-Jun-94 | 7.65 | 25 | 0.5828 | 0.209 | 2.035 | 0.977 |
| 12-Jun-95 | 9.03 | 26 | 0.6065 | 0.270 | 2.201 | 0.975 |
| 24-Mar-94 | 9.34 | 27 | 0.6302 | 0.332 | 2.234 | 0.973 |
| 7-Apr-94 | 10.32 | 28 | 0.6538 | 0.396 | 2.334 | 0.969 |
| 7-Mar-95 | 10.67 | 29 | 0.6775 | 0.461 | 2.367 | 0.966 |
| 7-Jun-94 | 11.81 | 30 | 0.7012 | 0.528 | 2.469 | 0.962 |
| 8-Mar-94 | 11.87 | 31 | 0.7249 | 0.597 | 2.474 | 0.958 |
| 24-Mar-94 | 12.9 | 32 | 0.7485 | 0.670 | 2.557 | 0.952 |
| 9-Feb-95 | 13.52 | 33 | 0.7722 | 0.746 | 2.604 | 0.944 |
| 25-Apr-95 | 13.52 | 34 | 0.7959 | 0.827 | 2.604 | 0.933 |
| 19-May-94 | 16.61 | 35 | 0.8195 | 0.914 | 2.810 | 0.923 |
| 4-May-94 | 17.19 | 36 | 0.8432 | 1.008 | 2.844 | 0.905 |
| 13-Apr-95 | 17.8 | 37 | 0.8669 | 1.112 | 2.879 | 0.876 |
| 23-May-95 | 22.71 | 38 | 0.8905 | 1.229 | 3.123 | 0.873 |
| 9-May-95 | 26.15 | 39 | 0.9142 | 1.367 | 3.264 | |
| 14-May-98 | 35.3 | 40 | 0.9379 | 1.537 | 3.564 | |
| 16-May-91 | 39.6 | 41 | 0.9615 | 1.769 | 3.679 | |
| 22-Mar-95 | 44.83 | 42 | 0.9852 | 2.176 | 3.803 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axus position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** NM303 **Date:** 3-Jun-00

**Chemical:** tCd **Analyst:** J.Johnston

**Notes:** Template and Example Lognormal Analysis

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| Avg: | 34,602 | 10 | 28 | 1 | 0.00 | 0.00 | 0.00 |
| SD: | 419 | 10 | 9 | 1 | 1.00 | 1.00 | 1.00 |
| CV: | 0.01 | 0.96 | 0.34 | 0.84 | | | |
| Min: | 33,374 | 2 | 8 | 0.3 | -0.82 | -2.15 | -0.93 |
| Max: | 35,929 | 45 | 62 | 7 | 3.47 | 3.73 | 5.23 |
| Median: | 34,561 | 6 | 28 | 1 | -0.47 | 0.05 | -0.31 |

| tCd | NM303 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| Conc. = mQ+b (r2=0.225) | | update r2 | 0.23 | 0.225 | r2: | 0.009 | 0.023 |
| r2 Q,[COC]: | 0.23 | [tCd] | Q | | m: | 0.0022 | 0.00028 |
| slope, m: | -0.4 | 31 | 2.2 | | b: | -67 | -7.56 |
| intercept, b: | 32.1 | 28 | 10.4 | | | | |
| N: 42 | | 12 | 45 | | | | |
| LnConc. = mLn(Q)+b (r2=0.313) | | update r2 | 0.31 | 0.313 | | | |
| r2 lnQ,ln[COC]: | 0.31 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m: | -0.26 | 3.57 | 0.81 | 36 | 2 | | |
| intercept, b: | 3.78 | 3.17 | 2.34 | 24 | 10 | | |
| N: 42 | | 2.78 | 3.80 | 16 | 45 | | |

N= 42

| update for new data | Sampling Date | Q Discharge cfs | tCd Concentration ug/L | tCd Load lbs/day | Ln Q | Ln tCd Conc. | Ln tCd Load | tCd NM303 Standardized Values = (x - Avg)/SD Q | Conc | Load | for graph 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DATA: | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | | |
| MFG | 16-May-91 | 39.6 | 7.6 | 1.6 | 3.68 | 2.03 | 0.48 | 2.94 | -2.15 | 0.29 | |
| MFG | 4-Oct-91 | 2.24 | 23.2 | 0.3 | 0.81 | 3.14 | -1.27 | -0.82 | -0.47 | -0.93 | |
| IDEQ | 28-Oct-93 | 3.76 | 30 | 0.6 | 1.32 | 3.40 | -0.50 | -0.66 | 0.27 | -0.63 | |
| IDEQ | 2-Dec-93 | 3.88 | 22 | 0.5 | 1.36 | 3.09 | -0.78 | -0.65 | -0.60 | -0.77 | |
| IDEQ | 16-Dec-93 | 3.64 | 28 | 0.5 | 1.29 | 3.33 | -0.60 | -0.68 | 0.05 | -0.69 | |
| IDEQ | 16-Dec-93 | 3.63 | 28 | 0.5 | 1.29 | 3.33 | -0.60 | -0.68 | 0.05 | -0.69 | |
| IDEQ | 24-Jan-94 | 4.85 | 28 | 0.7 | 1.58 | 3.33 | -0.31 | -0.55 | 0.05 | -0.52 | |
| IDEQ | 24-Jan-94 | 5.03 | 28 | 0.8 | 1.62 | 3.33 | -0.28 | -0.54 | 0.05 | -0.50 | |
| IDEQ | 18-Feb-94 | 3.76 | 28 | 0.6 | 1.32 | 3.33 | -0.57 | -0.66 | 0.05 | -0.67 | |
| IDEQ | 8-Mar-94 | 7.65 | 33 | 1.4 | 2.03 | 3.50 | 0.31 | -0.27 | 0.59 | 0.05 | |
| IDEQ | 8-Mar-94 | 11.87 | 33 | 2.1 | 2.47 | 3.50 | 0.75 | 0.15 | 0.59 | 0.74 | |
| IDEQ | 24-Mar-94 | 9.34 | 23 | 1.2 | 2.23 | 3.14 | 0.14 | -0.10 | -0.49 | -0.13 | |
| IDEQ | 24-Mar-94 | 12.9 | 23 | 1.6 | 2.56 | 3.14 | 0.47 | 0.26 | -0.49 | 0.27 | |
| IDEQ | 7-Apr-94 | 10.32 | 29 | 1.6 | 2.33 | 3.37 | 0.48 | 0.00 | 0.16 | 0.29 | |
| IDEQ | 4-May-94 | 17.19 | 26 | 2.4 | 2.84 | 3.26 | 0.88 | 0.69 | -0.16 | 1.01 | |
| IDEQ | 19-May-94 | 16.61 | 18 | 1.6 | 2.81 | 2.89 | 0.48 | 0.63 | -1.03 | 0.28 | |
| IDEQ | 7-Jun-94 | 11.81 | 25 | 1.6 | 2.47 | 3.22 | 0.46 | 0.15 | -0.27 | 0.27 | |
| IDEQ | 23-Jun-94 | 7.65 | 24 | 1.0 | 2.03 | 3.18 | -0.01 | -0.27 | -0.38 | -0.29 | |
| IDEQ | 20-Jul-94 | 4.85 | 28 | 0.7 | 1.58 | 3.33 | -0.31 | -0.55 | 0.05 | -0.52 | |
| IDEQ | 20-Jul-94 | 4.33 | 28 | 0.7 | 1.47 | 3.33 | -0.43 | -0.61 | 0.05 | -0.59 | |
| IDEQ | 15-Aug-94 | 4.27 | 27 | 0.6 | 1.45 | 3.30 | -0.48 | -0.61 | -0.06 | -0.62 | |
| IDEQ | 15-Aug-94 | 2.68 | 27 | 0.4 | 0.99 | 3.30 | -0.94 | -0.77 | -0.06 | -0.83 | |
| IDEQ | 8-Sep-94 | 4.27 | 34 | 0.8 | 1.45 | 3.53 | -0.25 | -0.61 | 0.70 | -0.47 | |
| IDEQ | 4-Oct-94 | 4.27 | 32 | 0.7 | 1.45 | 3.47 | -0.31 | -0.61 | 0.49 | -0.52 | |
| IDEQ | 15-Nov-94 | 4.7 | 62 | 1.6 | 1.55 | 4.13 | 0.45 | -0.57 | 3.73 | 0.25 | |
| IDEQ | 13-Dec-94 | 4.41 | 51 | 1.2 | 1.48 | 3.93 | 0.19 | -0.60 | 2.54 | -0.08 | |
| IDEQ | 10-Jan-95 | 5.52 | 43 | 1.3 | 1.71 | 3.76 | 0.24 | -0.49 | 1.67 | -0.02 | |
| IDEQ | 9-Feb-95 | 13.52 | 29 | 2.1 | 2.60 | 3.37 | 0.75 | 0.32 | 0.16 | 0.74 | |
| IDEQ | 7-Mar-95 | 10.67 | 30 | 1.7 | 2.37 | 3.40 | 0.54 | 0.03 | 0.27 | 0.39 | |
| IDEQ | 22-Mar-95 | 44.83 | 29 | 7.0 | 3.80 | 3.37 | 1.95 | 3.47 | 0.16 | 5.23 | |
| IDEQ | 13-Apr-95 | 17.8 | 28 | 2.7 | 2.88 | 3.33 | 0.99 | 0.75 | 0.05 | 1.27 | |
| IDEQ | 25-Apr-95 | 13.52 | 28 | 2.0 | 2.60 | 3.33 | 0.71 | 0.32 | 0.05 | 0.68 | |
| IDEQ | 9-May-95 | 26.15 | 16 | 2.3 | 3.26 | 2.77 | 0.81 | 1.59 | -1.24 | 0.87 | |
| IDEQ | 23-May-95 | 22.71 | 14 | 1.7 | 3.12 | 2.64 | 0.54 | 1.24 | -1.46 | 0.38 | |
| IDEQ | 12-Jun-95 | 9.03 | 16 | 0.8 | 2.20 | 2.77 | -0.25 | -0.13 | -1.24 | -0.48 | |
| IDEQ | 27-Jun-95 | 5.89 | 22 | 0.7 | 1.77 | 3.09 | -0.36 | -0.45 | -0.60 | -0.55 | |
| IDEQ | 11-Jul-95 | 5.01 | 22 | 0.6 | 1.61 | 3.09 | -0.52 | -0.54 | -0.60 | -0.65 | |
| IDEQ | 25-Jul-95 | 4.01 | 27 | 0.6 | 1.39 | 3.30 | -0.54 | -0.64 | -0.06 | -0.66 | |
| IDEQ | 14-Aug-95 | 3.11 | 33 | 0.6 | 1.13 | 3.50 | -0.59 | -0.73 | 0.59 | -0.68 | |
| IDEQ | 13-Sep-95 | 2.66 | 33 | 0.5 | 0.98 | 3.50 | -0.75 | -0.77 | 0.59 | -0.76 | |
| URS | 11-Nov-97 | 5.88 | 29.5 | 0.9 | 1.77 | 3.38 | -0.07 | -0.45 | 0.21 | -0.34 | |
| URS | 14-May-98 | 35.3 | 10.2 | 1.9 | 3.56 | 2.32 | 0.66 | 2.51 | -1.87 | 0.59 | |

tCd

**Concentration over time analysis**

| | tCd | NM303 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.003** | **0.00005** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 3.20 | 24 | | |
| mid: | 15-Aug-94 | 3.25 | 26 | | |
| last: | 14-May-98 | 3.32 | 28 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

**Load over time analysis**

| | tCd | NM303 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.045** | **0.00032** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | -0.36 | 1 | | |
| mid: | 15-Aug-94 | 0.02 | 1 | | |
| last: | 14-May-98 | 0.47 | 2 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

| | max r2: 0.521 | | | max r2: 0.862 | | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.003 | 0.00005 | 1.60 | 0.045 | 0.00032 | -11.18 |
| | 0.062 | -0.00020 | 10.37 | 0.088 | 0.00051 | -17.51 |
| | 0.103 | -0.00030 | 13.61 | 0.031 | 0.00032 | -11.08 |
| | 0.100 | -0.00030 | 13.62 | 0.023 | 0.00028 | -9.71 |
| | 0.117 | -0.00032 | 14.56 | 0.014 | 0.00022 | -7.40 |
| | 0.118 | -0.00033 | 14.79 | 0.008 | 0.00016 | -5.46 |
| | 0.119 | -0.00034 | 15.07 | 0.003 | 0.00010 | -3.26 |
| | 0.120 | -0.00035 | 15.30 | 0.001 | 0.00006 | -1.94 |
| | 0.121 | -0.00035 | 15.56 | 0.000 | 0.00002 | -0.57 |
| | 0.122 | -0.00036 | 15.81 | 0.001 | -0.00005 | 1.85 |
| | 0.114 | -0.00035 | 15.49 | 0.000 | -0.00004 | 1.48 |
| | 0.105 | -0.00034 | 15.13 | 0.000 | 0.00002 | -0.54 |
| | 0.119 | -0.00037 | 16.06 | 0.000 | 0.00002 | -0.52 |
| | 0.135 | -0.00040 | 17.12 | 0.001 | 0.00006 | -1.77 |
| | 0.134 | -0.00040 | 17.33 | 0.002 | 0.00010 | -3.20 |
| | 0.140 | -0.00042 | 17.96 | 0.009 | 0.00019 | -6.38 |
| | 0.186 | -0.00049 | 20.18 | 0.014 | 0.00024 | -8.18 |
| | 0.201 | -0.00051 | 21.18 | 0.021 | 0.00029 | -10.10 |
| | 0.222 | -0.00055 | 22.43 | 0.020 | 0.00029 | -10.10 |
| | 0.227 | -0.00057 | 23.03 | 0.015 | 0.00025 | -8.73 |
| | 0.234 | -0.00059 | 23.74 | 0.008 | 0.00019 | -6.55 |
| | 0.244 | -0.00061 | 24.62 | 0.003 | 0.00012 | -3.89 |
| | 0.256 | -0.00064 | 25.67 | 0.001 | -0.00005 | 1.80 |
| | 0.245 | -0.00064 | 25.51 | 0.003 | -0.00012 | 4.39 |
| | 0.237 | -0.00064 | 25.58 | 0.011 | -0.00021 | 7.62 |
| | 0.207 | -0.00054 | 21.96 | 0.009 | -0.00019 | 6.93 |
| | 0.175 | -0.00045 | 18.93 | 0.010 | -0.00021 | 7.54 |
| | 0.144 | -0.00038 | 16.44 | 0.010 | -0.00022 | 7.88 |
| | 0.129 | -0.00036 | 15.73 | 0.005 | -0.00015 | 5.56 |
| | 0.111 | -0.00033 | 14.73 | 0.003 | -0.00011 | 4.04 |
| | 0.093 | -0.00030 | 13.70 | 0.009 | 0.00016 | -5.59 |
| | 0.077 | -0.00027 | 12.68 | 0.044 | 0.00032 | -11.21 |
| | 0.059 | -0.00024 | 11.39 | 0.108 | 0.00046 | -16.39 |
| | 0.095 | -0.00030 | 13.64 | 0.312 | 0.00067 | -23.60 |
| | 0.199 | -0.00041 | 17.62 | 0.731 | 0.00087 | -30.86 |
| | 0.346 | -0.00053 | 21.74 | 0.805 | 0.00094 | -33.47 |
| | 0.411 | -0.00060 | 24.30 | 0.854 | 0.00101 | -35.99 |
| | 0.521 | -0.00071 | 28.43 | 0.862 | 0.00106 | -37.67 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| tCd | | NM303 | | |
| LN Analysis | | tCd | | |
| Load | | Load Data, EV=1.3 lbs/day CV=0.839 | | |
| Avg: | 1 | Load Data-based LN | | |
| SD: | 1 | u | ln tCd Load | tCd Load |
| CV: | 0.84 | 3 | 2.2 | 9 |
| Min: | 0.3 | 0 | -0.01 | 1 |
| Max: | 7 | -3 | -2.20 | 0.1 |
| Median: | 1 | | | |
| | | 1 | 1.3 | |
| | | 0.84 | 0.839 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.953, EV=1.31lbs/day CV=0.765; max r2=0.95**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.953 | u | lnLoad | Load | |
| slope, m: | 1.474 | 3 | 2.07 | 8 | |
| intercept, b: | -0.054 | 0 | 0.04 | 1 | |
| N: | 42 | -3 | -2.00 | 0.1 | |
| E[Load]: | 1.3 | Parameter Estimates | | | 0.953 0.953 |
| SD[Load]: | 1 | from LN regression | | | 1.3 1.31 |
| CV[Load]: | 0.76 | update graph label | | | 0.8 0.765 |

| Date | tCd Load lbs/day Ranked | N: 42 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.953 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 0.3 | 1 | 0.0148 | -2.176 | -1.274 | 0.953 |
| 15-Aug-94 | 0.4 | 2 | 0.0385 | -1.769 | -0.943 | 0.948 |
| 2-Dec-93 | 0.5 | 3 | 0.0621 | -1.537 | -0.778 | 0.947 |
| 13-Sep-95 | 0.5 | 4 | 0.0858 | -1.367 | -0.750 | 0.948 |
| 16-Dec-93 | 0.5 | 5 | 0.1095 | -1.229 | -0.604 | 0.947 |
| 16-Dec-93 | 0.5 | 6 | 0.1331 | -1.112 | -0.601 | 0.949 |
| 14-Aug-95 | 0.6 | 7 | 0.1568 | -1.008 | -0.594 | 0.949 |
| 18-Feb-94 | 0.6 | 8 | 0.1805 | -0.914 | -0.568 | 0.948 |
| 25-Jul-95 | 0.6 | 9 | 0.2041 | -0.827 | -0.540 | 0.945 |
| 11-Jul-95 | 0.6 | 10 | 0.2278 | -0.746 | -0.523 | 0.943 |
| 28-Oct-93 | 0.6 | 11 | 0.2515 | -0.670 | -0.499 | 0.939 |
| 15-Aug-94 | 0.6 | 12 | 0.2751 | -0.597 | -0.478 | 0.935 |
| 20-Jul-94 | 0.7 | 13 | 0.2988 | -0.528 | -0.427 | 0.930 |
| 27-Jun-95 | 0.7 | 14 | 0.3225 | -0.461 | -0.361 | 0.924 |
| 24-Jan-94 | 0.7 | 15 | 0.3462 | -0.396 | -0.314 | 0.919 |
| 20-Jul-94 | 0.7 | 16 | 0.3698 | -0.332 | -0.314 | 0.913 |
| 4-Oct-94 | 0.7 | 17 | 0.3935 | -0.270 | -0.308 | 0.905 |
| 24-Jan-94 | 0.8 | 18 | 0.4172 | -0.209 | -0.277 | 0.898 |
| 12-Jun-95 | 0.8 | 19 | 0.4408 | -0.149 | -0.252 | 0.890 |
| 8-Sep-94 | 0.8 | 20 | 0.4645 | -0.089 | -0.247 | 0.883 |
| 11-Nov-97 | 0.9 | 21 | 0.4882 | -0.030 | -0.069 | 0.879 |
| 23-Jun-94 | 1.0 | 22 | 0.5118 | 0.030 | -0.012 | 0.868 |
| 24-Mar-94 | 1.2 | 23 | 0.5355 | 0.089 | 0.145 | 0.857 |
| 13-Dec-94 | 1.2 | 24 | 0.5592 | 0.149 | 0.191 | 0.844 |
| 10-Jan-95 | 1.3 | 25 | 0.5828 | 0.209 | 0.245 | 0.830 |
| 8-Mar-94 | 1.4 | 26 | 0.6065 | 0.270 | 0.306 | 0.816 |
| 15-Nov-94 | 1.6 | 27 | 0.6302 | 0.332 | 0.450 | 0.803 |
| 7-Jun-94 | 1.6 | 28 | 0.6538 | 0.396 | 0.463 | 0.808 |
| 24-Mar-94 | 1.6 | 29 | 0.6775 | 0.461 | 0.468 | 0.814 |
| 19-May-94 | 1.6 | 30 | 0.7012 | 0.528 | 0.475 | 0.818 |
| 7-Apr-94 | 1.6 | 31 | 0.7249 | 0.597 | 0.476 | 0.820 |
| 16-May-91 | 1.6 | 32 | 0.7485 | 0.670 | 0.482 | 0.817 |
| 23-May-95 | 1.7 | 33 | 0.7722 | 0.746 | 0.537 | 0.807 |
| 7-Mar-95 | 1.7 | 34 | 0.7959 | 0.827 | 0.544 | 0.801 |
| 14-May-98 | 1.9 | 35 | 0.8195 | 0.914 | 0.661 | 0.785 |
| 25-Apr-95 | 2.0 | 36 | 0.8432 | 1.008 | 0.711 | 0.795 |
| 8-Mar-94 | 2.1 | 37 | 0.8669 | 1.112 | 0.745 | 0.818 |
| 9-Feb-95 | 2.1 | 38 | 0.8905 | 1.229 | 0.746 | 0.854 |
| 9-May-95 | 2.3 | 39 | 0.9142 | 1.367 | 0.811 | |
| 4-May-94 | 2.4 | 40 | 0.9379 | 1.537 | 0.877 | |
| 13-Apr-95 | 2.7 | 41 | 0.9615 | 1.769 | 0.986 | |
| 22-Mar-95 | 7.0 | 42 | 0.9852 | 2.176 | 1.945 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| tCd | | NM303 | 28 | 27.5 |
| LN Analysis | | tCd | 0.34 | 0.336 |

**Concentration** — Conc. Data, EV=27.5 ug/L CV=0.336

| | | Data-based LN | | |
|---|---|---|---|---|
| Avg: | 28 | u | ln[tCd] | [tCd] |
| SD: | 9 | 3 | 4.2 | 70 |
| CV: | 0.34 | 0 | 3.26 | 26 |
| Min: | 8 | -3 | 2.28 | 10 |
| Max: | 62 | | | |
| Median: | 28 | | | |

u=mLn(Conc.)+b: — update for r2, EV, CV: r2=0.859, EV=28.1 ug/L CV=0.419; max r2=0.96

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.859 | 0.859 |
| | | | | 28.1 | 28.1 |
| | | | | 0.419 | 0.419 |
| r2 u,lnConc: | 0.859 | u | lnConc. | Conc. | |
| slope, m: | 2.486 | 3 | 4.46 | 87 | |
| intercept, b: | -8.093 | 0 | 3.26 | 26 | |
| N: | 42 | -3 | 2.05 | 8 | |
| E[Conc]: | 28.1 | Parameter Estimates | | | |
| SD[Conc]: | 12 | from LN regression | | | |
| CV[Conc]: | 0.42 | update graph label | | | |

| | tCd | N: 42 | | | | max r2 0.961 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 16-May-91 | 7.6 | 1 | 0.0148 | -2.176 | 2.028 | 0.859 |
| 14-May-98 | 10.2 | 2 | 0.0385 | -1.769 | 2.322 | 0.871 |
| 23-May-95 | 14 | 3 | 0.0621 | -1.537 | 2.639 | 0.888 |
| 9-May-95 | 16 | 4 | 0.0858 | -1.367 | 2.773 | 0.885 |
| 12-Jun-95 | 16 | 5 | 0.1095 | -1.229 | 2.773 | 0.877 |
| 19-May-94 | 18 | 6 | 0.1331 | -1.112 | 2.890 | 0.875 |
| 2-Dec-93 | 22 | 7 | 0.1568 | -1.008 | 3.091 | 0.868 |
| 27-Jun-95 | 22 | 8 | 0.1805 | -0.914 | 3.091 | 0.863 |
| 11-Jul-95 | 22 | 9 | 0.2041 | -0.827 | 3.091 | 0.855 |
| 24-Mar-94 | 23 | 10 | 0.2278 | -0.746 | 3.135 | 0.846 |
| 24-Mar-94 | 23 | 11 | 0.2515 | -0.670 | 3.135 | 0.838 |
| 4-Oct-91 | 23.2 | 12 | 0.2751 | -0.597 | 3.144 | 0.828 |
| 23-Jun-94 | 24 | 13 | 0.2988 | -0.528 | 3.178 | 0.818 |
| 7-Jun-94 | 25 | 14 | 0.3225 | -0.461 | 3.219 | 0.808 |
| 4-May-94 | 26 | 15 | 0.3462 | -0.396 | 3.258 | 0.801 |
| 15-Aug-94 | 27 | 16 | 0.3698 | -0.332 | 3.296 | 0.800 |
| 15-Aug-94 | 27 | 17 | 0.3935 | -0.270 | 3.296 | 0.806 |
| 25-Jul-95 | 27 | 18 | 0.4172 | -0.209 | 3.296 | 0.811 |
| 16-Dec-93 | 28 | 19 | 0.4408 | -0.149 | 3.332 | 0.814 |
| 16-Dec-93 | 28 | 20 | 0.4645 | -0.089 | 3.332 | 0.826 |
| 24-Jan-94 | 28 | 21 | 0.4882 | -0.030 | 3.332 | 0.838 |
| 24-Jan-94 | 28 | 22 | 0.5118 | 0.030 | 3.332 | 0.849 |
| 18-Feb-94 | 28 | 23 | 0.5355 | 0.089 | 3.332 | 0.859 |
| 20-Jul-94 | 28 | 24 | 0.5592 | 0.149 | 3.332 | 0.868 |
| 20-Jul-94 | 28 | 25 | 0.5828 | 0.209 | 3.332 | 0.876 |
| 13-Apr-95 | 28 | 26 | 0.6065 | 0.270 | 3.332 | 0.882 |
| 25-Apr-95 | 28 | 27 | 0.6302 | 0.332 | 3.332 | 0.885 |
| 7-Apr-94 | 29 | 28 | 0.6538 | 0.396 | 3.367 | 0.886 |
| 9-Feb-95 | 29 | 29 | 0.6775 | 0.461 | 3.367 | 0.894 |
| 22-Mar-95 | 29 | 30 | 0.7012 | 0.528 | 3.367 | 0.899 |
| 11-Nov-97 | 29.5 | 31 | 0.7249 | 0.597 | 3.384 | 0.901 |
| 28-Oct-93 | 30 | 32 | 0.7485 | 0.670 | 3.401 | 0.903 |
| 7-Mar-95 | 30 | 33 | 0.7722 | 0.746 | 3.401 | 0.905 |
| 4-Oct-94 | 32 | 34 | 0.7959 | 0.827 | 3.466 | 0.899 |
| 8-Mar-94 | 33 | 35 | 0.8195 | 0.914 | 3.497 | 0.912 |
| 8-Mar-94 | 33 | 36 | 0.8432 | 1.008 | 3.497 | 0.937 |
| 14-Aug-95 | 33 | 37 | 0.8669 | 1.112 | 3.497 | 0.956 |
| 13-Sep-95 | 33 | 38 | 0.8905 | 1.229 | 3.497 | 0.961 |
| 8-Sep-94 | 34 | 39 | 0.9142 | 1.367 | 3.526 | |
| 10-Jan-95 | 43 | 40 | 0.9379 | 1.537 | 3.761 | |
| 13-Dec-94 | 51 | 41 | 0.9615 | 1.769 | 3.932 | |
| 15-Nov-94 | 62 | 42 | 0.9852 | 2.176 | 4.127 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tCd** | | **NM303** | | | 10 | 10.4 |
| **LN Analysis** | | **tCd** | | | 0.96 | 0.959 |
| **Discharge, Q** | | **Q Data, EV=10.4 cfs CV=0.959** | | | | |
| **Avg:** | **10** | **Q Data-based LN** | | | | |
| **SD:** | **10** | u | lnQ | Q | | |
| **CV:** | **0.96** | 3 | 4.4 | 84 | | |
| **Min:** | **2** | 0 | 2.01 | 7 | | |
| **Max:** | **45** | -3 | -0.41 | 1 | | |
| **Median:** | **6** | | | | | |
| | | | | | 0.938 | 0.938 |
| | | | | | 10.4 | 10.4 |
| **u=mLn(Q)+b:** | | | | | 0.98 | 0.98 |

update for r2, EV, CV: **r2=0.938, EV=10.4 cfs CV=0.98; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.938 | u | lnQ | Q |
| slope, m: | 1.219 | 3 | 4.47 | 87 |
| intercept, b: | -2.445 | 0 | 2.01 | 7 |
| N: | 42 | -3 | -0.46 | 1 |
| E[Q]: | 10.4 | Parameter Estimates | | |
| SD[Q]: | 10 | from LN regression | | |
| CV[Q]: | 0.98 | update graph label | | |

N: 42 max r2 0.983

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 2.24 | 1 | 0.0148 | -2.176 | 0.806 | 0.938 |
| 13-Sep-95 | 2.66 | 2 | 0.0385 | -1.769 | 0.978 | 0.945 |
| 15-Aug-94 | 2.68 | 3 | 0.0621 | -1.537 | 0.986 | 0.951 |
| 14-Aug-95 | 3.11 | 4 | 0.0858 | -1.367 | 1.135 | 0.952 |
| 16-Dec-93 | 3.63 | 5 | 0.1095 | -1.229 | 1.289 | 0.955 |
| 16-Dec-93 | 3.64 | 6 | 0.1331 | -1.112 | 1.292 | 0.962 |
| 28-Oct-93 | 3.76 | 7 | 0.1568 | -1.008 | 1.324 | 0.967 |
| 18-Feb-94 | 3.76 | 8 | 0.1805 | -0.914 | 1.324 | 0.971 |
| 2-Dec-93 | 3.88 | 9 | 0.2041 | -0.827 | 1.356 | 0.974 |
| 25-Jul-95 | 4.01 | 10 | 0.2278 | -0.746 | 1.389 | 0.977 |
| 15-Aug-94 | 4.27 | 11 | 0.2515 | -0.670 | 1.452 | 0.979 |
| 8-Sep-94 | 4.27 | 12 | 0.2751 | -0.597 | 1.452 | 0.981 |
| 4-Oct-94 | 4.27 | 13 | 0.2988 | -0.528 | 1.452 | 0.983 |
| 20-Jul-94 | 4.33 | 14 | 0.3225 | -0.461 | 1.466 | 0.983 |
| 13-Dec-94 | 4.41 | 15 | 0.3462 | -0.396 | 1.484 | 0.983 |
| 15-Nov-94 | 4.7 | 16 | 0.3698 | -0.332 | 1.548 | 0.982 |
| 24-Jan-94 | 4.85 | 17 | 0.3935 | -0.270 | 1.579 | 0.981 |
| 20-Jul-94 | 4.85 | 18 | 0.4172 | -0.209 | 1.579 | 0.980 |
| 11-Jul-95 | 5.01 | 19 | 0.4408 | -0.149 | 1.611 | 0.978 |
| 24-Jan-94 | 5.03 | 20 | 0.4645 | -0.089 | 1.615 | 0.976 |
| 10-Jan-95 | 5.52 | 21 | 0.4882 | -0.030 | 1.708 | 0.976 |
| 11-Nov-97 | 5.88 | 22 | 0.5118 | 0.030 | 1.772 | 0.975 |
| 27-Jun-95 | 5.89 | 23 | 0.5355 | 0.089 | 1.773 | 0.974 |
| 8-Mar-94 | 7.65 | 24 | 0.5592 | 0.149 | 2.035 | 0.979 |
| 23-Jun-94 | 7.65 | 25 | 0.5828 | 0.209 | 2.035 | 0.977 |
| 12-Jun-95 | 9.03 | 26 | 0.6065 | 0.270 | 2.201 | 0.975 |
| 24-Mar-94 | 9.34 | 27 | 0.6302 | 0.332 | 2.234 | 0.973 |
| 7-Apr-94 | 10.32 | 28 | 0.6538 | 0.396 | 2.334 | 0.969 |
| 7-Mar-95 | 10.67 | 29 | 0.6775 | 0.461 | 2.367 | 0.966 |
| 7-Jun-94 | 11.81 | 30 | 0.7012 | 0.528 | 2.469 | 0.962 |
| 8-Mar-94 | 11.87 | 31 | 0.7249 | 0.597 | 2.474 | 0.958 |
| 24-Mar-94 | 12.9 | 32 | 0.7485 | 0.670 | 2.557 | 0.952 |
| 9-Feb-95 | 13.52 | 33 | 0.7722 | 0.746 | 2.604 | 0.944 |
| 25-Apr-95 | 13.52 | 34 | 0.7959 | 0.827 | 2.604 | 0.933 |
| 19-May-94 | 16.61 | 35 | 0.8195 | 0.914 | 2.810 | 0.923 |
| 4-May-94 | 17.19 | 36 | 0.8432 | 1.008 | 2.844 | 0.905 |
| 13-Apr-95 | 17.8 | 37 | 0.8669 | 1.112 | 2.879 | 0.876 |
| 23-May-95 | 22.71 | 38 | 0.8905 | 1.229 | 3.123 | 0.873 |
| 9-May-95 | 26.15 | 39 | 0.9142 | 1.367 | 3.264 | |
| 14-May-98 | 35.3 | 40 | 0.9379 | 1.537 | 3.564 | |
| 16-May-91 | 39.6 | 41 | 0.9615 | 1.769 | 3.679 | |
| 22-Mar-95 | 44.83 | 42 | 0.9852 | 2.176 | 3.803 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

**INPUT Data (in red). Update Analysis After Inputing Data.** see comment

**Station:** NM303 **Date:** 13-Jun-00
**Chemical:** tPb **Analyst:** J.MacLachlan
**Notes:**
**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| Avg: | 34,602 | 10 | 99 | 5 | 0.00 | 0.00 | 0.00 |
| SD: | 419 | 10 | 44 | 5 | 1.00 | 1.00 | 1.00 |
| CV: | 0.01 | 0.96 | 0.45 | 1.00 | | | |
| Min: | 33,374 | 2 | 41 | 0.7 | -0.82 | -1.31 | -0.85 |
| Max: | 35,929 | 45 | 275 | 30 | 3.47 | 3.96 | 4.74 |
| Median: | 34,561 | 6 | 88 | 4 | -0.47 | -0.25 | -0.31 |

tPb NM303 : Concentration v. Discharge, Q

| | | | | | Q = mTime +b | LnQ = mTime +b |
|---|---|---|---|---|---|---|
| Conc. = mQ+b (r2=0.0145) | update r2 | 0.01 | 0.0145 | | r2: 0.009 | 0.023 |
| r2 Q,[COC]: | 0.01 | [tPb] | Q | | m: 0.0022 | 0.00028 |
| slope, m: | -0.5 | 103 | 2.2 | | b: -67 | -7.56 |
| intercept, b: | 104.7 | 99 | 10.4 | | | |
| N: 42 | | 81 | 45 | | | |
| LnConc. = mLn(Q)+b (r2=0.00563) | | update r2 | 0.01 | 0.00563 | | |
| r2 lnQ,ln[COC]: | 0.01 | ln[tPb] | ln Q | [tPb] | Q | |
| slope, m: | -0.04 | 4.56 | 0.81 | 96 | 2 | |
| intercept, b: | 4.59 | 4.50 | 2.34 | 90 | 10 | |
| N: 42 | | 4.45 | 3.80 | 85 | 45 | |

for graph 0

N= 42

| update for new data | Sampling Date | Q Discharge cfs | tPb Concentration ug/L | tPb Load lbs/day | Ln Q | Ln tPb Conc. | Ln tPb Load | tPb NM303 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| DATA: | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 39.6 | 41 | 8.7 | 3.68 | 3.71 | 2.17 | 2.94 | -1.31 | 0.66 |
| MFG | 4-Oct-91 | 2.24 | 62 | 0.7 | 0.81 | 4.13 | -0.29 | -0.82 | -0.84 | -0.85 |
| IDEQ | 28-Oct-93 | 3.76 | 44 | 0.9 | 1.32 | 3.78 | -0.12 | -0.66 | -1.24 | -0.83 |
| IDEQ | 2-Dec-93 | 3.88 | 55 | 1.1 | 1.36 | 4.01 | 0.14 | -0.65 | -0.99 | -0.78 |
| IDEQ | 16-Dec-93 | 3.64 | 81 | 1.6 | 1.29 | 4.39 | 0.46 | -0.68 | -0.41 | -0.69 |
| IDEQ | 16-Dec-93 | 3.63 | 81 | 1.6 | 1.29 | 4.39 | 0.46 | -0.68 | -0.41 | -0.70 |
| IDEQ | 24-Jan-94 | 4.85 | 88 | 2.3 | 1.58 | 4.48 | 0.83 | -0.55 | -0.25 | -0.56 |
| IDEQ | 24-Jan-94 | 5.03 | 88 | 2.4 | 1.62 | 4.48 | 0.87 | -0.54 | -0.25 | -0.54 |
| IDEQ | 18-Feb-94 | 3.76 | 120 | 2.4 | 1.32 | 4.79 | 0.89 | -0.66 | 0.47 | -0.53 |
| IDEQ | 8-Mar-94 | 7.65 | 81 | 3.3 | 2.03 | 4.39 | 1.20 | -0.27 | -0.41 | -0.36 |
| IDEQ | 8-Mar-94 | 11.87 | 81 | 5.2 | 2.47 | 4.39 | 1.64 | 0.15 | -0.41 | -0.01 |
| IDEQ | 24-Mar-94 | 9.34 | 97 | 4.9 | 2.23 | 4.57 | 1.58 | -0.10 | -0.05 | -0.07 |
| IDEQ | 24-Mar-94 | 12.9 | 97 | 6.7 | 2.56 | 4.57 | 1.91 | 0.26 | -0.05 | 0.28 |
| IDEQ | 7-Apr-94 | 10.32 | 96 | 5.3 | 2.33 | 4.56 | 1.67 | 0.00 | -0.07 | 0.02 |
| IDEQ | 4-May-94 | 17.19 | 75 | 6.9 | 2.84 | 4.32 | 1.94 | 0.69 | -0.54 | 0.32 |
| IDEQ | 19-May-94 | 16.61 | 67 | 6.0 | 2.81 | 4.20 | 1.79 | 0.63 | -0.72 | 0.14 |
| IDEQ | 7-Jun-94 | 11.81 | 78 | 5.0 | 2.47 | 4.36 | 1.60 | 0.15 | -0.48 | -0.05 |
| IDEQ | 23-Jun-94 | 7.65 | 92 | 3.8 | 2.03 | 4.52 | 1.33 | -0.27 | -0.16 | -0.28 |
| IDEQ | 20-Jul-94 | 4.85 | 72 | 1.9 | 1.58 | 4.28 | 0.63 | -0.55 | -0.61 | -0.64 |
| IDEQ | 20-Jul-94 | 4.33 | 72 | 1.7 | 1.47 | 4.28 | 0.52 | -0.61 | -0.61 | -0.68 |
| IDEQ | 15-Aug-94 | 4.27 | 67 | 1.5 | 1.45 | 4.20 | 0.43 | -0.61 | -0.72 | -0.70 |
| IDEQ | 15-Aug-94 | 2.68 | 67 | 1.0 | 0.99 | 4.20 | -0.03 | -0.77 | -0.72 | -0.81 |
| IDEQ | 8-Sep-94 | 4.27 | 62 | 1.4 | 1.45 | 4.13 | 0.35 | -0.61 | -0.84 | -0.73 |
| IDEQ | 4-Oct-94 | 4.27 | 79 | 1.8 | 1.45 | 4.37 | 0.60 | -0.61 | -0.45 | -0.65 |
| IDEQ | 15-Nov-94 | 4.7 | 186 | 4.7 | 1.55 | 5.23 | 1.55 | -0.57 | 1.96 | -0.10 |
| IDEQ | 13-Dec-94 | 4.41 | 139 | 3.3 | 1.48 | 4.93 | 1.19 | -0.60 | 0.90 | -0.37 |
| IDEQ | 10-Jan-95 | 5.52 | 275 | 8.2 | 1.71 | 5.62 | 2.10 | -0.49 | 3.96 | 0.56 |
| IDEQ | 9-Feb-95 | 13.52 | 113 | 8.2 | 2.60 | 4.73 | 2.11 | 0.32 | 0.31 | 0.57 |
| IDEQ | 7-Mar-95 | 10.67 | 204 | 11.7 | 2.37 | 5.32 | 2.46 | 0.03 | 2.36 | 1.23 |
| IDEQ | 22-Mar-95 | 44.83 | 125 | 30.1 | 3.80 | 4.83 | 3.41 | 3.47 | 0.58 | 4.74 |
| IDEQ | 13-Apr-95 | 17.8 | 107 | 10.2 | 2.88 | 4.67 | 2.33 | 0.75 | 0.18 | 0.95 |
| IDEQ | 25-Apr-95 | 13.52 | 87 | 6.3 | 2.60 | 4.47 | 1.85 | 0.32 | -0.27 | 0.21 |
| IDEQ | 9-May-95 | 26.15 | 122 | 17.2 | 3.26 | 4.80 | 2.84 | 1.59 | 0.52 | 2.27 |
| IDEQ | 23-May-95 | 22.71 | 96 | 11.7 | 3.12 | 4.56 | 2.46 | 1.24 | -0.07 | 1.23 |
| IDEQ | 12-Jun-95 | 9.03 | 102 | 5.0 | 2.20 | 4.62 | 1.60 | -0.13 | 0.06 | -0.05 |
| IDEQ | 27-Jun-95 | 5.89 | 121 | 3.8 | 1.77 | 4.80 | 1.34 | -0.45 | 0.49 | -0.27 |
| IDEQ | 11-Jul-95 | 5.01 | 127 | 3.4 | 1.61 | 4.84 | 1.23 | -0.54 | 0.63 | -0.35 |
| IDEQ | 25-Jul-95 | 4.01 | 142 | 3.1 | 1.39 | 4.96 | 1.12 | -0.64 | 0.97 | -0.41 |

tPb

**Concentration over time analysis**

| | tPb | NM303 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.059** | **0.00023** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 4.23 | 69 | | |
| mid: | 15-Aug-94 | 4.50 | 90 | | |
| last: | 14-May-98 | 4.82 | 124 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

**Load over time analysis**

| | tPb | NM303 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.064** | **0.00051** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | 0.67 | 2 | | |
| mid: | 15-Aug-94 | 1.27 | 4 | | |
| last: | 14-May-98 | 1.97 | 7 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

| | max r2: | 0.958 | | max r2: | 0.300 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.059 | 0.00023 | -3.41 | 0.064 | 0.00051 | -16.19 |
| | 0.014 | 0.00012 | 0.49 | 0.139 | 0.00083 | -27.39 |
| | 0.002 | 0.00005 | 2.91 | 0.077 | 0.00067 | -21.78 |
| | 0.000 | -0.00002 | 5.27 | 0.057 | 0.00056 | -18.06 |
| | 0.004 | -0.00007 | 7.01 | 0.042 | 0.00047 | -14.95 |
| | 0.007 | -0.00009 | 7.66 | 0.031 | 0.00040 | -12.59 |
| | 0.010 | -0.00011 | 8.41 | 0.021 | 0.00033 | -9.92 |
| | 0.013 | -0.00012 | 8.88 | 0.015 | 0.00028 | -8.36 |
| | 0.015 | -0.00014 | 9.41 | 0.010 | 0.00024 | -6.72 |
| | 0.012 | -0.00012 | 8.92 | 0.006 | 0.00019 | -5.03 |
| | 0.017 | -0.00015 | 9.72 | 0.005 | 0.00017 | -4.29 |
| | 0.022 | -0.00017 | 10.63 | 0.006 | 0.00019 | -5.04 |
| | 0.024 | -0.00018 | 10.95 | 0.007 | 0.00020 | -5.63 |
| | 0.026 | -0.00019 | 11.31 | 0.011 | 0.00026 | -7.59 |
| | 0.028 | -0.00021 | 11.74 | 0.014 | 0.00029 | -8.79 |
| | 0.040 | -0.00025 | 13.20 | 0.020 | 0.00036 | -11.13 |
| | 0.061 | -0.00031 | 15.28 | 0.026 | 0.00042 | -13.09 |
| | 0.079 | -0.00035 | 16.89 | 0.029 | 0.00045 | -14.39 |
| | 0.089 | -0.00038 | 17.93 | 0.029 | 0.00046 | -14.60 |
| | 0.120 | -0.00044 | 20.09 | 0.019 | 0.00038 | -11.67 |
| | 0.162 | -0.00051 | 22.64 | 0.010 | 0.00026 | -7.65 |
| | 0.227 | -0.00060 | 25.72 | 0.002 | 0.00012 | -2.79 |
| | 0.321 | -0.00071 | 29.43 | 0.002 | -0.00011 | 5.56 |
| | 0.481 | -0.00084 | 33.95 | 0.018 | -0.00032 | 12.82 |
| | 0.610 | -0.00094 | 37.54 | 0.050 | -0.00051 | 19.59 |
| | 0.594 | -0.00091 | 36.55 | 0.059 | -0.00056 | 21.52 |
| | 0.590 | -0.00092 | 36.87 | 0.084 | -0.00068 | 25.48 |
| | 0.657 | -0.00082 | 33.44 | 0.078 | -0.00066 | 24.88 |
| | 0.671 | -0.00085 | 34.26 | 0.071 | -0.00064 | 24.09 |
| | 0.725 | -0.00078 | 31.92 | 0.055 | -0.00056 | 21.24 |
| | 0.716 | -0.00078 | 31.85 | 0.025 | -0.00031 | 12.56 |
| | 0.729 | -0.00080 | 32.57 | 0.011 | -0.00020 | 8.68 |
| | 0.823 | -0.00086 | 34.70 | 0.006 | -0.00015 | 6.92 |
| | 0.819 | -0.00086 | 34.96 | 0.004 | 0.00010 | -2.28 |
| | 0.887 | -0.00092 | 37.10 | 0.084 | 0.00036 | -11.39 |
| | 0.943 | -0.00099 | 39.28 | 0.160 | 0.00049 | -15.93 |
| | 0.954 | -0.00102 | 40.49 | 0.225 | 0.00059 | -19.80 |
| | 0.958 | -0.00105 | 41.62 | 0.300 | 0.00072 | -24.48 |

update for EV, CV:

**tPb** **NM303**

**LN Analysis** **tPb**

**Load** **Load Data, EV=5.24 lbs/day CV=1**

**Load Data-based LN**

| | | u | ln tPb Load | tPb Load |
|---|---|---|---|---|
| **Avg:** | **5** | 3 | 3.8 | 45 |
| **SD:** | **5** | 0 | 1.31 | 4 |
| **CV:** | **1.00** | -3 | -1.20 | 0.3 |
| **Min:** | **0.7** | | | |
| **Max:** | **30** | | | |
| **Median:** | **4** | | | |

| | |
|---|---|
| 5 | 5.24 |
| 1.00 | 1 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.986, EV=5.34lbs/day CV=1.07; max r2=0.99**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.986 | u | lnLoad= | Load | | |
| slope, m: | 1.148 | 3 | 3.91 | 50 | | |
| intercept, b: | -1.486 | 0 | 1.30 | 4 | | |
| N: | 42 | -3 | -1.32 | 0.3 | | |
| E[Load]: | 5.3 | Parameter Estimates | | | 0.986 | 0.986 |
| SD[Load]: | 6 | from LN regression | | | 5.3 | 5.34 |
| CV[Load]: | 1.07 | update graph label | | | 1.1 | 1.07 |
| | | | | | max r2 | |
| | N: 42 | | | | 0.989 | |

| Date | tPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 0.7 | 1 | 0.0148 | -2.176 | -0.291 | 0.986 |
| 28-Oct-93 | 0.9 | 2 | 0.0385 | -1.769 | -0.116 | 0.988 |
| 15-Aug-94 | 1.0 | 3 | 0.0621 | -1.537 | -0.035 | 0.988 |
| 2-Dec-93 | 1.1 | 4 | 0.0858 | -1.367 | 0.138 | 0.987 |
| 8-Sep-94 | 1.4 | 5 | 0.1095 | -1.229 | 0.354 | 0.987 |
| 15-Aug-94 | 1.5 | 6 | 0.1331 | -1.112 | 0.431 | 0.988 |
| 16-Dec-93 | 1.6 | 7 | 0.1568 | -1.008 | 0.459 | 0.989 |
| 16-Dec-93 | 1.6 | 8 | 0.1805 | -0.914 | 0.461 | 0.989 |
| 13-Sep-95 | 1.6 | 9 | 0.2041 | -0.827 | 0.472 | 0.988 |
| 20-Jul-94 | 1.7 | 10 | 0.2278 | -0.746 | 0.517 | 0.987 |
| 4-Oct-94 | 1.8 | 11 | 0.2515 | -0.670 | 0.596 | 0.986 |
| 20-Jul-94 | 1.9 | 12 | 0.2751 | -0.597 | 0.631 | 0.985 |
| 11-Nov-97 | 1.9 | 13 | 0.2988 | -0.528 | 0.644 | 0.985 |
| 24-Jan-94 | 2.3 | 14 | 0.3225 | -0.461 | 0.831 | 0.985 |
| 24-Jan-94 | 2.4 | 15 | 0.3462 | -0.396 | 0.868 | 0.984 |
| 18-Feb-94 | 2.4 | 16 | 0.3698 | -0.332 | 0.887 | 0.983 |
| 14-Aug-95 | 2.6 | 17 | 0.3935 | -0.270 | 0.959 | 0.983 |
| 25-Jul-95 | 3.1 | 18 | 0.4172 | -0.209 | 1.120 | 0.983 |
| 13-Dec-94 | 3.3 | 19 | 0.4408 | -0.149 | 1.193 | 0.981 |
| 8-Mar-94 | 3.3 | 20 | 0.4645 | -0.089 | 1.204 | 0.980 |
| 11-Jul-95 | 3.4 | 21 | 0.4882 | -0.030 | 1.231 | 0.978 |
| 23-Jun-94 | 3.8 | 22 | 0.5118 | 0.030 | 1.331 | 0.976 |
| 27-Jun-95 | 3.8 | 23 | 0.5355 | 0.089 | 1.344 | 0.974 |
| 15-Nov-94 | 4.7 | 24 | 0.5592 | 0.149 | 1.548 | 0.971 |
| 24-Mar-94 | 4.9 | 25 | 0.5828 | 0.209 | 1.584 | 0.972 |
| 12-Jun-95 | 5.0 | 26 | 0.6065 | 0.270 | 1.600 | 0.972 |
| 7-Jun-94 | 5.0 | 27 | 0.6302 | 0.332 | 1.601 | 0.972 |
| 8-Mar-94 | 5.2 | 28 | 0.6538 | 0.396 | 1.643 | 0.969 |
| 7-Apr-94 | 5.3 | 29 | 0.6775 | 0.461 | 1.673 | 0.965 |
| 19-May-94 | 6.0 | 30 | 0.7012 | 0.528 | 1.790 | 0.961 |
| 25-Apr-95 | 6.3 | 31 | 0.7249 | 0.597 | 1.845 | 0.957 |
| 24-Mar-94 | 6.7 | 32 | 0.7485 | 0.670 | 1.907 | 0.954 |
| 4-May-94 | 6.9 | 33 | 0.7722 | 0.746 | 1.937 | 0.950 |
| 10-Jan-95 | 8.2 | 34 | 0.7959 | 0.827 | 2.100 | 0.943 |
| 9-Feb-95 | 8.2 | 35 | 0.8195 | 0.914 | 2.106 | 0.954 |
| 16-May-91 | 8.7 | 36 | 0.8432 | 1.008 | 2.167 | 0.958 |
| 14-May-98 | 8.8 | 37 | 0.8669 | 1.112 | 2.170 | 0.965 |
| 13-Apr-95 | 10.2 | 38 | 0.8905 | 1.229 | 2.327 | 0.956 |

| | | update for EV, CV: | | | |
|---|---|---|---|---|---|
| tPb | | NM303 | | 99 | 99.1 |
| LN Analysis | | tPb | | 0.45 | 0.448 |
| **Concentration** | | Conc. Data, EV=99.1 ug/L CV=0.448 | | | |
| Avg: | 99 | Data-based LN | | | |
| SD: | 44 | u | ln[tPb] | [tPb] | |
| CV: | 0.45 | 3 | 5.8 | 326 | |
| Min: | 41 | 0 | 4.51 | 90 | |
| Max: | 275 | -3 | 3.22 | 25 | |
| Median: | 88 | | | | |

| | | | | | 0.980 | 0.98 |
|---|---|---|---|---|---|---|
| | u=mLn(Conc.)+b: | | | | 99.4 | 99.4 |
| update for r2, EV, CV: | r2=0.98, EV=99.4 ug/L CV=0.43; max r2=0.99 | | | | 0.430 | 0.43 |
| | r2 u,lnConc: | 0.980 | u | lnConc. | Conc. | |
| | slope, m: | 2.428 | 3 | 5.75 | 314 | |
| | intercept, b: | -10.961 | 0 | 4.51 | 91 | |
| | N: | 42 | -3 | 3.28 | 27 | |
| | E[Conc]: | 99.4 | Parameter Estimates | | | |
| | SD[Conc]: | 43 | from LN regression | | | |
| | CV[Conc]: | 0.43 | update graph label | | | |

| | tPb | N: 42 | | | | max r2 0.990 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 16-May-91 | 41 | 1 | 0.0148 | -2.176 | 3.714 | 0.980 |
| 28-Oct-93 | 44 | 2 | 0.0385 | -1.769 | 3.784 | 0.978 |
| 14-May-98 | 46.1 | 3 | 0.0621 | -1.537 | 3.831 | 0.976 |
| 2-Dec-93 | 55 | 4 | 0.0858 | -1.367 | 4.007 | 0.974 |
| 11-Nov-97 | 60.2 | 5 | 0.1095 | -1.229 | 4.098 | 0.973 |
| 4-Oct-91 | 62 | 6 | 0.1331 | -1.112 | 4.127 | 0.973 |
| 8-Sep-94 | 62 | 7 | 0.1568 | -1.008 | 4.127 | 0.973 |
| 19-May-94 | 67 | 8 | 0.1805 | -0.914 | 4.205 | 0.972 |
| 15-Aug-94 | 67 | 9 | 0.2041 | -0.827 | 4.205 | 0.973 |
| 15-Aug-94 | 67 | 10 | 0.2278 | -0.746 | 4.205 | 0.972 |
| 20-Jul-94 | 72 | 11 | 0.2515 | -0.670 | 4.277 | 0.971 |
| 20-Jul-94 | 72 | 12 | 0.2751 | -0.597 | 4.277 | 0.971 |
| 4-May-94 | 75 | 13 | 0.2988 | -0.528 | 4.317 | 0.970 |
| 7-Jun-94 | 78 | 14 | 0.3225 | -0.461 | 4.357 | 0.971 |
| 4-Oct-94 | 79 | 15 | 0.3462 | -0.396 | 4.369 | 0.972 |
| 16-Dec-93 | 81 | 16 | 0.3698 | -0.332 | 4.394 | 0.973 |
| 16-Dec-93 | 81 | 17 | 0.3935 | -0.270 | 4.394 | 0.975 |
| 8-Mar-94 | 81 | 18 | 0.4172 | -0.209 | 4.394 | 0.975 |
| 8-Mar-94 | 81 | 19 | 0.4408 | -0.149 | 4.394 | 0.974 |
| 25-Apr-95 | 87 | 20 | 0.4645 | -0.089 | 4.466 | 0.972 |
| 24-Jan-94 | 88 | 21 | 0.4882 | -0.030 | 4.477 | 0.972 |
| 24-Jan-94 | 88 | 22 | 0.5118 | 0.030 | 4.477 | 0.972 |
| 23-Jun-94 | 92 | 23 | 0.5355 | 0.089 | 4.522 | 0.970 |
| 7-Apr-94 | 96 | 24 | 0.5592 | 0.149 | 4.564 | 0.970 |
| 23-May-95 | 96 | 25 | 0.5828 | 0.209 | 4.564 | 0.972 |
| 24-Mar-94 | 97 | 26 | 0.6065 | 0.270 | 4.575 | 0.971 |
| 24-Mar-94 | 97 | 27 | 0.6302 | 0.332 | 4.575 | 0.970 |
| 12-Jun-95 | 102 | 28 | 0.6538 | 0.396 | 4.625 | 0.967 |
| 13-Apr-95 | 107 | 29 | 0.6775 | 0.461 | 4.673 | 0.964 |
| 13-Sep-95 | 112 | 30 | 0.7012 | 0.528 | 4.718 | 0.963 |
| 9-Feb-95 | 113 | 31 | 0.7249 | 0.597 | 4.727 | 0.966 |
| 18-Feb-94 | 120 | 32 | 0.7485 | 0.670 | 4.787 | 0.967 |
| 27-Jun-95 | 121 | 33 | 0.7722 | 0.746 | 4.796 | 0.977 |
| 9-May-95 | 122 | 34 | 0.7959 | 0.827 | 4.804 | 0.984 |
| 22-Mar-95 | 125 | 35 | 0.8195 | 0.914 | 4.828 | 0.988 |
| 11-Jul-95 | 127 | 36 | 0.8432 | 1.008 | 4.844 | 0.990 |
| 13-Dec-94 | 139 | 37 | 0.8669 | 1.112 | 4.934 | 0.987 |
| 25-Jul-95 | 142 | 38 | 0.8905 | 1.229 | 4.956 | 0.989 |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | **NM303** | | | 10 | 10.4 |
| **LN Analysis** | | **tPb** | | | 0.96 | 0.959 |
| **Discharge, Q** | | **Q Data, EV=10.4 cfs CV=0.959** | | | | |
| **Avg:** | **10** | **Q Data-based LN** | | | | |
| **SD:** | **10** | u | lnQ | Q | | |
| **CV:** | **0.96** | 3 | 4.4 | 84 | | |
| **Min:** | **2** | 0 | 2.01 | 7 | | |
| **Max:** | **45** | -3 | -0.41 | 1 | | |
| **Median:** | **6** | | | | | |

| | | |
|---|---|---|
| | 0.938 | 0.938 |
| | 10.4 | 10.4 |
| **u=mLn(Q)+b:** | 0.98 | 0.98 |

update for r2, EV, CV: **r2=0.938, EV=10.4 cfs CV=0.98; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.938 | u | lnQ | Q |
| slope, m: | 1.219 | 3 | 4.47 | 87 |
| intercept, b: | -2.445 | 0 | 2.01 | 7 |
| N: | 42 | -3 | -0.46 | 1 |
| E[Q]: | 10.4 | Parameter Estimates | | |
| SD[Q]: | 10 | from LN regression | | |
| CV[Q]: | 0.98 | update graph label | | |

N: 42

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.983 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 2.24 | 1 | 0.0148 | -2.176 | 0.806 | 0.938 |
| 13-Sep-95 | 2.66 | 2 | 0.0385 | -1.769 | 0.978 | 0.945 |
| 15-Aug-94 | 2.68 | 3 | 0.0621 | -1.537 | 0.986 | 0.951 |
| 14-Aug-95 | 3.11 | 4 | 0.0858 | -1.367 | 1.135 | 0.952 |
| 16-Dec-93 | 3.63 | 5 | 0.1095 | -1.229 | 1.289 | 0.955 |
| 16-Dec-93 | 3.64 | 6 | 0.1331 | -1.112 | 1.292 | 0.962 |
| 28-Oct-93 | 3.76 | 7 | 0.1568 | -1.008 | 1.324 | 0.967 |
| 18-Feb-94 | 3.76 | 8 | 0.1805 | -0.914 | 1.324 | 0.971 |
| 2-Dec-93 | 3.88 | 9 | 0.2041 | -0.827 | 1.356 | 0.974 |
| 25-Jul-95 | 4.01 | 10 | 0.2278 | -0.746 | 1.389 | 0.977 |
| 15-Aug-94 | 4.27 | 11 | 0.2515 | -0.670 | 1.452 | 0.979 |
| 8-Sep-94 | 4.27 | 12 | 0.2751 | -0.597 | 1.452 | 0.981 |
| 4-Oct-94 | 4.27 | 13 | 0.2988 | -0.528 | 1.452 | 0.983 |
| 20-Jul-94 | 4.33 | 14 | 0.3225 | -0.461 | 1.466 | 0.983 |
| 13-Dec-94 | 4.41 | 15 | 0.3462 | -0.396 | 1.484 | 0.983 |
| 15-Nov-94 | 4.7 | 16 | 0.3698 | -0.332 | 1.548 | 0.982 |
| 24-Jan-94 | 4.85 | 17 | 0.3935 | -0.270 | 1.579 | 0.981 |
| 20-Jul-94 | 4.85 | 18 | 0.4172 | -0.209 | 1.579 | 0.980 |
| 11-Jul-95 | 5.01 | 19 | 0.4408 | -0.149 | 1.611 | 0.978 |
| 24-Jan-94 | 5.03 | 20 | 0.4645 | -0.089 | 1.615 | 0.976 |
| 10-Jan-95 | 5.52 | 21 | 0.4882 | -0.030 | 1.708 | 0.976 |
| 11-Nov-97 | 5.88 | 22 | 0.5118 | 0.030 | 1.772 | 0.975 |
| 27-Jun-95 | 5.89 | 23 | 0.5355 | 0.089 | 1.773 | 0.974 |
| 8-Mar-94 | 7.65 | 24 | 0.5592 | 0.149 | 2.035 | 0.979 |
| 23-Jun-94 | 7.65 | 25 | 0.5828 | 0.209 | 2.035 | 0.977 |
| 12-Jun-95 | 9.03 | 26 | 0.6065 | 0.270 | 2.201 | 0.975 |
| 24-Mar-94 | 9.34 | 27 | 0.6302 | 0.332 | 2.234 | 0.973 |
| 7-Apr-94 | 10.32 | 28 | 0.6538 | 0.396 | 2.334 | 0.969 |
| 7-Mar-95 | 10.67 | 29 | 0.6775 | 0.461 | 2.367 | 0.966 |
| 7-Jun-94 | 11.81 | 30 | 0.7012 | 0.528 | 2.469 | 0.962 |
| 8-Mar-94 | 11.87 | 31 | 0.7249 | 0.597 | 2.474 | 0.958 |
| 24-Mar-94 | 12.9 | 32 | 0.7485 | 0.670 | 2.557 | 0.952 |
| 9-Feb-95 | 13.52 | 33 | 0.7722 | 0.746 | 2.604 | 0.944 |
| 25-Apr-95 | 13.52 | 34 | 0.7959 | 0.827 | 2.604 | 0.933 |
| 19-May-94 | 16.61 | 35 | 0.8195 | 0.914 | 2.810 | 0.923 |
| 4-May-94 | 17.19 | 36 | 0.8432 | 1.008 | 2.844 | 0.905 |
| 13-Apr-95 | 17.8 | 37 | 0.8669 | 1.112 | 2.879 | 0.876 |
| 23-May-95 | 22.71 | 38 | 0.8905 | 1.229 | 3.123 | 0.873 |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM303 | **Date:** | 3-Jun-00 |
| **Chemical:** | tZn | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 34,602 | 10 | 4,209 | 206 | 0.00 | 0.00 | 0.00 |
| **SD:** | 419 | 10 | 1,344 | 180 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.01 | 0.96 | 0.32 | 0.87 | | | |
| **Min:** | 33,374 | 2 | 1,850 | 43.4 | -0.82 | -1.76 | -0.90 |
| **Max:** | 35,929 | 45 | 8,470 | 1,107 | 3.47 | 3.17 | 5.01 |
| **Median:** | 34,561 | 6 | 4,030 | 157 | -0.47 | -0.13 | -0.27 |

| tZn | NM303 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.158)** | | update r2 | **0.16** | 0.158 | r2: | 0.009 | 0.023 |
| r2 Q,[COC]: | 0.16 | [tZn] | Q | | m: | 0.0022 | 0.00028 |
| slope, m: | -53.7 | 4,645 | 2.2 | | b: | -67 | -7.56 |
| intercept, b: | 4765.0 | 4,209 | 10.4 | | | | |
| N: 42 | | 2,358 | 45 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.213)** | | update r2 | 0.21 | 0.213 | | | |
| r2 lnQ,ln[COC]: | 0.21 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m: | -0.19 | 8.53 | 0.81 | 5,049 | 2 | | |
| intercept, b: | 8.68 | 8.23 | 2.34 | 3,753 | 10 | | |
| N: 42 | | 7.95 | 3.80 | 2,826 | 45 | | |

**N= 42**

| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | for graph 0 tZn NM303 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 16-May-91 | 39.6 | 1850 | 394 | 3.68 | 7.52 | 5.98 | 2.94 | -1.76 | 1.05 |
| MFG | 4-Oct-91 | 2.24 | 3600 | 43 | 0.81 | 8.19 | 3.77 | -0.82 | -0.45 | -0.90 |
| IDEQ | 28-Oct-93 | 3.76 | 4780 | 97 | 1.32 | 8.47 | 4.57 | -0.66 | 0.43 | -0.61 |
| IDEQ | 2-Dec-93 | 3.88 | 4560 | 95 | 1.36 | 8.43 | 4.56 | -0.65 | 0.26 | -0.62 |
| IDEQ | 16-Dec-93 | 3.64 | 5290 | 104 | 1.29 | 8.57 | 4.64 | -0.68 | 0.80 | -0.57 |
| IDEQ | 16-Dec-93 | 3.63 | 5290 | 103 | 1.29 | 8.57 | 4.64 | -0.68 | 0.80 | -0.57 |
| IDEQ | 24-Jan-94 | 4.85 | 4370 | 114 | 1.58 | 8.38 | 4.74 | -0.55 | 0.12 | -0.51 |
| IDEQ | 24-Jan-94 | 5.03 | 4370 | 118 | 1.62 | 8.38 | 4.77 | -0.54 | 0.12 | -0.49 |
| IDEQ | 18-Feb-94 | 3.76 | 4450 | 90 | 1.32 | 8.40 | 4.50 | -0.66 | 0.18 | -0.65 |
| IDEQ | 8-Mar-94 | 7.65 | 4030 | 166 | 2.03 | 8.30 | 5.11 | -0.27 | -0.13 | -0.22 |
| IDEQ | 8-Mar-94 | 11.87 | 4030 | 257 | 2.47 | 8.30 | 5.55 | 0.15 | -0.13 | 0.29 |
| IDEQ | 24-Mar-94 | 9.34 | 3890 | 195 | 2.23 | 8.27 | 5.28 | -0.10 | -0.24 | -0.06 |
| IDEQ | 24-Mar-94 | 12.9 | 3890 | 270 | 2.56 | 8.27 | 5.60 | 0.26 | -0.24 | 0.36 |
| IDEQ | 7-Apr-94 | 10.32 | 4030 | 224 | 2.33 | 8.30 | 5.41 | 0.00 | -0.13 | 0.10 |
| IDEQ | 4-May-94 | 17.19 | 3360 | 311 | 2.84 | 8.12 | 5.74 | 0.69 | -0.63 | 0.58 |
| IDEQ | 19-May-94 | 16.61 | 2490 | 223 | 2.81 | 7.82 | 5.40 | 0.63 | -1.28 | 0.09 |
| IDEQ | 7-Jun-94 | 11.81 | 3260 | 207 | 2.47 | 8.09 | 5.33 | 0.15 | -0.71 | 0.01 |
| IDEQ | 23-Jun-94 | 7.65 | 3590 | 148 | 2.03 | 8.19 | 5.00 | -0.27 | -0.46 | -0.32 |
| IDEQ | 20-Jul-94 | 4.85 | 3560 | 93 | 1.58 | 8.18 | 4.53 | -0.55 | -0.48 | -0.63 |
| IDEQ | 20-Jul-94 | 4.33 | 3560 | 83 | 1.47 | 8.18 | 4.42 | -0.61 | -0.48 | -0.68 |
| IDEQ | 15-Aug-94 | 4.27 | 3240 | 74 | 1.45 | 8.08 | 4.31 | -0.61 | -0.72 | -0.73 |
| IDEQ | 15-Aug-94 | 2.68 | 3240 | 47 | 0.99 | 8.08 | 3.84 | -0.77 | -0.72 | -0.89 |
| IDEQ | 8-Sep-94 | 4.27 | 5490 | 126 | 1.45 | 8.61 | 4.84 | -0.61 | 0.95 | -0.44 |
| IDEQ | 4-Oct-94 | 4.27 | 4330 | 99 | 1.45 | 8.37 | 4.60 | -0.61 | 0.09 | -0.59 |
| IDEQ | 15-Nov-94 | 4.7 | 7910 | 200 | 1.55 | 8.98 | 5.30 | -0.57 | 2.75 | -0.03 |
| IDEQ | 13-Dec-94 | 4.41 | 8470 | 201 | 1.48 | 9.04 | 5.30 | -0.60 | 3.17 | -0.03 |
| IDEQ | 10-Jan-95 | 5.52 | 6220 | 185 | 1.71 | 8.74 | 5.22 | -0.49 | 1.50 | -0.12 |
| IDEQ | 9-Feb-95 | 13.52 | 4910 | 357 | 2.60 | 8.50 | 5.88 | 0.32 | 0.52 | 0.84 |
| IDEQ | 7-Mar-95 | 10.67 | 5180 | 297 | 2.37 | 8.55 | 5.69 | 0.03 | 0.72 | 0.51 |
| IDEQ | 22-Mar-95 | 44.83 | 4590 | 1107 | 3.80 | 8.43 | 7.01 | 3.47 | 0.28 | 5.01 |
| IDEQ | 13-Apr-95 | 17.8 | 5130 | 491 | 2.88 | 8.54 | 6.20 | 0.75 | 0.69 | 1.59 |
| IDEQ | 25-Apr-95 | 13.52 | 5370 | 391 | 2.60 | 8.59 | 5.97 | 0.32 | 0.86 | 1.03 |
| IDEQ | 9-May-95 | 26.15 | 2960 | 416 | 3.26 | 7.99 | 6.03 | 1.59 | -0.93 | 1.17 |
| IDEQ | 23-May-95 | 22.71 | 2100 | 257 | 3.12 | 7.65 | 5.55 | 1.24 | -1.57 | 0.28 |
| IDEQ | 12-Jun-95 | 9.03 | 2520 | 122 | 2.20 | 7.83 | 4.81 | -0.13 | -1.26 | -0.46 |
| IDEQ | 27-Jun-95 | 5.89 | 3320 | 105 | 1.77 | 8.11 | 4.66 | -0.45 | -0.66 | -0.56 |
| IDEQ | 11-Jul-95 | 5.01 | 3510 | 95 | 1.61 | 8.16 | 4.55 | -0.54 | -0.52 | -0.62 |
| IDEQ | 25-Jul-95 | 4.01 | 4110 | 89 | 1.39 | 8.32 | 4.48 | -0.64 | -0.07 | -0.65 |
| IDEQ | 14-Aug-95 | 3.11 | 4660 | 78 | 1.13 | 8.45 | 4.36 | -0.73 | 0.34 | -0.71 |
| IDEQ | 13-Sep-95 | 2.66 | 3900 | 56 | 0.98 | 8.27 | 4.02 | -0.77 | -0.23 | -0.84 |
| URS | 11-Nov-97 | 5.88 | 5510 | 174 | 1.77 | 8.61 | 5.16 | -0.45 | 0.97 | -0.18 |
| URS | 14-May-98 | 35.3 | 1850 | 351 | 3.56 | 7.52 | 5.86 | 2.51 | -1.76 | 0.81 |

tZn

**Concentration over time analysis**

| | tZn | NM303 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **LnConc.=mTime+b All data r2, m:** | | | **0.001** | **0.00003** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 16-May-91 | 8.26 | 3,871 | | |
| mid. | 15-Aug-94 | 8.29 | 3,997 | | |
| last: | 14-May-98 | 8.33 | 4,148 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

**Load over time analysis**

| | tZn | NM303 | | | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.035** | **0.00030** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 16-May-91 | 4.70 | 110 | | |
| mid. | 15-Aug-94 | 5.06 | 158 | | |
| last: | 14-May-98 | 5.48 | 239 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00000** |
| | 0-Jan-00 | 0.00 | 1 | | |
| | 14-May-98 | 0.00 | 1 | | |

max r2: 0.230

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.001 | 0.00003 | 7.36 |
| 0.027 | -0.00013 | 12.90 |
| 0.049 | -0.00020 | 15.28 |
| 0.044 | -0.00019 | 15.04 |
| 0.042 | -0.00019 | 14.91 |
| 0.034 | -0.00017 | 14.29 |
| 0.026 | -0.00015 | 13.60 |
| 0.024 | -0.00015 | 13.49 |
| 0.022 | -0.00015 | 13.36 |
| 0.020 | -0.00014 | 13.15 |
| 0.020 | -0.00014 | 13.25 |
| 0.021 | -0.00015 | 13.37 |
| 0.022 | -0.00015 | 13.63 |
| 0.023 | -0.00016 | 13.92 |
| 0.024 | -0.00017 | 14.08 |
| 0.031 | -0.00019 | 14.99 |
| 0.057 | -0.00026 | 17.26 |
| 0.073 | -0.00029 | 18.57 |
| 0.085 | -0.00032 | 19.58 |
| 0.099 | -0.00035 | 20.67 |
| 0.116 | -0.00039 | 21.96 |
| 0.146 | -0.00044 | 23.78 |
| 0.186 | -0.00050 | 25.97 |
| 0.171 | -0.00049 | 25.47 |
| 0.177 | -0.00051 | 26.17 |
| 0.144 | -0.00044 | 23.55 |
| 0.111 | -0.00034 | 20.24 |
| 0.084 | -0.00028 | 18.19 |
| 0.068 | -0.00026 | 17.16 |
| 0.050 | -0.00021 | 15.69 |
| 0.037 | -0.00018 | 14.62 |
| 0.020 | -0.00013 | 12.71 |
| 0.004 | -0.00006 | 10.06 |
| 0.008 | -0.00008 | 10.84 |
| 0.053 | -0.00018 | 14.58 |
| 0.133 | -0.00028 | 17.97 |
| 0.179 | -0.00033 | 19.95 |
| 0.230 | -0.00040 | 22.37 |

max r2: 0.884

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.035 | 0.00030 | -5.42 |
| 0.104 | 0.00058 | -14.98 |
| 0.047 | 0.00042 | -9.41 |
| 0.039 | 0.00039 | -8.29 |
| 0.032 | 0.00035 | -7.05 |
| 0.026 | 0.00032 | -5.96 |
| 0.020 | 0.00028 | -4.73 |
| 0.016 | 0.00026 | -3.75 |
| 0.012 | 0.00023 | -2.78 |
| 0.007 | 0.00017 | -0.81 |
| 0.007 | 0.00017 | -0.76 |
| 0.010 | 0.00022 | -2.30 |
| 0.012 | 0.00023 | -2.95 |
| 0.018 | 0.00029 | -4.98 |
| 0.023 | 0.00033 | -6.45 |
| 0.035 | 0.00042 | -9.34 |
| 0.042 | 0.00047 | -11.11 |
| 0.049 | 0.00051 | -12.71 |
| 0.049 | 0.00052 | -12.95 |
| 0.039 | 0.00047 | -11.08 |
| 0.027 | 0.00039 | -8.33 |
| 0.015 | 0.00028 | -4.73 |
| 0.002 | 0.00009 | 2.09 |
| 0.000 | 0.00003 | 4.34 |
| 0.001 | -0.00008 | 8.21 |
| 0.002 | -0.00009 | 8.53 |
| 0.002 | -0.00010 | 8.85 |
| 0.003 | -0.00012 | 9.63 |
| 0.000 | -0.00005 | 6.98 |
| 0.000 | 0.00001 | 5.01 |
| 0.020 | 0.00028 | -4.67 |
| 0.065 | 0.00046 | -11.17 |
| 0.151 | 0.00065 | -17.73 |
| 0.399 | 0.00089 | -26.40 |
| 0.729 | 0.00110 | -33.91 |
| 0.805 | 0.00119 | -37.24 |
| 0.851 | 0.00128 | -40.34 |
| 0.884 | 0.00137 | -43.73 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| tZn | | NM303 | | |
| LN Analysis | | tZn | | |
| **Load** | | **Load Data, EV=206 lbs/day CV=0.873** | | |
| Avg: | 206 | **Load Data-based LN** | | |
| SD: | 180 | u | ln tZn Load | tZn Load |
| CV: | 0.87 | 3 | 7.3 | 1484 |
| Min: | 43.4 | 0 | 5.04 | 155 |
| Max: | 1,107 | -3 | 2.79 | 16.2 |
| Median: | 157 | | | |
| | | 206 | 206 | |
| | | 0.87 | 0.873 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.971, EV=207lbs/day CV=0.818; max r2=0.98**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.971 | u | lnLoad | Load | |
| slope, m: | 1.397 | 3 | 7.22 | 1370 | |
| intercept, b: | -7.090 | 0 | 5.08 | 160 | |
| N: | 42 | -3 | 2.93 | 18.7 | |
| E[Load]: | 206.8 | Parameter Estimates | | | 0.971 0.971 |
| SD[Load]: | 169 | from LN regression | | | 206.8 207 |
| CV[Load]: | 0.82 | update graph label | | | 0.8 0.818 |

N: 42 — max r2 0.975

| Date | tZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 43 | 1 | 0.0148 | -2.176 | 3.770 | 0.971 |
| 15-Aug-94 | 47 | 2 | 0.0385 | -1.769 | 3.844 | 0.971 |
| 13-Sep-95 | 56 | 3 | 0.0621 | -1.537 | 4.022 | 0.969 |
| 15-Aug-94 | 74 | 4 | 0.0858 | -1.367 | 4.310 | 0.966 |
| 14-Aug-95 | 78 | 5 | 0.1095 | -1.229 | 4.356 | 0.968 |
| 20-Jul-94 | 83 | 6 | 0.1331 | -1.112 | 4.418 | 0.969 |
| 25-Jul-95 | 89 | 7 | 0.1568 | -1.008 | 4.485 | 0.971 |
| 18-Feb-94 | 90 | 8 | 0.1805 | -0.914 | 4.500 | 0.973 |
| 20-Jul-94 | 93 | 9 | 0.2041 | -0.827 | 4.531 | 0.974 |
| 11-Jul-95 | 95 | 10 | 0.2278 | -0.746 | 4.550 | 0.975 |
| 2-Dec-93 | 95 | 11 | 0.2515 | -0.670 | 4.556 | 0.975 |
| 28-Oct-93 | 97 | 12 | 0.2751 | -0.597 | 4.572 | 0.974 |
| 4-Oct-94 | 99 | 13 | 0.2988 | -0.528 | 4.600 | 0.972 |
| 16-Dec-93 | 103 | 14 | 0.3225 | -0.461 | 4.638 | 0.970 |
| 16-Dec-93 | 104 | 15 | 0.3462 | -0.396 | 4.640 | 0.968 |
| 27-Jun-95 | 105 | 16 | 0.3698 | -0.332 | 4.656 | 0.965 |
| 24-Jan-94 | 114 | 17 | 0.3935 | -0.270 | 4.736 | 0.963 |
| 24-Jan-94 | 118 | 18 | 0.4172 | -0.209 | 4.773 | 0.960 |
| 12-Jun-95 | 122 | 19 | 0.4408 | -0.149 | 4.807 | 0.957 |
| 8-Sep-94 | 126 | 20 | 0.4645 | -0.089 | 4.837 | 0.955 |
| 23-Jun-94 | 148 | 21 | 0.4882 | -0.030 | 4.996 | 0.954 |
| 8-Mar-94 | 166 | 22 | 0.5118 | 0.030 | 5.111 | 0.950 |
| 11-Nov-97 | 174 | 23 | 0.5355 | 0.089 | 5.161 | 0.946 |
| 10-Jan-95 | 185 | 24 | 0.5592 | 0.149 | 5.219 | 0.942 |
| 24-Mar-94 | 195 | 25 | 0.5828 | 0.209 | 5.275 | 0.938 |
| 15-Nov-94 | 200 | 26 | 0.6065 | 0.270 | 5.298 | 0.936 |
| 13-Dec-94 | 201 | 27 | 0.6302 | 0.332 | 5.303 | 0.932 |
| 7-Jun-94 | 207 | 28 | 0.6538 | 0.396 | 5.333 | 0.925 |
| 19-May-94 | 223 | 29 | 0.6775 | 0.461 | 5.405 | 0.917 |
| 7-Apr-94 | 224 | 30 | 0.7012 | 0.528 | 5.411 | 0.909 |
| 23-May-95 | 257 | 31 | 0.7249 | 0.597 | 5.547 | 0.896 |
| 8-Mar-94 | 257 | 32 | 0.7485 | 0.670 | 5.550 | 0.891 |
| 24-Mar-94 | 270 | 33 | 0.7722 | 0.746 | 5.598 | 0.878 |
| 7-Mar-95 | 297 | 34 | 0.7959 | 0.827 | 5.695 | 0.862 |
| 4-May-94 | 311 | 35 | 0.8195 | 0.914 | 5.739 | 0.852 |
| 14-May-98 | 351 | 36 | 0.8432 | 1.008 | 5.862 | 0.838 |
| 9-Feb-95 | 357 | 37 | 0.8669 | 1.112 | 5.878 | 0.854 |
| 25-Apr-95 | 391 | 38 | 0.8905 | 1.229 | 5.968 | 0.864 |
| 16-May-91 | 394 | 39 | 0.9142 | 1.367 | 5.977 | |
| 9-May-95 | 416 | 40 | 0.9379 | 1.537 | 6.032 | |
| 13-Apr-95 | 491 | 41 | 0.9615 | 1.769 | 6.197 | |
| 22-Mar-95 | 1107 | 42 | 0.9852 | 2.176 | 7.009 | |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | **NM303** | | 4,209 | 4210 |
| **LN Analysis** | | **tZn** | | 0.32 | 0.319 |
| **Concentration** | | **Conc. Data, EV=4210 ug/L CV=0.319** | | | |
| **Avg:** | **4,209** | **Data-based LN** | | | |
| **SD:** | **1,344** | u | ln[tZn] | [tZn] | |
| **CV:** | **0.32** | 3 | 9.2 | 10210 | |
| **Min:** | **1,850** | 0 | 8.30 | 4009 | |
| **Max:** | **8,470** | -3 | 7.36 | 1574 | |
| **Median:** | **4,030** | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.962 | 0.962 |
| **u=mLn(Conc.)+b:** | | | | 4239.7 | 4240 |
| update for r2, EV, CV: | **r2=0.962, EV=4240 ug/L CV=0.35; max r2=0.97** | | | 0.350 | 0.35 |
| | r2 u,lnConc: | 0.962 | u | lnConc. | Conc. |
| | slope, m: | 2.943 | 3 | 9.31 | 11091 |
| | intercept, b: | -24.410 | 0 | 8.29 | 4002 |
| | N: | 42 | -3 | 7.28 | 1444 |
| | E[Conc]: | 4239.7 | Parameter Estimates | | |
| | SD[Conc]: | 1483 | from LN regression | | |
| | CV[Conc]: | 0.35 | update graph label | | |

| Date | tZn Concentration ug/L Ranked | N: 42 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.971 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 16-May-91 | 1850 | 1 | 0.0148 | -2.176 | 7.523 | 0.962 |
| 14-May-98 | 1850 | 2 | 0.0385 | -1.769 | 7.523 | 0.957 |
| 23-May-95 | 2100 | 3 | 0.0621 | -1.537 | 7.650 | 0.963 |
| 19-May-94 | 2490 | 4 | 0.0858 | -1.367 | 7.820 | 0.969 |
| 12-Jun-95 | 2520 | 5 | 0.1095 | -1.229 | 7.832 | 0.968 |
| 9-May-95 | 2960 | 6 | 0.1331 | -1.112 | 7.993 | 0.971 |
| 15-Aug-94 | 3240 | 7 | 0.1568 | -1.008 | 8.083 | 0.969 |
| 15-Aug-94 | 3240 | 8 | 0.1805 | -0.914 | 8.083 | 0.969 |
| 7-Jun-94 | 3260 | 9 | 0.2041 | -0.827 | 8.089 | 0.968 |
| 27-Jun-95 | 3320 | 10 | 0.2278 | -0.746 | 8.108 | 0.966 |
| 4-May-94 | 3360 | 11 | 0.2515 | -0.670 | 8.120 | 0.964 |
| 11-Jul-95 | 3510 | 12 | 0.2751 | -0.597 | 8.163 | 0.962 |
| 20-Jul-94 | 3560 | 13 | 0.2988 | -0.528 | 8.178 | 0.961 |
| 20-Jul-94 | 3560 | 14 | 0.3225 | -0.461 | 8.178 | 0.959 |
| 23-Jun-94 | 3590 | 15 | 0.3462 | -0.396 | 8.186 | 0.957 |
| 4-Oct-91 | 3600 | 16 | 0.3698 | -0.332 | 8.189 | 0.953 |
| 24-Mar-94 | 3890 | 17 | 0.3935 | -0.270 | 8.266 | 0.949 |
| 24-Mar-94 | 3890 | 18 | 0.4172 | -0.209 | 8.266 | 0.949 |
| 13-Sep-95 | 3900 | 19 | 0.4408 | -0.149 | 8.269 | 0.947 |
| 8-Mar-94 | 4030 | 20 | 0.4645 | -0.089 | 8.302 | 0.944 |
| 8-Mar-94 | 4030 | 21 | 0.4882 | -0.030 | 8.302 | 0.942 |
| 7-Apr-94 | 4030 | 22 | 0.5118 | 0.030 | 8.302 | 0.939 |
| 25-Jul-95 | 4110 | 23 | 0.5355 | 0.089 | 8.321 | 0.934 |
| 4-Oct-94 | 4330 | 24 | 0.5592 | 0.149 | 8.373 | 0.929 |
| 24-Jan-94 | 4370 | 25 | 0.5828 | 0.209 | 8.383 | 0.928 |
| 24-Jan-94 | 4370 | 26 | 0.6065 | 0.270 | 8.383 | 0.926 |
| 18-Feb-94 | 4450 | 27 | 0.6302 | 0.332 | 8.401 | 0.921 |
| 2-Dec-93 | 4560 | 28 | 0.6538 | 0.396 | 8.425 | 0.916 |
| 22-Mar-95 | 4590 | 29 | 0.6775 | 0.461 | 8.432 | 0.912 |
| 14-Aug-95 | 4660 | 30 | 0.7012 | 0.528 | 8.447 | 0.906 |
| 28-Oct-93 | 4780 | 31 | 0.7249 | 0.597 | 8.472 | 0.898 |
| 9-Feb-95 | 4910 | 32 | 0.7485 | 0.670 | 8.499 | 0.890 |
| 13-Apr-95 | 5130 | 33 | 0.7722 | 0.746 | 8.543 | 0.884 |
| 7-Mar-95 | 5180 | 34 | 0.7959 | 0.827 | 8.553 | 0.892 |
| 16-Dec-93 | 5290 | 35 | 0.8195 | 0.914 | 8.574 | 0.899 |
| 16-Dec-93 | 5290 | 36 | 0.8432 | 1.008 | 8.574 | 0.913 |
| 25-Apr-95 | 5370 | 37 | 0.8669 | 1.112 | 8.589 | 0.915 |
| 8-Sep-94 | 5490 | 38 | 0.8905 | 1.229 | 8.611 | 0.908 |
| 11-Nov-97 | 5510 | 39 | 0.9142 | 1.367 | 8.614 | |
| 10-Jan-95 | 6220 | 40 | 0.9379 | 1.537 | 8.736 | |
| 15-Nov-94 | 7910 | 41 | 0.9615 | 1.769 | 8.976 | |
| 13-Dec-94 | 8470 | 42 | 0.9852 | 2.176 | 9.044 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **NM303** | | | 10 | 10.4 |
| **LN Analysis** | | **tZn** | | | 0.96 | 0.959 |
| **Discharge, Q** | | **Q Data, EV=10.4 cfs CV=0.959** | | | | |
| **Avg:** | **10** | **Q Data-based LN** | | | | |
| **SD:** | **10** | u | lnQ | Q | | |
| **CV:** | **0.96** | 3 | 4.4 | 84 | | |
| **Min:** | **2** | 0 | 2.01 | 7 | | |
| **Max:** | **45** | -3 | -0.41 | 1 | | |
| **Median:** | **6** | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.938 | 0.938 |
| | | | | | 10.4 | 10.4 |
| **u=mLn(Q)+b:** | | | | | 0.98 | 0.98 |

update for r2, EV, CV: **r2=0.938, EV=10.4 cfs CV=0.98; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.938 | u | lnQ | Q |
| slope, m: | 1.219 | 3 | 4.47 | 87 |
| intercept, b: | -2.445 | 0 | 2.01 | 7 |
| N: | 42 | -3 | -0.46 | 1 |
| E[Q]: | 10.4 | Parameter Estimates | | |
| SD[Q]: | 10 | from LN regression | | |
| CV[Q]: | 0.98 | update graph label | | |

N: 42

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.983 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 4-Oct-91 | 2.24 | 1 | 0.0148 | -2.176 | 0.806 | 0.938 |
| 13-Sep-95 | 2.66 | 2 | 0.0385 | -1.769 | 0.978 | 0.945 |
| 15-Aug-94 | 2.68 | 3 | 0.0621 | -1.537 | 0.986 | 0.951 |
| 14-Aug-95 | 3.11 | 4 | 0.0858 | -1.367 | 1.135 | 0.952 |
| 16-Dec-93 | 3.63 | 5 | 0.1095 | -1.229 | 1.289 | 0.955 |
| 16-Dec-93 | 3.64 | 6 | 0.1331 | -1.112 | 1.292 | 0.962 |
| 28-Oct-93 | 3.76 | 7 | 0.1568 | -1.008 | 1.324 | 0.967 |
| 18-Feb-94 | 3.76 | 8 | 0.1805 | -0.914 | 1.324 | 0.971 |
| 2-Dec-93 | 3.88 | 9 | 0.2041 | -0.827 | 1.356 | 0.974 |
| 25-Jul-95 | 4.01 | 10 | 0.2278 | -0.746 | 1.389 | 0.977 |
| 15-Aug-94 | 4.27 | 11 | 0.2515 | -0.670 | 1.452 | 0.979 |
| 8-Sep-94 | 4.27 | 12 | 0.2751 | -0.597 | 1.452 | 0.981 |
| 4-Oct-94 | 4.27 | 13 | 0.2988 | -0.528 | 1.452 | 0.983 |
| 20-Jul-94 | 4.33 | 14 | 0.3225 | -0.461 | 1.466 | 0.983 |
| 13-Dec-94 | 4.41 | 15 | 0.3462 | -0.396 | 1.484 | 0.983 |
| 15-Nov-94 | 4.7 | 16 | 0.3698 | -0.332 | 1.548 | 0.982 |
| 24-Jan-94 | 4.85 | 17 | 0.3935 | -0.270 | 1.579 | 0.981 |
| 20-Jul-94 | 4.85 | 18 | 0.4172 | -0.209 | 1.579 | 0.980 |
| 11-Jul-95 | 5.01 | 19 | 0.4408 | -0.149 | 1.611 | 0.978 |
| 24-Jan-94 | 5.03 | 20 | 0.4645 | -0.089 | 1.615 | 0.976 |
| 10-Jan-95 | 5.52 | 21 | 0.4882 | -0.030 | 1.708 | 0.976 |
| 11-Nov-97 | 5.88 | 22 | 0.5118 | 0.030 | 1.772 | 0.975 |
| 27-Jun-95 | 5.89 | 23 | 0.5355 | 0.089 | 1.773 | 0.974 |
| 8-Mar-94 | 7.65 | 24 | 0.5592 | 0.149 | 2.035 | 0.979 |
| 23-Jun-94 | 7.65 | 25 | 0.5828 | 0.209 | 2.035 | 0.977 |
| 12-Jun-95 | 9.03 | 26 | 0.6065 | 0.270 | 2.201 | 0.975 |
| 24-Mar-94 | 9.34 | 27 | 0.6302 | 0.332 | 2.234 | 0.973 |
| 7-Apr-94 | 10.32 | 28 | 0.6538 | 0.396 | 2.334 | 0.969 |
| 7-Mar-95 | 10.67 | 29 | 0.6775 | 0.461 | 2.367 | 0.966 |
| 7-Jun-94 | 11.81 | 30 | 0.7012 | 0.528 | 2.469 | 0.962 |
| 8-Mar-94 | 11.87 | 31 | 0.7249 | 0.597 | 2.474 | 0.958 |
| 24-Mar-94 | 12.9 | 32 | 0.7485 | 0.670 | 2.557 | 0.952 |
| 9-Feb-95 | 13.52 | 33 | 0.7722 | 0.746 | 2.604 | 0.944 |
| 25-Apr-95 | 13.52 | 34 | 0.7959 | 0.827 | 2.604 | 0.933 |
| 19-May-94 | 16.61 | 35 | 0.8195 | 0.914 | 2.810 | 0.923 |
| 4-May-94 | 17.19 | 36 | 0.8432 | 1.008 | 2.844 | 0.905 |
| 13-Apr-95 | 17.8 | 37 | 0.8669 | 1.112 | 2.879 | 0.876 |
| 23-May-95 | 22.71 | 38 | 0.8905 | 1.229 | 3.123 | 0.873 |
| 9-May-95 | 26.15 | 39 | 0.9142 | 1.367 | 3.264 | |
| 14-May-98 | 35.3 | 40 | 0.9379 | 1.537 | 3.564 | |
| 16-May-91 | 39.6 | 41 | 0.9615 | 1.769 | 3.679 | |
| 22-Mar-95 | 44.83 | 42 | 0.9852 | 2.176 | 3.803 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| -4.00 | 0.00003 | 10000 | 1000 |
| -3.00 | 0.00135 | 10000 | 1000 |
| -2.00 | 0.02275 | 10000 | 1000 |
| -1.00 | 0.15866 | 10000 | 1000 |
| 0.00 | 0.50000 | 10000 | 1000 |
| 1.00 | 0.84134 | 10000 | 1000 |
| 2.00 | 0.97725 | 10000 | 1000 |
| 3.00 | 0.99865 | 10000 | 1000 |
| 4.00 | 0.99997 | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM305 | **Date:** | 29-May-00 |
| **Chemical:** | dCd | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,293 | 20 | 21 | 2 | 0.00 | 0.00 | 0.00 |
| **SD:** | 772 | 23 | 8 | 1 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.19 | 0.37 | 0.90 | | | |
| **Min:** | 33,373 | 3 | 6 | 0.3 | -0.70 | -1.93 | -0.93 |
| **Max:** | 36,404 | 123 | 48 | 10 | 4.41 | 3.40 | 5.83 |
| **Median:** | 35,351 | 9 | 21 | 1 | -0.46 | 0.03 | -0.40 |

| dCd | NM305 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.36)** | | update r2 | | | r2: | 0.049 | 0.047 |
| r2 Q,[COC]: | 0.36 | [dCd] | Q | | m: | 0.0067 | 0.00027 |
| slope, m: | -0.2 | 25 | 3.2 | | b: | -216 | -6.94 |
| intercept, b: | 25.2 | 21 | 19.7 | | | | |
| N: 96 | | 0 | 123 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.50)** | | update r2 | | | | | |
| r2 lnQ,ln[COC]: | 0.50 | ln[dCd] | ln Q | [dCd] | Q | | |
| slope, m: | -0.32 | 3.39 | 1.16 | 30 | 3 | | |
| intercept, b: | 3.75 | 2.81 | 2.98 | 17 | 20 | | |
| N: 96 | | 2.23 | 4.81 | 9 | 123 | | |

N= 96

| | Sampling Date | Q Discharge cfs | dCd Concentration ug/L | dCd Load lbs/day | Ln Q | Ln dCd Conc. | Ln dCd Load | dCd NM305 Standardized Values = (x - Avg)/SD Q | Conc | Load | for graph 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | | | | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | | |
| MFG | 15-May-91 | 51.3 | 8.9 | 2.5 | 3.94 | 2.19 | 0.90 | 1.35 | -1.56 | 0.54 | |
| MFG | 16-May-91 | 50.5 | 7.4 | 2.0 | 3.92 | 2.00 | 0.70 | 1.31 | -1.75 | 0.24 | |
| MFG | 3-Oct-91 | 3.69 | 27 | 0.5 | 1.31 | 3.30 | -0.62 | -0.68 | 0.74 | -0.75 | |
| MFG | 4-Oct-91 | 4.02 | 21.8 | 0.5 | 1.39 | 3.08 | -0.75 | -0.67 | 0.08 | -0.79 | |
| IDEQ | 28-Oct-93 | 4.7 | 26 | 0.7 | 1.55 | 3.26 | -0.42 | -0.64 | 0.61 | -0.67 | |
| IDEQ | 2-Dec-93 | 4.7 | 22 | 0.6 | 1.55 | 3.09 | -0.59 | -0.64 | 0.10 | -0.74 | |
| IDEQ | 16-Dec-93 | 4.8 | 29 | 0.7 | 1.57 | 3.37 | -0.29 | -0.64 | 0.99 | -0.61 | |
| IDEQ | 24-Jan-94 | 5.87 | 20 | 0.6 | 1.77 | 3.00 | -0.46 | -0.59 | -0.15 | -0.69 | |
| IDEQ | 18-Feb-94 | 4.11 | 26 | 0.6 | 1.41 | 3.26 | -0.55 | -0.66 | 0.61 | -0.73 | |
| IDEQ | 18-Feb-94 | 4.03 | 26 | 0.6 | 1.39 | 3.26 | -0.57 | -0.67 | 0.61 | -0.73 | |
| IDEQ | 8-Mar-94 | 10.44 | 26 | 1.5 | 2.35 | 3.26 | 0.38 | -0.39 | 0.61 | -0.13 | |
| IDEQ | 8-Mar-94 | 12.76 | 26 | 1.8 | 2.55 | 3.26 | 0.58 | -0.30 | 0.61 | 0.09 | |
| IDEQ | 23-Mar-94 | 12.97 | 22 | 1.5 | 2.56 | 3.09 | 0.43 | -0.29 | 0.10 | -0.08 | |
| IDEQ | 7-Apr-94 | 18.12 | 23 | 2.2 | 2.90 | 3.14 | 0.81 | -0.07 | 0.23 | 0.40 | |
| IDEQ | 19-Apr-94 | 86.89 | 22 | 10.3 | 4.46 | 3.09 | 2.33 | 2.87 | 0.10 | 5.83 | |
| IDEQ | 20-May-94 | 15.31 | 19 | 1.6 | 2.73 | 2.94 | 0.45 | -0.19 | -0.28 | -0.06 | |
| IDEQ | 7-Jun-94 | 10.72 | 26 | 1.5 | 2.37 | 3.26 | 0.41 | -0.38 | 0.61 | -0.10 | |
| IDEQ | 23-Jun-94 | 7.39 | 24 | 1.0 | 2.00 | 3.18 | -0.05 | -0.52 | 0.36 | -0.47 | |
| IDEQ | 20-Jul-94 | 5.16 | 23 | 0.6 | 1.64 | 3.14 | -0.45 | -0.62 | 0.23 | -0.68 | |
| IDEQ | 20-Jul-94 | 4.74 | 23 | 0.6 | 1.56 | 3.14 | -0.53 | -0.64 | 0.23 | -0.72 | |
| IDEQ | 15-Aug-94 | 4.32 | 21 | 0.5 | 1.46 | 3.04 | -0.72 | -0.66 | -0.02 | -0.78 | |
| IDEQ | 15-Aug-94 | 3.69 | 21 | 0.4 | 1.31 | 3.04 | -0.87 | -0.68 | -0.02 | -0.83 | |
| IDEQ | 8-Sep-94 | 3.91 | 32 | 0.7 | 1.36 | 3.47 | -0.40 | -0.67 | 1.37 | -0.66 | |
| IDEQ | 28-Oct-94 | 3.91 | 27 | 0.6 | 1.36 | 3.30 | -0.57 | -0.67 | 0.74 | -0.73 | |
| IDEQ | 15-Nov-94 | 4.32 | 48 | 1.1 | 1.46 | 3.87 | 0.11 | -0.66 | 3.40 | -0.36 | |
| IDEQ | 13-Dec-94 | 4.22 | 44 | 1.0 | 1.44 | 3.78 | 0.00 | -0.66 | 2.89 | -0.44 | |
| IDEQ | 10-Jan-95 | 8 | 35 | 1.5 | 2.08 | 3.56 | 0.41 | -0.50 | 1.75 | -0.10 | |
| IDEQ | 9-Feb-95 | 17.61 | 27 | 2.6 | 2.87 | 3.30 | 0.94 | -0.09 | 0.74 | 0.61 | |
| IDEQ | 7-Mar-95 | 14.49 | 30 | 2.3 | 2.67 | 3.40 | 0.85 | -0.22 | 1.12 | 0.47 | |
| IDEQ | 13-Apr-95 | 22.11 | 26 | 3.1 | 3.10 | 3.26 | 1.13 | 0.10 | 0.61 | 0.97 | |
| IDEQ | 25-Apr-95 | 15.75 | 25 | 2.1 | 2.76 | 3.22 | 0.75 | -0.17 | 0.48 | 0.32 | |
| IDEQ | 9-May-95 | 30.45 | 18 | 2.9 | 3.42 | 2.89 | 1.08 | 0.46 | -0.40 | 0.88 | |
| IDEQ | 23-May-95 | 22.11 | 16 | 1.9 | 3.10 | 2.77 | 0.64 | 0.10 | -0.66 | 0.17 | |
| IDEQ | 27-Jun-95 | 7.39 | 22 | 0.9 | 2.00 | 3.09 | -0.13 | -0.52 | 0.10 | -0.52 | |
| IDEQ | 11-Jul-95 | 5.71 | 20 | 0.6 | 1.74 | 3.00 | -0.49 | -0.60 | -0.15 | -0.70 | |
| IDEQ | 26-Jul-95 | 4.54 | 23 | 0.6 | 1.51 | 3.14 | -0.58 | -0.65 | 0.23 | -0.73 | |
| IDEQ | 14-Aug-95 | 3.82 | 27 | 0.6 | 1.34 | 3.30 | -0.59 | -0.68 | 0.74 | -0.74 | |
| IDEQ | 18-Oct-95 | 7.2 | 38 | 1.5 | 1.97 | 3.64 | 0.39 | -0.53 | 2.13 | -0.12 | |
| IDEQ | 21-Nov-95 | 13 | 25 | 1.7 | 2.56 | 3.22 | 0.56 | -0.29 | 0.48 | 0.07 | |
| IDEQ | 17-Jan-96 | 47.8 | 19 | 4.9 | 3.87 | 2.94 | 1.59 | 1.20 | -0.28 | 2.18 | |
| IDEQ | 29-Feb-96 | 45 | 17 | 4.1 | 3.81 | 2.83 | 1.41 | 1.08 | -0.53 | 1.66 | |
| IDEQ | 28-Mar-96 | 45 | 17 | 4.1 | 3.81 | 2.83 | 1.41 | 1.08 | -0.53 | 1.66 | |
| IDEQ | 17-Apr-96 | 29 | 20 | 3.1 | 3.37 | 3.00 | 1.14 | 0.40 | -0.15 | 0.99 | |
| IDEQ | 8-May-96 | 19.1 | 16 | 1.6 | 2.95 | 2.77 | 0.50 | -0.03 | -0.66 | 0.00 | |
| IDEQ | 19-Jun-96 | 15.4 | 19 | 1.6 | 2.73 | 2.94 | 0.45 | -0.18 | -0.28 | -0.05 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 24-Jul-96 | 7.19 | 20 | 0.8 | 1.97 | 3.00 | -0.26 | -0.53 | -0.15 | -0.59 |
| IDEQ | 21-Aug-96 | 5.97 | 22 | 0.7 | 1.79 | 3.09 | -0.35 | -0.59 | 0.10 | -0.64 |
| IDEQ | 26-Sep-96 | 5.15 | 20 | 0.6 | 1.64 | 3.00 | -0.59 | -0.62 | -0.15 | -0.74 |
| IDEQ | 29-Oct-96 | 6.22 | 26 | 0.9 | 1.83 | 3.26 | -0.14 | -0.57 | 0.61 | -0.53 |
| IDEQ | 27-Nov-96 | 5.97 | 30 | 1.0 | 1.79 | 3.40 | -0.04 | -0.59 | 1.12 | -0.46 |
| IDEQ | 13-Dec-96 | 8.83 | 28 | 1.3 | 2.18 | 3.33 | 0.29 | -0.46 | 0.86 | -0.22 |
| IDEQ | 30-Jan-97 | 13.5 | 20 | 1.5 | 2.60 | 3.00 | 0.37 | -0.26 | -0.15 | -0.13 |
| IDEQ | 19-Feb-97 | 20.6 | 16 | 1.8 | 3.03 | 2.77 | 0.57 | 0.04 | -0.66 | 0.08 |
| IDEQ | 26-Mar-97 | 57 | 13 | 4.0 | 4.04 | 2.56 | 1.38 | 1.59 | -1.04 | 1.58 |
| IDEQ | 16-Apr-97 | 30.7 | 12 | 2.0 | 3.42 | 2.48 | 0.68 | 0.47 | -1.17 | 0.22 |
| IDEQ | 24-Jun-97 | 16.7 | 8.8 | 0.8 | 2.82 | 2.17 | -0.23 | -0.13 | -1.57 | -0.58 |
| IDEQ | 23-Jul-97 | 10.2 | 14 | 0.8 | 2.32 | 2.64 | -0.26 | -0.41 | -0.91 | -0.59 |
| IDEQ | 14-Aug-97 | 7.65 | 17 | 0.7 | 2.03 | 2.83 | -0.36 | -0.51 | -0.53 | -0.64 |
| IDEQ | 4-Sep-97 | 6.76 | 18 | 0.7 | 1.91 | 2.89 | -0.42 | -0.55 | -0.40 | -0.67 |
| IDEQ | 16-Oct-97 | 6.35 | 22 | 0.8 | 1.85 | 3.09 | -0.29 | -0.57 | 0.10 | -0.61 |
| URS | 11-Nov-97 | 5.38 | 29.5 | 0.9 | 1.68 | 3.38 | -0.16 | -0.61 | 1.05 | -0.54 |
| IDEQ | 26-Nov-97 | 7.5 | 21 | 0.8 | 2.01 | 3.04 | -0.17 | -0.52 | -0.02 | -0.54 |
| IDEQ | 17-Dec-97 | 9.2 | 22 | 1.1 | 2.22 | 3.09 | 0.09 | -0.45 | 0.10 | -0.38 |
| IDEQ | 21-Jan-98 | 6.9 | 23 | 0.9 | 1.93 | 3.14 | -0.16 | -0.55 | 0.23 | -0.54 |
| IDEQ | 25-Feb-98 | 9.58 | 16 | 0.8 | 2.26 | 2.77 | -0.19 | -0.43 | -0.66 | -0.56 |
| IDEQ | 20-Mar-98 | 13.5 | 14 | 1.0 | 2.60 | 2.64 | 0.02 | -0.26 | -0.91 | -0.43 |
| IDEQ | 23-Apr-98 | 27.4 | 16 | 2.4 | 3.31 | 2.77 | 0.86 | 0.33 | -0.66 | 0.48 |
| IDEQ | 7-May-98 | 36.2 | 8.3 | 1.6 | 3.59 | 2.12 | 0.48 | 0.70 | -1.64 | -0.02 |
| URS | 15-May-98 | 43.8 | 11.2 | 2.6 | 3.78 | 2.42 | 0.97 | 1.03 | -1.27 | 0.67 |
| IDEQ | 28-May-98 | 45.1 | 10 | 2.4 | 3.81 | 2.30 | 0.89 | 1.08 | -1.42 | 0.52 |
| IDEQ | 26-Jun-98 | 10.8 | 16 | 0.9 | 2.38 | 2.77 | -0.07 | -0.38 | -0.66 | -0.49 |
| IDEQ | 28-Jul-98 | 6.9 | 20 | 0.7 | 1.93 | 3.00 | -0.30 | -0.55 | -0.15 | -0.61 |
| IDEQ | 26-Aug-98 | 5.84 | 24 | 0.8 | 1.76 | 3.18 | -0.28 | -0.59 | 0.36 | -0.60 |
| IDEQ | 24-Sep-98 | 5.49 | 22 | 0.6 | 1.70 | 3.09 | -0.43 | -0.61 | 0.10 | -0.67 |
| IDEQ | 1-Oct-98 | 5.37 | 25 | 0.7 | 1.68 | 3.22 | -0.33 | -0.61 | 0.48 | -0.63 |
| IDEQ | 8-Oct-98 | 5.37 | 28 | 0.8 | 1.68 | 3.33 | -0.21 | -0.61 | 0.86 | -0.57 |
| IDEQ | 26-Oct-98 | 36.2 | 21 | 4.1 | 3.59 | 3.04 | 1.41 | 0.70 | -0.02 | 1.65 |
| USGS | 27-Oct-98 | 3.2 | 28 | 0.5 | 1.16 | 3.33 | -0.73 | -0.70 | 0.86 | -0.79 |
| USGS | 19-Nov-98 | 4 | 39 | 0.8 | 1.39 | 3.66 | -0.18 | -0.67 | 2.26 | -0.55 |
| USGS | 10-Dec-98 | 6 | 31 | 1.0 | 1.79 | 3.43 | 0.00 | -0.58 | 1.24 | -0.44 |
| IDEQ | 31-Dec-98 | 7.65 | 32 | 1.3 | 2.03 | 3.47 | 0.28 | -0.51 | 1.37 | -0.22 |
| IDEQ | 15-Jan-99 | 9.97 | 25 | 1.3 | 2.30 | 3.22 | 0.29 | -0.41 | 0.48 | -0.21 |
| USGS | 21-Jan-99 | 13 | 22 | 1.5 | 2.56 | 3.09 | 0.43 | -0.29 | 0.10 | -0.07 |
| IDEQ | 23-Feb-99 | 7.05 | 21 | 0.8 | 1.95 | 3.04 | -0.23 | -0.54 | -0.02 | -0.58 |
| IDEQ | 8-Mar-99 | 25 | 18 | 2.4 | 3.22 | 2.89 | 0.88 | 0.23 | -0.40 | 0.52 |
| USGS | 22-Mar-99 | 78 | 12 | -5.0 | 4.36 | 2.48 | 1.62 | 2.49 | -1.17 | 2.28 |
| USGS | 19-Apr-99 | 80 | 14 | 6.0 | 4.38 | 2.64 | 1.80 | 2.57 | -0.91 | 2.95 |
| USGS | 5-May-99 | 34 | 16 | 2.9 | 3.53 | 2.77 | 1.07 | 0.61 | -0.66 | 0.86 |
| USGS | 23-May-99 | 61 | 8.3 | 2.7 | 4.11 | 2.12 | 1.00 | 1.76 | -1.64 | 0.72 |
| USGS | 26-May-99 | 123 | 6.5 | 4.3 | 4.81 | 1.87 | 1.46 | 4.41 | -1.86 | 1.79 |
| USGS | 27-May-99 | 110 | 6.4 | 3.8 | 4.70 | 1.86 | 1.33 | 3.85 | -1.88 | 1.44 |
| USGS | 31-May-99 | 55 | 6.4 | 1.9 | 4.01 | 1.86 | 0.64 | 1.51 | -1.88 | 0.16 |
| USGS | 15-Jun-99 | 49 | 6 | 1.6 | 3.89 | 1.79 | 0.46 | 1.25 | -1.93 | -0.05 |
| USGS | 7-Jul-99 | 5 | 10 | 0.3 | 1.61 | 2.30 | -1.31 | -0.63 | -1.42 | -0.93 |
| USGS | 4-Aug-99 | 5 | 17 | 0.5 | 1.61 | 2.83 | -0.78 | -0.63 | -0.53 | -0.80 |
| USGS | 1-Sep-99 | 5 | 21 | 0.6 | 1.61 | 3.04 | -0.57 | -0.63 | -0.02 | -0.73 |

**dCd**

**Concentration over time analysis**

| | | r2 | Slope, m |
|---|---|---|---|
| | **dCd NM305** | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | **0.095** | **-0.00017** |
| | **Time** | **Ln[COC]** | **[COC]** |
| first: | 15-May-91 | 3.30 | 27 |
| mid: | 12-Oct-96 | 2.96 | 19 |
| last: | 1-Sep-99 | 2.78 | 16 |
| | **LnConc.=mTime+b >'96 r2, m:** | **0.050** | **-0.00036** |
| | 27-Nov-96 | 3.02 | 21 |
| | 1-Sep-99 | 2.66 | 14 |

**Load over time analysis**

| | | | |
|---|---|---|---|
| | **dCd NM305** | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | **0.011** | **0.00010** |
| | **Time** | **LnLoad** | **Load** |
| first: | 15-May-91 | 0.03 | 1.0 |
| mid: | 12-Oct-96 | 0.22 | 1.3 |
| last: | 1-Sep-99 | 0.32 | 1.4 |
| | **LnLoad=mTime+b >'96 r2, m:** | **0.013** | **0.00028** |
| | 27-Nov-96 | 0.09 | 1.1 |
| | 1-Sep-99 | 0.37 | 1.4 |

| | | | | | |
|---|---|---|---|---|---|
| max r2: | 0.949 | | max r2: | 0.723 | |
| **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.095 | -0.00017 | 8.99 | 0.011 | 0.00010 | -3.17 |
| 0.141 | -0.00021 | 10.43 | 0.018 | 0.00013 | -4.29 |
| 0.220 | -0.00027 | 12.38 | 0.025 | 0.00016 | -5.32 |
| 0.218 | -0.00027 | 12.64 | 0.017 | 0.00013 | -4.55 |
| 0.229 | -0.00029 | 13.27 | 0.010 | 0.00010 | -3.44 |
| 0.226 | -0.00029 | 13.31 | 0.007 | 0.00009 | -2.93 |
| 0.228 | -0.00030 | 13.51 | 0.004 | 0.00007 | -2.23 |
| 0.221 | -0.00030 | 13.45 | 0.003 | 0.00006 | -1.78 |
| 0.226 | -0.00030 | 13.75 | 0.001 | 0.00004 | -1.14 |
| 0.223 | -0.00030 | 13.78 | 0.000 | 0.00002 | -0.36 |
| 0.219 | -0.00031 | 13.82 | 0.000 | -0.00001 | 0.51 |
| 0.215 | -0.00031 | 13.86 | 0.000 | 0.00000 | 0.40 |
| 0.210 | -0.00031 | 13.90 | 0.000 | 0.00001 | 0.06 |
| 0.212 | -0.00031 | 14.13 | 0.000 | 0.00001 | -0.13 |
| 0.212 | -0.00032 | 14.33 | 0.001 | 0.00003 | -0.80 |
| 0.215 | -0.00033 | 14.59 | 0.008 | 0.00010 | -3.44 |
| 0.223 | -0.00034 | 15.04 | 0.010 | 0.00011 | -3.85 |
| 0.219 | -0.00034 | 15.11 | 0.011 | 0.00013 | -4.24 |
| 0.217 | -0.00035 | 15.29 | 0.010 | 0.00012 | -4.03 |
| 0.218 | -0.00035 | 15.53 | 0.007 | 0.00010 | -3.24 |
| 0.218 | -0.00036 | 15.80 | 0.003 | 0.00007 | -2.24 |
| 0.223 | -0.00037 | 16.22 | 0.001 | 0.00003 | -0.86 |
| 0.228 | -0.00039 | 16.68 | 0.000 | -0.00002 | 0.95 |
| 0.215 | -0.00038 | 16.47 | 0.002 | -0.00005 | 2.13 |
| 0.208 | -0.00038 | 16.50 | 0.005 | -0.00009 | 3.68 |
| 0.181 | -0.00035 | 15.49 | 0.007 | -0.00011 | 4.18 |
| 0.156 | -0.00033 | 14.53 | 0.009 | -0.00013 | 4.94 |
| 0.137 | -0.00031 | 13.88 | 0.009 | -0.00013 | 4.99 |
| 0.127 | -0.00030 | 13.67 | 0.005 | -0.00010 | 3.99 |
| 0.113 | -0.00029 | 13.20 | 0.003 | -0.00008 | 3.05 |
| 0.104 | -0.00028 | 12.96 | 0.000 | -0.00003 | 1.43 |
| 0.096 | -0.00028 | 12.77 | 0.000 | 0.00000 | 0.45 |
| 0.101 | -0.00029 | 13.32 | 0.001 | 0.00005 | -1.45 |
| 0.112 | -0.00032 | 14.24 | 0.002 | 0.00008 | -2.52 |
| 0.109 | -0.00032 | 14.41 | 0.001 | 0.00005 | -1.70 |
| 0.110 | -0.00033 | 14.85 | 0.000 | 0.00000 | 0.25 |
| 0.105 | -0.00034 | 14.94 | 0.002 | -0.00007 | 2.77 |
| 0.092 | -0.00033 | 14.51 | 0.008 | -0.00015 | 5.77 |
| 0.067 | -0.00028 | 12.86 | 0.008 | -0.00016 | 5.89 |
| 0.057 | -0.00027 | 12.35 | 0.006 | -0.00014 | 5.43 |
| 0.057 | -0.00027 | 12.69 | 0.000 | -0.00003 | 1.33 |
| 0.061 | -0.00030 | 13.42 | 0.002 | 0.00008 | -2.68 |
| 0.066 | -0.00032 | 14.23 | 0.012 | 0.00021 | -7.29 |
| 0.064 | -0.00033 | 14.50 | 0.029 | 0.00033 | -11.55 |
| 0.072 | -0.00036 | 15.76 | 0.037 | 0.00039 | -13.78 |

| | | | | | |
|---|---|---|---|---|---|
| 0.073 | -0.00038 | 16.36 | 0.047 | 0.00045 | -16.07 |
| 0.071 | -0.00039 | 16.76 | 0.039 | 0.00043 | -15.31 |
| 0.065 | -0.00039 | 16.69 | 0.030 | 0.00039 | -13.89 |
| 0.063 | -0.00040 | 17.04 | 0.018 | 0.00031 | -10.87 |
| 0.050 | -0.00036 | 15.91 | 0.013 | 0.00028 | -9.79 |
| 0.033 | -0.00030 | 13.66 | 0.011 | 0.00026 | -9.06 |
| 0.019 | -0.00024 | 11.32 | 0.012 | 0.00029 | -10.24 |
| 0.015 | -0.00022 | 10.77 | 0.015 | 0.00034 | -12.12 |
| 0.017 | -0.00025 | 11.72 | 0.023 | 0.00045 | -15.85 |
| 0.026 | -0.00032 | 14.42 | 0.062 | 0.00074 | -26.58 |
| 0.042 | -0.00043 | 18.43 | 0.091 | 0.00094 | -33.83 |
| 0.082 | -0.00062 | 25.29 | 0.082 | 0.00094 | -33.66 |
| 0.103 | -0.00073 | 29.20 | 0.072 | 0.00092 | -32.95 |
| 0.113 | -0.00081 | 31.96 | 0.058 | 0.00087 | -30.98 |
| 0.121 | -0.00088 | 34.61 | 0.043 | 0.00077 | -27.63 |
| 0.113 | -0.00090 | 35.15 | 0.032 | 0.00070 | -24.84 |
| 0.087 | -0.00081 | 32.14 | 0.024 | 0.00064 | -22.70 |
| 0.080 | -0.00082 | 32.53 | 0.016 | 0.00056 | -19.76 |
| 0.069 | -0.00081 | 32.12 | 0.014 | 0.00055 | -19.40 |
| 0.056 | -0.00077 | 30.54 | 0.008 | 0.00043 | -15.06 |
| 0.062 | -0.00086 | 33.78 | 0.003 | 0.00026 | -9.08 |
| 0.078 | -0.00102 | 39.70 | 0.001 | 0.00015 | -4.99 |
| 0.087 | -0.00114 | 43.89 | 0.005 | 0.00040 | -14.16 |
| 0.164 | -0.00161 | 61.08 | 0.008 | 0.00053 | -18.76 |
| 0.239 | -0.00206 | 77.48 | 0.024 | 0.00098 | -35.27 |
| 0.374 | -0.00274 | 101.96 | 0.051 | 0.00154 | -55.42 |
| 0.444 | -0.00322 | 119.25 | 0.044 | 0.00153 | -55.24 |
| 0.477 | -0.00357 | 132.03 | 0.029 | 0.00132 | -47.61 |
| 0.480 | -0.00378 | 139.79 | 0.016 | 0.00105 | -37.64 |
| 0.489 | -0.00402 | 148.28 | 0.005 | 0.00059 | -21.01 |
| 0.482 | -0.00419 | 154.77 | 0.000 | 0.00007 | -1.97 |
| 0.458 | -0.00430 | 158.59 | 0.003 | -0.00055 | 20.41 |
| 0.471 | -0.00467 | 172.07 | 0.002 | 0.00042 | -14.81 |
| 0.441 | -0.00484 | 178.31 | 0.011 | -0.00107 | 39.19 |
| 0.354 | -0.00439 | 162.03 | 0.041 | -0.00230 | 83.82 |
| 0.272 | -0.00398 | 147.10 | 0.089 | -0.00369 | 134.50 |
| 0.170 | -0.00316 | 117.16 | 0.135 | -0.00503 | 183.03 |
| 0.087 | -0.00234 | 87.51 | 0.202 | -0.00689 | 250.51 |
| 0.019 | -0.00118 | 45.39 | 0.301 | -0.00979 | 355.83 |
| 0.003 | 0.00051 | -16.19 | 0.597 | -0.01518 | 551.87 |
| 0.083 | 0.00282 | -99.95 | 0.723 | -0.01924 | 699.43 |
| 0.174 | 0.00480 | -172.07 | 0.721 | -0.02157 | 784.16 |
| 0.380 | 0.00775 | -279.38 | 0.660 | -0.02102 | 764.06 |
| 0.874 | 0.01203 | -434.91 | 0.645 | -0.02218 | 806.16 |
| 0.942 | 0.01326 | -479.79 | 0.614 | -0.02213 | 804.38 |
| 0.945 | 0.01378 | -498.45 | 0.546 | -0.01927 | 700.44 |
| 0.949 | 0.01462 | -529.15 | 0.404 | -0.01412 | 513.03 |

update for EV, CV:

**dCd**
**LN Analysis**
**Load**

**NM305**
**dCd**
**Load Data, EV=2 lbs/day CV=.90**
**Load Data-based LN**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **2** | | | |
| **SD:** | **1** | u | ln dCd Load | dCd Load |
| **CV:** | **0.90** | 3 | 2.5 | 12 |
| **Min:** | **0.3** | 0 | 0.20 | 1.2 |
| **Max:** | **10** | -3 | -2.10 | 0.1 |
| **Median:** | **1** | | | |

**u=mLn(Load)+ b:**

update for r2, EV, CV: **$r^2$=0.964, EV=1.6 lbs/day CV=.86; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.964 | u | lnLoad | Load |
| slope, m: | 1.344 | 3 | 2.45 | 12 |
| intercept, b: | -0.293 | 0 | 0.22 | 1.2 |
| N: | 96 | -3 | -2.01 | 0.1 |
| E[Load]: | 1.6 | Parameter Estimates | | |
| SD[Load]: | 1 | from LN regression | | |
| CV[Load]: | 0.86 | update graph label | | |

N: 96

max r2 0.989

| Date | dCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 7-Jul-99 | 0.269 | 1 | 0.0065 | -2.484 | -1.313 | 0.964 |
| 15-Aug-94 | 0.4 | 2 | 0.0169 | -2.123 | -0.875 | 0.963 |
| 4-Aug-99 | 0.4573 | 3 | 0.0273 | -1.922 | -0.782 | 0.967 |
| 4-Oct-91 | 0.5 | 4 | 0.0377 | -1.778 | -0.752 | 0.970 |
| 27-Oct-98 | 0.5 | 5 | 0.0481 | -1.664 | -0.730 | 0.973 |
| 15-Aug-94 | 0.5 | 6 | 0.0584 | -1.568 | -0.717 | 0.975 |
| 3-Oct-91 | 0.5 | 7 | 0.0688 | -1.485 | -0.624 | 0.976 |
| 26-Sep-96 | 0.6 | 8 | 0.0792 | -1.410 | -0.590 | 0.979 |
| 14-Aug-95 | 0.6 | 9 | 0.0896 | -1.343 | -0.589 | 0.981 |
| 2-Dec-93 | 0.6 | 10 | 0.1000 | -1.282 | -0.586 | 0.983 |
| 26-Jul-95 | 0.6 | 11 | 0.1104 | -1.224 | -0.577 | 0.984 |
| 18-Feb-94 | 0.6 | 12 | 0.1208 | -1.171 | -0.573 | 0.985 |
| 1-Sep-99 | 0.5649 | 13 | 0.1312 | -1.121 | -0.571 | 0.986 |
| 28-Oct-94 | 0.6 | 14 | 0.1416 | -1.073 | -0.566 | 0.987 |
| 18-Feb-94 | 0.6 | 15 | 0.1519 | -1.028 | -0.554 | 0.987 |
| 20-Jul-94 | 0.6 | 16 | 0.1623 | -0.985 | -0.534 | 0.987 |
| 11-Jul-95 | 0.6 | 17 | 0.1727 | -0.943 | -0.487 | 0.988 |
| 24-Jan-94 | 0.6 | 18 | 0.1831 | -0.904 | -0.459 | 0.988 |
| 20-Jul-94 | 0.6 | 19 | 0.1935 | -0.865 | -0.449 | 0.988 |
| 24-Sep-98 | 0.6 | 20 | 0.2039 | -0.828 | -0.431 | 0.989 |
| 4-Sep-97 | 0.7 | 21 | 0.2143 | -0.792 | -0.424 | 0.989 |
| 28-Oct-93 | 0.7 | 22 | 0.2247 | -0.756 | -0.419 | 0.989 |
| 8-Sep-94 | 0.7 | 23 | 0.2351 | -0.722 | -0.396 | 0.989 |
| 14-Aug-97 | 0.7 | 24 | 0.2455 | -0.689 | -0.357 | 0.989 |
| 21-Aug-96 | 0.7 | 25 | 0.2558 | -0.656 | -0.347 | 0.989 |
| 1-Oct-98 | 0.7 | 26 | 0.2662 | -0.624 | -0.325 | 0.989 |
| 28-Jul-98 | 0.7 | 27 | 0.2766 | -0.593 | -0.298 | 0.989 |
| 16-Dec-93 | 0.7 | 28 | 0.2870 | -0.562 | -0.289 | 0.989 |
| 16-Oct-97 | 0.8 | 29 | 0.2974 | -0.532 | -0.286 | 0.988 |
| 26-Aug-98 | 0.8 | 30 | 0.3078 | -0.502 | -0.282 | 0.988 |
| 23-Jul-97 | 0.8 | 31 | 0.3182 | -0.473 | -0.264 | 0.988 |
| 24-Jul-96 | 0.8 | 32 | 0.3286 | -0.444 | -0.257 | 0.987 |
| 24-Jun-97 | 0.8 | 33 | 0.3390 | -0.415 | -0.235 | 0.987 |
| 23-Feb-99 | 0.8 | 34 | 0.3494 | -0.387 | -0.228 | 0.987 |
| 8-Oct-98 | 0.8 | 35 | 0.3597 | -0.359 | -0.212 | 0.986 |
| 25-Feb-98 | 0.8 | 36 | 0.3701 | -0.332 | -0.193 | 0.986 |
| 19-Nov-98 | 0.8 | 37 | 0.3805 | -0.304 | -0.175 | 0.985 |
| 26-Nov-97 | 0.8 | 38 | 0.3909 | -0.277 | -0.166 | 0.985 |
| 21-Jan-98 | 0.9 | 39 | 0.4013 | -0.250 | -0.158 | 0.984 |
| 11-Nov-97 | 0.9 | 40 | 0.4117 | -0.223 | -0.158 | 0.984 |
| 29-Oct-96 | 0.9 | 41 | 0.4221 | -0.197 | -0.139 | 0.984 |
| 27-Jun-95 | 0.9 | 42 | 0.4325 | -0.170 | -0.134 | 0.984 |
| 26-Jun-98 | 0.9 | 43 | 0.4429 | -0.144 | -0.073 | 0.984 |
| 23-Jun-94 | 1.0 | 44 | 0.4532 | -0.117 | -0.047 | 0.984 |
| 27-Nov-96 | 1.0 | 45 | 0.4636 | -0.091 | -0.037 | 0.984 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 13-Dec-94 | 1.0 | 46 | 0.4740 | -0.065 | -0.001 | 0.985 |
| 10-Dec-98 | 1.0 | 47 | 0.4844 | -0.039 | 0.001 | 0.985 |
| 20-Mar-98 | 1.0 | 48 | 0.4948 | -0.013 | 0.017 | 0.986 |
| 17-Dec-97 | 1.1 | 49 | 0.5052 | 0.013 | 0.085 | 0.987 |
| 15-Nov-94 | 1.1 | 50 | 0.5156 | 0.039 | 0.109 | 0.988 |
| 31-Dec-98 | 1.3 | 51 | 0.5260 | 0.065 | 0.275 | 0.988 |
| 13-Dec-96 | 1.3 | 52 | 0.5364 | 0.091 | 0.285 | 0.988 |
| 15-Jan-99 | 1.3 | 53 | 0.5468 | 0.117 | 0.293 | 0.988 |
| 30-Jan-97 | 1.5 | 54 | 0.5571 | 0.144 | 0.373 | 0.987 |
| 8-Mar-94 | 1.5 | 55 | 0.5675 | 0.170 | 0.379 | 0.987 |
| 18-Oct-95 | 1.5 | 56 | 0.5779 | 0.197 | 0.387 | 0.987 |
| 7-Jun-94 | 1.5 | 57 | 0.5883 | 0.223 | 0.405 | 0.987 |
| 10-Jan-95 | 1.5 | 58 | 0.5987 | 0.250 | 0.410 | 0.987 |
| 23-Mar-94 | 1.5 | 59 | 0.6091 | 0.277 | 0.429 | 0.986 |
| 21-Jan-99 | 1.5 | 60 | 0.6195 | 0.304 | 0.431 | 0.986 |
| 20-May-94 | 1.6 | 61 | 0.6299 | 0.332 | 0.448 | 0.985 |
| 19-Jun-96 | 1.6 | 62 | 0.6403 | 0.359 | 0.454 | 0.984 |
| 15-Jun-99 | 1.58172 | 63 | 0.6506 | 0.387 | 0.459 | 0.983 |
| 7-May-98 | 1.6 | 64 | 0.6610 | 0.415 | 0.480 | 0.983 |
| 8-May-96 | 1.6 | 65 | 0.6714 | 0.444 | 0.497 | 0.982 |
| 21-Nov-95 | 1.7 | 66 | 0.6818 | 0.473 | 0.559 | 0.981 |
| 19-Feb-97 | 1.8 | 67 | 0.6922 | 0.502 | 0.573 | 0.980 |
| 8-Mar-94 | 1.8 | 68 | 0.7026 | 0.532 | 0.579 | 0.979 |
| 31-May-99 | 1.89376 | 69 | 0.7130 | 0.562 | 0.639 | 0.978 |
| 23-May-95 | 1.9 | 70 | 0.7234 | 0.593 | 0.644 | 0.977 |
| 16-Apr-97 | 2.0 | 71 | 0.7338 | 0.624 | 0.684 | 0.976 |
| 16-May-91 | 2.0 | 72 | 0.7442 | 0.656 | 0.698 | 0.974 |
| 25-Apr-95 | 2.1 | 73 | 0.7545 | 0.689 | 0.751 | 0.972 |
| 7-Apr-94 | 2.2 | 74 | 0.7649 | 0.722 | 0.807 | 0.970 |
| 7-Mar-95 | 2.3 | 75 | 0.7753 | 0.756 | 0.850 | 0.969 |
| 23-Apr-98 | 2.4 | 76 | 0.7857 | 0.792 | 0.858 | 0.967 |
| 8-Mar-99 | 2.4 | 77 | 0.7961 | 0.828 | 0.884 | 0.965 |
| 28-May-98 | 2.4 | 78 | 0.8065 | 0.865 | 0.886 | 0.963 |
| 15-May-91 | 2.5 | 79 | 0.8169 | 0.904 | 0.899 | 0.960 |
| 9-Feb-95 | 2.6 | 80 | 0.8273 | 0.943 | 0.939 | 0.956 |
| 15-May-98 | 2.6 | 81 | 0.8377 | 0.985 | 0.970 | 0.952 |
| 23-May-99 | 2.7 | 82 | 0.8481 | 1.028 | 1.002 | 0.947 |
| 5-May-99 | 2.9 | 83 | 0.8584 | 1.073 | 1.074 | 0.941 |
| 9-May-95 | 2.9 | 84 | 0.8688 | 1.121 | 1.081 | 0.934 |
| 13-Apr-95 | 3.1 | 85 | 0.8792 | 1.171 | 1.129 | 0.925 |
| 17-Apr-96 | 3.1 | 86 | 0.8896 | 1.224 | 1.138 | 0.914 |
| 27-May-99 | 3.8 | 87 | 0.9000 | 1.282 | 1.332 | 0.901 |
| 26-Mar-97 | 4.0 | 88 | 0.9104 | 1.343 | 1.383 | 0.903 |
| 26-Oct-98 | 4.1 | 89 | 0.9208 | 1.410 | 1.409 | 0.916 |
| 29-Feb-96 | 4.1 | 90 | 0.9312 | 1.485 | 1.415 | 0.935 |
| 28-Mar-96 | 4.1 | 91 | 0.9416 | 1.568 | 1.415 | 0.950 |
| 26-May-99 | 4.3 | 92 | 0.9519 | 1.664 | 1.459 | 0.952 |
| 17-Jan-96 | 4.9 | 93 | 0.9623 | 1.778 | 1.586 | |
| 22-Mar-99 | 5.0 | 94 | 0.9727 | 1.922 | 1.617 | |
| 19-Apr-99 | 6.0 | 95 | 0.9831 | 2.123 | 1.796 | |
| 19-Apr-94 | 10.3 | 96 | 0.9935 | 2.484 | 2.331 | |

update for EV, CV:

| dCd | | NM305 | | |
|---|---|---|---|---|
| LN Analysis | | dCd | | |
| **Concentration** | | Conc. Data, EV=21 ug/L CV=.37 | | |
| Avg: | 21 | Data-based LN | | |
| SD: | 8 | u | ln[dCd] | [dCd] |
| CV: | 0.37 | 3 | 4.1 | 58 |
| Min: | 6 | 0 | 2.99 | 20 |
| Max: | 48 | -3 | 1.91 | 7 |
| Median: | 21 | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **$r^2$=0.93, EV=22 ug/L CV=.48; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.925 | u | lnConc. | Conc. |
| slope, m: | 2.213 | 3 | 4.33 | 76 |
| intercept, b: | -6.580 | 0 | 2.97 | 20 |
| N: | 96 | -3 | 1.62 | 5 |
| E[Conc]: | 21.7 | Parameter Estimates | | |
| SD[Conc]: | 10 | from LN regression | | |
| CV[Conc]: | 0.48 | update graph label | | |

| Date | dCd Concentration ug/L Ranked | N: 96 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.981 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 15-Jun-99 | 6 | 1 | 0.0065 | -2.484 | 1.792 | 0.925 |
| 27-May-99 | 6.4 | 2 | 0.0169 | -2.123 | 1.856 | 0.919 |
| 31-May-99 | 6.4 | 3 | 0.0273 | -1.922 | 1.856 | 0.916 |
| 26-May-99 | 6.5 | 4 | 0.0377 | -1.778 | 1.872 | 0.917 |
| 16-May-91 | 7.4 | 5 | 0.0481 | -1.664 | 2.001 | 0.922 |
| 7-May-98 | 8.3 | 6 | 0.0584 | -1.568 | 2.116 | 0.926 |
| 23-May-99 | 8.3 | 7 | 0.0688 | -1.485 | 2.116 | 0.928 |
| 24-Jun-97 | 8.8 | 8 | 0.0792 | -1.410 | 2.175 | 0.933 |
| 15-May-91 | 8.9 | 9 | 0.0896 | -1.343 | 2.186 | 0.939 |
| 28-May-98 | 10 | 10 | 0.1000 | -1.282 | 2.303 | 0.948 |
| 7-Jul-99 | 10 | 11 | 0.1104 | -1.224 | 2.303 | 0.953 |
| 15-May-98 | 11.2 | 12 | 0.1208 | -1.171 | 2.416 | 0.963 |
| 16-Apr-97 | 12 | 13 | 0.1312 | -1.121 | 2.485 | 0.967 |
| 22-Mar-99 | 12 | 14 | 0.1416 | -1.073 | 2.485 | 0.970 |
| 26-Mar-97 | 13 | 15 | 0.1519 | -1.028 | 2.565 | 0.975 |
| 23-Jul-97 | 14 | 16 | 0.1623 | -0.985 | 2.639 | 0.978 |
| 20-Mar-98 | 14 | 17 | 0.1727 | -0.943 | 2.639 | 0.978 |
| 19-Apr-99 | 14 | 18 | 0.1831 | -0.904 | 2.639 | 0.979 |
| 23-May-95 | 16 | 19 | 0.1935 | -0.865 | 2.773 | 0.981 |
| 8-May-96 | 16 | 20 | 0.2039 | -0.828 | 2.773 | 0.981 |
| 19-Feb-97 | 16 | 21 | 0.2143 | -0.792 | 2.773 | 0.980 |
| 25-Feb-98 | 16 | 22 | 0.2247 | -0.756 | 2.773 | 0.979 |
| 23-Apr-98 | 16 | 23 | 0.2351 | -0.722 | 2.773 | 0.979 |
| 26-Jun-98 | 16 | 24 | 0.2455 | -0.689 | 2.773 | 0.979 |
| 5-May-99 | 16 | 25 | 0.2558 | -0.656 | 2.773 | 0.979 |
| 29-Feb-96 | 17 | 26 | 0.2662 | -0.624 | 2.833 | 0.979 |
| 28-Mar-96 | 17 | 27 | 0.2766 | -0.593 | 2.833 | 0.979 |
| 14-Aug-97 | 17 | 28 | 0.2870 | -0.562 | 2.833 | 0.978 |
| 4-Aug-99 | 17 | 29 | 0.2974 | -0.532 | 2.833 | 0.978 |
| 9-May-95 | 18 | 30 | 0.3078 | -0.502 | 2.890 | 0.978 |
| 4-Sep-97 | 18 | 31 | 0.3182 | -0.473 | 2.890 | 0.978 |
| 8-Mar-99 | 18 | 32 | 0.3286 | -0.444 | 2.890 | 0.977 |
| 20-May-94 | 19 | 33 | 0.3390 | -0.415 | 2.944 | 0.976 |
| 17-Jan-96 | 19 | 34 | 0.3494 | -0.387 | 2.944 | 0.976 |
| 19-Jun-96 | 19 | 35 | 0.3597 | -0.359 | 2.944 | 0.975 |
| 24-Jan-94 | 20 | 36 | 0.3701 | -0.332 | 2.996 | 0.974 |
| 11-Jul-95 | 20 | 37 | 0.3805 | -0.304 | 2.996 | 0.974 |
| 17-Apr-96 | 20 | 38 | 0.3909 | -0.277 | 2.996 | 0.974 |
| 24-Jul-96 | 20 | 39 | 0.4013 | -0.250 | 2.996 | 0.974 |
| 26-Sep-96 | 20 | 40 | 0.4117 | -0.223 | 2.996 | 0.974 |
| 30-Jan-97 | 20 | 41 | 0.4221 | -0.197 | 2.996 | 0.973 |
| 28-Jul-98 | 20 | 42 | 0.4325 | -0.170 | 2.996 | 0.972 |
| 15-Aug-94 | 21 | 43 | 0.4429 | -0.144 | 3.045 | 0.971 |
| 15-Aug-94 | 21 | 44 | 0.4532 | -0.117 | 3.045 | 0.971 |
| 26-Nov-97 | 21 | 45 | 0.4636 | -0.091 | 3.045 | 0.971 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 26-Oct-98 | 21 | 46 | 0.4740 | -0.065 | 3.045 | 0.971 |
| 23-Feb-99 | 21 | 47 | 0.4844 | -0.039 | 3.045 | 0.971 |
| 1-Sep-99 | 21 | 48 | 0.4948 | -0.013 | 3.045 | 0.970 |
| 4-Oct-91 | 21.8 | 49 | 0.5052 | 0.013 | 3.082 | 0.969 |
| 2-Dec-93 | 22 | 50 | 0.5156 | 0.039 | 3.091 | 0.969 |
| 23-Mar-94 | 22 | 51 | 0.5260 | 0.065 | 3.091 | 0.970 |
| 19-Apr-94 | 22 | 52 | 0.5364 | 0.091 | 3.091 | 0.970 |
| 27-Jun-95 | 22 | 53 | 0.5468 | 0.117 | 3.091 | 0.970 |
| 21-Aug-96 | 22 | 54 | 0.5571 | 0.144 | 3.091 | 0.969 |
| 16-Oct-97 | 22 | 55 | 0.5675 | 0.170 | 3.091 | 0.969 |
| 17-Dec-97 | 22 | 56 | 0.5779 | 0.197 | 3.091 | 0.968 |
| 24-Sep-98 | 22 | 57 | 0.5883 | 0.223 | 3.091 | 0.966 |
| 21-Jan-99 | 22 | 58 | 0.5987 | 0.250 | 3.091 | 0.965 |
| 7-Apr-94 | 23 | 59 | 0.6091 | 0.277 | 3.135 | 0.963 |
| 20-Jul-94 | 23 | 60 | 0.6195 | 0.304 | 3.135 | 0.963 |
| 20-Jul-94 | 23 | 61 | 0.6299 | 0.332 | 3.135 | 0.961 |
| 26-Jul-95 | 23 | 62 | 0.6403 | 0.359 | 3.135 | 0.960 |
| 21-Jan-98 | 23 | 63 | 0.6506 | 0.387 | 3.135 | 0.958 |
| 23-Jun-94 | 24 | 64 | 0.6610 | 0.415 | 3.178 | 0.956 |
| 26-Aug-98 | 24 | 65 | 0.6714 | 0.444 | 3.178 | 0.955 |
| 25-Apr-95 | 25 | 66 | 0.6818 | 0.473 | 3.219 | 0.953 |
| 21-Nov-95 | 25 | 67 | 0.6922 | 0.502 | 3.219 | 0.955 |
| 1-Oct-98 | 25 | 68 | 0.7026 | 0.532 | 3.219 | 0.956 |
| 15-Jan-99 | 25 | 69 | 0.7130 | 0.562 | 3.219 | 0.957 |
| 28-Oct-93 | 26 | 70 | 0.7234 | 0.593 | 3.258 | 0.957 |
| 18-Feb-94 | 26 | 71 | 0.7338 | 0.624 | 3.258 | 0.962 |
| 18-Feb-94 | 26 | 72 | 0.7442 | 0.656 | 3.258 | 0.966 |
| 8-Mar-94 | 26 | 73 | 0.7545 | 0.689 | 3.258 | 0.970 |
| 8-Mar-94 | 26 | 74 | 0.7649 | 0.722 | 3.258 | 0.973 |
| 7-Jun-94 | 26 | 75 | 0.7753 | 0.756 | 3.258 | 0.975 |
| 13-Apr-95 | 26 | 76 | 0.7857 | 0.792 | 3.258 | 0.976 |
| 29-Oct-96 | 26 | 77 | 0.7961 | 0.828 | 3.258 | 0.976 |
| 3-Oct-91 | 27 | 78 | 0.8065 | 0.865 | 3.296 | 0.975 |
| 28-Oct-94 | 27 | 79 | 0.8169 | 0.904 | 3.296 | 0.978 |
| 9-Feb-95 | 27 | 80 | 0.8273 | 0.943 | 3.296 | 0.980 |
| 14-Aug-95 | 27 | 81 | 0.8377 | 0.985 | 3.296 | 0.980 |
| 13-Dec-96 | 28 | 82 | 0.8481 | 1.028 | 3.332 | 0.978 |
| 8-Oct-98 | 28 | 83 | 0.8584 | 1.073 | 3.332 | 0.980 |
| 27-Oct-98 | 28 | 84 | 0.8688 | 1.121 | 3.332 | 0.980 |
| 16-Dec-93 | 29 | 85 | 0.8792 | 1.171 | 3.367 | 0.977 |
| 11-Nov-97 | 29.5 | 86 | 0.8896 | 1.224 | 3.384 | 0.976 |
| 7-Mar-95 | 30 | 87 | 0.9000 | 1.282 | 3.401 | 0.975 |
| 27-Nov-96 | 30 | 88 | 0.9104 | 1.343 | 3.401 | 0.973 |
| 10-Dec-98 | 31 | 89 | 0.9208 | 1.410 | 3.434 | 0.967 |
| 8-Sep-94 | 32 | 90 | 0.9312 | 1.485 | 3.466 | 0.960 |
| 31-Dec-98 | 32 | 91 | 0.9416 | 1.568 | 3.466 | 0.948 |
| 10-Jan-95 | 35 | 92 | 0.9519 | 1.664 | 3.555 | 0.964 |
| 18-Oct-95 | 38 | 93 | 0.9623 | 1.778 | 3.638 | |
| 19-Nov-98 | 39 | 94 | 0.9727 | 1.922 | 3.664 | |
| 13-Dec-94 | 44 | 95 | 0.9831 | 2.123 | 3.784 | |
| 15-Nov-94 | 48 | 96 | 0.9935 | 2.484 | 3.871 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dCd** | | **NM305** | | |
| **LN Analysis** | | **dCd** | | |
| **Discharge, Q** | | **Q Data, EV=20 cfs CV=1.19** | | |
| **Avg:** | **20** | **Q Data-based LN** | | |
| **SD:** | **23** | u | lnQ | Q |
| **CV:** | **1.19** | 3 | 5.4 | 212 |
| **Min:** | **3** | 0 | 2.54 | 13 |
| **Max:** | **123** | -3 | -0.28 | 1 |
| **Median:** | **9** | | | |

**u=mLn{Q}+b:**

update for r2, EV, CV: **r2=0.92, EV=19.7 cfs CV=1.33; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.919 | u | lnQ | Q |
| slope, m: | 0.990 | 3 | 5.50 | 245 |
| intercept, b: | -2.446 | 0 | 2.47 | 12 |
| N: | 96 | -3 | -0.56 | 1 |
| E[Q]: | 19.7 | Parameter Estimates | | |
| SD[Q]: | 26 | from LN regression | | |
| CV[Q]: | 1.33 | update graph label | | |

N: 96

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.980 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Oct-98 | 3.2 | 1 | 0.0065 | -2.484 | 1.163 | 0.919 |
| 3-Oct-91 | 3.69 | 2 | 0.0169 | -2.123 | 1.306 | 0.930 |
| 15-Aug-94 | 3.69 | 3 | 0.0273 | -1.922 | 1.306 | 0.939 |
| 14-Aug-95 | 3.82 | 4 | 0.0377 | -1.778 | 1.340 | 0.945 |
| 8-Sep-94 | 3.91 | 5 | 0.0481 | -1.664 | 1.364 | 0.950 |
| 28-Oct-94 | 3.91 | 6 | 0.0584 | -1.568 | 1.364 | 0.954 |
| 19-Nov-98 | 4 | 7 | 0.0688 | -1.485 | 1.386 | 0.958 |
| 4-Oct-91 | 4.02 | 8 | 0.0792 | -1.410 | 1.391 | 0.961 |
| 18-Feb-94 | 4.03 | 9 | 0.0896 | -1.343 | 1.394 | 0.963 |
| 18-Feb-94 | 4.11 | 10 | 0.1000 | -1.282 | 1.413 | 0.965 |
| 13-Dec-94 | 4.22 | 11 | 0.1104 | -1.224 | 1.440 | 0.967 |
| 15-Aug-94 | 4.32 | 12 | 0.1208 | -1.171 | 1.463 | 0.969 |
| 15-Nov-94 | 4.32 | 13 | 0.1312 | -1.121 | 1.463 | 0.970 |
| 26-Jul-95 | 4.54 | 14 | 0.1416 | -1.073 | 1.513 | 0.971 |
| 28-Oct-93 | 4.7 | 15 | 0.1519 | -1.028 | 1.548 | 0.973 |
| 2-Dec-93 | 4.7 | 16 | 0.1623 | -0.985 | 1.548 | 0.974 |
| 20-Jul-94 | 4.74 | 17 | 0.1727 | -0.943 | 1.556 | 0.975 |
| 16-Dec-93 | 4.8 | 18 | 0.1831 | -0.904 | 1.569 | 0.976 |
| 7-Jul-99 | 5 | 19 | 0.1935 | -0.865 | 1.609 | 0.977 |
| 4-Aug-99 | 5 | 20 | 0.2039 | -0.828 | 1.609 | 0.978 |
| 1-Sep-99 | 5 | 21 | 0.2143 | -0.792 | 1.609 | 0.978 |
| 26-Sep-96 | 5.15 | 22 | 0.2247 | -0.756 | 1.639 | 0.979 |
| 20-Jul-94 | 5.16 | 23 | 0.2351 | -0.722 | 1.641 | 0.979 |
| 1-Oct-98 | 5.37 | 24 | 0.2455 | -0.689 | 1.681 | 0.979 |
| 8-Oct-98 | 5.37 | 25 | 0.2558 | -0.656 | 1.681 | 0.979 |
| 11-Nov-97 | 5.38 | 26 | 0.2662 | -0.624 | 1.683 | 0.980 |
| 24-Sep-98 | 5.49 | 27 | 0.2766 | -0.593 | 1.703 | 0.979 |
| 11-Jul-95 | 5.71 | 28 | 0.2870 | -0.562 | 1.742 | 0.979 |
| 26-Aug-98 | 5.84 | 29 | 0.2974 | -0.532 | 1.765 | 0.979 |
| 24-Jan-94 | 5.87 | 30 | 0.3078 | -0.502 | 1.770 | 0.979 |
| 21-Aug-96 | 5.97 | 31 | 0.3182 | -0.473 | 1.787 | 0.979 |
| 27-Nov-96 | 5.97 | 32 | 0.3286 | -0.444 | 1.787 | 0.978 |
| 10-Dec-98 | 6 | 33 | 0.3390 | -0.415 | 1.792 | 0.978 |
| 29-Oct-96 | 6.22 | 34 | 0.3494 | -0.387 | 1.828 | 0.977 |
| 16-Oct-97 | 6.35 | 35 | 0.3597 | -0.359 | 1.848 | 0.976 |
| 4-Sep-97 | 6.76 | 36 | 0.3701 | -0.332 | 1.911 | 0.976 |
| 21-Jan-98 | 6.9 | 37 | 0.3805 | -0.304 | 1.932 | 0.975 |
| 28-Jul-98 | 6.9 | 38 | 0.3909 | -0.277 | 1.932 | 0.974 |
| 23-Feb-99 | 7.05 | 39 | 0.4013 | -0.250 | 1.953 | 0.973 |
| 24-Jul-96 | 7.19 | 40 | 0.4117 | -0.223 | 1.973 | 0.972 |
| 18-Oct-95 | 7.2 | 41 | 0.4221 | -0.197 | 1.974 | 0.971 |
| 23-Jun-94 | 7.39 | 42 | 0.4325 | -0.170 | 2.000 | 0.970 |
| 27-Jun-95 | 7.39 | 43 | 0.4429 | -0.144 | 2.000 | 0.969 |
| 26-Nov-97 | 7.5 | 44 | 0.4532 | -0.117 | 2.015 | 0.968 |
| 14-Aug-97 | 7.65 | 45 | 0.4636 | -0.091 | 2.035 | 0.968 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 31-Dec-98 | 7.65 | 46 | 0.4740 | -0.065 | 2.035 | 0.967 |
| 10-Jan-95 | 8 | 47 | 0.4844 | -0.039 | 2.079 | 0.966 |
| 13-Dec-96 | 8.83 | 48 | 0.4948 | -0.013 | 2.178 | 0.966 |
| 17-Dec-97 | 9.2 | 49 | 0.5052 | 0.013 | 2.219 | 0.965 |
| 25-Feb-98 | 9.58 | 50 | 0.5156 | 0.039 | 2.260 | 0.964 |
| 15-Jan-99 | 9.97 | 51 | 0.5260 | 0.065 | 2.300 | 0.962 |
| 23-Jul-97 | 10.2 | 52 | 0.5364 | 0.091 | 2.322 | 0.961 |
| 8-Mar-94 | 10.44 | 53 | 0.5468 | 0.117 | 2.346 | 0.960 |
| 7-Jun-94 | 10.72 | 54 | 0.5571 | 0.144 | 2.372 | 0.959 |
| 26-Jun-98 | 10.8 | 55 | 0.5675 | 0.170 | 2.380 | 0.958 |
| 8-Mar-94 | 12.76 | 56 | 0.5779 | 0.197 | 2.546 | 0.957 |
| 23-Mar-94 | 12.97 | 57 | 0.5883 | 0.223 | 2.563 | 0.955 |
| 21-Nov-95 | 13 | 58 | 0.5987 | 0.250 | 2.565 | 0.953 |
| 21-Jan-99 | 13 | 59 | 0.6091 | 0.277 | 2.565 | 0.951 |
| 30-Jan-97 | 13.5 | 60 | 0.6195 | 0.304 | 2.603 | 0.950 |
| 20-Mar-98 | 13.5 | 61 | 0.6299 | 0.332 | 2.603 | 0.949 |
| 7-Mar-95 | 14.49 | 62 | 0.6403 | 0.359 | 2.673 | 0.948 |
| 20-May-94 | 15.31 | 63 | 0.6506 | 0.387 | 2.729 | 0.947 |
| 19-Jun-96 | 15.4 | 64 | 0.6610 | 0.415 | 2.734 | 0.946 |
| 25-Apr-95 | 15.75 | 65 | 0.6714 | 0.444 | 2.757 | 0.945 |
| 24-Jun-97 | 16.7 | 66 | 0.6818 | 0.473 | 2.815 | 0.946 |
| 9-Feb-95 | 17.61 | 67 | 0.6922 | 0.502 | 2.868 | 0.947 |
| 7-Apr-94 | 18.12 | 68 | 0.7026 | 0.532 | 2.897 | 0.947 |
| 8-May-96 | 19.1 | 69 | 0.7130 | 0.562 | 2.950 | 0.950 |
| 19-Feb-97 | 20.6 | 70 | 0.7234 | 0.593 | 3.025 | 0.953 |
| 13-Apr-95 | 22.11 | 71 | 0.7338 | 0.624 | 3.096 | 0.956 |
| 23-May-95 | 22.11 | 72 | 0.7442 | 0.656 | 3.096 | 0.958 |
| 8-Mar-99 | 25 | 73 | 0.7545 | 0.689 | 3.219 | 0.965 |
| 23-Apr-98 | 27.4 | 74 | 0.7649 | 0.722 | 3.311 | 0.968 |
| 17-Apr-96 | 29 | 75 | 0.7753 | 0.756 | 3.367 | 0.969 |
| 9-May-95 | 30.45 | 76 | 0.7857 | 0.792 | 3.416 | 0.969 |
| 16-Apr-97 | 30.7 | 77 | 0.7961 | 0.828 | 3.424 | 0.969 |
| 5-May-99 | 34 | 78 | 0.8065 | 0.865 | 3.526 | 0.972 |
| 7-May-98 | 36.2 | 79 | 0.8169 | 0.904 | 3.589 | 0.971 |
| 26-Oct-98 | 36.2 | 80 | 0.8273 | 0.943 | 3.589 | 0.969 |
| 15-May-98 | 43.8 | 81 | 0.8377 | 0.985 | 3.780 | 0.970 |
| 29-Feb-96 | 45 | 82 | 0.8481 | 1.028 | 3.807 | 0.970 |
| 28-Mar-96 | 45 | 83 | 0.8584 | 1.073 | 3.807 | 0.971 |
| 28-May-98 | 45.1 | 84 | 0.8688 | 1.121 | 3.809 | 0.969 |
| 17-Jan-96 | 47.8 | 85 | 0.8792 | 1.171 | 3.867 | 0.965 |
| 15-Jun-99 | 49 | 86 | 0.8896 | 1.224 | 3.892 | 0.961 |
| 16-May-91 | 50.5 | 87 | 0.9000 | 1.282 | 3.922 | 0.956 |
| 15-May-91 | 51.3 | 88 | 0.9104 | 1.343 | 3.938 | 0.948 |
| 31-May-99 | 55 | 89 | 0.9208 | 1.410 | 4.007 | 0.938 |
| 26-Mar-97 | 57 | 90 | 0.9312 | 1.485 | 4.043 | 0.924 |
| 23-May-99 | 61 | 91 | 0.9416 | 1.568 | 4.111 | 0.914 |
| 22-Mar-99 | 78 | 92 | 0.9519 | 1.664 | 4.357 | 0.943 |
| 19-Apr-99 | 80 | 93 | 0.9623 | 1.778 | 4.382 | |
| 19-Apr-94 | 86.89 | 94 | 0.9727 | 1.922 | 4.465 | |
| 27-May-99 | 110 | 95 | 0.9831 | 2.123 | 4.700 | |
| 26-May-99 | 123 | 96 | 0.9935 | 2.484 | 4.812 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | see comment |
|---|---|---|
| **Station:** | **NM305** | **Date:** 13-Jun-00 |
| **Chemical:** | **dPb** | **Analyst:** JMacLachlan |
| **Notes:** | | |

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,293 | 20 | 41 | 4 | 0.00 | 0.00 | 0.00 |
| **SD:** | 772 | 23 | 16 | 4 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.18 | 0.40 | 1.04 | | | |
| **Min:** | 33,373 | 3 | 4 | 0.3 | -0.71 | -2.28 | -0.89 |
| **Max:** | 36,404 | 123 | 91 | 22 | 4.41 | 3.10 | 4.76 |
| **Median:** | 35,351 | 9 | 38 | 2 | -0.45 | -0.18 | -0.39 |

| dPb | NM305 | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.0844)** | | update r2 | 0.08 | 0.0844 | | r2: | 0.053 | 0.060 | | |
| r2 Q,[COC]: | 0.08 | [tCd] | Q | | | m: | 0.0070 | 0.00030 | | |
| slope, m: | -0.2 | 44 | 3.2 | | | b: | -226 | -8.08 | | |
| intercept, b: | 44.9 | 41 | 19.9 | | | | | | | |
| N: 96 | | 20 | 123 | | | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.0568)** | | update r2 | 0.06 | 0.0568 | | | | | | |
| r2 lnQ,ln[COC]: | 0.06 | ln[tCd] | ln Q | [tCd] | Q | | | | | |
| slope, m: | -0.11 | 3.77 | 1.16 | 44 | 3 | | | | | |
| intercept, b: | 3.91 | 3.57 | 2.99 | 35 | 20 | | | | | |
| N: 96 | | 3.36 | 4.81 | 29 | 123 | | | | | |

*N= 96*

| | Sampling Date | Q Discharge | dPb Concentration | dPb Load | Ln Q | Ln dPb Conc. | Ln dPb Load | dPb NM305 Standardized Values = (x - Avg)/SD | for graph 0 | |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | Q | Conc | Load |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 15-May-91 | 51.3 | 14 | 3.9 | 3.94 | 2.64 | 1.35 | 1.35 | -1.66 | 0.02 |
| MFG | 16-May-91 | 50.5 | 14 | 3.8 | 3.92 | 2.64 | 1.34 | 1.31 | -1.66 | 0.01 |
| MFG | 3-Oct-91 | 3.69 | 15 | 0.3 | 1.31 | 2.71 | -1.21 | -0.69 | -1.60 | -0.89 |
| MFG | 4-Oct-91 | 4.02 | 24 | 0.5 | 1.39 | 3.18 | -0.66 | -0.68 | -1.05 | -0.83 |
| IDEQ | 28-Oct-93 | 4.7 | 29 | 0.7 | 1.55 | 3.37 | -0.31 | -0.65 | -0.74 | -0.78 |
| IDEQ | 2-Dec-93 | 4.7 | 30 | 0.8 | 1.55 | 3.40 | -0.28 | -0.65 | -0.67 | -0.77 |
| IDEQ | 16-Dec-93 | 4.8 | 40 | 1.0 | 1.57 | 3.69 | 0.03 | -0.64 | -0.06 | -0.70 |
| IDEQ | 24-Jan-94 | 5.87 | 34 | 1.1 | 1.77 | 3.53 | 0.07 | -0.60 | -0.43 | -0.69 |
| IDEQ | 18-Feb-94 | 4.11 | 34 | 0.8 | 1.41 | 3.53 | -0.29 | -0.67 | -0.43 | -0.77 |
| IDEQ | 18-Feb-94 | 4.03 | 34 | 0.7 | 1.39 | 3.53 | -0.30 | -0.68 | -0.43 | -0.78 |
| IDEQ | 8-Mar-94 | 10.44 | 46 | 2.6 | 2.35 | 3.83 | 0.95 | -0.40 | 0.31 | -0.30 |
| IDEQ | 8-Mar-94 | 12.76 | 46 | 3.2 | 2.55 | 3.83 | 1.15 | -0.30 | 0.31 | -0.16 |
| IDEQ | 23-Mar-94 | 12.97 | 53 | 3.7 | 2.56 | 3.97 | 1.31 | -0.29 | 0.75 | -0.02 |
| IDEQ | 7-Apr-94 | 18.12 | 57 | 5.6 | 2.90 | 4.04 | 1.72 | -0.07 | 0.99 | 0.45 |
| IDEQ | 19-Apr-94 | 86.89 | 48 | 22.4 | 4.46 | 3.87 | 3.11 | 2.87 | 0.44 | 4.76 |
| IDEQ | 20-May-94 | 15.31 | 4 | 0.3 | 2.73 | 1.39 | -1.11 | -0.19 | -2.28 | -0.88 |
| IDEQ | 7-Jun-94 | 10.72 | 54 | 3.1 | 2.37 | 3.99 | 1.14 | -0.39 | 0.81 | -0.17 |
| IDEQ | 23-Jun-94 | 7.39 | 52 | 2.1 | 2.00 | 3.95 | 0.73 | -0.53 | 0.69 | -0.44 |
| IDEQ | 20-Jul-94 | 5.16 | 49 | 1.4 | 1.64 | 3.89 | 0.31 | -0.63 | 0.50 | -0.62 |
| IDEQ | 20-Jul-94 | 4.74 | 49 | 1.2 | 1.56 | 3.89 | 0.22 | -0.65 | 0.50 | -0.65 |
| IDEQ | 15-Aug-94 | 4.32 | 35 | 0.8 | 1.46 | 3.56 | -0.21 | -0.66 | -0.37 | -0.76 |
| IDEQ | 15-Aug-94 | 3.69 | 35 | 0.7 | 1.31 | 3.56 | -0.36 | -0.69 | -0.37 | -0.79 |
| IDEQ | 8-Sep-94 | 3.91 | 26 | 0.5 | 1.36 | 3.26 | -0.60 | -0.68 | -0.92 | -0.82 |
| IDEQ | 28-Oct-94 | 3.91 | 30 | 0.6 | 1.36 | 3.40 | -0.46 | -0.68 | -0.67 | -0.80 |
| IDEQ | 15-Nov-94 | 4.32 | 90 | 2.1 | 1.46 | 4.50 | 0.74 | -0.66 | 3.03 | -0.43 |
| IDEQ | 13-Dec-94 | 4.22 | 60 | 1.4 | 1.44 | 4.09 | 0.31 | -0.67 | 1.18 | -0.62 |
| IDEQ | 10-Jan-95 | 8 | 54 | 2.3 | 2.08 | 3.99 | 0.84 | -0.51 | 0.81 | -0.37 |
| IDEQ | 9-Feb-95 | 17.61 | 73 | 6.9 | 2.87 | 4.29 | 1.93 | -0.10 | 1.98 | 0.80 |
| IDEQ | 7-Mar-95 | 14.49 | 61 | 4.8 | 2.67 | 4.11 | 1.56 | -0.23 | 1.24 | 0.25 |
| IDEQ | 13-Apr-95 | 22.11 | 58 | 6.9 | 3.10 | 4.06 | 1.93 | 0.10 | 1.06 | 0.80 |
| IDEQ | 25-Apr-95 | 15.75 | 64 | 5.4 | 2.76 | 4.16 | 1.69 | -0.18 | 1.43 | 0.42 |
| IDEQ | 9-May-95 | 30.45 | 64 | 10.5 | 3.42 | 4.16 | 2.35 | 0.45 | 1.43 | 1.71 |
| IDEQ | 23-May-95 | 22.11 | 54 | 6.4 | 3.10 | 3.99 | 1.86 | 0.10 | 0.81 | 0.68 |
| IDEQ | 27-Jun-95 | 7.39 | 72 | 2.9 | 2.00 | 4.28 | 1.05 | -0.53 | 1.92 | -0.23 |
| IDEQ | 11-Jul-95 | 5.71 | 72 | 2.2 | 1.74 | 4.28 | 0.79 | -0.61 | 1.92 | -0.40 |
| IDEQ | 26-Jul-95 | 4.54 | 75 | 1.8 | 1.51 | 4.32 | 0.61 | -0.66 | 2.11 | -0.50 |
| IDEQ | 14-Aug-95 | 3.82 | 74 | 1.5 | 1.34 | 4.30 | 0.42 | -0.69 | 2.05 | -0.58 |
| IDEQ | 18-Oct-95 | 7.2 | 91 | 3.5 | 1.97 | 4.51 | 1.26 | -0.54 | 3.10 | -0.06 |
| IDEQ | 21-Nov-95 | 13 | 67 | 4.7 | 2.56 | 4.20 | 1.54 | -0.29 | 1.61 | 0.23 |
| IDEQ | 17-Jan-96 | 47.8 | 65 | 16.7 | 3.87 | 4.17 | 2.82 | 1.20 | 1.49 | 3.30 |
| IDEQ | 29-Feb-96 | 45 | 39 | 9.4 | 3.81 | 3.66 | 2.25 | 1.08 | -0.12 | 1.45 |
| IDEQ | 28-Mar-96 | 45 | 39 | 9.4 | 3.81 | 3.66 | 2.25 | 1.08 | -0.12 | 1.45 |
| IDEQ | 17-Apr-96 | 29 | 45 | 7.0 | 3.37 | 3.81 | 1.95 | 0.39 | 0.25 | 0.83 |
| IDEQ | 8-May-96 | 19.1 | 40 | 4.1 | 2.95 | 3.69 | 1.41 | -0.03 | -0.06 | 0.08 |
| IDEQ | 19-Jun-96 | 15.4 | 37 | 3.1 | 2.73 | 3.61 | 1.12 | -0.19 | -0.24 | -0.18 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 24-Jul-96 | 7.19 | 40 | 1.5 | 1.97 | 3.69 | 0.44 | -0.54 | -0.06 | -0.57 |
| IDEQ | 21-Aug-96 | 5.97 | 36 | 1.2 | 1.79 | 3.58 | 0.15 | -0.59 | -0.30 | -0.67 |
| IDEQ | 26-Sep-96 | 5.15 | 37 | 1.0 | 1.64 | 3.61 | 0.02 | -0.63 | -0.24 | -0.70 |
| IDEQ | 29-Oct-96 | 6.22 | 41 | 1.4 | 1.83 | 3.71 | 0.32 | -0.58 | 0.01 | -0.61 |
| IDEQ | 27-Nov-96 | 5.97 | 43 | 1.4 | 1.79 | 3.76 | 0.32 | -0.59 | 0.13 | -0.61 |
| IDEQ | 13-Dec-96 | 8.83 | 58 | 2.8 | 2.18 | 4.06 | 1.01 | -0.47 | 1.06 | -0.26 |
| IDEQ | 30-Jan-97 | 13.5 | 40 | 2.9 | 2.60 | 3.69 | 1.07 | -0.27 | -0.06 | -0.22 |
| IDEQ | 19-Feb-97 | 20.6 | 49 | 5.4 | 3.03 | 3.89 | 1.69 | 0.03 | 0.50 | 0.42 |
| IDEQ | 26-Mar-97 | 57 | 47 | 14.4 | 4.04 | 3.85 | 2.67 | 1.59 | 0.38 | 2.72 |
| IDEQ | 16-Apr-97 | 30.7 | 49 | 8.1 | 3.42 | 3.89 | 2.09 | 0.46 | 0.50 | 1.10 |
| IDEQ | 24-Jun-97 | 16.7 | 35 | 3.1 | 2.82 | 3.56 | 1.15 | -0.13 | -0.37 | -0.16 |
| IDEQ | 23-Jul-97 | 10.2 | 52 | 2.9 | 2.32 | 3.95 | 1.05 | -0.41 | 0.69 | -0.24 |
| IDEQ | 14-Aug-97 | 7.65 | 46 | 1.9 | 2.03 | 3.83 | 0.64 | -0.52 | 0.31 | -0.48 |
| IDEQ | 4-Sep-97 | 6.76 | 41 | 1.5 | 1.91 | 3.71 | 0.40 | -0.56 | 0.01 | -0.58 |
| IDEQ | 16-Oct-97 | 6.35 | 38 | 1.3 | 1.85 | 3.64 | 0.26 | -0.58 | -0.18 | -0.63 |
| URS | 11-Nov-97 | 5.38 | 41.6 | 1.2 | 1.68 | 3.73 | 0.19 | -0.62 | 0.04 | -0.66 |
| IDEQ | 26-Nov-97 | 7.5 | 39 | 1.6 | 2.01 | 3.66 | 0.45 | -0.53 | -0.12 | -0.56 |
| IDEQ | 17-Dec-97 | 9.2 | 30 | 1.5 | 2.22 | 3.40 | 0.40 | -0.46 | -0.67 | -0.59 |
| IDEQ | 21-Jan-98 | 6.9 | 37 | 1.4 | 1.93 | 3.61 | 0.32 | -0.55 | -0.24 | -0.61 |
| IDEQ | 25-Feb-98 | 9.58 | 42 | 2.2 | 2.26 | 3.74 | 0.77 | -0.44 | 0.07 | -0.41 |
| IDEQ | 20-Mar-98 | 13.5 | 38 | 2.8 | 2.60 | 3.64 | 1.02 | -0.27 | -0.18 | -0.26 |
| IDEQ | 23-Apr-98 | 27.4 | 40 | 5.9 | 3.31 | 3.69 | 1.77 | 0.32 | -0.06 | 0.54 |
| IDEQ | 7-May-98 | 36.2 | 23 | 4.5 | 3.59 | 3.14 | 1.50 | 0.70 | -1.11 | 0.18 |
| URS | 15-May-98 | 43.8 | 25.5 | 6.0 | 3.78 | 3.24 | 1.79 | 1.03 | -0.95 | 0.57 |
| IDEQ | 28-May-98 | 45.1 | 34 | 8.2 | 3.81 | 3.53 | 2.11 | 1.08 | -0.43 | 1.14 |
| IDEQ | 26-Jun-98 | 10.8 | 36 | 2.1 | 2.38 | 3.58 | 0.74 | -0.39 | -0.30 | -0.43 |
| IDEQ | 28-Jul-98 | 6.9 | 35 | 1.3 | 1.93 | 3.56 | 0.26 | -0.55 | -0.37 | -0.63 |
| IDEQ | 26-Aug-98 | 5.84 | 31 | 1.0 | 1.76 | 3.43 | -0.03 | -0.60 | -0.61 | -0.72 |
| IDEQ | 24-Sep-98 | 5.49 | 31 | 0.9 | 1.70 | 3.43 | -0.09 | -0.61 | -0.61 | -0.73 |
| IDEQ | 1-Oct-98 | 5.37 | 32 | 0.9 | 1.68 | 3.47 | -0.08 | -0.62 | -0.55 | -0.73 |
| IDEQ | 8-Oct-98 | 5.37 | 31 | 0.9 | 1.68 | 3.43 | -0.11 | -0.62 | -0.61 | -0.74 |
| IDEQ | 26-Oct-98 | 36.2 | 26 | 5.1 | 3.59 | 3.26 | 1.62 | 0.70 | -0.92 | 0.33 |
| USGS | 27-Oct-98 | 3.2 | 29 | 0.5 | 1.16 | 3.37 | -0.69 | -0.71 | -0.74 | -0.84 |
| USGS | 19-Nov-98 | 4 | 36 | 0.8 | 1.39 | 3.58 | -0.26 | -0.68 | -0.30 | -0.77 |
| USGS | 10-Dec-98 | 6 | 36 | 1.2 | 1.79 | 3.58 | 0.15 | -0.59 | -0.30 | -0.67 |
| IDEQ | 31-Dec-98 | 7.65 | 38 | 1.6 | 2.03 | 3.64 | 0.45 | -0.52 | -0.18 | -0.57 |
| IDEQ | 15-Jan-99 | 9.97 | 38 | 2.0 | 2.30 | 3.64 | 0.71 | -0.42 | -0.18 | -0.44 |
| USGS | 21-Jan-99 | 13 | 44 | 3.1 | 2.56 | 3.78 | 1.12 | -0.29 | 0.19 | -0.18 |
| IDEQ | 23-Feb-99 | 7.05 | 30 | 1.1 | 1.95 | 3.40 | 0.13 | -0.55 | -0.67 | -0.67 |
| IDEQ | 8-Mar-99 | 25 | 37 | 5.0 | 3.22 | 3.61 | 1.60 | 0.22 | -0.24 | 0.31 |
| USGS | 22-Mar-99 | 78 | 23 | 9.7 | 4.36 | 3.14 | -2.27 | 2.49 | -1.11 | 1.50 |
| USGS | 19-Apr-99 | 80 | 13 | 5.6 | 4.38 | 2.56 | 1.72 | 2.57 | -1.73 | 0.46 |
| USGS | 5-May-99 | 34 | 26 | 4.8 | 3.53 | 3.26 | 1.56 | 0.61 | -0.92 | 0.25 |
| USGS | 23-May-99 | 61 | 23 | 7.5 | 4.11 | 3.14 | 2.02 | 1.76 | -1.11 | 0.96 |
| USGS | 26-May-99 | 123 | 23 | 15.2 | 4.81 | 3.14 | 2.72 | 4.41 | -1.11 | 2.92 |
| USGS | 27-May-99 | 110 | 23 | 13.6 | 4.70 | 3.14 | 2.61 | 3.86 | -1.11 | 2.51 |
| USGS | 31-May-99 | 55 | 22 | 6.5 | 4.01 | 3.09 | 1.87 | 1.50 | -1.17 | 0.70 |
| USGS | 15-Jun-99 | 49 | 25 | 6.6 | 3.89 | 3.22 | 1.89 | 1.25 | -0.98 | 0.72 |
| USGS | 7-Jul-99 | 17 | 29 | 2.7 | 2.83 | 3.37 | 0.98 | -0.12 | -0.74 | -0.29 |
| USGS | 4-Aug-99 | 8.6 | 33 | 1.5 | 2.15 | 3.50 | 0.42 | -0.48 | -0.49 | -0.57 |
| USGS | 1-Sep-99 | 5 | 29 | 0.8 | 1.61 | 3.37 | -0.25 | -0.64 | -0.74 | -0.77 |

**dPb**

**Concentration over time analysis**

| | dPb | NM305 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.011** | **-0.00006** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 15-May-91 | 3.74 | 42 | | |
| mid: | 12-Oct-96 | 3.62 | 37 | | |
| last: | 1-Sep-99 | 3.56 | 35 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.494** | **-0.00068** |
| | 27-Nov-96 | 3.90 | 49 | | |
| | 1-Sep-99 | 3.22 | 25 | | |

**Load over time analysis**

| | dPb | NM305 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.038** | **0.00024** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 15-May-91 | 0.43 | 2 | | |
| mid: | 12-Oct-96 | 0.90 | 2 | | |
| last: | 1-Sep-99 | 1.15 | 3 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.002** | **0.00014** |
| | 27-Nov-96 | 0.90 | 2 | | |
| | 1-Sep-99 | 1.04 | 3 | | |

max r2: 0.760

**Forward time Regression on Ln Concentration(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.011 | -0.00006 | 5.80 |
| 0.030 | -0.00010 | 7.22 |
| 0.063 | -0.00015 | 8.90 |
| 0.108 | -0.00020 | 10.60 |
| 0.143 | -0.00023 | 11.90 |
| 0.158 | -0.00025 | 12.42 |
| 0.172 | -0.00026 | 12.94 |
| 0.177 | -0.00027 | 13.19 |
| 0.187 | -0.00028 | 13.62 |
| 0.198 | -0.00029 | 14.05 |
| 0.210 | -0.00031 | 14.53 |
| 0.211 | -0.00031 | 14.71 |
| 0.212 | -0.00032 | 14.90 |
| 0.207 | -0.00032 | 14.94 |
| 0.200 | -0.00032 | 14.89 |
| 0.199 | -0.00032 | 15.04 |
| 0.477 | -0.00041 | 18.37 |
| 0.474 | -0.00042 | 18.54 |
| 0.472 | -0.00042 | 18.75 |
| 0.475 | -0.00043 | 19.06 |
| 0.478 | -0.00044 | 19.40 |
| 0.510 | -0.00047 | 20.27 |
| 0.546 | -0.00049 | 21.24 |
| 0.628 | -0.00054 | 22.79 |
| 0.694 | -0.00057 | 24.17 |
| 0.679 | -0.00056 | 23.72 |
| 0.674 | -0.00057 | 23.94 |
| 0.676 | -0.00058 | 24.36 |
| 0.662 | -0.00058 | 24.19 |
| 0.654 | -0.00058 | 24.33 |
| 0.648 | -0.00059 | 24.56 |
| 0.636 | -0.00059 | 24.58 |
| 0.623 | -0.00059 | 24.58 |
| 0.620 | -0.00060 | 24.98 |
| 0.599 | -0.00059 | 24.64 |
| 0.576 | -0.00058 | 24.21 |
| 0.547 | -0.00056 | 23.57 |
| 0.515 | -0.00054 | 22.83 |
| 0.480 | -0.00049 | 21.22 |
| 0.445 | -0.00047 | 20.36 |
| 0.408 | -0.00044 | 19.42 |
| 0.416 | -0.00046 | 20.11 |
| 0.424 | -0.00048 | 20.86 |
| 0.414 | -0.00049 | 21.12 |
| 0.419 | -0.00051 | 21.90 |

max r2: 0.973

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept |
|---|---|---|
| only on >4 data points: delete last 4 rows | | |
| 0.038 | 0.00024 | -7.50 |
| 0.046 | 0.00027 | -8.69 |
| 0.056 | 0.00031 | -10.07 |
| 0.036 | 0.00025 | -7.91 |
| 0.022 | 0.00020 | -6.22 |
| 0.017 | 0.00017 | -5.25 |
| 0.012 | 0.00015 | -4.27 |
| 0.008 | 0.00013 | -3.52 |
| 0.006 | 0.00011 | -2.78 |
| 0.003 | 0.00007 | -1.62 |
| 0.001 | 0.00004 | -0.34 |
| 0.001 | 0.00004 | -0.34 |
| 0.001 | 0.00004 | -0.56 |
| 0.001 | 0.00006 | -0.98 |
| 0.003 | 0.00008 | -1.93 |
| 0.012 | 0.00016 | -4.72 |
| 0.004 | 0.00009 | -2.28 |
| 0.005 | 0.00010 | -2.62 |
| 0.004 | 0.00010 | -2.41 |
| 0.002 | 0.00007 | -1.60 |
| 0.001 | 0.00004 | -0.57 |
| 0.000 | -0.00001 | 1.21 |
| 0.002 | -0.00007 | 3.47 |
| 0.009 | -0.00015 | 6.35 |
| 0.021 | -0.00023 | 9.19 |
| 0.025 | -0.00026 | 10.19 |
| 0.036 | -0.00031 | 12.07 |
| 0.041 | -0.00034 | 13.11 |
| 0.033 | -0.00031 | 12.08 |
| 0.029 | -0.00030 | 11.69 |
| 0.022 | -0.00026 | 10.45 |
| 0.017 | -0.00024 | 9.59 |
| 0.008 | -0.00017 | 7.04 |
| 0.004 | -0.00012 | 5.35 |
| 0.004 | -0.00013 | 5.55 |
| 0.006 | -0.00015 | 6.49 |
| 0.009 | -0.00020 | 8.15 |
| 0.016 | -0.00027 | 10.67 |
| 0.015 | -0.00027 | 10.68 |
| 0.011 | -0.00024 | 9.70 |
| 0.001 | -0.00009 | 4.14 |
| 0.000 | 0.00003 | -0.08 |
| 0.005 | 0.00016 | -4.94 |
| 0.014 | 0.00029 | -9.42 |
| 0.022 | 0.00037 | -12.37 |

| | | | | | |
|---|---|---|---|---|---|
| 0.437 | -0.00054 | 23.04 | 0.027 | 0.00043 | -14.37 |
| 0.442 | -0.00057 | 23.91 | 0.022 | 0.00040 | -13.40 |
| 0.468 | -0.00061 | 25.38 | 0.013 | 0.00032 | -10.73 |
| 0.489 | -0.00065 | 26.84 | 0.006 | 0.00022 | -6.91 |
| 0.494 | -0.00068 | 27.87 | 0.002 | 0.00014 | -4.02 |
| 0.490 | -0.00070 | 28.68 | 0.000 | 0.00004 | -0.59 |
| 0.449 | -0.00067 | 27.66 | 0.000 | 0.00005 | -0.89 |
| 0.451 | -0.00070 | 28.76 | 0.000 | 0.00007 | -1.58 |
| 0.421 | -0.00069 | 28.50 | 0.004 | 0.00022 | -7.02 |
| 0.393 | -0.00069 | 28.33 | 0.029 | 0.00061 | -21.18 |
| 0.355 | -0.00067 | 27.64 | 0.066 | 0.00096 | -33.79 |
| 0.369 | -0.00072 | 29.31 | 0.081 | 0.00112 | -39.40 |
| 0.321 | -0.00067 | 27.58 | 0.095 | 0.00127 | -44.96 |
| 0.281 | -0.00064 | 26.51 | 0.095 | 0.00134 | -47.54 |
| 0.255 | -0.00063 | 26.25 | 0.087 | 0.00135 | -47.93 |
| 0.239 | -0.00064 | 26.48 | 0.075 | 0.00131 | -46.27 |
| 0.207 | -0.00061 | 25.52 | 0.059 | 0.00122 | -42.97 |
| 0.181 | -0.00060 | 25.01 | 0.051 | 0.00119 | -41.99 |
| 0.206 | -0.00068 | 27.89 | 0.040 | 0.00112 | -39.57 |
| 0.187 | -0.00068 | 27.95 | 0.028 | 0.00099 | -34.87 |
| 0.147 | -0.00062 | 25.73 | 0.026 | 0.00101 | -35.65 |
| 0.120 | -0.00058 | 24.37 | 0.030 | 0.00114 | -40.23 |
| 0.085 | -0.00050 | 21.57 | 0.055 | 0.00162 | -57.74 |
| 0.145 | -0.00068 | 28.10 | 0.082 | 0.00209 | -74.54 |
| 0.203 | -0.00086 | 34.56 | 0.139 | 0.00287 | -102.99 |
| 0.194 | -0.00090 | 36.06 | 0.261 | 0.00413 | -148.61 |
| 0.170 | -0.00090 | 35.82 | 0.289 | 0.00468 | -168.61 |
| 0.149 | -0.00089 | 35.51 | 0.281 | 0.00490 | -176.66 |
| 0.150 | -0.00095 | 37.77 | 0.251 | 0.00485 | -174.63 |
| 0.150 | -0.00100 | 39.68 | 0.215 | 0.00463 | -166.71 |
| 0.143 | -0.00104 | 41.01 | 0.175 | 0.00432 | -155.42 |
| 0.143 | -0.00112 | 43.75 | 0.127 | 0.00382 | -137.45 |
| 0.191 | -0.00139 | 53.64 | 0.189 | 0.00499 | -179.87 |
| 0.224 | -0.00166 | 63.50 | 0.096 | 0.00356 | -127.82 |
| 0.189 | -0.00165 | 63.18 | 0.031 | 0.00206 | -73.36 |
| 0.148 | -0.00158 | 60.49 | 0.002 | 0.00051 | -17.21 |
| 0.089 | -0.00130 | 50.35 | 0.008 | -0.00117 | 43.98 |
| 0.032 | -0.00082 | 32.96 | 0.048 | -0.00313 | 115.15 |
| 0.015 | 0.00057 | -17.42 | 0.105 | -0.00541 | 197.76 |
| 0.066 | 0.00131 | -44.34 | 0.458 | -0.01145 | 417.33 |
| 0.437 | 0.00340 | -120.27 | 0.617 | -0.01535 | 558.94 |
| 0.563 | 0.00456 | -162.40 | 0.644 | -0.01803 | 656.58 |
| 0.596 | 0.00275 | -96.52 | 0.763 | -0.02210 | 804.31 |
| 0.760 | 0.00343 | -121.40 | 0.927 | -0.02695 | 980.94 |
| 0.737 | 0.00344 | -121.74 | 0.949 | -0.02854 | 1038.66 |
| 0.700 | 0.00340 | -120.31 | 0.954 | -0.02697 | 981.31 |
| 0.626 | 0.00329 | -116.29 | 0.973 | -0.02433 | 885.35 |

update for EV, CV:

**dPb** **NM305**

**LN Analysis** **dPb**

**Load** **Load Data, EV=3.78 lbs/day CV=1.04**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **4** | **Load Data-based LN** | | |
| **SD:** | **4** | u | ln tCd Load | tCd Load |
| **CV:** | **1.04** | 3 | 3.5 | 34 |
| **Min:** | **0.3** | 0 | 0.96 | 3 |
| **Max:** | **22** | -3 | -1.60 | 0.2 |
| **Median:** | **2** | | | |
| | | 4 | 3.78 | |
| | | 1.04 | 1.04 | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.989, EV=3.88lbs/day CV=1.24; max r2=0.99**

| | | | | | | |
|---|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.989 | u | lnLoad | Load | | |
| slope, m: | 1.035 | 3 | 3.79 | 44 | | |
| intercept, b: | -0.919 | 0 | 0.89 | 2 | | |
| N: | 96 | -3 | -2.01 | 0.1 | | |
| E[Load]: | 3.9 | Parameter Estimates | | | 0.989 | 0.989 |
| SD[Load]: | 5 | from LN regression | | | 3.9 | 3.88 |
| CV[Load]: | 1.24 | update graph label | | | 1.2 | 1.24 |
| | | | | | max r2 | |
| | **dPb** | N: 96 | | | 0.991 | |

| Date | **Load lbs/day Ranked** | **i rank** | **i-3/8 / N+1/4 plotting points** | **u y-axis** | **Ln x-axis** | **r2 forward** |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 3-Oct-91 | **0.3** | 1 | 0.0065 | -2.484 | -1.211 | 0.989 |
| 20-May-94 | **0.3** | 2 | 0.0169 | -2.123 | -1.110 | 0.990 |
| 27-Oct-98 | **0.5** | 3 | 0.0273 | -1.922 | -0.695 | 0.989 |
| 4-Oct-91 | **0.5** | 4 | 0.0377 | -1.778 | -0.656 | 0.990 |
| 8-Sep-94 | **0.5** | 5 | 0.0481 | -1.664 | -0.603 | 0.990 |
| 28-Oct-94 | **0.6** | 6 | 0.0584 | -1.568 | -0.460 | 0.990 |
| 15-Aug-94 | **0.7** | 7 | 0.0688 | -1.485 | -0.364 | 0.990 |
| 28-Oct-93 | **0.7** | 8 | 0.0792 | -1.410 | -0.310 | 0.991 |
| 18-Feb-94 | **0.7** | 9 | 0.0896 | -1.343 | -0.305 | 0.991 |
| 18-Feb-94 | **0.8** | 10 | 0.1000 | -1.282 | -0.285 | 0.991 |
| 2-Dec-93 | **0.8** | 11 | 0.1104 | -1.224 | -0.276 | 0.991 |
| 19-Nov-98 | **0.8** | 12 | 0.1208 | -1.171 | -0.255 | 0.991 |
| 1-Sep-99 | **0.8** | 13 | 0.1312 | -1.121 | -0.248 | 0.991 |
| 15-Aug-94 | **0.8** | 14 | 0.1416 | -1.073 | -0.206 | 0.991 |
| 8-Oct-98 | **0.9** | 15 | 0.1519 | -1.028 | -0.110 | 0.991 |
| 24-Sep-98 | **0.9** | 16 | 0.1623 | -0.985 | -0.088 | 0.990 |
| 1-Oct-98 | **0.9** | 17 | 0.1727 | -0.943 | -0.079 | 0.990 |
| 26-Aug-98 | **1.0** | 18 | 0.1831 | -0.904 | -0.026 | 0.990 |
| 26-Sep-96 | **1.0** | 19 | 0.1935 | -0.865 | 0.025 | 0.989 |
| 16-Dec-93 | **1.0** | 20 | 0.2039 | -0.828 | 0.032 | 0.989 |
| 24-Jan-94 | **1.1** | 21 | 0.2143 | -0.792 | 0.071 | 0.989 |
| 23-Feb-99 | **1.1** | 22 | 0.2247 | -0.756 | 0.129 | 0.989 |
| 21-Aug-96 | **1.2** | 23 | 0.2351 | -0.722 | 0.145 | 0.988 |
| 10-Dec-98 | **1.2** | 24 | 0.2455 | -0.689 | 0.150 | 0.988 |
| 11-Nov-97 | **1.2** | 25 | 0.2558 | -0.656 | 0.186 | 0.988 |
| 20-Jul-94 | **1.2** | 26 | 0.2662 | -0.624 | 0.223 | 0.987 |
| 16-Oct-97 | **1.3** | 27 | 0.2766 | -0.593 | 0.261 | 0.987 |
| 28-Jul-98 | **1.3** | 28 | 0.2870 | -0.562 | 0.262 | 0.986 |
| 20-Jul-94 | **1.4** | 29 | 0.2974 | -0.532 | 0.308 | 0.986 |
| 13-Dec-94 | **1.4** | 30 | 0.3078 | -0.502 | 0.309 | 0.985 |
| 29-Oct-96 | **1.4** | 31 | 0.3182 | -0.473 | 0.316 | 0.985 |
| 21-Jan-98 | **1.4** | 32 | 0.3286 | -0.444 | 0.317 | 0.984 |
| 27-Nov-96 | **1.4** | 33 | 0.3390 | -0.415 | 0.323 | 0.984 |
| 17-Dec-97 | **1.5** | 34 | 0.3494 | -0.387 | 0.395 | 0.984 |
| 4-Sep-97 | **1.5** | 35 | 0.3597 | -0.359 | 0.400 | 0.984 |
| 14-Aug-95 | **1.5** | 36 | 0.3701 | -0.332 | 0.419 | 0.983 |
| 4-Aug-99 | **1.5** | 37 | 0.3805 | -0.304 | 0.423 | 0.983 |
| 24-Jul-96 | **1.5** | 38 | 0.3909 | -0.277 | 0.437 | 0.983 |
| 31-Dec-98 | **1.6** | 39 | 0.4013 | -0.250 | 0.447 | 0.984 |
| 26-Nov-97 | **1.6** | 40 | 0.4117 | -0.223 | 0.453 | 0.985 |
| 26-Jul-95 | **1.8** | 41 | 0.4221 | -0.197 | 0.605 | 0.986 |
| 14-Aug-97 | **1.9** | 42 | 0.4325 | -0.170 | 0.638 | 0.986 |
| 15-Jan-99 | **2.0** | 43 | 0.4429 | -0.144 | 0.712 | 0.986 |
| 23-Jun-94 | **2.1** | 44 | 0.4532 | -0.117 | 0.726 | 0.986 |
| 15-Nov-94 | **2.1** | 45 | 0.4636 | -0.091 | 0.738 | 0.986 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 26-Jun-98 | 2.1 | 46 | 0.4740 | -0.065 | 0.738 | 0.986 |
| 25-Feb-98 | 2.2 | 47 | 0.4844 | -0.039 | 0.772 | 0.986 |
| 11-Jul-95 | 2.2 | 48 | 0.4948 | -0.013 | 0.794 | 0.986 |
| 10-Jan-95 | 2.3 | 49 | 0.5052 | 0.013 | 0.843 | 0.987 |
| 8-Mar-94 | 2.6 | 50 | 0.5156 | 0.039 | 0.949 | 0.987 |
| 7-Jul-99 | 2.7 | 51 | 0.5260 | 0.065 | 0.975 | 0.987 |
| 13-Dec-96 | 2.8 | 52 | 0.5364 | 0.091 | 1.014 | 0.986 |
| 20-Mar-98 | 2.8 | 53 | 0.5468 | 0.117 | 1.015 | 0.986 |
| 23-Jul-97 | 2.9 | 54 | 0.5571 | 0.144 | 1.049 | 0.985 |
| 27-Jun-95 | 2.9 | 55 | 0.5675 | 0.170 | 1.052 | 0.985 |
| 30-Jan-97 | 2.9 | 56 | 0.5779 | 0.197 | 1.067 | 0.985 |
| 19-Jun-96 | 3.1 | 57 | 0.5883 | 0.223 | 1.120 | 0.984 |
| 21-Jan-99 | 3.1 | 58 | 0.5987 | 0.250 | 1.124 | 0.984 |
| 7-Jun-94 | 3.1 | 59 | 0.6091 | 0.277 | 1.136 | 0.984 |
| 24-Jun-97 | 3.1 | 60 | 0.6195 | 0.304 | 1.146 | 0.985 |
| 8-Mar-94 | 3.2 | 61 | 0.6299 | 0.332 | 1.150 | 0.986 |
| 18-Oct-95 | 3.5 | 62 | 0.6403 | 0.359 | 1.260 | 0.988 |
| 23-Mar-94 | 3.7 | 63 | 0.6506 | 0.387 | 1.308 | 0.989 |
| 16-May-91 | 3.8 | 64 | 0.6610 | 0.415 | 1.336 | 0.989 |
| 15-May-91 | 3.9 | 65 | 0.6714 | 0.444 | 1.352 | 0.989 |
| 8-May-96 | 4.1 | 66 | 0.6818 | 0.473 | 1.414 | 0.990 |
| 7-May-98 | 4.5 | 67 | 0.6922 | 0.502 | 1.499 | 0.990 |
| 21-Nov-95 | 4.7 | 68 | 0.7026 | 0.532 | 1.545 | 0.989 |
| 7-Mar-95 | 4.8 | 69 | 0.7130 | 0.562 | 1.559 | 0.989 |
| 5-May-99 | 4.8 | 70 | 0.7234 | 0.593 | 1.559 | 0.988 |
| 8-Mar-99 | 5.0 | 71 | 0.7338 | 0.624 | 1.605 | 0.987 |
| 26-Oct-98 | 5.1 | 72 | 0.7442 | 0.656 | 1.622 | 0.986 |
| 25-Apr-95 | 5.4 | 73 | 0.7545 | 0.689 | 1.691 | 0.985 |
| 19-Feb-97 | 5.4 | 74 | 0.7649 | 0.722 | 1.692 | 0.985 |
| 7-Apr-94 | 5.6 | 75 | 0.7753 | 0.756 | 1.715 | 0.984 |
| 19-Apr-99 | 5.6 | 76 | 0.7857 | 0.792 | 1.722 | 0.983 |
| 23-Apr-98 | 5.9 | 77 | 0.7961 | 0.828 | 1.774 | 0.982 |
| 15-May-98 | 6.0 | 78 | 0.8065 | 0.865 | 1.793 | 0.981 |
| 23-May-95 | 6.4 | 79 | 0.8169 | 0.904 | 1.860 | 0.979 |
| 31-May-99 | 6.5 | 80 | 0.8273 | 0.943 | 1.873 | 0.978 |
| 15-Jun-99 | 6.6 | 81 | 0.8377 | 0.985 | 1.886 | 0.976 |
| 13-Apr-95 | 6.9 | 82 | 0.8481 | 1.028 | 1.931 | 0.974 |
| 9-Feb-95 | 6.9 | 83 | 0.8584 | 1.073 | 1.934 | 0.971 |
| 17-Apr-96 | 7.0 | 84 | 0.8688 | 1.121 | 1.949 | 0.968 |
| 23-May-99 | 7.5 | 85 | 0.8792 | 1.171 | 2.021 | 0.965 |
| 16-Apr-97 | 8.1 | 86 | 0.8896 | 1.224 | 2.091 | 0.961 |
| 28-May-98 | 8.2 | 87 | 0.9000 | 1.282 | 2.110 | 0.954 |
| 29-Feb-96 | 9.4 | 88 | 0.9104 | 1.343 | 2.245 | 0.949 |
| 28-Mar-96 | 9.4 | 89 | 0.9208 | 1.410 | 2.245 | 0.940 |
| 22-Mar-99 | 9.7 | 90 | 0.9312 | 1.485 | 2.267 | 0.926 |
| 9-May-95 | 10.5 | 91 | 0.9416 | 1.568 | 2.350 | 0.924 |
| 27-May-99 | 13.6 | 92 | 0.9519 | 1.664 | 2.611 | 0.973 |
| 26-Mar-97 | 14.4 | 93 | 0.9623 | 1.778 | 2.668 | |
| 26-May-99 | 15.2 | 94 | 0.9727 | 1.922 | 2.723 | |
| 17-Jan-96 | 16.7 | 95 | 0.9831 | 2.123 | 2.816 | |
| 19-Apr-94 | 22.4 | 96 | 0.9935 | 2.484 | 3.111 | |

| | | update for EV, CV: | | | |
|---|---|---|---|---|---|
| **dPb** | | **NM305** | | 41 | 40.9 |
| **LN Analysis** | | **dPb** | | 0.40 | 0.395 |
| **Concentration** | | **Conc. Data, EV=40.9 ug/L CV=0.395** | | | |
| **Avg:** | **41** | **Data-based LN** | | | |
| **SD:** | **16** | u | ln[tCd] | [tCd] | |
| **CV:** | **0.40** | 3 | 4.8 | 119 | |
| **Min:** | **4** | 0 | 3.64 | 38 | |
| **Max:** | **91** | -3 | 2.50 | 12 | |
| **Median:** | **38** | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 0.905 | 0.905 |
| | **u=mLn{Conc.}+b:** | | | | 42.1 | 42.1 |
| update for r2, EV, CV: | **r2=0.905, EV=42.1 ug/L CV=0.509; max r2=0.99** | | | | 0.509 | 0.509 |
| | r2 u,lnConc: | 0.905 | u | lnConc. | Conc. | |
| | slope, m: | 2.082 | 3 | 5.07 | 158 | |
| | intercept, b: | -7.545 | 0 | 3.62 | 38 | |
| | N: | 96 | -3 | 2.18 | 9 | |
| | E[Conc]: | 42.1 | Parameter Estimates | | | |
| | SD[Conc]: | 21 | from LN regression | | | |
| | CV[Conc]: | 0.51 | update graph label | | | |

| | **dPb** | N: 96 | | | | max r2 0.992 |
|---|---|---|---|---|---|---|
| | **Concentration** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **ug/L Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | **forward** |
| update and rank for new data | | | | | | |
| 20-May-94 | 4 | 1 | 0.0065 | -2.484 | 1.386 | 0.905 |
| 19-Apr-99 | 13 | 2 | 0.0169 | -2.123 | 2.565 | 0.973 |
| 15-May-91 | 14 | 3 | 0.0273 | -1.922 | 2.639 | 0.974 |
| 16-May-91 | 14 | 4 | 0.0377 | -1.778 | 2.639 | 0.977 |
| 3-Oct-91 | 15 | 5 | 0.0481 | -1.664 | 2.708 | 0.984 |
| 31-May-99 | 22 | 6 | 0.0584 | -1.568 | 3.091 | 0.992 |
| 7-May-98 | 23 | 7 | 0.0688 | -1.485 | 3.135 | 0.992 |
| 22-Mar-99 | 23 | 8 | 0.0792 | -1.410 | 3.135 | 0.992 |
| 23-May-99 | 23 | 9 | 0.0896 | -1.343 | 3.135 | 0.992 |
| 26-May-99 | 23 | 10 | 0.1000 | -1.282 | 3.135 | 0.991 |
| 27-May-99 | 23 | 11 | 0.1104 | -1.224 | 3.135 | 0.991 |
| 4-Oct-91 | 24 | 12 | 0.1208 | -1.171 | 3.178 | 0.991 |
| 15-Jun-99 | 25 | 13 | 0.1312 | -1.121 | 3.219 | 0.991 |
| 15-May-98 | 25.5 | 14 | 0.1416 | -1.073 | 3.239 | 0.991 |
| 8-Sep-94 | 26 | 15 | 0.1519 | -1.028 | 3.258 | 0.991 |
| 26-Oct-98 | 26 | 16 | 0.1623 | -0.985 | 3.258 | 0.990 |
| 5-May-99 | 26 | 17 | 0.1727 | -0.943 | 3.258 | 0.990 |
| 28-Oct-93 | 29 | 18 | 0.1831 | -0.904 | 3.367 | 0.990 |
| 27-Oct-98 | 29 | 19 | 0.1935 | -0.865 | 3.367 | 0.990 |
| 7-Jul-99 | 29 | 20 | 0.2039 | -0.828 | 3.367 | 0.990 |
| 1-Sep-99 | 29 | 21 | 0.2143 | -0.792 | 3.367 | 0.990 |
| 2-Dec-93 | 30 | 22 | 0.2247 | -0.756 | 3.401 | 0.989 |
| 28-Oct-94 | 30 | 23 | 0.2351 | -0.722 | 3.401 | 0.989 |
| 17-Dec-97 | 30 | 24 | 0.2455 | -0.689 | 3.401 | 0.989 |
| 23-Feb-99 | 30 | 25 | 0.2558 | -0.656 | 3.401 | 0.989 |
| 26-Aug-98 | 31 | 26 | 0.2662 | -0.624 | 3.434 | 0.988 |
| 24-Sep-98 | 31 | 27 | 0.2766 | -0.593 | 3.434 | 0.988 |
| 8-Oct-98 | 31 | 28 | 0.2870 | -0.562 | 3.434 | 0.988 |
| 1-Oct-98 | 32 | 29 | 0.2974 | -0.532 | 3.466 | 0.987 |
| 4-Aug-99 | 33 | 30 | 0.3078 | -0.502 | 3.497 | 0.987 |
| 24-Jan-94 | 34 | 31 | 0.3182 | -0.473 | 3.526 | 0.987 |
| 18-Feb-94 | 34 | 32 | 0.3286 | -0.444 | 3.526 | 0.987 |
| 18-Feb-94 | 34 | 33 | 0.3390 | -0.415 | 3.526 | 0.988 |
| 28-May-98 | 34 | 34 | 0.3494 | -0.387 | 3.526 | 0.988 |
| 15-Aug-94 | 35 | 35 | 0.3597 | -0.359 | 3.555 | 0.987 |
| 15-Aug-94 | 35 | 36 | 0.3701 | -0.332 | 3.555 | 0.988 |
| 24-Jun-97 | 35 | 37 | 0.3805 | -0.304 | 3.555 | 0.988 |
| 28-Jul-98 | 35 | 38 | 0.3909 | -0.277 | 3.555 | 0.988 |
| 21-Aug-96 | 36 | 39 | 0.4013 | -0.250 | 3.584 | 0.988 |
| 26-Jun-98 | 36 | 40 | 0.4117 | -0.223 | 3.584 | 0.988 |
| 19-Nov-98 | 36 | 41 | 0.4221 | -0.197 | 3.584 | 0.988 |
| 10-Dec-98 | 36 | 42 | 0.4325 | -0.170 | 3.584 | 0.988 |
| 19-Jun-96 | 37 | 43 | 0.4429 | -0.144 | 3.611 | 0.987 |
| 26-Sep-96 | 37 | 44 | 0.4532 | -0.117 | 3.611 | 0.988 |
| 21-Jan-98 | 37 | 45 | 0.4636 | -0.091 | 3.611 | 0.987 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8-Mar-99 | 37 | 46 | 0.4740 | -0.065 | 3.611 | 0.987 |
| 16-Oct-97 | 38 | 47 | 0.4844 | -0.039 | 3.638 | 0.987 |
| 20-Mar-98 | 38 | 48 | 0.4948 | -0.013 | 3.638 | 0.986 |
| 31-Dec-98 | 38 | 49 | 0.5052 | 0.013 | 3.638 | 0.986 |
| 15-Jan-99 | 38 | 50 | 0.5156 | 0.039 | 3.638 | 0.986 |
| 29-Feb-96 | 39 | 51 | 0.5260 | 0.065 | 3.664 | 0.985 |
| 28-Mar-96 | 39 | 52 | 0.5364 | 0.091 | 3.664 | 0.985 |
| 26-Nov-97 | 39 | 53 | 0.5468 | 0.117 | 3.664 | 0.984 |
| 16-Dec-93 | 40 | 54 | 0.5571 | 0.144 | 3.689 | 0.983 |
| 8-May-96 | 40 | 55 | 0.5675 | 0.170 | 3.689 | 0.983 |
| 24-Jul-96 | 40 | 56 | 0.5779 | 0.197 | 3.689 | 0.982 |
| 30-Jan-97 | 40 | 57 | 0.5883 | 0.223 | 3.689 | 0.981 |
| 23-Apr-98 | 40 | 58 | 0.5987 | 0.250 | 3.689 | 0.981 |
| 29-Oct-96 | 41 | 59 | 0.6091 | 0.277 | 3.714 | 0.980 |
| 4-Sep-97 | 41 | 60 | 0.6195 | 0.304 | 3.714 | 0.980 |
| 11-Nov-97 | 41.6 | 61 | 0.6299 | 0.332 | 3.728 | 0.980 |
| 25-Feb-98 | 42 | 62 | 0.6403 | 0.359 | 3.738 | 0.979 |
| 27-Nov-96 | 43 | 63 | 0.6506 | 0.387 | 3.761 | 0.980 |
| 21-Jan-99 | 44 | 64 | 0.6610 | 0.415 | 3.784 | 0.979 |
| 17-Apr-96 | 45 | 65 | 0.6714 | 0.444 | 3.807 | 0.978 |
| 8-Mar-94 | 46 | 66 | 0.6818 | 0.473 | 3.829 | 0.977 |
| 8-Mar-94 | 46 | 67 | 0.6922 | 0.502 | 3.829 | 0.976 |
| 14-Aug-97 | 46 | 68 | 0.7026 | 0.532 | 3.829 | 0.975 |
| 26-Mar-97 | 47 | 69 | 0.7130 | 0.562 | 3.850 | 0.974 |
| 19-Apr-94 | 48 | 70 | 0.7234 | 0.593 | 3.871 | 0.973 |
| 20-Jul-94 | 49 | 71 | 0.7338 | 0.624 | 3.892 | 0.971 |
| 20-Jul-94 | 49 | 72 | 0.7442 | 0.656 | 3.892 | 0.969 |
| 19-Feb-97 | 49 | 73 | 0.7545 | 0.689 | 3.892 | 0.968 |
| 16-Apr-97 | 49 | 74 | 0.7649 | 0.722 | 3.892 | 0.966 |
| 23-Jun-94 | 52 | 75 | 0.7753 | 0.756 | 3.951 | 0.967 |
| 23-Jul-97 | 52 | 76 | 0.7857 | 0.792 | 3.951 | 0.965 |
| 23-Mar-94 | 53 | 77 | 0.7961 | 0.828 | 3.970 | 0.962 |
| 7-Jun-94 | 54 | 78 | 0.8065 | 0.865 | 3.989 | 0.959 |
| 10-Jan-95 | 54 | 79 | 0.8169 | 0.904 | 3.989 | 0.956 |
| 23-May-95 | 54 | 80 | 0.8273 | 0.943 | 3.989 | 0.953 |
| 7-Apr-94 | 57 | 81 | 0.8377 | 0.985 | 4.043 | 0.954 |
| 13-Apr-95 | 58 | 82 | 0.8481 | 1.028 | 4.060 | 0.949 |
| 13-Dec-96 | 58 | 83 | 0.8584 | 1.073 | 4.060 | 0.944 |
| 13-Dec-94 | 60 | 84 | 0.8688 | 1.121 | 4.094 | 0.940 |
| 7-Mar-95 | 61 | 85 | 0.8792 | 1.171 | 4.111 | 0.932 |
| 25-Apr-95 | 64 | 86 | 0.8896 | 1.224 | 4.159 | 0.924 |
| 9-May-95 | 64 | 87 | 0.9000 | 1.282 | 4.159 | 0.913 |
| 17-Jan-96 | 65 | 88 | 0.9104 | 1.343 | 4.174 | 0.897 |
| 21-Nov-95 | 67 | 89 | 0.9208 | 1.410 | 4.205 | 0.877 |
| 27-Jun-95 | 72 | 90 | 0.9312 | 1.485 | 4.277 | 0.847 |
| 11-Jul-95 | 72 | 91 | 0.9416 | 1.568 | 4.277 | 0.847 |
| 9-Feb-95 | 73 | 92 | 0.9519 | 1.664 | 4.290 | 0.825 |
| 14-Aug-95 | 74 | 93 | 0.9623 | 1.778 | 4.304 | |
| 26-Jul-95 | 75 | 94 | 0.9727 | 1.922 | 4.317 | |
| 15-Nov-94 | 90 | 95 | 0.9831 | 2.123 | 4.500 | |
| 18-Oct-95 | 91 | 96 | 0.9935 | 2.484 | 4.511 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **dPb** | | **NM305** | | | 20 | 19.9 |
| **LN Analysis** | | **dPb** | | | 1.18 | 1.18 |
| **Discharge, Q** | | **Q Data, EV=19.9 cfs CV=1.18** | | | | |
| **Avg:** | **20** | **Q Data-based LN** | | | | |
| **SD:** | **23** | u | lnQ | Q | | |
| **CV:** | **1.18** | 3 | 5.4 | 211 | | |
| **Min:** | **3** | 0 | 2.55 | 13 | | |
| **Max:** | **123** | -3 | -0.24 | 1 | | |
| **Median:** | **9** | | | | | |

| | | | | | 0.927 | 0.927 |
|---|---|---|---|---|---|---|
| | | | | | 19.8 | 19.8 |
| **u=mLn{Q}+b:** | | | | | 1.31 | 1.31 |
| update for r2, EV, CV: | **r2=0.927, EV=19.8 cfs CV=1.31; max r2=0.98** | | | | | |
| | r2 u,lnQ: | 0.927 | u | lnQ | Q | |
| | slope, m: | 1.002 | 3 | 5.48 | 241 | |
| | intercept, b: | -2.493 | 0 | 2.49 | 12 | |
| | N: | 96 | -3 | -0.51 | 1 | |
| | E[Q]: | 19.8 | Parameter Estimates | | | |
| | SD[Q]: | 26 | from LN regression | | | |
| | CV[Q]: | 1.31 | update graph label | | | |

| | Q | N: 96 | | | | max r2 0.981 |
|---|---|---|---|---|---|---|
| | Discharge | i | i-3/8 / N+1/4 | u | Ln | r2 |
| **Date** | **cfs Ranked** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| update and rank for new data | | | | | | |
| 27-Oct-98 | 3.2 | 1 | 0.0065 | -2.484 | 1.163 | 0.927 |
| 3-Oct-91 | 3.69 | 2 | 0.0169 | -2.123 | 1.306 | 0.938 |
| 15-Aug-94 | 3.69 | 3 | 0.0273 | -1.922 | 1.306 | 0.946 |
| 14-Aug-95 | 3.82 | 4 | 0.0377 | -1.778 | 1.340 | 0.952 |
| 8-Sep-94 | 3.91 | 5 | 0.0481 | -1.664 | 1.364 | 0.957 |
| 28-Oct-94 | 3.91 | 6 | 0.0584 | -1.568 | 1.364 | 0.961 |
| 19-Nov-98 | 4 | 7 | 0.0688 | -1.485 | 1.386 | 0.964 |
| 4-Oct-91 | 4.02 | 8 | 0.0792 | -1.410 | 1.391 | 0.967 |
| 18-Feb-94 | 4.03 | 9 | 0.0896 | -1.343 | 1.394 | 0.969 |
| 18-Feb-94 | 4.11 | 10 | 0.1000 | -1.282 | 1.413 | 0.970 |
| 13-Dec-94 | 4.22 | 11 | 0.1104 | -1.224 | 1.440 | 0.972 |
| 15-Aug-94 | 4.32 | 12 | 0.1208 | -1.171 | 1.463 | 0.973 |
| 15-Nov-94 | 4.32 | 13 | 0.1312 | -1.121 | 1.463 | 0.974 |
| 26-Jul-95 | 4.54 | 14 | 0.1416 | -1.073 | 1.513 | 0.975 |
| 28-Oct-93 | 4.7 | 15 | 0.1519 | -1.028 | 1.548 | 0.976 |
| 2-Dec-93 | 4.7 | 16 | 0.1623 | -0.985 | 1.548 | 0.977 |
| 20-Jul-94 | 4.74 | 17 | 0.1727 | -0.943 | 1.556 | 0.978 |
| 16-Dec-93 | 4.8 | 18 | 0.1831 | -0.904 | 1.569 | 0.979 |
| 1-Sep-99 | 5 | 19 | 0.1935 | -0.865 | 1.609 | 0.979 |
| 26-Sep-96 | 5.15 | 20 | 0.2039 | -0.828 | 1.639 | 0.980 |
| 20-Jul-94 | 5.16 | 21 | 0.2143 | -0.792 | 1.641 | 0.980 |
| 1-Oct-98 | 5.37 | 22 | 0.2247 | -0.756 | 1.681 | 0.981 |
| 8-Oct-98 | 5.37 | 23 | 0.2351 | -0.722 | 1.681 | 0.981 |
| 11-Nov-97 | 5.38 | 24 | 0.2455 | -0.689 | 1.683 | 0.981 |
| 24-Sep-98 | 5.49 | 25 | 0.2558 | -0.656 | 1.703 | 0.981 |
| 11-Jul-95 | 5.71 | 26 | 0.2662 | -0.624 | 1.742 | 0.981 |
| 26-Aug-98 | 5.84 | 27 | 0.2766 | -0.593 | 1.765 | 0.981 |
| 24-Jan-94 | 5.87 | 28 | 0.2870 | -0.562 | 1.770 | 0.981 |
| 21-Aug-96 | 5.97 | 29 | 0.2974 | -0.532 | 1.787 | 0.981 |
| 27-Nov-96 | 5.97 | 30 | 0.3078 | -0.502 | 1.787 | 0.981 |
| 10-Dec-98 | 6 | 31 | 0.3182 | -0.473 | 1.792 | 0.980 |
| 29-Oct-96 | 6.22 | 32 | 0.3286 | -0.444 | 1.828 | 0.980 |
| 16-Oct-97 | 6.35 | 33 | 0.3390 | -0.415 | 1.848 | 0.979 |
| 4-Sep-97 | 6.76 | 34 | 0.3494 | -0.387 | 1.911 | 0.979 |
| 21-Jan-98 | 6.9 | 35 | 0.3597 | -0.359 | 1.932 | 0.978 |
| 28-Jul-98 | 6.9 | 36 | 0.3701 | -0.332 | 1.932 | 0.978 |
| 23-Feb-99 | 7.05 | 37 | 0.3805 | -0.304 | 1.953 | 0.977 |
| 24-Jul-96 | 7.19 | 38 | 0.3909 | -0.277 | 1.973 | 0.976 |
| 18-Oct-95 | 7.2 | 39 | 0.4013 | -0.250 | 1.974 | 0.976 |
| 23-Jun-94 | 7.39 | 40 | 0.4117 | -0.223 | 2.000 | 0.975 |
| 27-Jun-95 | 7.39 | 41 | 0.4221 | -0.197 | 2.000 | 0.974 |
| 26-Nov-97 | 7.5 | 42 | 0.4325 | -0.170 | 2.015 | 0.973 |
| 14-Aug-97 | 7.65 | 43 | 0.4429 | -0.144 | 2.035 | 0.972 |
| 31-Dec-98 | 7.65 | 44 | 0.4532 | -0.117 | 2.035 | 0.971 |
| 10-Jan-95 | 8 | 45 | 0.4636 | -0.091 | 2.079 | 0.971 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4-Aug-99 | 8.6 | 46 | 0.4740 | -0.065 | 2.152 | 0.970 |
| 13-Dec-96 | 8.83 | 47 | 0.4844 | -0.039 | 2.178 | 0.969 |
| 17-Dec-97 | 9.2 | 48 | 0.4948 | -0.013 | 2.219 | 0.968 |
| 25-Feb-98 | 9.58 | 49 | 0.5052 | 0.013 | 2.260 | 0.967 |
| 15-Jan-99 | 9.97 | 50 | 0.5156 | 0.039 | 2.300 | 0.966 |
| 23-Jul-97 | 10.2 | 51 | 0.5260 | 0.065 | 2.322 | 0.965 |
| 8-Mar-94 | 10.44 | 52 | 0.5364 | 0.091 | 2.346 | 0.964 |
| 7-Jun-94 | 10.72 | 53 | 0.5468 | 0.117 | 2.372 | 0.963 |
| 26-Jun-98 | 10.8 | 54 | 0.5571 | 0.144 | 2.380 | 0.962 |
| 8-Mar-94 | 12.76 | 55 | 0.5675 | 0.170 | 2.546 | 0.961 |
| 23-Mar-94 | 12.97 | 56 | 0.5779 | 0.197 | 2.563 | 0.960 |
| 21-Nov-95 | 13 | 57 | 0.5883 | 0.223 | 2.565 | 0.958 |
| 21-Jan-99 | 13 | 58 | 0.5987 | 0.250 | 2.565 | 0.956 |
| 30-Jan-97 | 13.5 | 59 | 0.6091 | 0.277 | 2.603 | 0.955 |
| 20-Mar-98 | 13.5 | 60 | 0.6195 | 0.304 | 2.603 | 0.953 |
| 7-Mar-95 | 14.49 | 61 | 0.6299 | 0.332 | 2.673 | 0.952 |
| 20-May-94 | 15.31 | 62 | 0.6403 | 0.359 | 2.729 | 0.951 |
| 19-Jun-96 | 15.4 | 63 | 0.6506 | 0.387 | 2.734 | 0.949 |
| 25-Apr-95 | 15.75 | 64 | 0.6610 | 0.415 | 2.757 | 0.948 |
| 24-Jun-97 | 16.7 | 65 | 0.6714 | 0.444 | 2.815 | 0.947 |
| 7-Jul-99 | 17 | 66 | 0.6818 | 0.473 | 2.833 | 0.947 |
| 9-Feb-95 | 17.61 | 67 | 0.6922 | 0.502 | 2.868 | 0.947 |
| 7-Apr-94 | 18.12 | 68 | 0.7026 | 0.532 | 2.897 | 0.947 |
| 8-May-96 | 19.1 | 69 | 0.7130 | 0.562 | 2.950 | 0.950 |
| 19-Feb-97 | 20.6 | 70 | 0.7234 | 0.593 | 3.025 | 0.953 |
| 13-Apr-95 | 22.11 | 71 | 0.7338 | 0.624 | 3.096 | 0.956 |
| 23-May-95 | 22.11 | 72 | 0.7442 | 0.656 | 3.096 | 0.958 |
| 8-Mar-99 | 25 | 73 | 0.7545 | 0.689 | 3.219 | 0.965 |
| 23-Apr-98 | 27.4 | 74 | 0.7649 | 0.722 | 3.311 | 0.968 |
| 17-Apr-96 | 29 | 75 | 0.7753 | 0.756 | 3.367 | 0.969 |
| 9-May-95 | 30.45 | 76 | 0.7857 | 0.792 | 3.416 | 0.969 |
| 16-Apr-97 | 30.7 | 77 | 0.7961 | 0.828 | 3.424 | 0.969 |
| 5-May-99 | 34 | 78 | 0.8065 | 0.865 | 3.526 | 0.972 |
| 7-May-98 | 36.2 | 79 | 0.8169 | 0.904 | 3.589 | 0.971 |
| 26-Oct-98 | 36.2 | 80 | 0.8273 | 0.943 | 3.589 | 0.969 |
| 15-May-98 | 43.8 | 81 | 0.8377 | 0.985 | 3.780 | 0.970 |
| 29-Feb-96 | 45 | 82 | 0.8481 | 1.028 | 3.807 | 0.970 |
| 28-Mar-96 | 45 | 83 | 0.8584 | 1.073 | 3.807 | 0.971 |
| 28-May-98 | 45.1 | 84 | 0.8688 | 1.121 | 3.809 | 0.969 |
| 17-Jan-96 | 47.8 | 85 | 0.8792 | 1.171 | 3.867 | 0.965 |
| 15-Jun-99 | 49 | 86 | 0.8896 | 1.224 | 3.892 | 0.961 |
| 16-May-91 | 50.5 | 87 | 0.9000 | 1.282 | 3.922 | 0.956 |
| 15-May-91 | 51.3 | 88 | 0.9104 | 1.343 | 3.938 | 0.948 |
| 31-May-99 | 55 | 89 | 0.9208 | 1.410 | 4.007 | 0.938 |
| 26-Mar-97 | 57 | 90 | 0.9312 | 1.485 | 4.043 | 0.924 |
| 23-May-99 | 61 | 91 | 0.9416 | 1.568 | 4.111 | 0.914 |
| 22-Mar-99 | 78 | 92 | 0.9519 | 1.664 | 4.357 | 0.943 |
| 19-Apr-99 | 80 | 93 | 0.9623 | 1.778 | 4.382 | |
| 19-Apr-94 | 86.89 | 94 | 0.9727 | 1.922 | 4.465 | |
| 27-May-99 | 110 | 95 | 0.9831 | 2.123 | 4.700 | |
| 26-May-99 | 123 | 96 | 0.9935 | 2.484 | 4.812 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM305 | **Date:** | 29-May-00 |
| **Chemical:** | dZn | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |

**Input Discharge and Concentration Data below (in red)**

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,293 | 20 | 3,364 | 275 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 772 | 23 | 1,356 | 248 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.18 | 0.40 | 0.90 | | | | |
| **Min:** | 33,373 | 3 | 864 | 45 | | -0.71 | -1.84 | -0.93 |
| **Max:** | 36,404 | 123 | 7,460 | 1,678 | | 4.41 | 3.02 | 5.65 |
| **Median:** | 35,351 | 9 | 3,155 | 180 | | -0.45 | -0.15 | -0.38 |

| dZn | NM305 | | : Concentration v. Discharge, Q | | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.26)** | | update r2 | | | | r2: | 0.053 | 0.060 |
| r2 Q,[COC]: | 0.27 | [dZn] | Q | | | m: | 0.0070 | 0.00030 |
| slope, m: | -30.1 | 3,866 | 3.2 | | | b: | -226 | -8.08 |
| intercept, b: | 3962.5 | 3,364 | 19.9 | | | | | |
| N: | 96 | 256 | 123 | | | | | |
| **LnConc. = mLn(Q)+b (r2=0.36)** | | | update r2 | | | | | |
| r2 lnQ,ln[COC]: | 0.39 | ln[dZn] | ln Q | [dZn] | Q | | | |
| slope, m: | -0.29 | 8.42 | 1.16 | 4,515 | 3 | | | |
| intercept, b: | 8.75 | 7.89 | 2.99 | 2,672 | 20 | | | |
| N: | 96 | 7.37 | 4.81 | 1,582 | 123 | | | |

**N= 96**

| | Sampling Date | Q Discharge | dZn Concentration | dZn Load | Ln Q | Ln dZn Conc. | Ln dZn Load | dZn NM305 Standardized Values = (x - Avg)/SD | | for graph 0 |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | Q | Conc | Load |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 15-May-91 | 51.3 | 1940 | 535 | 3.94 | 7.57 | 6.28 | 1.35 | -1.05 | 1.05 |
| MFG | 16-May-91 | 50.5 | 1990 | 541 | 3.92 | 7.60 | 6.29 | 1.31 | -1.01 | 1.07 |
| MFG | 3-Oct-91 | 3.69 | 2640 | 52 | 1.31 | 7.88 | 3.96 | -0.69 | -0.53 | -0.90 |
| MFG | 4-Oct-91 | 4.02 | 4550 | 98 | 1.39 | 8.42 | 4.59 | -0.68 | 0.87 | -0.71 |
| IDEQ | 28-Oct-93 | 4.7 | 4510 | 114 | 1.55 | 8.41 | 4.74 | -0.65 | 0.85 | -0.65 |
| IDEQ | 2-Dec-93 | 4.7 | 4260 | 108 | 1.55 | 8.36 | 4.68 | -0.65 | 0.66 | -0.68 |
| IDEQ | 16-Dec-93 | 4.8 | 4830 | 125 | 1.57 | 8.48 | 4.83 | -0.64 | 1.08 | -0.61 |
| IDEQ | 24-Jan-94 | 5.87 | 4210 | 133 | 1.77 | 8.35 | 4.89 | -0.60 | 0.62 | -0.57 |
| IDEQ | 18-Feb-94 | 4.03 | 4070 | 88 | 1.39 | 8.31 | 4.48 | -0.68 | 0.52 | -0.75 |
| IDEQ | 18-Feb-94 | 4.11 | 4070 | 90 | 1.41 | 8.31 | 4.50 | -0.67 | 0.52 | -0.75 |
| IDEQ | 8-Mar-94 | 10.44 | 3760 | 211 | 2.35 | 8.23 | 5.35 | -0.40 | 0.29 | -0.26 |
| IDEQ | 8-Mar-94 | 12.76 | 3760 | 258 | 2.55 | 8.23 | 5.55 | -0.30 | 0.29 | -0.07 |
| IDEQ | 23-Mar-94 | 12.97 | 3810 | 266 | 2.56 | 8.25 | 5.58 | -0.29 | 0.33 | -0.04 |
| IDEQ | 7-Apr-94 | 18.12 | 3940 | 384 | 2.90 | 8.28 | 5.95 | -0.07 | 0.42 | 0.44 |
| IDEQ | 19-Apr-94 | 86.89 | 3590 | 1678 | 4.46 | 8.19 | 7.43 | 2.87 | 0.17 | 5.65 |
| IDEQ | 20-May-94 | 15.31 | 2520 | 208 | 2.73 | 7.83 | 5.34 | -0.19 | -0.62 | -0.27 |
| IDEQ | 7-Jun-94 | 10.72 | 3160 | 182 | 2.37 | 8.06 | 5.21 | -0.39 | -0.15 | -0.38 |
| IDEQ | 23-Jun-94 | 7.39 | 3300 | 131 | 2.00 | 8.10 | 4.88 | -0.53 | -0.05 | -0.58 |
| IDEQ | 20-Jul-94 | 4.74 | 2610 | 67 | 1.56 | 7.87 | 4.20 | -0.65 | -0.56 | -0.84 |
| IDEQ | 20-Jul-94 | 5.16 | 2610 | 72 | 1.64 | 7.87 | 4.28 | -0.63 | -0.56 | -0.82 |
| IDEQ | 15-Aug-94 | 3.69 | 2280 | 45 | 1.31 | 7.73 | 3.81 | -0.69 | -0.80 | -0.93 |
| IDEQ | 15-Aug-94 | 4.32 | 2280 | 53 | 1.46 | 7.73 | 3.97 | -0.66 | -0.80 | -0.90 |
| IDEQ | 8-Sep-94 | 3.91 | 4840 | 102 | 1.36 | 8.48 | 4.62 | -0.68 | 1.09 | -0.70 |
| IDEQ | 28-Oct-94 | 3.91 | 3890 | 82 | 1.36 | 8.27 | 4.40 | -0.68 | 0.39 | -0.78 |
| IDEQ | 15-Nov-94 | 4.32 | 6800 | 158 | 1.46 | 8.82 | 5.06 | -0.66 | 2.53 | -0.47 |
| IDEQ | 13-Dec-94 | 4.22 | 7390 | 168 | 1.44 | 8.91 | 5.12 | -0.67 | 2.97 | -0.43 |
| IDEQ | 10-Jan-95 | 8 | 5500 | 237 | 2.08 | 8.61 | 5.47 | -0.51 | 1.58 | -0.16 |
| IDEQ | 9-Feb-95 | 17.61 | 4590 | 435 | 2.87 | 8.43 | 6.08 | -0.10 | 0.90 | 0.64 |
| IDEQ | 7-Mar-95 | 14.49 | 4760 | 371 | 2.67 | 8.47 | 5.92 | -0.23 | 1.03 | 0.39 |
| IDEQ | 13-Apr-95 | 22.11 | 4690 | 558 | 3.10 | 8.45 | 6.32 | 0.10 | 0.98 | 1.14 |
| IDEQ | 25-Apr-95 | 15.75 | 4740 | 402 | 2.76 | 8.46 | 6.00 | -0.18 | 1.01 | 0.51 |
| IDEQ | 9-May-95 | 30.45 | 2640 | 432 | 3.42 | 7.88 | 6.07 | 0.45 | -0.53 | 0.63 |
| IDEQ | 23-May-95 | 22.11 | 2070 | 246 | 3.10 | 7.64 | 5.51 | 0.10 | -0.95 | -0.12 |
| IDEQ | 27-Jun-95 | 7.39 | 2930 | 116 | 2.00 | 7.98 | 4.76 | -0.53 | -0.32 | -0.64 |
| IDEQ | 11-Jul-95 | 5.71 | 2920 | 90 | 1.74 | 7.98 | 4.50 | -0.61 | -0.33 | -0.75 |
| IDEQ | 26-Jul-95 | 4.54 | 3080 | 75 | 1.51 | 8.03 | 4.32 | -0.66 | -0.21 | -0.81 |
| IDEQ | 14-Aug-95 | 3.82 | 3470 | 71 | 1.34 | 8.15 | 4.27 | -0.69 | 0.08 | -0.82 |
| IDEQ | 18-Oct-95 | 7.2 | 5920 | 229 | 1.97 | 8.69 | 5.44 | -0.54 | 1.89 | -0.19 |
| IDEQ | 21-Nov-95 | 13 | 4210 | 294 | 2.56 | 8.35 | 5.69 | -0.29 | 0.62 | 0.08 |
| IDEQ | 17-Jan-96 | 47.8 | 2830 | 728 | 3.87 | 7.95 | 6.59 | 1.20 | -0.39 | 1.82 |
| IDEQ | 29-Feb-96 | 45 | 2970 | 719 | 3.81 | 8.00 | 6.58 | 1.08 | -0.29 | 1.79 |
| IDEQ | 28-Mar-96 | 45 | 2830 | 685 | 3.81 | 7.95 | 6.53 | 1.08 | -0.39 | 1.65 |
| IDEQ | 17-Apr-96 | 29 | 3350 | 523 | 3.37 | 8.12 | 6.26 | 0.39 | -0.01 | 1.00 |
| IDEQ | 8-May-96 | 19.1 | 2910 | 299 | 2.95 | 7.98 | 5.70 | -0.03 | -0.34 | 0.10 |
| IDEQ | 19-Jun-96 | 15.4 | 1790 | 148 | 2.73 | 7.49 | 5.00 | -0.19 | -1.16 | -0.51 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 24-Jul-96 | 7.19 | 2470 | 96 | 1.97 | 7.81 | 4.56 | -0.54 | -0.66 | -0.72 |
| IDEQ | 21-Aug-96 | 5.97 | 2790 | 90 | 1.79 | 7.93 | 4.50 | -0.59 | -0.42 | -0.75 |
| IDEQ | 26-Sep-96 | 5.15 | 2540 | 70 | 1.64 | 7.84 | 4.25 | -0.61 | -0.61 | -0.83 |
| IDEQ | 29-Oct-96 | 6.22 | 4440 | 149 | 1.83 | 8.40 | 5.00 | -0.58 | 0.79 | -0.51 |
| IDEQ | 27-Nov-96 | 5.97 | 5550 | 178 | 1.79 | 8.62 | 5.18 | -0.59 | 1.61 | -0.39 |
| IDEQ | 13-Dec-96 | 8.83 | 4560 | 217 | 2.18 | 8.43 | 5.38 | -0.47 | 0.88 | -0.24 |
| IDEQ | 30-Jan-97 | 13.5 | 3260 | 237 | 2.60 | 8.09 | 5.47 | -0.27 | -0.08 | -0.16 |
| IDEQ | 19-Feb-97 | 20.6 | 2520 | 279 | 3.03 | 7.83 | 5.63 | 0.03 | -0.62 | 0.02 |
| IDEQ | 26-Mar-97 | 57 | 2110 | 647 | 4.04 | 7.65 | 6.47 | 1.59 | -0.93 | 1.50 |
| IDEQ | 16-Apr-97 | 30.7 | 2080 | 344 | 3.42 | 7.64 | 5.84 | 0.46 | -0.95 | 0.27 |
| IDEQ | 24-Jun-97 | 16.7 | 1500 | 135 | 2.82 | 7.31 | 4.90 | -0.13 | -1.38 | -0.57 |
| IDEQ | 23-Jul-97 | 10.2 | 2280 | 125 | 2.32 | 7.73 | 4.83 | -0.41 | -0.80 | -0.61 |
| IDEQ | 14-Aug-97 | 7.65 | 2850 | 117 | 2.03 | 7.96 | 4.76 | -0.52 | -0.38 | -0.64 |
| IDEQ | 4-Sep-97 | 6.76 | 2550 | 93 | 1.91 | 7.84 | 4.53 | -0.56 | -0.60 | -0.74 |
| IDEQ | 16-Oct-97 | 6.35 | 3410 | 116 | 1.85 | 8.13 | 4.76 | -0.58 | 0.03 | -0.64 |
| URS | 11-Nov-97 | 5.38 | 5180 | 150 | 1.68 | 8.55 | 5.01 | -0.62 | 1.34 | -0.51 |
| IDEQ | 26-Nov-97 | 7.5 | 4110 | 166 | 2.01 | 8.32 | 5.11 | -0.53 | 0.55 | -0.44 |
| IDEQ | 17-Dec-97 | 9.2 | 3810 | 189 | 2.22 | 8.25 | 5.24 | -0.46 | 0.33 | -0.35 |
| IDEQ | 21-Jan-98 | 6.9 | 3680 | 137 | 1.93 | 8.21 | 4.92 | -0.55 | 0.23 | -0.56 |
| IDEQ | 25-Feb-98 | 9.58 | 2620 | 135 | 2.26 | 7.87 | 4.91 | -0.44 | -0.55 | -0.57 |
| IDEQ | 20-Mar-98 | 13.5 | 2230 | 162 | 2.60 | 7.71 | 5.09 | -0.27 | -0.84 | -0.46 |
| IDEQ | 23-Apr-98 | 27.4 | 3150 | 464 | 3.31 | 8.06 | 6.14 | 0.32 | -0.16 | 0.76 |
| IDEQ | 7-May-98 | 36.2 | 1630 | 317 | 3.59 | 7.40 | 5.76 | 0.70 | -1.28 | 0.17 |
| URS | 15-May-98 | 43.8 | 1960 | 462 | 3.78 | 7.58 | 6.14 | 1.03 | -1.04 | 0.75 |
| IDEQ | 28-May-98 | 45.1 | 1940 | 471 | 3.81 | 7.57 | 6.15 | 1.08 | -1.05 | 0.79 |
| IDEQ | 26-Jun-98 | 10.8 | 2550 | 148 | 2.38 | 7.84 | 5.00 | -0.39 | -0.60 | -0.51 |
| IDEQ | 28-Jul-98 | 6.9 | 2680 | 99 | 1.93 | 7.89 | 4.60 | -0.55 | -0.50 | -0.71 |
| IDEQ | 26-Aug-98 | 5.84 | 3980 | 125 | 1.76 | 8.29 | 4.83 | -0.60 | 0.45 | -0.61 |
| IDEQ | 24-Sep-98 | 5.49 | 3670 | 108 | 1.70 | 8.21 | 4.69 | -0.61 | 0.23 | -0.67 |
| IDEQ | 1-Oct-98 | 5.37 | 4130 | 559 | 1.68 | 8.33 | 6.33 | -0.62 | 0.56 | 1.14 |
| IDEQ | 8-Oct-98 | 5.37 | 4600 | 133 | 1.68 | 8.43 | 4.89 | -0.62 | 0.91 | -0.57 |
| IDEQ | 26-Oct-98 | 36.2 | 2980 | 580 | 3.59 | 8.00 | 6.36 | 0.70 | -0.28 | 1.23 |
| USGS | 27-Oct-98 | 3.2 | 4850 | 83 | 1.16 | 8.49 | 4.42 | -0.71 | 1.10 | -0.77 |
| USGS | 19-Nov-98 | 4 | 7460 | 161 | 1.39 | 8.92 | 5.08 | -0.68 | 3.02 | -0.46 |
| USGS | 10-Dec-98 | 6 | 6640 | 214 | 1.79 | 8.80 | 5.37 | -0.59 | 2.42 | -0.25 |
| IDEQ | 31-Dec-98 | 7.65 | 4880 | 201 | 2.03 | 8.49 | 5.30 | -0.52 | 1.12 | -0.30 |
| IDEQ | 15-Jan-99 | 9.97 | 4110 | 220 | 2.30 | 8.32 | 5.40 | -0.42 | 0.55 | -0.22 |
| USGS | 21-Jan-99 | 13 | 3820 | 267 | 2.56 | 8.25 | 5.59 | -0.29 | 0.34 | -0.03 |
| IDEQ | 23-Feb-99 | 7.05 | 3190 | 121 | 1.95 | 8.07 | 4.80 | -0.55 | -0.13 | -0.62 |
| IDEQ | 8-Mar-99 | 25 | 2810 | 378 | 3.22 | 7.94 | 5.93 | 0.22 | -0.41 | 0.41 |
| USGS | 22-Mar-99 | 78 | 2010 | 843 | 4.36 | 7.61 | 6.74 | 2.49 | -1.00 | 2.29 |
| USGS | 19-Apr-99 | 80 | 2400 | 1033 | 4.38 | 7.78 | 6.94 | 2.57 | -0.71 | 3.05 |
| USGS | 5-May-99 | 34 | 2690 | 492 | 3.53 | 7.90 | 6.20 | 0.61 | -0.50 | 0.87 |
| USGS | 23-May-99 | 61 | 1240 | 407 | 4.11 | 7.12 | 6.01 | 1.76 | -1.57 | 0.53 |
| USGS | 26-May-99 | 123 | 981 | 649 | 4.81 | 6.89 | 6.48 | 4.41 | -1.76 | 1.51 |
| USGS | 27-May-99 | 110 | 1020 | 604 | 4.70 | 6.93 | 6.40 | 3.86 | -1.73 | 1.32 |
| USGS | 31-May-99 | 55 | 974 | 288 | 4.01 | 6.88 | 5.66 | 1.50 | -1.76 | 0.05 |
| USGS | 15-Jun-99 | 49 | 864 | 228 | 3.89 | 6.76 | 5.43 | 1.25 | -1.84 | -0.19 |
| USGS | 7-Jul-99 | 17 | 1570 | 144 | 2.83 | 7.36 | 4.97 | -0.12 | -1.32 | -0.53 |
| USGS | 4-Aug-99 | 8.6 | 2280 | 105 | 2.15 | 7.73 | 4.66 | -0.48 | -0.80 | -0.68 |
| USGS | 1-Sep-99 | 5 | 3570 | 96 | 1.61 | 8.18 | 4.56 | -0.64 | 0.15 | -0.72 |

dZn

**Concentration over time analysis**

| | | | | r2 | Slope, m |
|---|---|---|---|---|---|
| | **dZn** | **NM305** | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.074** | **-0.00015** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 15-May-91 | 8.33 | 4,140 | | |
| mid: | 12-Oct-96 | 8.03 | 3,058 | | |
| last: | 1-Sep-99 | 7.86 | 2,602 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.064** | **-0.00044** |
| | 27-Nov-96 | 8.17 | 3,533 | | |
| | 1-Sep-99 | 7.73 | 2,276 | | |

**Load over time analysis**

| | | | | | |
|---|---|---|---|---|---|
| | **dZn** | **NM305** | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.029** | **0.00017** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 15-May-91 | 4.99 | 147 | | |
| mid: | 12-Oct-96 | 5.32 | 205 | | |
| last: | 1-Sep-99 | 5.50 | 245 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.033** | **0.00042** |
| | 27-Nov-96 | 5.18 | 178 | | |
| | 1-Sep-99 | 5.60 | 271 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | max r2: | 0.952 | | max r2: | 0.930 | |
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.074 | -0.00015 | 13.44 | 0.029 | 0.00017 | -0.58 |
| | 0.098 | -0.00018 | 14.42 | 0.045 | 0.00021 | -2.25 |
| | 0.126 | -0.00021 | 15.53 | 0.067 | 0.00027 | -4.22 |
| | 0.144 | -0.00023 | 16.31 | 0.050 | 0.00024 | -3.03 |
| | 0.137 | -0.00024 | 16.39 | 0.042 | 0.00022 | -2.59 |
| | 0.131 | -0.00023 | 16.29 | 0.038 | 0.00021 | -2.27 |
| | 0.126 | -0.00023 | 16.22 | 0.033 | 0.00020 | -1.87 |
| | 0.118 | -0.00023 | 16.02 | 0.030 | 0.00020 | -1.59 |
| | 0.113 | -0.00022 | 15.95 | 0.027 | 0.00019 | -1.35 |
| | 0.109 | -0.00022 | 15.89 | 0.022 | 0.00017 | -0.68 |
| | 0.104 | -0.00022 | 15.83 | 0.017 | 0.00015 | 0.03 |
| | 0.102 | -0.00022 | 15.85 | 0.017 | 0.00015 | -0.14 |
| | 0.099 | -0.00022 | 15.87 | 0.019 | 0.00017 | -0.54 |
| | 0.096 | -0.00022 | 15.87 | 0.022 | 0.00018 | -1.01 |
| | 0.092 | -0.00022 | 15.83 | 0.028 | 0.00021 | -1.96 |
| | 0.091 | -0.00022 | 15.90 | 0.057 | 0.00029 | -4.85 |
| | 0.100 | -0.00024 | 16.41 | 0.060 | 0.00030 | -5.25 |
| | 0.102 | -0.00024 | 16.67 | 0.060 | 0.00030 | -5.50 |
| | 0.103 | -0.00025 | 16.88 | 0.056 | 0.00030 | -5.32 |
| | 0.112 | -0.00027 | 17.43 | 0.044 | 0.00027 | -4.15 |
| | 0.121 | -0.00028 | 18.05 | 0.034 | 0.00023 | -2.98 |
| | 0.138 | -0.00031 | 18.91 | 0.020 | 0.00018 | -0.98 |
| | 0.157 | -0.00033 | 19.88 | 0.010 | 0.00012 | 1.01 |
| | 0.146 | -0.00033 | 19.66 | 0.005 | 0.00009 | 2.11 |
| | 0.143 | -0.00033 | 19.77 | 0.001 | 0.00005 | 3.66 |
| | 0.122 | -0.00031 | 18.89 | 0.001 | 0.00003 | 4.22 |
| | 0.099 | -0.00027 | 17.75 | 0.000 | 0.00002 | 4.72 |
| | 0.083 | -0.00025 | 17.04 | 0.000 | 0.00002 | 4.61 |
| | 0.073 | -0.00024 | 16.61 | 0.002 | 0.00006 | 3.30 |
| | 0.062 | -0.00023 | 16.04 | 0.004 | 0.00009 | 2.17 |
| | 0.051 | -0.00021 | 15.42 | 0.010 | 0.00015 | 0.08 |
| | 0.040 | -0.00019 | 14.70 | 0.017 | 0.00019 | -1.55 |
| | 0.044 | -0.00020 | 15.25 | 0.027 | 0.00025 | -3.56 |
| | 0.057 | -0.00024 | 16.49 | 0.031 | 0.00027 | -4.44 |
| | 0.060 | -0.00025 | 16.95 | 0.024 | 0.00025 | -3.46 |
| | 0.063 | -0.00027 | 17.48 | 0.014 | 0.00020 | -1.58 |
| | 0.064 | -0.00028 | 17.92 | 0.005 | 0.00012 | 1.13 |
| | 0.061 | -0.00028 | 18.04 | 0.000 | 0.00003 | 4.49 |
| | 0.042 | -0.00024 | 16.39 | 0.000 | 0.00003 | 4.43 |
| | 0.033 | -0.00021 | 15.62 | 0.001 | 0.00005 | 3.52 |
| | 0.034 | -0.00023 | 16.10 | 0.008 | 0.00017 | -0.62 |
| | 0.035 | -0.00024 | 16.43 | 0.026 | 0.00030 | -5.22 |
| | 0.036 | -0.00025 | 16.97 | 0.054 | 0.00044 | -10.29 |
| | 0.033 | -0.00025 | 16.90 | 0.089 | 0.00057 | -15.11 |
| | 0.034 | -0.00026 | 17.41 | 0.110 | 0.00066 | -18.33 |

| | | | | | |
|---|---|---|---|---|---|
| 0.053 | -0.00034 | 20.12 | 0.106 | 0.00067 | -18.75 |
| 0.062 | -0.00038 | 21.70 | 0.087 | 0.00062 | -17.05 |
| 0.067 | -0.00042 | 22.89 | 0.066 | 0.00056 | -14.64 |
| 0.078 | -0.00047 | 24.69 | 0.040 | 0.00044 | -10.45 |
| 0.064 | -0.00044 | 23.61 | 0.033 | 0.00042 | -9.60 |
| 0.042 | -0.00036 | 20.93 | 0.031 | 0.00042 | -9.62 |
| 0.028 | -0.00031 | 18.88 | 0.033 | 0.00045 | -10.86 |
| 0.024 | -0.00030 | 18.65 | 0.037 | 0.00051 | -12.76 |
| 0.029 | -0.00034 | 20.22 | 0.047 | 0.00060 | -16.24 |
| 0.041 | -0.00043 | 23.41 | 0.100 | 0.00090 | -26.86 |
| 0.058 | -0.00054 | 27.45 | 0.138 | 0.00111 | -34.52 |
| 0.101 | -0.00074 | 34.43 | 0.127 | 0.00111 | -34.56 |
| 0.124 | -0.00086 | 38.85 | 0.112 | 0.00108 | -33.67 |
| 0.135 | -0.00094 | 41.93 | 0.093 | 0.00103 | -31.71 |
| 0.158 | -0.00108 | 46.73 | 0.065 | 0.00089 | -26.57 |
| 0.158 | -0.00113 | 48.74 | 0.046 | 0.00078 | -22.58 |
| 0.128 | -0.00106 | 46.01 | 0.036 | 0.00072 | -20.40 |
| 0.112 | -0.00104 | 45.31 | 0.028 | 0.00067 | -18.79 |
| 0.100 | -0.00103 | 45.18 | 0.024 | 0.00066 | -18.35 |
| 0.089 | -0.00103 | 45.00 | 0.013 | 0.00050 | -12.70 |
| 0.099 | -0.00115 | 49.44 | 0.004 | 0.00030 | -5.45 |
| 0.124 | -0.00136 | 57.18 | 0.001 | 0.00013 | 0.71 |
| 0.123 | -0.00144 | 59.79 | 0.007 | 0.00042 | -9.58 |
| 0.187 | -0.00185 | 74.93 | 0.011 | 0.00058 | -15.56 |
| 0.253 | -0.00230 | 91.01 | 0.031 | 0.00102 | -31.46 |
| 0.348 | -0.00289 | 112.44 | 0.070 | 0.00162 | -53.27 |
| 0.414 | -0.00340 | 130.82 | 0.055 | 0.00153 | -50.04 |
| 0.477 | -0.00391 | 149.49 | 0.026 | 0.00109 | -33.92 |
| 0.482 | -0.00415 | 158.29 | 0.010 | 0.00070 | -19.63 |
| 0.491 | -0.00441 | 167.56 | 0.000 | 0.00011 | 1.63 |
| 0.487 | -0.00462 | 175.30 | 0.010 | 0.00074 | -21.12 |
| 0.468 | -0.00478 | 180.96 | 0.000 | 0.00016 | -0.24 |
| 0.509 | -0.00537 | 202.41 | 0.015 | 0.00101 | -31.09 |
| 0.483 | -0.00560 | 210.92 | 0.002 | -0.00038 | 19.60 |
| 0.393 | -0.00506 | 191.25 | 0.021 | -0.00135 | 54.71 |
| 0.288 | -0.00429 | 163.23 | 0.046 | -0.00220 | 85.54 |
| 0.195 | -0.00360 | 138.06 | 0.096 | -0.00347 | 131.69 |
| 0.109 | -0.00279 | 108.91 | 0.167 | -0.00511 | 191.10 |
| 0.026 | -0.00147 | 60.96 | 0.262 | -0.00745 | 276.14 |
| 0.000 | 0.00005 | 5.53 | 0.678 | -0.01271 | 467.19 |
| 0.044 | 0.00220 | -72.47 | 0.862 | -0.01655 | 606.73 |
| 0.123 | 0.00431 | -149.02 | 0.868 | -0.01829 | 669.96 |
| 0.332 | 0.00762 | -269.41 | 0.833 | -0.01723 | 631.42 |
| 0.869 | 0.01232 | -440.52 | 0.825 | -0.01806 | 661.82 |
| 0.931 | 0.01353 | -484.40 | 0.815 | -0.01845 | 676.00 |
| 0.932 | 0.01405 | -503.23 | 0.814 | -0.01632 | 598.39 |
| 0.952 | 0.01534 | -550.37 | 0.930 | -0.01227 | 451.27 |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| **dZn** | | **NM305** | | |
| **LN Analysis** | | **dZn** | | |
| **Load** | | **Load Data, EV=270lbs/d CV=.92** | | |
| **Avg:** | **275** | **Load Data-based LN** | | |
| **SD:** | **248** | u | ln dZn Load | dZn Load |
| **CV:** | **0.90** | 3 | 7.6 | 2068 |
| **Min:** | **45** | 0 | 5.32 | 205 |
| **Max:** | **1,678** | -3 | 3.01 | 20 |
| **Median:** | **180** | | | |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **$r^2$=0.977, EV=275.5 lbs/day CV=.92; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.977 | u | lnLoad | Load |
| slope, m: | 1.281 | 3 | 7.66 | 2114 |
| intercept, b: | -6.805 | 0 | 5.31 | 203 |
| N: | 96 | -3 | 2.97 | 20 |
| E[Load]: | 275.5 | Parameter Estimates | | |
| SD[Load]: | 253 | from LN regression | | |
| CV[Load]: | 0.92 | update graph label | | |

| | | | | | | max r2 0.987 |
|---|---|---|---|---|---|---|
| | **dZn** | N: 96 | | | | |
| | **Load** | **i** | **i-3/8 / N+1/4** | **u** | **Ln** | **r2** |
| **Date** | **lbs/day** | **rank** | **plotting points** | **y-axis** | **x-axis** | forward |
| | **Ranked** | | | | | |
| update and rank for new data | | | | | | |
| 15-Aug-94 | **45** | 1 | 0.0065 | -2.484 | 3.812 | 0.977 |
| 3-Oct-91 | **52** | 2 | 0.0169 | -2.123 | 3.959 | 0.979 |
| 15-Aug-94 | **53** | 3 | 0.0273 | -1.922 | 3.970 | 0.980 |
| 20-Jul-94 | **67** | 4 | 0.0377 | -1.778 | 4.198 | 0.980 |
| 26-Sep-96 | **70** | 5 | 0.0481 | -1.664 | 4.254 | 0.981 |
| 14-Aug-95 | **71** | 6 | 0.0584 | -1.568 | 4.267 | 0.983 |
| 20-Jul-94 | **72** | 7 | 0.0688 | -1.485 | 4.283 | 0.983 |
| 26-Jul-95 | **75** | 8 | 0.0792 | -1.410 | 4.321 | 0.984 |
| 28-Oct-94 | **82** | 9 | 0.0896 | -1.343 | 4.405 | 0.984 |
| 27-Oct-98 | **83** | 10 | 0.1000 | -1.282 | 4.425 | 0.985 |
| 18-Feb-94 | **88** | 11 | 0.1104 | -1.224 | 4.480 | 0.985 |
| 21-Aug-96 | **90** | 12 | 0.1208 | -1.171 | 4.495 | 0.986 |
| 11-Jul-95 | **90** | 13 | 0.1312 | -1.121 | 4.496 | 0.987 |
| 18-Feb-94 | **90** | 14 | 0.1416 | -1.073 | 4.500 | 0.987 |
| 4-Sep-97 | **93** | 15 | 0.1519 | -1.028 | 4.530 | 0.987 |
| 24-Jul-96 | **96** | 16 | 0.1623 | -0.985 | 4.560 | 0.987 |
| 1-Sep-99 | 96.033 | 17 | 0.1727 | -0.943 | 4.565 | 0.987 |
| 4-Oct-91 | **98** | 18 | 0.1831 | -0.904 | 4.589 | 0.987 |
| 28-Jul-98 | **99** | 19 | 0.1935 | -0.865 | 4.600 | 0.987 |
| 8-Sep-94 | **102** | 20 | 0.2039 | -0.828 | 4.623 | 0.987 |
| 4-Aug-99 | 105.49104 | 21 | 0.2143 | -0.792 | 4.659 | 0.987 |
| 2-Dec-93 | **108** | 22 | 0.2247 | -0.756 | 4.680 | 0.987 |
| 24-Sep-98 | **108** | 23 | 0.2351 | -0.722 | 4.686 | 0.987 |
| 28-Oct-93 | **114** | 24 | 0.2455 | -0.689 | 4.737 | 0.986 |
| 27-Jun-95 | **116** | 25 | 0.2558 | -0.656 | 4.758 | 0.986 |
| 16-Oct-97 | **116** | 26 | 0.2662 | -0.624 | 4.758 | 0.986 |
| 14-Aug-97 | 117.29745 | 27 | 0.2766 | -0.593 | 4.765 | 0.986 |
| 23-Feb-99 | 120.99351 | 28 | 0.2870 | -0.562 | 4.796 | 0.986 |
| 16-Dec-93 | **125** | 29 | 0.2974 | -0.532 | 4.826 | 0.985 |
| 26-Aug-98 | **125** | 30 | 0.3078 | -0.502 | 4.829 | 0.985 |
| 23-Jul-97 | **125** | 31 | 0.3182 | -0.473 | 4.829 | 0.985 |
| 23-Jun-94 | **131** | 32 | 0.3286 | -0.444 | 4.877 | 0.984 |
| 8-Oct-98 | 132.89676 | 33 | 0.3390 | -0.415 | 4.890 | 0.984 |
| 24-Jan-94 | **133** | 34 | 0.3494 | -0.387 | 4.890 | 0.983 |
| 24-Jun-97 | **135** | 35 | 0.3597 | -0.359 | 4.904 | 0.983 |
| 25-Feb-98 | **135** | 36 | 0.3701 | -0.332 | 4.906 | 0.982 |
| 21-Jan-98 | **137** | 37 | 0.3805 | -0.304 | 4.917 | 0.981 |
| 7-Jul-99 | 143.5922 | 38 | 0.3909 | -0.277 | 4.967 | 0.981 |
| 26-Jun-98 | **148** | 39 | 0.4013 | -0.250 | 4.998 | 0.980 |
| 19-Jun-96 | **148** | 40 | 0.4117 | -0.223 | 4.999 | 0.979 |
| 29-Oct-96 | **149** | 41 | 0.4221 | -0.197 | 5.001 | 0.979 |
| 11-Nov-97 | **150** | 42 | 0.4325 | -0.170 | 5.010 | 0.978 |
| 15-Nov-94 | **158** | 43 | 0.4429 | -0.144 | 5.063 | 0.978 |
| 19-Nov-98 | **161** | 44 | 0.4532 | -0.117 | 5.079 | 0.977 |
| 20-Mar-98 | **162** | 45 | 0.4636 | -0.091 | 5.087 | 0.977 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 26-Nov-97 | 166 | 46 | 0.4740 | -0.065 | 5.111 | 0.976 |
| 13-Dec-94 | 168 | 47 | 0.4844 | -0.039 | 5.123 | 0.976 |
| 27-Nov-96 | 178 | 48 | 0.4948 | -0.013 | 5.183 | 0.976 |
| 7-Jun-94 | 182 | 49 | 0.5052 | 0.013 | 5.205 | 0.976 |
| 17-Dec-97 | 189 | 50 | 0.5156 | 0.039 | 5.240 | 0.975 |
| 31-Dec-98 | 201 | 51 | 0.5260 | 0.065 | 5.303 | 0.975 |
| 20-May-94 | 208 | 52 | 0.5364 | 0.091 | 5.335 | 0.974 |
| 8-Mar-94 | 211 | 53 | 0.5468 | 0.117 | 5.353 | 0.973 |
| 10-Dec-98 | 214 | 54 | 0.5571 | 0.144 | 5.368 | 0.972 |
| 13-Dec-96 | 217 | 55 | 0.5675 | 0.170 | 5.378 | 0.971 |
| 15-Jan-99 | 220 | 56 | 0.5779 | 0.197 | 5.396 | 0.970 |
| 15-Jun-99 | 228 | 57 | 0.5883 | 0.223 | 5.428 | 0.969 |
| 18-Oct-95 | 229 | 58 | 0.5987 | 0.250 | 5.435 | 0.968 |
| 10-Jan-95 | 237 | 59 | 0.6091 | 0.277 | 5.467 | 0.967 |
| 30-Jan-97 | 237 | 60 | 0.6195 | 0.304 | 5.467 | 0.967 |
| 23-May-95 | 246 | 61 | 0.6299 | 0.332 | 5.506 | 0.967 |
| 8-Mar-94 | 258 | 62 | 0.6403 | 0.359 | 5.553 | 0.967 |
| 23-Mar-94 | 266 | 63 | 0.6506 | 0.387 | 5.583 | 0.966 |
| 21-Jan-99 | 267.1708 | 64 | 0.6610 | 0.415 | 5.588 | 0.965 |
| 19-Feb-97 | 279 | 65 | 0.6714 | 0.444 | 5.632 | 0.966 |
| 31-May-99 | 288 | 66 | 0.6818 | 0.473 | 5.664 | 0.966 |
| 21-Nov-95 | 294 | 67 | 0.6922 | 0.502 | 5.685 | 0.966 |
| 8-May-96 | 299 | 68 | 0.7026 | 0.532 | 5.701 | 0.967 |
| 7-May-98 | 317 | 69 | 0.7130 | 0.562 | 5.760 | 0.969 |
| 16-Apr-97 | 344 | 70 | 0.7234 | 0.593 | 5.839 | 0.970 |
| 7-Mar-95 | 371 | 71 | 0.7338 | 0.624 | 5.916 | 0.968 |
| 8-Mar-99 | 378 | 72 | 0.7442 | 0.656 | 5.935 | 0.966 |
| 7-Apr-94 | 384 | 73 | 0.7545 | 0.689 | 5.951 | 0.964 |
| 25-Apr-95 | 402 | 74 | 0.7649 | 0.722 | 5.996 | 0.962 |
| 23-May-99 | 406.9432 | 75 | 0.7753 | 0.756 | 6.009 | 0.959 |
| 9-May-95 | 432 | 76 | 0.7857 | 0.792 | 6.070 | 0.956 |
| 9-Feb-95 | 435 | 77 | 0.7961 | 0.828 | 6.075 | 0.953 |
| 15-May-98 | 462 | 78 | 0.8065 | 0.865 | 6.135 | 0.950 |
| 23-Apr-98 | 464.3478 | 79 | 0.8169 | 0.904 | 6.141 | 0.948 |
| 28-May-98 | 471 | 80 | 0.8273 | 0.943 | 6.154 | 0.944 |
| 5-May-99 | 492.0548 | 81 | 0.8377 | 0.985 | 6.199 | 0.940 |
| 17-Apr-96 | 523 | 82 | 0.8481 | 1.028 | 6.259 | 0.937 |
| 15-May-91 | 535 | 83 | 0.8584 | 1.073 | 6.283 | 0.937 |
| 16-May-91 | 541 | 84 | 0.8688 | 1.121 | 6.293 | 0.939 |
| 13-Apr-95 | 558 | 85 | 0.8792 | 1.171 | 6.324 | 0.940 |
| 1-Oct-98 | 559 | 86 | 0.8896 | 1.224 | 6.326 | 0.942 |
| 26-Oct-98 | 580 | 87 | 0.9000 | 1.282 | 6.364 | 0.939 |
| 27-May-99 | 604 | 88 | 0.9104 | 1.343 | 6.403 | 0.938 |
| 26-Mar-97 | 647 | 89 | 0.9208 | 1.410 | 6.472 | 0.938 |
| 26-May-99 | 649.16694 | 90 | 0.9312 | 1.485 | 6.476 | 0.952 |
| 28-Mar-96 | 685 | 91 | 0.9416 | 1.568 | 6.530 | 0.958 |
| 29-Feb-96 | 719 | 92 | 0.9519 | 1.664 | 6.578 | 0.973 |
| 17-Jan-96 | 728 | 93 | 0.9623 | 1.778 | 6.590 | |
| 22-Mar-99 | 843 | 94 | 0.9727 | 1.922 | 6.738 | |
| 19-Apr-99 | 1033 | 95 | 0.9831 | 2.123 | 6.940 | |
| 19-Apr-94 | 1678 | 96 | 0.9935 | 2.484 | 7.425 | |

update for EV, CV:

| dZn | | NM305 | | |
|---|---|---|---|---|
| LN Analysis | | dZn | | |
| **Concentration** | | Conc. Data, EV=3,364 ug/L CV=.40 | | |
| Avg: | 3,364 | Data-based LN | | |
| SD: | 1,356 | u | ln[dZn] | [dZn] |
| CV: | 0.40 | 3 | 9.2 | 9992 |
| Min: | 864 | 0 | 8.05 | 3121 |
| Max: | 7,460 | -3 | 6.88 | 975 |
| Median: | 3,155 | | | |

**u=mLn{Conc.}+b:**

update for r2, EV, CV: $r^2$=0.97, EV=3411 ug/L CV=.47; max r2=0.99

| | | | | |
|---|---|---|---|---|
| r2 u,lnConc: | 0.968 | u | lnConc. | Conc. |
| slope, m: | 2.229 | 3 | 9.38 | 11847 |
| intercept, b: | -17.912 | 0 | 8.03 | 3085 |
| N: | 96 | -3 | 6.69 | 803 |
| E[Conc]: | 3411.0 | Parameter Estimates | | |
| SD[Conc]: | 1610 | from LN regression | | |
| CV[Conc]: | 0.47 | update graph label | | |

| | dZn | N: 96 | | | | max r2 0.991 |
|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 15-Jun-99 | 864 | 1 | 0.0065 | -2.484 | 6.762 | 0.968 |
| 31-May-99 | 974 | 2 | 0.0169 | -2.123 | 6.881 | 0.968 |
| 26-May-99 | 981 | 3 | 0.0273 | -1.922 | 6.889 | 0.969 |
| 27-May-99 | 1020 | 4 | 0.0377 | -1.778 | 6.928 | 0.975 |
| 23-May-99 | 1240 | 5 | 0.0481 | -1.664 | 7.123 | 0.984 |
| 24-Jun-97 | 1500 | 6 | 0.0584 | -1.568 | 7.313 | 0.989 |
| 7-Jul-99 | 1570 | 7 | 0.0688 | -1.485 | 7.359 | 0.990 |
| 7-May-98 | 1630 | 8 | 0.0792 | -1.410 | 7.396 | 0.990 |
| 19-Jun-96 | 1790 | 9 | 0.0896 | -1.343 | 7.490 | 0.991 |
| 28-May-98 | 1940 | 10 | 0.1000 | -1.282 | 7.570 | 0.991 |
| 15-May-91 | 1940 | 11 | 0.1104 | -1.224 | 7.570 | 0.990 |
| 15-May-98 | 1960 | 12 | 0.1208 | -1.171 | 7.581 | 0.990 |
| 16-May-91 | 1990 | 13 | 0.1312 | -1.121 | 7.596 | 0.990 |
| 22-Mar-99 | 2010 | 14 | 0.1416 | -1.073 | 7.606 | 0.989 |
| 23-May-95 | 2070 | 15 | 0.1519 | -1.028 | 7.635 | 0.989 |
| 16-Apr-97 | 2080 | 16 | 0.1623 | -0.985 | 7.640 | 0.989 |
| 26-Mar-97 | 2110 | 17 | 0.1727 | -0.943 | 7.654 | 0.989 |
| 20-Mar-98 | 2230 | 18 | 0.1831 | -0.904 | 7.710 | 0.988 |
| 15-Aug-94 | 2280 | 19 | 0.1935 | -0.865 | 7.732 | 0.988 |
| 15-Aug-94 | 2280 | 20 | 0.2039 | -0.828 | 7.732 | 0.988 |
| 4-Aug-99 | 2280 | 21 | 0.2143 | -0.792 | 7.732 | 0.987 |
| 23-Jul-97 | 2280 | 22 | 0.2247 | -0.756 | 7.732 | 0.987 |
| 19-Apr-99 | 2400 | 23 | 0.2351 | -0.722 | 7.783 | 0.987 |
| 24-Jul-96 | 2470 | 24 | 0.2455 | -0.689 | 7.812 | 0.986 |
| 20-May-94 | 2520 | 25 | 0.2558 | -0.656 | 7.832 | 0.986 |
| 19-Feb-97 | 2520 | 26 | 0.2662 | -0.624 | 7.832 | 0.986 |
| 26-Sep-96 | 2540 | 27 | 0.2766 | -0.593 | 7.840 | 0.985 |
| 4-Sep-97 | 2550 | 28 | 0.2870 | -0.562 | 7.844 | 0.985 |
| 26-Jun-98 | 2550 | 29 | 0.2974 | -0.532 | 7.844 | 0.984 |
| 20-Jul-94 | 2610 | 30 | 0.3078 | -0.502 | 7.867 | 0.984 |
| 20-Jul-94 | 2610 | 31 | 0.3182 | -0.473 | 7.867 | 0.983 |
| 25-Feb-98 | 2620 | 32 | 0.3286 | -0.444 | 7.871 | 0.983 |
| 3-Oct-91 | 2640 | 33 | 0.3390 | -0.415 | 7.879 | 0.982 |
| 9-May-95 | 2640 | 34 | 0.3494 | -0.387 | 7.879 | 0.982 |
| 28-Jul-98 | 2680 | 35 | 0.3597 | -0.359 | 7.894 | 0.981 |
| 5-May-99 | 2690 | 36 | 0.3701 | -0.332 | 7.897 | 0.981 |
| 21-Aug-96 | 2790 | 37 | 0.3805 | -0.304 | 7.934 | 0.981 |
| 8-Mar-99 | 2810 | 38 | 0.3909 | -0.277 | 7.941 | 0.980 |
| 28-Mar-96 | 2830 | 39 | 0.4013 | -0.250 | 7.948 | 0.980 |
| 17-Jan-96 | 2830 | 40 | 0.4117 | -0.223 | 7.948 | 0.979 |
| 14-Aug-97 | 2850 | 41 | 0.4221 | -0.197 | 7.955 | 0.979 |
| 8-May-96 | 2910 | 42 | 0.4325 | -0.170 | 7.976 | 0.979 |
| 11-Jul-95 | 2920 | 43 | 0.4429 | -0.144 | 7.979 | 0.978 |
| 27-Jun-95 | 2930 | 44 | 0.4532 | -0.117 | 7.983 | 0.978 |
| 29-Feb-96 | 2970 | 45 | 0.4636 | -0.091 | 7.996 | 0.978 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 26-Oct-98 | 2980 | 46 | 0.4740 | -0.065 | 8.000 | 0.979 |
| 26-Jul-95 | 3080 | 47 | 0.4844 | -0.039 | 8.033 | 0.979 |
| 23-Apr-98 | 3150 | 48 | 0.4948 | -0.013 | 8.055 | 0.979 |
| 7-Jun-94 | 3160 | 49 | 0.5052 | 0.013 | 8.058 | 0.979 |
| 23-Feb-99 | 3190 | 50 | 0.5156 | 0.039 | 8.068 | 0.979 |
| 30-Jan-97 | 3260 | 51 | 0.5260 | 0.065 | 8.089 | 0.979 |
| 23-Jun-94 | 3300 | 52 | 0.5364 | 0.091 | 8.102 | 0.978 |
| 17-Apr-96 | 3350 | 53 | 0.5468 | 0.117 | 8.117 | 0.978 |
| 16-Oct-97 | 3410 | 54 | 0.5571 | 0.144 | 8.134 | 0.978 |
| 14-Aug-95 | 3470 | 55 | 0.5675 | 0.170 | 8.152 | 0.977 |
| 1-Sep-99 | 3570 | 56 | 0.5779 | 0.197 | 8.180 | 0.976 |
| 19-Apr-94 | 3590 | 57 | 0.5883 | 0.223 | 8.186 | 0.975 |
| 24-Sep-98 | 3670 | 58 | 0.5987 | 0.250 | 8.208 | 0.974 |
| 21-Jan-98 | 3680 | 59 | 0.6091 | 0.277 | 8.211 | 0.973 |
| 8-Mar-94 | 3760 | 60 | 0.6195 | 0.304 | 8.232 | 0.972 |
| 8-Mar-94 | 3760 | 61 | 0.6299 | 0.332 | 8.232 | 0.971 |
| 17-Dec-97 | 3810 | 62 | 0.6403 | 0.359 | 8.245 | 0.970 |
| 23-Mar-94 | 3810 | 63 | 0.6506 | 0.387 | 8.245 | 0.969 |
| 21-Jan-99 | 3820 | 64 | 0.6610 | 0.415 | 8.248 | 0.967 |
| 28-Oct-94 | 3890 | 65 | 0.6714 | 0.444 | 8.266 | 0.966 |
| 7-Apr-94 | 3940 | 66 | 0.6818 | 0.473 | 8.279 | 0.964 |
| 26-Aug-98 | 3980 | 67 | 0.6922 | 0.502 | 8.289 | 0.963 |
| 18-Feb-94 | 4070 | 68 | 0.7026 | 0.532 | 8.311 | 0.961 |
| 18-Feb-94 | 4070 | 69 | 0.7130 | 0.562 | 8.311 | 0.960 |
| 26-Nov-97 | 4110 | 70 | 0.7234 | 0.593 | 8.321 | 0.959 |
| 15-Jan-99 | 4110 | 71 | 0.7338 | 0.624 | 8.321 | 0.958 |
| 1-Oct-98 | 4130 | 72 | 0.7442 | 0.656 | 8.326 | 0.955 |
| 24-Jan-94 | 4210 | 73 | 0.7545 | 0.689 | 8.345 | 0.953 |
| 21-Nov-95 | 4210 | 74 | 0.7649 | 0.722 | 8.345 | 0.950 |
| 2-Dec-93 | 4260 | 75 | 0.7753 | 0.756 | 8.357 | 0.947 |
| 29-Oct-96 | 4440 | 76 | 0.7857 | 0.792 | 8.398 | 0.943 |
| 28-Oct-93 | 4510 | 77 | 0.7961 | 0.828 | 8.414 | 0.942 |
| 4-Oct-91 | 4550 | 78 | 0.8065 | 0.865 | 8.423 | 0.943 |
| 13-Dec-96 | 4560 | 79 | 0.8169 | 0.904 | 8.425 | 0.943 |
| 9-Feb-95 | 4590 | 80 | 0.8273 | 0.943 | 8.432 | 0.943 |
| 8-Oct-98 | 4600 | 81 | 0.8377 | 0.985 | 8.434 | 0.941 |
| 13-Apr-95 | 4690 | 82 | 0.8481 | 1.028 | 8.453 | 0.938 |
| 25-Apr-95 | 4740 | 83 | 0.8584 | 1.073 | 8.464 | 0.935 |
| 7-Mar-95 | 4760 | 84 | 0.8688 | 1.121 | 8.468 | 0.931 |
| 16-Dec-93 | 4830 | 85 | 0.8792 | 1.171 | 8.483 | 0.924 |
| 8-Sep-94 | 4840 | 86 | 0.8896 | 1.224 | 8.485 | 0.916 |
| 27-Oct-98 | 4850 | 87 | 0.9000 | 1.282 | 8.487 | 0.903 |
| 31-Dec-98 | 4880 | 88 | 0.9104 | 1.343 | 8.493 | 0.886 |
| 11-Nov-97 | 5180 | 89 | 0.9208 | 1.410 | 8.553 | 0.875 |
| 10-Jan-95 | 5500 | 90 | 0.9312 | 1.485 | 8.613 | 0.851 |
| 27-Nov-96 | 5550 | 91 | 0.9416 | 1.568 | 8.622 | 0.809 |
| 18-Oct-95 | 5920 | 92 | 0.9519 | 1.664 | 8.686 | 0.778 |
| 10-Dec-98 | 6640 | 93 | 0.9623 | 1.778 | 8.801 | |
| 15-Nov-94 | 6800 | 94 | 0.9727 | 1.922 | 8.825 | |
| 13-Dec-94 | 7390 | 95 | 0.9831 | 2.123 | 8.908 | |
| 19-Nov-98 | 7460 | 96 | 0.9935 | 2.484 | 8.917 | |

update for EV, CV:

**dZn**
**LN Analysis**

**Discharge, Q**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **20** | **Q Data, EV=20 cfs CV=1.19** | | |
| **SD:** | **23** | **Q Data-based LN** | | |
| **CV:** | **1.18** | u | lnQ | Q |
| **Min:** | **3** | 3 | 5.4 | 211 |
| **Max:** | **123** | 0 | 2.55 | 13 |
| **Median:** | **9** | -3 | -0.24 | 1 |

**NM305**
**dZn**

**u=mLn{Q}+b:**

update for r2, EV, CV: **r2=0.93, EV=19.8 cfs CV=1.31; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.927 | u | lnQ | Q |
| slope, m: | 1.002 | 3 | 5.48 | 241 |
| intercept, b: | -2.493 | 0 | 2.49 | 12 |
| N: | 96 | -3 | -0.51 | 1 |
| E[Q]: | 19.8 | Parameter Estimates | | |
| SD[Q]: | 26 | from LN regression | | |
| CV[Q]: | 1.31 | update graph label | | |

N: 96

max r2 0.981

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Oct-98 | 3.2 | 1 | 0.0065 | -2.484 | 1.163 | 0.927 |
| 3-Oct-91 | 3.69 | 2 | 0.0169 | -2.123 | 1.306 | 0.938 |
| 15-Aug-94 | 3.69 | 3 | 0.0273 | -1.922 | 1.306 | 0.946 |
| 14-Aug-95 | 3.82 | 4 | 0.0377 | -1.778 | 1.340 | 0.952 |
| 8-Sep-94 | 3.91 | 5 | 0.0481 | -1.664 | 1.364 | 0.957 |
| 28-Oct-94 | 3.91 | 6 | 0.0584 | -1.568 | 1.364 | 0.961 |
| 19-Nov-98 | 4 | 7 | 0.0688 | -1.485 | 1.386 | 0.964 |
| 4-Oct-91 | 4.02 | 8 | 0.0792 | -1.410 | 1.391 | 0.967 |
| 18-Feb-94 | 4.03 | 9 | 0.0896 | -1.343 | 1.394 | 0.969 |
| 18-Feb-94 | 4.11 | 10 | 0.1000 | -1.282 | 1.413 | 0.970 |
| 13-Dec-94 | 4.22 | 11 | 0.1104 | -1.224 | 1.440 | 0.972 |
| 15-Aug-94 | 4.32 | 12 | 0.1208 | -1.171 | 1.463 | 0.973 |
| 15-Nov-94 | 4.32 | 13 | 0.1312 | -1.121 | 1.463 | 0.974 |
| 26-Jul-95 | 4.54 | 14 | 0.1416 | -1.073 | 1.513 | 0.975 |
| 28-Oct-93 | 4.7 | 15 | 0.1519 | -1.028 | 1.548 | 0.976 |
| 2-Dec-93 | 4.7 | 16 | 0.1623 | -0.985 | 1.548 | 0.977 |
| 20-Jul-94 | 4.74 | 17 | 0.1727 | -0.943 | 1.556 | 0.978 |
| 16-Dec-93 | 4.8 | 18 | 0.1831 | -0.904 | 1.569 | 0.979 |
| 1-Sep-99 | 5 | 19 | 0.1935 | -0.865 | 1.609 | 0.979 |
| 26-Sep-96 | 5.15 | 20 | 0.2039 | -0.828 | 1.639 | 0.980 |
| 20-Jul-94 | 5.16 | 21 | 0.2143 | -0.792 | 1.641 | 0.980 |
| 1-Oct-98 | 5.37 | 22 | 0.2247 | -0.756 | 1.681 | 0.981 |
| 8-Oct-98 | 5.37 | 23 | 0.2351 | -0.722 | 1.681 | 0.981 |
| 11-Nov-97 | 5.38 | 24 | 0.2455 | -0.689 | 1.683 | 0.981 |
| 24-Sep-98 | 5.49 | 25 | 0.2558 | -0.656 | 1.703 | 0.981 |
| 11-Jul-95 | 5.71 | 26 | 0.2662 | -0.624 | 1.742 | 0.981 |
| 26-Aug-98 | 5.84 | 27 | 0.2766 | -0.593 | 1.765 | 0.981 |
| 24-Jan-94 | 5.87 | 28 | 0.2870 | -0.562 | 1.770 | 0.981 |
| 21-Aug-96 | 5.97 | 29 | 0.2974 | -0.532 | 1.787 | 0.981 |
| 27-Nov-96 | 5.97 | 30 | 0.3078 | -0.502 | 1.787 | 0.981 |
| 10-Dec-98 | 6 | 31 | 0.3182 | -0.473 | 1.792 | 0.980 |
| 29-Oct-96 | 6.22 | 32 | 0.3286 | -0.444 | 1.828 | 0.980 |
| 16-Oct-97 | 6.35 | 33 | 0.3390 | -0.415 | 1.848 | 0.979 |
| 4-Sep-97 | 6.76 | 34 | 0.3494 | -0.387 | 1.911 | 0.979 |
| 21-Jan-98 | 6.9 | 35 | 0.3597 | -0.359 | 1.932 | 0.978 |
| 28-Jul-98 | 6.9 | 36 | 0.3701 | -0.332 | 1.932 | 0.978 |
| 23-Feb-99 | 7.05 | 37 | 0.3805 | -0.304 | 1.953 | 0.977 |
| 24-Jul-96 | 7.19 | 38 | 0.3909 | -0.277 | 1.973 | 0.976 |
| 18-Oct-95 | 7.2 | 39 | 0.4013 | -0.250 | 1.974 | 0.976 |
| 23-Jun-94 | 7.39 | 40 | 0.4117 | -0.223 | 2.000 | 0.975 |
| 27-Jun-95 | 7.39 | 41 | 0.4221 | -0.197 | 2.000 | 0.974 |
| 26-Nov-97 | 7.5 | 42 | 0.4325 | -0.170 | 2.015 | 0.973 |
| 14-Aug-97 | 7.65 | 43 | 0.4429 | -0.144 | 2.035 | 0.972 |
| 31-Dec-98 | 7.65 | 44 | 0.4532 | -0.117 | 2.035 | 0.971 |
| 10-Jan-95 | 8 | 45 | 0.4636 | -0.091 | 2.079 | 0.971 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4-Aug-99 | 8.6 | 46 | 0.4740 | -0.065 | 2.152 | 0.970 |
| 13-Dec-96 | 8.83 | 47 | 0.4844 | -0.039 | 2.178 | 0.969 |
| 17-Dec-97 | 9.2 | 48 | 0.4948 | -0.013 | 2.219 | 0.968 |
| 25-Feb-98 | 9.58 | 49 | 0.5052 | 0.013 | 2.260 | 0.967 |
| 15-Jan-99 | 9.97 | 50 | 0.5156 | 0.039 | 2.300 | 0.966 |
| 23-Jul-97 | 10.2 | 51 | 0.5260 | 0.065 | 2.322 | 0.965 |
| 8-Mar-94 | 10.44 | 52 | 0.5364 | 0.091 | 2.346 | 0.964 |
| 7-Jun-94 | 10.72 | 53 | 0.5468 | 0.117 | 2.372 | 0.963 |
| 26-Jun-98 | 10.8 | 54 | 0.5571 | 0.144 | 2.380 | 0.962 |
| 8-Mar-94 | 12.76 | 55 | 0.5675 | 0.170 | 2.546 | 0.961 |
| 23-Mar-94 | 12.97 | 56 | 0.5779 | 0.197 | 2.563 | 0.960 |
| 21-Nov-95 | 13 | 57 | 0.5883 | 0.223 | 2.565 | 0.958 |
| 21-Jan-99 | 13 | 58 | 0.5987 | 0.250 | 2.565 | 0.956 |
| 30-Jan-97 | 13.5 | 59 | 0.6091 | 0.277 | 2.603 | 0.955 |
| 20-Mar-98 | 13.5 | 60 | 0.6195 | 0.304 | 2.603 | 0.953 |
| 7-Mar-95 | 14.49 | 61 | 0.6299 | 0.332 | 2.673 | 0.952 |
| 20-May-94 | 15.31 | 62 | 0.6403 | 0.359 | 2.729 | 0.951 |
| 19-Jun-96 | 15.4 | 63 | 0.6506 | 0.387 | 2.734 | 0.949 |
| 25-Apr-95 | 15.75 | 64 | 0.6610 | 0.415 | 2.757 | 0.948 |
| 24-Jun-97 | 16.7 | 65 | 0.6714 | 0.444 | 2.815 | 0.947 |
| 7-Jul-99 | 17 | 66 | 0.6818 | 0.473 | 2.833 | 0.947 |
| 9-Feb-95 | 17.61 | 67 | 0.6922 | 0.502 | 2.868 | 0.947 |
| 7-Apr-94 | 18.12 | 68 | 0.7026 | 0.532 | 2.897 | 0.947 |
| 8-May-96 | 19.1 | 69 | 0.7130 | 0.562 | 2.950 | 0.950 |
| 19-Feb-97 | 20.6 | 70 | 0.7234 | 0.593 | 3.025 | 0.953 |
| 13-Apr-95 | 22.11 | 71 | 0.7338 | 0.624 | 3.096 | 0.956 |
| 23-May-95 | 22.11 | 72 | 0.7442 | 0.656 | 3.096 | 0.958 |
| 8-Mar-99 | 25 | 73 | 0.7545 | 0.689 | 3.219 | 0.965 |
| 23-Apr-98 | 27.4 | 74 | 0.7649 | 0.722 | 3.311 | 0.968 |
| 17-Apr-96 | 29 | 75 | 0.7753 | 0.756 | 3.367 | 0.969 |
| 9-May-95 | 30.45 | 76 | 0.7857 | 0.792 | 3.416 | 0.969 |
| 16-Apr-97 | 30.7 | 77 | 0.7961 | 0.828 | 3.424 | 0.969 |
| 5-May-99 | 34 | 78 | 0.8065 | 0.865 | 3.526 | 0.972 |
| 7-May-98 | 36.2 | 79 | 0.8169 | 0.904 | 3.589 | 0.971 |
| 26-Oct-98 | 36.2 | 80 | 0.8273 | 0.943 | 3.589 | 0.969 |
| 15-May-98 | 43.8 | 81 | 0.8377 | 0.985 | 3.780 | 0.970 |
| 29-Feb-96 | 45 | 82 | 0.8481 | 1.028 | 3.807 | 0.970 |
| 28-Mar-96 | 45 | 83 | 0.8584 | 1.073 | 3.807 | 0.971 |
| 28-May-98 | 45.1 | 84 | 0.8688 | 1.121 | 3.809 | 0.969 |
| 17-Jan-96 | 47.8 | 85 | 0.8792 | 1.171 | 3.867 | 0.965 |
| 15-Jun-99 | 49 | 86 | 0.8896 | 1.224 | 3.892 | 0.961 |
| 16-May-91 | 50.5 | 87 | 0.9000 | 1.282 | 3.922 | 0.956 |
| 15-May-91 | 51.3 | 88 | 0.9104 | 1.343 | 3.938 | 0.948 |
| 31-May-99 | 55 | 89 | 0.9208 | 1.410 | 4.007 | 0.938 |
| 26-Mar-97 | 57 | 90 | 0.9312 | 1.485 | 4.043 | 0.924 |
| 23-May-99 | 61 | 91 | 0.9416 | 1.568 | 4.111 | 0.914 |
| 22-Mar-99 | 78 | 92 | 0.9519 | 1.664 | 4.357 | 0.943 |
| 19-Apr-99 | 80 | 93 | 0.9623 | 1.778 | 4.382 | |
| 19-Apr-94 | 86.89 | 94 | 0.9727 | 1.922 | 4.465 | |
| 27-May-99 | 110 | 95 | 0.9831 | 2.123 | 4.700 | |
| 26-May-99 | 123 | 96 | 0.9935 | 2.484 | 4.812 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | NM305 | **Date:** | 3-Jun-00 |
| **Chemical:** | tCd | **Analyst:** | J.Johnston |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,285 | 20 | 21 | 2 | 0.01 | -0.01 | 0.00 |
| **SD:** | 773 | 23 | 8 | 2 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.17 | 0.37 | 1.01 | | | |
| **Min:** | 33,373 | 3 | 6 | 0.4 | -0.72 | -1.93 | -0.78 |
| **Max:** | 36,404 | 123 | 48 | 13 | 4.44 | 3.40 | 6.42 |
| **Median:** | 35,334 | 10 | 21 | 1 | -0.43 | -0.03 | -0.31 |

| tCd | NM305 | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.283)** | | update r2 | **0.28** | 0.283 | r2: | 0.055 | 0.072 |
| r2 Q,[COC]: | 0.28 | [tCd] | Q | | m: | 0.0070 | 0.00033 |
| slope, m: | -0.2 | 24 | 3.2 | | b: | -228 | -9.05 |
| intercept, b: | 24.8 | 21 | 19.8 | | | | |
| N: 97 | | 3 | 123 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.447)** | | update r2 | | 0.45 | 0.447 | | |
| r2 lnQ,ln[COC]: | 0.45 | ln[tCd] | ln Q | [tCd] | Q | | |
| slope, m: | -0.30 | 3.37 | 1.16 | 29 | 3 | | |
| intercept, b: | 3.71 | 2.83 | 2.99 | 17 | 20 | | |
| N: 96 | | 2.29 | 4.81 | 10 | 123 | | |

**N= 97**

| | Sampling Date | Q Discharge | tCd Concentration | tCd Load | Ln Q | Ln tCd Conc. | Ln tCd Load | tCd NM305 Standardized Values = (x - Avg)/SD Q | Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 15-May-91 | 51.3 | 9 | 2.5 | 3.94 | 2.20 | 0.91 | 1.35 | -1.55 | 0.41 |
| MFG | 16-May-91 | 50.5 | 7.7 | 2.1 | 3.92 | 2.04 | 0.74 | 1.32 | -1.72 | 0.19 |
| MFG | 3-Oct-91 | 3.69 | 19 | 0.4 | 1.31 | 2.94 | -0.98 | -0.70 | -0.28 | -0.78 |
| MFG | 4-Oct-91 | 4.02 | 22.8 | 0.5 | 1.39 | 3.13 | -0.71 | -0.68 | 0.20 | -0.71 |
| IDEQ | 28-Oct-93 | 4.7 | 22 | 0.6 | 1.55 | 3.09 | -0.59 | -0.65 | 0.10 | -0.68 |
| IDEQ | 2-Dec-93 | 4.7 | 23 | 0.6 | 1.55 | 3.14 | -0.54 | -0.65 | 0.23 | -0.66 |
| IDEQ | 16-Dec-93 | 4.8 | 26 | 0.7 | 1.57 | 3.26 | -0.40 | -0.65 | 0.61 | -0.61 |
| IDEQ | 24-Jan-94 | 5.87 | 19 | 0.6 | 1.77 | 2.94 | -0.51 | -0.60 | -0.28 | -0.65 |
| IDEQ | 18-Feb-94 | 4.11 | 25 | 0.6 | 1.41 | 3.22 | -0.59 | -0.68 | 0.48 | -0.68 |
| IDEQ | 18-Feb-94 | 4.03 | 25 | 0.5 | 1.39 | 3.22 | -0.61 | -0.68 | 0.48 | -0.68 |
| IDEQ | 8-Mar-94 | 10.44 | 24 | 1.3 | 2.35 | 3.18 | 0.30 | -0.41 | 0.36 | -0.23 |
| IDEQ | 8-Mar-94 | 12.76 | 24 | 1.6 | 2.55 | 3.18 | 0.50 | -0.31 | 0.36 | -0.06 |
| IDEQ | 23-Mar-94 | 12.97 | 21 | 1.5 | 2.56 | 3.04 | 0.38 | -0.30 | -0.03 | -0.16 |
| IDEQ | 7-Apr-94 | 18.12 | 25 | 2.4 | 2.90 | 3.22 | 0.89 | -0.07 | 0.48 | 0.39 |
| IDEQ | 19-Apr-94 | 86.89 | 28 | 13.1 | 4.46 | 3.33 | 2.57 | 2.89 | 0.86 | 6.42 |
| IDEQ | 4-May-94 | 14.89 | 22 | 1.8 | 2.70 | 3.09 | 0.57 | -0.21 | 0.10 | 0.01 |
| IDEQ | 20-May-94 | 15.31 | 20 | 1.6 | 2.73 | 3.00 | 0.50 | -0.20 | -0.15 | -0.06 |
| IDEQ | 7-Jun-94 | 10.72 | 25 | 1.4 | 2.37 | 3.22 | 0.37 | -0.39 | 0.48 | -0.17 |
| IDEQ | 23-Jun-94 | 7.39 | 24 | 1.0 | 2.00 | 3.18 | -0.05 | -0.54 | 0.36 | -0.45 |
| IDEQ | 20-Jul-94 | 5.16 | 22 | 0.6 | 1.64 | 3.09 | -0.49 | -0.63 | 0.10 | -0.65 |
| IDEQ | 20-Jul-94 | 4.74 | 22 | 0.6 | 1.56 | 3.09 | -0.58 | -0.65 | 0.10 | -0.67 |
| IDEQ | 15-Aug-94 | 4.32 | 21 | 0.5 | 1.46 | 3.04 | -0.72 | -0.67 | -0.03 | -0.71 |
| IDEQ | 15-Aug-94 | 3.69 | 21 | 0.4 | 1.31 | 3.04 | -0.87 | -0.70 | -0.03 | -0.75 |
| IDEQ | 8-Sep-94 | 3.91 | 30 | 0.6 | 1.36 | 3.40 | -0.46 | -0.69 | 1.12 | -0.63 |
| IDEQ | 28-Oct-94 | 3.91 | 25 | 0.5 | 1.36 | 3.22 | -0.64 | -0.69 | 0.48 | -0.69 |
| IDEQ | 15-Nov-94 | 4.32 | 48 | 1.1 | 1.46 | 3.87 | 0.11 | -0.67 | 3.40 | -0.36 |
| IDEQ | 13-Dec-94 | 4.22 | 45 | 1.0 | 1.44 | 3.81 | 0.02 | -0.67 | 3.02 | -0.41 |
| IDEQ | 10-Jan-95 | 8 | 38 | 1.6 | 2.08 | 3.64 | 0.49 | -0.51 | 2.13 | -0.07 |
| IDEQ | 9-Feb-95 | 17.61 | 27 | 2.6 | 2.87 | 3.30 | 0.94 | -0.10 | 0.74 | 0.46 |
| IDEQ | 7-Mar-95 | 14.49 | 26 | 2.0 | 2.67 | 3.26 | 0.71 | -0.23 | 0.61 | 0.16 |
| IDEQ | 13-Apr-95 | 22.11 | 27 | 3.2 | 3.10 | 3.30 | 1.17 | 0.10 | 0.74 | 0.83 |
| IDEQ | 25-Apr-95 | 15.75 | 25 | 2.1 | 2.76 | 3.22 | 0.75 | -0.18 | 0.48 | 0.21 |
| IDEQ | 9-May-95 | 30.45 | 16 | 2.6 | 3.42 | 2.77 | 0.96 | 0.46 | -0.66 | 0.49 |
| IDEQ | 23-May-95 | 22.11 | 15 | 1.8 | 3.10 | 2.71 | 0.58 | 0.10 | -0.79 | 0.02 |
| IDEQ | 27-Jun-95 | 7.39 | 20 | 0.8 | 2.00 | 3.00 | -0.23 | -0.54 | -0.15 | -0.54 |
| IDEQ | 11-Jul-95 | 5.71 | 20 | 0.6 | 1.74 | 3.00 | -0.49 | -0.61 | -0.15 | -0.64 |
| IDEQ | 26-Jul-95 | 4.54 | 23 | 0.6 | 1.51 | 3.14 | -0.58 | -0.66 | 0.23 | -0.67 |
| IDEQ | 14-Aug-95 | 3.82 | 27 | 0.6 | 1.34 | 3.30 | -0.59 | -0.69 | 0.74 | -0.68 |
| IDEQ | 18-Oct-95 | 7.2 | 36 | 1.4 | 1.97 | 3.58 | 0.33 | -0.54 | 1.88 | -0.20 |
| IDEQ | 21-Nov-95 | 13 | 26 | 1.8 | 2.56 | 3.26 | 0.60 | -0.29 | 0.61 | 0.04 |
| IDEQ | 17-Jan-96 | 47.8 | 20 | 5.1 | 3.87 | 3.00 | 1.64 | 1.20 | -0.15 | 1.92 |
| IDEQ | 29-Feb-96 | 45 | 16 | 3.9 | 3.81 | 2.77 | 1.35 | 1.08 | -0.66 | 1.20 |
| IDEQ | 28-Mar-96 | 45 | 18 | 4.4 | 3.81 | 2.89 | 1.47 | 1.08 | -0.41 | 1.48 |
| IDEQ | 17-Apr-96 | 29 | 20 | 3.1 | 3.37 | 3.00 | 1.14 | 0.39 | -0.15 | 0.78 |
| IDEQ | 8-May-96 | 19.1 | 17 | 1.7 | 2.95 | 2.83 | 0.56 | -0.03 | -0.53 | 0.00 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 19-Jun-96 | 15.4 | 14 | 1.2 | 2.73 | 2.64 | 0.15 | -0.19 | -0.92 | -0.33 |
| IDEQ | 24-Jul-96 | 7.19 | 20 | 0.8 | 1.97 | 3.00 | -0.26 | -0.55 | -0.15 | -0.55 |
| IDEQ | 21-Aug-96 | 5.97 | 21 | 0.7 | 1.79 | 3.04 | -0.39 | -0.60 | -0.03 | -0.61 |
| IDEQ | 26-Sep-96 | 5.15 | 20 | 0.6 | 1.64 | 3.00 | -0.59 | -0.63 | -0.15 | -0.68 |
| IDEQ | 29-Oct-96 | 6.22 | 26 | 0.9 | 1.83 | 3.26 | -0.14 | -0.59 | 0.61 | -0.50 |
| IDEQ | 27-Nov-96 | 5.97 | 30 | 1.0 | 1.79 | 3.40 | -0.04 | -0.60 | 1.12 | -0.45 |
| IDEQ | 13-Dec-96 | 8.83 | 27 | 1.3 | 2.18 | 3.30 | 0.25 | -0.47 | 0.74 | -0.26 |
| IDEQ | 30-Jan-97 | 13.5 | 20 | 1.5 | 2.60 | 3.00 | 0.37 | -0.27 | -0.15 | -0.17 |
| IDEQ | 19-Feb-97 | 20.6 | 15 | 1.7 | 3.03 | 2.71 | 0.51 | 0.03 | -0.79 | -0.05 |
| IDEQ | 26-Mar-97 | 57 | 13 | 4.0 | 4.04 | 2.56 | 1.38 | 1.60 | -1.04 | 1.27 |
| IDEQ | 16-Apr-97 | 30.7 | 12 | 2.0 | 3.42 | 2.48 | 0.68 | 0.47 | -1.17 | 0.13 |
| IDEQ | 24-Jun-97 | 16.7 | 8.6 | 0.8 | 2.82 | 2.15 | -0.26 | -0.14 | -1.60 | -0.55 |
| IDEQ | 23-Jul-97 | 10.2 | 14 | 0.8 | 2.32 | 2.64 | -0.26 | -0.42 | -0.92 | -0.56 |
| IDEQ | 14-Aug-97 | 7.65 | 17 | 0.7 | 2.03 | 2.83 | -0.36 | -0.53 | -0.53 | -0.59 |
| IDEQ | 4-Sep-97 | 6.76 | 19 | 0.7 | 1.91 | 2.94 | -0.37 | -0.56 | -0.28 | -0.60 |
| IDEQ | 16-Oct-97 | 6.35 | 23 | 0.8 | 1.85 | 3.14 | -0.24 | -0.58 | 0.23 | -0.55 |
| URS | 11-Nov-97 | 5.38 | 27.4 | 0.8 | 1.68 | 3.31 | -0.23 | -0.62 | 0.79 | -0.54 |
| IDEQ | 26-Nov-97 | 7.5 | 22 | 0.9 | 2.01 | 3.09 | -0.12 | -0.53 | 0.18 | -0.49 |
| IDEQ | 17-Dec-97 | 9.2 | 21 | 1.0 | 2.22 | 3.04 | 0.04 | -0.46 | -0.03 | -0.48 |
| IDEQ | 21-Jan-98 | 6.9 | 21 | 0.8 | 1.93 | 3.04 | -0.25 | -0.56 | -0.03 | -0.55 |
| IDEQ | 25-Feb-98 | 9.58 | 15 | 0.8 | 2.26 | 2.71 | -0.26 | -0.44 | -0.79 | -0.55 |
| IDEQ | 20-Mar-98 | 13.5 | 14 | 1.0 | 2.60 | 2.64 | 0.02 | -0.27 | -0.92 | -0.42 |
| IDEQ | 23-Apr-98 | 27.4 | 16 | 2.4 | 3.31 | 2.77 | 0.86 | 0.33 | -0.66 | 0.34 |
| IDEQ | 7-May-98 | 36.2 | 8.6 | 1.7 | 3.59 | 2.15 | 0.52 | 0.70 | -1.60 | -0.04 |
| URS | 15-May-98 | 43.8 | 11.2 | 2.6 | 3.78 | 2.42 | 0.97 | 1.03 | -1.27 | 0.50 |
| IDEQ | 28-May-98 | 45.1 | 11 | 2.7 | 3.81 | 2.40 | 0.98 | 1.09 | -1.30 | 0.52 |
| IDEQ | 26-Jun-98 | 10.8 | 16 | 0.9 | 2.38 | 2.77 | -0.07 | -0.39 | -0.66 | -0.46 |
| IDEQ | 28-Jul-98 | 6.9 | 20 | 0.7 | 1.93 | 3.00 | -0.30 | -0.56 | -0.15 | -0.57 |
| IDEQ | 26-Aug-98 | 5.84 | 24 | 0.8 | 1.76 | 3.18 | -0.28 | -0.60 | 0.36 | -0.56 |
| IDEQ | 24-Sep-98 | 5.49 | 22 | 0.6 | 1.70 | 3.09 | -0.43 | -0.62 | 0.10 | -0.62 |
| IDEQ | 1-Oct-98 | 5.37 | 25 | 0.7 | 1.68 | 3.22 | -0.33 | -0.62 | 0.48 | -0.58 |
| IDEQ | 8-Oct-98 | 5.37 | 28 | 0.8 | 1.68 | 3.33 | -0.21 | -0.62 | 0.86 | -0.53 |
| IDEQ | 26-Oct-98 | 36.2 | 22 | 4.3 | 3.59 | 3.09 | 1.46 | 0.70 | 0.10 | 1.43 |
| USGS | 27-Oct-98 | 3.2 | 31 | 0.5 | 1.16 | 3.43 | -0.63 | -0.72 | 1.24 | -0.69 |
| IDEQ | 25-Nov-98 | 8.31 | 38 | 1.7 | 2.12 | 3.64 | 0.53 | -0.50 | 2.13 | -0.03 |
| USGS | 10-Dec-98 | 6 | 39 | 1.3 | 1.79 | 3.66 | 0.23 | -0.60 | 2.26 | -0.28 |
| IDEQ | 31-Dec-98 | 7.65 | 31 | 1.3 | 2.03 | 3.43 | 0.24 | -0.53 | 1.24 | -0.27 |
| IDEQ | 15-Jan-99 | 9.97 | 29 | 1.6 | 2.30 | 3.37 | 0.44 | -0.43 | 0.99 | -0.11 |
| USGS | 21-Jan-99 | 13 | 21 | 1.5 | 2.56 | 3.04 | 0.38 | -0.29 | -0.03 | -0.16 |
| IDEQ | 23-Feb-99 | 7.05 | 22 | 0.8 | 1.95 | 3.09 | -0.18 | -0.55 | 0.10 | -0.52 |
| IDEQ | 8-Mar-99 | 25 | 17 | 2.3 | 3.22 | 2.83 | 0.83 | 0.22 | -0.53 | 0.30 |
| USGS | 22-Mar-99 | 78 | 14 | 5.9 | 4.36 | 2.64 | 1.77 | 2.50 | -0.92 | 2.33 |
| USGS | 19-Apr-99 | 80 | 17 | 7.3 | 4.38 | 2.83 | 1.99 | 2.59 | -0.53 | 3.15 |
| USGS | 5-May-99 | 34 | 17 | 3.1 | 3.53 | 2.83 | 1.13 | 0.61 | -0.53 | 0.77 |
| USGS | 23-May-99 | 61 | 9 | 3.0 | 4.11 | 2.20 | 1.08 | 1.77 | -1.55 | 0.68 |
| USGS | 26-May-99 | 123 | 9 | 6.0 | 4.81 | 2.20 | 1.78 | 4.44 | -1.55 | 2.58 |
| USGS | 27-May-99 | 110 | 7 | 4.1 | 4.70 | 1.95 | 1.42 | 3.88 | -1.80 | 1.35 |
| USGS | 31-May-99 | 55 | 6 | 1.8 | 4.01 | 1.79 | 0.57 | 1.51 | -1.93 | 0.01 |
| USGS | 15-Jun-99 | 49 | 6 | 1.6 | 3.89 | 1.79 | 0.46 | 1.26 | -1.93 | -0.10 |
| USGS | 7-Jul-99 | 17 | 10.6 | 1.0 | 2.83 | 2.36 | -0.03 | -0.12 | -1.35 | -0.44 |
| USGS | 4-Aug-99 | 8.6 | 17.7 | 0.8 | 2.15 | 2.87 | -0.20 | -0.48 | -0.44 | -0.53 |
| USGS | 1-Sep-99 | 5 | 29 | | | | | | | |

tCd

**Concentration over time analysis**

| | tCd | NM305 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.064** | **-0.00014** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 15-May-91 | 3.23 | 25 | | |
| mid: | 26-Sep-96 | 2.96 | 19 | | |
| last: | 1-Sep-99 | 2.82 | 17 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.043** | **-0.00033** |
| | 29-Oct-96 | 3.03 | 21 | | |
| | 1-Sep-99 | 2.70 | 15 | | |

**Load over time analysis**

| | tCd | NM305 | | | |
|---|---|---|---|---|---|
| | | | | **Load over time** | |
| | **LnLoad=mTime+b All data r2, m:** | | | **0.041** | **0.00019** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 15-May-91 | -0.11 | 1 | | |
| mid: | 26-Sep-96 | 0.27 | 1 | | |
| last: | 1-Sep-99 | 0.47 | 2 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.104** | **0.00073** |
| | 29-Oct-96 | -0.09 | 1 | | |
| | 1-Sep-99 | 0.67 | 2 | | |

| | max r2: 0.878 | | | max r2: 0.769 | | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.064 | -0.00014 | 7.76 | 0.041 | 0.00019 | -6.52 |
| | 0.101 | -0.00017 | 9.09 | 0.055 | 0.00023 | -7.83 |
| | 0.165 | -0.00022 | 10.87 | 0.069 | 0.00027 | -9.13 |
| | 0.180 | -0.00024 | 11.50 | 0.053 | 0.00024 | -8.09 |
| | 0.185 | -0.00025 | 11.96 | 0.041 | 0.00021 | -7.27 |
| | 0.187 | -0.00026 | 12.13 | 0.034 | 0.00020 | -6.68 |
| | 0.187 | -0.00026 | 12.25 | 0.028 | 0.00018 | -6.10 |
| | 0.183 | -0.00026 | 12.26 | 0.024 | 0.00017 | -5.62 |
| | 0.190 | -0.00027 | 12.56 | 0.019 | 0.00015 | -5.00 |
| | 0.187 | -0.00027 | 12.60 | 0.014 | 0.00013 | -4.27 |
| | 0.184 | -0.00027 | 12.65 | 0.009 | 0.00011 | -3.45 |
| | 0.182 | -0.00028 | 12.73 | 0.010 | 0.00011 | -3.54 |
| | 0.180 | -0.00028 | 12.82 | 0.011 | 0.00012 | -3.86 |
| | 0.183 | -0.00028 | 13.07 | 0.012 | 0.00012 | -4.06 |
| | 0.180 | -0.00029 | 13.13 | 0.016 | 0.00015 | -4.88 |
| | 0.173 | -0.00028 | 13.05 | 0.042 | 0.00023 | -7.81 |
| | 0.174 | -0.00029 | 13.26 | 0.048 | 0.00025 | -8.46 |
| | 0.179 | -0.00030 | 13.61 | 0.052 | 0.00026 | -9.07 |
| | 0.175 | -0.00030 | 13.67 | 0.056 | 0.00028 | -9.55 |
| | 0.173 | -0.00031 | 13.80 | 0.053 | 0.00027 | -9.49 |
| | 0.174 | -0.00031 | 14.05 | 0.045 | 0.00025 | -8.77 |
| | 0.176 | -0.00032 | 14.33 | 0.035 | 0.00023 | -7.84 |
| | 0.179 | -0.00033 | 14.69 | 0.025 | 0.00019 | -6.61 |
| | 0.183 | -0.00034 | 15.09 | 0.015 | 0.00015 | -4.96 |
| | 0.172 | -0.00034 | 14.91 | 0.009 | 0.00012 | -3.85 |
| | 0.168 | -0.00034 | 15.01 | 0.004 | 0.00008 | -2.33 |
| | 0.142 | -0.00031 | 13.91 | 0.003 | 0.00007 | -2.01 |
| | 0.117 | -0.00028 | 12.82 | 0.002 | 0.00005 | -1.48 |
| | 0.096 | -0.00025 | 11.92 | 0.002 | 0.00006 | -1.82 |
| | 0.086 | -0.00024 | 11.61 | 0.005 | 0.00010 | -3.08 |
| | 0.078 | -0.00024 | 11.32 | 0.007 | 0.00012 | -3.99 |
| | 0.068 | -0.00022 | 10.91 | 0.015 | 0.00018 | -5.97 |
| | 0.060 | -0.00022 | 10.62 | 0.021 | 0.00021 | -7.26 |
| | 0.068 | -0.00024 | 11.35 | 0.032 | 0.00027 | -9.23 |
| | 0.080 | -0.00026 | 12.34 | 0.038 | 0.00030 | -10.49 |
| | 0.080 | -0.00027 | 12.66 | 0.031 | 0.00028 | -9.72 |
| | 0.081 | -0.00028 | 13.03 | 0.021 | 0.00024 | -8.09 |
| | 0.076 | -0.00028 | 13.01 | 0.011 | 0.00018 | -5.91 |
| | 0.064 | -0.00027 | 12.45 | 0.004 | 0.00010 | -3.30 |
| | 0.043 | -0.00022 | 10.81 | 0.004 | 0.00011 | -3.44 |
| | 0.033 | -0.00020 | 10.04 | 0.006 | 0.00014 | -4.51 |
| | 0.031 | -0.00020 | 10.07 | 0.022 | 0.00027 | -9.37 |
| | 0.036 | -0.00022 | 10.88 | 0.045 | 0.00039 | -13.78 |
| | 0.037 | -0.00024 | 11.35 | 0.085 | 0.00055 | -19.27 |
| | 0.035 | -0.00024 | 11.44 | 0.128 | 0.00068 | -24.28 |

| | | | | | |
|---|---|---|---|---|---|
| 0.039 | -0.00026 | 12.25 | 0.152 | 0.00078 | -27.57 |
| 0.051 | -0.00031 | 14.02 | 0.158 | 0.00082 | -29.31 |
| 0.049 | -0.00032 | 14.30 | 0.147 | 0.00082 | -29.23 |
| 0.045 | -0.00032 | 14.33 | 0.129 | 0.00080 | -28.30 |
| 0.043 | -0.00033 | 14.57 | 0.104 | 0.00073 | -25.98 |
| 0.032 | -0.00029 | 13.28 | 0.094 | 0.00072 | -25.71 |
| 0.018 | -0.00022 | 10.80 | 0.088 | 0.00073 | -25.89 |
| 0.008 | -0.00016 | 8.44 | 0.093 | 0.00079 | -27.97 |
| 0.006 | -0.00014 | 7.72 | 0.103 | 0.00087 | -31.01 |
| 0.008 | -0.00017 | 9.02 | 0.122 | 0.00100 | -35.67 |
| 0.015 | -0.00025 | 11.72 | 0.210 | 0.00135 | -48.18 |
| 0.029 | -0.00036 | 15.79 | 0.266 | 0.00160 | -57.35 |
| 0.067 | -0.00056 | 23.09 | 0.254 | 0.00163 | -58.39 |
| 0.088 | -0.00067 | 27.17 | 0.240 | 0.00165 | -59.14 |
| 0.098 | -0.00075 | 30.07 | 0.218 | 0.00164 | -58.75 |
| 0.103 | -0.00082 | 32.28 | 0.194 | 0.00161 | -57.74 |
| 0.093 | -0.00082 | 32.33 | 0.175 | 0.00160 | -57.23 |
| 0.073 | -0.00075 | 29.98 | 0.155 | 0.00157 | -56.21 |
| 0.064 | -0.00075 | 29.81 | 0.139 | 0.00157 | -56.13 |
| 0.058 | -0.00075 | 30.05 | 0.132 | 0.00162 | -57.91 |
| 0.051 | -0.00075 | 29.94 | 0.107 | 0.00153 | -54.64 |
| 0.063 | -0.00089 | 34.90 | 0.081 | 0.00139 | -49.65 |
| 0.084 | -0.00108 | 42.00 | 0.067 | 0.00133 | -47.68 |
| 0.096 | -0.00123 | 47.39 | 0.094 | 0.00167 | -59.73 |
| 0.184 | -0.00176 | 66.45 | 0.108 | 0.00189 | -67.92 |
| 0.278 | -0.00230 | 85.91 | 0.163 | 0.00248 | -89.28 |
| 0.425 | -0.00303 | 112.59 | 0.247 | 0.00328 | -118.35 |
| 0.520 | -0.00363 | 134.29 | 0.233 | 0.00342 | -123.26 |
| 0.575 | -0.00411 | 151.60 | 0.198 | 0.00331 | -119.42 |
| 0.595 | -0.00444 | 163.79 | 0.160 | 0.00311 | -112.15 |
| 0.623 | -0.00481 | 177.00 | 0.114 | 0.00267 | -96.17 |
| 0.636 | -0.00515 | 189.26 | 0.070 | 0.00216 | -77.51 |
| 0.634 | -0.00546 | 200.49 | 0.033 | 0.00154 | -55.04 |
| 0.673 | -0.00606 | 222.44 | 0.096 | 0.00278 | -100.00 |
| 0.661 | -0.00647 | 237.20 | 0.021 | 0.00132 | -47.11 |
| 0.605 | -0.00634 | 232.72 | 0.016 | 0.00126 | -44.94 |
| 0.520 | -0.00589 | 216.39 | 0.002 | 0.00049 | -16.97 |
| 0.430 | -0.00546 | 200.80 | 0.003 | -0.00067 | 25.28 |
| 0.312 | -0.00471 | 173.55 | 0.021 | -0.00198 | 72.62 |
| 0.218 | -0.00444 | 163.54 | 0.092 | -0.00487 | 177.80 |
| 0.098 | -0.00311 | 115.43 | 0.461 | -0.01145 | 416.48 |
| 0.026 | -0.00180 | 67.57 | 0.748 | -0.01750 | 636.42 |
| 0.000 | -0.00025 | 11.29 | 0.769 | -0.02095 | 761.59 |
| 0.081 | 0.00415 | -148.65 | 0.687 | -0.01988 | 722.84 |
| 0.593 | 0.01070 | -386.63 | 0.728 | -0.02297 | 835.00 |
| 0.705 | 0.01250 | -451.87 | 0.726 | -0.02400 | 872.65 |
| 0.878 | 0.01523 | -551.10 | 0.755 | -0.01926 | 700.06 |

update for EV, CV:

tCd — NM305

LN Analysis — tCd

**Load** — **Load Data, EV=1.75 lbs/day CV=1.01**

**Load Data-based LN**

| | | u | ln tCd Load | tCd Load |
|---|---|---|---|---|
| **Avg:** | **2** | | | |
| **SD:** | **2** | 3 | 2.7 | 15 |
| **CV:** | **1.01** | 3 | 0.21 | 1 |
| **Min:** | **0.4** | 0 | -2.31 | 0.1 |
| **Max:** | **13** | -3 | | |
| **Median:** | **1** | | | |

2 1.75

1.01 1.01

**u=mLn(Load)+ b:**

update for r2, EV, CV: **r2=0.96, EV=1.72lbs/day CV=0.88; max r2=0.99**

| | | | | | |
|---|---|---|---|---|---|
| r2 u,lnLoad: | 0.955 | u | lnLoad | Load | |
| slope, m: | 1.322 | 3 | 2.53 | 12 | |
| intercept, b: | -0.338 | 0 | 0.26 | 1 | |
| N: | 96 | -3 | -2.01 | 0.1 | |
| E[Load]: | 1.7 | Parameter Estimates | | | 0.955 0.96 |
| SD[Load]: | 2 | from LN regression | | | 1.7 1.72 |
| CV[Load]: | 0.88 | update graph label | | | 0.9 0.88 |

N: 96 — max r2 0.993

| Date | tCd Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 3-Oct-91 | 0.4 | 1 | 0.0065 | -2.484 | -0.975 | 0.955 |
| 15-Aug-94 | 0.4 | 2 | 0.0169 | -2.123 | -0.875 | 0.961 |
| 15-Aug-94 | 0.5 | 3 | 0.0273 | -1.922 | -0.717 | 0.964 |
| 4-Oct-91 | 0.5 | 4 | 0.0377 | -1.778 | -0.707 | 0.969 |
| 28-Oct-94 | 0.5 | 5 | 0.0481 | -1.664 | -0.643 | 0.972 |
| 27-Oct-98 | 0.5 | 6 | 0.0584 | -1.568 | -0.628 | 0.976 |
| 18-Feb-94 | 0.5 | 7 | 0.0688 | -1.485 | -0.612 | 0.978 |
| 18-Feb-94 | 0.6 | 8 | 0.0792 | -1.410 | -0.593 | 0.981 |
| 26-Sep-96 | 0.6 | 9 | 0.0896 | -1.343 | -0.590 | 0.983 |
| 14-Aug-95 | 0.6 | 10 | 0.1000 | -1.282 | -0.589 | 0.985 |
| 28-Oct-93 | 0.6 | 11 | 0.1104 | -1.224 | -0.586 | 0.986 |
| 20-Jul-94 | 0.6 | 12 | 0.1208 | -1.171 | -0.578 | 0.987 |
| 26-Jul-95 | 0.6 | 13 | 0.1312 | -1.121 | -0.577 | 0.988 |
| 2-Dec-93 | 0.6 | 14 | 0.1416 | -1.073 | -0.542 | 0.988 |
| 24-Jan-94 | 0.6 | 15 | 0.1519 | -1.028 | -0.511 | 0.989 |
| 20-Jul-94 | 0.6 | 16 | 0.1623 | -0.985 | -0.493 | 0.989 |
| 11-Jul-95 | 0.6 | 17 | 0.1727 | -0.943 | -0.487 | 0.989 |
| 8-Sep-94 | 0.6 | 18 | 0.1831 | -0.904 | -0.460 | 0.990 |
| 24-Sep-98 | 0.6 | 19 | 0.1935 | -0.865 | -0.431 | 0.990 |
| 16-Dec-93 | 0.7 | 20 | 0.2039 | -0.828 | -0.398 | 0.990 |
| 21-Aug-96 | 0.7 | 21 | 0.2143 | -0.792 | -0.394 | 0.991 |
| 4-Sep-97 | 0.7 | 22 | 0.2247 | -0.756 | -0.370 | 0.991 |
| 14-Aug-97 | 0.7 | 23 | 0.2351 | -0.722 | -0.357 | 0.991 |
| 1-Oct-98 | 0.7 | 24 | 0.2455 | -0.689 | -0.325 | 0.991 |
| 28-Jul-98 | 0.7 | 25 | 0.2558 | -0.656 | -0.298 | 0.992 |
| 26-Aug-98 | 0.8 | 26 | 0.2662 | -0.624 | -0.282 | 0.992 |
| 23-Jul-97 | 0.8 | 27 | 0.2766 | -0.593 | -0.264 | 0.992 |
| 24-Jun-97 | 0.8 | 28 | 0.2870 | -0.562 | -0.258 | 0.993 |
| 25-Feb-98 | 0.8 | 29 | 0.2974 | -0.532 | -0.257 | 0.993 |
| 24-Jul-96 | 0.8 | 30 | 0.3078 | -0.502 | -0.257 | 0.993 |
| 21-Jan-98 | 0.8 | 31 | 0.3182 | -0.473 | -0.249 | 0.993 |
| 16-Oct-97 | 0.8 | 32 | 0.3286 | -0.444 | -0.241 | 0.992 |
| 11-Nov-97 | 0.8 | 33 | 0.3390 | -0.415 | -0.232 | 0.992 |
| 27-Jun-95 | 0.8 | 34 | 0.3494 | -0.387 | -0.229 | 0.992 |
| 8-Oct-98 | 0.8 | 35 | 0.3597 | -0.359 | -0.212 | 0.992 |
| 4-Aug-99 | 0.8 | 36 | 0.3701 | -0.332 | -0.200 | 0.991 |
| 23-Feb-99 | 0.8 | 37 | 0.3805 | -0.304 | -0.181 | 0.991 |
| 29-Oct-96 | 0.9 | 38 | 0.3909 | -0.277 | -0.139 | 0.991 |
| 26-Nov-97 | 0.9 | 39 | 0.4013 | -0.250 | -0.119 | 0.991 |
| 26-Jun-98 | 0.9 | 40 | 0.4117 | -0.223 | -0.073 | 0.991 |
| 23-Jun-94 | 1.0 | 41 | 0.4221 | -0.197 | -0.047 | 0.990 |
| 27-Nov-96 | 1.0 | 42 | 0.4325 | -0.170 | -0.037 | 0.990 |
| 7-Jul-99 | 1.0 | 43 | 0.4429 | -0.144 | -0.031 | 0.990 |
| 20-Mar-98 | 1.0 | 44 | 0.4532 | -0.117 | 0.017 | 0.989 |
| 13-Dec-94 | 1.0 | 45 | 0.4636 | -0.091 | 0.021 | 0.989 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 17-Dec-97 | 1.0 | 46 | 0.4740 | -0.065 | 0.039 | 0.989 |
| 15-Nov-94 | 1.1 | 47 | 0.4844 | -0.039 | 0.109 | 0.989 |
| 19-Jun-96 | 1.2 | 48 | 0.4948 | -0.013 | 0.148 | 0.988 |
| 10-Dec-98 | 1.3 | 49 | 0.5052 | 0.013 | 0.230 | 0.988 |
| 31-Dec-98 | 1.3 | 50 | 0.5156 | 0.039 | 0.244 | 0.988 |
| 13-Dec-96 | 1.3 | 51 | 0.5260 | 0.065 | 0.249 | 0.987 |
| 8-Mar-94 | 1.3 | 52 | 0.5364 | 0.091 | 0.299 | 0.987 |
| 18-Oct-95 | 1.4 | 53 | 0.5468 | 0.117 | 0.333 | 0.987 |
| 7-Jun-94 | 1.4 | 54 | 0.5571 | 0.144 | 0.366 | 0.987 |
| 30-Jan-97 | 1.5 | 55 | 0.5675 | 0.170 | 0.373 | 0.987 |
| 23-Mar-94 | 1.5 | 56 | 0.5779 | 0.197 | 0.382 | 0.987 |
| 21-Jan-99 | 1.5 | 57 | 0.5883 | 0.223 | 0.384 | 0.987 |
| 15-Jan-99 | 1.6 | 58 | 0.5987 | 0.250 | 0.442 | 0.987 |
| 15-Jun-99 | 1.6 | 59 | 0.6091 | 0.277 | 0.459 | 0.988 |
| 10-Jan-95 | 1.6 | 60 | 0.6195 | 0.304 | 0.492 | 0.988 |
| 20-May-94 | 1.6 | 61 | 0.6299 | 0.332 | 0.499 | 0.989 |
| 8-Mar-94 | 1.6 | 62 | 0.6403 | 0.359 | 0.499 | 0.989 |
| 19-Feb-97 | 1.7 | 63 | 0.6506 | 0.387 | 0.508 | 0.990 |
| 7-May-98 | 1.7 | 64 | 0.6610 | 0.415 | 0.516 | 0.990 |
| 25-Nov-98 | 1.7 | 65 | 0.6714 | 0.444 | 0.530 | 0.989 |
| 8-May-96 | 1.7 | 66 | 0.6818 | 0.473 | 0.558 | 0.989 |
| 4-May-94 | 1.8 | 67 | 0.6922 | 0.502 | 0.567 | 0.989 |
| 31-May-99 | 1.8 | 68 | 0.7026 | 0.532 | 0.574 | 0.988 |
| 23-May-95 | 1.8 | 69 | 0.7130 | 0.562 | 0.579 | 0.987 |
| 21-Nov-95 | 1.8 | 70 | 0.7234 | 0.593 | 0.598 | 0.987 |
| 16-Apr-97 | 2.0 | 71 | 0.7338 | 0.624 | 0.684 | 0.986 |
| 7-Mar-95 | 2.0 | 72 | 0.7442 | 0.656 | 0.706 | 0.985 |
| 16-May-91 | 2.1 | 73 | 0.7545 | 0.689 | 0.738 | 0.984 |
| 25-Apr-95 | 2.1 | 74 | 0.7649 | 0.722 | 0.751 | 0.984 |
| 8-Mar-99 | 2.3 | 75 | 0.7753 | 0.756 | 0.827 | 0.982 |
| 23-Apr-98 | 2.4 | 76 | 0.7857 | 0.792 | 0.858 | 0.982 |
| 7-Apr-94 | 2.4 | 77 | 0.7961 | 0.828 | 0.891 | 0.981 |
| 15-May-91 | 2.5 | 78 | 0.8065 | 0.865 | 0.910 | 0.981 |
| 9-Feb-95 | 2.6 | 79 | 0.8169 | 0.904 | 0.939 | 0.980 |
| 9-May-95 | 2.6 | 80 | 0.8273 | 0.943 | 0.964 | 0.979 |
| 15-May-98 | 2.6 | 81 | 0.8377 | 0.985 | 0.970 | 0.977 |
| 28-May-98 | 2.7 | 82 | 0.8481 | 1.028 | 0.982 | 0.975 |
| 23-May-99 | 3.0 | 83 | 0.8584 | 1.073 | 1.083 | 0.972 |
| 5-May-99 | 3.1 | 84 | 0.8688 | 1.121 | 1.135 | 0.969 |
| 17-Apr-96 | 3.1 | 85 | 0.8792 | 1.171 | 1.138 | 0.967 |
| 13-Apr-95 | 3.2 | 86 | 0.8896 | 1.224 | 1.167 | 0.962 |
| 29-Feb-96 | 3.9 | 87 | 0.9000 | 1.282 | 1.354 | 0.956 |
| 26-Mar-97 | 4.0 | 88 | 0.9104 | 1.343 | 1.383 | 0.959 |
| 27-May-99 | 4.1 | 89 | 0.9208 | 1.410 | 1.421 | 0.960 |
| 26-Oct-98 | 4.3 | 90 | 0.9312 | 1.485 | 1.455 | 0.961 |
| 28-Mar-96 | 4.4 | 91 | 0.9416 | 1.568 | 1.472 | 0.958 |
| 17-Jan-96 | 5.1 | 92 | 0.9519 | 1.664 | 1.638 | 0.944 |
| 22-Mar-99 | 5.9 | 93 | 0.9623 | 1.778 | 1.771 | |
| 26-May-99 | 6.0 | 94 | 0.9727 | 1.922 | 1.784 | |
| 19-Apr-99 | 7.3 | 95 | 0.9831 | 2.123 | 1.990 | |
| 19-Apr-94 | 13.1 | 96 | 0.9935 | 2.484 | 2.572 | |
| 1-Sep-99 | | | | | | |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tCd** | | **NM305** | | 21 | 21.2 |
| **LN Analysis** | | **tCd** | | 0.37 | 0.371 |

## Concentration

**Conc. Data, EV=21.2 ug/L CV=0.371**

| | | **Data-based LN** | | |
|---|---|---|---|---|
| **Avg:** | **21** | u | ln[tCd] | [tCd] |
| **SD:** | **8** | 3 | 4.1 | 58 |
| **CV:** | **0.37** | 0 | 2.99 | 20 |
| **Min:** | **6** | -3 | 1.91 | 7 |
| **Max:** | **48** | | | |
| **Median:** | **21** | | | |

**u=mLn(Conc.)+b:**

update for r2, EV, CV: **r2=0.933, EV=21.3 ug/L CV=0.446; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| | | | | 0.933 0.933 |
| | | | | 21.3 21.3 |
| | | | | 0.446 0.446 |
| r2 u,lnConc: | 0.933 | u | lnConc. | Conc. |
| slope, m: | 2.349 | 3 | 4.25 | 70 |
| intercept, b: | -6.971 | 0 | 2.97 | 19 |
| N: | 96 | -3 | 1.69 | 5 |
| E[Conc]: | 21.3 | Parameter Estimates | | |
| SD[Conc]: | 9 | from LN regression | | |
| CV[Conc]: | 0.45 | update graph label | | |

N: 96

max r2 0.980

| Date | tCd Concentration ug/L Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 31-May-99 | 6 | 1 | 0.0065 | -2.484 | 1.792 | 0.933 |
| 15-Jun-99 | 6 | 2 | 0.0169 | -2.123 | 1.792 | 0.929 |
| 27-May-99 | 7 | 3 | 0.0273 | -1.922 | 1.946 | 0.931 |
| 16-May-91 | 7.7 | 4 | 0.0377 | -1.778 | 2.041 | 0.933 |
| 24-Jun-97 | 8.6 | 5 | 0.0481 | -1.664 | 2.152 | 0.934 |
| 7-May-98 | 8.6 | 6 | 0.0584 | -1.568 | 2.152 | 0.934 |
| 15-May-91 | 9 | 7 | 0.0688 | -1.485 | 2.197 | 0.936 |
| 23-May-99 | 9 | 8 | 0.0792 | -1.410 | 2.197 | 0.939 |
| 26-May-99 | 9 | 9 | 0.0896 | -1.343 | 2.197 | 0.946 |
| 7-Jul-99 | 10.6 | 10 | 0.1000 | -1.282 | 2.361 | 0.957 |
| 28-May-98 | 11 | 11 | 0.1104 | -1.224 | 2.398 | 0.961 |
| 15-May-98 | 11.2 | 12 | 0.1208 | -1.171 | 2.416 | 0.966 |
| 16-Apr-97 | 12 | 13 | 0.1312 | -1.121 | 2.485 | 0.971 |
| 26-Mar-97 | 13 | 14 | 0.1416 | -1.073 | 2.565 | 0.975 |
| 19-Jun-96 | 14 | 15 | 0.1519 | -1.028 | 2.639 | 0.976 |
| 23-Jul-97 | 14 | 16 | 0.1623 | -0.985 | 2.639 | 0.976 |
| 20-Mar-98 | 14 | 17 | 0.1727 | -0.943 | 2.639 | 0.976 |
| 22-Mar-99 | 14 | 18 | 0.1831 | -0.904 | 2.639 | 0.977 |
| 23-May-95 | 15 | 19 | 0.1935 | -0.865 | 2.708 | 0.979 |
| 19-Feb-97 | 15 | 20 | 0.2039 | -0.828 | 2.708 | 0.979 |
| 25-Feb-98 | 15 | 21 | 0.2143 | -0.792 | 2.708 | 0.979 |
| 9-May-95 | 16 | 22 | 0.2247 | -0.756 | 2.773 | 0.980 |
| 29-Feb-96 | 16 | 23 | 0.2351 | -0.722 | 2.773 | 0.980 |
| 23-Apr-98 | 16 | 24 | 0.2455 | -0.689 | 2.773 | 0.979 |
| 26-Jun-98 | 16 | 25 | 0.2558 | -0.656 | 2.773 | 0.979 |
| 8-May-96 | 17 | 26 | 0.2662 | -0.624 | 2.833 | 0.980 |
| 14-Aug-97 | 17 | 27 | 0.2766 | -0.593 | 2.833 | 0.980 |
| 8-Mar-99 | 17 | 28 | 0.2870 | -0.562 | 2.833 | 0.979 |
| 19-Apr-99 | 17 | 29 | 0.2974 | -0.532 | 2.833 | 0.979 |
| 5-May-99 | 17 | 30 | 0.3078 | -0.502 | 2.833 | 0.979 |
| 4-Aug-99 | 17.7 | 31 | 0.3182 | -0.473 | 2.874 | 0.980 |
| 28-Mar-96 | 18 | 32 | 0.3286 | -0.444 | 2.890 | 0.980 |
| 3-Oct-91 | 19 | 33 | 0.3390 | -0.415 | 2.944 | 0.979 |
| 24-Jan-94 | 19 | 34 | 0.3494 | -0.387 | 2.944 | 0.979 |
| 4-Sep-97 | 19 | 35 | 0.3597 | -0.359 | 2.944 | 0.978 |
| 20-May-94 | 20 | 36 | 0.3701 | -0.332 | 2.996 | 0.977 |
| 27-Jun-95 | 20 | 37 | 0.3805 | -0.304 | 2.996 | 0.978 |
| 11-Jul-95 | 20 | 38 | 0.3909 | -0.277 | 2.996 | 0.978 |
| 17-Jan-96 | 20 | 39 | 0.4013 | -0.250 | 2.996 | 0.978 |
| 17-Apr-96 | 20 | 40 | 0.4117 | -0.223 | 2.996 | 0.978 |
| 24-Jul-96 | 20 | 41 | 0.4221 | -0.197 | 2.996 | 0.978 |
| 26-Sep-96 | 20 | 42 | 0.4325 | -0.170 | 2.996 | 0.977 |
| 30-Jan-97 | 20 | 43 | 0.4429 | -0.144 | 2.996 | 0.977 |
| 28-Jul-98 | 20 | 44 | 0.4532 | -0.117 | 2.996 | 0.976 |
| 23-Mar-94 | 21 | 45 | 0.4636 | -0.091 | 3.045 | 0.975 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15-Aug-94 | 21 | 46 | 0.4740 | -0.065 | 3.045 | 0.975 |
| 15-Aug-94 | 21 | 47 | 0.4844 | -0.039 | 3.045 | 0.975 |
| 21-Aug-96 | 21 | 48 | 0.4948 | -0.013 | 3.045 | 0.975 |
| 17-Dec-97 | 21 | 49 | 0.5052 | 0.013 | 3.045 | 0.974 |
| 21-Jan-98 | 21 | 50 | 0.5156 | 0.039 | 3.045 | 0.973 |
| 21-Jan-99 | 21 | 51 | 0.5260 | 0.065 | 3.045 | 0.972 |
| 28-Oct-93 | 22 | 52 | 0.5364 | 0.091 | 3.091 | 0.971 |
| 4-May-94 | 22 | 53 | 0.5468 | 0.117 | 3.091 | 0.972 |
| 20-Jul-94 | 22 | 54 | 0.5571 | 0.144 | 3.091 | 0.972 |
| 20-Jul-94 | 22 | 55 | 0.5675 | 0.170 | 3.091 | 0.971 |
| 26-Nov-97 | 22 | 56 | 0.5779 | 0.197 | 3.091 | 0.970 |
| 24-Sep-98 | 22 | 57 | 0.5883 | 0.223 | 3.091 | 0.969 |
| 26-Oct-98 | 22 | 58 | 0.5987 | 0.250 | 3.091 | 0.968 |
| 23-Feb-99 | 22 | 59 | 0.6091 | 0.277 | 3.091 | 0.967 |
| 4-Oct-91 | 22.8 | 60 | 0.6195 | 0.304 | 3.127 | 0.965 |
| 2-Dec-93 | 23 | 61 | 0.6299 | 0.332 | 3.135 | 0.964 |
| 26-Jul-95 | 23 | 62 | 0.6403 | 0.359 | 3.135 | 0.963 |
| 16-Oct-97 | 23 | 63 | 0.6506 | 0.387 | 3.135 | 0.961 |
| 8-Mar-94 | 24 | 64 | 0.6610 | 0.415 | 3.178 | 0.960 |
| 8-Mar-94 | 24 | 65 | 0.6714 | 0.444 | 3.178 | 0.960 |
| 23-Jun-94 | 24 | 66 | 0.6818 | 0.473 | 3.178 | 0.960 |
| 26-Aug-98 | 24 | 67 | 0.6922 | 0.502 | 3.178 | 0.959 |
| 18-Feb-94 | 25 | 68 | 0.7026 | 0.532 | 3.219 | 0.957 |
| 18-Feb-94 | 25 | 69 | 0.7130 | 0.562 | 3.219 | 0.960 |
| 7-Apr-94 | 25 | 70 | 0.7234 | 0.593 | 3.219 | 0.962 |
| 7-Jun-94 | 25 | 71 | 0.7338 | 0.624 | 3.219 | 0.963 |
| 28-Oct-94 | 25 | 72 | 0.7442 | 0.656 | 3.219 | 0.963 |
| 25-Apr-95 | 25 | 73 | 0.7545 | 0.689 | 3.219 | 0.963 |
| 1-Oct-98 | 25 | 74 | 0.7649 | 0.722 | 3.219 | 0.961 |
| 16-Dec-93 | 26 | 75 | 0.7753 | 0.756 | 3.258 | 0.959 |
| 7-Mar-95 | 26 | 76 | 0.7857 | 0.792 | 3.258 | 0.960 |
| 21-Nov-95 | 26 | 77 | 0.7961 | 0.828 | 3.258 | 0.961 |
| 29-Oct-96 | 26 | 78 | 0.8065 | 0.865 | 3.258 | 0.959 |
| 9-Feb-95 | 27 | 79 | 0.8169 | 0.904 | 3.296 | 0.957 |
| 13-Apr-95 | 27 | 80 | 0.8273 | 0.943 | 3.296 | 0.958 |
| 14-Aug-95 | 27 | 81 | 0.8377 | 0.985 | 3.296 | 0.958 |
| 13-Dec-96 | 27 | 82 | 0.8481 | 1.028 | 3.296 | 0.956 |
| 11-Nov-97 | 27.4 | 83 | 0.8584 | 1.073 | 3.311 | 0.952 |
| 19-Apr-94 | 28 | 84 | 0.8688 | 1.121 | 3.332 | 0.947 |
| 8-Oct-98 | 28 | 85 | 0.8792 | 1.171 | 3.332 | 0.942 |
| 15-Jan-99 | 29 | 86 | 0.8896 | 1.224 | 3.367 | 0.934 |
| 1-Sep-99 | 29 | 87 | 0.9000 | 1.282 | 3.367 | 0.925 |
| 8-Sep-94 | 30 | 88 | 0.9104 | 1.343 | 3.401 | 0.912 |
| 27-Nov-96 | 30 | 89 | 0.9208 | 1.410 | 3.401 | 0.895 |
| 27-Oct-98 | 31 | 90 | 0.9312 | 1.485 | 3.434 | 0.871 |
| 31-Dec-98 | 31 | 91 | 0.9416 | 1.568 | 3.434 | 0.837 |
| 18-Oct-95 | 36 | 92 | 0.9519 | 1.664 | 3.584 | 0.919 |
| 10-Jan-95 | 38 | 93 | 0.9623 | 1.778 | 3.638 | |
| 25-Nov-98 | 38 | 94 | 0.9727 | 1.922 | 3.638 | |
| 10-Dec-98 | 39 | 95 | 0.9831 | 2.123 | 3.664 | |
| 13-Dec-94 | 45 | 96 | 0.9935 | 2.484 | 3.807 | |
| 15-Nov-94 | 48 | | | | | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| tCd | | NM305 | | | 20 | 19.8 |
| LN Analysis | | tCd | | | 1.17 | 1.17 |

**Discharge, Q**

**Q Data, EV=19.8 cfs CV=1.17**

| | | | | |
|---|---|---|---|---|
| | | **Q Data-based LN** | | |
| **Avg:** | **20** | u | lnQ | Q |
| **SD:** | **23** | 3 | 5.3 | 209 |
| **CV:** | **1.17** | 0 | 2.56 | 13 |
| **Min:** | **3** | -3 | -0.23 | 1 |
| **Max:** | **123** | | | |
| **Median:** | **10** | | | |

| | | | |
|---|---|---|---|
| | | 0.932 | 0.932 |
| | | 18.8 | 18.8 |
| **u=mLn(Q)+b:** | | 1.23 | 1.23 |

update for r2, EV, CV: **r2=0.932, EV=18.8 cfs CV=1.23; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.932 | u | lnQ | Q |
| slope, m: | 1.044 | 3 | 5.35 | 210 |
| intercept, b: | -2.584 | 0 | 2.47 | 12 |
| N: | 96 | -3 | -0.40 | 1 |
| E[Q]: | 18.8 | Parameter Estimates | | |
| SD[Q]: | 23 | from LN regression | | |
| CV[Q]: | 1.23 | update graph label | | |

N: 96

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 0.980 r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Oct-98 | 3.2 | 1 | 0.0065 | -2.484 | 1.163 | 0.932 |
| 3-Oct-91 | 3.69 | 2 | 0.0169 | -2.123 | 1.306 | 0.942 |
| 15-Aug-94 | 3.69 | 3 | 0.0273 | -1.922 | 1.306 | 0.949 |
| 14-Aug-95 | 3.82 | 4 | 0.0377 | -1.778 | 1.340 | 0.955 |
| 8-Sep-94 | 3.91 | 5 | 0.0481 | -1.664 | 1.364 | 0.959 |
| 28-Oct-94 | 3.91 | 6 | 0.0584 | -1.568 | 1.364 | 0.962 |
| 4-Oct-91 | 4.02 | 7 | 0.0688 | -1.485 | 1.391 | 0.965 |
| 18-Feb-94 | 4.03 | 8 | 0.0792 | -1.410 | 1.394 | 0.967 |
| 18-Feb-94 | 4.11 | 9 | 0.0896 | -1.343 | 1.413 | 0.969 |
| 13-Dec-94 | 4.22 | 10 | 0.1000 | -1.282 | 1.440 | 0.971 |
| 15-Aug-94 | 4.32 | 11 | 0.1104 | -1.224 | 1.463 | 0.972 |
| 15-Nov-94 | 4.32 | 12 | 0.1208 | -1.171 | 1.463 | 0.973 |
| 26-Jul-95 | 4.54 | 13 | 0.1312 | -1.121 | 1.513 | 0.974 |
| 28-Oct-93 | 4.7 | 14 | 0.1416 | -1.073 | 1.548 | 0.975 |
| 2-Dec-93 | 4.7 | 15 | 0.1519 | -1.028 | 1.548 | 0.976 |
| 20-Jul-94 | 4.74 | 16 | 0.1623 | -0.985 | 1.556 | 0.977 |
| 16-Dec-93 | 4 8 | 17 | 0.1727 | -0.943 | 1.569 | 0.977 |
| 1-Sep-99 | 5 | 18 | 0.1831 | -0.904 | 1.609 | 0.978 |
| 26-Sep-96 | 5.15 | 19 | 0.1935 | -0.865 | 1.639 | 0.978 |
| 20-Jul-94 | 5.16 | 20 | 0.2039 | -0.828 | 1.641 | 0.979 |
| 1-Oct-98 | 5.37 | 21 | 0.2143 | -0.792 | 1.681 | 0.979 |
| 8-Oct-98 | 5.37 | 22 | 0.2247 | -0.756 | 1.681 | 0.979 |
| 11-Nov-97 | 5.38 | 23 | 0.2351 | -0.722 | 1.683 | 0.980 |
| 24-Sep-98 | 5.49 | 24 | 0.2455 | -0.689 | 1.703 | 0.980 |
| 11-Jul-95 | 5.71 | 25 | 0.2558 | -0.656 | 1.742 | 0.979 |
| 26-Aug-98 | 5.84 | 26 | 0.2662 | -0.624 | 1.765 | 0.979 |
| 24-Jan-94 | 5.87 | 27 | 0.2766 | -0.593 | 1.770 | 0.979 |
| 21-Aug-96 | 5.97 | 28 | 0.2870 | -0.562 | 1.787 | 0.979 |
| 27-Nov-96 | 5.97 | 29 | 0.2974 | -0.532 | 1.787 | 0.979 |
| 10-Dec-98 | 6 | 30 | 0.3078 | -0.502 | 1.792 | 0.978 |
| 29-Oct-96 | 6.22 | 31 | 0.3182 | -0.473 | 1.828 | 0.978 |
| 16-Oct-97 | 6.35 | 32 | 0.3286 | -0.444 | 1.848 | 0.977 |
| 4-Sep-97 | 6.76 | 33 | 0.3390 | -0.415 | 1.911 | 0.977 |
| 21-Jan-98 | 6.9 | 34 | 0.3494 | -0.387 | 1.932 | 0.976 |
| 28-Jul-98 | 6.9 | 35 | 0.3597 | -0.359 | 1.932 | 0.976 |
| 23-Feb-99 | 7.05 | 36 | 0.3701 | -0.332 | 1.953 | 0.975 |
| 24-Jul-96 | 7.19 | 37 | 0.3805 | -0.304 | 1.973 | 0.974 |
| 18-Oct-95 | 7.2 | 38 | 0.3909 | -0.277 | 1.974 | 0.973 |
| 23-Jun-94 | 7.39 | 39 | 0.4013 | -0.250 | 2.000 | 0.973 |
| 27-Jun-95 | 7.39 | 40 | 0.4117 | -0.223 | 2.000 | 0.972 |
| 26-Nov-97 | 7.5 | 41 | 0.4221 | -0.197 | 2.015 | 0.971 |
| 14-Aug-97 | 7.65 | 42 | 0.4325 | -0.170 | 2.035 | 0.970 |
| 31-Dec-98 | 7.65 | 43 | 0.4429 | -0.144 | 2.035 | 0.969 |
| 10-Jan-95 | 8 | 44 | 0.4532 | -0.117 | 2.079 | 0.968 |
| 25-Nov-98 | 8.31 | 45 | 0.4636 | -0.091 | 2.117 | 0.967 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4-Aug-99 | 8.6 | 46 | 0.4740 | -0.065 | 2.152 | 0.966 |
| 13-Dec-96 | 8.83 | 47 | 0.4844 | -0.039 | 2.178 | 0.965 |
| 17-Dec-97 | 9.2 | 48 | 0.4948 | -0.013 | 2.219 | 0.964 |
| 25-Feb-98 | 9.58 | 49 | 0.5052 | 0.013 | 2.260 | 0.962 |
| 15-Jan-99 | 9.97 | 50 | 0.5156 | 0.039 | 2.300 | 0.961 |
| 23-Jul-97 | 10.2 | 51 | 0.5260 | 0.065 | 2.322 | 0.960 |
| 8-Mar-94 | 10.44 | 52 | 0.5364 | 0.091 | 2.346 | 0.958 |
| 7-Jun-94 | 10.72 | 53 | 0.5468 | 0.117 | 2.372 | 0.957 |
| 26-Jun-98 | 10.8 | 54 | 0.5571 | 0.144 | 2.380 | 0.956 |
| 8-Mar-94 | 12.76 | 55 | 0.5675 | 0.170 | 2.546 | 0.955 |
| 23-Mar-94 | 12.97 | 56 | 0.5779 | 0.197 | 2.563 | 0.953 |
| 21-Nov-95 | 13 | 57 | 0.5883 | 0.223 | 2.565 | 0.951 |
| 21-Jan-99 | 13 | 58 | 0.5987 | 0.250 | 2.565 | 0.949 |
| 30-Jan-97 | 13.5 | 59 | 0.6091 | 0.277 | 2.603 | 0.947 |
| 20-Mar-98 | 13.5 | 60 | 0.6195 | 0.304 | 2.603 | 0.945 |
| 7-Mar-95 | 14.49 | 61 | 0.6299 | 0.332 | 2.673 | 0.943 |
| 4-May-94 | 14.89 | 62 | 0.6403 | 0.359 | 2.701 | 0.941 |
| 20-May-94 | 15.31 | 63 | 0.6506 | 0.387 | 2.729 | 0.938 |
| 19-Jun-96 | 15.4 | 64 | 0.6610 | 0.415 | 2.734 | 0.936 |
| 25-Apr-95 | 15.75 | 65 | 0.6714 | 0.444 | 2.757 | 0.935 |
| 24-Jun-97 | 16.7 | 66 | 0.6818 | 0.473 | 2.815 | 0.934 |
| 7-Jul-99 | 17 | 67 | 0.6922 | 0.502 | 2.833 | 0.932 |
| 9-Feb-95 | 17.61 | 68 | 0.7026 | 0.532 | 2.868 | 0.932 |
| 7-Apr-94 | 18.12 | 69 | 0.7130 | 0.562 | 2.897 | 0.933 |
| 8-May-96 | 19.1 | 70 | 0.7234 | 0.593 | 2.950 | 0.936 |
| 19-Feb-97 | 20.6 | 71 | 0.7338 | 0.624 | 3.025 | 0.940 |
| 13-Apr-95 | 22.11 | 72 | 0.7442 | 0.656 | 3.096 | 0.943 |
| 23-May-95 | 22.11 | 73 | 0.7545 | 0.689 | 3.096 | 0.946 |
| 8-Mar-99 | 25 | 74 | 0.7649 | 0.722 | 3.219 | 0.955 |
| 23-Apr-98 | 27.4 | 75 | 0.7753 | 0.756 | 3.311 | 0.960 |
| 17-Apr-96 | 29 | 76 | 0.7857 | 0.792 | 3.367 | 0.961 |
| 9-May-95 | 30.45 | 77 | 0.7961 | 0.828 | 3.416 | 0.962 |
| 16-Apr-97 | 30.7 | 78 | 0.8065 | 0.865 | 3.424 | 0.963 |
| 5-May-99 | 34 | 79 | 0.8169 | 0.904 | 3.526 | 0.969 |
| 7-May-98 | 36.2 | 80 | 0.8273 | 0.943 | 3.589 | 0.970 |
| 26-Oct-98 | 36.2 | 81 | 0.8377 | 0.985 | 3.589 | 0.969 |
| 15-May-98 | 43.8 | 82 | 0.8481 | 1.028 | 3.780 | 0.973 |
| 29-Feb-96 | 45 | 83 | 0.8584 | 1.073 | 3.807 | 0.973 |
| 28-Mar-96 | 45 | 84 | 0.8688 | 1.121 | 3.807 | 0.974 |
| 28-May-98 | 45.1 | 85 | 0.8792 | 1.171 | 3.809 | 0.973 |
| 17-Jan-96 | 47.8 | 86 | 0.8896 | 1.224 | 3.867 | 0.969 |
| 15-Jun-99 | 49 | 87 | 0.9000 | 1.282 | 3.892 | 0.965 |
| 16-May-91 | 50.5 | 88 | 0.9104 | 1.343 | 3.922 | 0.960 |
| 15-May-91 | 51.3 | 89 | 0.9208 | 1.410 | 3.938 | 0.953 |
| 31-May-99 | 55 | 90 | 0.9312 | 1.485 | 4.007 | 0.942 |
| 26-Mar-97 | 57 | 91 | 0.9416 | 1.568 | 4.043 | 0.926 |
| 23-May-99 | 61 | 92 | 0.9519 | 1.664 | 4.111 | 0.910 |
| 22-Mar-99 | 78 | 93 | 0.9623 | 1.778 | 4.357 | |
| 19-Apr-99 | 80 | 94 | 0.9727 | 1.922 | 4.382 | |
| 19-Apr-94 | 86.89 | 95 | 0.9831 | 2.123 | 4.465 | |
| 27-May-99 | 110 | 96 | 0.9935 | 2.484 | 4.700 | |
| 26-May-99 | 123 | | | | | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | | | see comment |
|---|---|---|---|
| **Station:** | **NM305** | **Date:** | **19-Jun-00** |
| **Chemical:** | **tPb** | **Analyst:** | **J.Johnston** |
| **Notes:** | Template and Example Lognormal Analysis | | |
| **Input Discharge and Concentration Data below (in red)** | | | |

| | Date | Discharge | Concentration | Load | | | |
|---|---|---|---|---|---|---|---|
| **Avg:** | 35,293 | 20 | 93 | 18 | 0.00 | 0.00 | 0.00 |
| **SD:** | 774 | 23 | 98 | 61 | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.18 | 1.06 | 3.31 | | | |
| **Min:** | 33,373 | 3 | 5 | 0.4 | -0.71 | -0.89 | -0.30 |
| **Max:** | 36,404 | 123 | 800 | 529 | 4.46 | 7.20 | 8.43 |
| **Median:** | 35,351 | 9 | 67 | 4 | -0.44 | -0.26 | -0.24 |

| tPb NM305 | | | : Concentration v. Discharge, Q | | Q = mTime +b | LnQ = mTime +b |
|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.485)** | | update r2 | **0.48** | 0.485 | r2: 0.050 | 0.055 |
| r2 Q,[COC]: | 0.48 | [tPb] | Q | | m: 0.0067 | 0.00028 |
| slope, m: | 3.0 | 44 | 3.2 | | b: -218 | -7.54 |
| intercept, b: | 34.5 | 93 | 19.7 | | | |
| N: 98 | | 398 | 123 | | | |
| **LnConc. = mLn(Q)+b (r2=0.216)** | | update r2 | 0.22 | 0.216 | | |
| r2 lnQ,ln[COC]: | 0.22 | ln[tPb] | ln Q | [tPb] Q | | |
| slope, m: | 0.32 | 3.85 | 1.16 | 47 3 | | |
| intercept, b: | 3.47 | 4.43 | 2.98 | 84 20 | | |
| N: 98 | | 5.02 | 4.81 | 152 123 | | |

**N= 98**

| update for new data | Sampling Date | Q Discharge cfs | tPb Concentration ug/L | tPb Load lbs/day | Ln Q | Ln tPb Conc. | Ln tPb Load | tPb NM305 Standardized Values = (x - Avg)/SD Q | for graph 0 Conc | Load |
|---|---|---|---|---|---|---|---|---|---|---|
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | |
| MFG | 15-May-91 | 51.3 | 42 | 11.6 | 3.94 | 3.74 | 2.45 | 1.37 | -0.52 | -0.11 |
| MFG | 16-May-91 | 50.5 | 40 | 10.9 | 3.92 | 3.69 | 2.39 | 1.33 | -0.54 | -0.12 |
| MFG | 3-Oct-91 | 3.69 | 39 | 0.8 | 1.31 | 3.66 | -0.26 | -0.69 | -0.55 | -0.29 |
| MFG | 4-Oct-91 | 4.02 | 51 | 1.1 | 1.39 | 3.93 | 0.10 | -0.68 | -0.42 | -0.28 |
| IDEQ | 28-Oct-93 | 4.7 | 40 | 1.0 | 1.55 | 3.69 | 0.01 | -0.65 | -0.54 | -0.29 |
| IDEQ | 2-Dec-93 | 4.7 | 48 | 1.2 | 1.55 | 3.87 | 0.19 | -0.65 | -0.45 | -0.28 |
| IDEQ | 16-Dec-93 | 4.8 | 64 | 1.7 | 1.57 | 4.16 | 0.50 | -0.64 | -0.29 | -0.28 |
| IDEQ | 24-Jan-94 | 5.87 | 68 | 2.1 | 1.77 | 4.22 | 0.76 | -0.60 | -0.25 | -0.27 |
| IDEQ | 18-Feb-94 | 4.11 | 73 | 1.6 | 1.41 | 4.29 | 0.48 | -0.67 | -0.20 | -0.28 |
| IDEQ | 18-Feb-94 | 4.03 | 73 | 1.6 | 1.39 | 4.29 | 0.46 | -0.68 | -0.20 | -0.28 |
| IDEQ | 8-Mar-94 | 10.44 | 108 | 6.1 | 2.35 | 4.68 | 1.80 | -0.40 | 0.16 | -0.20 |
| IDEQ | 8-Mar-94 | 12.76 | 108 | 7.4 | 2.55 | 4.68 | 2.00 | -0.30 | 0.16 | -0.18 |
| IDEQ | 23-Mar-94 | 12.97 | 87 | 6.1 | 2.56 | 4.47 | 1.80 | -0.29 | -0.06 | -0.20 |
| IDEQ | 7-Apr-94 | 18.12 | 85 | 8.3 | 2.90 | 4.44 | 2.11 | -0.07 | -0.08 | -0.17 |
| IDEQ | 19-Apr-94 | 86.89 | 442 | 206.6 | 4.46 | 6.09 | 5.33 | 2.90 | 3.56 | 3.10 |
| IDEQ | 4-May-94 | 14.89 | 72 | 5.8 | 2.70 | 4.28 | 1.75 | -0.21 | -0.21 | -0.21 |
| IDEQ | 20-May-94 | 15.31 | 5 | 0.4 | 2.73 | 1.61 | -0.89 | -0.19 | -0.89 | -0.30 |
| IDEQ | 7-Jun-94 | 10.72 | 66 | 3.8 | 2.37 | 4.19 | 1.34 | -0.39 | -0.27 | -0.24 |
| IDEQ | 23-Jun-94 | 7.39 | 69 | 2.7 | 2.00 | 4.23 | 1.01 | -0.53 | -0.24 | -0.26 |
| IDEQ | 20-Jul-94 | 5.16 | 55 | 1.5 | 1.64 | 4.01 | 0.42 | -0.63 | -0.38 | -0.28 |
| IDEQ | 20-Jul-94 | 4.74 | 55 | 1.4 | 1.56 | 4.01 | 0.34 | -0.65 | -0.38 | -0.28 |
| IDEQ | 15-Aug-94 | 4.32 | 44 | 1.0 | 1.46 | 3.78 | 0.02 | -0.66 | -0.50 | -0.29 |
| IDEQ | 15-Aug-94 | 3.69 | 44 | 0.9 | 1.31 | 3.78 | -0.14 | -0.69 | -0.50 | -0.29 |
| IDEQ | 8-Sep-94 | 3.91 | 40 | 0.8 | 1.36 | 3.69 | -0.17 | -0.68 | -0.54 | -0.29 |
| IDEQ | 28-Oct-94 | 3.91 | 53 | 1.1 | 1.36 | 3.97 | 0.11 | -0.68 | -0.40 | -0.28 |
| IDEQ | 15-Nov-94 | 4.32 | 134 | 3.1 | 1.46 | 4.90 | 1.14 | -0.66 | 0.42 | -0.25 |
| IDEQ | 13-Dec-94 | 4.22 | 91 | 2.1 | 1.44 | 4.51 | 0.73 | -0.67 | -0.02 | -0.27 |
| IDEQ | 10-Jan-95 | 8 | 200 | 8.6 | 2.08 | 5.30 | 2.15 | -0.50 | 1.09 | -0.16 |
| IDEQ | 9-Feb-95 | 17.61 | 107 | 10.1 | 2.87 | 4.67 | 2.32 | -0.09 | 0.15 | -0.14 |
| IDEQ | 7-Mar-95 | 14.49 | 95 | 7.4 | 2.67 | 4.55 | 2.00 | -0.22 | 0.02 | -0.18 |
| IDEQ | 13-Apr-95 | 22.11 | 106 | 12.6 | 3.10 | 4.66 | 2.53 | 0.10 | 0.14 | -0.09 |
| IDEQ | 25-Apr-95 | 15.75 | 79 | 6.7 | 2.76 | 4.37 | 1.90 | -0.17 | -0.14 | -0.19 |
| IDEQ | 9-May-95 | 30.45 | 108 | 17.7 | 3.42 | 4.68 | 2.87 | 0.46 | 0.16 | -0.01 |
| IDEQ | 23-May-95 | 22.11 | 87 | 10.3 | 3.10 | 4.47 | 2.34 | 0.10 | -0.06 | -0.13 |
| IDEQ | 27-Jun-95 | 7.39 | 103 | 4.1 | 2.00 | 4.63 | 1.41 | -0.53 | 0.10 | -0.23 |
| IDEQ | 11-Jul-95 | 5.71 | 101 | 3.1 | 1.74 | 4.62 | 1.13 | -0.60 | 0.08 | -0.25 |
| IDEQ | 26-Jul-95 | 4.54 | 100 | 2.4 | 1.51 | 4.61 | 0.89 | -0.65 | 0.07 | -0.26 |
| IDEQ | 14-Aug-95 | 3.82 | 61 | 1.3 | 1.34 | 4.11 | 0.23 | -0.69 | -0.32 | -0.28 |
| IDEQ | 18-Oct-95 | 7.2 | 110 | 4.3 | 1.97 | 4.70 | 1.45 | -0.54 | 0.18 | -0.23 |
| IDEQ | 21-Nov-95 | 13 | 196 | 13.7 | 2.56 | 5.28 | 2.62 | -0.29 | 1.05 | -0.08 |
| IDEQ | 17-Jan-96 | 47.8 | 110 | 28.3 | 3.87 | 4.70 | 3.34 | 1.21 | 0.18 | 0.16 |
| IDEQ | 29-Feb-96 | 45 | 98 | 23.7 | 3.81 | 4.58 | 3.17 | 1.09 | 0.05 | 0.09 |
| IDEQ | 28-Mar-96 | 45 | 52 | 12.6 | 3.81 | 3.95 | 2.53 | 1.09 | -0.41 | -0.09 |
| IDEQ | 17-Apr-96 | 29 | 109 | 17.0 | 3.37 | 4.69 | 2.83 | 0.40 | 0.17 | -0.02 |
| IDEQ | 8-May-96 | 19.1 | 89 | 9.1 | 2.95 | 4.49 | 2.21 | -0.03 | -0.04 | -0.15 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 19-Jun-96 | 15.4 | 46 | 3.8 | 2.73 | 3.83 | 1.34 | -0.19 | -0.48 | -0.24 |
| IDEQ | 24-Jul-96 | 7.19 | 57 | 2.2 | 1.97 | 4.04 | 0.79 | -0.54 | -0.36 | -0.27 |
| IDEQ | 21-Aug-96 | 5.97 | 49 | 1.6 | 1.79 | 3.89 | 0.45 | -0.59 | -0.44 | -0.28 |
| IDEQ | 26-Sep-96 | 5.15 | 46 | 1.3 | 1.64 | 3.83 | 0.24 | -0.63 | -0.48 | -0.28 |
| IDEQ | 29-Oct-96 | 6.22 | 68 | 2.3 | 1.83 | 4.22 | 0.82 | -0.58 | -0.25 | -0.26 |
| IDEQ | 27-Nov-96 | 5.97 | 54 | 1.7 | 1.79 | 3.99 | 0.55 | -0.59 | -0.39 | -0.27 |
| IDEQ | 13-Dec-96 | 8.83 | 96 | 4.6 | 2.18 | 4.56 | 1.52 | -0.47 | 0.03 | -0.23 |
| IDEQ | 30-Jan-97 | 13.5 | 70 | 5.1 | 2.60 | 4.25 | 1.63 | -0.27 | -0.25 | -0.22 |
| IDEQ | 19-Feb-97 | 20.6 | 112 | 12.4 | 3.03 | 4.72 | 2.52 | 0.04 | 0.20 | -0.10 |
| IDEQ | 26-Mar-97 | 57 | 87 | 26.7 | 4.04 | 4.47 | 3.28 | 1.61 | -0.06 | 0.14 |
| IDEQ | 16-Apr-97 | 30.7 | 80 | 13.2 | 3.42 | 4.38 | 2.58 | 0.48 | -0.13 | -0.08 |
| IDEQ | 24-Jun-97 | 16.7 | 50 | 4.5 | 2.82 | 3.91 | 1.50 | -0.13 | -0.43 | -0.23 |
| IDEQ | 23-Jul-97 | 10.2 | 71 | 3.9 | 2.32 | 4.26 | 1.36 | -0.41 | -0.22 | -0.24 |
| IDEQ | 14-Aug-97 | 7.65 | 57 | 2.3 | 2.03 | 4.04 | 0.85 | -0.52 | -0.36 | -0.26 |
| IDEQ | 4-Sep-97 | 6.76 | 56 | 2.0 | 1.91 | 4.03 | 0.71 | -0.56 | -0.37 | -0.27 |
| IDEQ | 16-Oct-97 | 6.35 | 54 | 1.8 | 1.85 | 3.99 | 0.61 | -0.58 | -0.39 | -0.27 |
| URS | 11-Nov-97 | 5.38 | 47.6 | 1.4 | 1.68 | 3.86 | 0.32 | -0.62 | -0.46 | -0.28 |
| IDEQ | 26-Nov-97 | 7.5 | 47 | 1.9 | 2.01 | 3.85 | 0.64 | -0.53 | -0.46 | -0.27 |
| IDEQ | 17-Dec-97 | 9.2 | 42 | 2.1 | 2.22 | 3.74 | 0.73 | -0.45 | -0.52 | -0.27 |
| IDEQ | 21-Jan-98 | 6.9 | 49 | 1.8 | 1.93 | 3.89 | 0.60 | -0.55 | -0.44 | -0.27 |
| IDEQ | 25-Feb-98 | 9.58 | 307 | 15.8 | 2.26 | 5.73 | 2.76 | -0.44 | 2.18 | -0.04 |
| IDEQ | 20-Mar-98 | 13.5 | 72 | 5.2 | 2.60 | 4.28 | 1.65 | -0.27 | -0.21 | -0.22 |
| IDEQ | 23-Apr-98 | 27.4 | 169 | 24.9 | 3.31 | 5.13 | 3.22 | 0.33 | 0.78 | 0.11 |
| IDEQ | 7-May-98 | 36.2 | 74 | 14.4 | 3.59 | 4.30 | 2.67 | 0.71 | -0.19 | -0.06 |
| URS | 15-May-98 | 43.8 | 39.7 | 9.4 | 3.78 | 3.68 | 2.24 | 1.04 | -0.54 | -0.15 |
| IDEQ | 28-May-98 | 45.1 | 90 | 21.8 | 3.81 | 4.50 | 3.08 | 1.10 | -0.03 | 0.06 |
| IDEQ | 26-Jun-98 | 10.8 | 49 | 2.8 | 2.38 | 3.89 | 1.05 | -0.38 | -0.44 | -0.26 |
| IDEQ | 28-Jul-98 | 6.9 | 41 | 1.5 | 1.93 | 3.71 | 0.42 | -0.55 | -0.53 | -0.28 |
| IDEQ | 26-Aug-98 | 5.84 | 44 | 1.4 | 1.76 | 3.78 | 0.32 | -0.60 | -0.50 | -0.28 |
| IDEQ | 24-Sep-98 | 5.49 | 46 | 1.4 | 1.70 | 3.83 | 0.31 | -0.61 | -0.48 | -0.28 |
| IDEQ | 1-Oct-98 | 5.37 | 42 | 1.2 | 1.68 | 3.74 | 0.19 | -0.62 | -0.52 | -0.28 |
| IDEQ | 8-Oct-98 | 5.37 | 44 | 1.3 | 1.68 | 3.78 | 0.24 | -0.62 | -0.50 | -0.28 |
| IDEQ | 26-Oct-98 | 36.2 | 36 | 7.0 | 3.59 | 3.58 | 1.95 | 0.71 | -0.58 | -0.19 |
| USGS | 27-Oct-98 | 3.2 | 47 | 0.8 | 1.16 | 3.85 | -0.21 | -0.71 | -0.46 | -0.29 |
| USGS | 19-Nov-98 | 4 | 50 | 1.1 | 1.39 | 3.91 | 0.07 | -0.68 | -0.43 | -0.28 |
| IDEQ | 25-Nov-98 | 8.31 | 134 | 6.0 | 2.12 | 4.90 | 1.79 | -0.49 | 0.42 | -0.20 |
| USGS | 10-Dec-98 | 6 | 68 | 2.2 | 1.79 | 4.22 | 0.79 | -0.59 | -0.25 | -0.27 |
| IDEQ | 31-Dec-98 | 7.65 | 57 | 2.3 | 2.03 | 4.04 | 0.85 | -0.52 | -0.36 | -0.26 |
| IDEQ | 15-Jan-99 | 9.97 | 57 | 3.1 | 2.30 | 4.04 | 1.12 | -0.42 | -0.36 | -0.25 |
| USGS | 21-Jan-99 | 13 | 54 | 3.8 | 2.56 | 3.99 | 1.33 | -0.29 | -0.39 | -0.24 |
| IDEQ | 23-Feb-99 | 7.05 | 41 | 1.6 | 1.95 | 3.71 | 0.44 | -0.55 | -0.53 | -0.28 |
| IDEQ | 8-Mar-99 | 25 | 48 | 6.5 | 3.22 | 3.87 | 1.87 | 0.23 | -0.45 | -0.20 |
| USGS | 22-Mar-99 | 78 | 330 | 138.5 | 4.36 | 5.80 | 4.93 | 2.52 | 2.42 | 1.98 |
| USGS | 19-Apr-99 | 80 | 260 | 111.9 | 4.38 | 5.56 | 4.72 | 2.60 | 1.70 | 1.54 |
| USGS | 5-May-99 | 34 | 52 | 9.5 | 3.53 | 3.95 | 2.25 | 0.62 | -0.41 | -0.15 |
| USGS | 23-May-99 | 61 | 220 | 72.2 | 4.11 | 5.39 | 4.28 | 1.78 | 1.30 | 0.89 |
| USGS | 26-May-99 | 123 | 800 | 529.4 | 4.81 | 6.68 | 6.27 | 4.46 | 7.20 | 8.43 |
| USGS | 27-May-99 | 110 | 270 | 159.8 | 4.70 | 5.60 | 5.07 | 3.90 | 1.80 | 2.33 |
| USGS | 31-May-99 | 55 | 100 | 29.6 | 4.01 | 4.61 | 3.39 | 1.53 | 0.07 | 0.19 |
| USGS | 15-Jun-99 | 49 | 81 | 21.4 | 3.89 | 4.39 | 3.06 | 1.27 | -0.12 | 0.05 |
| USGS | 7-Jul-99 | 17 | 45.6 | 4.2 | 2.83 | 3.82 | 1.43 | -0.12 | -0.48 | -0.23 |
| USGS | 4-Aug-99 | 8.6 | 48.2 | 2.2 | 2.15 | 3.88 | 0.80 | -0.48 | -0.45 | -0.27 |
| USGS | 1-Sep-99 | 5 | 21 | 0.6 | 1.61 | 3.04 | -0.57 | -0.63 | -0.73 | -0.29 |

tPb

**Concentration over time analysis**

| | tPb | NM305 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.008** | **0.00008** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 15-May-91 | 4.13 | 62 | | |
| mid: | 12-Oct-96 | 4.28 | 72 | | |
| last: | 1-Sep-99 | 4.36 | 78 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.012** | **0.00026** |
| | 29-Oct-96 | 4.12 | 62 | | |
| | 1-Sep-99 | 4.39 | 80 | | |

**Load over time analysis**

| | tPb | NM305 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.042** | **0.00036** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 15-May-91 | 0.84 | 2 | | |
| mid: | 12-Oct-96 | 1.56 | 5 | | |
| last: | 1-Sep-99 | 1.94 | 7 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.047** | **0.00110** |
| | 29-Oct-96 | 1.06 | 3 | | |
| | 1-Sep-99 | 2.20 | 9 | | |

| | max r2: | 0.907 | | max r2: | 0.974 | |
|---|---|---|---|---|---|---|
| | **Forward time Regression on Ln Concentration(t)** | | | **Forward time Regression on Ln Load(t)** | | |
| | **r2** | **slope** | **intercept** | **r2** | **slope** | **intercept** |
| | only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| | 0.008 | 0.00008 | 1.55 | 0.042 | 0.00036 | -11.21 |
| | 0.005 | 0.00006 | 2.04 | 0.053 | 0.00042 | -13.24 |
| | 0.003 | 0.00005 | 2.67 | 0.066 | 0.00048 | -15.51 |
| | 0.001 | 0.00002 | 3.41 | 0.054 | 0.00045 | -14.28 |
| | 0.000 | 0.00001 | 3.88 | 0.045 | 0.00042 | -13.37 |
| | 0.000 | 0.00000 | 4.43 | 0.039 | 0.00039 | -12.37 |
| | 0.000 | -0.00002 | 4.84 | 0.033 | 0.00037 | -11.49 |
| | 0.000 | -0.00002 | 5.00 | 0.029 | 0.00035 | -10.83 |
| | 0.001 | -0.00002 | 5.10 | 0.027 | 0.00034 | -10.39 |
| | 0.001 | -0.00002 | 5.15 | 0.023 | 0.00032 | -9.64 |
| | 0.001 | -0.00002 | 5.19 | 0.019 | 0.00029 | -8.80 |
| | 0.000 | -0.00001 | 4.83 | 0.021 | 0.00031 | -9.30 |
| | 0.000 | 0.00000 | 4.44 | 0.023 | 0.00033 | -10.05 |
| | 0.000 | 0.00000 | 4.26 | 0.024 | 0.00035 | -10.64 |
| | 0.000 | 0.00001 | 4.10 | 0.028 | 0.00037 | -11.63 |
| | 0.004 | 0.00007 | 1.95 | 0.054 | 0.00051 | -16.52 |
| | 0.004 | 0.00007 | 1.87 | 0.058 | 0.00053 | -17.40 |
| | 0.001 | -0.00002 | 5.18 | 0.044 | 0.00047 | -14.98 |
| | 0.001 | -0.00003 | 5.37 | 0.044 | 0.00047 | -15.27 |
| | 0.001 | -0.00003 | 5.52 | 0.042 | 0.00047 | -15.13 |
| | 0.002 | -0.00005 | 6.00 | 0.036 | 0.00044 | -14.14 |
| | 0.003 | -0.00006 | 6.53 | 0.030 | 0.00041 | -12.92 |
| | 0.007 | -0.00009 | 7.45 | 0.022 | 0.00036 | -11.08 |
| | 0.011 | -0.00012 | 8.47 | 0.015 | 0.00029 | -8.77 |
| | 0.019 | -0.00015 | 9.76 | 0.008 | 0.00022 | -6.15 |
| | 0.024 | -0.00018 | 10.65 | 0.004 | 0.00016 | -3.79 |
| | 0.019 | -0.00016 | 9.98 | 0.003 | 0.00013 | -3.00 |
| | 0.018 | -0.00016 | 9.95 | 0.001 | 0.00009 | -1.37 |
| | 0.009 | -0.00011 | 8.41 | 0.002 | 0.00011 | -2.28 |
| | 0.007 | -0.00010 | 7.94 | 0.003 | 0.00015 | -3.60 |
| | 0.006 | -0.00009 | 7.65 | 0.004 | 0.00017 | -4.41 |
| | 0.004 | -0.00008 | 7.10 | 0.006 | 0.00023 | -6.40 |
| | 0.004 | -0.00008 | 7.13 | 0.007 | 0.00025 | -7.24 |
| | 0.002 | -0.00006 | 6.42 | 0.013 | 0.00034 | -10.47 |
| | 0.001 | -0.00005 | 6.15 | 0.017 | 0.00041 | -12.82 |
| | 0.000 | -0.00003 | 5.41 | 0.017 | 0.00041 | -13.00 |
| | 0.000 | -0.00001 | 4.60 | 0.014 | 0.00040 | -12.43 |
| | 0.000 | 0.00002 | 3.69 | 0.011 | 0.00036 | -11.03 |
| | 0.000 | 0.00000 | 4.21 | 0.005 | 0.00025 | -7.25 |
| | 0.001 | 0.00004 | 2.87 | 0.004 | 0.00024 | -6.95 |
| | 0.007 | 0.00014 | -0.62 | 0.008 | 0.00034 | -10.55 |
| | 0.012 | 0.00019 | -2.49 | 0.018 | 0.00052 | -16.99 |
| | 0.017 | 0.00023 | -4.15 | 0.032 | 0.00070 | -23.54 |
| | 0.014 | 0.00022 | -3.65 | 0.043 | 0.00084 | -28.63 |
| | 0.023 | 0.00029 | -6.03 | 0.061 | 0.00104 | -35.72 |

| | | | | | |
|---|---|---|---|---|---|
| 0.029 | 0.00034 | -7.93 | 0.075 | 0.00120 | -41.33 |
| 0.024 | 0.00032 | -7.10 | 0.077 | 0.00126 | -43.61 |
| 0.022 | 0.00032 | -7.08 | 0.071 | 0.00126 | -43.48 |
| 0.017 | 0.00029 | -6.26 | 0.060 | 0.00120 | -41.46 |
| 0.012 | 0.00026 | -4.92 | 0.047 | 0.00110 | -37.75 |
| 0.013 | 0.00027 | -5.47 | 0.040 | 0.00106 | -36.42 |
| 0.010 | 0.00025 | -4.71 | 0.031 | 0.00097 | -33.05 |
| 0.015 | 0.00033 | -7.51 | 0.032 | 0.00102 | -35.12 |
| 0.016 | 0.00036 | -8.53 | 0.033 | 0.00110 | -37.93 |
| 0.028 | 0.00048 | -13.20 | 0.047 | 0.00138 | -47.81 |
| 0.036 | 0.00058 | -16.72 | 0.079 | 0.00186 | -65.35 |
| 0.044 | 0.00068 | -20.29 | 0.108 | 0.00229 | -80.87 |
| 0.039 | 0.00067 | -19.93 | 0.115 | 0.00248 | -87.85 |
| 0.043 | 0.00074 | -22.47 | 0.119 | 0.00266 | -94.29 |
| 0.041 | 0.00076 | -23.29 | 0.114 | 0.00273 | -96.70 |
| 0.039 | 0.00078 | -23.96 | 0.105 | 0.00275 | -97.59 |
| 0.035 | 0.00078 | -23.99 | 0.093 | 0.00272 | -96.32 |
| 0.028 | 0.00074 | -22.33 | 0.076 | 0.00256 | -90.56 |
| 0.021 | 0.00067 | -19.91 | 0.063 | 0.00246 | -86.86 |
| 0.012 | 0.00054 | -15.05 | 0.051 | 0.00234 | -82.73 |
| 0.007 | 0.00043 | -11.13 | 0.038 | 0.00211 | -74.50 |
| 0.042 | 0.00107 | -34.21 | 0.056 | 0.00272 | -96.52 |
| 0.046 | 0.00119 | -38.69 | 0.058 | 0.00295 | -104.69 |
| 0.089 | 0.00171 | -57.48 | 0.093 | 0.00388 | -138.57 |
| 0.102 | 0.00194 | -65.77 | 0.125 | 0.00476 | -170.51 |
| 0.085 | 0.00187 | -63.44 | 0.155 | 0.00567 | -203.19 |
| 0.111 | 0.00231 | -79.25 | 0.232 | 0.00739 | -265.72 |
| 0.105 | 0.00239 | -82.32 | 0.238 | 0.00802 | -288.44 |
| 0.088 | 0.00231 | -79.50 | 0.221 | 0.00816 | -293.46 |
| 0.073 | 0.00222 | -76.21 | 0.198 | 0.00808 | -290.79 |
| 0.060 | 0.00211 | -71.94 | 0.173 | 0.00782 | -281.34 |
| 0.043 | 0.00187 | -63.38 | 0.142 | 0.00735 | -264.30 |
| 0.028 | 0.00159 | -53.02 | 0.109 | 0.00672 | -241.32 |
| 0.010 | 0.00101 | -31.97 | 0.117 | 0.00743 | -267.03 |
| 0.002 | 0.00046 | -12.33 | 0.069 | 0.00593 | -212.71 |
| 0.000 | -0.00018 | 10.97 | 0.032 | 0.00416 | -148.55 |
| 0.001 | 0.00034 | -7.95 | 0.025 | 0.00405 | -144.49 |
| 0.000 | -0.00008 | 7.58 | 0.005 | 0.00200 | -70.12 |
| 0.005 | -0.00105 | 42.63 | 0.001 | -0.00093 | 36.26 |
| 0.023 | -0.00251 | 95.74 | 0.022 | -0.00483 | 177.93 |
| 0.079 | -0.00538 | 199.77 | 0.092 | -0.01135 | 414.94 |
| 0.225 | -0.00994 | 365.67 | 0.330 | -0.02270 | 827.34 |
| 0.509 | -0.01675 | 613.24 | 0.627 | -0.03550 | 1292.44 |
| 0.467 | -0.01809 | 661.91 | 0.634 | -0.04069 | 1480.90 |
| 0.425 | -0.01868 | 683.33 | 0.617 | -0.04353 | 1584.16 |
| 0.712 | -0.02615 | 954.88 | 0.860 | -0.05654 | 2057.22 |
| 0.696 | -0.02667 | 973.75 | 0.862 | -0.05865 | 2134.15 |
| 0.812 | -0.02024 | 739.99 | 0.920 | -0.05061 | 1841.61 |
| 0.907 | -0.01536 | 562.39 | 0.974 | -0.04298 | 1564.03 |

update for EV, CV:

**tPb** **NM305**

**LN Analysis** **tPb**

**Load** **Load Data, EV=19 lbs/day CV=3.3**

**Load Data-based LN**

| | | | | |
|---|---|---|---|---|
| **Avg:** | **18** | u | ln tPb Load | tPb Load |
| **SD:** | **61** | 3 | 6.4 | 598 |
| **CV:** | **3.31** | 0 | 1.67 | 5 |
| **Min:** | **0.4** | -3 | -3.06 | 0.05 |
| **Max:** | **529** | | | |
| **Median:** | **4** | | | |

| | |
|---|---|
| 18 | 19 |
| 3.31 | 3.3 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.93, EV=13.1lbs/day CV=2.63; max r2=0.97**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.932 | u | lnLoad | Load |
| slope, m: | 0.696 | 3 | 5.85 | 347 |
| intercept, b: | -1.069 | 0 | 1.54 | 5 |
| N: | 98 | -3 | -2.78 | 0.1 |
| E[Load]: | 13.1 | Parameter Estimates | | |
| SD[Load]: | 34 | from LN regression | | |
| CV[Load]: | 2.63 | update graph label | | |

| | | | |
|---|---|---|---|
| | | 0.932 | 0.93 |
| | | 13.1 | 13.1 |
| | | 2.6 | 2.63 |
| | | max r2 | |
| | | 0.970 | |

N: 98

| Date | tPb Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 20-May-94 | 0.4 | 1 | 0.0064 | -2.491 | -0.887 | 0.932 |
| 1-Sep-99 | 0.6 | 2 | 0.0165 | -2.131 | -0.571 | 0.935 |
| 3-Oct-91 | 0.8 | 3 | 0.0267 | -1.931 | -0.256 | 0.937 |
| 27-Oct-98 | 0.8 | 4 | 0.0369 | -1.788 | -0.212 | 0.941 |
| 8-Sep-94 | 0.8 | 5 | 0.0471 | -1.674 | -0.173 | 0.944 |
| 15-Aug-94 | 0.9 | 6 | 0.0573 | -1.578 | -0.135 | 0.946 |
| 28-Oct-93 | 1.0 | 7 | 0.0674 | -1.495 | 0.011 | 0.948 |
| 15-Aug-94 | 1.0 | 8 | 0.0776 | -1.421 | 0.022 | 0.951 |
| 19-Nov-98 | 1.1 | 9 | 0.0878 | -1.355 | 0.073 | 0.953 |
| 4-Oct-91 | 1.1 | 10 | 0.0980 | -1.293 | 0.098 | 0.955 |
| 28-Oct-94 | 1.1 | 11 | 0.1081 | -1.236 | 0.109 | 0.957 |
| 1-Oct-98 | 1.2 | 12 | 0.1183 | -1.183 | 0.193 | 0.958 |
| 2-Dec-93 | 1.2 | 13 | 0.1285 | -1.134 | 0.194 | 0.960 |
| 14-Aug-95 | 1.3 | 14 | 0.1387 | -1.086 | 0.226 | 0.961 |
| 8-Oct-98 | 1.3 | 15 | 0.1489 | -1.041 | 0.240 | 0.963 |
| 26-Sep-96 | 1.3 | 16 | 0.1590 | -0.998 | 0.243 | 0.964 |
| 24-Sep-98 | 1.4 | 17 | 0.1692 | -0.957 | 0.307 | 0.965 |
| 11-Nov-97 | 1.4 | 18 | 0.1794 | -0.918 | 0.320 | 0.966 |
| 26-Aug-98 | 1.4 | 19 | 0.1896 | -0.879 | 0.324 | 0.967 |
| 20-Jul-94 | 1.4 | 20 | 0.1997 | -0.843 | 0.338 | 0.967 |
| 28-Jul-98 | 1.5 | 21 | 0.2099 | -0.807 | 0.420 | 0.968 |
| 20-Jul-94 | 1.5 | 22 | 0.2201 | -0.772 | 0.423 | 0.969 |
| 23-Feb-99 | 1.6 | 23 | 0.2303 | -0.738 | 0.442 | 0.969 |
| 21-Aug-96 | 1.6 | 24 | 0.2405 | -0.705 | 0.454 | 0.970 |
| 18-Feb-94 | 1.6 | 25 | 0.2506 | -0.672 | 0.459 | 0.970 |
| 18-Feb-94 | 1.6 | 26 | 0.2608 | -0.641 | 0.479 | 0.970 |
| 16-Dec-93 | 1.7 | 27 | 0.2710 | -0.610 | 0.502 | 0.970 |
| 27-Nov-96 | 1.7 | 28 | 0.2812 | -0.579 | 0.551 | 0.970 |
| 21-Jan-98 | 1.8 | 29 | 0.2913 | -0.549 | 0.598 | 0.970 |
| 16-Oct-97 | 1.8 | 30 | 0.3015 | -0.520 | 0.612 | 0.970 |
| 26-Nov-97 | 1.9 | 31 | 0.3117 | -0.491 | 0.640 | 0.970 |
| 4-Sep-97 | 2.0 | 32 | 0.3219 | -0.462 | 0.711 | 0.970 |
| 13-Dec-94 | 2.1 | 33 | 0.3321 | -0.434 | 0.726 | 0.970 |
| 17-Dec-97 | 2.1 | 34 | 0.3422 | -0.406 | 0.732 | 0.970 |
| 24-Jan-94 | 2.1 | 35 | 0.3524 | -0.379 | 0.764 | 0.970 |
| 10-Dec-98 | 2.2 | 36 | 0.3626 | -0.352 | 0.786 | 0.970 |
| 24-Jul-96 | 2.2 | 37 | 0.3728 | -0.325 | 0.791 | 0.969 |
| 4-Aug-99 | 2.2 | 38 | 0.3830 | -0.298 | 0.802 | 0.969 |
| 29-Oct-96 | 2.3 | 39 | 0.3931 | -0.271 | 0.822 | 0.968 |
| 14-Aug-97 | 2.3 | 40 | 0.4033 | -0.245 | 0.853 | 0.967 |
| 31-Dec-98 | 2.3 | 41 | 0.4135 | -0.219 | 0.853 | 0.967 |
| 26-Jul-95 | 2.4 | 42 | 0.4237 | -0.193 | 0.893 | 0.966 |
| 23-Jun-94 | 2.7 | 43 | 0.4338 | -0.167 | 1.009 | 0.964 |
| 26-Jun-98 | 2.8 | 44 | 0.4440 | -0.141 | 1.046 | 0.964 |
| 15-Jan-99 | 3.1 | 45 | 0.4542 | -0.115 | 1.118 | 0.963 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 11-Jul-95 | 3.1 | 46 | 0.4644 | -0.089 | 1.132 | 0.962 |
| 15-Nov-94 | 3.1 | 47 | 0.4746 | -0.064 | 1.136 | 0.961 |
| 21-Jan-99 | 3.8 | 48 | 0.4847 | -0.038 | 1.329 | 0.960 |
| 7-Jun-94 | 3.8 | 49 | 0.4949 | -0.013 | 1.337 | 0.960 |
| 19-Jun-96 | 3.8 | 50 | 0.5051 | 0.013 | 1.338 | 0.960 |
| 23-Jul-97 | 3.9 | 51 | 0.5153 | 0.038 | 1.360 | 0.959 |
| 27-Jun-95 | 4.1 | 52 | 0.5254 | 0.064 | 1.410 | 0.958 |
| 7-Jul-99 | 4.2 | 53 | 0.5356 | 0.089 | 1.428 | 0.958 |
| 18-Oct-95 | 4.3 | 54 | 0.5458 | 0.115 | 1.449 | 0.957 |
| 24-Jun-97 | 4.5 | 55 | 0.5560 | 0.141 | 1.502 | 0.956 |
| 13-Dec-96 | 4.6 | 56 | 0.5662 | 0.167 | 1.517 | 0.955 |
| 30-Jan-97 | 5.1 | 57 | 0.5763 | 0.193 | 1.626 | 0.954 |
| 20-Mar-98 | 5.2 | 58 | 0.5865 | 0.219 | 1.654 | 0.953 |
| 4-May-94 | 5.8 | 59 | 0.5967 | 0.245 | 1.752 | 0.952 |
| 25-Nov-98 | 6.0 | 60 | 0.6069 | 0.271 | 1.790 | 0.952 |
| 8-Mar-94 | 6.1 | 61 | 0.6170 | 0.298 | 1.803 | 0.952 |
| 23-Mar-94 | 6.1 | 62 | 0.6272 | 0.325 | 1.803 | 0.952 |
| 8-Mar-99 | 6.5 | 63 | 0.6374 | 0.352 | 1.865 | 0.951 |
| 25-Apr-95 | 6.7 | 64 | 0.6476 | 0.379 | 1.901 | 0.951 |
| 26-Oct-98 | 7.0 | 65 | 0.6578 | 0.406 | 1.948 | 0.951 |
| 7-Mar-95 | 7.4 | 66 | 0.6679 | 0.434 | 2.002 | 0.950 |
| 8-Mar-94 | 7.4 | 67 | 0.6781 | 0.462 | 2.003 | 0.950 |
| 7-Apr-94 | 8.3 | 68 | 0.6883 | 0.491 | 2.115 | 0.949 |
| 10-Jan-95 | 8.6 | 69 | 0.6985 | 0.520 | 2.153 | 0.950 |
| 8-May-96 | 9.1 | 70 | 0.7087 | 0.549 | 2.213 | 0.950 |
| 15-May-98 | 9.4 | 71 | 0.7188 | 0.579 | 2.236 | 0.951 |
| 5-May-99 | 9.5 | 72 | 0.7290 | 0.610 | 2.253 | 0.952 |
| 9-Feb-95 | 10.1 | 73 | 0.7392 | 0.641 | 2.316 | 0.953 |
| 23-May-95 | 10.3 | 74 | 0.7494 | 0.672 | 2.337 | 0.953 |
| 16-May-91 | 10.9 | 75 | 0.7595 | 0.705 | 2.386 | 0.954 |
| 15-May-91 | 11.6 | 76 | 0.7697 | 0.738 | 2.450 | 0.954 |
| 19-Feb-97 | 12.4 | 77 | 0.7799 | 0.772 | 2.519 | 0.956 |
| 28-Mar-96 | 12.6 | 78 | 0.7901 | 0.807 | 2.533 | 0.957 |
| 13-Apr-95 | 12.6 | 79 | 0.8003 | 0.843 | 2.534 | 0.958 |
| 16-Apr-97 | 13.2 | 80 | 0.8104 | 0.879 | 2.581 | 0.958 |
| 21-Nov-95 | 13.7 | 81 | 0.8206 | 0.918 | 2.618 | 0.958 |
| 7-May-98 | 14.4 | 82 | 0.8308 | 0.957 | 2.668 | 0.956 |
| 25-Feb-98 | 15.8 | 83 | 0.8410 | 0.998 | 2.761 | 0.954 |
| 17-Apr-96 | 17.0 | 84 | 0.8511 | 1.041 | 2.834 | 0.952 |
| 9-May-95 | 17.7 | 85 | 0.8613 | 1.086 | 2.873 | 0.949 |
| 15-Jun-99 | 21.4 | 86 | 0.8715 | 1.134 | 3.061 | 0.945 |
| 28-May-98 | 21.8 | 87 | 0.8817 | 1.183 | 3.084 | 0.942 |
| 29-Feb-96 | 23.7 | 88 | 0.8919 | 1.236 | 3.167 | 0.937 |
| 23-Apr-98 | 24.9 | 89 | 0.9020 | 1.293 | 3.215 | 0.928 |
| 26-Mar-97 | 26.7 | 90 | 0.9122 | 1.355 | 3.284 | 0.916 |
| 17-Jan-96 | 28.3 | 91 | 0.9224 | 1.421 | 3.342 | 0.899 |
| 31-May-99 | 29.6 | 92 | 0.9326 | 1.495 | 3.387 | 0.884 |
| 23-May-99 | 72.2 | 93 | 0.9427 | 1.578 | 4.279 | 0.967 |
| 19-Apr-99 | 111.9 | 94 | 0.9529 | 1.674 | 4.718 | 0.965 |
| 22-Mar-99 | 138.5 | 95 | 0.9631 | 1.788 | 4.931 | |
| 27-May-99 | 159.8 | 96 | 0.9733 | 1.931 | 5.074 | |
| 19-Apr-94 | 206.6 | 97 | 0.9835 | 2.131 | 5.331 | |
| 26-May-99 | 529.4 | 98 | 0.9936 | 2.491 | 6.272 | |

update for EV, CV:

| | | | | |
|---|---|---|---|---|
| tPb | | NM30S | 93 | 92.7 |
| LN Analysis | | tPb | 1.06 | 1.06 |

## Concentration

**Conc. Data, EV=92.7 ug/L CV=1.06**

| | | Data-based LN | | |
|---|---|---|---|---|
| Avg: | 93 | u | ln[tPb] | [tPb] |
| SD: | 98 | 3 | 6.8 | 859 |
| CV: | 1.06 | 0 | 4.15 | 64 |
| Min: | 5 | -3 | 1.55 | 5 |
| Max: | 800 | | | |
| Median: | 67 | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.878 | 0.878 |
| **u=mLn(Conc.)+b:** | | | | 92.1 | 92.1 |
| update for r2, EV, CV: | **r2=0.878, EV=92.1 ug/L CV=0.802; max r2=0.98** | | | 0.802 | 0.802 |
| r2 u,lnConc: | 0.878 | u | lnConc. | Conc. | |
| slope, m: | 1.420 | 3 | 6.39 | 594 | |
| intercept, b: | -6.068 | 0 | 4.27 | 72 | |
| N: | 98 | -3 | 2.16 | 9 | |
| E[Conc]: | 92.1 | Parameter Estimates | | | |
| SD[Conc]: | 74 | from LN regression | | | |
| CV[Conc]: | 0.80 | update graph label | | | |

| | tPb | N: 98 | | | | | max r2 0.981 |
|---|---|---|---|---|---|---|---|
| | Concentration | i | i-3/8 / N+1/4 | u | Ln | r2 |
| Date | ug/L Ranked | rank | plotting points | y-axis | x-axis | forward |
| update and rank for new data | | | | | | |
| 20-May-94 | 5 | 1 | 0.0064 | -2.491 | 1.609 | 0.878 |
| 1-Sep-99 | 21 | 2 | 0.0165 | -2.131 | 3.045 | 0.892 |
| 26-Oct-98 | 36 | 3 | 0.0267 | -1.931 | 3.584 | 0.887 |
| 3-Oct-91 | 39 | 4 | 0.0369 | -1.788 | 3.664 | 0.891 |
| 15-May-98 | 39.7 | 5 | 0.0471 | -1.674 | 3.681 | 0.896 |
| 16-May-91 | 40 | 6 | 0.0573 | -1.578 | 3.689 | 0.901 |
| 28-Oct-93 | 40 | 7 | 0.0674 | -1.495 | 3.689 | 0.905 |
| 8-Sep-94 | 40 | 8 | 0.0776 | -1.421 | 3.689 | 0.908 |
| 28-Jul-98 | 41 | 9 | 0.0878 | -1.355 | 3.714 | 0.911 |
| 23-Feb-99 | 41 | 10 | 0.0980 | -1.293 | 3.714 | 0.913 |
| 15-May-91 | 42 | 11 | 0.1081 | -1.236 | 3.738 | 0.916 |
| 17-Dec-97 | 42 | 12 | 0.1183 | -1.183 | 3.738 | 0.918 |
| 1-Oct-98 | 42 | 13 | 0.1285 | -1.134 | 3.738 | 0.920 |
| 15-Aug-94 | 44 | 14 | 0.1387 | -1.086 | 3.784 | 0.921 |
| 15-Aug-94 | 44 | 15 | 0.1489 | -1.041 | 3.784 | 0.924 |
| 26-Aug-98 | 44 | 16 | 0.1590 | -0.998 | 3.784 | 0.925 |
| 8-Oct-98 | 44 | 17 | 0.1692 | -0.957 | 3.784 | 0.927 |
| 7-Jul-99 | 45.6 | 18 | 0.1794 | -0.918 | 3.820 | 0.928 |
| 19-Jun-96 | 46 | 19 | 0.1896 | -0.879 | 3.829 | 0.930 |
| 26-Sep-96 | 46 | 20 | 0.1997 | -0.843 | 3.829 | 0.932 |
| 24-Sep-98 | 46 | 21 | 0.2099 | -0.807 | 3.829 | 0.933 |
| 26-Nov-97 | 47 | 22 | 0.2201 | -0.772 | 3.850 | 0.934 |
| 27-Oct-98 | 47 | 23 | 0.2303 | -0.738 | 3.850 | 0.936 |
| 11-Nov-97 | 47.6 | 24 | 0.2405 | -0.705 | 3.863 | 0.937 |
| 2-Dec-93 | 48 | 25 | 0.2506 | -0.672 | 3.871 | 0.938 |
| 8-Mar-99 | 48 | 26 | 0.2608 | -0.641 | 3.871 | 0.939 |
| 4-Aug-99 | 48.2 | 27 | 0.2710 | -0.610 | 3.875 | 0.939 |
| 21-Aug-96 | 49 | 28 | 0.2812 | -0.579 | 3.892 | 0.940 |
| 21-Jan-98 | 49 | 29 | 0.2913 | -0.549 | 3.892 | 0.940 |
| 26-Jun-98 | 49 | 30 | 0.3015 | -0.520 | 3.892 | 0.941 |
| 24-Jun-97 | 50 | 31 | 0.3117 | -0.491 | 3.912 | 0.941 |
| 19-Nov-98 | 50 | 32 | 0.3219 | -0.462 | 3.912 | 0.941 |
| 4-Oct-91 | 51 | 33 | 0.3321 | -0.434 | 3.932 | 0.941 |
| 28-Mar-96 | 52 | 34 | 0.3422 | -0.406 | 3.951 | 0.941 |
| 5-May-99 | 52 | 35 | 0.3524 | -0.379 | 3.951 | 0.941 |
| 28-Oct-94 | 53 | 36 | 0.3626 | -0.352 | 3.970 | 0.941 |
| 27-Nov-96 | 54 | 37 | 0.3728 | -0.325 | 3.989 | 0.941 |
| 16-Oct-97 | 54 | 38 | 0.3830 | -0.298 | 3.989 | 0.941 |
| 21-Jan-99 | 54 | 39 | 0.3931 | -0.271 | 3.989 | 0.941 |
| 20-Jul-94 | 55 | 40 | 0.4033 | -0.245 | 4.007 | 0.940 |
| 20-Jul-94 | 55 | 41 | 0.4135 | -0.219 | 4.007 | 0.940 |
| 4-Sep-97 | 56 | 42 | 0.4237 | -0.193 | 4.025 | 0.939 |
| 24-Jul-96 | 57 | 43 | 0.4338 | -0.167 | 4.043 | 0.938 |
| 14-Aug-97 | 57 | 44 | 0.4440 | -0.141 | 4.043 | 0.938 |
| 31-Dec-98 | 57 | 45 | 0.4542 | -0.115 | 4.043 | 0.937 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15-Jan-99 | 57 | 46 | 0.4644 | -0.089 | 4.043 | 0.935 |
| 14-Aug-95 | 61 | 47 | 0.4746 | -0.064 | 4.111 | 0.934 |
| 16-Dec-93 | 64 | 48 | 0.4847 | -0.038 | 4.159 | 0.933 |
| 7-Jun-94 | 66 | 49 | 0.4949 | -0.013 | 4.190 | 0.933 |
| 24-Jan-94 | 68 | 50 | 0.5051 | 0.013 | 4.220 | 0.933 |
| 29-Oct-96 | 68 | 51 | 0.5153 | 0.038 | 4.220 | 0.934 |
| 10-Dec-98 | 68 | 52 | 0.5254 | 0.064 | 4.220 | 0.934 |
| 23-Jun-94 | 69 | 53 | 0.5356 | 0.089 | 4.234 | 0.934 |
| 30-Jan-97 | 70 | 54 | 0.5458 | 0.115 | 4.248 | 0.935 |
| 23-Jul-97 | 71 | 55 | 0.5560 | 0.141 | 4.263 | 0.935 |
| 4-May-94 | 72 | 56 | 0.5662 | 0.167 | 4.277 | 0.935 |
| 20-Mar-98 | 72 | 57 | 0.5763 | 0.193 | 4.277 | 0.935 |
| 18-Feb-94 | 73 | 58 | 0.5865 | 0.219 | 4.290 | 0.935 |
| 18-Feb-94 | 73 | 59 | 0.5967 | 0.245 | 4.290 | 0.935 |
| 7-May-98 | 74 | 60 | 0.6069 | 0.271 | 4.304 | 0.934 |
| 25-Apr-95 | 79 | 61 | 0.6170 | 0.298 | 4.369 | 0.933 |
| 16-Apr-97 | 80 | 62 | 0.6272 | 0.325 | 4.382 | 0.934 |
| 15-Jun-99 | 81 | 63 | 0.6374 | 0.352 | 4.394 | 0.935 |
| 7-Apr-94 | 85 | 64 | 0.6476 | 0.379 | 4.443 | 0.935 |
| 23-Mar-94 | 87 | 65 | 0.6578 | 0.406 | 4.466 | 0.937 |
| 23-May-95 | 87 | 66 | 0.6679 | 0.434 | 4.466 | 0.940 |
| 26-Mar-97 | 87 | 67 | 0.6781 | 0.462 | 4.466 | 0.942 |
| 8-May-96 | 89 | 68 | 0.6883 | 0.491 | 4.489 | 0.943 |
| 28-May-98 | 90 | 69 | 0.6985 | 0.520 | 4.500 | 0.945 |
| 13-Dec-94 | 91 | 70 | 0.7087 | 0.549 | 4.511 | 0.947 |
| 7-Mar-95 | 95 | 71 | 0.7188 | 0.579 | 4.554 | 0.949 |
| 13-Dec-96 | 96 | 72 | 0.7290 | 0.610 | 4.564 | 0.952 |
| 29-Feb-96 | 98 | 73 | 0.7392 | 0.641 | 4.585 | 0.955 |
| 26-Jul-95 | 100 | 74 | 0.7494 | 0.672 | 4.605 | 0.958 |
| 31-May-99 | 100 | 75 | 0.7595 | 0.705 | 4.605 | 0.962 |
| 11-Jul-95 | 101 | 76 | 0.7697 | 0.738 | 4.615 | 0.965 |
| 27-Jun-95 | 103 | 77 | 0.7799 | 0.772 | 4.635 | 0.968 |
| 13-Apr-95 | 106 | 78 | 0.7901 | 0.807 | 4.663 | 0.971 |
| 9-Feb-95 | 107 | 79 | 0.8003 | 0.843 | 4.673 | 0.974 |
| 8-Mar-94 | 108 | 80 | 0.8104 | 0.879 | 4.682 | 0.977 |
| 8-Mar-94 | 108 | 81 | 0.8206 | 0.918 | 4.682 | 0.979 |
| 9-May-95 | 108 | 82 | 0.8308 | 0.957 | 4.682 | 0.980 |
| 17-Apr-96 | 109 | 83 | 0.8410 | 0.998 | 4.691 | 0.980 |
| 18-Oct-95 | 110 | 84 | 0.8511 | 1.041 | 4.700 | 0.978 |
| 17-Jan-96 | 110 | 85 | 0.8613 | 1.086 | 4.700 | 0.975 |
| 19-Feb-97 | 112 | 86 | 0.8715 | 1.134 | 4.718 | 0.974 |
| 15-Nov-94 | 134 | 87 | 0.8817 | 1.183 | 4.898 | 0.977 |
| 25-Nov-98 | 134 | 88 | 0.8919 | 1.236 | 4.898 | 0.975 |
| 23-Apr-98 | 169 | 89 | 0.9020 | 1.293 | 5.130 | 0.981 |
| 21-Nov-95 | 196 | 90 | 0.9122 | 1.355 | 5.278 | 0.978 |
| 10-Jan-95 | 200 | 91 | 0.9224 | 1.421 | 5.298 | 0.977 |
| 23-May-99 | 220 | 92 | 0.9326 | 1.495 | 5.394 | 0.972 |
| 19-Apr-99 | 260 | 93 | 0.9427 | 1.578 | 5.561 | 0.965 |
| 27-May-99 | 270 | 94 | 0.9529 | 1.674 | 5.598 | 0.976 |
| 25-Feb-98 | 307 | 95 | 0.9631 | 1.788 | 5.727 | |
| 22-Mar-99 | 330 | 96 | 0.9733 | 1.931 | 5.799 | |
| 19-Apr-94 | 442 | 97 | 0.9835 | 2.131 | 6.091 | |
| 26-May-99 | 800 | 98 | 0.9936 | 2.491 | 6.685 | |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tPb** | | | **NM305** | | 20 | 19.7 |
| **LN Analysis** | | | **tPb** | | 1.18 | 1.18 |

## Discharge, Q

**Q Data, EV=19.7 cfs CV=1.18**

| | | | | |
|---|---|---|---|---|
| | | **Q Data-based LN** | | |
| **Avg:** | **20** | u | lnQ | Q |
| **SD:** | **23** | 3 | 5.3 | 209 |
| **CV:** | **1.18** | 0 | 2.55 | 13 |
| **Min:** | **3** | -3 | -0.25 | 1 |
| **Max:** | **123** | | | |
| **Median:** | **9** | | | |

| | | |
|---|---|---|
| | 0.934 | 0.934 |
| | 18.6 | 18.6 |
| **u=mLn(Q)+b:** | 1.23 | 1.23 |

update for r2, EV, CV: **r2=0.934, EV=18.6 cfs CV=1.23; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.934 | u | lnQ | Q |
| slope, m: | 1.042 | 3 | 5.34 | 209 |
| intercept, b: | -2.567 | 0 | 2.46 | 12 |
| N: | 98 | -3 | -0.42 | 1 |
| E[Q]: | 18.6 | Parameter Estimates | | |
| SD[Q]: | 23 | from LN regression | | |
| CV[Q]: | 1.23 | update graph label | | |

N: 98 — max r2 0.980

| Date | Q Discharge cfs Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 27-Oct-98 | 3.2 | 1 | 0.0064 | -2.488 | 1.163 | 0.934 |
| 3-Oct-91 | 3.69 | 2 | 0.0167 | -2.127 | 1.306 | 0.944 |
| 15-Aug-94 | 3.69 | 3 | 0.0270 | -1.927 | 1.306 | 0.951 |
| 14-Aug-95 | 3.82 | 4 | 0.0373 | -1.783 | 1.340 | 0.957 |
| 8-Sep-94 | 3.91 | 5 | 0.0476 | -1.669 | 1.364 | 0.961 |
| 28-Oct-94 | 3.91 | 6 | 0.0578 | -1.573 | 1.364 | 0.964 |
| 19-Nov-98 | 4 | 7 | 0.0681 | -1.490 | 1.386 | 0.967 |
| 4-Oct-91 | 4.02 | 8 | 0.0784 | -1.416 | 1.391 | 0.969 |
| 18-Feb-94 | 4.03 | 9 | 0.0887 | -1.349 | 1.394 | 0.971 |
| 18-Feb-94 | 4.11 | 10 | 0.0990 | -1.287 | 1.413 | 0.972 |
| 13-Dec-94 | 4.22 | 11 | 0.1093 | -1.231 | 1.440 | 0.973 |
| 15-Aug-94 | 4.32 | 12 | 0.1195 | -1.177 | 1.463 | 0.975 |
| 15-Nov-94 | 4.32 | 13 | 0.1298 | -1.127 | 1.463 | 0.975 |
| 26-Jul-95 | 4.54 | 14 | 0.1401 | -1.080 | 1.513 | 0.976 |
| 28-Oct-93 | 4.7 | 15 | 0.1504 | -1.035 | 1.548 | 0.977 |
| 2-Dec-93 | 4.7 | 16 | 0.1607 | -0.992 | 1.548 | 0.978 |
| 20-Jul-94 | 4.74 | 17 | 0.1710 | -0.950 | 1.556 | 0.978 |
| 16-Dec-93 | 4.8 | 18 | 0.1812 | -0.911 | 1.569 | 0.978 |
| 1-Sep-99 | 5 | 19 | 0.1915 | -0.872 | 1.609 | 0.979 |
| 26-Sep-96 | 5.15 | 20 | 0.2018 | -0.835 | 1.639 | 0.979 |
| 20-Jul-94 | 5.16 | 21 | 0.2121 | -0.799 | 1.641 | 0.979 |
| 1-Oct-98 | 5.37 | 22 | 0.2224 | -0.764 | 1.681 | 0.979 |
| 8-Oct-98 | 5.37 | 23 | 0.2326 | -0.730 | 1.681 | 0.980 |
| 11-Nov-97 | 5.38 | 24 | 0.2429 | -0.697 | 1.683 | 0.980 |
| 24-Sep-98 | 5.49 | 25 | 0.2532 | -0.664 | 1.703 | 0.980 |
| 11-Jul-95 | 5.71 | 26 | 0.2635 | -0.633 | 1.742 | 0.979 |
| 26-Aug-98 | 5.84 | 27 | 0.2738 | -0.601 | 1.765 | 0.979 |
| 24-Jan-94 | 5.87 | 28 | 0.2841 | -0.571 | 1.770 | 0.979 |
| 21-Aug-96 | 5.97 | 29 | 0.2943 | -0.541 | 1.787 | 0.979 |
| 27-Nov-96 | 5.97 | 30 | 0.3046 | -0.511 | 1.787 | 0.978 |
| 10-Dec-98 | 6 | 31 | 0.3149 | -0.482 | 1.792 | 0.978 |
| 29-Oct-96 | 6.22 | 32 | 0.3252 | -0.453 | 1.828 | 0.977 |
| 16-Oct-97 | 6.35 | 33 | 0.3355 | -0.425 | 1.848 | 0.977 |
| 4-Sep-97 | 6.76 | 34 | 0.3458 | -0.397 | 1.911 | 0.976 |
| 21-Jan-98 | 6.9 | 35 | 0.3560 | -0.369 | 1.932 | 0.975 |
| 28-Jul-98 | 6.9 | 36 | 0.3663 | -0.342 | 1.932 | 0.975 |
| 23-Feb-99 | 7.05 | 37 | 0.3766 | -0.314 | 1.953 | 0.974 |
| 24-Jul-96 | 7.19 | 38 | 0.3869 | -0.287 | 1.973 | 0.973 |
| 18-Oct-95 | 7.2 | 39 | 0.3972 | -0.261 | 1.974 | 0.972 |
| 23-Jun-94 | 7.39 | 40 | 0.4075 | -0.234 | 2.000 | 0.971 |
| 27-Jun-95 | 7.39 | 41 | 0.4177 | -0.208 | 2.000 | 0.971 |
| 26-Nov-97 | 7.5 | 42 | 0.4280 | -0.181 | 2.015 | 0.970 |
| 14-Aug-97 | 7.65 | 43 | 0.4383 | -0.155 | 2.035 | 0.969 |
| 31-Dec-98 | 7.65 | 44 | 0.4486 | -0.129 | 2.035 | 0.968 |
| 10-Jan-95 | 8 | 45 | 0.4589 | -0.103 | 2.079 | 0.967 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25-Nov-98 | 8.31 | 46 | 0.4692 | -0.077 | 2.117 | 0.966 |
| 4-Aug-99 | 8.6 | 47 | 0.4794 | -0.052 | 2.152 | 0.965 |
| 13-Dec-96 | 8.83 | 48 | 0.4897 | -0.026 | 2.178 | 0.964 |
| 17-Dec-97 | 9.2 | 49 | 0.5000 | 0.000 | 2.219 | 0.964 |
| 25-Feb-98 | 9.58 | 50 | 0.5103 | 0.026 | 2.260 | 0.963 |
| 15-Jan-99 | 9.97 | 51 | 0.5206 | 0.052 | 2.300 | 0.961 |
| 23-Jul-97 | 10.2 | 52 | 0.5308 | 0.077 | 2.322 | 0.960 |
| 8-Mar-94 | 10.44 | 53 | 0.5411 | 0.103 | 2.346 | 0.959 |
| 7-Jun-94 | 10.72 | 54 | 0.5514 | 0.129 | 2.372 | 0.958 |
| 26-Jun-98 | 10.8 | 55 | 0.5617 | 0.155 | 2.380 | 0.957 |
| 8-Mar-94 | 12.76 | 56 | 0.5720 | 0.181 | 2.546 | 0.957 |
| 23-Mar-94 | 12.97 | 57 | 0.5823 | 0.208 | 2.563 | 0.955 |
| 21-Nov-95 | 13 | 58 | 0.5925 | 0.234 | 2.565 | 0.953 |
| 21-Jan-99 | 13 | 59 | 0.6028 | 0.261 | 2.565 | 0.951 |
| 30-Jan-97 | 13.5 | 60 | 0.6131 | 0.287 | 2.603 | 0.950 |
| 20-Mar-98 | 13.5 | 61 | 0.6234 | 0.314 | 2.603 | 0.948 |
| 7-Mar-95 | 14.49 | 62 | 0.6337 | 0.342 | 2.673 | 0.947 |
| 4-May-94 | 14.89 | 63 | 0.6440 | 0.369 | 2.701 | 0.945 |
| 20-May-94 | 15.31 | 64 | 0.6542 | 0.397 | 2.729 | 0.944 |
| 19-Jun-96 | 15.4 | 65 | 0.6645 | 0.425 | 2.734 | 0.942 |
| 25-Apr-95 | 15.75 | 66 | 0.6748 | 0.453 | 2.757 | 0.941 |
| 24-Jun-97 | 16.7 | 67 | 0.6851 | 0.482 | 2.815 | 0.941 |
| 7-Jul-99 | 17 | 68 | 0.6954 | 0.511 | 2.833 | 0.940 |
| 9-Feb-95 | 17.61 | 69 | 0.7057 | 0.541 | 2.868 | 0.941 |
| 7-Apr-94 | 18.12 | 70 | 0.7159 | 0.571 | 2.897 | 0.942 |
| 8-May-96 | 19.1 | 71 | 0.7262 | 0.601 | 2.950 | 0.946 |
| 19-Feb-97 | 20.6 | 72 | 0.7365 | 0.633 | 3.025 | 0.950 |
| 13-Apr-95 | 22.11 | 73 | 0.7468 | 0.664 | 3.096 | 0.953 |
| 23-May-95 | 22.11 | 74 | 0.7571 | 0.697 | 3.096 | 0.956 |
| 8-Mar-99 | 25 | 75 | 0.7674 | 0.730 | 3.219 | 0.965 |
| 23-Apr-98 | 27.4 | 76 | 0.7776 | 0.764 | 3.311 | 0.969 |
| 17-Apr-96 | 29 | 77 | 0.7879 | 0.799 | 3.367 | 0.970 |
| 9-May-95 | 30.45 | 78 | 0.7982 | 0.835 | 3.416 | 0.971 |
| 16-Apr-97 | 30.7 | 79 | 0.8085 | 0.872 | 3.424 | 0.972 |
| 5-May-99 | 34 | 80 | 0.8188 | 0.911 | 3.526 | 0.976 |
| 7-May-98 | 36.2 | 81 | 0.8290 | 0.950 | 3.589 | 0.976 |
| 26-Oct-98 | 36.2 | 82 | 0.8393 | 0.992 | 3.589 | 0.975 |
| 15-May-98 | 43.8 | 83 | 0.8496 | 1.035 | 3.780 | 0.977 |
| 29-Feb-96 | 45 | 84 | 0.8599 | 1.080 | 3.807 | 0.978 |
| 28-Mar-96 | 45 | 85 | 0.8702 | 1.127 | 3.807 | 0.979 |
| 28-May-98 | 45.1 | 86 | 0.8805 | 1.177 | 3.809 | 0.978 |
| 17-Jan-96 | 47.8 | 87 | 0.8907 | 1.231 | 3.867 | 0.976 |
| 15-Jun-99 | 49 | 88 | 0.9010 | 1.287 | 3.892 | 0.974 |
| 16-May-91 | 50.5 | 89 | 0.9113 | 1.349 | 3.922 | 0.971 |
| 15-May-91 | 51.3 | 90 | 0.9216 | 1.416 | 3.938 | 0.966 |
| 31-May-99 | 55 | 91 | 0.9319 | 1.490 | 4.007 | 0.958 |
| 26-Mar-97 | 57 | 92 | 0.9422 | 1.573 | 4.043 | 0.946 |
| 23-May-99 | 61 | 93 | 0.9524 | 1.669 | 4.111 | 0.931 |
| 22-Mar-99 | 78 | 94 | 0.9627 | 1.783 | 4.357 | 0.925 |
| 19-Apr-99 | 80 | 95 | 0.9730 | 1.927 | 4.382 | |
| 19-Apr-94 | 86.89 | 96 | 0.9833 | 2.127 | 4.465 | |
| 27-May-99 | 110 | 97 | 0.9936 | 2.488 | 4.700 | |
| 26-May-99 | 123 | 97 | 0.9936 | 2.488 | 4.812 | |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| INPUT Data (in red). Update Analysis After Inputing Data. | see comment |
|---|---|
| **Station:** NM305 | **Date:** 3-Jun-00 |
| **Chemical:** tZn | **Analyst:** J.Johnston |
| **Notes:** | |
| Input Discharge and Concentration Data below (in red) | |

| | Date | Discharge | Concentration | Load | | | | |
|---|---|---|---|---|---|---|---|---|
| **Avg:** | 35,285 | 20 | 3,338 | 278 | | 0.00 | 0.00 | 0.00 |
| **SD:** | 773 | 23 | 1,410 | 265 | | 1.00 | 1.00 | 1.00 |
| **CV:** | 0.02 | 1.17 | 0.42 | 0.95 | | | | |
| **Min:** | 33,373 | 4 | 21 | 0.6 | | -0.70 | -2.35 | -1.05 |
| **Max:** | 36,404 | 123 | 7,250 | 1,781 | | 4.44 | 2.78 | 5.66 |
| **Median:** | 35,334 | 10 | 3,120 | 173 | | -0.44 | -0.15 | -0.40 |

| tZn NM305 | | | : Concentration v. Discharge, Q | | Q = mTime +b | | LnQ = mTime +b |
|---|---|---|---|---|---|---|---|
| **Conc. = mQ+b (r2=0.199)** | | update r2 | 0.20 | 0.199 | r2: | 0.055 | 0.064 |
| r2 Q,[COC]: | 0.20 | [tZn] | Q | | m: | 0.0070 | 0.00031 |
| slope, m: | -27.1 | 3,775 | 3.7 | | b: | -228 | -8.28 |
| intercept, b: | 3875.0 | 3,338 | 19.9 | | | | |
| N: 97 | | 546 | 123 | | | | |
| **LnConc. = mLn(Q)+b (r2=0.0906)** | | update r2 | 0.09 | 0.0906 | | | |
| r2 lnQ,ln[COC]: | 0.09 | ln[tZn] | ln Q | [tZn] | Q | | |
| slope, m: | -0.21 | 8.24 | 1.31 | 3,793 | 4 | | |
| intercept, b: | 8.52 | 7.88 | 2.99 | 2,653 | 20 | | |
| N: 97 | | 7.50 | 4.81 | 1,801 | 123 | | |

N= 97

| | Sampling Date | Q Discharge | tZn Concentration | tZn Load | Ln Q | Ln tZn Conc. | Ln tZn Load | tZn NM305 Standardized Values = (x - Avg)/SD Q | Conc | Load | for graph 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| update for new data | | cfs | ug/L | lbs/day | | | | | | | |
| **DATA:** | | x-axis | y-axis | y-axis | x-axis | y-axis | y-axis | | | | |
| MFG | 15-May-91 | 51.3 | 1800 | 496.8 | 3.94 | 7.50 | 6.21 | 1.35 | -1.09 | 0.82 | |
| MFG | 16-May-91 | 50.5 | 1900 | 516.2 | 3.92 | 7.55 | 6.25 | 1.32 | -1.02 | 0.90 | |
| MFG | 3-Oct-91 | 3.69 | 3120 | 61.9 | 1.31 | 8.05 | 4.13 | -0.70 | -0.15 | -0.81 | |
| MFG | 4-Oct-91 | 4.02 | 4490 | 97.1 | 1.39 | 8.41 | 4.58 | -0.68 | 0.82 | -0.68 | |
| IDEQ | 28-Oct-93 | 4.7 | 4490 | 113.5 | 1.55 | 8.41 | 4.73 | -0.65 | 0.82 | -0.62 | |
| IDEQ | 2-Dec-93 | 4.7 | 4350 | 110.0 | 1.55 | 8.38 | 4.70 | -0.65 | 0.72 | -0.63 | |
| IDEQ | 16-Dec-93 | 4.8 | 4590 | 118.5 | 1.57 | 8.43 | 4.78 | -0.65 | 0.89 | -0.60 | |
| IDEQ | 24-Jan-94 | 5.87 | 3830 | 121.0 | 1.77 | 8.25 | 4.80 | -0.60 | 0.35 | -0.59 | |
| IDEQ | 18-Feb-94 | 4.11 | 4020 | 88.9 | 1.41 | 8.30 | 4.49 | -0.68 | 0.48 | -0.71 | |
| IDEQ | 18-Feb-94 | 4.03 | 4020 | 87.2 | 1.39 | 8.30 | 4.47 | -0.68 | 0.48 | -0.72 | |
| IDEQ | 8-Mar-94 | 10.44 | 3730 | 209.5 | 2.35 | 8.22 | 5.34 | -0.41 | 0.28 | -0.26 | |
| IDEQ | 8-Mar-94 | 12.76 | 3730 | 256.1 | 2.55 | 8.22 | 5.55 | -0.31 | 0.28 | -0.08 | |
| IDEQ | 23-Mar-94 | 12.97 | 3750 | 261.7 | 2.56 | 8.23 | 5.57 | -0.30 | 0.29 | -0.06 | |
| IDEQ | 7-Apr-94 | 18.12 | 3840 | 374.3 | 2.90 | 8.25 | 5.93 | -0.07 | 0.36 | 0.36 | |
| IDEQ | 19-Apr-94 | 86.89 | 3810 | 1781.1 | 4.46 | 8.25 | 7.48 | 2.89 | 0.34 | 5.66 | |
| IDEQ | 4-May-94 | 14.89 | 3250 | 260.4 | 2.70 | 8.09 | 5.56 | -0.21 | -0.06 | -0.07 | |
| IDEQ | 20-May-94 | 15.31 | 2390 | 196.9 | 2.73 | 7.78 | 5.28 | -0.20 | -0.67 | -0.31 | |
| IDEQ | 7-Jun-94 | 10.72 | 3000 | 173.0 | 2.37 | 8.01 | 5.15 | -0.39 | -0.24 | -0.40 | |
| IDEQ | 23-Jun-94 | 7.39 | 3250 | 129.2 | 2.00 | 8.09 | 4.86 | -0.54 | -0.06 | -0.56 | |
| IDEQ | 20-Jul-94 | 5.16 | 2600 | 72.2 | 1.64 | 7.86 | 4.28 | -0.63 | -0.52 | -0.78 | |
| IDEQ | 20-Jul-94 | 4.74 | 2600 | 66.3 | 1.56 | 7.86 | 4.19 | -0.65 | -0.52 | -0.80 | |
| IDEQ | 15-Aug-94 | 4.32 | 2260 | 52.5 | 1.46 | 7.72 | 3.96 | -0.67 | -0.76 | -0.85 | |
| IDEQ | 15-Aug-94 | 3.69 | 2260 | 44.9 | 1.31 | 7.72 | 3.80 | -0.70 | -0.76 | -0.88 | |
| IDEQ | 8-Sep-94 | 3.91 | 4560 | 95.9 | 1.36 | 8.43 | 4.56 | -0.69 | 0.87 | -0.69 | |
| IDEQ | 28-Oct-94 | 3.91 | 3780 | 79.5 | 1.36 | 8.24 | 4.38 | -0.69 | 0.31 | -0.75 | |
| IDEQ | 15-Nov-94 | 4.32 | 7020 | 163.2 | 1.46 | 8.86 | 5.09 | -0.67 | 2.61 | -0.43 | |
| IDEQ | 13-Dec-94 | 4.22 | 7170 | 162.8 | 1.44 | 8.88 | 5.09 | -0.67 | 2.72 | -0.43 | |
| IDEQ | 10-Jan-95 | 8 | 5570 | 239.7 | 2.08 | 8.63 | 5.48 | -0.51 | 1.58 | -0.14 | |
| IDEQ | 9-Feb-95 | 17.61 | 4370 | 414.0 | 2.87 | 8.38 | 6.03 | -0.10 | 0.73 | 0.51 | |
| IDEQ | 7-Mar-95 | 14.49 | 4790 | 373.4 | 2.67 | 8.47 | 5.92 | -0.23 | 1.03 | 0.36 | |
| IDEQ | 13-Apr-95 | 22.11 | 4840 | 575.7 | 3.10 | 8.48 | 6.36 | 0.10 | 1.07 | 1.12 | |
| IDEQ | 25-Apr-95 | 15.75 | 4900 | 415.2 | 2.76 | 8.50 | 6.03 | -0.18 | 1.11 | 0.52 | |
| IDEQ | 9-May-95 | 30.45 | 2860 | 468.5 | 3.42 | 7.96 | 6.15 | 0.46 | -0.34 | 0.72 | |
| IDEQ | 23-May-95 | 22.11 | 2050 | 243.9 | 3.10 | 7.63 | 5.50 | 0.10 | -0.91 | -0.13 | |
| IDEQ | 27-Jun-95 | 7.39 | 2940 | 116.9 | 2.00 | 7.99 | 4.76 | -0.54 | -0.28 | -0.61 | |
| IDEQ | 11-Jul-95 | 5.71 | 2910 | 89.4 | 1.74 | 7.98 | 4.49 | -0.61 | -0.30 | -0.71 | |
| IDEQ | 26-Jul-95 | 4.54 | 3030 | 74.0 | 1.51 | 8.02 | 4.30 | -0.66 | -0.22 | -0.77 | |
| IDEQ | 14-Aug-95 | 3.82 | 3380 | 69.5 | 1.34 | 8.13 | 4.24 | -0.69 | 0.03 | -0.79 | |
| IDEQ | 18-Oct-95 | 7.2 | 5800 | 224.7 | 1.97 | 8.67 | 5.41 | -0.55 | 1.75 | -0.20 | |
| IDEQ | 21-Nov-95 | 13 | 4210 | 294.4 | 2.56 | 8.35 | 5.69 | -0.30 | 0.62 | 0.06 | |
| IDEQ | 17-Jan-96 | 47.8 | 2760 | 709.8 | 3.87 | 7.92 | 6.56 | 1.20 | -0.41 | 1.63 | |
| IDEQ | 29-Feb-96 | 45 | 2810 | 680.3 | 3.81 | 7.94 | 6.52 | 1.08 | -0.37 | 1.52 | |
| IDEQ | 28-Mar-96 | 45 | 2730 | 660.9 | 3.81 | 7.91 | 6.49 | 1.08 | -0.43 | 1.44 | |
| IDEQ | 17-Apr-96 | 29 | 3310 | 516.4 | 3.37 | 8.10 | 6.25 | 0.39 | -0.02 | 0.90 | |
| IDEQ | 8-May-96 | 19.1 | 2900 | 298.0 | 2.95 | 7.97 | 5.70 | -0.03 | -0.31 | 0.08 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| IDEQ | 19-Jun-96 | 15.4 | 1760 | 145.8 | 2.73 | 7.47 | 4.98 | -0.19 | -1.12 | -0.50 |
| IDEQ | 24-Jul-96 | 7.19 | 2440 | 94.4 | 1.97 | 7.80 | 4.55 | -0.55 | -0.64 | -0.69 |
| IDEQ | 21-Aug-96 | 5.97 | 2780 | 89.3 | 1.79 | 7.93 | 4.49 | -0.60 | -0.40 | -0.71 |
| IDEQ | 26-Sep-96 | 5.15 | 2500 | 69.3 | 1.64 | 7.82 | 4.24 | -0.63 | -0.59 | -0.79 |
| IDEQ | 29-Oct-96 | 6.22 | 4360 | 145.9 | 1.83 | 8.38 | 4.98 | -0.59 | 0.73 | -0.50 |
| IDEQ | 27-Nov-96 | 5.97 | 5220 | 167.7 | 1.79 | 8.56 | 5.12 | -0.69 | 1.34 | -0.42 |
| IDEQ | 13-Dec-96 | 8.83 | 4430 | 210.4 | 2.18 | 8.40 | 5.35 | -0.47 | 0.77 | -0.25 |
| IDEQ | 30-Jan-97 | 13.5 | 3190 | 231.7 | 2.60 | 8.07 | 5.45 | -0.27 | -0.10 | -0.17 |
| IDEQ | 19-Feb-97 | 20.6 | 2500 | 277.1 | 3.03 | 7.82 | 5.62 | 0.03 | -0.59 | 0.00 |
| IDEQ | 26-Mar-97 | 57 | 2160 | 662.4 | 4.04 | 7.68 | 6.50 | 1.60 | -0.84 | 1.45 |
| IDEQ | 16-Apr-97 | 30.7 | 2080 | 343.5 | 3.42 | 7.64 | 5.84 | 0.47 | -0.89 | 0.25 |
| IDEQ | 24-Jun-97 | 16.7 | 1500 | 134.8 | 2.82 | 7.31 | 4.90 | -0.14 | -1.30 | -0.54 |
| IDEQ | 23-Jul-97 | 10.2 | 2140 | 117.4 | 2.32 | 7.67 | 4.77 | -0.42 | -0.85 | -0.60 |
| IDEQ | 14-Aug-97 | 7.65 | 2720 | 111.9 | 2.03 | 7.93 | 4.72 | -0.53 | -0.44 | -0.63 |
| IDEQ | 4-Sep-97 | 6.76 | 2440 | 88.7 | 1.91 | 7.80 | 4.49 | -0.56 | -0.64 | -0.71 |
| IDEQ | 16-Oct-97 | 6.35 | 3430 | 117.2 | 1.85 | 8.14 | 4.76 | -0.58 | 0.07 | -0.61 |
| URS | 11-Nov-97 | 5.38 | 5140 | 148.8 | 1.68 | 8.54 | 5.00 | -0.62 | 1.28 | -0.49 |
| IDEQ | 26-Nov-97 | 7.5 | 4130 | 166.6 | 2.01 | 8.33 | 5.12 | -0.53 | 0.56 | -0.42 |
| IDEQ | 17-Dec-97 | 9.2 | 3800 | 188.1 | 2.22 | 8.24 | 5.24 | -0.46 | 0.33 | -0.34 |
| IDEQ | 21-Jan-98 | 6.9 | 3530 | 131.0 | 1.93 | 8.17 | 4.88 | -0.56 | 0.14 | -0.55 |
| IDEQ | 25-Feb-98 | 9.58 | 2760 | 142.3 | 2.26 | 7.92 | 4.96 | -0.44 | -0.41 | -0.51 |
| IDEQ | 20-Mar-98 | 13.5 | 2160 | 156.9 | 2.60 | 7.68 | 5.06 | -0.27 | -0.84 | -0.46 |
| IDEQ | 23-Apr-98 | 27.4 | 3210 | 473.2 | 3.31 | 8.07 | 6.16 | 0.33 | -0.09 | 0.74 |
| IDEQ | 7-May-98 | 36.2 | 1620 | 315.5 | 3.59 | 7.39 | 5.75 | 0.70 | -1.22 | 0.14 |
| URS | 15-May-98 | 43.8 | 2130 | 501.9 | 3.78 | 7.66 | 6.22 | 1.03 | -0.86 | 0.84 |
| IDEQ | 28-May-98 | 45.1 | 1930 | 468.3 | 3.81 | 7.57 | 6.15 | 1.09 | -1.00 | 0.72 |
| IDEQ | 26-Jun-98 | 10.8 | 2550 | 148.2 | 2.38 | 7.84 | 5.00 | -0.39 | -0.56 | -0.49 |
| IDEQ | 28-Jul-98 | 6.9 | 2660 | 98.7 | 1.93 | 7.89 | 4.59 | -0.56 | -0.48 | -0.68 |
| IDEQ | 26-Aug-98 | 5.84 | 3910 | 122.8 | 1.76 | 8.27 | 4.81 | -0.60 | 0.41 | -0.58 |
| IDEQ | 24-Sep-98 | 5.49 | 3650 | 107.8 | 1.70 | 8.20 | 4.68 | -0.62 | 0.22 | -0.64 |
| IDEQ | 1-Oct-98 | 5.37 | 4120 | 119.0 | 1.68 | 8.32 | 4.78 | -0.62 | 0.56 | -0.60 |
| IDEQ | 8-Oct-98 | 5.37 | 4700 | 135.8 | 1.68 | 8.46 | 4.91 | -0.62 | 0.97 | -0.54 |
| IDEQ | 26-Oct-98 | 36.2 | 2990 | 582.3 | 3.59 | 8.00 | 6.37 | 0.70 | -0.25 | 1.15 |
| USGS | 19-Nov-98 | 4 | 7100 | 152.8 | 1.39 | 8.87 | 5.03 | -0.68 | 2.67 | -0.47 |
| IDEQ | 25-Nov-98 | 8.31 | 7250 | 324.1 | 2.12 | 8.89 | 5.78 | -0.50 | 2.78 | 0.17 |
| USGS | 10-Dec-98 | 6 | 7000 | 226.0 | 1.79 | 8.85 | 5.42 | -0.60 | 2.60 | -0.20 |
| IDEQ | 31-Dec-98 | 7.65 | 4790 | 197.1 | 2.03 | 8.47 | 5.28 | -0.53 | 1.03 | -0.30 |
| IDEQ | 15-Jan-99 | 9.97 | 4100 | 219.9 | 2.30 | 8.32 | 5.39 | -0.43 | 0.54 | -0.22 |
| USGS | 21-Jan-99 | 13 | 3800 | 265.8 | 2.56 | 8.24 | 5.58 | -0.30 | 0.33 | -0.05 |
| IDEQ | 23-Feb-99 | 7.05 | 3180 | 120.6 | 1.95 | 8.06 | 4.79 | -0.55 | -0.11 | -0.59 |
| IDEQ | 8-Mar-99 | 25 | 2870 | 386.0 | 3.22 | 7.96 | 5.96 | 0.22 | -0.33 | 0.41 |
| USGS | 22-Mar-99 | 78 | 2300 | 965.2 | 4.36 | 7.74 | 6.87 | 2.50 | -0.74 | 2.59 |
| USGS | 19-Apr-99 | 80 | 2600 | 1119.0 | 4.38 | 7.86 | 7.02 | 2.59 | -0.52 | 3.17 |
| USGS | 5-May-99 | 34 | 2600 | 475.6 | 3.53 | 7.86 | 6.16 | 0.61 | -0.52 | 0.74 |
| USGS | 23-May-99 | 61 | 1300 | 426.6 | 4.11 | 7.17 | 6.06 | 1.77 | -1.45 | 0.56 |
| USGS | 26-May-99 | 123 | 1500 | 992.6 | 4.81 | 7.31 | 6.90 | 4.44 | -1.30 | 2.69 |
| USGS | 27-May-99 | 110 | 1100 | 651.0 | 4.70 | 7.00 | 6.48 | 3.82 | -1.59 | 1.40 |
| USGS | 31-May-99 | 55 | 950 | 281.1 | 4.01 | 6.86 | 5.64 | 1.51 | -1.69 | 0.01 |
| USGS | 15-Jun-99 | 49 | 870 | 229.3 | 3.89 | 6.77 | 5.44 | 1.26 | -1.75 | -0.18 |
| USGS | 7-Jul-99 | 17 | 1760 | 161.0 | 2.83 | 7.47 | 5.08 | -0.12 | -1.12 | -0.44 |
| USGS | 4-Aug-99 | 8.6 | 2250 | 104.1 | 2.15 | 7.72 | 4.65 | -0.48 | -0.77 | -0.66 |
| USGS | 1-Sep-99 | 5 | 21 | 0.6 | 1.61 | 3.04 | -0.57 | -0.64 | -2.35 | -1.05 |

**tZn**

**Concentration over time analysis**

| | tZn | NM305 | | r2 | Slope, m |
|---|---|---|---|---|---|
| | | | | **Concentration over time** | |
| | **LnConc.=mTime+b All data r2, m:** | | | **0.071** | **-0.00023** |
| | **Time** | **Ln[COC]** | **[COC]** | | |
| first: | 15-May-91 | 8.42 | 4,540 | | |
| mid: | 26-Sep-96 | 7.98 | 2,910 | | |
| last: | 1-Sep-99 | 7.73 | 2,283 | | |
| | **LnConc.=mTime+b >'96 r2, m:** | | | **0.097** | **-0.00089** |
| | 29-Oct-96 | 8.37 | 4,311 | | |
| | 1-Sep-99 | 7.45 | 1,718 | | |

**Load over time analysis**

| | tZn | NM305 | | Load over time | |
|---|---|---|---|---|---|
| | **LnLoad=mTime+b All data r2, m:** | | | **0.004** | **0.00008** |
| | **Time** | **LnLoad** | **Load** | | |
| first: | 15-May-91 | 5.11 | 166 | | |
| mid: | 26-Sep-96 | 5.27 | 194 | | |
| last: | 1-Sep-99 | 5.35 | 211 | | |
| | **LnLoad=mTime+b >'96 r2, m:** | | | **0.000** | **0.00001** |
| | 29-Oct-96 | 5.31 | 203 | | |
| | 1-Sep-99 | 5.32 | 204 | | |

max r2: #DIV/0!

**Forward time Regression on Ln Concentration(t)**

max r2: #DIV/0!

**Forward time Regression on Ln Load(t)**

| r2 | slope | intercept | r2 | slope | intercept |
|---|---|---|---|---|---|
| only on >4 data points: delete last 4 rows | | | only on >4 data points: delete last 4 rows | | |
| 0.071 | -0.00023 | 15.99 | 0.004 | 0.00008 | 2.48 |
| 0.088 | -0.00026 | 17.16 | 0.008 | 0.00012 | 1.09 |
| 0.107 | -0.00030 | 18.46 | 0.016 | 0.00017 | -0.59 |
| 0.113 | -0.00032 | 19.13 | 0.010 | 0.00013 | 0.54 |
| 0.110 | -0.00032 | 19.38 | 0.007 | 0.00012 | 1.19 |
| 0.106 | -0.00032 | 19.31 | 0.005 | 0.00010 | 1.57 |
| 0.103 | -0.00032 | 19.27 | 0.004 | 0.00009 | 1.99 |
| 0.099 | -0.00032 | 19.17 | 0.003 | 0.00008 | 2.37 |
| 0.097 | -0.00032 | 19.22 | 0.002 | 0.00007 | 2.76 |
| 0.095 | -0.00032 | 19.22 | 0.001 | 0.00005 | 3.47 |
| 0.092 | -0.00032 | 19.23 | 0.000 | 0.00003 | 4.25 |
| 0.091 | -0.00032 | 19.30 | 0.000 | 0.00003 | 4.18 |
| 0.090 | -0.00032 | 19.38 | 0.001 | 0.00004 | 3.87 |
| 0.088 | -0.00032 | 19.46 | 0.001 | 0.00005 | 3.53 |
| 0.086 | -0.00033 | 19.51 | 0.002 | 0.00007 | 2.74 |
| 0.084 | -0.00033 | 19.57 | 0.009 | 0.00015 | 0.02 |
| 0.085 | -0.00033 | 19.82 | 0.010 | 0.00016 | -0.54 |
| 0.091 | -0.00035 | 20.48 | 0.011 | 0.00017 | -0.79 |
| 0.094 | -0.00036 | 20.89 | 0.011 | 0.00017 | -0.88 |
| 0.095 | -0.00037 | 21.22 | 0.009 | 0.00016 | -0.58 |
| 0.100 | -0.00039 | 21.87 | 0.006 | 0.00013 | 0.57 |
| 0.106 | -0.00041 | 22.60 | 0.003 | 0.00009 | 1.98 |
| 0.116 | -0.00044 | 23.59 | 0.001 | 0.00004 | 3.87 |
| 0.128 | -0.00047 | 24.70 | 0.000 | -0.00003 | 6.26 |
| 0.123 | -0.00047 | 24.72 | 0.001 | -0.00006 | 7.59 |
| 0.122 | -0.00048 | 25.02 | 0.004 | -0.00011 | 9.34 |
| 0.108 | -0.00046 | 24.24 | 0.005 | -0.00013 | 10.00 |
| 0.094 | -0.00043 | 23.31 | 0.006 | -0.00015 | 10.72 |
| 0.084 | -0.00042 | 22.75 | 0.006 | -0.00015 | 10.76 |
| 0.079 | -0.00041 | 22.59 | 0.004 | -0.00012 | 9.73 |
| 0.072 | -0.00040 | 22.19 | 0.002 | -0.00010 | 8.79 |
| 0.064 | -0.00039 | 21.71 | 0.000 | -0.00004 | 6.83 |
| 0.056 | -0.00037 | 21.13 | 0.000 | 0.00000 | 5.35 |
| 0.058 | -0.00039 | 21.72 | 0.001 | 0.00005 | 3.39 |
| 0.067 | -0.00043 | 23.22 | 0.001 | 0.00007 | 2.78 |
| 0.069 | -0.00045 | 23.92 | 0.000 | 0.00004 | 4.02 |
| 0.071 | -0.00047 | 24.74 | 0.000 | -0.00002 | 6.20 |
| 0.073 | -0.00049 | 25.56 | 0.002 | -0.00011 | 9.29 |
| 0.072 | -0.00051 | 26.14 | 0.007 | -0.00022 | 13.11 |
| 0.060 | -0.00048 | 24.92 | 0.007 | -0.00023 | 13.49 |
| 0.054 | -0.00047 | 24.56 | 0.006 | -0.00021 | 12.99 |
| 0.056 | -0.00049 | 25.52 | 0.002 | -0.00011 | 9.35 |
| 0.058 | -0.00052 | 26.47 | 0.000 | 0.00000 | 5.37 |
| 0.061 | -0.00055 | 27.61 | 0.002 | 0.00012 | 0.91 |
| 0.059 | -0.00057 | 28.13 | 0.006 | 0.00024 | -3.31 |

| | | | | | |
|---|---|---|---|---|---|
| 0.061 | -0.00060 | 29.27 | 0.010 | 0.00031 | -5.90 |
| 0.076 | -0.00069 | 32.70 | 0.009 | 0.00030 | -5.60 |
| 0.084 | -0.00076 | 35.03 | 0.005 | 0.00023 | -3.16 |
| 0.089 | -0.00081 | 37.02 | 0.002 | 0.00015 | 0.03 |
| 0.097 | -0.00089 | 39.74 | 0.000 | 0.00001 | 5.13 |
| 0.089 | -0.00089 | 39.68 | 0.000 | -0.00005 | 6.96 |
| 0.076 | -0.00085 | 38.38 | 0.000 | -0.00008 | 8.31 |
| 0.067 | -0.00083 | 37.77 | 0.000 | -0.00009 | 8.47 |
| 0.066 | -0.00087 | 39.00 | 0.000 | -0.00007 | 7.98 |
| 0.073 | -0.00095 | 42.18 | 0.000 | -0.00002 | 6.05 |
| 0.084 | -0.00109 | 46.90 | 0.002 | 0.00023 | -3.11 |
| 0.101 | -0.00125 | 52.94 | 0.006 | 0.00039 | -8.86 |
| 0.131 | -0.00150 | 61.73 | 0.004 | 0.00035 | -7.20 |
| 0.151 | -0.00169 | 68.72 | 0.002 | 0.00025 | -3.88 |
| 0.164 | -0.00185 | 74.61 | 0.000 | 0.00013 | 0.72 |
| 0.184 | -0.00207 | 82.67 | 0.000 | -0.00010 | 8.92 |
| 0.188 | -0.00221 | 87.53 | 0.002 | -0.00028 | 15.53 |
| 0.174 | -0.00222 | 88.10 | 0.004 | -0.00043 | 20.74 |
| 0.168 | -0.00231 | 91.23 | 0.006 | -0.00057 | 25.82 |
| 0.166 | -0.00243 | 95.70 | 0.008 | -0.00069 | 30.42 |
| 0.166 | -0.00258 | 101.01 | 0.015 | -0.00099 | 41.08 |
| 0.177 | -0.00282 | 109.83 | 0.023 | -0.00129 | 52.15 |
| 0.203 | -0.00321 | 123.82 | 0.032 | -0.00162 | 63.85 |
| 0.209 | -0.00343 | 131.90 | 0.023 | -0.00146 | 58.13 |
| 0.258 | -0.00405 | 154.13 | 0.021 | -0.00145 | 58.01 |
| 0.302 | -0.00469 | 177.47 | 0.012 | -0.00117 | 47.57 |
| 0.369 | -0.00560 | 210.42 | 0.005 | -0.00081 | 34.61 |
| 0.421 | -0.00646 | 241.57 | 0.009 | -0.00117 | 47.85 |
| 0.472 | -0.00735 | 273.88 | 0.021 | -0.00192 | 74.75 |
| 0.492 | -0.00798 | 296.77 | 0.034 | -0.00262 | 100.19 |
| 0.512 | -0.00860 | 319.36 | 0.054 | -0.00349 | 132.01 |
| 0.527 | -0.00928 | 343.98 | 0.082 | -0.00457 | 171.00 |
| 0.538 | -0.01003 | 371.22 | 0.117 | -0.00591 | 219.83 |
| 0.590 | -0.01137 | 419.98 | 0.101 | -0.00591 | 219.61 |
| 0.568 | -0.01172 | 432.36 | 0.136 | -0.00737 | 272.84 |
| 0.539 | -0.01209 | 446.02 | 0.146 | -0.00838 | 309.48 |
| 0.501 | -0.01240 | 457.08 | 0.179 | -0.01031 | 379.38 |
| 0.479 | -0.01307 | 481.65 | 0.230 | -0.01295 | 475.28 |
| 0.462 | -0.01403 | 516.39 | 0.292 | -0.01634 | 598.58 |
| 0.454 | -0.01579 | 580.47 | 0.380 | -0.02177 | 795.64 |
| 0.443 | -0.01729 | 634.68 | 0.569 | -0.03004 | 1096.35 |
| 0.437 | -0.01940 | 711.34 | 0.690 | -0.03814 | 1390.55 |
| 0.459 | -0.02312 | 846.63 | 0.745 | -0.04571 | 1665.61 |
| 0.434 | -0.02463 | 901.72 | 0.744 | -0.04948 | 1802.55 |
| 0.389 | -0.02481 | 908.24 | 0.781 | -0.05520 | 2010.58 |
| 0.385 | -0.02605 | 953.40 | 0.789 | -0.05804 | 2113.80 |
| 0.362 | -0.02691 | 984.67 | 0.756 | -0.05728 | 2086.29 |
| 0.375 | -0.03103 | 1134.59 | 0.714 | -0.05865 | 2136.23 |
| 0.459 | -0.04353 | 1589.05 | 0.741 | -0.07193 | 2619.15 |
| 0.709 | -0.07908 | 2882.74 | 0.807 | -0.10093 | 3674.64 |
| 1.000 | -0.16693 | 6080.12 | 1.000 | -0.18630 | 6781.61 |
| #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |

update for EV, CV:

**tZn**

**NM305**

**LN Analysis**

**tZn**

**Load**

**Load Data, EV=278 lbs/day CV=0.96**

| | |
|---|---|
| **Avg:** | **278** |
| **SD:** | **265** |
| **CV:** | **0.95** |
| **Min:** | **0.6** |
| **Max:** | **1,781** |
| **Median:** | **173** |

**Load Data-based LN**

| u | ln tZn Load | tZn Load |
|---|---|---|
| 3 | 7.7 | 2250 |
| 0 | 5.30 | 201 |
| -3 | 2.89 | 18.0 |
| 278 | | 278 |
| 0.95 | | 0.96 |

**u=mLn{Load}+ b:**

update for r2, EV, CV: **r2=0.84, EV=344lbs/day CV=1.47; max r2=0.99**

| | | | | |
|---|---|---|---|---|
| r2 u,lnLoad: | 0.835 | u | lnLoad | Load |
| slope, m: | 0.931 | 3 | 8.48 | 4838 |
| intercept, b: | -4.900 | 0 | 5.26 | 193 |
| N: | 97 | -3 | 2.04 | 7.7 |
| E[Load]: | 343.5 | Parameter Estimates | | |
| SD[Load]: | 506 | from LN regression | | |
| CV[Load]: | 1.47 | update graph label | | |

| | |
|---|---|
| 0.835 | 0.84 |
| 343.5 | 344 |
| 1.5 | 1.47 |

N: 97

max r2
#DIV/0!

| Date | tZn Load lbs/day Ranked | i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 1-Sep-99 | **0.6** | 1 | 0.0064 | -2.488 | -0.571 | 0.835 |
| 15-Aug-94 | **44.9** | 2 | 0.0167 | -2.127 | 3.804 | 0.984 |
| 15-Aug-94 | **52.5** | 3 | 0.0270 | -1.927 | 3.961 | 0.984 |
| 3-Oct-91 | **61.9** | 4 | 0.0373 | -1.783 | 4.126 | 0.984 |
| 20-Jul-94 | **66.3** | 5 | 0.0476 | -1.669 | 4.194 | 0.985 |
| 26-Sep-96 | **69.3** | 6 | 0.0578 | -1.573 | 4.238 | 0.986 |
| 14-Aug-95 | **69.5** | 7 | 0.0681 | -1.490 | 4.241 | 0.987 |
| 20-Jul-94 | **72.2** | 8 | 0.0784 | -1.416 | 4.279 | 0.987 |
| 26-Jul-95 | **74.0** | 9 | 0.0887 | -1.349 | 4.304 | 0.987 |
| 28-Oct-94 | **79.5** | 10 | 0.0990 | -1.287 | 4.376 | 0.988 |
| 18-Feb-94 | **87.2** | 11 | 0.1093 | -1.231 | 4.468 | 0.988 |
| 4-Sep-97 | **88.7** | 12 | 0.1195 | -1.177 | 4.486 | 0.989 |
| 18-Feb-94 | **88.9** | 13 | 0.1298 | -1.127 | 4.487 | 0.990 |
| 21-Aug-96 | **89.3** | 14 | 0.1401 | -1.080 | 4.492 | 0.990 |
| 11-Jul-95 | **89.4** | 15 | 0.1504 | -1.035 | 4.493 | 0.991 |
| 24-Jul-96 | **94.4** | 16 | 0.1607 | -0.992 | 4.547 | 0.991 |
| 8-Sep-94 | **95.9** | 17 | 0.1710 | -0.950 | 4.564 | 0.991 |
| 4-Oct-91 | **97.1** | 18 | 0.1812 | -0.911 | 4.576 | 0.991 |
| 28-Jul-98 | **98.7** | 19 | 0.1915 | -0.872 | 4.593 | 0.991 |
| 4-Aug-99 | **104.1** | 20 | 0.2018 | -0.835 | 4.645 | 0.991 |
| 24-Sep-98 | **107.8** | 21 | 0.2121 | -0.799 | 4.680 | 0.991 |
| 2-Dec-93 | **110.0** | 22 | 0.2224 | -0.764 | 4.700 | 0.992 |
| 14-Aug-97 | **111.9** | 23 | 0.2326 | -0.730 | 4.718 | 0.992 |
| 28-Oct-93 | **113.5** | 24 | 0.2429 | -0.697 | 4.732 | 0.992 |
| 27-Jun-95 | **116.9** | 25 | 0.2532 | -0.664 | 4.761 | 0.993 |
| 16-Oct-97 | **117.2** | 26 | 0.2635 | -0.633 | 4.764 | 0.993 |
| 23-Jul-97 | **117.4** | 27 | 0.2738 | -0.601 | 4.766 | 0.993 |
| 16-Dec-93 | **118.5** | 28 | 0.2841 | -0.571 | 4.775 | 0.993 |
| 1-Oct-98 | **119.0** | 29 | 0.2943 | -0.541 | 4.779 | 0.993 |
| 23-Feb-99 | **120.6** | 30 | 0.3046 | -0.511 | 4.793 | 0.993 |
| 24-Jan-94 | **121.0** | 31 | 0.3149 | -0.482 | 4.795 | 0.993 |
| 26-Aug-98 | **122.8** | 32 | 0.3252 | -0.453 | 4.811 | 0.992 |
| 23-Jun-94 | **129.2** | 33 | 0.3355 | -0.425 | 4.861 | 0.992 |
| 21-Jan-98 | **131.0** | 34 | 0.3458 | -0.397 | 4.876 | 0.992 |
| 24-Jun-97 | **134.8** | 35 | 0.3560 | -0.369 | 4.904 | 0.992 |
| 8-Oct-98 | **135.8** | 36 | 0.3663 | -0.342 | 4.911 | 0.991 |
| 25-Feb-98 | **142.3** | 37 | 0.3766 | -0.314 | 4.958 | 0.991 |
| 19-Jun-96 | **145.8** | 38 | 0.3869 | -0.287 | 4.982 | 0.991 |
| 29-Oct-96 | **145.9** | 39 | 0.3972 | -0.261 | 4.983 | 0.990 |
| 26-Jun-98 | **148.2** | 40 | 0.4075 | -0.234 | 4.998 | 0.990 |
| 11-Nov-97 | **148.8** | 41 | 0.4177 | -0.208 | 5.002 | 0.990 |
| 19-Nov-98 | **152.8** | 42 | 0.4280 | -0.181 | 5.029 | 0.989 |
| 20-Mar-98 | **156.9** | 43 | 0.4383 | -0.155 | 5.055 | 0.989 |
| 7-Jul-99 | **161.0** | 44 | 0.4486 | -0.129 | 5.081 | 0.989 |
| 13-Dec-94 | **162.8** | 45 | 0.4589 | -0.103 | 5.092 | 0.988 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 15-Nov-94 | 163.2 | 46 | 0.4692 | -0.077 | 5.095 | 0.988 |
| 26-Nov-97 | 166.6 | 47 | 0.4794 | -0.052 | 5.116 | 0.988 |
| 27-Nov-96 | 167.7 | 48 | 0.4897 | -0.026 | 5.122 | 0.988 |
| 7-Jun-94 | 173.0 | 49 | 0.5000 | 0.000 | 5.153 | 0.988 |
| 17-Dec-97 | 188.1 | 50 | 0.5103 | 0.026 | 5.237 | 0.988 |
| 20-May-94 | 196.9 | 51 | 0.5206 | 0.052 | 5.282 | 0.988 |
| 31-Dec-98 | 197.1 | 52 | 0.5308 | 0.077 | 5.284 | 0.988 |
| 8-Mar-94 | 209.5 | 53 | 0.5411 | 0.103 | 5.345 | 0.987 |
| 13-Dec-96 | 210.4 | 54 | 0.5514 | 0.129 | 5.349 | 0.987 |
| 15-Jan-99 | 219.9 | 55 | 0.5617 | 0.155 | 5.393 | 0.986 |
| 18-Oct-95 | 224.7 | 56 | 0.5720 | 0.181 | 5.415 | 0.986 |
| 10-Dec-98 | 226.0 | 57 | 0.5823 | 0.208 | 5.420 | 0.985 |
| 15-Jun-99 | 229.3 | 58 | 0.5925 | 0.234 | 5.435 | 0.984 |
| 30-Jan-97 | 231.7 | 59 | 0.6028 | 0.261 | 5.445 | 0.984 |
| 10-Jan-95 | 239.7 | 60 | 0.6131 | 0.287 | 5.480 | 0.983 |
| 23-May-95 | 243.9 | 61 | 0.6234 | 0.314 | 5.497 | 0.983 |
| 8-Mar-94 | 256.1 | 62 | 0.6337 | 0.342 | 5.545 | 0.982 |
| 4-May-94 | 260.4 | 63 | 0.6440 | 0.369 | 5.562 | 0.981 |
| 23-Mar-94 | 261.7 | 64 | 0.6542 | 0.397 | 5.567 | 0.981 |
| 21-Jan-99 | 265.8 | 65 | 0.6645 | 0.425 | 5.583 | 0.980 |
| 19-Feb-97 | 277.1 | 66 | 0.6748 | 0.453 | 5.624 | 0.980 |
| 31-May-99 | 281.1 | 67 | 0.6851 | 0.482 | 5.639 | 0.980 |
| 21-Nov-95 | 294.4 | 68 | 0.6954 | 0.511 | 5.685 | 0.980 |
| 8-May-96 | 298.0 | 69 | 0.7057 | 0.541 | 5.697 | 0.979 |
| 7-May-98 | 315.5 | 70 | 0.7159 | 0.571 | 5.754 | 0.979 |
| 25-Nov-98 | 324.1 | 71 | 0.7262 | 0.601 | 5.781 | 0.979 |
| 16-Apr-97 | 343.5 | 72 | 0.7365 | 0.633 | 5.839 | 0.978 |
| 7-Mar-95 | 373.4 | 73 | 0.7468 | 0.664 | 5.923 | 0.977 |
| 7-Apr-94 | 374.3 | 74 | 0.7571 | 0.697 | 5.925 | 0.976 |
| 8-Mar-99 | 386.0 | 75 | 0.7674 | 0.730 | 5.956 | 0.974 |
| 9-Feb-95 | 414.0 | 76 | 0.7776 | 0.764 | 6.026 | 0.972 |
| 25-Apr-95 | 415.2 | 77 | 0.7879 | 0.799 | 6.029 | 0.971 |
| 23-May-99 | 426.6 | 78 | 0.7982 | 0.835 | 6.056 | 0.970 |
| 28-May-98 | 468.3 | 79 | 0.8085 | 0.872 | 6.149 | 0.968 |
| 9-May-95 | 468.5 | 80 | 0.8188 | 0.911 | 6.150 | 0.970 |
| 23-Apr-98 | 473.2 | 81 | 0.8290 | 0.950 | 6.160 | 0.971 |
| 5-May-99 | 475.6 | 82 | 0.8393 | 0.992 | 6.165 | 0.971 |
| 15-May-91 | 496.8 | 83 | 0.8496 | 1.035 | 6.208 | 0.969 |
| 15-May-98 | 501.9 | 84 | 0.8599 | 1.080 | 6.218 | 0.969 |
| 16-May-91 | 516.2 | 85 | 0.8702 | 1.127 | 6.247 | 0.967 |
| 17-Apr-96 | 516.4 | 86 | 0.8805 | 1.177 | 6.247 | 0.964 |
| 13-Apr-95 | 575.7 | 87 | 0.8907 | 1.231 | 6.356 | 0.958 |
| 26-Oct-98 | 582.3 | 88 | 0.9010 | 1.287 | 6.367 | 0.957 |
| 27-May-99 | 651.0 | 89 | 0.9113 | 1.349 | 6.478 | 0.951 |
| 28-Mar-96 | 660.9 | 90 | 0.9216 | 1.416 | 6.494 | 0.958 |
| 26-Mar-97 | 662.4 | 91 | 0.9319 | 1.490 | 6.496 | 0.963 |
| 29-Feb-96 | 680.3 | 92 | 0.9422 | 1.573 | 6.523 | 0.957 |
| 17-Jan-96 | 709.8 | 93 | 0.9524 | 1.669 | 6.565 | 0.941 |
| 22-Mar-99 | 965.2 | 94 | 0.9627 | 1.783 | 6.872 | 0.932 |
| 26-May-99 | 992.6 | 95 | 0.9730 | 1.927 | 6.900 | 0.973 |
| 19-Apr-99 | 1119.0 | 96 | 0.9833 | 2.127 | 7.020 | 1.000 |
| 19-Apr-94 | 1781.1 | 97 | 0.9936 | 2.488 | 7.485 | #DIV/0! |

update for EV, CV:

| | | | | | |
|---|---|---|---|---|---|
| **tZn** | | **NM305** | | 3,338 | 3340 |
| **LN Analysis** | | **tZn** | | 0.42 | 0.422 |
| **Concentration** | | **Conc. Data, EV=3340 ug/L CV=0.422** | | | |
| **Avg:** | **3,338** | **Data-based LN** | | | |
| **SD:** | **1,410** | u | ln[tZn] | [tZn] | |
| **CV:** | **0.42** | 3 | 9.2 | 10366 | |
| **Min:** | **21** | 0 | 8.03 | 3075 | |
| **Max:** | **7,250** | -3 | 6.82 | 912 | |
| **Median:** | **3,120** | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | 0.653 | 0.653 |
| **u=mLn{Conc.}+b:** | | | | 4140.6 | 4140 |
| update for r2, EV, CV: | **r2=0.653, EV=4140 ug/L CV=0.99; max r2=0.99** | | | 0.990 | 0.99 |
| r2 u,lnConc: | 0.653 | u | lnConc. | Conc. | |
| slope, m: | 1.210 | 3 | 10.47 | 35121 | |
| intercept, b: | -9.664 | 0 | 7.99 | 2943 | |
| N: | 97 | -3 | 5.51 | 247 | |
| E[Conc]: | 4140.6 | Parameter Estimates | | | |
| SD[Conc]: | 4099 | from LN regression | | | |
| CV[Conc]: | 0.99 | update graph label | | | |

| Date | tZn Concentration ug/L Ranked | N: 97 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 1-Sep-99 | 21 | 1 | 0.0064 | -2.488 | 3.045 | 0.653 |
| 15-Jun-99 | 870 | 2 | 0.0167 | -2.127 | 6.768 | 0.971 |
| 31-May-99 | 950 | 3 | 0.0270 | -1.927 | 6.856 | 0.975 |
| 27-May-99 | 1100 | 4 | 0.0373 | -1.783 | 7.003 | 0.982 |
| 23-May-99 | 1300 | 5 | 0.0476 | -1.669 | 7.170 | 0.987 |
| 24-Jun-97 | 1500 | 6 | 0.0578 | -1.573 | 7.313 | 0.989 |
| 26-May-99 | 1500 | 7 | 0.0681 | -1.490 | 7.313 | 0.989 |
| 7-May-98 | 1620 | 8 | 0.0784 | -1.416 | 7.390 | 0.990 |
| 19-Jun-96 | 1760 | 9 | 0.0887 | -1.349 | 7.473 | 0.990 |
| 7-Jul-99 | 1760 | 10 | 0.0990 | -1.287 | 7.473 | 0.990 |
| 15-May-91 | 1800 | 11 | 0.1093 | -1.231 | 7.496 | 0.989 |
| 16-May-91 | 1900 | 12 | 0.1195 | -1.177 | 7.550 | 0.989 |
| 28-May-98 | 1930 | 13 | 0.1298 | -1.127 | 7.565 | 0.989 |
| 23-May-95 | 2050 | 14 | 0.1401 | -1.080 | 7.626 | 0.989 |
| 16-Apr-97 | 2080 | 15 | 0.1504 | -1.035 | 7.640 | 0.989 |
| 15-May-98 | 2130 | 16 | 0.1607 | -0.992 | 7.664 | 0.988 |
| 23-Jul-97 | 2140 | 17 | 0.1710 | -0.950 | 7.669 | 0.988 |
| 26-Mar-97 | 2160 | 18 | 0.1812 | -0.911 | 7.678 | 0.987 |
| 20-Mar-98 | 2160 | 19 | 0.1915 | -0.872 | 7.678 | 0.987 |
| 4-Aug-99 | 2250 | 20 | 0.2018 | -0.835 | 7.719 | 0.987 |
| 15-Aug-94 | 2260 | 21 | 0.2121 | -0.799 | 7.723 | 0.986 |
| 15-Aug-94 | 2260 | 22 | 0.2224 | -0.764 | 7.723 | 0.986 |
| 22-Mar-99 | 2300 | 23 | 0.2326 | -0.730 | 7.741 | 0.985 |
| 20-May-94 | 2390 | 24 | 0.2429 | -0.697 | 7.779 | 0.985 |
| 24-Jul-96 | 2440 | 25 | 0.2532 | -0.664 | 7.800 | 0.984 |
| 4-Sep-97 | 2440 | 26 | 0.2635 | -0.633 | 7.800 | 0.984 |
| 26-Sep-96 | 2500 | 27 | 0.2738 | -0.601 | 7.824 | 0.983 |
| 19-Feb-97 | 2500 | 28 | 0.2841 | -0.571 | 7.824 | 0.983 |
| 26-Jun-98 | 2550 | 29 | 0.2943 | -0.541 | 7.844 | 0.982 |
| 20-Jul-94 | 2600 | 30 | 0.3046 | -0.511 | 7.863 | 0.982 |
| 20-Jul-94 | 2600 | 31 | 0.3149 | -0.482 | 7.863 | 0.981 |
| 19-Apr-99 | 2600 | 32 | 0.3252 | -0.453 | 7.863 | 0.981 |
| 5-May-99 | 2600 | 33 | 0.3355 | -0.425 | 7.863 | 0.980 |
| 28-Jul-98 | 2660 | 34 | 0.3458 | -0.397 | 7.886 | 0.980 |
| 14-Aug-97 | 2720 | 35 | 0.3560 | -0.369 | 7.908 | 0.979 |
| 28-Mar-96 | 2730 | 36 | 0.3663 | -0.342 | 7.912 | 0.978 |
| 17-Jan-96 | 2760 | 37 | 0.3766 | -0.314 | 7.923 | 0.977 |
| 25-Feb-98 | 2760 | 38 | 0.3869 | -0.287 | 7.923 | 0.977 |
| 21-Aug-96 | 2780 | 39 | 0.3972 | -0.261 | 7.930 | 0.976 |
| 29-Feb-96 | 2810 | 40 | 0.4075 | -0.234 | 7.941 | 0.975 |
| 9-May-95 | 2860 | 41 | 0.4177 | -0.208 | 7.959 | 0.974 |
| 8-Mar-99 | 2870 | 42 | 0.4280 | -0.181 | 7.962 | 0.973 |
| 8-May-96 | 2900 | 43 | 0.4383 | -0.155 | 7.972 | 0.973 |
| 11-Jul-95 | 2910 | 44 | 0.4486 | -0.129 | 7.976 | 0.972 |
| 27-Jun-95 | 2940 | 45 | 0.4589 | -0.103 | 7.986 | 0.971 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 26-Oct-98 | 2990 | 46 | 0.4692 | -0.077 | 8.003 | 0.970 |
| 7-Jun-94 | 3000 | 47 | 0.4794 | -0.052 | 8.006 | 0.969 |
| 26-Jul-95 | 3030 | 48 | 0.4897 | -0.026 | 8.016 | 0.968 |
| 3-Oct-91 | 3120 | 49 | 0.5000 | 0.000 | 8.046 | 0.967 |
| 23-Feb-99 | 3180 | 50 | 0.5103 | 0.026 | 8.065 | 0.966 |
| 30-Jan-97 | 3190 | 51 | 0.5206 | 0.052 | 8.068 | 0.965 |
| 23-Apr-98 | 3210 | 52 | 0.5308 | 0.077 | 8.074 | 0.964 |
| 4-May-94 | 3250 | 53 | 0.5411 | 0.103 | 8.086 | 0.962 |
| 23-Jun-94 | 3250 | 54 | 0.5514 | 0.129 | 8.086 | 0.961 |
| 17-Apr-96 | 3310 | 55 | 0.5617 | 0.155 | 8.105 | 0.960 |
| 14-Aug-95 | 3380 | 56 | 0.5720 | 0.181 | 8.126 | 0.958 |
| 16-Oct-97 | 3430 | 57 | 0.5823 | 0.208 | 8.140 | 0.957 |
| 21-Jan-98 | 3530 | 58 | 0.5925 | 0.234 | 8.169 | 0.955 |
| 24-Sep-98 | 3650 | 59 | 0.6028 | 0.261 | 8.202 | 0.953 |
| 8-Mar-94 | 3730 | 60 | 0.6131 | 0.287 | 8.224 | 0.951 |
| 8-Mar-94 | 3730 | 61 | 0.6234 | 0.314 | 8.224 | 0.951 |
| 23-Mar-94 | 3750 | 62 | 0.6337 | 0.342 | 8.230 | 0.950 |
| 28-Oct-94 | 3780 | 63 | 0.6440 | 0.369 | 8.237 | 0.949 |
| 17-Dec-97 | 3800 | 64 | 0.6542 | 0.397 | 8.243 | 0.947 |
| 21-Jan-99 | 3800 | 65 | 0.6645 | 0.425 | 8.243 | 0.946 |
| 19-Apr-94 | 3810 | 66 | 0.6748 | 0.453 | 8.245 | 0.943 |
| 24-Jan-94 | 3830 | 67 | 0.6851 | 0.482 | 8.251 | 0.941 |
| 7-Apr-94 | 3840 | 68 | 0.6954 | 0.511 | 8.253 | 0.938 |
| 26-Aug-98 | 3910 | 69 | 0.7057 | 0.541 | 8.271 | 0.934 |
| 18-Feb-94 | 4020 | 70 | 0.7159 | 0.571 | 8.299 | 0.931 |
| 18-Feb-94 | 4020 | 71 | 0.7262 | 0.601 | 8.299 | 0.928 |
| 15-Jan-99 | 4100 | 72 | 0.7365 | 0.633 | 8.319 | 0.924 |
| 1-Oct-98 | 4120 | 73 | 0.7468 | 0.664 | 8.324 | 0.921 |
| 26-Nov-97 | 4130 | 74 | 0.7571 | 0.697 | 8.326 | 0.916 |
| 21-Nov-95 | 4210 | 75 | 0.7674 | 0.730 | 8.345 | 0.911 |
| 2-Dec-93 | 4350 | 76 | 0.7776 | 0.764 | 8.378 | 0.906 |
| 29-Oct-96 | 4360 | 77 | 0.7879 | 0.799 | 8.380 | 0.903 |
| 9-Feb-95 | 4370 | 78 | 0.7982 | 0.835 | 8.383 | 0.898 |
| 13-Dec-96 | 4430 | 79 | 0.8085 | 0.872 | 8.396 | 0.891 |
| 4-Oct-91 | 4490 | 80 | 0.8188 | 0.911 | 8.410 | 0.884 |
| 28-Oct-93 | 4490 | 81 | 0.8290 | 0.950 | 8.410 | 0.876 |
| 8-Sep-94 | 4560 | 82 | 0.8393 | 0.992 | 8.425 | 0.866 |
| 16-Dec-93 | 4590 | 83 | 0.8496 | 1.035 | 8.432 | 0.853 |
| 8-Oct-98 | 4700 | 84 | 0.8599 | 1.080 | 8.455 | 0.838 |
| 7-Mar-95 | 4790 | 85 | 0.8702 | 1.127 | 8.474 | 0.820 |
| 31-Dec-98 | 4790 | 86 | 0.8805 | 1.177 | 8.474 | 0.798 |
| 13-Apr-95 | 4840 | 87 | 0.8907 | 1.231 | 8.485 | 0.769 |
| 25-Apr-95 | 4900 | 88 | 0.9010 | 1.287 | 8.497 | 0.732 |
| 11-Nov-97 | 5140 | 89 | 0.9113 | 1.349 | 8.545 | 0.685 |
| 27-Nov-96 | 5220 | 90 | 0.9216 | 1.416 | 8.560 | 0.620 |
| 10-Jan-95 | 5570 | 91 | 0.9319 | 1.490 | 8.625 | 0.538 |
| 18-Oct-95 | 5800 | 92 | 0.9422 | 1.573 | 8.666 | 0.411 |
| 10-Dec-98 | 7000 | 93 | 0.9524 | 1.669 | 8.854 | 0.970 |
| 15-Nov-94 | 7020 | 94 | 0.9627 | 1.783 | 8.857 | 0.956 |
| 19-Nov-98 | 7100 | 95 | 0.9730 | 1.927 | 8.868 | 0.984 |
| 13-Dec-94 | 7170 | 96 | 0.9833 | 2.127 | 8.878 | 1.000 |
| 25-Nov-98 | 7250 | 97 | 0.9936 | 2.488 | 8.889 | #DIV/0! |

update for EV, CV:

| | | | | | | |
|---|---|---|---|---|---|---|
| **tZn** | | **NM305** | | | 20 | 19.9 |
| **LN Analysis** | | **tZn** | | | 1.17 | 1.17 |
| **Discharge, Q** | | **Q Data, EV=19.9 cfs CV=1.17** | | | | |
| **Avg:** | **20** | **Q Data-based LN** | | | | |
| **SD:** | **23** | u | lnQ | Q | | |
| **CV:** | **1.17** | 3 | 5.3 | 209 | | |
| **Min:** | **4** | 0 | 2.56 | 13 | | |
| **Max:** | **123** | -3 | -0.23 | 1 | | |
| **Median:** | **10** | | | | | |
| | | | | | 0.926 | 0.926 |
| | | | | | 19.8 | 19.8 |
| | | **u=mLn(Q)+b:** | | | 1.28 | 1.28 |

update for r2, EV, CV: **r2=0.926, EV=19.8 cfs CV=1.28; max r2=0.98**

| | | | | |
|---|---|---|---|---|
| r2 u,lnQ: | 0.926 | u | lnQ | Q |
| slope, m: | 1.016 | 3 | 5.45 | 233 |
| intercept, b: | -2.541 | 0 | 2.50 | 12 |
| N: | 97 | -3 | -0.45 | 1 |
| E[Q]: | 19.8 | Parameter Estimates | | |
| SD[Q]: | 25 | from LN regression | | |
| CV[Q]: | 1.28 | update graph label | | |

| Date | Q Discharge cfs Ranked | N: 97 i rank | i-3/8 / N+1/4 plotting points | u y-axis | Ln x-axis | max r2 #DIV/0! r2 forward |
|---|---|---|---|---|---|---|
| update and rank for new data | | | | | | |
| 3-Oct-91 | 3.69 | 1 | 0.0064 | -2.488 | 1.306 | 0.926 |
| 15-Aug-94 | 3.69 | 2 | 0.0167 | -2.127 | 1.306 | 0.940 |
| 14-Aug-95 | 3.82 | 3 | 0.0270 | -1.927 | 1.340 | 0.948 |
| 8-Sep-94 | 3.91 | 4 | 0.0373 | -1.783 | 1.364 | 0.954 |
| 28-Oct-94 | 3.91 | 5 | 0.0476 | -1.669 | 1.364 | 0.958 |
| 19-Nov-98 | 4 | 6 | 0.0578 | -1.573 | 1.386 | 0.962 |
| 4-Oct-91 | 4.02 | 7 | 0.0681 | -1.490 | 1.391 | 0.965 |
| 18-Feb-94 | 4.03 | 8 | 0.0784 | -1.416 | 1.394 | 0.968 |
| 18-Feb-94 | 4.11 | 9 | 0.0887 | -1.349 | 1.413 | 0.970 |
| 13-Dec-94 | 4.22 | 10 | 0.0990 | -1.287 | 1.440 | 0.971 |
| 15-Aug-94 | 4.32 | 11 | 0.1093 | -1.231 | 1.463 | 0.973 |
| 15-Nov-94 | 4.32 | 12 | 0.1195 | -1.177 | 1.463 | 0.974 |
| 26-Jul-95 | 4.54 | 13 | 0.1298 | -1.127 | 1.513 | 0.975 |
| 28-Oct-93 | 4.7 | 14 | 0.1401 | -1.080 | 1.548 | 0.976 |
| 2-Dec-93 | 4.7 | 15 | 0.1504 | -1.035 | 1.548 | 0.977 |
| 20-Jul-94 | 4.74 | 16 | 0.1607 | -0.992 | 1.556 | 0.978 |
| 16-Dec-93 | 4.8 | 17 | 0.1710 | -0.950 | 1.569 | 0.979 |
| 1-Sep-99 | 5 | 18 | 0.1812 | -0.911 | 1.609 | 0.979 |
| 26-Sep-96 | 5.15 | 19 | 0.1915 | -0.872 | 1.639 | 0.980 |
| 20-Jul-94 | 5.16 | 20 | 0.2018 | -0.835 | 1.641 | 0.981 |
| 1-Oct-98 | 5.37 | 21 | 0.2121 | -0.799 | 1.681 | 0.981 |
| 8-Oct-98 | 5.37 | 22 | 0.2224 | -0.764 | 1.681 | 0.982 |
| 11-Nov-97 | 5.38 | 23 | 0.2326 | -0.730 | 1.683 | 0.982 |
| 24-Sep-98 | 5.49 | 24 | 0.2429 | -0.697 | 1.703 | 0.982 |
| 11-Jul-95 | 5.71 | 25 | 0.2532 | -0.664 | 1.742 | 0.982 |
| 26-Aug-98 | 5.84 | 26 | 0.2635 | -0.633 | 1.765 | 0.982 |
| 24-Jan-94 | 5.87 | 27 | 0.2738 | -0.601 | 1.770 | 0.982 |
| 21-Aug-96 | 5.97 | 28 | 0.2841 | -0.571 | 1.787 | 0.982 |
| 27-Nov-96 | 5.97 | 29 | 0.2943 | -0.541 | 1.787 | 0.982 |
| 10-Dec-98 | 6 | 30 | 0.3046 | -0.511 | 1.792 | 0.982 |
| 29-Oct-96 | 6.22 | 31 | 0.3149 | -0.482 | 1.828 | 0.982 |
| 16-Oct-97 | 6.35 | 32 | 0.3252 | -0.453 | 1.848 | 0.981 |
| 4-Sep-97 | 6.76 | 33 | 0.3355 | -0.425 | 1.911 | 0.981 |
| 21-Jan-98 | 6.9 | 34 | 0.3458 | -0.397 | 1.932 | 0.980 |
| 28-Jul-98 | 6.9 | 35 | 0.3560 | -0.369 | 1.932 | 0.980 |
| 23-Feb-99 | 7.05 | 36 | 0.3663 | -0.342 | 1.953 | 0.980 |
| 24-Jul-96 | 7.19 | 37 | 0.3766 | -0.314 | 1.973 | 0.979 |
| 18-Oct-95 | 7.2 | 38 | 0.3869 | -0.287 | 1.974 | 0.978 |
| 23-Jun-94 | 7.39 | 39 | 0.3972 | -0.261 | 2.000 | 0.978 |
| 27-Jun-95 | 7.39 | 40 | 0.4075 | -0.234 | 2.000 | 0.977 |
| 26-Nov-97 | 7.5 | 41 | 0.4177 | -0.208 | 2.015 | 0.976 |
| 14-Aug-97 | 7.65 | 42 | 0.4280 | -0.181 | 2.035 | 0.975 |
| 31-Dec-98 | 7.65 | 43 | 0.4383 | -0.155 | 2.035 | 0.975 |
| 10-Jan-95 | 8 | 44 | 0.4486 | -0.129 | 2.079 | 0.974 |
| 25-Nov-98 | 8.31 | 45 | 0.4589 | -0.103 | 2.117 | 0.973 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 4-Aug-99 | 8.6 | 46 | 0.4692 | -0.077 | 2.152 | 0.972 |
| 13-Dec-96 | 8.83 | 47 | 0.4794 | -0.052 | 2.178 | 0.971 |
| 17-Dec-97 | 9.2 | 48 | 0.4897 | -0.026 | 2.219 | 0.970 |
| 25-Feb-98 | 9.58 | 49 | 0.5000 | 0.000 | 2.260 | 0.970 |
| 15-Jan-99 | 9.97 | 50 | 0.5103 | 0.026 | 2.300 | 0.969 |
| 23-Jul-97 | 10.2 | 51 | 0.5206 | 0.052 | 2.322 | 0.967 |
| 8-Mar-94 | 10.44 | 52 | 0.5308 | 0.077 | 2.346 | 0.966 |
| 7-Jun-94 | 10.72 | 53 | 0.5411 | 0.103 | 2.372 | 0.965 |
| 26-Jun-98 | 10.8 | 54 | 0.5514 | 0.129 | 2.380 | 0.964 |
| 8-Mar-94 | 12.76 | 55 | 0.5617 | 0.155 | 2.546 | 0.964 |
| 23-Mar-94 | 12.97 | 56 | 0.5720 | 0.181 | 2.563 | 0.962 |
| 21-Nov-95 | 13 | 57 | 0.5823 | 0.208 | 2.565 | 0.960 |
| 21-Jan-99 | 13 | 58 | 0.5925 | 0.234 | 2.565 | 0.959 |
| 30-Jan-97 | 13.5 | 59 | 0.6028 | 0.261 | 2.603 | 0.957 |
| 20-Mar-98 | 13.5 | 60 | 0.6131 | 0.287 | 2.603 | 0.956 |
| 7-Mar-95 | 14.49 | 61 | 0.6234 | 0.314 | 2.673 | 0.954 |
| 4-May-94 | 14.89 | 62 | 0.6337 | 0.342 | 2.701 | 0.952 |
| 20-May-94 | 15.31 | 63 | 0.6440 | 0.369 | 2.729 | 0.951 |
| 19-Jun-96 | 15.4 | 64 | 0.6542 | 0.397 | 2.734 | 0.949 |
| 25-Apr-95 | 15.75 | 65 | 0.6645 | 0.425 | 2.757 | 0.948 |
| 24-Jun-97 | 16.7 | 66 | 0.6748 | 0.453 | 2.815 | 0.947 |
| 7-Jul-99 | 17 | 67 | 0.6851 | 0.482 | 2.833 | 0.946 |
| 9-Feb-95 | 17.61 | 68 | 0.6954 | 0.511 | 2.868 | 0.946 |
| 7-Apr-94 | 18.12 | 69 | 0.7057 | 0.541 | 2.897 | 0.947 |
| 8-May-96 | 19.1 | 70 | 0.7159 | 0.571 | 2.950 | 0.950 |
| 19-Feb-97 | 20.6 | 71 | 0.7262 | 0.601 | 3.025 | 0.953 |
| 13-Apr-95 | 22.11 | 72 | 0.7365 | 0.633 | 3.096 | 0.956 |
| 23-May-95 | 22.11 | 73 | 0.7468 | 0.664 | 3.096 | 0.958 |
| 8-Mar-99 | 25 | 74 | 0.7571 | 0.697 | 3.219 | 0.965 |
| 23-Apr-98 | 27.4 | 75 | 0.7674 | 0.730 | 3.311 | 0.968 |
| 17-Apr-96 | 29 | 76 | 0.7776 | 0.764 | 3.367 | 0.969 |
| 9-May-95 | 30.45 | 77 | 0.7879 | 0.799 | 3.416 | 0.969 |
| 16-Apr-97 | 30.7 | 78 | 0.7982 | 0.835 | 3.424 | 0.969 |
| 5-May-99 | 34 | 79 | 0.8085 | 0.872 | 3.526 | 0.972 |
| 7-May-98 | 36.2 | 80 | 0.8188 | 0.911 | 3.589 | 0.971 |
| 26-Oct-98 | 36.2 | 81 | 0.8290 | 0.950 | 3.589 | 0.969 |
| 15-May-98 | 43.8 | 82 | 0.8393 | 0.992 | 3.780 | 0.970 |
| 29-Feb-96 | 45 | 83 | 0.8496 | 1.035 | 3.807 | 0.970 |
| 28-Mar-96 | 45 | 84 | 0.8599 | 1.080 | 3.807 | 0.971 |
| 28-May-98 | 45.1 | 85 | 0.8702 | 1.127 | 3.809 | 0.969 |
| 17-Jan-96 | 47.8 | 86 | 0.8805 | 1.177 | 3.867 | 0.965 |
| 15-Jun-99 | 49 | 87 | 0.8907 | 1.231 | 3.892 | 0.961 |
| 16-May-91 | 50.5 | 88 | 0.9010 | 1.287 | 3.922 | 0.956 |
| 15-May-91 | 51.3 | 89 | 0.9113 | 1.349 | 3.938 | 0.948 |
| 31-May-99 | 55 | 90 | 0.9216 | 1.416 | 4.007 | 0.938 |
| 26-Mar-97 | 57 | 91 | 0.9319 | 1.490 | 4.043 | 0.924 |
| 23-May-99 | 61 | 92 | 0.9422 | 1.573 | 4.111 | 0.913 |
| 22-Mar-99 | 78 | 93 | 0.9524 | 1.669 | 4.357 | 0.943 |
| 19-Apr-99 | 80 | 94 | 0.9627 | 1.783 | 4.382 | 0.925 |
| 19-Apr-94 | 86.89 | 95 | 0.9730 | 1.927 | 4.465 | 0.871 |
| 27-May-99 | 110 | 96 | 0.9833 | 2.127 | 4.700 | 1.000 |
| 26-May-99 | 123 | 97 | 0.9936 | 2.488 | 4.812 | #DIV/0! |

**Secondary Scale For LN graphs**

| u | Cumulative Frequecny secondary y-axis | Candidate x-axis positions x-axis position | |
|---|---|---|---|
| **-4.00** | **0.00003** | 10000 | 1000 |
| **-3.00** | **0.00135** | 10000 | 1000 |
| **-2.00** | **0.02275** | 10000 | 1000 |
| **-1.00** | **0.15866** | 10000 | 1000 |
| **0.00** | **0.50000** | 10000 | 1000 |
| **1.00** | **0.84134** | 10000 | 1000 |
| **2.00** | **0.97725** | 10000 | 1000 |
| **3.00** | **0.99865** | 10000 | 1000 |
| **4.00** | **0.99997** | 10000 | 1000 |

| | |
|---|---|
| -0.134 | 130 |
| 0 | 263 |
| 0.134 | 972 |

Final (Revision 2)
VOLUME 8
Appendix C

# REMEDIAL INVESTIGATION REPORT

## Coeur d'Alene Basin
## Remedial Investigation/Feasibility Study

September 2001