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asi
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Incorporated
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27 November 1997

Mr. Doug Kriscunas
TriMatrix
5555 Glenwood Hills Parkway SE
Grand Rapids, MI 49588

Dear Mr. Kriscunas,

On behalf of the staff and myself here at **ANALYTICAL STANDARDS**, we would like to congratulate you on your laboratory's outstanding performances. In our May audit #EPA0597, your facility ranked among the top five of all the laboratories scored. We didn't feel that these very impressive efforts should go unrecognized. Therefore, please find enclosed our award of excellence for your lab. This certificate is our way of acknowledging this superior effort.

To be in the top ten percent is no small task. After all, the Environmental Performance Audit now has over two hundred fifty of the best environmental laboratories in the country. These numbers include all of the top ten money making environmental laboratory chains. It is this select type of competition that makes your accomplishment even more outstanding.

We here at **asi**, look forward to working with you at TriMatrix and wish all of your laboratories good luck for continuing this level of performance on all future audits. Again, congratulations on your fine effort and keep up the good work!

Sincerely yours,
ANALYTICAL STANDARDS, INC.

Frederick S. Anderson

Frederick S. Anderson
President

When auditing
is over the
concern

Award of Excellence

Analytical Standards, Incorporated

does hereby recognize

Trimatrix Laboratories, Incorporated
Grand Rapids

as one of the top five highest rated laboratories in the Environmental Laboratory Program,
the world's first true double blind, round robin, statistically based performance evaluation program.
Your facility's superior analytical performance establishes you not only in our top ten but also as one of the top laboratories in the entire environmental community.

The Environmental Laboratory Program
Audit # EPA0597 ***May 1997***

Frederick S. Anderson, President

24 November 1997
Date

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Page: 1
Date: 09MAY97

Performance Evaluation Report
USEPA Water Pollution Study WP037 TNA (2)

P cipant ID: MI00005 Type: OTHER Requesting Office: MI

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
TRACE METALS IN MICROGRAMS/LITER					
001-ALUMINUM					
01	1235	1203	1030- 1360	1070- 1310	Accept.
002-ARSENIC					
01	90.9	88.0	69.6- 107	74.3- 102	Accept.
003-BERYLLIUM					
02	685	675	601- 750	620- 731	Accept.
004-CADMIUM					
01	22.8	22.2	18.3- 26.4	19.4- 25.4	Accept.
005-COBALT					
01	219	220	196- 244	202- 238	Accept.
006-CHROMIUM					
01	137	137	120- 156	124- 151	Accept.
007-COPPER					
01	121	115	102- 128	105- 124	Accept.
008-IRON					
01	387	393	350- 445	362- 433	Accept.
009-MERCURY					
01	0.409	0.494	0.266-0.729	0.324-0.671	Accept.
0 MANGANESE					
01	146	144	129- 158	132- 155	Accept.
011-NICKEL					
01	420	417	376- 463	387- 452	Accept.
012-LEAD					
01	125	130	109- 147	114- 143	Accept.
013-SELENIUM					
01	136	150	113- 160	119- 154	Accept.
014-VANADIUM					
01	3210	3300	2990- 3600	3070- 3520	Accept.
015-ZINC					
01	296	295	263- 332	272- 323	Accept.
016-ANTIMONY					
02	670	779	606- 928	646- 888	Accept.
017-SILVER					
02	486	490	455- 557	468- 544	Accept.
018-THALLIUM					
02	465	471	390- 563	411- 541	Accept.
074-MOLYBDENUM					
02	135	190	174- 220	180- 215	Not Accept.
075-STRONTIUM					
02	148	144	129- 168	134- 163	Accept.
076-TITANIUM					
02	223	226	195- 253	203- 245	Accept.
MINERALS IN MILLIGRAMS/LITER (EXCEPT AS NOTED)					
0 SPEC. COND.(UMHOS/CM AT 25 C)					
01	829	1132	1050- 1230	1070- 1210	Not Accept.

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Performance Evaluation Report
USEPA Water Pollution Study WP037

Participant ID: MI00005 Type: CTHEB Requesting Office: MI

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
021-TDS AT 180 C					
C1	592	685	461- 932	521- 872	Accept.
022-TOTAL HARDNESS(AS CACO3)					
C1	314	317	294- 344	300- 337	Accept.
023-CALCIUM					
C1	63.6	66.0	61- 73.2	62.5- 71.6	Accept.
024-MAGNESIUM					
C1	35.1	37.0	33.7- 40	34.5- 39.2	Accept.
025-SODIUM					
C1	86.6	92.2	85.1- 101	87.1- 99.6	Ck. for Err.
026-POTASSIUM					
C1	16.9	17.0	14.6- 19.8	15.3- 19.2	Accept.
027-TOTAL ALKALINITY(AS CACO3)					
C1	92.1	91.0	82.2- 99	84.3- 96.9	Accept.
028-CHLORIDE					
C1	233	226	207- 250	212- 244	Accept.
029-FLUORIDE					
C1	2.56	2.60	2.25- 2.92	2.34- 2.84	Accept.
030-SULFATE					
C1	110	118	99.9- 138	105- 133	Accept.
NUTRIENTS IN MILLIGRAMS/LITER					
031-AMMONIA-NITROGEN					
C1	0.299	0.261	0.12-0.444	0.159-0.405	Accept.
032-NITRATE-NITROGEN					
C1	0.607	0.620	0.47-0.756	0.504-0.722	Accept.
033-ORTHOPHOSPHATE					
C1	5.63	5.50	4.84- 6.25	5.01- 6.09	Accept.
034-KJELDAHL-NITROGEN					
C2	2.34	2.60	1.72- 3.53	1.94- 3.31	Accept.
035-TOTAL PHOSPHORUS					
C2	7.22	7.00	5.99- 8.24	6.26- 7.97	Accept.
DEMANDS IN MILLIGRAMS/LITER					
036-COD					
C1	165	152	117- 177	124- 169	Accept.
037-TOC					
C1	59.9	60.0	50.1- 69.4	52.6- 66.9	Accept.
038-5-DAY BOD					
C1	104	93.1	49.4- 137	60.4- 126	Accept.
102-CARBONACEOUS BOD					
C1	104	80.0	36.4- 124	48- 112	Accept.
PCB'S IN MICROGRAMS/LITER					
045-PCB-AROCLOR 1254					
C2	2.09	2.33	1.04- 3.29	1.32- 3	Accept.
04 CB-AROCLOR 1260					
C1	4.54	4.60	2.71- 5.7	3.09- 5.33	Accept.

I = 2

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Performance Evaluation Report
USEPA Water Pollution Study WP037

P cipant ID: MI00005 Type: OTHER Requesting Office: MI

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
PCB'S IN OIL IN MILLIGRAMS/KILOGRAM					
099-PCB IN OIL- 1016/1242					
02	28.9	27.2	4.83- 38.3	9.18- 34	Accept.
101-PCB IN OIL- 1260					
01	24.5	28.5	4.17- 41.5	8.95- 36.7	Accept.
PESTICIDES IN MICROGRAMS/LITER					
047-ALDRIN					
01	2.10	2.54	0.714- 3.51	1.07- 3.16	Accept.
048-DIELDRIN					
01	3.55	3.87	2.06- 5.39	2.49- 4.98	Accept.
049-DDD					
01	6.06	6.42	2.68- 9.42	3.52- 8.59	Accept.
050-DDE					
01	3.14	3.34	1.33- 4.67	1.75- 4.26	Accept.
051-DDT					
01	5.07	5.86	2.22- 8.33	2.99- 7.56	Accept.
052-HEPTACHLOR					
01	2.89	3.42	0.918- 4.8	1.41- 4.3	Accept.
0 HLORDANE					
02	7.07	8.85	4.18- 12.1	5.19- 11.1	Accept.
078-HEPTACHLOR EPOXIDE					
01	2.25	2.84	1.48- 3.4	1.72- 3.15	Accept.
VOLATILE HALOCARBONS IN MICROGRAMS/LITER					
054-1,2 DICHLOROETHANE					
01	44.4	47.4	37.4- 63.5	40.7- 60.2	Accept.
055-CHLOROFORM					
01	53.6	59.4	42.3- 75.1	46.5- 70.9	Accept.
056-1,1,1 TRICHLOROETHANE					
01	49.3	54.2	36.1- 69.5	40.3- 65.2	Accept.
057-TRICHLOROETHENE					
01	57.9	64.2	42.2- 82	47.3- 77	Accept.
058-CARBONTETRACHLORIDE					
01	50.1	51.3	32.7- 71	37.5- 66.2	Accept.
059-TETRACHLOROETHENE					
01	41.0	44.3	31.1- 56	34.3- 52.9	Accept.
060-BROMODICHLOROMETHANE					
01	46.2	48.7	34.9- 63.1	38.4- 59.6	Accept.
061-DIBROMOCHLOROMETHANE					
01	79.4	85.4	67.5- 103	72- 98.7	Accept.
062-BROMOFORM					
01	39.9	42.8	27.1- 61.4	31.4- 57.1	Accept.
063-METHYLENE CHLORIDE					
01	56.2	53.5	35.2- 72.4	39.9- 67.7	Accept.
06 HLOROBENZENE					
01	54.8	57.3	42.6- 76.9	46.9- 72.6	Accept.

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Performance Evaluation Report
USEPA Water Pollution Study WP037

P cipant ID: MIC0005 Type: OTHER Requesting Office: MI

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
VOLATILE AROMATICS IN MICROGRAMS/LITER					
065-BENZENE					
C1	66.8	72.6	54.1- 91.9	58.9- 87.1	Accept.
066-ETHYLBENZENE					
01	55.0	63.3	42.7- 81.7	47.6- 76.8	Accept.
067-TOLUENE					
C1	53.2	56.1	40.7- 69.3	44.4- 65.7	Accept.
094-1,2-DICHLOROBENZENE					
C1	47.6	47.4	33.8- 59.9	37.1- 56.6	Accept.
095-1,4-DICHLOROBENZENE					
C1	47.2	53.2	37- 68.5	41- 64.5	Accept.
096-1,3-DICHLOROBENZENE					
C1	48.7	50.4	36.5- 62.1	39.7- 58.9	Accept.
MISCELLANEOUS ANALYTES					
019-PH-UNITS					
C1	9.30	9.30	9.05- 9.56	9.11- 9.5	Accept.
071-TOTAL CYANIDE(IN MG/L)					
01	0.085	0.080	0.0522-0.107	0.0591- 0.1	Accept.
07 CN-FILTERABLE RESIDUE(IN MG/L)					
C1	72.0	77.0	59.9- 82.6	62.3- 79.7	Accept.
073-OIL AND GREASE(IN MG/L)					
C1	26.9	32.0	20.7- 33	22.3- 31.5	Accept.
097-TOTAL PHENOLICS(IN MG/L)					
01	1.87	2.08	1.25- 2.91	1.46- 2.7	Accept.
098-TOTAL RESIDUAL CHLORINE(IN MG/L)					
C1	2.70	2.63	2.38- 3.22	2.49- 3.11	Accept.

0 = 0

********** END OF DATA FOR MIC0005 **********
NOTE: FOR LIMITS AND TRUE VALUES, ASSUME THREE SIGNIFICANT DIGITS.
********** END OF REPORT FOR MIC0005 **********

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* Based on gravimetric calculations, or a reference value when necessary.

Performance Evaluation Report
USEPA Water Pollution Study WP038

P cipant ID: MI00005 Type: OTHER Requesting Office: MI

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
TRACE METALS IN MICROGRAMS/LITER					
001-ALUMINUM					
01	1990	1903	1690- 2150	1740- 2090	Accept.
002-ARSENIC					
01	407	410	344- 478	361- 461	Accept.
003-BERYLLIUM					
02	7.30	8.25	4.87- 11.2	5.66- 10.4	Accept.
004-CADMIUM					
01	70.7	69.0	58.5- 78.6	61.1- 76.1	Accept.
005-COBALT					
01	407	401	346- 456	360- 442	Accept.
006-CHROMIUM					
01	420	420	371- 473	384- 460	Accept.
007-COPPER					
01	304	277	252- 305	259- 298	Ck. for Err.
008-IRON					
01	2120	2100	1890- 2280	1940- 2230	Accept.
009-MERCURY					
01	3.74	3.85	2.87- 4.3	3.04- 4.12	Accept.
0 ANGANESE					
01	1140	1100	995- 1240	1030- 1210	Accept.
011-NICKEL					
01	197	188	168- 213	174- 207	Accept.
012-LEAD					
01	432	430	379- 480	392- 467	Accept.
013-SELENIUM					
01	1957	1951	1570- 2220	1650- 2140	Accept.
014-VANADIUM					
01	7490	7604	6890- 8310	7070- 8130	Accept.
015-ZINC					
01	1580	1551	1360- 1760	1410- 1710	Accept.
016-ANTIMONY					
02	133	170	108- 206	120- 194	Accept.
017-SILVER					
02	61.6	60.0	51.7- 67.7	53.7- 65.7	Accept.
018-THALLIUM					
02	185	200	161- 230	170- 222	Accept.
074-MOLYBDENUM					
02	53.0	56.9	45.8- 65.4	48.3- 62.9	Accept.
075-STRONTIUM					
02	35.0	32.1	27.4- 36.9	28.6- 35.6	Accept.
076-TITANIUM					
02	44.2	48.9	40.9- 56	42.9- 54	Accept.
INERALS IN MILLIGRAMS/LITER (EXCEPT AS NOTED)					
0 PEC. COND.(UMHOS/CM AT 25 C)					
01	814	887	804- 920	818- 906	Ck. for Err.

Performance Evaluation Report
USEPA Water Pollution Study WP038

icipant ID: MI00005 Type: OTHER Requesting Office: MI

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
021-TDS AT 180 C					
01	563	512	440- 668	469- 639	Accept.
022-TOTAL HARDNESS(AS CACO3)					
01	224	229	208- 249	214- 244	Accept.
023-CALCIUM					
01	81.2	83.0	74.6- 92.9	76.9- 90.6	Accept.
024-MAGNESIUM					
01	5.19	5.30	4.51- 5.86	4.68- 5.69	Accept.
025-SODIUM					
01	66.8	68.3	61.3- 76.1	63.1- 74.2	Accept.
026-POTASSIUM					
01	12.7	12.5	10.9- 14.4	11.3- 14	Accept.
027-TOTAL ALKALINITY(AS CACO3)					
01	61.1	58.1	52.6- 64.1	54- 62.6	Accept.
028-CHLORIDE					
01	175	163	150- 176	154- 172	Ck. for Err.
029-FLUORIDE					
01	1.93	1.90	1.65- 2.12	1.71- 2.06	Accept.
030-SULFATE					
01	94.1	96.0	81.7- 109	85.1- 105	Accept.
NUTRIENTS IN MILLIGRAMS/LITER					
031-AMMONIA-NITROGEN					
01	2.98	2.80	2.16- 3.47	2.32- 3.31	Accept.
032-NITRATE-NITROGEN					
01	30.1	31.0	25.4- 35.7	26.7- 34.4	Accept.
033-ORTHOPHOSPHATE					
01	1.52	1.50	1.29- 1.72	1.34- 1.67	Accept.
034-KJELDAHL-NITROGEN					
02	24.9	24.0	18.3- 29.2	19.6- 27.9	Accept.
035-TOTAL PHOSPHORUS					
02	1.14	1.10	0.906- 1.33	0.956- 1.28	Accept.
DEMANDS IN MILLIGRAMS/LITER					
036-COD					
01	74.8	81.0	59.4- 95.7	64- 91	Accept.
037-TOC					
01	32.9	32.0	26.7- 37.2	28.1- 35.8	Accept.
038-5-DAY BOD					
01	52.1	50.3	26- 74.6	32.1- 68.5	Accept.
102-CARBONACEOUS BOD					
01	50.3	43.0	18.1- 68.6	24.7- 62	Accept.
PCB'S IN MICROGRAMS/LITER					
042-PCB-AROCLOR 1232					
01	1.57	1.61	0.682- 2.37	0.897- 2.15	Accept.
0 PCB-AROCLOR 1248					
02	1.30	1.51	0.672- 1.96	0.835- 1.8	Accept.

Performance Evaluation Report
USEPA Water Pollution Study WP038

P cipant ID: MI00005 Type: OTHER Requesting Office: MI

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
PCB'S IN OIL IN MILLIGRAMS/KILOGRAM					
100-PCB IN OIL- 1254					
01	25.0	32.7	0.993- 46.2	6.77- 40.4	Accept.
101-PCB IN OIL- 1260					
02	31.4	39.0	6.89- 53.6	12.9- 47.6	Accept.
PESTICIDES IN MICROGRAMS/LITER					
047-ALDRIN					
01	0.340	0.349	0.109-0.463	0.154-0.419	Accept.
048-DIELDRIN					
01	1.89	2.22	1.25- 2.93	1.47- 2.77	Accept.
049-DDD					
01	4.31	4.64	2.43- 6.53	3- 6.02	Accept.
050-DDE					
01	1.65	1.96	0.959- 2.45	1.15- 2.27	Accept.
051-DDT					
01	6.76	7.42	3.92- 9.31	4.6- 8.63	Accept.
052-HEPTACHLOR					
01	0.502	0.564	0.192-0.762	0.255-0.689	Accept.
0 CHLORDANE					
02	5.82	6.46	2.94- 9.13	3.72- 8.35	Accept.
0[illegible]-HEPTACHLOR EPOXIDE					
01	0.273	0.244	0.135-0.319	0.159-0.296	Accept.
VOLATILE HALOCARBONS IN MICROGRAMS/LITER					
054-1,2 DICHLOROETHANE					
01	32.0	32.8	21.2- 42.3	23.8- 39.7	Accept.
055-CHLOROFORM					
01	41.5	45.4	30.6- 51.5	33.2- 48.9	Accept.
056-1,1,1 TRICHLOROETHANE					
01	33.9	38.7	26.3- 42.8	28.3- 40.7	Accept.
057-TRICHLOROETHENE					
01	28.2	33.6	20.4- 40.3	22.9- 37.8	Accept.
058-CARBONTETRACHLORIDE					
01	39.4	44.8	27.9- 53.5	31.1- 50.3	Accept.
059-TETRACHLOROETHENE					
01	41.3	43.7	26.1- 55	29.7- 51.3	Accept.
060-BROMODICHLOROMETHANE					
01	44.6	50.3	33.5- 62.1	37.1- 58.5	Accept.
061-DIBROMOCHLOROMETHANE					
01	26.9	27.3	17.5- 34.8	19.8- 32.7	Accept.
062-BROMOFORM					
01	26.1	26.4	15.6- 36.1	18.1- 33.5	Accept.
063-METHYLENE CHLORIDE					
01	52.8	64.2	37.1- 75	41.8- 70.2	Accept.
0 CHLOROBENZENE					
01	36.3	37.7	26.4- 47.4	29.1- 44.7	Accept.

Performance Evaluation Report
USEPA Water Pollution Study WP038

P cipant ID: MI00005 Type: OTHER Requesting Office: MI

Sample Number	Reported Value	True Value*	Acceptance Limits	Warning Limits	Performance Evaluation
VOLATILE AROMATICS IN MICROGRAMS/LITER					
065-BENZENE					
01	12.5	13.3	9.69- 17.1	10.6- 16.2	Accept.
066-ETHYLBENZENE					
01	8.42	8.60	6.02- 10.5	6.59- 9.96	Accept.
067-TOLUENE					
01	11.5	12.7	9.21- 15.7	10- 14.8	Accept.
094-1,2-DICHLOROBENZENE					
01	31.5	34.7	25.1- 42.3	27.3- 40.1	Accept.
095-1,4-DICHLOROBENZENE					
01	22.5	25.4	18.5- 32.1	20.3- 30.4	Accept.
096-1,3-DICHLOROBENZENE					
01	16.5	18.3	13- 21.9	14.2- 20.9	Accept.
MISCELLANEOUS ANALYTES					
019-PH-UNITS					
01	6.61	6.58	6.44- 6.74	6.47- 6.7	Accept.
071-TOTAL CYANIDE(IN MG/L)					
01	0.187	0.190	0.119-0.259	0.137-0.241	Accept.
0 NON-FILTERABLE RESIDUE(IN MG/L)					
01	42.2	46.0	33.3- 48	35.1- 46.1	Accept.
097-TOTAL PHENOLICS(IN MG/L)					
01	0.099	0.113	0.0402- 0.18	0.0584-0.162	Accept.
098-TOTAL RESIDUAL CHLORINE(IN MG/L)					
01	1.40	1.39	1.14- 1.73	1.22- 1.65	Accept.
104-OIL AND GREASE (HEXANE EXTRACTION)(IN MG/L)					
01	11.0	12.2	5.1- 17.6	6.61- 16.1	Accept.

********** END OF DATA FOR MI00005 **********
NOTE: FOR LIMITS AND TRUE VALUES, ASSUME THREE SIGNIFICANT DIGITS.
********** END OF REPORT FOR MI00005 **********

* Based on gravimetric calculations, or a reference value when necessary.

The Environmental Performance Audit

EPA0597 May 1997

Trimatrix - Grand Rapids Laboratory #000082

asi Analytical Standards, Incorporated

This report was prepared by:

Analytical Standards, Incorporated
6331 Emerson Avenue, P.O. Box 4060
Parkersburg, West Virginia 26104-4060
1-800-AUDIT-44 (283-4844)

for the exclusive use of:
Trimatrix Laboratories Incorporated

Any questions about its contents should be directed to asi at the number above.

May 1997 Audit #EPA0597 Laboratory #000082
Summary Report For
Trimatrix Laboratories Incorporated
5555 Glenwood Hills Parkway SE
Grand Rapids, MI 49588

asi
Analytical Standards, Incorporated

Introduction & Comments

Thank you for participating in the **Environmental Performance Audit** program. We feel that this program is the state of the art - the most comprehensive performance audit of its kind. It combines a true statistical base with the first of its kind true double-blind format. The double-blind format was designed so that samples are introduced into the laboratory without the laboratory's knowledge. All audit samples are made up to look like "real world" samples, and sample delivery is broken down into four shipments to further prevent your analyst from recognizing them as audit samples. In this way, samples are treated like everyday samples from the extraction process through analysis. Thus, allowing you to see how your laboratory performed on a daily basis rather than the best-case scenario.

The executive summary page provides a score for each laboratory based on the number of correct answers that were reported out of 100 possible points for the inorganic and organic parameters, as well as an overall score. Point value was determined based on the total number of parameters that you participated in. The laboratory evaluation page provides a breakdown of both the return times as well as a sampling kit review, if applicable.

The statistical section provides the numerical breakdown for each individual laboratory for each particular audit. This includes mean, warning, and control limits as well as a score based on these limits. The warning limits were established as plus or minus 1.96 times the standard deviation from the mean, with the control limits at plus or minus 2.58 times the standard deviation.

The last two sections provide the quality control charting for all parameters, both inorganic and organic. This allows you the opportunity to view the entire database. All laboratories that were outliers, and those reporting less than values, have also been noted on each graph.

Respectively Submitted: 31 August 1997

Frederick S. Anderson

Frederick S. Anderson
President

Executive Summary

LABORATORY SUMMARYS	METALS	INORGANICS	ORGANICS	OVERALL
Your Laboratories Evaluation Score was: (100% Maximum)	**95.65%**	**95.65%**	**97.22%**	**96.34%**
Total Number of Parameters Participated In:	**26** (26 maximum)	**23** (23 maximum)	**36** (36 maximum)	**85** (85 maximum)
Total Number of Parameters Scored:	23	23	36	82
The Average Laboratory Evaluation Score Was:	88.31%	86.78%	89.165%	88.33%
The Highest Laboratory Evaluation Score Was:	100%	100%	100%	98.80%
The Lowest Laboratory Evaluation Score Was:	53.70%	45.65%	57.14%	63.69%

asi
Analytical Standards, Incorporated

Definitions

The following section is provided to explain the terminology used throughout this report.

Reported Values: This refers to the results provided by your laboratory.

Mean Recovery: Refers to the statistically calculated mean of all reporting laboratories after any outliers have been removed.

# of Labs: Provides a count of the total number of reporting laboratories.

Acceptance Limits: Provides the calculated acceptance range for the study determined at the 99% confidence level, calculated as 2.58 times the standard deviation from the mean.

Warning Limits: Provides the calculated warning range for the study determined at the 95% confidence level, calculated as 1.96 times the standard deviation from the mean.

Performance Evaluation: Provides a rated review of how your laboratory performed using the following criteria:

- **Not Reporting:** No data was submitted for this parameter.
- **See Below:** Provides for special notations in the comment field.
- **Acceptable:** Reported value fell within the 95% confidence limits.
- **Check for Error:** Reported value fell within the 99% confidence limits but outside the 95% confidence limits.
- **Not Acceptable:** Reported value fell outside the 99% confidence limits.

Outlier Removal: Evaluation and removal of outliers, if necessary, is done using the ASTM recommended t test.

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Inorganic Summary Report

Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Trace Metals (ppb)				Units reported in micrograms per liter		
Aluminum (Al)	330.000	308.414	51	182.479 - 434.349	212.742 - 404.086	Acceptable
Antimony (Sb)	< 200.000	124.250	51	75.003 - 173.497	86.838 - 161.662	* See Below
Arsenic (As)	26.000	26.817	51	11.371 - 42.263	15.082 - 38.552	Acceptable
Barium (Ba)	310.000	282.450	51	231.201 - 333.699	243.517 - 321.383	Acceptable
Beryllium (Be)	30.000	29.050	51	23.622 - 34.478	24.926 - 33.174	Acceptable
Boron (B)	200.000	243.773	51	176.737 - 310.809	192.846 - 294.700	Acceptable
Cadmium (Cd)	72.000	67.193	51	53.955 - 80.431	57.136 - 77.250	Acceptable
Chromium (Cr)	< 50.000	40.621	51	28.562 - 52.680	31.460 - 49.782	* See Below
Cobalt (Co)	56.000	51.465	51	38.433 - 64.497	41.565 - 61.365	Acceptable
Copper (Cu)	54.000	44.744	51	27.337 - 62.151	31.520 - 57.968	Acceptable
Iron (Fe)	140.000	158.867	51	56.299 - 261.435	80.947 - 236.787	Acceptable
Lead (Pb)	31.000	29.256	51	15.510 - 43.002	18.813 - 39.699	Acceptable
Manganese (Mn)	51.000	46.678	51	36.028 - 57.328	38.587 - 54.769	Acceptable
Mercury (Hg)	11.000	6.596	51	3.139 - 10.053	3.970 - 9.222	Not Acceptable
Molybdenum (Mo)	170.000	174.739	51	141.506 - 207.972	149.492 - 199.986	Acceptable
Nickel (Ni)	110.000	105.679	51	78.806 - 132.552	85.264 - 126.094	Acceptable
Selenium (Se)	53.000	53.129	51	5.053 - 101.205	16.606 - 89.652	Acceptable
Silver (Ag)	52.000	60.411	51	44.046 - 76.776	47.979 - 72.843	Acceptable

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Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Trace Metals (ppb)				Units reported in micrograms per liter		
Thallium (Tl)	174.000	197.037	51	149.307 - 244.767	160.777 - 233.297	Acceptable
Vanadium (V)	200.000	184.821	51	148.789 - 220.853	157.448 - 212.194	Acceptable
Zinc (Zn)	110.000	115.852	51	90.026 - 141.678	96.232 - 135.472	Acceptable

False Positive Check: Tests were requested for Ag, Al, As, Be, B, Cd, Cr, Co, Hg, Mn, Mo, Ni, Sb, Se, Tl and V. All were reported as BDL correctly. Please lower the PQL's for Antimony and Chromium.

Minerals Metals				Units reported in milligrams per liter		
Calcium (Ca)	29.000	27.561	49	22.484 - 32.638	23.704 - 31.418	Acceptable
Magnesium (Mg)	25.000	23.381	49	18.239 - 28.523	19.475 - 27.287	Acceptable
Potassium (K)	21.000	19.568	49	14.320 - 24.816	15.581 - 23.555	Acceptable
Sodium (Na)	44.000	40.402	49	31.106 - 49.698	33.340 - 47.464	Acceptable
Total Hardness as CaCO3	*********	173.958	49	135.975 - 211.941	145.103 - 202.813	Not Reporting

Hexachrome				Units reported in milligrams per liter		
Hexachrome	110.000	102.667	37	73.740 - 131.594	80.691 - 124.643	Acceptable

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Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Total Cyanide				Units reported in milligrams per liter		
Total Cyanide	0.200	0.182	40	0.038 - 0.326	0.072 - 0.292	Acceptable
Total Phenolics				Units reported in milligrams per liter		
Total Phenolics	1.600	1.843	39	0.765 - 2.921	1.024 - 2.662	Acceptable
Total Organic Halide				Units reported in micrograms per liter		
Total Organic Halide (TOX)	33.000	47.006	32	10.620 - 83.392	19.364 - 74.648	Acceptable
Total Organic Carbon				Units reported in milligrams per liter		
Total Organic Carbon (TOC)	52.000	50.140	34	42.054 - 58.226	43.997 - 56.283	Acceptable
Chemical Oxygen Demand (COD)				Units reported in milligrams per liter		
Chemical Oxygen Demand	138.000	154.958	40	96.676 - 213.240	110.682 - 199.234	Acceptable
Biological Oxygen Demand (BOD)				Units reported in milligrams per liter		
Biological Oxygen Demand	15.000	15.980	40	3.057 - 28.903	6.162 - 25.798	Acceptable

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Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Oil & Grease				Units reported in milligrams per liter		
Oil & Grease	16.000	14.119	45	4.085 - 24.153	6.497 - 21.741	Acceptable
Nutrients				Units reported in milligrams per liter		
Ammonia-Nitrogen as N	4.300	3.970	48	0.962 - 6.978	1.685 - 6.255	Acceptable
Nitrate-Nitrogen as N	4.300	4.496	48	3.572 - 5.420	3.794 - 5.198	Acceptable
Kjeldahl-Nitrogen as N	24.000	18.172	48	4.212 - 32.132	7.566 - 28.778	Acceptable
Orthophosphate as P	3.200	2.932	48	0.760 - 5.104	1.282 - 4.582	Acceptable
Total Phosphorus as P	5.600	4.728	48	1.191 - 8.265	2.041 - 7.415	Acceptable
Minerals - pH				Units reported in Standard Units		
pH	10.190	10.240	47	9.778 - 10.702	9.889 - 10.591	Acceptable
Minerals - Specific Conductivity				Units reported in UMHOS per centimeter		
Specific Conductivity	1161.000	1215.820	47	1084.384 - 1347.256	1115.970 - 1315.670	Acceptable
Minerals				Units reported in milligrams per liter		
Total Dissolved Solids (TDS)	754.000	644.552	47	555.245 - 733.859	576.707 - 712.397	Not Acceptable
Total Suspended Solids (TSS)	59.000	45.167	47	8.454 - 81.880	17.276 - 73.058	Acceptable

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Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Minerals				Units reported in milligrams per liter		
Total Solids (TS)	756.000	714.333	47	545.266 - 883.400	585.894 - 842.772	Acceptable
Total Alkalinity	177.000	175.708	47	164.565 - 186.851	167.243 - 184.173	Acceptable
Chloride (Cl-)	187.000	179.607	47	158.632 - 200.582	163.672 - 195.542	Acceptable
Fluoride (F-)	5.000	5.237	47	3.932 - 6.542	4.245 - 6.229	Acceptable
Sulfate	100.000	96.165	47	65.943 - 126.387	73.206 - 119.124	Acceptable
Total Residual Chlorine				Units reported in milligrams per liter		
Residual Chlorine	2.600	2.318	37	0.760 - 3.876	1.134 - 3.502	Acceptable

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Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Total Petroleum Hydrocarbon (TPH)				Units reported in milligrams per liter		
Total Petroleum Hydrocarbon (TPH)	22.000	17.629	35	1.726 - 33.532	5.548 - 29.710	Acceptable
Diesel Range Organics				Units reported in milligrams per liter		
Diesel Range Organics (DRO)	14.000	15.381	38	2.244 - 28.518	5.401 - 25.361	Acceptable
Gasoline Range Organics (GRO)				Units reported in micrograms per liter		
Gasoline Range Organics (GRO)	260.000	279.471	38	108.703 - 450.239	149.741 - 409.201	Acceptable
Aromatic Volatile Organics (BTEX)				Units reported in micrograms per liter		
Benzene	36.000	28.981	39	19.549 - 38.413	21.815 - 36.147	Acceptable
Ethyl Benzene	57.000	49.109	39	27.267 - 70.951	32.516 - 65.702	Acceptable
Toluene	50.000	42.635	39	26.716 - 58.554	30.542 - 54.728	Acceptable
Xylenes, Total	65.000	58.667	39	33.865 - 83.469	39.826 - 77.508	Acceptable
Organochlorine Pesticides				Units reported in micrograms per liter		
Γ-BHC (Lindane)	21.000	22.350	39	6.713 - 37.987	10.470 - 34.230	Acceptable
4,4'-DDD	15.000	30.670	39	3.438 - 57.902	9.982 - 51.358	Acceptable
4,4'-DDE	13.000	33.232	39	3.768 - 62.696	10.849 - 55.615	Acceptable

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Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Organochlorine Pesticides				**Units reported in micrograms per liter**		
4,4'-DDT	15.000	39.755	39	1.888 - 77.622	10.988 - 68.522	Acceptable
Endrin	19.000	23.395	39	3.597 - 37.833	12.427 - 34.363	Acceptable
PCB'S				**Units reported in micrograms per liter**		
PCB-1221	8.900	14.458	40	2.518 - 26.398	5.387 - 23.529	Acceptable
PCB's in Oil				**Units reported in milligrams per kilogram**		
PCB-1221	20.000	24.889	37	10.560 - 39.118	14.080 - 35.698	Acceptable
Polynuclear Aromatic Hydrocarbons (PAH's)				**Units reported in micrograms per liter**		
Acenaphthene	52.000	50.028	34	27.636 - 72.420	33.017 - 67.039	Acceptable
Acenaphthylene	45.000	41.717	34	18.479 - 64.955	24.063 - 59.371	Acceptable
Fluorene	28.000	31.767	34	17.889 - 45.645	21.224 - 42.310	Acceptable
Phenanthrene	34.000	38.817	34	24.152 - 53.482	27.676 - 49.958	Acceptable
Pyrene	10.000	12.983	34	4.559 - 21.407	6.584 - 19.382	Acceptable

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Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Chlorinated Herbicides				Units reported in micrograms per liter		
2,4-D	26.000	24.553	40	4.292 - 44.814	9.161 - 39.945	Acceptable
2,4,5-TP (Silvex)	27.000	29.430	40	6.847 - 52.013	12.274 - 46.586	Acceptable
Volatile Organics 8240 (ppb Level)				Units reported in micrograms per liter		
Carbon tetrachloride	39.000	38.970	45	22.721 - 55.219	26.626 - 51.314	Acceptable
Chloroform	53.000	52.691	45	35.186 - 70.196	39.392 - 65.990	Acceptable
Ethylbenzene	24.000	26.743	45	15.541 - 37.945	18.233 - 35.253	Acceptable
Tetrachloroethene	37.000	44.965	45	24.637 - 65.293	29.522 - 60.408	Acceptable
Trichloroethene	44.000	46.500	45	30.814 - 62.186	34.583 - 58.417	Acceptable
Semivolatile Organics 8270 (ppb Level)				Units reported in micrograms per liter		
Acenaphthene	40.000	36.496	46	13.392 - 59.600	18.944 - 54.048	Acceptable
Di-n-butylphthalate	53.000	36.023	46	3.791 - 68.255	11.537 - 60.509	Acceptable
1,4-Dichlorobenzene	57.000	45.983	46	19.484 - 72.482	25.852 - 66.114	Acceptable
Diethylphthalate	46.000	33.537	46	5.843 - 61.231	12.498 - 54.576	Acceptable
Dimethylphthalate	40.000	31.121	46	1.443 - 60.799	8.575 - 53.667	Acceptable
2,4-Dinitrophenol	< 20.000	22.631	46	0.391 - 44.871	5.736 - 39.526	Not Acceptable
Hexachlorobenzene	36.000	42.104	46	17.878 - 66.330	23.700 - 60.508	Acceptable

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Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Semivolatile Organics 8270 (ppb Level)				Units reported in micrograms per liter		
Hexachlorobutadiene	39.000	42.157	46	16.937 - 67.376	22.998 - 61.316	Acceptable
2-Nitrophenol	58.000	42.809	46	11.591 - 74.027	19.093 - 66.525	Acceptable
Pentachlorophenol	38.000	47.823	46	10.297 - 85.349	19.315 - 76.331	Acceptable

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Study Statistical Summaries: Metals

This page provides a total statistical breakdown for all metals parameters tested.

Trace Metals Parameters	Reporting Units	Calculated "True" Value	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
Aluminum (Al)	ug/l	300.000	308.414	48.812	404.086	212.742	434.349	182.479	431.000	204.000
Antimony (Sb)	ug/l	146.900	124.250	19.088	161.662	86.838	173.497	75.003	240.000	26.000
Arsenic (As)	ug/l	28.000	26.817	5.987	38.552	15.082	42.263	11.371	70.000	17.000
Barium (Ba)	ug/l	325.000	282.450	19.864	321.383	243.517	333.699	231.201	310.000	240.000
Beryllium (Be)	ug/l	34.670	29.050	2.104	33.174	24.926	34.478	23.622	40.000	16.400
Boron (B)	ug/l	250.000	243.773	25.983	294.700	192.846	310.809	176.737	332.000	197.000
Cadmium (Cd)	ug/l	72.670	67.193	5.131	77.250	57.136	80.431	53.955	129.000	36.000
Chromium (Cr)	ug/l	40.000	40.621	4.674	49.782	31.460	52.680	28.562	60.000	30.000
Cobalt (Co)	ug/l	50.000	51.465	5.051	61.365	41.565	64.497	38.433	60.000	33.000
Copper (Cu)	ug/l	35.000	44.744	6.747	57.968	31.520	62.151	27.337	110.000	31.000
Iron (Fe)	ug/l	125.000	158.867	39.755	236.787	80.947	261.435	56.299	346.000	100.000
Lead (Pb)	ug/l	35.000	29.256	5.328	39.699	18.813	43.002	15.510	60.000	19.000
Manganese (Mn)	ug/l	55.000	46.678	4.128	54.769	38.587	57.328	36.028	60.000	28.000
Mercury (Hg)	ug/l	11.110	6.596	1.340	9.222	3.970	10.053	3.139	15.000	0.420
Molybdenum (Mo)	ug/l	200.000	174.739	12.881	199.986	149.492	207.972	141.506	220.000	80.000
Nickel (Ni)	ug/l	111.110	105.679	10.416	126.094	85.264	132.552	78.806	140.000	36.000
Selenium (Se)	ug/l	65.000	53.129	18.634	89.652	16.606	101.205	5.053	91.000	29.000
Silver (Ag)	ug/l	78.010	60.411	6.343	72.843	47.979	76.776	44.046	78.000	17.000
Thallium (Tl)	ug/l	177.280	197.037	18.500	233.297	160.777	244.767	149.307	347.000	29.276
Vanadium (V)	ug/l	200.000	184.821	13.966	212.194	157.448	220.853	148.789	319.000	156.000
Zinc (Zn)	ug/l	111.000	115.852	10.010	135.472	96.232	141.678	90.026	156.000	68.000

Mineral Metals Parameters	Reporting Units	Calculated "True" Value	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
Calcium (Ca)	mg/l	30.000	27.561	1.968	31.418	23.704	32.638	22.484	31.200	22.500
Magnesium (Mg)	mg/l	25.000	23.381	1.993	27.287	19.475	28.523	18.239	27.700	19.600
Potassium (K)	mg/l	20.000	19.568	2.034	23.555	15.581	24.816	14.320	24.600	16.000
Sodium (Na)	mg/l	45.000	40.402	3.603	47.464	33.340	49.698	31.106	46.300	20.000
Hardness as CaCO3	mg/l	175.000	173.958	14.722	202.813	145.103	211.941	135.975	210.000	2.300

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Study Statistical Summaries: Inorganics

This page provides a total statistical breakdown for all general inorganic parameters tested.

General Inorganic Parameters	Reporting Units	Calculated "True" Value	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
Total Cyanide	mg/l	0.200	0.182	0.056	0.292	0.072	0.326	0.038	0.350	0.028
Total Phenolics	mg/l	2.750	1.843	0.418	2.662	1.024	2.921	0.765	1040.000	0.710
Total Organic Halide (TOX)	ug/l	115.000	47.006	14.103	74.648	19.364	83.392	10.620	80.000	20.000
Total Organic Carbon (TOC)	mg/l	42.000	50.140	3.134	56.283	43.997	58.226	42.054	57.000	6.000
Chemical Oxygen Demand (COD	mg/l	145.000	154.958	22.590	199.234	110.682	213.240	96.676	190.000	57.000
Biological Oxygen Demand (BOD	mg/l	22.000	15.980	5.009	25.798	6.162	28.903	3.057	37.000	7.000
Oil & Grease	mg/l	15.000	14.119	3.889	21.741	6.497	24.153	4.085	89.500	4.000
Total Residual Chlorine	mg/l	3.250	2.318	0.604	3.502	1.134	3.876	0.760	3.120	0.800
Hexachrome	ug/l	150.000	102.667	11.212	124.643	80.691	131.594	73.740	120.000	71.000

Inorganic Nutrient Parameters	Reporting Units	Calculated "True" Value	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
Ammonia-Nitrogen as N	mg/l	4.000	3.970	1.166	6.255	1.685	6.978	0.962	24.000	0.080
Nitrate+Nitrite-Nitrogen as N	mg/l	4.500	4.496	0.358	5.198	3.794	5.420	3.572	5.400	0.058
Kjeldahl-Nitrogen as N	mg/l	20.000	18.172	5.411	26.778	7.566	32.132	4.212	210.000	4.080
Orthophosphate as P	mg/l	3.000	2.932	0.842	4.582	1.282	5.104	0.760	4.100	0.140
Total Phosphorus as P	mg/l	6.000	4.728	1.371	7.415	2.041	8.265	1.191	20.100	0.370

Inorganic Mineral Parameters	Reporting Units	Calculated "True" Value	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
pH	S.U.	11.000	10.240	0.179	10.591	9.889	10.702	9.778	10.700	5.900
Specific Conductivity	umhos/cm	1250.000	1215.820	50.944	1315.670	1115.970	1347.256	1084.384	3080.000	1080.000
Total Dissolved Solids (TDS)	mg/l	700.000	644.552	34.615	712.397	576.707	733.859	555.245	715.000	520.000
Total Suspended Solids (TSS)	mg/l	55.000	45.167	14.230	73.058	17.276	81.880	8.454	178.000	16.600
Total Solids	mg/l	735.000	714.333	65.530	842.772	585.894	883.400	545.266	14500.000	600.000
Total Alkalinity	mg/l	175.000	175.708	4.319	184.173	167.243	186.851	164.565	250.000	53.000
Chloride (Cl)	mg/l	175.000	179.607	8.130	195.542	163.672	200.582	158.632	205.000	162.000
Fluoride (F)	mg/l	5.000	5.237	0.506	6.229	4.245	6.542	3.932	6.980	4.400
Sulfate (SO4)	mg/l	90.000	96.165	11.714	119.124	73.206	126.387	65.943	120.000	70.000

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Study Statistical Summaries: Organic General, G.C.

This page provides a total statistical breakdown for all general organic and g.c. parameters tested.

General Organic Parameters	Reporting Units	Calculated "True" Value	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
Total Petroleum Hydrocarbons	mg/l	19.000	17.629	6.164	29.710	5.548	33.532	1.726	349.000	1.000

Gas Chromatographic Organic Parameters	Reporting Units	Calculated "True" Value	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
Diesel Range Organics	mg/l	22.000	15.381	5.092	25.361	5.401	28.518	2.244	66.000	8.460
Gasoline Range Organics	ug/l	320.000	279.471	66.189	409.201	149.741	450.239	108.703	6380.000	164.000
Volatile Aromatics 602/8020										
Benzene	ug/l	35.000	28.981	3.656	36.147	21.815	38.413	19.549	53.000	22.000
Ethyl Benzene	ug/l	60.000	49.109	8.466	65.702	32.516	70.951	27.267	82.600	34.000
Toluene	ug/l	50.000	42.635	6.170	54.728	30.542	58.554	26.716	76.000	33.000
Xylenes	ug/l	70.000	58.667	9.613	77.508	39.826	83.469	33.865	99.000	35.000
Organochlorine Pesticides 608/8080										
4,4'-DDD	ug/l	45.000	30.670	10.555	51.358	9.982	57.902	3.438	52.000	10.000
4,4'-DDE	ug/l	50.000	33.232	11.420	55.615	10.849	62.696	3.768	50.000	5.600
4,4'-DDT	ug/l	40.000	39.755	14.677	68.522	10.988	77.622	1.888	66.000	8.400
Endrin	ug/l	30.000	23.395	5.596	34.363	12.427	37.833	8.957	38.000	10.000
Gamma-BHC (Lindane)	ug/l	28.000	22.350	6.061	34.230	10.470	37.987	6.713	36.000	11.000
Polychlorinated Biphenyls 608/8080										
PCB-1221	ug/l	22.500	14.458	4.628	23.529	5.387	26.398	2.518	33.000	8.400
PCB's in Oil 8080										
PCB-1221 in Oil	mg/kg	27.000	24.889	5.515	35.698	14.080	39.118	10.660	1400.000	1.400
Polynuclear Aromatic Hydrocarbons 610/8270/8310										
Acenaphthene	ug/l	60.000	50.028	8.679	67.039	33.017	72.420	27.636	66.000	34.000
Acenaphthylene	ug/l	55.000	41.717	9.007	59.371	24.063	64.955	18.479	55.000	18.000
Fluorene	ug/l	40.000	31.767	5.379	42.310	21.224	45.645	17.889	42.000	23.000
Phenanthrene	ug/l	50.000	38.817	5.684	49.958	27.676	53.482	24.152	47.000	29.000
Pyrene	ug/l	25.000	12.983	3.265	19.382	6.584	21.407	4.559	19.000	8.200
Chlorinated Herbicides 8150										
2,4,5-TP (Silvex)	ug/l	35.000	29.430	8.753	46.586	12.274	52.013	6.847	44.000	14.000
2,4-D	ug/l	26.000	24.553	7.853	39.945	9.161	44.814	4.292	110.000	2.100

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EPA0597 May 1997

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Study Statistical Summaries: Organic G.C./M.S.

This page provides a total statistical breakdown for all organic g.c./m.s. parameters tested.

Gas Chromatographic/M.S. Organic Parameters	Reporting Units	Calculated "True" Value	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
Volatile Organics 624/8240										
Carbon Tetrachloride	ug/l	40.000	38.970	6.298	51.314	26.626	55.219	22.721	48.000	25.000
Chloroform	ug/l	50.000	52.691	6.785	65.990	39.392	70.196	35.186	77.000	39.000
Ethylbenzene	ug/l	30.000	26.743	4.342	35.253	18.233	37.945	15.541	37.300	18.000
Tetrachloroethene	ug/l	55.000	44.965	7.879	60.408	29.522	65.293	24.637	63.000	33.000
Trichloroethene	ug/l	50.000	46.500	6.080	58.417	34.583	62.186	30.814	59.000	34.000
Semivolatile Organics 625/8270										
Acenaphthene	ug/l	45.000	36.496	8.955	54.048	18.944	59.600	13.392	54.000	18.000
Di-n-butylphthalate	ug/l	45.000	36.023	12.493	60.509	11.537	68.255	3.791	60.000	5.000
1,4-Dichlorobenzene	ug/l	70.000	45.983	10.271	66.114	25.852	72.482	19.484	63.000	27.000
Diethylphthalate	ug/l	45.000	33.537	10.734	54.576	12.498	61.231	5.843	55.000	3.000
Dimethylphthalate	ug/l	45.000	31.121	11.503	53.667	8.575	60.799	1.443	49.000	2.000
Hexachlorobenzene	ug/l	55.000	42.104	9.390	60.508	23.700	66.330	17.878	62.000	25.000
Hexachlorobutadiene	ug/l	65.000	42.157	9.775	61.316	22.998	67.377	16.937	62.000	25.000
2,4-Dinitrophenol	ug/l	50.000	22.631	8.620	39.526	5.736	44.871	0.391	40.200	9.100
2-Nitrophenol	ug/l	65.000	42.809	12.100	66.525	19.093	74.027	11.591	64.000	23.000
Pentachlorophenol	ug/l	70.000	47.823	14.545	76.331	19.315	85.349	10.297	68.000	16.000

16 December 1997

Mr. Rick Wilburn
TriMatrix Laboratories, Inc.
5555 Glenwood Hills Parkway, SE
Grand Rapids, MI 49588

asi
Analytical Standards, Incorporated
P.O. Box 183
2307 Camden Ave.
Parkersburg, WV
26102-0183
304.422.4ASI
304.422.4761 fax

Dear Mr. Wilburn,

Enclosed is the final report of SW-004, our solid waste performance evaluation study. We would like to thank you for participating and hope you will continue in our program. We would also like to congratulate you and the entire staff at TriMatrix Laboratories, Inc. Your facility ranked fourth out of twenty-five laboratories participating in our solid waste study, SW-004. Finally, we have enclosed a laboratory questionnaire. Please take a few minutes, complete it and FAX or mail it back to **asi.** Your input is very important to us and is essential if we are to improve. We also feel it is extremely important to maintain good communication with our clients, so please send the laboratory questionnaire back to us with your input.

Your report is broken down in the following sections: a summary of laboratory results, a statistical overview for the entire study and a copy of the data submission form.

- The data summary section offers a summarized breakdown of your laboratory results. In addition, we have included comment fields that note contamination or other less serious errors. To complete this section, we have included a page of definitions just before the summary.

- The statistical overview is provided for the entire study, including the calculated "true value," the standard deviations, and the highest and lowest reported values for each parameter.

- The quality control charts are attached for every inorganic & organic parameter analyzed. In all cases, outliers were included on the charts unless their presence would have greatly distorted the graph axis. Please note, we have placed red dots on each chart to make locating your position easier.

The BenchMark program has been designed to be the most complete state-of-the-art program available anywhere. We have combined the ease of use that whole volume samples afford with the statistical benefits of a round-robin program.

Please also remember ACAS, the Automatic Corrective Action Program. At your request, we will review your laboratory's results, and ship an ON TARGET sample from the same lot for all 'not acceptable' parameters. This provides a corrective action sample immediately and makes determining where your error was much easier. Should you have any additional questions or comments, please feel free to contact me at (304) 422-4274. Thank you again for supporting **asi.** We look forward to serving you again in the near future.

Sincerely
ANALYTICAL STANDARDS, INC.

Fred Anderson

Frederick S. Anderson
President

The BenchMark Laboratory Program

SW-004 October 1997

TriMatrix Laboratories, Inc. Laboratory #: 000082

asi
Analytical Standards, Incorporated

This report was prepared by :

Analytical Standards, Incorporated
6331 Emerson Ave., P.O. Box 4060
Parkersburg, West Virginia 26104-4060
1-800-AUDIT-44 (283-4844)

for the exclusive use of:
TriMatrix Laboratories, Inc.

Any questions regarding report contents should be directed to asi at the number above.

October 1997 Audit #SW004 Laboratory #: 000082

Summary Report For

TriMatrix Laboratories, Inc.
5555 Glenwood Hills Pkwy SE
Grand Rapids, MI 49588

Introduction & Definitions

We would like to thank you for participating in our program. The **Environmental Performance Audit** program is the state of the art - most comprehensive performance audit of its kind. The double-blind format was designed so that samples are introduced into the laboratory without the laboratory's knowledge. All audit samples are made up to look like "real world" samples, and sample delivery is broken down into four shipments to further prevent your analyst from recognizing them as audit samples. In this way, samples are treated like everyday samples from the extraction process through analysis. Thus, allowing you to see how your laboratory performed on a daily basis rather than the best-case scenario.

The executive summary page provides a score for each laboratory based on the number of correct answers that were reported out of 100 possible points for the inorganic and organic parameters, as well as an overall score. Point value was determined based on the total number of parameters that you participated in. The laboratory evaluation page provides a breakdown of both the return times as well as a sampling kit review, if applicable.

The statistical section provides the numerical breakdown for each individual laboratory for each particular audit. This includes mean, warning, and control limits as well as a score based on these limits. The warning limits were established as plus or minus 1.96 times the standard deviation from the mean, with the control limits at plus or minus 2.58 times the standard deviation.

The last two sections provide the quality control charting for all parameters, both inorganic and organic. This allows you the opportunity to view the entire database. All laboratories that were outliers, and those reporting less than values, have also been noted on each graph.

The following section is provided to explain the terminology used throughout this report.

Reported Values: This refers to the results provided by your laboratory.

Mean Recovery: Refers to the statistically calculated mean of all reporting laboratories after any outliers have been removed.

# of Labs: Provides a count of the total number of reporting laboratories.

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Acceptance Limits: Provides the calculated acceptance range for the study determined at the 99% confidence level, calculated as 2.58 times the standard deviation from the mean.

Warning Limits: Provides the calculated warning range for the study determined at the 95% confidence level, calculated as 1.96 times the standard deviation from the mean.

Performance Evaluation: Provides a rated review of how your laboratory performed using the following criteria:

- **Not Reporting:** No data was submitted for this parameter.
- **See Below:** Provides for special notations in the comment field.
- **Acceptable:** Reported value fell within the 95% confidence limits.
- **Check for Error:** Reported value fell within the 99% confidence limits but outside the 95% confidence limits.
- **Not Acceptable:** Reported value fell outside the 99% confidence limits.

Outlier Removal: Evaluation and removal of outliers, if necessary, is done using the ASTM recommended t test.

Respectively Submitted: 30 October, 1997

Frederick S. Anderson

Frederick S. Anderson
President

asi Analytical Standards, Incorporated

Executive Summary

LABORATORY SUMMARYS	INORGANICS	ORGANICS	OVERALL
Your Laboratories Evaluation Score was:	**94.12%** (100% Maximum)	**95,56%** (100% Maximum)	**95.16%** (100% Maximum)
Total Number of Parameters Participated In:	**17** (17 maximum)	**47** (47 maximum)	**64** (64 maximum)
Total Number of Parameters Scored:	17	45	62
The Average Laboratory Evaluation Score Was:	95.36%	85.10%	90.70%
The Highest Laboratory Evaluation Score Was:	100.00%	97.83%	100.00%
The Lowest Laboratory Evaluation Score Was:	87.50%	35.71%	80.43%

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Trimatrix Laboratories | Laboratory # 000082

Inorganic Summary Report

Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Trace Metals in soil (ppm)				**Units reported in milligrams per kilogram**		
Aluminum (Al)	12900.000	8413.330	25	160.935 - 16665.725	2459.421 - 14367.239	Acceptable
Arsenic (As)	51.200	26.500	25	0.001 - 53.281	7.178 - 45.822	Check for Error
Barium (Ba)	132.000	123.535	25	77.709 - 169.361	90.472 - 156.598	Acceptable
Beryllium (Be)	3.700	2.933	25	1.339 - 4.527	1.783 - 4.083	Acceptable
Cadmium (Cd)	12.300	10.273	25	4.462 - 16.084	6.080 - 14.465	Acceptable
Chromium (Cr)	40.500	27.211	25	5.487 - 48.935	11.537 - 42.884	Acceptable
Copper (Cu)	41.800	37.349	25	22.059 - 52.639	26.317 - 48.381	Acceptable
Iron (Fe)	20050.000	14768.000	25	676.981 - 28859.019	4601.661 - 24934.339	Acceptable
Lead (Pb)	25.600	24.087	25	17.474 - 30.700	19.316 - 28.858	Acceptable
Manganese (Mn)	188.000	168.733	25	16.532 - 320.934	58.924 - 278.542	Acceptable
Mercury (Hg)	0.606	0.759	25	0.279 - 1.239	0.413 - 1.105	Acceptable
Nickel (Ni)	37.700	27.865	25	1.987 - 53.743	9.194 - 46.536	Acceptable
Selenium (Se)	9.620	4.759	25	0.001 - 11.026	0.238 - 9.280	Check for Error
Silver (Ag)	1.600	1.724	25	0.001 - 3.747	0.264 - 3.184	Acceptable
Thallium (Tl)	2.340	2.311	25	0.770 - 3.352	1.199 - 3.423	Acceptable
Zinc (Zn)	106.100	97.208	25	74.640 - 119.776	80.926 - 113.490	Acceptable

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Trimatrix Laboratories Laboratory # 000082

Inorganic Summary Report

Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Total Cyanide in Soil				Units reported in Milligrams per Kilogram		
Total Cyanide in Soil	450.000	776.000	19	0.001 - 1588.783	189.596 - 1362.404	Acceptable

The Environmental Performance Audit

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Trimatrix Laboratories | Laboratory # 000082

Organic Summary Report

Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Organochlorine Pesticides in Soil				**Units reported in micrograms per kilogram**		
Aldrin	94.600	100.775	21	53.482 - 148.068	66.655 - 134.895	Acceptable
Gamma-BHC (Lindane)	71.900	77.125	21	26.212 - 128.038	40.392 - 113.858	Acceptable
4,4'-DDD	88.500	99.013	21	49.384 - 148.642	63.207 - 134.819	Acceptable
4,4'-DDE	91.600	101.875	21	39.033 - 164.717	56.536 - 147.214	Acceptable
4,4'-DDT	251.000	355.875	21	145.159 - 566.591	203.849 - 507.901	Acceptable
Dieldrin	83.000	92.987	21	47.310 - 138.664	60.032 - 125.942	Acceptable
Endrin	122.000	137.150	21	70.026 - 204.274	88.721 - 185.579	Acceptable
Heptachlor	152.000	181.125	21	99.959 - 262.291	122.565 - 239.685	Acceptable
Volatile Organics in Soil				**Units reported in micrograms per kilogram**		
2-Butanone (MEK)	< 100.000	102.786	25	7.432 - 198.140	33.990 - 171.582	Not Acceptable
1,2-Dichlorobenzene	109.000	168.000	25	0.001 - 379.702	15.262 - 320.738	Acceptable
1,3-Dichlorobenzene	37.600	97.086	25	0.001 - 216.992	10.576 - 183.596	Acceptable
Styrene	< 10.000	24.050	25	0.001 - 50.784	4.762 - 43.338	Not Acceptable
1,2,4-Trichlorobenzene	276.000	430.333	25	54.230 - 806.436	158.984 - 701.682	Acceptable
1,1,2-Trichloroethane	11.800	87.350	25	0.001 - 199.985	6.086 - 168.614	Acceptable
Xylenes (Total)	< 30.000	13.720	25	2.599 - 24.841	5.696 - 21.744	* See Below

**Please lower the detection limit for (total) Xylene.*

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Organic Summary Report

Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Semivolatile Organics in soil				Units reported in Micrograms per kilogram		
Anthracene	5580.000	7080.000	22	584.792 - 13575.208	2393.860 - 11766.140	Acceptable
Benzo(a)pyrene	4690.000	6917.780	22	1378.169 - 12457.391	2921.080 - 10914.479	Acceptable
Butyl benzyl phthalate	2960.000	4097.500	22	779.300 - 7415.700	1703.497 - 6491.503	Acceptable
2-Chloronaphthalene	4290.000	5271.250	22	1713.547 - 8828.953	2704.451 - 7838.049	Acceptable
2-Chlorophenol	5870.000	7215.560	22	1241.316 - 13189.804	2905.283 - 11525.837	Acceptable
Chrysene	936.000	1372.440	22	443.297 - 2301.583	702.085 - 2042.795	Acceptable
Di-n-butylphthalate	4590.000	6071.250	22	592.699 - 11549.801	2118.604 - 10023.896	Acceptable
1,3-Dichlorobenzene	2620.000	2201.430	22	942.705 - 3460.155	1293.289 - 3109.571	Acceptable
1,4-Dichlorobenzene	2900.000	2401.430	22	745.769 - 4057.091	1206.909 - 3595.951	Acceptable
1,2-Dichlorobenzene	2260.000	2258.570	22	699.029 - 3818.111	1133.398 - 3383.742	Acceptable
Diethylphthalate	2830.000	3873.330	22	312.051 - 7434.609	1303.951 - 6442.709	Acceptable
2,4-Dimethylphenol	< 330.000	135.000	22	18.095 - 251.905	50.656 - 219.344	* See Below
Dimethylphthalate	3130.000	4447.780	22	311.033 - 8584.527	1463.214 - 7432.345	Acceptable
2,4-Dinitrophenol	3910.000	4372.860	22	1992.108 - 6753.612	2655.203 - 6090.516	Acceptable
Di-n-octylphthalate	2520.000	3643.750	22	401.719 - 6885.781	1304.700 - 5982.800	Acceptable
Fluorene	5130.000	7025.710	22	584.708 - 13466.712	2378.679 - 11672.742	Acceptable
Hexachlorobenzene	6000.000	7266.670	22	2004.646 - 12528.694	3470.243 - 11063.097	Acceptable
Hexachlorobutadiene	4330.000	4461.430	22	573.960 - 8348.900	1656.712 - 7266.148	Acceptable

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Organic Summary Report

Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Semivolatile Organics in soil				**Units reported in Micrograms per kilogram**		
Hexachlorocyclopentadiene	3830.000	3352.860	22	480.405 - 6225.315	1280.451 - 5425.269	Acceptable
Napthalene	4970.000	5020.000	22	242.762 - 9797.238	1573.335 - 8466.665	Acceptable
2-Nitrophenol	2280.000	3128.890	22	446.044 - 5811.736	1193.279 - 5064.501	Acceptable
4-Nitrophenol	7180.000	6974.290	22	228.285 - 13720.295	2107.206 - 11841.374	Acceptable
Pentachlorophenol	5220.000	6392.220	22	657.776 - 12126.664	2254.954 - 10529.486	Acceptable
Phenanthrene	3730.000	4553.750	22	1854.967 - 7252.533	2606.641 - 6500.859	Acceptable
Phenol	4180.000	4697.780	22	1678.235 - 7717.325	2519.249 - 6876.310	Acceptable
1,2,4-Trichlorobenzene	4000.000	4528.750	22	767.156 - 8290.344	1814.848 - 7242.652	Acceptable
2,4,6-Trichlorophenol	2280.000	3004.440	22	554.075 - 5454.805	1236.560 - 4772.320	Acceptable

*5-Chloro-2-methylaniline was reported at 268 ppb. *Please lower the detection limit for 2,4-Dimethylphenol.*

PCB's in Soil				**Units reported in Micrograms per kilogram**		
PCB-1248	247.000	307.000	22	2.393 - 611.607	87.233 - 526.767	Acceptable

Chlorinated Hebicides in Soil				**Units reported in micrograms per Kilogram**		
2,4-D	151.000	122.043	19	38.123 - 205.963	61.497 - 182.589	Acceptable

The Environmental Performance Audit

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Organic Summary Report

Analytical Standards, Incorporated

Compound	Reported Values	Mean Recovery	# of Labs	Acceptance Limits	Warning Limits	Performance Evaluation
Chlorinated Hebicides in Soil				Units reported in micrograms per Kilogram		
2,4-DB	98.500	96.333	19	23.108 - 169.558	43.503 - 149.163	Acceptable
2,4,5-T	91.000	78.429	19	21.544 - 135.314	37.388 - 119.470	Acceptable
2,4,5-TP (Silvex)	103.000	83.229	19	14.165 - 152.293	33.401 - 133.057	Acceptable

asi Analytical Standards, Incorporated

Study Statistical Summary

These pages provides a total statistical breakdown for the parameters tested.

Trace Metals Parameters	Reporting Units	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
Aluminum (Al)	mg/kg	8413.330	2769.260	14367.239	2459.421	16665.725	160.935	18651.000	4000.000
Arsenic (As)	mg/kg	26.500	8.987	45.822	7.178	53.281	0.001	51.200	15.000
Barium (Ba)	mg/kg	123.535	15.378	156.598	90.472	169.361	77.709	154.000	90.000
Beryllium (Be)	mg/kg	2.933	0.535	4.083	1.783	4.527	1.339	4.000	2.100
Cadmium (Cd)	mg/kg	10.273	1.950	14.466	6.081	16.084	4.462	14.500	6.300
Chromium (Cr)	mg/kg	27.211	7.290	42.885	11.538	48.935	5.487	40.500	3.700
Copper (Cu)	mg/kg	37.349	5.131	48.381	26.317	52.639	22.059	48.400	24.000
Iron (Fe)	mg/kg	14768.000	4728.530	24934.340	4601.661	28859.019	676.981	22781.000	5420.000
Lead (Pb)	mg/kg	24.087	2.219	28.858	19.316	30.700	17.474	28.400	15.000
Manganese (Mn)	mg/kg	168.733	51.074	278.542	58.924	320.934	16.532	267.000	125.000
Mercury (Hg)	mg/kg	0.759	0.161	1.105	0.413	1.239	0.279	1.100	0.562
Nickel (Ni)	mg/kg	27.865	8.684	46.536	9.194	53.743	1.987	42.000	3.700
Selenium (Se)	mg/kg	4.759	2.103	9.280	0.238	11.026	0.001	9.620	2.000
Silver (Ag)	mg/kg	1.724	0.679	3.184	0.264	3.747	0.001	3.100	0.990
Thallium (Tl)	mg/kg	2.311	0.517	3.423	1.199	3.852	0.770	6.300	1.300
Zinc (Zn)	mg/kg	97.208	7.573	113.490	80.926	119.776	74.640	820.000	85.100
Total Cyanide	ug/kg	776.000	272.746	1362.404	189.596	1588.783	0.001	6790.000	0.000

Pesticides	Reporting Units	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
Aldrin	ug/kg	100.775	15.870	134.896	66.655	148.068	53.482	130.000	70.000
g-BHC [gamma] (Lindane)	ug/kg	77.125	17.085	113.858	40.392	128.038	26.212	110.000	45.000
4,4'-DDD	ug/kg	99.013	16.654	134.819	63.207	148.642	49.384	130.000	68.000
4,4'-DDE	ug/kg	101.875	21.088	147.214	56.536	164.717	39.033	142.000	60.000
4,4'-DDT	ug/kg	355.875	70.710	507.901	203.849	566.591	145.159	480.000	203.000
Dieldrin	ug/kg	92.987	15.328	125.942	60.032	138.664	47.310	120.000	61.000
Endrin	ug/kg	137.150	22.525	185.579	88.721	204.275	70.026	170.000	90.000
Heptachlor	ug/kg	181.125	27.237	239.685	122.565	262.291	99.959	230.000	130.000

Analytical Standards, Incorporated

Study Statistical Summary

These pages provides a total statistical breakdown for the parameters tested.

PCB's	Reporting Units	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
Aroclor-1248	ug/kg	307.000	102.217	526.767	87.233	611.607	2.393	520.000	175.000

Regulated Herbicides	Reporting Units	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
2,4-D	ug/kg	122.043	28.161	182.589	61.497	205.963	38.123	155.000	70.000
2,4-DB	ug/kg	96.333	24.572	149.163	43.503	169.558	23.108	150.000	45.000
2,4,5-T	ug/kg	78.429	19.089	119.470	37.388	135.314	21.544	295.000	46.800
2,4,5-TP (Silvex)	ug/kg	83.229	23.176	133.057	33.401	152.293	14.165	151.000	42.000

Volatiles	Reporting Units	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
1,2-Dichlorobenzene	ug/kg	168.000	71.011	320.738	15.262	379.702	0.001	378.000	11.000
1,3-Dichlorobenzene	ug/kg	97.086	40.237	183.596	10.576	216.992	0.001	213.000	7.500
Styrene	ug/kg	24.050	8.971	43.338	4.762	50.784	0.001	53.700	3.580
1,2,4-Trichlorobenzene	ug/kg	430.333	126.209	701.682	158.984	806.436	54.230	620.000	126.000
1,1,2-Trichloroethane	ug/kg	87.350	37.797	168.614	6.086	199.985	0.001	210.000	11.800
Xylene (Total)	ug/kg	13.720	3.732	21.744	5.696	24.841	2.599	29.500	3.000

Semi-voatiles	Reporting Units	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
Anthracene	ug/kg	7080.000	2179.600	11766.140	2393.860	13575.208	584.792	11000.000	4500.000
Benzo (a) pyrene	ug/kg	6917.780	1858.930	10914.480	2921.081	12457.391	1378.169	9000.000	4360.000
Butyl benzyl phthalate	ug/kg	4097.500	1113.490	6491.504	1703.497	7415.700	779.300	9700.000	2280.000
2-Chloronaphthalene	ug/kg	5271.250	1193.860	7838.049	2704.451	8828.953	1713.547	7500.000	2690.000
2-Chlorophenol	ug/kg	7215.560	2004.780	11525.837	2905.283	13189.804	1241.316	11000.000	3980.000
Chrysene	ug/kg	1372.440	311.793	2042.795	702.085	2301.583	443.297	2000.000	900.000
Di-n-butylphthalate	ug/kg	6071.250	1838.440	10023.896	2118.604	11549.801	592.699	11000.000	4100.000
1,2-Dichlorobenzene	ug/kg	2258.570	523.336	3383.742	1133.398	3818.111	699.029	3300.000	320.000
1,3-Dichlorobenzene	ug/kg	2201.430	422.391	3109.571	1293.289	3460.155	942.705	3200.000	138.000
1,4-Dichlorobenzene	ug/kg	2401.430	555.591	3595.951	1206.909	4057.091	745.769	3100.000	167.000
Diethylphthalate	ug/kg	3873.330	1195.060	6442.709	1303.951	7434.609	312.051	5812.000	2260.000
2,4-Dimethylphenol	ug/kg	135.000	39.230	219.345	50.656	251.905	18.095	205.000	95.000

asi Analytical Standards, Incorporated

Study Statistical Summary

These pages provides a total statistical breakdown for the parameters tested.

Semi-volatiles (continued)	Reporting Units	Statistical Mean	Standard Deviation	Upper Warning Limits	Lower Warning Limits	Upper Control Limits	Lower Control Limits	Highest Reported	Lowest Reported
Dimethylphthalate	ug/kg	4447.780	1388.170	7432.346	1463.214	8584.527	311.033	7100.000	2460.000
2,4-Dinitrophenol	ug/kg	4372.860	798.910	6090.517	2655.204	6753.612	1992.108	5760.000	840.000
Di-n-octylphthalate	ug/kg	3643.750	1087.930	5982.800	1304.701	6885.781	401.719	9700.000	2410.000
Fluorene	ug/kg	7025.670	2161.410	11672.702	2378.639	13466.672	584.668	12000.000	4400.000
Hexachlorobenzene	ug/kg	7266.670	1765.780	11063.097	3470.243	12528.694	2004.646	10036.000	5080.000
Hexachlorobutadiene	ug/kg	4461.430	1304.520	7266.148	1656.712	8348.900	573.960	7600.000	1240.000
Hexachlorocyclopentadiene	ug/kg	3352.860	963.911	5425.269	1280.451	6225.315	480.405	5100.000	874.000
Naphthalene	ug/kg	5020.000	1603.100	8466.665	1573.335	9797.238	242.762	7766.000	2000.000
2-Nitrophenol	ug/kg	3128.890	900.284	5064.501	1193.279	5811.736	446.044	4212.000	1210.000
4-Nitrophenol	ug/kg	6974.290	2263.760	11841.374	2107.206	13720.295	228.285	11000.000	2410.000
Pentachlorophenol	ug/kg	6392.220	1924.310	10529.487	2254.954	12126.664	657.776	10000.000	3810.000
Phenanthrene	ug/kg	4553.750	905.632	6500.859	2606.641	7252.533	1854.967	6200.000	3130.000
Phenol	ug/kg	4697.780	1013.270	6876.311	2519.250	7717.325	1678.235	6100.000	3040.000
1,2,4-Trichlorobenzene	ug/kg	4528.750	1262.280	7242.652	1814.848	8290.344	767.156	6600.000	1120.000
2,4,6-Trichlorophenol	ug/kg	3004.440	822.270	4772.321	1236.560	5454.805	554.075	4100.000	1330.000

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

RUSSELL J. HARDING, Director

REPLY TO:

SURFACE WATER QUALITY DIVISION
KNAPP'S CENTRE
PO BOX 30273
LANSING MI 48909-7773

T E L E C O P Y C O V E R S H E E T

PLEASE DELIVER THE FOLLOWING PAGES TO:

NAME: Craig Rentoff

FIRM:

PHONE NO:

FAX NUMBER:

FROM: Art Ostrzenski

FIRM: SURFACE WATER QUALITY DIVISION

PHONE NO: 517-335-4491

FAX NUMBER: 517-373-9958

TOTAL NUMBER OF PAGES (including cover sheet): 9

IF YOU DO NOT RECEIVE ALL PAGES, PLEASE CALL BACK AS SOON AS POSSIBLE.

COMMENTS: Draft Survey schedule & directions. for the Detroit Coke/Upper Detroit Seds/Rouge River Seds Sampling Oct 20-31, 1997. Any questions please give me a call

- ART

ORIGINAL: ☑ Will Not Follow ☐ Will Be Mailed ☐ Will Be Delivered

IF 0100a
(10/96)

Appendix 3.

Upper Detroit River Sediment Sampling Draft Survey Plan

October 20-31, 1997

Schedule

Upper Detroit River/Rouge River Sediment Survey			
Draft Checklist	udtrsvy.xls		
Boat Launch:	Belanger Boat Launch		
Boat Overnight Storage/Work Area:	USACE Fort Wayne Boat Dock		
Marine Radios:	Mudpuppy, ERT Whaler, Shorestation		
		MUDPUPPY STAFF	
		USEPA	MDEQ
Day 1:	am: Sediment Survey: Upper Detroit	Joe, Scott	Art
Oct 20	pm: Sediment Survey: Upper Detroit		
Day 2:	am: Sediment Survey: Upper Detroit	Joe, Scott	Art
Oct 21	pm: Sediment Survey: Upper Detroit		
Day 3:	am: Set up equipment for sonar and video	Joe, Scott	Art
Oct 22	pm: Sonar/Video Survey off Detroit Coke		
Day 4:	am: Sonar/Video Survey Detroit Coke/Detroit River:**MEDIA DAY**	Joe, Scott, Marc	Art
Oct 23	pm: Sonar/Video Survey Detroit Coke/Detroit River		
Day 5:	am: Sonar/Video Survey Detroit Coke/Detroit River	Joe, Scott, Marc	Art
Oct 24	pm: Sonar/Video Survey Detroit Coke/Detroit River:		
Day 6:	am: Sediment Survey Rouge River	Joe, Brian	Art
Oct 27	pm: Sediment Survey Rouge River		
Day 7:	am: Sediment Survey Rouge River	Joe, Brian	Art
Oct 28	pm: Sediment Survey Rouge River		
Day 8:	am: Sediment Survey Rouge River	Joe, Brian	Art
Oct 29	pm: Sediment Survey Rouge River		
Day 9 :	am: Biogenesis Collection-Allied Fuel Slip	Joe, Brian	Art
Oct 30:	pm: Biogenesis Collection-Allied Fuel Slip		
Day 10:	am: Demobilize/ Deliver Samples to Lab	Joe, Brian	Art
Oct 31:	pm: End Of Survey		

Directions to places of interest.

Lodging:

Cross Country Inn
18777 Northline Dr.
Southgate, MI 48195
313-287-8340

$57/night

I-75 to Exit 37 (Northline/Allen Rd). Take Northline Dr. west for 1/4 mile.

Overnight Boat Docking:

U.S. Army Corp of Engineers-Fort Wayne Boat Yard
I-75 to Livernois (north of Exit 37). Take Livernois right (south) to USACE gate.
Open from 7am-530pm, M-F
Contact: Steve Thomson, USACE. 313-554-0919

Boat Launching Sites:

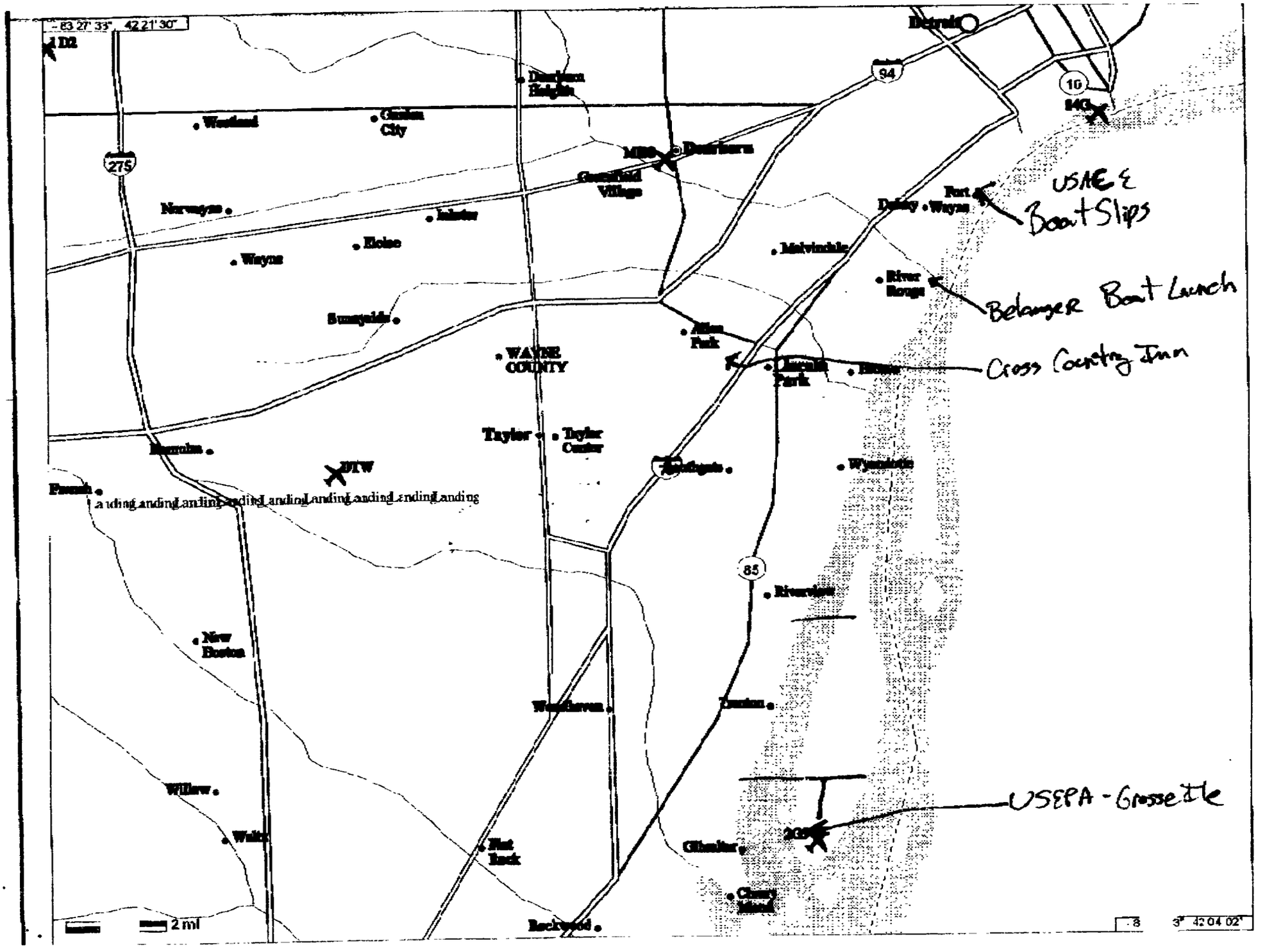
Belanger Park (at the foot of Rouge River/Detroit River):
Jefferson Ave to Great Lakes Drive. east on Great Lakes to Marion. Marion north to Belanger Park Dr, go east.

There are also boat launches below the Ambassador Bridge, and below Fort Wayne.

Boat Gasoline Sites
(Across from Belle Isle)
Keans Marina- 331-9911 Open thru October

Contacts:

MDEQ-SWQD:	Art Ostaszewski 517-335-4491
USEPA GLNPO:	Marc Tuchman 312-353-1369
	Scott Cinowski 312-353-9184
	Brian Stage 312-353-3565
R/V Mudpuppy.	Joe Bonem 517-894-1038
USEPA-Superfund.	Rose Ellison 313-692-7689
USEPA-ERT	DAVE CHARTERS 732-906-6825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10
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Westland
Garden City
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MRS
Dearborn
Greenfield Village
Norwayne
Inkster
Eloise
Wayne
Sunnyside
Melvindale
Ford
Delray
Wayne
River Rouge
Allen Park
WAYNE COUNTY
Lincoln Park
Ecorse
Taylor
Taylor Center
DTW
Romulus
Flat Rock
Wyandotte
Riverview
New Boston
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Gibraltar
Rockwood
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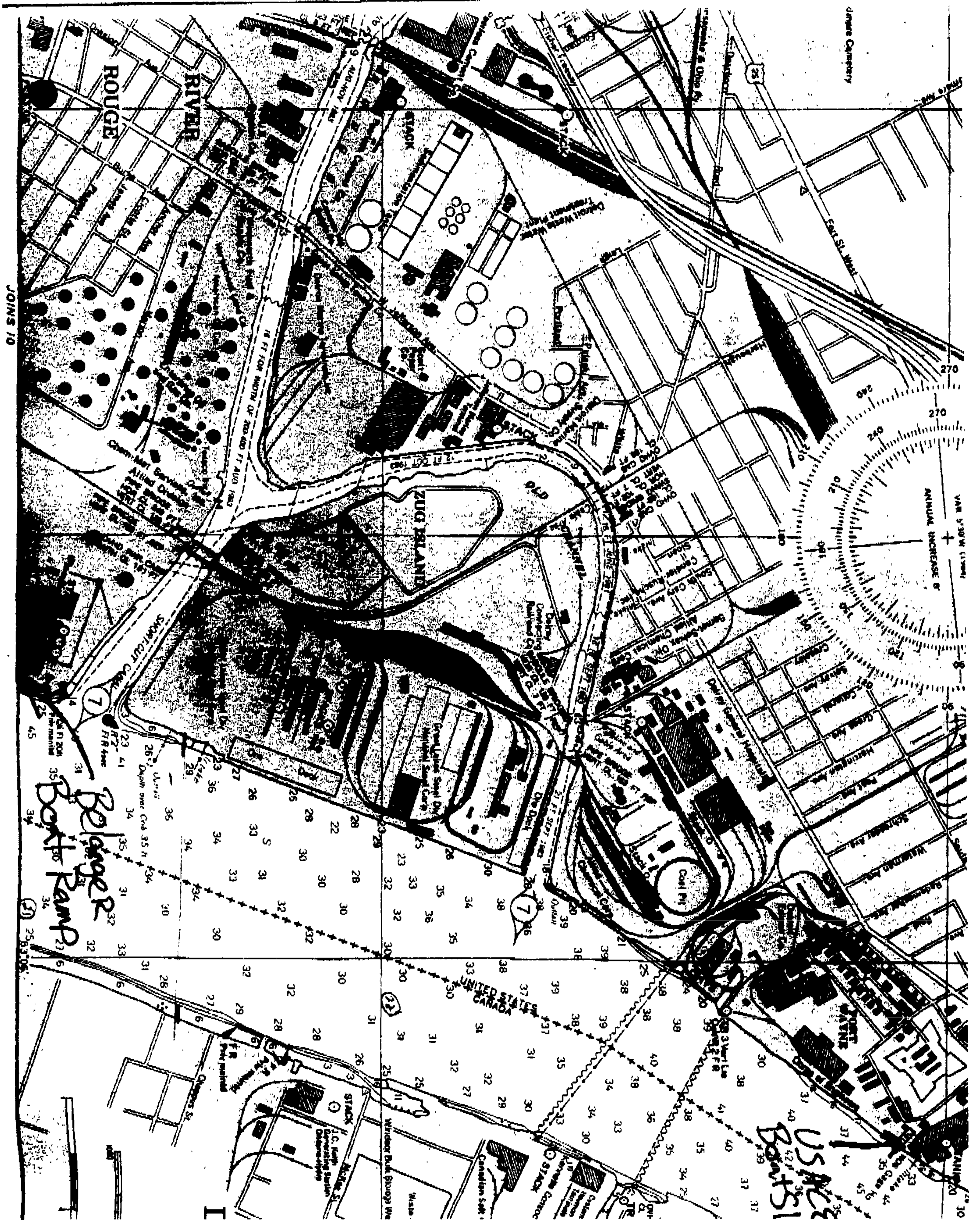
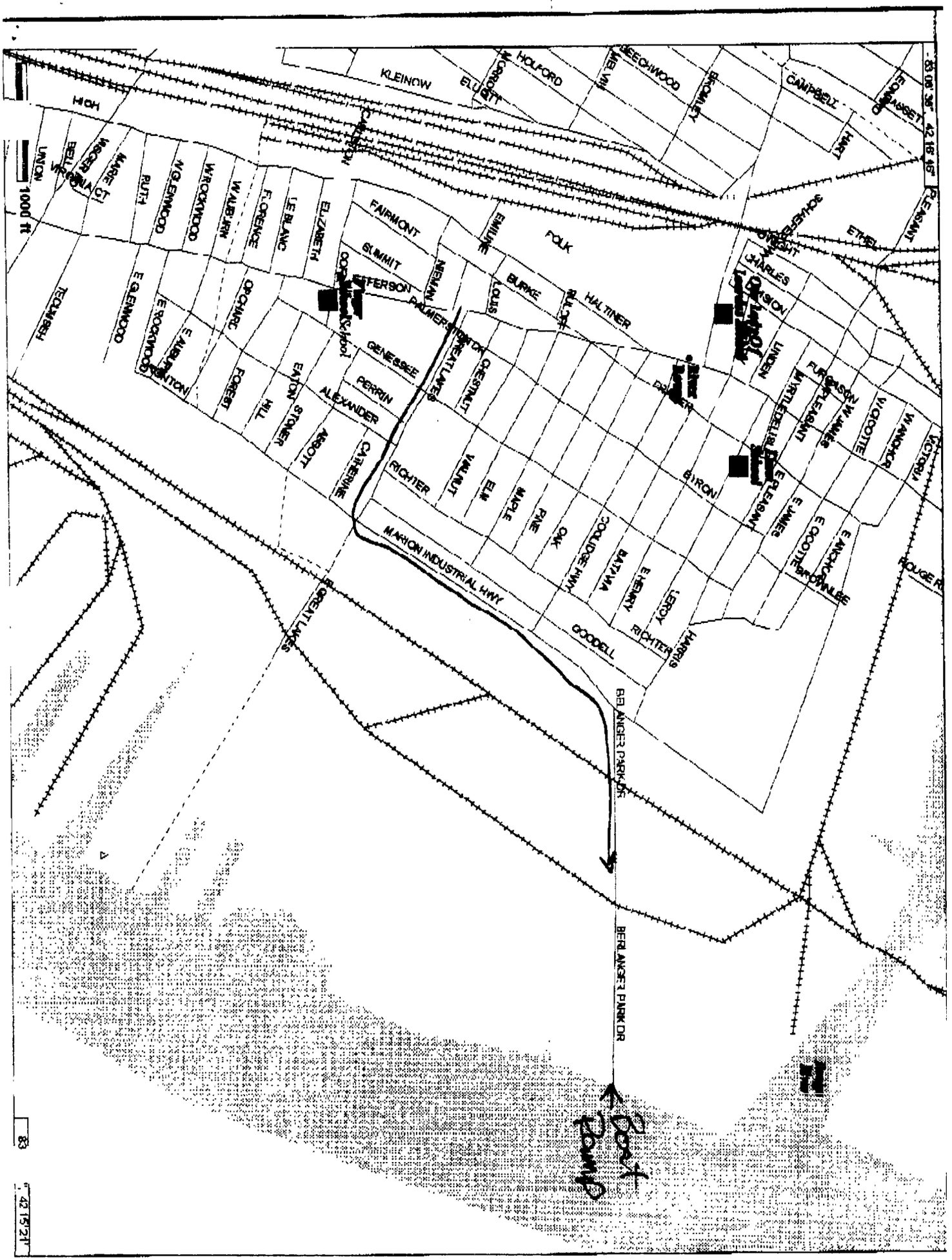
USAE & Boat Slips
Belanger Boat Launch
Cross Country Inn
USEPA - Grosse Ile


ROUGE
RIVER
ZUG ISLAND
JOINS 10
SHORT CUT CANAL
UNITED STATES
CANADA
FORT WAYNE
Coal Pile
Belanger Boat Ramp
USACE Boats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SUMMIT
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BURKE
HALTINER
CHARLES
NEWAN
LEE BLANC
ELIZABETH
W. ALBERT
FLORENCE
W. GEMWOOD
W. ROCKWOOD
RUTH
MARIE
BELLA VISTA
UNION
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TECUMSEH
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ORCHARD
FOREST
HILL
EATON
STONER
ALEXANDER
PERRIN
GENESSEE
CHESTNUT
WALNUT
ELM
MAPLE
PINE
OAK
COOLIDGE HWY
BATAVIA
EMERY
LEROY
RICHTER
HARRIS
GOODELL
BIRON
ERLEANT
E. JAMES
E. COOTTE
E. MACKINAW
W. JAMES
W. COOTTE
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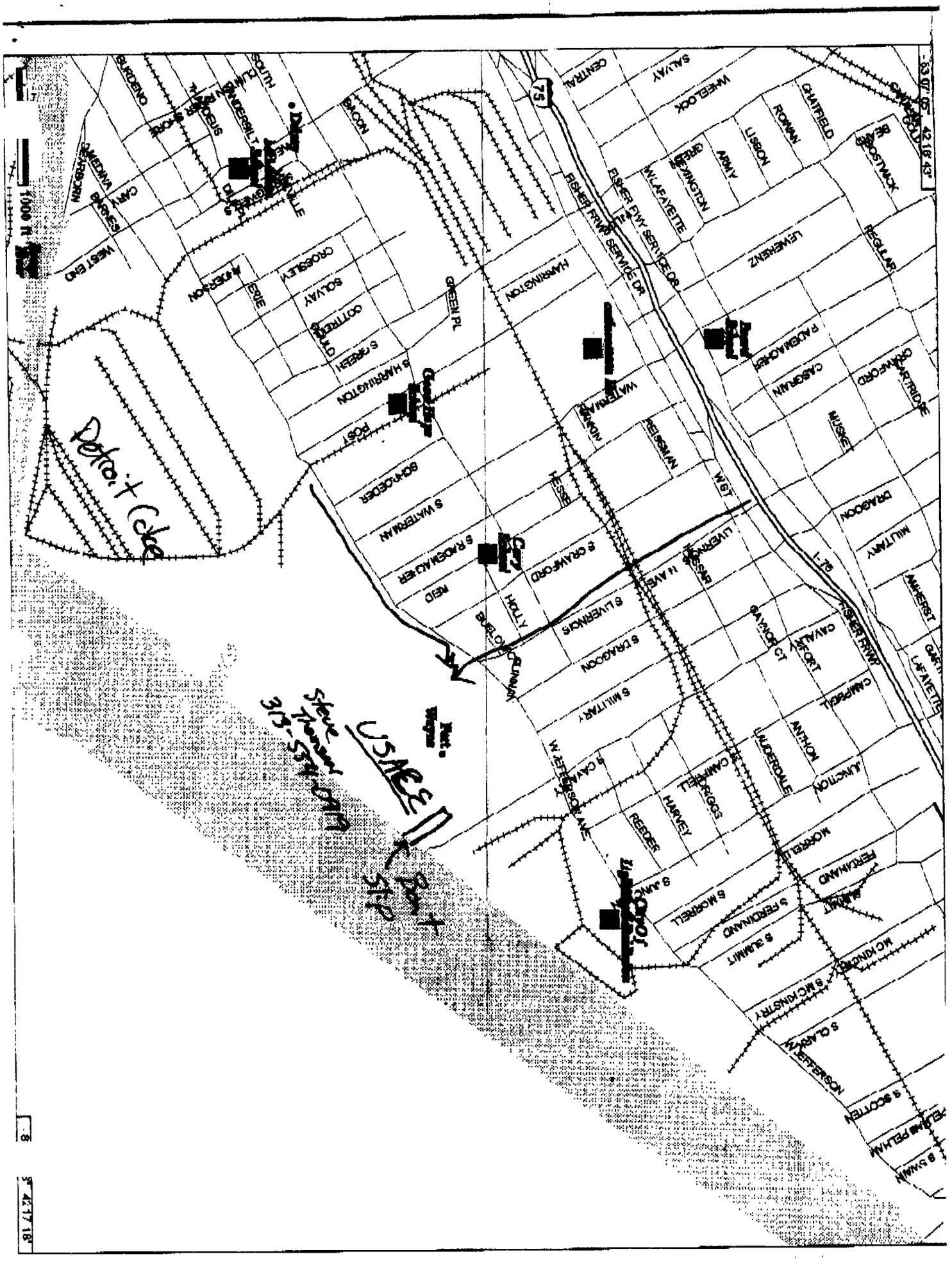
Detroit Cake
USACE
Steve Thomas
313-574-0199
Port Step
FISHER FRWY
FISHER FRWY SERVICE DR
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W LAFAYETTE
WASHINGTON
ARMY
LISBON
ROWAN
CHATFIELD
WHEELOCK
SALWAY
CENTRAL
BEAUBIEN
POSTWICK
REGULAR
LEMERINZ
HARRINGTON
GREEN PL
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COTTAGE
SOLWAY
CROSSLEY
ERIE
HUDSON
WEST END
CARY
WINDSOR
BURDENO
SIBLEY
DUNCANNON
SOUTH
BACON
POST
SCHROEDER
S WATERMAN
S ROSEMADER
REID
E GRAYFORD
HOLLY
BELOIT
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S DRAGOON
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REEDER
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CAMPBELL
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CAMPBELL
MILITARY
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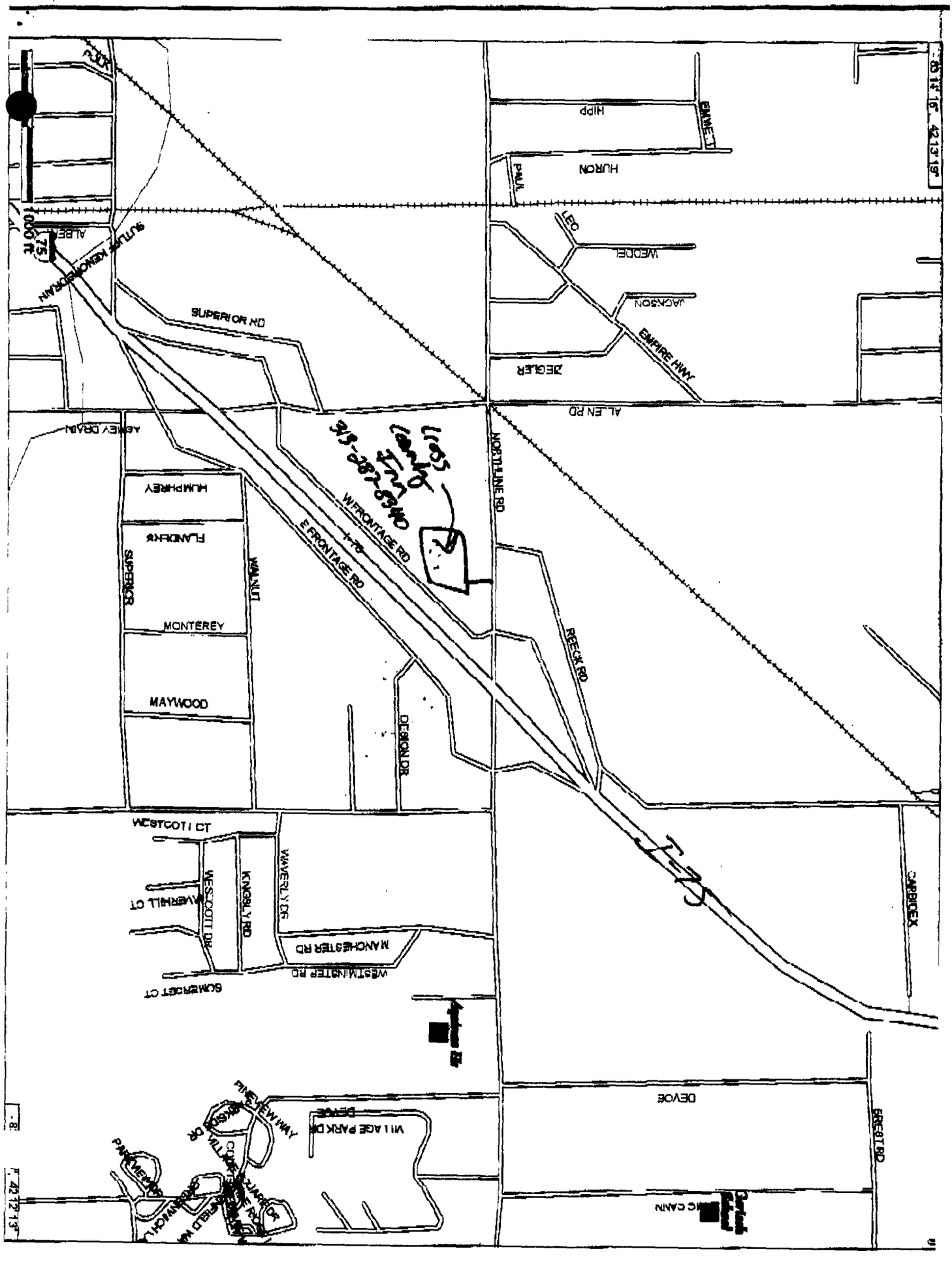
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HURON
HIPP
BARNETT
PAUL
HUMPHREY
FLANDERS
MONTEREY
MAYWOOD
SUPERIOR
WALNUT
DESIGN DR
WESTCOTT CT
WAVERLY DR
KINGSLY RD
WESCOTT DR
WERNILL CT
MANCHESTER RD
WESTMINSTER RD
SOMERSET CT
CARBIDEX
DEVOE
FOREST RD
VILLAGE PARK DR
PINE VIEW HWY
PARKMEADOW
ALBERT
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AGNEW DRAIN
42°13'19"
83°14'16"
42°12'13"
-83°

Fier-Tucker, Dorene [HWTSS]

From: Mikkelson, Stephen [DL]
To: Esker, Joe [ASEPRO]; Melander, Judy [ASPIO]; Bjork, Roger [ASCO]; Haas, Walter [BR]; Fier-Tucker, Dorene [HWTSS]; Hannan, Dan [HWTSS]; Lee, Stephen [HWTSS]
Cc: Pribble, Ralph [ASPIO]; Smith, Walker [ASPIO]; Shelito, Pat [BR]; Lewis, Jeff [DL]; Jacobs, Diane [DU]; Abraham, Jason [MA]; Miland, Melanie [RO]
Subject: RE: Flood Team update 4-25
Date: Friday, April 25, 1997 4:06PM

TGIF!!!

Here is the northwest flood team report for Friday, April 25. Joe Esker plans to come to Detroit Lakes Monday to meet with the flood team. Here are the Zone reports:

Zone 1: Environment Canada called very concerned about a fertilizer release into the flood waters (a spill) that they heard of. This occurred in the Grand Forks area and was pretty substantial. Nothing can be done now, but they just wanted confirmation on it. The East Grand Forks master lift station is under and shot. They have the parts they need to fix it on order and are semi-optimistic to have it running possibly within a week. East Grand Forks freshwater is out for a month or so. They tried filling a tower with fresh water and it emptied almost as fast as they filled it due to open plumbing spraying out in the many homes that have been dislodged from their foundations from flood waters. The Crystal Sugar Beet plant in EGF survived the flood and wants to restart its beet processing. The problem is having a water supply to do so. Very ironic, they're surrounded by water, but can't use any of it...this was the same irony experienced in Grand Forks when burning buildings could not be extinguished because they were flooded (certainly not the least bit humorous, but very ironic).

Zone 2: Staff will conduct a follow up assessment in Ada next week. Their cleanup is progressing very well. It appears that almost all the debris was brought to a Sanitary Landfill near Gentilly (about 10 miles North of Crookston). Susie Thomas of Becker County is coordinating with Norman County on a household hazardous waste collection (an exact date is being worked out). She is doing that because of a partnership agreement between the two counties. A cleanup strategy needs to be developed to deal with citizens living in the riparian areas, west of Highway 75. Sorbent pads were being transported to Moorhead, they want about 50 bails for cleanup. They will be brought from Ada. The city of Shelly has requested sorbent pads, they will get some from Thief River Falls, which does not need them.

Zone 3: Breckenridge continues to pump flood waters back into the river channel, and are progressing with cleanup. Tom Holstrom was in Breckenridge again today to continue helping with coordination. The solid waste is being brought to Comstock (just outside Wahpeton, ND). Twenty (20) more homes were identified as needing sorbent pads. There are still enough in Breckenridge, and those homes will be supplied with them.

OTHER: The whole team is preparing for more solid waste, hazardous waste and wastewater problems to crop throughout the region as flood waters recede. Discussions continue with East Grand Forks about establishing a demolition landfill site. They are anticipating much more solid waste than in any other area. In fact, several homes will likely be completely demolished. The Fargo/Moorhead area wants to establish a Demolition Landfill site on the Moorhead side. If they can't, they will need to haul solid waste to Comstock.

Staff is reminded to always practice common sense and complete safety in the field, especially during the cleanup phase of this flood. Over the weekend, the Breckenridge and Moorhead areas may need help coordinating cleanup activities. The team plans to invite two St. Paul staff up on Monday to assist in activities on Tuesday and Wednesday (4/29 & 30).

Thanks again for your time,
Mikk.

Tom - you may want to use this as part of the Tues update. Feel free to call Dorene for more info - she has been extremely helpful
Glenn

Post-It™ Fax Note 7671	Date 4-29-97	# of pages ▶ 1
To Glenn Cekus	From Dorene Fier	
Co./Dept. USEPA	Co. MPCA	
Phone #	Phone # 612-297-8656	
Fax # 312-886-0064	Fax # 612-297-8676	

SF-00006-06(4/86) 4-16-97

DEPARTMENT: POLLUTION CONTROL AGENCY

STATE OF MINNESOTA

Office Memorandum

DATE April 16, 1997

TO: Federal Emergency Management Agency
U.S. EPA - Region V

FROM: Randy Thorson, P.E.
Point Source Compliance Section
Water Quality Division

PHONE: (612) 296-9287

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 1
To J.J. Schweizer	From Randy Thorson
Co. US EPA-Reg V	Co. MPCA
Dept.	Phone # (612) 296-9287
Fax # (312) 886-7804	Fax # (612) 297-8683

SUBJECT: PRELIMINARY LIST OF FLOOD IMPACTED WASTEWATER FACILITIES

This memo is intended to provide the above Federal Agencies with a **preliminary** list of communities in Minnesota which we know are having problems with their wastewater pumping or lift stations, and wastewater treatment facilities. I am sure that both respective Agencies are well aware we are still in the early stages of assessing damages in the Minnesota River basin, and we have not yet crested yet along much of the Bois De Sioux/Red River basin, where infrastructure damage may be severe. As additional information becomes available, we will provide it to you.

Treatment Facilities

Minnesota River Basin
St. Peter - Ponds completely under water.
Le Sueur - Secondary ponds completely under water.
Belle Plaine - Secondary ponds under water

Red River Basin
Wolverton - Mechanical plant under water
Halstad - Mechanical plant under water

Pump or Lift Stations

Red River Basin
Perley
Ada
Halstad
Shelly
Hendrum
Breckenridge

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

September 30, 1993

TO: Environmental Response Division Staff

FROM: Alan J. Howard, Chief, Environmental Response Division

SUBJECT: MERA Operational Memorandum #15: Default Type A Cleanup Criteria

In order to facilitate cleanup decisions at sites at which naturally occurring metals may be of concern, the following acceptable default Type A soil cleanup criteria have been established. These values are based on analysis of the database for the Michigan Background Soil Survey (April 1991) which is maintained by Waste Management Division (WMD). They represent the mean plus one standard deviation for WMD data from combined clay, topsoil and sand categories. The values are presented in two significant figures. Data should be rounded to two significant figures for comparison.

Table 1: ACCEPTABLE DEFAULT VALUES TYPE A SOIL CLEANUP CRITERIA

Substance	Acceptable Concentration (mg/kg)	Substance	Acceptable Concentration (mg/kg)
Aluminum	6900	Iron	12000
Arsenic	5.8	Mercury	0.13
Barium	75	Lithium	9.8
Cadmium	1.2	Manganese	440
Cobalt	6.8	Nickel	20
Chromium (total)	18	Lead	21
Copper	32	Selenium	0.41
Cyanide	0.39	Silver	1.0
		Zinc	47

The default values apply as follows:

1. If measured concentrations at a site do not exceed the values listed in Table 1, site specific samples to establish background are not required.

2. The values apply to all soil types, statewide.

3. It is acceptable to establish a site-specific background concentration higher than the default values. Such sampling should be conducted according to requirements in existence before the issuance of this memorandum. Comparison of site values is made against the mean plus three standard deviations calculated from background samples as provided for in existing ERD guidance regarding verification of soil remediation.

samples will then be sent to the contract laboratory identified by Detroit Coke for analysis. Detroit Coke will pay for the analysis of the PE samples. USEPA then compares the results from the contract lab with the known composition of the PE samples and will determine whether the contract lab meets USEPA standards. If it is determined that the contract lab is not adequate, ~~we can either work with the lab to identify the cause of any problems noted, or~~ Detroit Coke ~~can~~ may have to select another lab and we will perform the PE process with the new lab. Please be aware that once a laboratory is selected and the PE process is initiated, Detroit Coke must use that lab for the RFI. If Detroit Coke chooses to change labs once the PE process has been instituted, then we will have to begin the PE process anew.

If you have any questions, please contact me at (312) 886-0455, or Allen Melcer at (312) 886-1498.

Sincerely yours,

Gregory A. Rudloff, Geologist
IL-IN-MI Permits Section
Waste Management Branch

Enclosures

DETROIT COKE RFI PE SAMPLES

PRINCIPAL ANALYTE LIST FOR SOILS			
Parameter	**Act 307 Industrial Cleanup Criteria in ppm**	**Act 451 Industrial Cleanup Criteria in ppm**	
Semi-Volatiles			
Acenaphthene	1.6 E+05	8.1 E+05	81%
Acenaphthylene	3,200	16,000	1.6%
Anthracene*	9.0 E+05	1.0 E+06	100%
Benzo (a) Anthracene*	21	210	
Benzo (a) Pyrene*	2.1	21	
Benzo (b&k) Fluoranthene*	-	-	
Benzo (g,h,i) Perylene*	3.2 E+03	1.6 E+04	1.6%
Chrysene*	2,100	2.1 E+04	2.1%
Dibenzo (a,h) Anthracene*	2.1	21	
Dibenzofuran	-	-	
Fluoranthene*	1.1 E+05	5.4 E+05	54%
Fluorene*	1.1 E+05	5.4 E+05	54%
Indeno (1,2,3-cd) Pyrene*	21	210	
Naphthalene*	3.2 E+04	1.6 E+05	16%
2-Methylnaphthalene	-	-	
2-Chloronaphthalene	3.7 E+04	1.9 E+05	19%
Phenenthrene*	3.2 E+03	1.6 E+04	1.6%
Phenol	8.9 E+04	4.5 E+05	45%
2,4 Dimethylphenol	-	-	
2-Methylphenol	7,400	37,000	3.7%
4-Methylphenol	4,500	23,000	2.3%
Pyrene*	6.7 E+04	3.4 E+05	34%
Volatiles			
Benzene*	85	850	
Ethylbenzene*	1.4 E+04	7.2 E+04	7.2%
Toluene*	3.3 E+04	1.6 E+05	16%
Xylene, Total*	2.7 E+05	1.0 E+06	100%
Metals			
Arsenic	8.6	83	
Cyanide	2.0 E+04	9.9 E+04	9.9%
Mercury	270	1,400	
Selenium	4,500	23,000	2.3%

* Found in Detroit Coke RFI Release Assessment Samples
Underlined parameters are likely to be key for decision-making

DETROIT COKE RFI PE SAMPLES

PRINCIPAL ANALYTE LIST FOR GROUND WATER		
Parameter	**Industrial Cleanup Criteria in ppm**	**Act 451 Industrial Cleanup Criteria in ppm**
Semi-Volatiles		
Acenaphthene*	3.7	3.8
Fluorene*	2.5	2.5
Naphthalene*	.029	.029
Phenenthene*	.075	.075
Phenol	1.1	1.1
2,4 Dimethylphenol	-	-
2-Methylphenol	.038	.038
4-Methylphenol	.024	.0062
Pyrene*	1.6	1.6
Volatiles		
Benzene*	.005	.005
Ethylbenzene	.031	.031
Toluene*	.11	.11
Xylene, Total*	.059	.059
Metals		
Arsenic	.0002	.011
Cyanide	.0055	.0052
Mercury	.0000013	.0000013
Selenium	.005	.005

* Found in Detroit Coke RFI Release Assessment Samples
Underlined parameters are likely to be key for decision-making

Midwestern Operations

22345 Roethel Drive
Novi, MI 48375
(313) 344-1770
Fax (313) 344-2654

Clayton
ENVIRONMENTAL
CONSULTANTS

June 30, 1992

Mr. Carl Curry
Manager Environmental
DETROIT COKE CORPORATION
7819 West Jefferson Avenue
Detroit, MI 48209

Clayton Project No. 80927-17
P.O. No. D-10014-92A

Dear Mr. Curry:

The following is our report for the samples received on June 1, 1992. The results and analytical methods used are presented in the attached tables.

Please note that samples (where appropriate) will be retained for 30 days after report date.

We appreciate the opportunity to be of assistance to you. If you have any questions, please call me or our Client Services Department at (313) 344-2650.

Sincerely,

Daryl Strandbergh
Manager, Laboratory Services

DS/tw
Attachments

SWMU 18
SLUDGE

Analytical Results
for
DETROIT COKE CORPORATION

Clayton Project No. 80927-17

Sample Matrix: Leachate
Lab Number: 974182
Sample Identification: RD-1

TCLP Compounds	Concentration (mg/L)	Regulatory Limit (mg/L)
- Arsenic	<0.1	5
- Barium	0.3	100
- Benzene	3.6	0.5
2-Butanone	<0.5	200
- Cadmium	<0.05	1
Carbon tetrachloride	<0.09	0.5
- Chlorobenzene	<0.08	100
Chloroform	<0.09	6
- Chromium	<0.1	5
- Cresol (total)	18	200
1,4-Dichlorobenzene	<0.2	7.5
1,2-Dichloroethane	<0.08	0.5
1,1-Dichloroethene	<0.09	0.7
2,4-Dinitrotoluene	<0.1	0.13
Hexachlorobenzene	<0.1	0.13
Hexachlorobutadiene	<0.2	0.5
Hexachloroethane	<0.2	3
- Lead	<0.1	5
- Mercury	<0.01	0.2
Nitrobenzene	<0.2	2
Pentachlorophenol	<5	100
Pyridine	0.8	5
- Selenium	0.3	1
- Silver	<0.02	5
Tetrachloroethene	<0.08	0.7
Trichloroethene	<0.09	0.5
2,4,5-Trichlorophenol	<1	400
2,4,6-Trichlorophenol	<0.5	2
Vinyl chloride	<0.2	0.2

Extraction: 40 CFR 261, Appendix II--Toxicity Characteristic Leaching Procedure (TCLP).

Analysis: EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW- 846, Second and Third Editions.

SW V #27
Production Tar

Analytical Results
for
DETROIT COKE CORPORATION

Clayton Project No. 80927-17

Sample Matrix: Leachate
Lab Number: 974183
Sample Identification: SD-2

TCLP Compounds	Concentration (mg/L)	Regulatory Limit (mg/L)
Arsenic	<0.1	5
Barium	0.3	100
Benzene	0.93	0.5
2-Butanone	<0.5	200
Cadmium	<0.05	1
Carbon tetrachloride	<0.09	0.5
Chlorobenzene	<0.08	100
Chloroform	<0.09	6
Chromium	<0.1	5
Cresol (total)	22	200
1,4-Dichlorobenzene	<0.2	7.5
1,2-Dichloroethane	<0.08	0.5
1,1-Dichloroethene	<0.09	0.7
2,4-Dinitrotoluene	<0.1	0.13
Hexachlorobenzene	<0.1	0.13
Hexachlorobutadiene	<0.2	0.5
Hexachloroethane	<0.2	3
Lead	0.2	5
Mercury	<0.01	0.2
Nitrobenzene	<0.2	2
Pentachlorophenol	<5	100
Pyridine	0.3	5
Selenium	0.2	1
Silver	0.05	5
Tetrachloroethene	<0.08	0.7
Trichloroethene	<0.09	0.5
2,4,5-Trichlorophenol	<1	400
2,4,6-Trichlorophenol	<0.5	2
Vinyl chloride	<0.2	0.2

Extraction: 40 CFR 261, Appendix II--Toxicity Characteristic Leaching Procedure (TCLP).

Analysis: EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW- 846, Second and Third Editions.

SWMU 1

Analytical Results
for
DETROIT COKE CORPORATION

Clayton Project No. 80927-17

Sample Matrix: Leachate
Lab Number: 974184
Sample Identification: RP-1

TCLP Compounds	Concentration (mg/L)	Regulatory Limit (mg/L)
Arsenic	<0.1	5
Barium	0.8	100
Benzene	<0.08	0.5
2-Butanone	<0.5	200
Cadmium	<0.05	1
Carbon tetrachloride	<0.09	0.5
Chlorobenzene	<0.08	100
Chloroform	<0.09	6
Chromium	<0.1	5
Cresol (total)	1	200
1,4-Dichlorobenzene	<0.2	7.5
1,2-Dichloroethane	<0.08	0.5
1,1-Dichloroethene	<0.09	0.7
2,4-Dinitrotoluene	<0.05	0.13
Hexachlorobenzene	<0.05	0.13
Hexachlorobutadiene	<0.05	0.5
Hexachloroethane	<0.05	3
Lead	<0.1	5
Mercury	<0.01	0.2
Nitrobenzene	<0.05	2
Pentachlorophenol	<5	100
Pyridine	<0.05	5
Selenium	0.1	1
Silver	<0.02	5
Tetrachloroethene	<0.08	0.7
Trichloroethene	<0.09	0.5
2,4,5-Trichlorophenol	<0.5	400
2,4,6-Trichlorophenol	<0.5	2
Vinyl chloride	<0.2	0.2

Extraction: 40 CFR 261, Appendix II--Toxicity Characteristic Leaching Procedure (TCLP).

Analysis: EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW- 846, Second and Third Editions.

CLAYTON ENVIR ENTAL CONSULTANTS, INC.
22345 Roethel ve Novi, Michigan 48375

Clayton Project No. 80927-17

Table 1

Lab Number	Sample Description	pH	Flashpoint (F)
SWMU 18 974182	RD-1	6.6	>200
974183	SD-2	7.9	>200
Analytical Method (EPA):		9045	1010

Table 2

Lab Number	Sample Description	Releasable Cyanide (ug/g)	Releasable Sulfide (ug/g)
SWMU 18 – 974182	RD-1	<50	<100
974183	SD-2	<50	<100
Limit of Detection:		50 ug/g	100 ug/g
Analytical Method (EPA):		SW 846-chapter 7	9030

Clayton ENVIRONMENTAL CONSULTANTS
A Marsh & McLennan Company

REQUEST FOR LABORATORY ANALYTICAL SERVICES

For Clayton Use Only	Page
Project No.	80927-17
Batch No.	
Client No.	
Date Logged In	By

REPORT RESULTS TO

Name	CARL CURRY
Title	ENVIRONMENTAL
Company	Detroit Coke
Dept.	
Mailing Address	7819 W. Jefferson
City, State, Zip	Detroit MI 48209
Telephone No.	313-842-6222
Telefax No.	

Purchase Order No. D-10014-92A
Client Job No.

SEND INVOICE TO

Name	Detroit Coke
Company	
Dept.	
Address	
City, State, Zip	

Date Results Required:
Rush Charges Authorized? ☐ Yes ☐ No
Phone Results ☐

Samples are: (check if applicable)
☐ Drinking Water
☐ Collected in the State of New York

Special Instructions: (method, limit of detection, etc.)
TCLP Type Tests - All TCLP w/o Herbicides & Pesticides

* Explanation of Preservative:

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request; Enter a 'P' if Preservative added. *)

CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	NO HERB OR PEST TCLP										FOR LAB USE ONLY
RD-1	5/29/92	SLUDGE		1	X										38 on CART
SD-2	5/29/92	SLUDGE		1	X										
RP-1	5/29/92	SOLID		1	X										

CHAIN OF CUSTODY

Relinquished by:		Date/Time	Received by:	Date/Time
Relinquished by:		Date/Time	Received at Lab by: P. Sweeney	Date/Time 6/1/92 9:21 AM
Method of Shipment:			Sample Condition Upon Receipt: ☐ Acceptable ☐ Other (explain)	

Authorized by: Paul Chiarastri Date 5/29/92
(Client Signature Must Accompany Request)

RECEIVED JUN 01 1992

Please return completed form and samples to one of the Clayton Environmental Consultants, Inc. labs listed below:

22345 Roethel Drive
Novi, MI 48375
(313) 344-1770

Parlin Center
160 Fieldcrest Ave.
Edison, NJ 08837
(201) 225-6040

400 Chastain Center Blvd., N.W.
Suite 490
Kennesaw, GA 30144
(404) 499-7500

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Pleasanton, CA 94566
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Clayton
ENVIRONMENTAL
CONSULTANTS

July 1, 1992

Mr. Carl Curry
Environmental Manager
DETROIT COKE CORPORATION
7819 West Jefferson Avenue
Detroit, MI 48209

Clayton Project No. 81162-17
P.O. No. D-10017-92A

Dear Mr. Curry:

The following is our report for the samples received on June 9, 1992. The results and analytical methods used are presented in the attached tables.

Please note that samples (where appropriate) will be retained for 30 days after report date.

We appreciate the opportunity to be of assistance to you. If you have any questions, please call me or our Client Services Department at (313) 344-2650.

Sincerely,

for

Daryl Strandbergh
Manager, Laboratory Services

DS/tw
Attachments

Analytical Results
for
DETROIT COKE CORPORATION

Clayton Project No. 81162-17

Sample Matrix: Bulk
Lab Number: 976100
Sample Identification: Railroad Tie - Wood

Compounds	Concentration (mg/L)	Regulatory Limit (mg/L)
Arsenic	<0.1	5
Barium	0.7	100
Cadmium	<0.05	1
Chromium	<0.1	5
Cresol (total)	<1	200
1,4-Dichlorobenzene	<0.2	7.5
2,4-Dinitrotoluene	<0.06	0.13
Hexachlorobenzene	<0.07	0.13
Hexachlorobutadiene	<0.09	0.5
Hexachloroethane	<0.09	3.0
Lead	<0.1	5
Mercury	<0.01	0.2
Nitobenzene	<0.09	2
Pentachlorophenol	<5	100
Pyridine	<0.07	5
Selenium	0.2	1
Silver	<0.02	5
2,4,5-Trichlorophenol	<0.7	400
2,3,6-Trichlorophenol	<0.5	2

Extraction: 40 CFR 261, Appendix II--Toxicity Characteristic Leaching Procedure (TCLP).

Analysis: EPA Test Methods for Evaluationg Solid Waste: Physical/Chemical Methods, SW-846, Second and Third Editions.

CLAYTON ENVIR(ENTAL CONSULTANTS, INC.

Analytical Laboratory Report

for

DETROIT COKE CORPORATION

Clayton Project No. 81162-17

Lab Number	Sample Description	pH	Ignitability
976100	RAILROAD TIE-WOOD	6.7	negative
976101	WOOD SAMPLE (BOX) #10	6.3	negative

Analytical Method (EPA): 9045

Lab Number	Sample Description	Total Cyanide (mg/kg)
976100	RAILROAD TIE-WOOD	0.97
976101	WOOD SAMPLE (BOX) #10	23

Limit of Detection: 0.02 mg/kg
Analytical Method (EPA): 9012

Lab Number	Sample Description	Sulfide (ug/g)
976100	RAILROAD TIE-WOOD	<100
976101	WOOD SAMPLE (BOX) #10	<100

Limit of Detection: 100 ug/g
Analytical Method (EPA): 9030

Clayton ENVIRONMENTAL CONSULTANTS
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REQUEST FOR LABORATORY ANALYTICAL SERVICES

For Clayton Use Only	Page
Project No. 8466-17	
Batch No.	
Client No.	
Date Logged In	By

REPORT RESULTS TO

Name: Detroit Coke - Carl Curry | Title:
Company: Detroit Coke Corp. | Dept. ENV.
Mailing Address: 7819 W. Jefferson
City, State, Zip: Detroit, Mi 48209
Telephone No. 313-842-6222 | Telefax No. 313-843-8240

Purchase Order No. D-10017-92A | Client Job No.

SEND INVOICE TO

Name:
Company: Same | Dept.
Address:
City, State, Zip:

Date Results Required: | Rush Charges Authorized? ☐ Yes ☐ No | Phone Results ☑

Samples are: (check if applicable)
☐ Drinking Water
☐ Collected in the State of New York

Special Instructions: (method, limit of detection, etc.)
Waste Characterization
* Explanation of Preservative:

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request; Enter a 'P' if Preservative added. *)

CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	pH	Flashpoint	Total Cyanide	Reactive Sulfide	TCLP (10 metals)	TCLP-acid extract	TCLP-base neutrals				FOR LAB USE ONLY
Railroad Tie - Wood	6/8/92	Solid		1	X	X	X	X	X	X	X				
Wood Sample (Box) #10	6/8/92	Solid		1	X	X	X	X							
															02 on cart CK
					Deanna knows of Samples!!										AA, WC, & GC/MS Know of Samples

CHAIN OF CUSTODY

Relinquished by: | Date/Time
Relinquished by: | Date/Time
Method of Shipment:

Received by: | Date/Time
Received at Lab by: P. Sweeney | Date/Time 6/9/92 3:44pm
Sample Condition Upon Receipt: ☒ Acceptable ☐ Other (explain)

Authorized by: _____ Date _____
(Client Signature Must Accompany Request)

RECEIVED JUN 09 1992

Please return completed form and samples to one of the Clayton Environmental Consultants, Inc. labs listed below:

22345 Roethel Drive
Novi, MI 48375
(313) 344-1770

Raritan Center
160 Fieldcrest Ave.
Edison, NJ 08837
(201) 225-6040

400 Chastain Center Blvd., N.W.
Suite 490
Kennesaw, GA 30144
(404) 499-7500

1252 Quarry Lane
Pleasanton, CA 94566
(415) 426-2600

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RAILROAD TIES

CITY ENVIRONMENTAL, INC. • 1923 FREDERICK ST. • DETROIT, MICHIGAN 48211 • 313 923-0080
FAX 313 923-0217

Date: 07/01/92

Date Received: 06/29/92
Date Completed: 07/01/92

Customer: K & D Industrial
Address: 6470 Beverly Plaza
Romulus, MI 48174

Attn: Mr. Ardis Loos
Phone Number: (313)729-9350
Fax Number: (313)729-7890

Sample Identification: Detroit Coke - RR Ties

Physical Description: Brown Solid

Sample Number: 7394

Sample Was Analyzed: "As Received"

Type Of Analysis: PCB

Analysis:	Sample Results (ppb)
Total PCB's (8080)	<33.0

Reviewed By: Reid Goniwiecha
Manager: D.P. Lin, Ph.D.
Reid A. Goniwiecha

CITY

Midwestern Operations

22345 Roethel Drive
Novi, MI 48375
(313) 344-1770
Fax (313) 344-2654

Clayton
ENVIRONMENTAL
CONSULTANTS

June 25, 1992

Mr. Paul Choinski
DETROIT COKE CORPORATION
P.O. Box 09229
Detroit, MI 48209

Clayton Project No. 80296-17
P.O. No. D-10011-92A

Dear Mr. Choinski:

The following is our report for the samples received on May 6, 1992. The results and analytical methods used are presented in the attached tables.

Please note that samples (where appropriate) will be retained for 30 days after report date.

We appreciate the opportunity to be of assistance to you. If you have any questions, please call me or our Client Services Department at (313) 344-2650.

Sincerely,

Daryl Strandbergh
Manager, Laboratory Services

DS/tw
Attachments

Analytical Results
for
DETROIT COKE CORPORATION

Clayton Project No. 79800-17

Sample Matrix: Bulk
Lab Number: 968793
Sample Identification: #10 Wood

CAS Number	Constituent	Analytical Result (mg/L)	Regulatory Level (mg/L)
7440-38-2	Arsenic	0.1	5
7440-39-3	Barium	0.2	100.0
71-43-2	Benzene	<0.03	0.5
78-93-3	2-Butanone	<0.5	200
7440-43-9	Cadmium	<0.05	1
56-23-5	Carbon tetrachloride	<0.03	0.5
57-74-9	Chlordane	<0.004	0.03
108-90-7	Chlorobenzene	<0.03	100
67-66-3	Chloroform	<0.03	6
7440-47-3	Chromium	<0.1	5
----------	Cresol (Total)	14	200
94-75-7	2,4-D	<0.1	10
106-46-7	1,4-Dichlorobenzene	<0.3	7.5
107-06-2	1,2-Dichloroethane	<0.03	0.5
75-35-4	1,1-Dichloroethene	<0.03	0.7
121-14-2	2,4-Dinitrotoluene*	<0.3	0.13
72-20-8	Endrin	<0.004	0.02
76-44-8	Heptachlor (and its epoxide)	<0.0004	0.008
118-74-1	Hexachlorobenzene*	<0.2	0.13
87-68-3	Hexachloro-1,3-butadiene	<0.3	0.5
67-72-1	Hexachloroethane	<0.3	3
7439-92-1	Lead	0.2	5
58-89-9	Lindane	<0.0004	0.4
7439-97-6	Mercury	<0.01	0.2
72-43-5	Methoxychlor	<0.004	10
98-95-3	Nitrobenzene	<0.3	2
87-86-5	Pentachlorophenol	<5	100
110-86-1	Pyridine	<0.4	5
7782-49-2	Selenium	0.1	1
7440-22-4	Silver	0.11	5
93-72-1	2,4,5-TP (Silvex)	<0.02	1
127-18-4	Tetrachloroethene	<0.03	0.7

* Regulatory limits could not be achieved due to high concentration of Cresol present in the sample matrix.

Analytical Results
for
DETROIT COKE CORPORATION

Clayton Project No. 79800-17

Sample Matrix: Bulk
Lab Number: 968793
Sample Identification: #10 Wood

CAS Number	Constituent	Analytical Result (mg/L)	Regulatory Level (mg/L)
8001-35-2	Toxaphene	<0.008	0.5
79-01-6	Trichloroethene	<0.03	0.5
95-95-4	2,4,5-Trichlorophenol	<1	400
88-06-2	2,4,6-Trichlorophenol	<0.5	2
75-01-4	Vinyl chloride	<0.05	0.2

Extraction: 40 CFR 261, Appendix II--Toxicity Characteristic Leaching Procedure (TCLP).

Analysis: EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, Second and Third Editions.

CLAYTON ENVIRC ENTAL CONSULTANTS, INC.

Analytical Laboratory Report

for

DETROIT COKE CORPORATION

Clayton Project No. 80296-17

Lab Number	Sample Description	Ignitability
968793	#10 (WOOD)	Negative

Analytical Method (EPA): SW-846

CLAYTON ENVIRONMENTAL CONSULTANTS
A Marsh & McLennan Company

REQUEST FOR LABORATORY ANALYTICAL SERVICES

For Clayton Use Only	Page 1
Project No.	80296-1
Batch No.	
Client No.	
Date Logged In	By

REPORT RESULTS TO

Name: PAUL CHOINSKI | Title:
Company: DETROIT COKE CORP. | Dept.:
Mailing Address: PO BOX 09229
City, State, Zip: DET. MI 48209
Telephone No.: 313-842 6222 | Telefax No.:

Purchase Order No.: D-10011-92A | Client Job No.:

SEND INVOICE TO

Name: Detroit Coke
Company: PO Box 09229 | Dept.:
Address:
City, State, Zip: Det. MI 48336

Date Results Required: ROUTINE
Rush Charges Authorized? ☐ Yes ☐ No
Phone Results ☐

Samples are: (check if applicable)
☐ Drinking Water
☐ Collected in the State of New York

Special Instructions: (method, limit of detection, etc.)
Call w/ cost.

* Explanation of Preservative:

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request; Enter a 'P' if Preservative added. *)

CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	T.C.L.P.	IGNITIBILITY	Herbicides	FOR LAB USE ONLY
[redacted] #10 (Wood) SAMPLE	4/29/92			1	X	X	X	

CHAIN OF CUSTODY

Relinquished by: | Date/Time
Relinquished by: | Date/Time
Method of Shipment:

Received by: | Date/Time
Received at Lab by: P. Sweeney | Date/Time 5-6-92 8:36am

Sample Condition Upon Receipt: ☑ Acceptable ☐ Other (explain)

Authorized by: Paul Choinski Date 5/4/92
(Client Signature Must Accompany Request)

RECEIVED MAY 06 1992

Please return completed form and samples to one of the Clayton Environmental Consultants, Inc. labs listed below:

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Novi, MI 48375
(313) 344-1770

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Edison, NJ 08837
(201) 225-6040

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Suite 400
Kennesaw, GA 30144
(404) 499-7500

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Pleasanton, CA 94566
(415) 426-2600

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Novi, MI 48375
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Fax (313) 344-2654

Clayton
ENVIRONMENTAL
CONSULTANTS

March 16, 1992

Mr. Carl Curry
Environmental Manager
DETROIT COKE CORPORATION
7819 West Jefferson
Detroit, MI 48209

Clayton Project No. 78804-17
P.O. No. D-10004-92A

Dear Mr. Curry:

The following is our report for the samples received on March 3, 1992. The results and analytical methods used are presented in the attached tables.

Please note that samples (where appropriate) will be retained for 30 days after report date.

We appreciate the opportunity to be of assistance to you. If you have any questions, please call me or our Client Services Department at (313) 344-2650.

Sincerely,

Daryl Strandbergh
Manager, Laboratory Services

DS/tw
Attachments

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
DETROIT COKE CORPORATION

SWRCU 7

Clayton Project No. 78804-17
P.O. No. D-10004-92A

Sample Matrix: Liquid - water
Lab Number: 954558
Sample Identification: #10 TANK DIKE

EPA HW Number	CAS Number	Constituent	Analytical Result (mg/L)	Regulatory Level (mg/L)
D004	7440-38-2	Arsenic	<0.1	5.0
D005	7440-39-3	Barium	<0.1	100.0
D018	71-43-2	Benzene	0.15	0.5
D006	7440-43-9	Cadmium	<0.05	1.0
D019	56-23-5	Carbon Tetrachloride	<0.03	0.5
D021	108-90-7	Chlorobenzene	<0.03	100.0
D022	67-66-3	Chloroform	<0.03	6.0
D007	7440-47-3	Chromium	<0.1	5.0
D026		Cresol (Total)	*	200.0
D027	106-46-7	1,4-Dichlorobenzene	<0.2	7.5
D028	107-06-2	1,2-Dichloroethane	<0.03	0.5
D029	75-35-4	1,1-Dichloroethylene	<0.03	0.7
D030	121-14-2	2,4-Dinitrotoluene	<0.05	0.13
D032	118-74-1	Hexachlorobenzene	<0.05	0.13
D033	87-68-3	Hexachloro-1,3-butadiene	<0.05	0.5
D034	67-72-1	Hexachloroethane	<0.05	3.0
D008	7439-92-1	Lead	<0.1	5.0
D009	7439-97-6	Mercury	<0.01	0.2
D035	78-93-3	Methyl ethyl ketone	<0.5	200.0
D036	98-95-3	Nitrobenzene	<0.05	2.0
D037	87-86-5	Pentachlorophenol	*	100.0
D038	110-86-1	Pyridine	0.13	5.0
D010	7782-49-2	Selenium	<0.1	1.0
D011	7440-22-4	Silver	<0.02	5.0
D039	127-18-4	Tetrachloroethylene	<0.03	0.7
D040	79-01-6	Trichloroethylene	<0.03	0.5
D041	95-95-4	2,4,5-Trichlorophenol	*	400.0
D042	88-06-2	2,4,6-Trichlorophenol	*	2.0
D043	75-01-4	Vinyl chloride	<0.05	0.2

Extraction: 40 CFR 261, Appendix II--Toxicity Characteristic Leaching Procedure (TCLP).

Analysis: EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, Second and Third Editions.

*Unable to quantitate due to matrix interference.

Clayton
ENVIRONMENTAL CONSULTANTS

Exhibit 23

Analytical Results
for
DETROIT COKE CORPORATION

Clayton Project No. 78804-17
P.O. No. D-10004-92A

Sample Matrix: Liquid
Lab Number: 954559
Sample Identification: QUENCH BASIN

EPA HW Number	CAS Number	Constituent	Analytical Result (mg/L)	Regulatory Level (mg/L)
D004	7440-38-2	Arsenic	<0.1	5.0
D005	7440-39-3	Barium	<0.1	100.0
D018	71-43-2	Benzene	<0.03	0.5
D006	7440-43-9	Cadmium	<0.05	1.0
D019	56-23-5	Carbon Tetrachloride	<0.03	0.5
D021	108-90-7	Chlorobenzene	<0.03	100.0
D022	67-66-3	Chloroform	<0.03	6.0
D007	7440-47-3	Chromium	<0.1	5.0
D026		Cresol (Total)	<1	200.0
D027	106-46-7	1,4-Dichlorobenzene	<0.2	7.5
D028	107-06-2	1,2-Dichloroethane	<0.03	0.5
D029	75-35-4	1,1-Dichloroethylene	<0.03	0.7
D030	121-14-2	2,4-Dinitrotoluene	<0.05	0.13
D032	118-74-1	Hexachlorobenzene	<0.05	0.13
D033	87-68-3	Hexachloro-1,3-butadiene	<0.05	0.5
D034	67-72-1	Hexachloroethane	<0.05	3.0
D008	7439-92-1	Lead	<0.1	5.0
D009	7439-97-6	Mercury	<0.01	0.2
D035	78-93-3	Methyl ethyl ketone	<0.5	200.0
D036	98-95-3	Nitrobenzene	<0.05	2.0
D037	87-86-5	Pentachlorophenol	<5	100.0
D038	110-86-1	Pyridine	<0.05	5.0
D010	7782-49-2	Selenium	<0.1	1.0
D011	7440-22-4	Silver	<0.02	5.0
D039	127-18-4	Tetrachloroethylene	<0.03	0.7
D040	79-01-6	Trichloroethylene	<0.03	0.5
D041	95-95-4	2,4,5-Trichlorophenol	<0.5	400.0
D042	88-06-2	2,4,6-Trichlorophenol	<0.5	2.0
D043	75-01-4	Vinyl chloride	<0.05	0.2

Extraction: 40 CFR 261, Appendix II--Toxicity Characteristic Leaching Procedure (TCLP).

Analysis: EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, Second and Third Editions.

Clayton
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rainwater
SW.18

Analytical Results
for
DETROIT COKE CORPORATION

Clayton Project No. 78804-17
P.O. No. D-10004-92A

Sample Matrix: Liquid
Lab Number: 954560
Sample Identification: ROUND DIKE

EPA HW Number	CAS Number	Constituent	Analytical Result (mg/L)	Regulatory Level (mg/L)
D004	7440-38-2	Arsenic	<0.1	5.0
D005	7440-39-3	Barium	<0.1	100.0
D018	71-43-2	Benzene	0.08	0.5
D006	7440-43-9	Cadmium	<0.05	1.0
D019	56-23-5	Carbon Tetrachloride	<0.03	0.5
D021	108-90-7	Chlorobenzene	<0.03	100.0
D022	67-66-3	Chloroform	<0.03	6.0
D007	7440-47-3	Chromium	<0.1	5.0
D026		Cresol (Total)	<1	200.0
D027	106-46-7	1,4-Dichlorobenzene	<0.2	7.5
D028	107-06-2	1,2-Dichloroethane	<0.03	0.5
D029	75-35-4	1,1-Dichloroethylene	<0.03	0.7
D030	121-14-2	2,4-Dinitrotoluene	<0.05	0.13
D032	118-74-1	Hexachlorobenzene	<0.05	0.13
D033	87-68-3	Hexachloro-1,3-butadiene	<0.05	0.5
D034	67-72-1	Hexachloroethane	<0.05	3.0
D008	7439-92-1	Lead	<0.1	5.0
D009	7439-97-6	Mercury	<0.01	0.2
D035	78-93-3	Methyl ethyl ketone	<0.5	200.0
D036	98-95-3	Nitrobenzene	<0.05	2.0
D037	87-86-5	Pentachlorophenol	<5	100.0
D038	110-86-1	Pyridine	0.11	5.0
D010	7782-49-2	Selenium	<0.1	1.0
D011	7440-22-4	Silver	<0.02	5.0
D039	127-18-4	Tetrachloroethylene	<0.03	0.7
D040	79-01-6	Trichloroethylene	<0.03	0.5
D041	95-95-4	2,4,5-Trichlorophenol	<0.5	400.0
D042	88-06-2	2,4,6-Trichlorophenol	<0.5	2.0
D043	75-01-4	Vinyl chloride	<0.05	0.2

Extraction: 40 CFR 261, Appendix II--Toxicity Characteristic Leaching Procedure (TCLP).

Analysis: EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, Second and Third Editions.

Clayton
ENVIRONMENTAL CONSULTANTS

By Products Rainwater

Analytical Results
for
DETROIT COKE CORPORATION

Clayton Project No. 78804-17
P.O. No. D-10004-92A

Sample Matrix: Liquid
Lab Number: 954561
Sample Identification: BY-PRODUCTS AREA DRAINAGE

EPA HW Number	CAS Number	Constituent	Analytical Result (mg/L)	Regulatory Level (mg/L)
D004	7440-38-2	Arsenic	<0.1	5.0
D005	7440-39-3	Barium	<0.1	100.0
D018	71-43-2	Benzene	0.10	0.5
D006	7440-43-9	Cadmium	<0.05	1.0
D019	56-23-5	Carbon Tetrachloride	<0.03	0.5
D021	108-90-7	Chlorobenzene	<0.03	100.0
D022	67-66-3	Chloroform	<0.03	6.0
D007	7440-47-3	Chromium	<0.1	5.0
D026		Cresol (Total)	<1	200.0
D027	106-46-7	1,4-Dichlorobenzene	<0.2	7.5
D028	107-06-2	1,2-Dichloroethane	<0.03	0.5
D029	75-35-4	1,1-Dichloroethylene	<0.03	0.7
D030	121-14-2	2,4-Dinitrotoluene	<0.05	0.13
D032	118-74-1	Hexachlorobenzene	<0.05	0.13
D033	87-68-3	Hexachloro-1,3-butadiene	<0.05	0.5
D034	67-72-1	Hexachloroethane	<0.05	3.0
D008	7439-92-1	Lead	<0.1	5.0
D009	7439-97-6	Mercury	<0.01	0.2
D035	78-93-3	Methyl ethyl ketone	<0.5	200.0
D036	98-95-3	Nitrobenzene	<0.05	2.0
D037	87-86-5	Pentachlorophenol	<5	100.0
D038	110-86-1	Pyridine	0.27	5.0
D010	7782-49-2	Selenium	<0.1	1.0
D011	7440-22-4	Silver	<0.02	5.0
D039	127-18-4	Tetrachloroethylene	<0.03	0.7
D040	79-01-6	Trichloroethylene	<0.03	0.5
D041	95-95-4	2,4,5-Trichlorophenol	<0.5	400.0
D042	88-06-2	2,4,6-Trichlorophenol	<0.5	2.0
D043	75-01-4	Vinyl chloride	<0.05	0.2

Extraction: 40 CFR 261, Appendix II--Toxicity Characteristic Leaching Procedure (TCLP).

Analysis: EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, Second and Third Editions.

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ENVIRONMENTAL CONSULTANTS

Analytical Results
for
DETROIT COKE CORPORATION

Clayton Project No. 78804-17
P.O. No. D-10004-92A

Sample Matrix: Liquid
Lab Number: 954562
Sample Identification: BY-PRODUCTS SQUARE DIKE

EPA HW Number	CAS Number	Constituent	Analytical Result (mg/L)	Regulatory Level (mg/L)
D004	7440-38-2	Arsenic	<0.1	5.0
D005	7440-39-3	Barium	<0.1	100.0
D018	71-43-2	Benzene	<0.03	0.5
D006	7440-43-9	Cadmium	<0.05	1.0
D019	56-23-5	Carbon Tetrachloride	<0.03	0.5
D021	108-90-7	Chlorobenzene	<0.03	100.0
D022	67-66-3	Chloroform	<0.03	6.0
D007	7440-47-3	Chromium	<0.1	5.0
D026		Cresol (Total)	<1	200.0
D027	106-46-7	1,4-Dichlorobenzene	<0.2	7.5
D028	107-06-2	1,2-Dichloroethane	<0.03	0.5
D029	75-35-4	1,1-Dichloroethylene	<0.03	0.7
D030	121-14-2	2,4-Dinitrotoluene	<0.05	0.13
D032	118-74-1	Hexachlorobenzene	<0.05	0.13
D033	87-68-3	Hexachloro-1,3-butadiene	<0.05	0.5
D034	67-72-1	Hexachloroethane	<0.05	3.0
D008	7439-92-1	Lead	<0.1	5.0
D009	7439-97-6	Mercury	<0.01	0.2
D035	78-93-3	Methyl ethyl ketone	<0.5	200.0
D036	98-95-3	Nitrobenzene	<0.05	2.0
D037	87-86-5	Pentachlorophenol	<5	100.0
D038	110-86-1	Pyridine	<0.05	5.0
D010	7782-49-2	Selenium	<0.1	1.0
D011	7440-22-4	Silver	<0.02	5.0
D039	127-18-4	Tetrachloroethylene	<0.03	0.7
D040	79-01-6	Trichloroethylene	<0.03	0.5
D041	95-95-4	2,4,5-Trichlorophenol	<0.5	400.0
D042	88-06-2	2,4,6-Trichlorophenol	<0.5	2.0
D043	75-01-4	Vinyl chloride	<0.05	0.2

Extraction: 40 CFR 261, Appendix II--Toxicity Characteristic Leaching Procedure (TCLP).

Analysis: EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, Second and Third Editions.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
DETROIT COKE CORPORATION

Clayton Project No. 78804-17
P.O. No. D-16004-92A

Sample Matrix: Bulk
Lab Number: 954563
Sample Identification: TOP OF CONCRETE .

EPA HW Number	CAS Number	Constituent	Analytical Result (mg/L)	Regulatory Level (mg/L)
D004	7440-38-2	Arsenic	<0.1	5.0
D005	7440-39-3	Barium	0.2	100.0
D018	71-43-2	Benzene	<0.03	0.5
D006	7440-43-9	Cadmium	<0.05	1.0
D019	56-23-5	Carbon Tetrachloride	<0.03	0.5
D021	108-90-7	Chlorobenzene	<0.03	100.0
D022	67-66-3	Chloroform	<0.03	6.0
D007	7440-47-3	Chromium	<0.1	5.0
D026		Cresol (Total)	<1	200.0
D027	106-46-7	1,4-Dichlorobenzene	<2	7.5
D028	107-06-2	1,2-Dichloroethane	<0.03	0.5
D029	75-35-4	1,1-Dichloroethylene	<0.03	0.7
D030	121-14-2	2,4-Dinitrotoluene	<0.05	0.13
D032	118-74-1	Hexachlorobenzene	<0.05	0.13
D033	87-68-3	Hexachloro-1,3-butadiene	<0.05	0.5
D034	67-72-1	Hexachloroethane	<0.05	3.0
D008	7439-92-1	Lead	<0.1	5.0
D009	7439-97-6	Mercury	<0.01	0.2
D035	78-93-3	Methyl ethyl ketone	<0.5	200.0
D036	98-95-3	Nitrobenzene	<0.05	2.0
D037	87-86-5	Pentachlorophenol	<5	100.0
D038	110-86-1	Pyridine	<0.05	5.0
D010	7782-49-2	Selenium	<0.1	1.0
D011	7440-22-4	Silver	<0.02	5.0
D039	127-18-4	Tetrachloroethylene	<0.03	0.7
D040	79-01-6	Trichloroethylene	<0.03	0.5
D041	95-95-4	2,4,5-Trichlorophenol	<0.5	400.0
D042	88-06-2	2,4,6-Trichlorophenol	<0.5	2.0
D043	75-01-4	Vinyl chloride	<0.05	0.2

Extraction: 40 CFR 261, Appendix II--Toxicity Characteristic Leaching Procedure (TCLP).

Analysis: EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, Second and Third Editions.

Midwestern Operations

22345 Roethel Drive
Novi, MI 48375
(313) 344-1770
Fax (313) 344-2654

Clayton
ENVIRONMENTAL
CONSULTANTS

March 30, 1992

Mr. Carl Curry
Environmental Manager
DETROIT COKE CORPORATION
7819 West Jefferson
Detroit, MI 48209

Clayton Project No. 78952-17
P.O. No. D-10005-92A

Dear Mr. Curry:

The following is our report for the samples received on March 10, 1992. The results and analytical methods used are presented in the attached tables.

Please note that samples (where appropriate) will be retained for 30 days after report date.

We appreciate the opportunity to be of assistance to you. If you have any questions, please call me or our Client Services Department at (313) 344-2650.

Sincerely,

Daryl Strandbergh
Manager, Laboratory Services

DS/rk
Attachments

Clayton
ENVIRONMENTAL CONSULTANTS

SWMU 1[illegible]

Analytical Results
for
DETROIT COKE CORPORATION

Clayton Project No. 78952-17
P.O. No. D-10005-92A

Sample Matrix: Water
Lab Number: 956025
Sample Identification: COAL FINES RECOVERY

EPA HW Number	CAS Number	Constituent	Analytical Result (mg/L)	Regulatory Level (mg/L)
D004	7440-38-2	Arsenic	<0.1	5.0
D005	7440-39-3	Barium	<0.1	100.0
D018	71-43-2	Benzene	<0.03	0.5
D006	7440-43-9	Cadmium	<0.05	1.0
D019	56-23-5	Carbon Tetrachloride	<0.03	0.5
D021	108-90-7	Chlorobenzene	<0.03	100.0
D022	67-66-3	Chloroform	<0.03	6.0
D007	7440-47-3	Chromium	<0.1	5.0
D026		Cresol (Total)	<1	200.0
D027	106-46-7	1,4-Dichlorobenzene	<0.2	7.5
D028	107-06-2	1,2-Dichloroethane	<0.03	0.5
D029	75-35-4	1,1-Dichloroethylene	<0.03	0.7
D030	121-14-2	2,4-Dinitrotoluene	<0.05	0.13
D032	118-74-1	Hexachlorobenzene	<0.05	0.13
D033	87-68-3	Hexachloro-1,3-butadiene	<0.06	0.5
D034	67-72-1	Hexachloroethane	<0.05	3.0
D008	7439-92-1	Lead	<0.1	5.0
D009	7439-97-6	Mercury	<0.01	0.2
D035	78-93-3	Methyl ethyl ketone	<0.5	200.0
D036	98-95-3	Nitrobenzene	<0.05	2.0
D037	87-86-5	Pentachlorophenol	<5	100.0
D038	110-86-1	Pyridine	<0.05	5.0
D010	7782-49-2	Selenium	<0.1	1.0
D011	7440-22-4	Silver	<0.02	5.0
D039	127-18-4	Tetrachloroethylene	<0.03	0.7
D040	79-01-6	Trichloroethylene	<0.03	0.5
D041	95-95-4	2,4,5-Trichlorophenol	<0.5	400.0
D042	88-06-2	2,4,6-Trichlorophenol	<0.5	2.0
D043	75-01-4	Vinyl chloride	<0.05	0.2

Extraction: 40 CFR 261, Appendix II--Toxicity Characteristic Leaching Procedure (TCLP).

Analysis: EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, Second and Third Editions.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
DETROIT COKE CORPORATION

Clayton Project No. 78952-17
P.O. No. D-10005-92A

Sample Matrix: Water
Lab Number: 956026
Sample Identification: TAR LINE BASIN

EPA HW Number	CAS Number	Constituent	Analytical Result (mg/L)	Regulatory Level (mg/L)
D004	7440-38-2	Arsenic	<0.1	5.0
D005	7440-39-3	Barium	<0.1	100.0
D018	71-43-2	Benzene	0.08	0.5
D006	7440-43-9	Cadmium	<0.05	1.0
D019	56-23-5	Carbon Tetrachloride	<0.03	0.5
D021	108-90-7	Chlorobenzene	<0.03	100.0
D022	67-66-3	Chloroform	<0.03	6.0
D007	7440-47-3	Chromium	<0.1	5.0
D026		Cresol (Total)	<1	200.0
D027	106-46-7	1,4-Dichlorobenzene	<0.2	7.5
D028	107-06-2	1,2-Dichloroethane	<0.03	0.5
D029	75-35-4	1,1-Dichloroethylene	<0.03	0.7
D030	121-14-2	2,4-Dinitrotoluene	<0.05	0.13
D032	118-74-1	Hexachlorobenzene	<0.05	0.13
D033	87-68-3	Hexachloro-1,3-butadiene	<0.06	0.5
D034	67-72-1	Hexachloroethane	<0.05	3.0
D008	7439-92-1	Lead	<0.1	5.0
D009	7439-97-6	Mercury	<0.01	0.2
D035	78-93-3	Methyl ethyl ketone	<0.5	200.0
D036	98-95-3	Nitrobenzene	<0.05	2.0
D037	87-86-5	Pentachlorophenol	<5	100.0
D038	110-86-1	Pyridine	<0.05	5.0
D010	7782-49-2	Selenium	<0.1	1.0
D011	7440-22-4	Silver	<0.02	5.0
D039	127-18-4	Tetrachloroethylene	<0.03	0.7
D040	79-01-6	Trichloroethylene	<0.03	0.5
D041	95-95-4	2,4,5-Trichlorophenol	<0.5	400.0
D042	88-06-2	2,4,6-Trichlorophenol	<0.5	2.0
D043	75-01-4	Vinyl chloride	<0.05	0.2

Extraction: 40 CFR 261, Appendix II--Toxicity Characteristic Leaching Procedure (TCLP).

Analysis: EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, Second and Third Editions.

Clayton
ENVIRONMENTAL CONSULTANTS
A Marsh & McLennan Company

REQUEST FOR LABORATORY ANALYTICAL SERVICES

For Clayton Use Only	Page 1 of 1
Project No.	78952-17
Batch No.	
Client No.	
Date Logged In	By

REPORT RESULTS TO

Name	CARL CURRY	Title	Env. Mgr.
Company	Detroit Coke	Dept.	
Mailing Address	7819 W. Jefferson		
City, State, Zip	Detroit Mi		
Telephone No.	313-842-6222	Telefax No.	313-843-8240

Purchase Order No. D-10005-92A | Client Job No.

SEND INVOICE TO

Name			
Company	Same	Dept.	
Address			
City, State, Zip			

Date Results Required: 7-10 days | Rush Charges Authorized? ☐ Yes ☒ No | Phone Results ☑

Samples are: (check if applicable)
☐ Drinking Water
☐ Collected in the State of New York

Special Instructions: (method, limit of detection, etc.)

* Explanation of Preservative:

ANALYSIS REQUESTED (Enter an 'X' in the box below to indicate request; Enter a 'P' if Preservative added. *)

CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	TCLP Metals	TCLP VOC	TCLP SEMI-VOL.	FOR LAB USE ONLY
Coal Fines Recovery	3/9/92	WATER		4	X	X	X	
Tar ~~Pump House~~ - ~~SUMP~~ LINE BASIN	3/9/92	WATER		4	X	X	X	
~~Tar Line Basin~~	~~3/9/92~~	~~WATER~~		~~4~~	~~X~~	~~X~~	~~X~~	

37 on cart CK

CHAIN OF CUSTODY

Relinquished by:	Date/Time	Received by: Carol Kamoo — Date/Time 10:00 AM
Relinquished by:	Date/Time	Received at Lab by: — Date/Time
Method of Shipment:		Sample Condition Upon Receipt: ☒ Acceptable ☐ Other (explain)

Authorized by: [signature] Date 3-10-92
(Client Signature Must Accompany Request)

RECEIVED MAR 10 1992

Please return completed form and samples to one of the Clayton Environmental Consultants, Inc. labs listed below:

22345 Pontiac Drive Novi, MI 48375 (313) 344-1770	Raritan Center 160 Fieldcrest Ave. Edison, NJ 08837 (201) 225-6040	400 Chastain Center Blvd., N.W. Suite 490 Kennesaw, GA 30144 (404) 499-7500	1252 Quarry Lane Pleasanton, CA 94566 (415) 426-2600

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Part B

DETROIT COKE CORPORATION

BOX 09229/DETROIT, MI 48209/(313) 842-6222

AUGUST 3, 1989

DEPARTMENT OF NATURAL RESOURCES
WASTE MANAGEMENT DIVISION - PERMITS
OTTAWA BUILDING, SOUTH
P.O. BOX 30241
LANSING, MI 48909

ATTENTION: MS. KATHLEEN CLANCY

DEAR MS. CLANCY:

ENCLOSED ARE METAL ANALYSES OF THE WEAK AMMONIA LIQUOR PRODUCED AND DISPOSED OF VIA UNDERGROUND INJECTION BY DETROIT COKE CORPORATION.

THE ANALYSES ARE FROM THE WASTE ANALYSIS PLAN BEING IMPLEMENTED AND THE ANALYSES COVER THE PREVIOUS COUPLE YEARS. IF THERE IS ANY QUESTION OR ADDITIONAL INFORMATION NEEDED, PLEASE CALL ME AT (313) 842-6222.

SINCERELY,

Carl Curry

CARL CURRY

CC/JP
ENCLOSURES

RECEIVED

AUG 07 1989

Waste Management Division

CLAYTON ENVIRONMENTAL CONSULTANTS, INC.

Analytical Laboratory Report
for
DETROIT COKE CORPORATION

Clayton Project No.: 55467-17
P.O. No.: D-467-89

Lab Number: 708333
Sample Description: AMMONIA LIQUOR

Compound Name	Concentration		Limit of Detection	
Metals				
Beryllium	<0.2	mg/L	0.2	mg/L
Cadmium	<0.2	mg/L	0.2	mg/L
Copper	<1	mg/L	1	mg/L
Nickel	<2	mg/L	2	mg/L
Chromium	<2	mg/L	2	mg/L
Lead	<2	mg/L	2	mg/L
Sulfide	740	mg/L	1	mg/L
Oil & Grease	49	mg/L	5	mg/L
Phenol	600	mg/L	0.05	mg/L
Total Suspended Solids	20	mg/L	10	mg/L
pH	9.2		--	
Specific Gravity	1.01	g/mL	--	
Ammonia	5,000		1	mg/L
Cyanide	0.037	mg/L	0.01	mg/L

Clayton Environmental Consultants, Inc.

22345 Roethel Drive • Novi, Michigan 48050 • (313) 344-1770

Waste Analysis Plan - 1988

January 20, 1988

Mr. Byron G. Tims
Laboratory Supervisor
DETROIT COKE CORPORATION
7819 West Jefferson Avenue
Detroit, MI 48209

Clayton Project No. 45718-17
P.O. No. D-3891-87
Partial Report

Dear Mr. Tims:

The following is our report for the sample submitted on December 16, 1987. The results and analytical methods used are presented below.

Lab Number: 599043
Sample Description: Ammonia Liquor

Compound	Concentration		Limit of Detection		Analytical Method
Antimony	<0.4	mg/L	0.4	mg/L	A
Arsenic	0.06	mg/L	0.02	mg/L	A
Beryllium	<0.02	mg/L	0.02	mg/L	A
Cadmium	<0.02	mg/L	0.02	mg/L	A
Chromium	<0.2	mg/L	0.2	mg/L	A
Copper	<0.1	mg/L	0.1	mg/L	A
Lead	<0.2	mg/L	0.2	mg/L	A
Mercury	0.001	mg/L	0.001	mg/L	A
Nickel	<0.2	mg/L	0.2	mg/L	A
Selenium	<0.02	mg/L	0.02	mg/L	A
Silver	<0.05	mg/L	0.05	mg/L	A
Thallium	<0.5	mg/L	0.5	mg/L	A
Zinc	0.03	mg/L	0.03	mg/L	A
Total Suspended Solids	73	mg/L**	5	mg/L	B
Oil and Grease	20	mg/L	1	mg/L	B
Thiocyanate	590	mg/L	0.2	mg/L	C
pH	9.3		--		B
Phenol	650	mg/L	0.05	mg/L	A
Sulfide	350	mg/L	1	mg/L	B
Ammonia Nitrogen	2,800	mg/L	1	mg/L	B

Compound	Concentration	Limit of Detection	Analytical Method
Volatile Organic Compounds	See attached		D
Semi-Volatile Organic Compounds	See attached		E

**Result has been blank corrected using a lab blank.

A. EPA Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, Second and Third Editions.

B. Methods for Chemical Analysis of Water and Wastes - EPA-600/4-79-020, March 1983.

C. Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 16th Edition, 1985.

D. Gas chromatography/mass spectrometry following EPA protocol (Method 624).

E. Gas chromatography/mass spectrometry following EPA protocol (Method 625).

The cyanide result will be forwarded upon completion.

It is a pleasure to be of assistance to you. Please contact me if you have any questions.

Sincerely,

Robert Lieckfield Jr./kw

Robert Lieckfield Jr., C.I.H.
Manager, Laboratory Services

RL:kf
Attachment

Clayton Environmental Consultants, Inc.

22345 Roethel Drive • Novi, Michigan 48050 • (313) 344-1770

April 17, 1987

Mr. Byron G. Tims
Laboratory Assistant
DETROIT COKE CORPORATION
7819 West Jefferson Avenue
Detroit, MI 48209

Clayton Project No. 39462-17
P.O. No. D-695-87

Dear Mr. Tims:

The following is our report on the analysis of the ammonia liquor sample submitted on March 6, 1987. The analytical methods used are summarized below. The results are provided in the enclosed tables.

Priority Pollutant Metals

An aliquot of the sample was diluted with water and ashed with nitric acid at 105 °C for four hours. The acid solution was then analyzed for priority pollutant metals using atomic absorption spectrophotometry as referenced in EPA Test Methods for Analysis of Solid Waste: Physical/Chemical Methods, SW-846, Second Edition, April 1984.

Conventional/Nonconventional Pollutants

The analyses for sulfide, phenol, ammonia-nitrogen, oil and grease, pH, and total suspended solids were performed in accordance with Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, March 1983. Sulfide, phenol, and ammonia-nitrogen were analyzed by Spotts, Stevens and McCoy, Inc. in Reading, Pennsylvania.

Thiocyanate was analyzed following Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 16th Edition, 1985.

Volatile Organics

A 5-milliliter water sample was placed in a glass purging chamber. The sample was purged with helium to transfer the volatile components from the aqueous to the vapor phase. The sample (purge) effluent was collected on a Tenax/silica gel/charcoal sorbent column. After purging was completed, the sorbent column was thermally desorbed onto the GC/MS for identification and quantitation.

Base/Neutral/Acid Compounds

A measured volume of sample was serially extracted with methylene chloride at a pH greater than 11 and again at a pH less than 2 using a separatory funnel. The methylene chloride extract was dried, concentrated to a volume of 1 milliliter, and analyzed by GC/MS. Identification of sample components was performed using the retention time and the relative abundance of characteristic ions (m/z). Quantitative analysis was performed using internal standard techniques.

It is a pleasure to be of assistance to you. Please call me if you have any questions.

Sincerely,

Robert Lieckfield Jr., C.I.H.
Manager, Laboratory Services

RL:kf
Enclosure

CLAYTON EN...ON TAL CONSULTANTS, INC.

Results of Analysis
for
DETROIT COKE CORPORATION

Clayton Project No.: 39462-17

Lab Number: 530381
Sample Description: AMMONIA LIQUOR

Compound Name	Concentration		Limit of Detection	
Antimony	<0.4	mg/L	0.4	mg/L
Arsenic	<0.02	mg/L	0.02	mg/L
Beryllium	<0.02	mg/L	0.02	mg/L
Cadmium	<0.02	mg/L	0.02	mg/L
Chromium	<0.2	mg/L	0.2	mg/L
Copper	<0.1	mg/L	0.1	mg/L
Lead	<0.2	mg/L	0.2	mg/L
Mercury	0.02	mg/L	0.02	mg/L
Nickel	<0.2	mg/L	0.2	mg/L
Selenium	<0.1	mg/L	0.02	mg/L
Silver	<0.1	mg/L	0.1	mg/L
Thallium	<0.5	mg/L	0.5	mg/L
Zinc	0.18	mg/L	0.03	mg/L
Total Suspended Solids	11	mg/L	*	
Oil and Grease	21	mg/L	0.5	mg/L
Thiocyanate	800	mg/L	0.1	mg/L
pH	9.2		--	
Phenol	1400	mg/L	*	
Sulfide	251	mg/L	*	
Ammonia-Nitrogen	5500	mg/L	*	

* The limit of detection for bulk samples varies with sample size.

Results for total suspended solids have been blank corrected.

RECEIVED
APR 24 1986
HAZARDOUS WASTE DIV

DETROIT COKE CORPORATION
BOX 09229/DETROIT, MI 48209/(313) 842-6222

April 22, 1986

Ms. Faye Dade
Hazardous Waste Division
DNR
S. E. Michigan Field Office
15500 Sheldon Road
Northville, MI 48167

Dear Ms. Dade:

Relative to your letter dated March 31, 1986, the following information summarizes the items in question.

The By-Products Departmental Supervisor and the Environmental and Quality Control Supervisor have been tested relative to the proper operation, safety, environmental regulations, monitoring and reporting, chemistry, fluid flow, instrumentation, unit operations, mechanical equipment and maintenance of the disposal wells. Further on-the-job training is given to by-products operators, for job qualification.

Detroit Coke Corporation has wastewater operators who are certified by the State of Michigan Department of Natural Resources. They are qualified under the rules governing the certification of waste treatment plant operators to operate any industrial or commercial treatment facility of the classifications, (1) A-1B, physical clarification and (2) A-2G, deep well injection. Resumes of the involved personnel are kept on file at the plant.

New potential operators are trained for 15 days with qualified operators. If after this period of time, they are judged to be incapable, they are released from this department. Records are retained on qualification.

Also, the "Right to Know Regulations" are being followed and further develop the operators awareness of chemical management in the workplace.

If there are further questions relative to any of this information, please feel free to contact the writer.

Sincerely,

Carl Curry

Carl Curry,
Mgr./Environmental Control
Detroit Coke Corporation

CC/jmp