8/15/97 2

WTR-

Allan Ota, Mike Lee

Here's my first draft of the revised ocean disposal permit. I changed a number of items. We should discuss if this is the way you want to go:

1. Eliminated analyses of individual waste streams and only requiring monthly analyses of waste store in on-shore storage tank. I put in section if fish processing procedures change then we can require them to do individual analyses. Otherwise, do you think we need to have them do individual waste stream analyses at all? (Or maybe once or twice a year?) I don't really think necessary.

2. Eliminated volume limits for individual waste streams; only have 200,000 gallon limit for disposal per day.

3. Are bioassays required by regulation and calculations done to insure that LPC not being exceeded? Or is it sufficient that water quality standards not being exceeded?

4. Allan, you might want to redo the tables in Lotus format, I revised Pat's which were in Word Perfect and they don't really line up correctly. We might want to send the canneries a copy of forms (or email them) when the final permits are issued.

5. I added section if seas are rough can do alternate disposal pattern but must record conditions.

Allan, how are you doing on calculations? The present extension expires August 31. I will do re-extension. Think December 31 is enough time?

P.S. Did you know come October I'll be taking over the CNMI and Palau? We're hiring someone to replace me, while I take over Jim Branch's islands (he's retiring).

Pat

(1594)

DRAFT 8/15/97

MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT § 102
OCEAN DUMPING PERMIT

PERMIT NUMBER AND TYPE: OD97 ~~93~~-01 Special

EFFECTIVE DATE: ~~September 1, 1993~~ December 31, 1997

EXPIRATION DATE: ~~August 31, 1996~~ January 1, 2001

PERMITTEE: StarKist Samoa, Inc.
P.O. Box 368
Pago Pago, American Samoa 96799

WASTE GENERATOR: StarKist Samoa, Inc.
P.O. Box 368
Pago Pago, American Samoa 96799

WASTE GENERATED AT: StarKist Samoa, Inc.
P.O. Box 368
Pago Pago, American Samoa 96799

PORT OF DEPARTURE: Pago Pago Harbor, American Samoa

WASTE TRANSPORTER: FV TASMAN SEA
Blue North Fisheries, Inc.
1130 N.W. 45th Street
Seattle, Washington 98107-4626

A special ocean dumping permit is being issued to StarKist Samoa, Inc. because the Regional Administrator of EPA Region IX has determined that disposal of fish processing wastes off American Samoa meets EPA's ocean dumping criteria at 40 C.F.R. Parts 227 and 228. For this permit, the term "fish processing wastes" shall refer to Dissolved Air Flotation (DAF) Sludge, Cooker Juice and Press Liquor generated at the permittee's plant in Pago Pago, American Samoa; or any combination of the three waste streams pumped from StarKist Samoa's onshore holding tanks into the ocean disposal vessel for transportation to the ocean disposal site.

This special permit authorizes the transportation and dumping into ocean waters of fish processing wastes as described in the special conditions section pursuant to the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972 (33 U.S.C. § 1401 *et seq.*) as amended (hereinafter referred to as "the Act"); regulations issued thereunder; and the terms and conditions stated below.

This MPRSA Special Permit does not contain any information collection requirements subject to Office of Management and Budget review under the Paper Work Reduction Act of 1980 (44 U.S.C. § 3501 *et seq.*). This determination has been made because the permit does not require data collection by more than 10 persons.

1. GENERAL CONDITIONS

1.1. Operation under this special ocean dumping permit shall conform to all applicable federal statutes and regulations including, but not limited to, the Act, the Marine Plastic Pollution Research and Control Act of 1987 (P.L. 100-220), the Clean Water Act (33 U.S.C. § 1251 *et seq.*), and the Ports and Waterways Safety Act (33 U.S.C. § 1221 *et seq.*).

1.2. All transportation and dumping authorized herein shall be undertaken in a manner consistent with the terms and conditions of this permit. StarKist Samoa, Inc. (hereafter referred to as "the permittee") shall be liable for compliance with all such terms and conditions. The permittee shall be held liable under § 105 of the Act (33 U.S.C. § 1415) if any permit violations occur. During disposal operations when the permittee's fish processing wastes are loaded aboard the disposal vessel in holding tanks, either separately or combined with similar fish processing wastes from other permittees authorized to use the ocean disposal site defined in Special Condition 2.2, the permittees shall be held individually liable under § 105 of the Act (33 U.S.C. § 1415) if a permit violation occurs. If a permit violation occurs during the transportation and disposal of fish processing wastes, the waste transporter may also be liable for permit violations.

1.3. Under § 105 of the Act, any person who violates any provision of the Act, 40 C.F.R. Parts 220 through 228 promulgated thereunder, or any term or condition of this permit shall be liable for a civil penalty of not more than $50,000 per day for each violation. Additionally, any knowing violation of the Act, 40 C.F.R. Parts 220 through 228, or the permit may result in a criminal action being brought with penalties of not more than $50,000 or one year in prison, or both. Violations of the Act or the terms and conditions of this permit include but are not limited to:

1.3.1. Transportation to, and dumping at any location other than that defined in Special Condition 2.2 of this permit;

1.3.2. Transportation and dumping of any material not identified in this permit, more frequently than authorized in this permit, or more than the quantities identified in this permit, unless specifically authorized by a written modification hereto;

1.3.3. Failure to conduct permit monitoring as required in Special Conditions 3.1, 3.3.1, 4.7 and 5.1; or

1.3.4. Failure to file reports on fish processing wastes and disposal site monitoring reports as required in the Special Conditions.

1.4. Nothing contained herein shall be deemed to authorize, in any way, the transportation from the United States for the purpose of dumping into the ocean waters, the territorial sea, or the contiguous zone, the following materials:

1.4.1. High-level radioactive wastes;

1.4.2. Materials, in whatever form, produced for radiological, chemical, or biological warfare;

1.4.3. Persistent synthetic or natural materials which may float or remain in suspension in the ocean; or

1.4.4. Medical wastes as defined in § 3(k) of the Act.

1.4.5. Flotables, garbage, domestic trash, waste chemicals, solid waste, or any materials prohibited by the Act or the Marine Plastic Pollution Research and Control Act.

1.5. Nothing contained herein shall be deemed to authorize, in any way, violation of applicable American Samoa Water Quality Standards. The following water quality standards apply:

Table 1. 1989 American Samoa Water Quality Standards: Oceanic Waters [§24.0207(g)(1-7)].

might change

Parameter	Median Not to Exceed the Given Value
Turbidity	0.20 NTU
Total Phosphorus	11.0 µg-P/L
Total Nitrogen	115.0 µg-N/L
Chlorophyll *a*	0.18 µg/L
Light Penetration Depth	150 feet, to exceed the given value 50% of the time.
Dissolved Oxygen	Not less than 80% of saturation or less than 5.5 mg/L. If the natural level of dissolved oxygen is less than 5.5 mg/L, then the natural dissolved oxygen level shall become the standard.
pH	The pH range shall be 6.5 to 8.6 pH units and within 0.2 pH units of the level which occurs naturally.

ASEPA in process of revising stnds now. Check status before permit issued

Should the American Samoa Water Quality Standards applicable to this permit be revised, such revised standards shall apply.

1.6. After notice and opportunity for a hearing, this permit may be revised, revoked or limited, in whole or in part, subject only to the provisions of 40 C.F.R. §§ 222.3(b) through 222.3(h) and 40 C.F.R. § 223.2, as a result of a determination by the Regional Administrator of EPA that:

1.6.1. The cumulative impact of the permittee's dumping activities or the aggregate impact of all dumping activities in the dump site designated in Special Condition 2.2 should be categorized as Impact Category I, as defined in 40 C.F.R. § 228.10(c)(1);

1.6.2. There has been a change in circumstances regarding the management of the disposal site designated in Special Condition 2.2;

1.6.3. The dumping authorized by the permit would violate applicable American Samoa Water Quality Standards;

1.6.4. The dumping authorized can no longer be carried out consistent with the criteria defined at 40 C.F.R. Parts 227 and 228;

1.6.5. The permittee violated any term or condition of the permit;

1.6.6. The permittee misrepresented, or did not disclose all relevant facts in the permit application accurately; or

1.6.7. The permittee did not keep records, engage in monitoring and reporting activities, or to notify appropriate officials in a timely manner of the transportation and dumping activities as specified in any condition of this permit.

1.7. The permittee shall ensure always that facilities, including any vessels associated with the permit, are in good working order to achieve compliance with the terms and conditions of this permit. During all loading operations, there shall not be a loss of fish processing wastes to any waterway. During transport to the disposal site, there shall not be a loss of fish processing wastes to Pago Pago Harbor or the ocean.

1.8. The permittee shall notify the Regional Administrator of any change in the designated fish processing waste transporter at least 30 days before the transfer date. ~~Any change in the designated fish processing waste transporter may be made at the discretion of the Regional Administrator or his delegate. A written request for such a transfer shall be made by the permittee at least thirty (30) days before the requested transfer date. Written approval by the EPA Regional Administrator must be obtained before such a transfer occurs.~~

1.9. The permittee shall allow the EPA Regional Administrator, the Commander of the Fourteenth U.S. Coast Guard District (USCG), the Director of the American Samoa Environmental Protection Agency (ASEPA), and/or their authorized representatives to:

1.9.1. Enter into, upon, or through the permittee's premises, vessels, or other premises or vessels under the control of the permittee, where, or in which, a source of material to be dumped is located or in which any records are required to be kept under the terms and conditions of this permit or the Act;

1.9.2. Have access to and copy any records required to be kept under the terms and conditions of this permit or the Act;

1.9.3. Inspect any dumping equipment, navigational system equipment, monitoring equipment or monitoring methods required in this permit;

1.9.4. Sample or require that a sample be drawn, under EPA, USCG, or ASEPA supervision, of any materials discharged or to be discharged; or

1.9.5. Inspect laboratory facilities, data, and quality control records required for compliance with any condition of this permit.

1.10. Material which is regulated by this permit may be disposed of, due to an emergency, to safeguard life at sea, in locations or in a manner that does not comply with the terms of this permit. If this occurs, the permittee shall make a full report, according to the provisions of 18 U.S.C. § 1001, within 15 days to the EPA Regional Administrator, the USCG and the ASEPA describing the conditions of this emergency and the actions taken, including the location, the nature and the amount of material disposed.

1.11. The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of rights, nor any infringement of Federal, State or local laws or regulations, nor does it obviate the necessity of obtaining State or local assent required by applicable law for the activity authorized.

1.12. This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities, or, except as authorized by this permit, the conduct of any work in any navigable waters.

1.13. Unless otherwise provided for herein, all terms used in this permit shall have the meanings assigned to them by the Act or 40 C.F.R. Parts 220 through 228, issued thereunder.

2. SPECIAL CONDITIONS - DISPOSAL SITE AND FISH PROCESSING WASTE CHARACTERIZATION

Special conditions are necessary to define the length of the permit period, identify the disposal site location, describe fish processing waste streams and define maximum permitted limits for ~~DAF Sludge, Cooker Juice and Press Liquor~~ for the combined three waste streams (DAF sludge, cooker juice and press liquor) stored in on-shore storage tanks.

2.1. **Location of the Waste Generator and Duration of the Permit**

2.1.1. The material to be dumped shall consist of fish processing wastes, defined in Special Conditions 2.3 and 2.4, generated at the permittee's fish cannery in Pago Pago, American Samoa.

2.1.2. This permit shall become effective on ~~September 1, 1993~~ December 31, 1997 and it shall expire three years from the effective data at midnight on ~~August 31, 1996~~. January 1, 2001.

2.2. **Location of Disposal Site**

Disposal of fish processing wastes generated at the location defined in Special Condition 2.1.1 shall be confined to a circular area with a 1.5 nautical mile radius, centered at 14° 24.00' South latitude by 170° 38.30' West longitude.

2.3. **Description of Fish Processing Wastes**

2.3.1. During the term of this permit, and according to all other terms and conditions of this permit, the permittee is authorized to transport and dispose a maximum of 200,000 gallons per day of fish processing wastes. ~~pumped from a storage tank on the permittee's premises.~~ The fish processing wastes, Dissolve Air Flotation (DAF) sludge, cooker juice and press liquor, are stored in ~~pumped from~~ the permittee's on-shore storage tanks. ~~are authorized for disposal at the designated ocean disposal site. Fish processing wastes pumped into the permittee's onshore storage tanks shall not exceed the following amounts:~~

~~**Table 2. Volumes of Fish Processing Wastes Generated Each Day by StarKist Samoa and Pumped into a Storage Tank before Loading into the Ocean Disposal Vessel.**~~

~~**Fish Processing Waste**~~	~~**Maximum Volume Generated (gallons/day)**~~
~~Dissolved Air Flotation (DAF) Sludge~~	~~30,000~~
~~Cooker Juice~~	~~70,000~~
~~Press Liquor~~	~~100,000~~
~~**Maximum Daily Volume Generated and Pumped into a Storage Tank before Loading into the Disposal Vessel**~~	~~**200,000**~~

2.4. Fish Processing Waste Stream Limits

Fish processing waste stream limits apply to the combined fish wastes of DAF sludge, cooker juice and press liquor, which are co-mingled and stored in an onshore storage tank prior to transport to the ocean disposal site.

~~**Table 3.** Limits for DAF Sludge, Cooker Juice and Press Liquor.~~

~~Physical or Chemical Parameter (units)[a]~~	~~DAF Sludge~~	~~Cooker Juice~~	~~Press Liquor~~
~~Total Solids (mg/L)~~	~~163,430~~	~~114,180~~	~~327,870~~
~~Total Volatile Solids (mg/L)~~	~~136,180~~	~~63,400~~	~~292,280~~
~~5-Day BOD (mg/L)~~	~~232,320~~	~~185,150~~	~~310,790~~
~~Oil and Grease (mg/L)~~	~~64,100~~	~~11,810~~	~~112,080~~
~~Total Phosphorus (mg/L)~~	~~1,640~~	~~940~~	~~3,160~~
~~Total Nitrogen (mg/L)~~	~~7,020~~	~~7,560~~	~~20,360~~
~~Ammonia (mg/L)~~	~~1,830~~	~~690~~	~~1,390~~
~~pH (pH units)~~	~~5.3 to 7.0~~	~~5.9 to 7.0~~	~~5.8 to 7.0~~
~~Density (g/mL)~~	~~0.97 to 1.06~~	~~0.98 to 1.06~~	~~0.99 to 1.08~~

Table 3. Limits for Onshore Storage Tank Fish Wastes

Physical or Chemical Parameter (units)[a]	**Storage Tank**
Total Solids (mg/L)	
Total Volatile Solids (mg/L)	
5-Day BOD (mg/L)	
Oil and Grease (mg/L)	
Total Phosphorus (mg/L)	

Physical or Chemical Parameter (units)[a]	Storage Tank
Total Phosphorus (mg/L)	
Total Nitrogen (mg/L)	
Ammonia (mg/L)	
pH (pH units)	5.3 to 7.0
Density (g/mL)	0.97 to 1.06

a = All calculated values were rounded to the nearest 10, except density and pH ranges.

2.4.2. Permitted Maximum Concentrations for the onshore storage tank fish waste ~~each type of fish processing waste stream~~ were calculated based on an analysis XX months of ~~historical~~ data from the permittee's previous Special Ocean Dumping Permit, number OD ~~90-0193-01~~. The calculations followed EPA's recommended procedure for determining permit limits as defined in the EPA document titled: "Guidance Document for Ocean Dumping Permit Writers" (January 30, 1988). EPA Region IX will periodically review these limits during the permit to evaluate the accuracy of the limits. If revisions are necessary, EPA Region IX will make changes according to the authority defined in the Ocean Dumping Regulations at 40 C.F.R §§ 223.2 through 223.5.

2.4.3. The Permitted Maximum Concentrations, density range and pH range listed above, shall not be exceeded at any time during the term of this permit.

3. SPECIAL CONDITIONS - ANALYSIS OF FISH PROCESSING WASTES

Compliance with the permitted maximum concentrations defined in Special Condition 2.4 shall be determined by monthly monitoring of the waste in the onshore storage tank. ~~**each of the fish processing waste streams**~~. ~~Additional analyses of fish processing wastes and reporting requirements are defined in this section~~. ~~Any fish processing waste stream~~ The sampling dates shall be scheduled within the first two weeks of the month to allow enough time for laboratory analyses and report writing to comply with Special Condition 3.3.

3.1. Analyses of Fish Processing Wastes

3.1.1. Concentrations or values of the parameters listed in Special Condition 2.4 and those listed in the table below shall be determined for the waste in the onshore storage tank. ~~each fish processing waste stream. A sample of each fish processing waste stream shall be taken before the individual streams are mixed and pumped into an onshore storage tank. A sample shall consist of three replicate grab~~

samples, taken on the day that sampling is scheduled, pooled for use as a composite sample. (NOTE: This section in red was formely Section 3.1.2) In addition to the fish processing waste stream samples taken under Special Condition 3.1.1, the Once a month, the permittee shall analyze samples taken from its onshore fish processing waste storage tank during the transfer of these wastes to the disposal vessel's holding tanks.

3.1.2.1 3.1.1.1 Three samples shall be taken from the onshore storage tank transfer line at 10 minute intervals. These samples shall be composited to produce one sample for analysis. The permittee's samples shall not be combined with fish processing waste from any other permittee.

3.1.2.2. Samples described in Special Condition 3.1.2.1 shall be taken for 12 months. Samples shall be collected on the same day that samples are taken for analysis under Special Condition 3.1.1 and another sample shall be taken one week later.

3.1.2.3. 3.1.1.2. The same parameters and detection limits listed in Table 4 shall be analyzed and used for the onshore storage tank composite samples. This sampling and analysis program will provide 2 samples per month for 12 months yielding 24 samples. The detection limits specified in Table 4 shall be used in all fish processing waste stream analyses.

Table 4. Physical and Chemical Parameters to be Analyzed from of Onshore Storage Tank Waste Individual Samples of DAF Sludge, Cooker Juice and Press Liquor.

Parameter	Method Detection Limit
Total Solids	10.0 mg/L
Total Volatile Solids	10.0 mg/L
5-Day BOD	10.0 mg/L
Oil and Grease	10.0 mg/L
Total Phosphorus	1.0 mg/L
Total Nitrogen	1.0 mg/L
Ammonia	1.0 mg/L
pH	0.1 pH units
Density	0.01 g/mL

~~3.1.2. In addition to the fish processing waste stream samples taken under Special Condition 3.1.1, the permittee shall analyze samples taken from its onshore fish processing waste storage tank during the transfer of these wastes to the disposal vessel's holding tanks.~~

~~3.1.2.1. Three samples shall be taken from the onshore storage tank transfer line at 10 minute intervals. These samples shall be composited to produce one sample for analysis. The permittee's samples shall not be combined with fish processing waste from any other permittee.~~

~~3.1.2.2. Samples described in Special Condition 3.1.2.1 shall be taken for 12 months. Samples shall be collected on the same day that samples are taken for analysis under Special Condition 3.1.1 and another sample shall be taken one week later.~~

~~3.1.2.3. The same parameters and detection limits listed in Table 4 shall be analyzed and used for the onshore storage tank composite samples. This sampling and analysis program will provide 2 samples per month for 12 months yielding 24 samples.~~

~~3.1.2.4. The permittee shall send a copy of the analytical data for the onshore storage tank samples to EPA Region IX every 3 months during the 12-month sampling period. EPA Region IX will use these results to calculate limits for the onshore storage tank fish processing wastes. When the onshore storage tank limits are calculated, EPA Region IX will evaluate whether to amend this permit using the new limits.~~

3.1~~.3~~.2 All sampling procedures, analytical protocols, and quality control/quality assurance procedures shall be performed according to guidelines specified by EPA Region IX. The following references shall be used by the permittee:

3.1.3.1. 40 C.F.R. Part 136, EPA Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act;

3.1.3.2. Tetra Tech, Incorporated. 1985. Summary of U.S. EPA-approved Methods, Standard Methods and Other Guidance for 301(h) Monitoring Variables. Final program document prepared for the Marine Operations Division, Office of Marine and Estuarine Protection, U.S. Environmental Protection Agency. EPA Contract No. 68-01-693. Tetra Tech, Incorporated, Bellevue, Wa.; and

3.1.3.3. Environmental Protection Agency. 1987. Quality Assurance and Quality Control for 301(h) Monitoring Programs: Guidance on

Field and Laboratory Methods. Office of Marine and Estuarine Protection, Washington, D.C. EPA 430/9-86-004.

3.2. Analytical Laboratory

3.2.1. Within 30 days of the effective date of this permit, the name and address of the contract laboratory or laboratories and a description of all analytical test procedures and quality assurance/quality control procedures, including detection limits being used, shall be provided ~~for~~ to EPA Region IX ~~approval~~.

3.2.2. Any potential variation or change in the designated laboratory or analytical procedures shall be reported, in writing, ~~for~~ to EPA Region IX ~~approval~~.

3.2.3. EPA Region IX may require analyses of quality control samples by any laboratories employed to comply with Special Condition 3.1 and Appendix A. Upon request, the permittee shall provide EPA Region IX with the analytical results from such samples.

3.2.4. ~~A complete analysis of parameters, required in Special Condition 3.1, shall be made by the permittee and reported to EPA Region IX and the ASEPA whenever there is a significant change in the quality of a fish processing waste stream as determined by EPA Region IX or the ASEPA.~~ Should there be a modification in the permittee's fish processing procedures such that there may be a significant change in the quality of a fish processing waste stream (DAF sludge, ~~pre~~cooker juice or press liquor) EPA Region IX and ASEPA shall be notified 60 days prior to such modification. At their discretion, either agency may require that the permittee conduct a complete analysis of parameters for specified waste streams, and report the results to EPA Region IX and ASEPA within 30 days of sampling. (A sample shall consist of three replicate grab samples pooled for use as a composite sample. The detection limits specified in Table 4 shall be used in all fish procesing waste stream analyses.) If necessary, bioassays may be required in addition to parameter analyses.

3.3. Reporting

3.3.1. The permittee shall provide EPA Region IX, ASEPA, the National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (USFWS) and the Western Pacific Regional Fishery Management Council (WPRFMC) with a report, prepared every 3 months during the permit period, that contains the following information:

3.3.1.1. Daily volumes of fish processing waste ~~DAF Sludge, Cooker Juice and Press Liquor~~ generated at the permittee's facility and pumped into the permittee's onshore storage tanks to ~~These volumes shall~~ be reported in gallons per day using Form 1 (see Appendix B);

3.3.1.2. Daily volumes of fish processing wastes disposed at the ocean disposal site to. ~~These volumes shall~~ be reported in gallons per day using Form 1 (see Appendix B);

3.3.1.3. Monthly fish processing waste ~~stream~~ analyses from the onshore storage tank demonstrating that the fish processing wastes being dumped comply with the permitted limits of parameters listed in Special Condition 2.4 and a cumulative yearly summary of the volumes of fish processing wastes disposed at the ocean site using Form 2 (see Appendix B);

3.3.1.4. The monthly amount of alum (aluminum sulfate) and coagulant polymer added to the fish processing waste ~~streams~~ reported in pounds per month (see Forms 1 and 2).

3.3.2. Such reports, including a comparison with the permit limits as required on Forms 1 and 2, shall be submitted to EPA Region IX, ASEPA, NMFS USFWS and WPRFMC within 45 days of the end of the preceding 3-month period for which they were prepared. The reports shall be submitted within this time unless extenuating circumstances are communicated to EPA Region IX and the ASEPA in writing. In addition to a hard copy of Forms 1 and 2, the data contained on Form 1 shall be submitted to EPA Region IX on a 3.5" computer diskette in a format compatible with LOTUS version ~~2.2.~~XX??

3.3.3. A summary report of all 3-month reports listed in Special Condition 3.3.1, including a comparisons with permit limits and a detailed discussion of the summary results, shall be submitted by the permittee to EPA and the ASEPA 45 days after the permit expires. All fish processing waste ~~stream~~ data shall be reported in the same format as required in Special Condition 3.3.2.

3.3.4. Upon detection of a violation of any permit condition, the permittee shall send a written notification of this violation to EPA Region IX and the ASEPA within five working days and a detailed written report of the violation shall be sent to the agencies within 15 working days. This notification shall pertain to any permit limits (defined in Special Condition 2.4) that are exceeded, violation of volume limits (defined in Table 2 under Special Condition 2.3.1), and any disposal operation that occurs outside the disposal site defined in Special Condition 2.2.

DO WE STILL NEED BIOASSAYS DONE? No need for remodeling unless boat radically changes or site is different.

~~3.3.5. Eighteen months from the effective date of this special permit, the permittee shall submit a report to EPA and ASEPA on the results of suspended phase bioassay tests and reevaluation of the model used to predict the concentrations of fish processing wastes disposed at the designated site. The suspended phase bioassays shall be conducted using at least one species from each of the following three~~

~~groups: Group 1 = *Mytilus* sp. (mussel), *Crassostrea* sp. (oyster), *Acartia tonsa* (copepod), or *Trypneustes* sp. (sea urchin) larvae; Group 2 = *Holmesimysis costata* (mysid shrimp) or *Penaeus vannamei* (white shrimp); and Group 3 = *Citharicthys stigmaeus* (speckled sanddab) or *Coryphaena hippurus* (dolphinfish) juveniles.~~

~~Appropriate suspended phase bioassay protocols, either protocols approved by EPA or protocols published by the American Society for Testing and Materials (ASTM), shall be followed. Suspended particulate phase bioassays shall be run using the following fish processing waste concentrations: 100%, 75%, 50%, 25%, 10%, 5%, and a control (0%). A minimum of five replicates are required per dilution concentration. Concurrent reference toxicant tests shall be conducted when the suspended phase bioassays are run.~~

~~A sampling and testing plan shall be submitted to EPA Region IX and ASEPA by October 1, 1993 for approval before the bioassay tests are conducted. Samples for the suspended particulate phase bioassays shall be composited from the permittee's onshore storage tanks. Three samples shall be taken from the onshore storage tank transfer line at 10 minute intervals. These samples shall be composited to produce one sample for analysis. The permittee's samples shall not be combined with fish processing waste from any other permittee. The permittee shall take samples on the following dates: November 30, 1993, February 28, 1994 and May 31, 1994. Samples shall be collected and shipped to the testing laboratory according to EPA-approved methods to ensure that the samples do not change before the bioassay tests begin. All suspended particulate phase bioassays shall be started within 10 days of sampling.~~

~~The testing plan submitted by October 1, 1993 should also include a proposal to reevaluate the disposal site model using results obtained from the new series of suspended phase bioassays. These bioassays are being required to confirm the toxicity of the fish processing wastes and to reevaluate the disposal operations based on the use of a different disposal vessel.~~

~~The bioassay and computer model confirmation report shall contain the following information:~~

~~3.3.5.1. INTRODUCTION AND PROJECT DESCRIPTION~~

~~The project description should include the following information about fish processing waste toxicity, previous bioassay test results, previous modelling at the ocean disposal site, and the design of the new bioassay tests.~~

~~3.3.5.2. MATERIALS AND METHODS~~

~~Fish processing waste sampling and sample handling procedures should be described or referenced.~~

~~References for laboratory protocols for suspended phase bioassay tests.~~

~~1) EPA-approved methods and references.~~

~~2) Test species used in each test, the supplier or collection site for each test species, and QA/QC procedures for maintaining the test species.~~

~~3) Source of seawater used in reference, control and bioassay tests.~~

~~4) Data and statistical analysis procedures.~~

~~5) Limiting Permissible Concentration (LPC) calculations.~~

~~6) Description of model selected to evaluate dispersal of fish processing wastes at the ocean disposal site. Use of this model shall be approved by EPA Region IX and ASEPA before it is used by the permittee to evaluate the fish processing waste disposal plume.~~

~~3.3.5.3. DESCRIPTION OF SAMPLING PROCEDURES~~

~~QA/QC procedures and actual sampling procedures used during fish processing waste stream sampling and handling of the samples.~~

~~3.3.5.4. FINAL RESULTS, ANALYSIS OF DATA AND DISCUSSION~~

~~1) Complete bioassay data tables and summary bioassay tables shall be furnished in the report. All data tables should be typed or produced as a computer printout.~~

~~2) The permittee shall analyze the bioassay data and calculate the LPC of the material as defined at 40 C.F.R. § 227.27(a-b).~~

~~3) The permittee shall use the LPC in the approved plume model to determine the concentration of fish processing wastes disposed at the designated ocean disposal site which complies with EPA's Ocean Dumping Criteria defined at 40 C.F.R. Parts 227 and 228.~~

~~3.3.5.5. REFERENCES~~

~~This list should include all references used in the field sampling program, laboratory protocols, LPC calculations, modelling analyses, and historical data used to evaluate the fish processing waste disposal operations at the designated ocean disposal site.~~

~~3.3.5.6. DETAILED QA/QC PLANS AND INFORMATION~~

~~The following topics should be addressed in the QA Plan:~~

~~1) QA objectives.~~

~~2) Organization, responsibilities and personnel qualifications, internal quality control checks.~~

~~3) Sampling and analytical procedures.~~

~~4) Equipment calibration and maintenance.~~

~~5) Sample custody and tracking.~~

~~6) documentation, data reduction, and reporting.~~

~~7) Data validation.~~

~~8) Performance and systems audits.~~

~~9) Corrective action.~~

~~10) Reports.~~

4. SPECIAL CONDITIONS - VESSEL OPERATIONS

Specifications for vessel operations are defined to limit dumping activities to the dump site identified in Special Condition 2.2 and to record all dumping activities. The permittee's fish processing wastes and fish processing wastes of other authorized permittees may be loaded into the disposal vessel together or separately.

4.1. Posting of the Permit

This permit, or a true copy thereof, shall be placed in a conspicuous place on any vessel which is used for the transportation and dumping authorized by this permit.

4.2. Vessel Identification

Every vessel engaged in the transportation of fish processing wastes for ocean disposal shall have its name and number painted in letters and numbers at least fourteen (14) inches high on both sides of the vessel. The name and number shall be kept distinctly legible always, and a vessel without such markings shall not be used to transport or dump fish processing wastes.

4.3. Determination of the Disposal Location Within the Dump Site

On each disposal trip, the master of the disposal vessel shall determine the location of the disposal operation as follows:

4.3.1. The disposal vessel, as defined under WASTE TRANSPORTER on page 1 of this permit, shall proceed directly to the center of the disposal site at the location specified in Special Condition 2.2.

4.3.2. The master of the vessel shall observe the conditions at the dump site center, noting the vessel's position (latitude and longitude), wind direction and observed surface current direction.

4.3.3. After the conditions defined in Special Condition 4.3.2 have been recorded, the master of the disposal vessel shall proceed 1.1 nautical miles up current from the center of the disposal site and record the position of the disposal vessel (latitude and longitude). This position shall be the starting point for disposal operations for each disposal trip.

4.3.4. The master of the disposal vessel shall prepare a hard copy ~~(on 8.5 inch by 11 inch paper)~~ of the computerized navigational plot documenting compliance with the procedures defined in Special Conditions 4.3.1 through 4.3.4. The hard copy of the computerized navigational plot for each disposal trip shall be supplied to the permittee. The permittee shall submit these hard copies of the computerized navigational plots with the 3-month reports required under Special Condition 3.3.1. The hard copies of the navigational plots shall include:

4.3.4.1. The disposal vessel's course during the entire dumping operation; and

4.3.4.2. The times and location of entry and exit from the disposal site, position and time of arrival at the center of the disposal site, position and time of arrival at the location 1.1 nautical miles up current from the disposal site, beginning and ending of dumping operations, and disposal vessel position plotted every 15 minutes while dumping operations occur.

4.3.5. The master of the disposal vessel shall sign and date each hard copy of the computerized navigational plots certifying that the hard copies are an accurate record of the disposal vessel's track for each disposal trip.

4.3.6. The master of the disposal vessel shall certify that disposal operations occurred in the manner required by the permit.

4.3.7. The procedures listed in Special Conditions 4.3.1 through 4.3.6 shall be repeated for each disposal trip.

4.4. Disposal Rate and Vessel Speed

4.4.1. The disposal vessel/barge shall discharge the material authorized by this permit beginning at the disposal location as determined by Special Condition 4.3.3. The vessel track shall be in a direction that is perpendicular to the current detected at the center of the disposal site as defined in Special Condition 2.2. Disposal shall occur in a oval shape along an axis at least 0.5 nautical miles on either side of the starting point determined in Special Condition 4.3.3. The entire disposal vessel track shall be within the disposal site boundaries.

4.4.2. On those ocassions when ocean conditions (e.g. large waves, strong winds, etc.) make it difficult for the vessel to discharge waste in the normal manner (as described in Section 4.4.1) without jeopardizing the vessel, the master of the vessel is allowed to deviate from the normal disposal pattern. If such deviation should occur, he shall describe the adverse conditions in the log and and submit a record of the disposal trip, including the computer-generated navigational plot. All efforts must be made to stay within the disposal site, maximizing the area of disposal within the site, and having the prevailing winds and currents carry the waste away from shore.

4.4.~~1.1~~. 3. From June 1 through November 30, fish processing wastes shall be pumped from the disposal vessel into the ocean at a rate of 140 gallons per minute per knot, not to exceed 1,400 gallons per minute at a maximum speed of 10 knots.

4.4.~~1.2~~. 4. From December 1 through May 31, fish processing wastes shall be pumped from the disposal vessel into the ocean at a rate of 120 gallons per minute per knot, not to exceed 1,200 gallons per minute at a maximum speed of 10 knots.

4.5. Computerized Navigational System

The permittee shall use an onboard computerized electronic positioning system to fix the position of the disposal vessel accurately during all dumping operations. The computerized navigational system and the method to produce a 8.5 inch by 11 inch hard copy of each disposal trip must be approved by EPA Region IX and the USCG Liaison Office (CGLO) Pago Pago. ~~The permittee shall submit the description, specifications and example hard copy plots for the computerized navigational system at least 15 working days before the effective date of the permit. Disposal operations shall not begin until EPA Region IX and CGLO Pago Pago provide the permittee with written approval for the computerized navigation system and the hard copy plots.~~

4.6. Permitted Times for Disposal Operations

Dumping operations shall be restricted to daylight hours, unless an emergency exists as defined at 40 C.F.R. § 220.1(c)(4). ASEPA and CGLO Pago Pago shall be notified immediately if an emergency exists and ocean disposal is required to protect human life at sea. No later than 5

working days after the emergency, the permittee and the waste transporter shall provide EPA Region IX, ASEPA and CGLO Pago Pago with a detailed written report on the emergency situation.

4.7. Reporting of the Ocean Dumping Vessel Operations

4.7.1. The waste transporter shall maintain and the permittee shall submit copies of a daily transportation and dumping log, including hard copy plots of all information required in Special Conditions 4.3 and 4.7.2. Copies of the daily logs shall be sent to EPA Region IX, CGLO Pago Pago, and the ASEPA as part of the 3-month report.

4.7.2. The logbook shall contain the following information for each disposal trip:

4.7.2.1. Permit number, date and consecutive trip number;

4.7.2.2. Record of contact with ASEPA and CGLO before each trip to the ocean disposal site.

4.7.2.3. The time when loading of the vessel commences and ceases in Pago Pago Harbor;

4.7.2.4. The volume of fish processing waste loaded into the disposal vessel from each fish cannery;

4.7.2.5. The time and navigational position that dumping commences and ceases;

4.7.2.6. A record of vessel speed and direction every 15 minutes during each dumping operation at the disposal site, and a hard copy of the vessel's course defined in Special Condition 4.3;

4.7.2.7. Discharge rate from the disposal vessel.

4.7.2.8. Observe, note and plot the time and position of any floatable material;

4.7.2.9. Observe, note and plot the wind speed and direction every 30 minutes while dumping fish processing wastes at the designated disposal site;

4.7.2.10. Observe and note current direction at the beginning and end of the disposal trip, and the direction of the disposal plume at the end of the disposal operation;

4.7.2.11. Observe, note and plot the presence of the previous disposal plume and any unusual occurrences during the disposal trip, or any other information relevant to the assessment of environmental impacts as a result of dumping activities; and

4.7.2.12. Any unusual occurrences noted under Special Condition 4.7.2.9 shall be highlighted in the report defined in Special Condition 3.3.1.

4.7.2.13. Any deviation from the normal disposal pattern such as circumstances described in ~~Special Condition~~ 4.3.8 and reasons for the deviation. Section 4.4.2.

5. SPECIAL CONDITIONS - DUMP SITE MONITORING

The monitoring program for disposal of fish processing wastes in the ocean must document effects of disposed wastes on the receiving waters, biota, and beneficial uses of the receiving waters; compliance with EPA's Ocean Dumping Regulations; and determine compliance with permit terms and conditions. Revisions to the monitoring program may be made under the direction of EPA Region IX at any time during the permit term, in compliance with 40 C.F.R. §§ 223.2 and 223.3. This may include a change in the number of parameters to be monitored, the frequency of monitoring, the location of sample stations, or the number and size of samples to be collected.

Implementation of the disposal site monitoring program and all segments of the monitoring program specified in Special Condition 5 and Appendix A shall be the responsibility of the permittee.

5.1. Monitoring Program

The permittee shall conduct the monitoring program, defined in Appendix A, to determine the environmental impacts of ocean dumping of fish processing waste. If possible, monitoring cruises shall be scheduled within the first two weeks of each month to allow enough time for laboratory analysis and report writing in compliance with Special Condition 5.2. The permittee shall notify the ASEPA at least 48 hours before any scheduled monitoring activities.

5.2. Monitoring Reports

Monthly site monitoring reports shall be submitted to EPA Region IX, the ASEPA, NMFS, USFWS and WPRFMC with the 3-month reports as specified in Special Condition 3.3.2. The reports shall include: neatly compiled raw data for all sample analyses, quality assurance/quality control data, statistical analysis of sample variability between stations and within samples for each parameter, and a detailed discussion of the results.

5.3. Final Summary Report

5.3.1. A report shall be submitted to EPA Region IX, ASEPA, NMFS, USFWS and WPRFMC 60 days after the permit expires. This report shall summarize all of the data collected to characterize fish processing wastes and the results of the dump site monitoring program specified in this special permit.

5.3.2. At a minimum, the summary report shall contain the following sections:

5.3.2.1. Introduction (including a summary of previous ocean disposal activities),

5.3.2.2. Location of Sampling Sites,

5.3.2.3. Materials and Methods,

5.3.2.4. Results and Discussion (including comparisons and contrasts with previous MPRSA § 102 research and special permit data related to disposal of fish processing wastes off American Samoa),

5.3.2.5. Conclusions; and

5.3.2.6. References.

5.4. Quality Assurance/Quality Control

5.4.1. All appropriate phases of the monitoring, sampling, and laboratory analytical procedures shall comply with the EPA Region IX-specified protocols and references listed in Special Condition 3.1.2.

5.4.2. The qualifications of the on-site Principal Investigator in charge of the field monitoring operation at the dump site shall be submitted to EPA Region IX and the ASEPA for approval whenever a new Principal Investigator is retained. ~~before the initial monitoring cruise.~~ Notification of any change in this individual shall be submitted to EPA Region IX and ASEPA at least 7 days before the cruise is scheduled.

6. SPECIAL CONDITIONS - NOTICE TO REGULATORY AGENCIES

6.1. Notice of Sailing to the U.S. Coast Guard Liaison Office and the American Samoa Environmental Protection Agency

6.1.1. The waste transporter shall provide telephone notification of sailing to CGLO Pago Pago at 633-2299 and the ASEPA at 633-2304 during working hours (7:00 a.m. to 3:30 p.m.) no later than 24 hours before the estimated time of departure for the dump site defined in Special Condition 2.2. A record of contact with both agencies shall be reported with other information for each disposal trip.

6.1.2. The waste transporter shall immediately notify CGLO Pago Pago and the ASEPA upon any changes in the estimated time of departure greater than two hours.

6.1.3. Surveillance of activities at the dump site designated in Special Condition 2.2, may be accomplished by unannounced aerial overflights or observation from another vessel by ASEPA, USCG or American Samoa Department of Public Safety personnel, or a USCG shiprider and/or a ASEPA shiprider who will be on board the towing/conveyance vessel for the entire voyage. Within two hours after receipt of the initial notification the waste transporter will be advised whether or not a shiprider will be assigned to the waste transporter's disposal vessel.

6.1.4. The following information shall be provided to CGLO Pago Pago and the ASEPA in the notification of sailing defined above:

6.1.4.1. The time of departure,

6.1.4.2. Estimated time of arrival at the dump site,

6.1.4.3. Estimated time of departure from the dump site, and

6.1.4.4. Estimated time of return to port.

6.2. Reports and Correspondence

6.2.1. Two copies of all reports and related correspondence required by General Condition 1.10, Special Conditions 3.2, 3.3, 4.3, 4.5, 4.6, 4.7, 5.2, 5.3, 6.1, and all other materials, including applications shall be submitted to EPA Region IX at the following address:

Office of Pacific ~~Island and Native American Programs (E-4)~~Insular Area Programs (CMD-5)
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, California 94105-3901
Telephone (415) 744-1599

6.2.2. One copy ~~Two copies~~ of all reports required by General Condition 1.10 and Special Conditions 4.5, 4.6, 4.7 and 6.1 sent to the U.S. Coast Guard shall be submitted to the following address:

Commanding Officer
U.S. Coast Guard Liaison Office
P.0. Box 249
Pago Pago, American Samoa 96799
Telephone (684) 633-2299

6.2.3. One copy ~~Three copies~~ of all reports required by General Condition 1.10 and Special Conditions 3.2, 3.3, 4.3, 4.5, 4.6, 4.7, 5.2, 5.3, and 6.1 sent to the American Samoa Environmental Protection Agency shall be submitted to the following address:

Director
American Samoa Environmental Protection Agency
Office of the Governor
Pago Pago, American Samoa 96799
Telephone (684) 633-2304

6.2.4. One copy of the all reports required by Special Conditions 3.3, 5.2 and 5.3 shall be sent to the USFWS, the NMFS and the WPRFMC at the following addresses:

Project Leader
Office of Environmental Services
U.S. Fish and Wildlife Service
300 Ala Moana Boulevard
P.0. Box 50167
Honolulu, Hawaii 96850

Western Pacific Program Officer
National Marine Fisheries Service
2570 Dole Street
Honolulu, Hawaii 96822-2396

Executive Director
Western Pacific Regional Fishery Management Council
1164 Bishop Street, Suite 1405
Honolulu, Hawaii 96813

Signed this _____ day of _____, 1993

For the Regional Administrator:

_____

~~Harry Seraydarian, Director~~Alexis Strauss, Acting Director
Water ~~Management~~ Division
U.S. EPA, Region IX

APPENDIX A

SPECIAL OCEAN DUMPING PERMIT OD ~~93-0197~~-01
OCEAN DUMP SITE MONITORING PLAN

7. MONITORING OF RECEIVING WATER

Monitoring of the receiving waters at the disposal site defined in Special Condition 2.2 shall be the responsibility of the permittee. Funding and cooperation for site monitoring may be accomplished through an agreement between permittee and other permittees authorized to use the disposal site. Any agreements negotiated between the permittee and other authorized permittees shall be the sole responsibility of the permittee named in this permit. EPA Region IX requires that a monitoring program be developed that complies with the special conditions defined below.

During each monitoring cruise, the disposal plume from the disposal vessel shall be sampled by taking discrete water samples for the measurement of parameters listed in Special Condition 7.2.4. ~~Results of the first 3-month monitoring report will be evaluated by EPA Region IX to determine whether portions of Special Conditions 7 and/or 8 will be revised. The evaluation will be based on documented sampling results and recommendations by the permittee(s).~~

7.1. Location of Water Sampling Stations

7.1.1. On each sampling cruise, the latitude and longitude of all sampling stations shall be determined and plotted using an acceptable navigational system.

7.1.2. The Principal Investigator shall ensure that discrete water samples are taken at the locations marked in Figure 1.

					Prevailing Surface Current Direction <----------
5	4	3	2	1	
Leading Edge of Plume	1.0 nmi	0.5 nmi	0.25 nmi	Starting	

Figure 1. Orientation of Sample Stations (Top View) in the Middle of the Discharge Plume Visually Identified at the Time of Sampling.

7.1.3. The following stations, defined in Figure 1, shall be sampled on each sampling cruise:

7.1.4.1. Station 1 shall be the starting point of the dumping operation as determined in Special Condition 4.3.

7.1.4.2. Station 2 shall be 0.25 nautical miles (nmi) down-current from Station 1.

7.1.4.3. Station 3 shall be 0.5 nmi down-current from Station 1.

7.1.4.4. Station 4 shall be 1.0 nmi down-current from Station 1.

7.1.4.5. Station 5 shall be at the leading edge of the discharge plume, but within the plume.

7.1.4. The Principal Investigator shall ensure that each sampling station is positioned as close as possible to the middle of the discharge plume according to his/her best professional judgment.

7.2. Water Column Characteristics to Be Measured

7.2.1. Discrete water samples at Stations 1, 2, 3, 4, and 5 shall be taken at depths of 1, 3, and 10 meters from the surface at the middle of the plume visually identified by the Principal Investigator.

7.2.2. Surface water conditions shall be recorded at all stations including:

7.2.2.1. Wind speed and direction;

7.2.2.2. Current direction and wave height; and

7.2.2.3. Observations of plume color (e.g., Forel-Ule color scale), odor, floating materials, grease, oil, scum, and foam.

7.2.3. Water samples shall be obtained using a self-closing 3-liter water sample device at each depth listed in 7.2.1.

7.2.4. Water column parameters analyzed from discrete samples taken at the depths listed in 7.2.1 shall include:

Table 4. Physical and Chemical Parameters to be Analyzed from Water Samples Taken at the Ocean Disposal Site.

Parameter[a]	Method Detection Limit
Total Suspended Solids	10.0 mg/L
Total Volatile Suspended Solids	10.0 mg/L

Parameter[a]	Method Detection Limit
Oil and Grease	10.0 mg/L
Total Phosphorus	1.0 mg/L
Total Nitrogen	1.0 mg/L
Ammonia	1.0 mg/L
pH	0.1 pH units

a = Samples should be acidified to pH <2 with sulfuric acid and refrigerated a 4°C until analysis.

7.2.5. Temperature measurements shall be taken at depths of 1, 3, and 10 meters at the starting point of the disposal operation, as defined in Special Condition 4.3.3.

7.3. Frequency of Sampling

7.3.1. Water samples shall be collected when dumping operations occur. Each station listed under Special Condition 7.1 shall be sampled once each month. These samples shall be used to characterize the receiving waters at the disposal site.

7.3.2. Control samples shall be taken at Station 1 before dumping activities.

7.3.3. Station 1 shall be sampled at a point within the plume immediately after discharge operations cease.

7.3.4. Stations 2 through 5 shall be sampled consecutively at distances indicated in Special Condition 7.1.4 to allow efficient sampling of the discharge plume. The time between each sample and the sampling location, beginning with the control sample and ending with the sample collected at the leading edge of the plume, shall be recorded.

7.4. Water Quality Criteria and Standards

7.4.1. The Limiting Permissible Concentration (LPC) of the liquid phase of the fish processing wastes shall not be exceeded at the disposal site boundary four hours after disposal operations cease. (QUESTION: IS IT AT THE DISPOSAL SITE BOUNDARY OR WITHIN THE BOUNDARIES FOUR HOURS AFTER DISPOSAL OPERATIONS? MY READING OF THE REGS IS "WITHIN") The LPC, as defined at 40 C.F.R. §227.27,shall not exceed applicable American Samoa Oceanic Water Quality Standards (see Table 1). EPA Region IX and the ASEPA will evaluate the LPC based on EPA's Ocean Dumping

Regulations and the concentration of parameters measured at the stations sampled during the tenure of this permit.

8. MONITORING OF BIOLOGICAL COMMUNITIES

8.1. Pelagic Resources

8.1.1. All sightings of fish, sea turtles, sea birds, or cetaceans near the disposal site shall be recorded including:

8.1.1.1. Time, location and bearing;

8.1.1.2. Species name(s); and

8.1.1.3. Approximate number of individuals.

New / Revised previous form

APPENDIX B - REPORT FORM 1

Monthly Volumes of StarKist Samoa Fish Processing Wastes Generated Per Day and Volumes of Fish Processing Waste Disposed at the Ocean Site

Daily Limit Not to Exceed 200,000 gallons/day

Month _____ 19__

Date	Total Generated (gallons/day)	Volume Ocean Disposed (gallons/day)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		

Date	Total Generated (gallons/day)	Volume Ocean Disposed (gallons/day)
25		
26		
27		
28		
29		
30		
31		
TOTAL		

NOTE: An asterisk (*) to the right of the fish processing waste volume signifies that a violation of the permit limit has occurred. The number of violations are shown in the Monthly Totals row.

Monthly quantities of alum (aluminum sulfate) and coagulant polymer added to the fish processing waste streams:

Aluminum sulfate: _____ pounds/month

Coagulant polymer: _____ pounds/month

APPENDIX B - REPORT FORM 2

Data Form for 3-Month Report on Waste Stream Analyses for StarKist Samoa MPRSA § 102 Permit #OD 93-01

Reporting Period: From _____ 19__ To _____ 19__

StarKist Samoa - On-Shore Storage Tank Waste

Month & Year	Total Solids (mg/L)		Total Volatile Solids (mg/L)		5-Day Blological Oxygen Demand (mg/L)		Oil and Grease (mg/L)		Total Phosphorus (mg/L)		Total Nitrogen (mg/L)		Ammonia (mg/L)		pH (pH units)		Density (g/mL)	
OD 97-01 Permit Limits	XXXXXXX		XXXXXXX		XXXXXXXX		XXXXXXXX		XXXXXXX		XXXXXXX		xxxxxxx		5.3 to 7.0		0.97 to 1.06	

*Note an asterisk (*) next to the waste concentration signifies that a violation of the permit limit has occurred.

New Revised previous form

Cumulative Yearly Data on Fish Processing Wastes Generated at StarKist Samoa's Plant and Disposed at the Ocean Site.
MPRSA §102 Special Permit #OD 97-01

Reporting Period:
From _____ 19__
To _____ 19__

Month & Year	Total Generated (gallons/month)	Aluminum sulfate (pounds/month)	Coaglant polymer (pounds/month)	Volume Ocean Disposed (gallons/month)	Volume Ocean Disposed (gallons/month)
Cumulative Yearly Totals					

NOTE: A separate table shall be prepared for each calendar year.

NOTICE OF APPLICATION AND PROPOSED ACTION
U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) REGION IX
75 HAWTHORNE STREET
SAN FRANCISCO, CALIFORNIA 94105-3901

Applications for Permits to Transport
and Dump Materials into Ocean Waters

Public Notice for Ocean Dumping Permit Numbers
OD 98-01 and OD 98-02

Pursuant to Section 102 of the Marine Protection, Research and Sanctuaries Act (MPRSA) of 1972, as amended (33 U.S.C. § 1401 et seq.) and 40 C.F.R. § 222.3 of EPA's Ocean Dumping Regulations (42 Fed. Reg. 2462, Jan. 11, 1977), notice is hereby given by this office of complete applications for permits to transport and dispose fish processing wastes into ocean waters of Tutuila Island, American Samoa. The permit applicants are: STARKIST SAMOA, INC., P.O. Box 368, Pago Pago, American Samoa 96799 and VCS SAMOA PACKING COMPANY, INC., P.O. Box 957, Pago Pago, American Samoa 96799.

EPA has made a tentative decision to issue special ocean dumping permits to StarKist Samoa and VCS Samoa Packing Company for a three-year period. The Agency has determined that these permits are required for ocean disposal of fish processing wastes produced at canneries in Pago Pago, American Samoa. The fish processing wastes to be disposed from StarKist Samoa are: dissolved air flotation (DAF) sludge, cooker juice and press liquor. The fish processing wastes to be disposed from VCS Samoa Packing are: DAF sludge, precooker water and press water. Based on dilution levels expected at the designated ocean disposal site, the fish processing wastes are not expected to cause significant long-term impacts to oceanic water quality, marine ecosystems or human health.

The fish processing wastes will be disposed at an ocean disposal site 5.45 nautical miles southeast of Tutuila Island. The ocean disposal site has center coordinates of 14° 24.00' South latitude by 170° 38.20' West longitude and a radius of 1.5 nautical miles. The water depth at the disposal site is about 9,000 feet. This site was designated for use on February 6, 1990 (55 Fed. Reg. 3948) and was used by the two American Samoa canneries for disposal of fish processing wastes under MPRSA § 102 special permits OD 90-01 and 93-01 (StarKist Samoa), and OD 90-02 and 93-02 (VCS Samoa Packing Company) for a cumulative total of six years. No significant long-term environmental impacts were found at the site during site monitoring activities.

During the term of special permits OD 98-01 and OD 98-02, the permittees must continue monitoring programs for the combined fish processing waste streams, disposal vessel navigation and monthly ocean disposal site monitoring. Information compiled during the term of these permits and any previous information about ocean disposal of fish processing wastes off American Samoa will be used by EPA Region IX to determine compliance with EPA's Ocean Dumping Regulations defined at 40 C.F.R. Parts 220 through 228 and the Special MPRSA § 102 permits.

SUMMARY OF INFORMATION AND TENTATIVE DETERMINATION

DAF sludge is waste material that remains after treatment of fish processing wastes to remove grease and suspended particulate matter. DAF sludge also contains aluminum sulfate or alum (an odor reducing chemical) and coagulant polymers (to coagulate suspended matter) that are added during the waste treatment process. Cooker juice or precooker water is a combination of stick water and other process water that collects under the steam precookers at the fish plants. Press liquor or press water is waste water produced at the fish meal plants when fish scrap is cooked and pressed before being dried to produce livestock food meal. The three waste streams will be combined in an onshore storage tank prior to transport to the ocean disposal site.

There are no changes in the volumes of fish processing wastes proposed for disposal by either applicant. The proposed disposal volumes are:

Fish Processing Waste	**StarKist Samoa (gallons/day)**	**VCS Samoa Packing (gallons/day)**	**Total Volume (gallons/day)**
Daily Maximum - Combined Waste Stream from Onshore Storage Tank	200,000	200,000	400,000

Based on EPA Region IX's review of data collected under the previous MPRSA § 102 special permits, the following changes are proposed for the new permits: 1) new permit limits for the combined fishwaste have been calculated which are mostly higher than the previous permit limits for the separate waste streams, 2) a new set of confirmatory suspended phase acute toxicity bioassays are required to confirm that disposal operations are similar to the previous permitted actions, 3) a clarification of the requirements for disposal operations, including use of a computerized navigation system to plot the course of the vessel accurately during disposal operations, and 4) reporting forms have been modified to simplify the reporting of permit monitoring information. All other general and special conditions are similar to existing conditions in MPRSA § 102 special permits OD 93-01 and OD 93-02.

INITIATION OF HEARINGS AND PUBLIC COMMENTS

Within 30 days of the date of this notice, any person may request a public hearing to consider the issuance of, or the conditions to be imposed upon, these permits. Any such request for a public hearing must: 1) be in writing, 2) identify the person requesting the hearing, 3) state any objections to the issuance of, or to the conditions to be imposed upon, these permits, and 4) state the issues which are proposed to be considered at the hearing. Under 40 C.F.R § 222.4, the Regional Administrator's determination on whether to hold a public hearing shall be based on

whether the request presents genuine issues of policy or facts amenable to resolution by public hearing.

Comments on the tentative determination and requests for public hearings may be submitted in writing within 30 days of the date of publication of this notice to: Mr. John Ong, Acting Chief, Monitoring and Assessment Office (WTR-2), U.S. Environmental Protection Agency, Region IX, 75 Hawthorne Street, San Francisco, CA 94105-3901, telephone (415) 744-1156. 1867

The Administrative Record, which includes the applications, the proposed permits, the fact sheet describing the permits and changes from previous special permits OD 93-01 and OD 93-02, is available for public review Monday to Friday from 9:00 a.m. to 4:00 p.m. at the: EPA Region IX Library, 13th Floor, 75 Hawthorne Street, San Francisco, CA, (415) 744-1510; EPA Pacific Island Contact Office, 300 Ala Moana Boulevard, Room 5124, Honolulu, HI, (808) 541-2710; and American Samoa EPA, Executive Office Building, Office of the Governor, Pago Pago, American Samoa, (684) 633-2304.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

FAX TRANSMISSION

DATE: January 7, 1998

SUBJECT: Printing of Public Notice in Classified Section/Legal Notices

FROM: Allan Ota
U.S. EPA, Region 9
Monitoring and Assessment Office (WTR-2)
FAX #: (415) 744-1078
OFFICE #: (415) 744-1980

TO: Classified Ad Section
Chronicle/Examiner

FAX#: (415) 512-7303
OFFICE #: (415) 777-7777

****

NOTES: There are 3 pages following this cover sheet.

I would like to get a cost estimate for printing this public notice in the Legal Notices Section for one day. Please call me if you need other information or a different format. Thanks in advance for your assistance.

Fax sent → phone confirmation made, however told that fax # should be 512-7304
ATTN: James Au

T C R (JAN 07 '98 04:33PM)

US EPA SF

(MANUAL)

DATE	START TIME	REMOTE TERMINAL IDENTIFICATION	TIME	RE-SULTS	MODE	TOTAL PAGES	PERSONAL LABEL	FILE NO.
TRANSMISSION								
JAN 07	08:27AM	5105478126	02'04"	OK	ESM	04		077
	09:08AM	9157726871	05'20"	OK	ESM	09		079
	09:34AM	1 520 774 2780	00'31"	OK	ESM	01		080
	09:52AM	202 260 0116	00'39"	OK	ESM	02		081
	10:40AM	602 965 0557	00'37"	OK	ESM	01		086
	12:28PM	202 2605711	05'09"	OK	ES	12		001
	12:39PM	916503294545	06'49"	OK	S	08		004
	12:50PM	202 260 1827	00'54"	OK	ESM	02		006
	01:15PM		00'46"	OK	ESM	01		008
	02:37PM	COASTAL CONSERVANCY	00'49"	OK	ESM	02		011
	03:54PM	17148949699	00'28"	OK	ESM	01		015
	04:31PM	4155127303	01'53"	OK	ES	04		020
RECEPTION								
JAN 07	07:40AM	602 870 6720	01'18"	OK	ES	03		076
	08:46AM	6196745388	01'09"	OK	S	02		078
	10:00AM	602 640 5382	03'36"	OK	ES	07		082
	10:23AM	0	01'28"	OK	S	03		083
	10:27AM	602 640 5382	06'13"	OK	ES	10		084
	10:36AM	9166538102	02'33"	OK	ED	05		085
	10:46AM		00'43"	OK	ED	01		087
	10:55AM	9167576605	01'02"	OK	ES	02		088
	11:15AM	DUDEK & ASSOCIATES	00'51"	OK	ES	02		089
	11:20AM	916 445+0732	01'34"	OK	ES	04		090
	11:33AM	00000000000000000000	00'59"	OK	ES	02		091
	11:44AM	702 798 2692	14'32"	OK	ES	18		092
	12:20PM	6146443587	03'45"	OK	ES	03		095
	12:34PM	6146443587	04'25"	OK	ES	06		003
	12:47PM	6146443587	00'38"	OK	ES	01		005
	12:48PM	6146443587	00'43"	OK	ES	01		007
	01:35PM	COASTAL CONSERVANCY	02'31"	OK	ES	06		009
	03:21PM	213 580 1084	00'45"	OK	S	01		012
	03:33PM		17'54"	OK	ED	26		013
	03:51PM	602 640 5382	03'06"	OK	ES	05		014
	03:56PM	2146657373	00'43"	OK	ES	01		016
	04:11PM	520 734 9339	08'55"	OK	S	10		017
	04:25PM	9116292397	05'18"	OK	ES	13		018

SCAN:096310 PRINT:169130 TX:109125 RX:151152

E)ECM >)REDUCTION S)STANDARD D)DETAIL F)FINE @)FORWARDING M)MEMORY C)CONFIDENTIAL $)TRANSFER P)POLLING #)BATCH

Date: 1/7/98 3:46:39 PM

To:

Company:

Fax number: 4157441078

Thank you for faxing your advertisement to the San Francisco Chronicle and Examiner Classified Department. We have received 4 page(s).

We make every effort to process each fax received within two hours. However, during periods of peak volume (especially Friday), faxes are prioritized based on time received and publication date. We will notify you via fax or phone prior to publishing your advertisement to confirm run date(s) and cost unless your state otherwise in your instructions to us.

Deadlines for **faxing or canceling** incolumn Classified advertisements are:

2:30 p.m. Monday-Wednesday for next day publication
2:30 p.m. Wednesday for Friday
2:30 p.m. Thursday for Saturday publication
2:30 p.m. Friday for Sunday & Monday publications

To reach us by phone:
Please call your regular **Classified Sales Rep.**

If you do not have a classified sales representative, please call the Classified Fax Rep at **415-777-7411** between 8:30 a.m. - 4:30 p.m. (PST), Mon-Fri.

If you are faxing a **funeral notice** (paid obituary), the deadline is:

3:00 p.m. Monday-Sunday for next day publication

To reach the **funeral desk**, please call **415-777-7320**

For you convenience we accept VISA, Mastercard and AMEX.

Note: All advertising is accepted subject to the approval of the publisher(s) of the newspaper(s) in which the advertisement is scheduled to appear. The publisher(s) of the newspaper(s) shall at all times have the right to revise or reject in whole or in part any advertisement which they, or any of them, in their absolute discretion determine is not consistent with the best interest of the newspaper(s) in which it is scheduled to appear.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

FAX TRANSMISSION

DATE: January 12, 1998

SUBJECT: Printing of Public Notice in Classified Section/Legal Notices

FROM: Allan Ota
U.S. EPA, Region 9
Monitoring and Assessment Office (WTR-2)
FAX #: (415) 744-1078
OFFICE #: (415) 744-1980

TO: James Au
Classified Ad Section
Chronicle/Examiner

FAX#: (415) 512-7304
OFFICE #: (415) 777-6549

****

James:

I would like to get the name and other pertinent information I need to insert into our printing procurement form. Please fax the information to our fax number above, or if you have e-mail, to: ota.allan@epamail.epa.gov.

Thanks in advance for your assistance.

September 1973
1 TFRM 4-2000

Standard Form No. 1143

ADVERTISING ORDER

ORDER NUMBER

DEPARTMENT OR ESTABLISHMENT, BUREAU OR OFFICE: U.S. Environmental Protection Agency, Region IX

DATE: (today's date)

The publisher of the publication named below is authorized to publish the enclosed advertisement according to the schedule below provided the rates are not in excess of the commercial rates charged to private individuals with the usual discounts. It is to be set solid, without paragraphing, and without any display in the heading unless otherwise expressly authorized in the specifications.

NAME OF THE PUBLICATION ADVERTISED IN: Samoa News

SUBJECT OF ADVERTISEMENT: Public Notice, Ocean Dumping

EDITION OF PAPER ADVERTISEMENT APPEARED: Section of paper advertisement appeared

NUMBER OF TIMES ADVERTISEMENT APPEARED: 5 days

DATE(s) ADVERTISEMENT APPEARED: N/A

SPECIFICATIONS FOR ADVERTISEMENT: PLEASE NOTE: Payment cannot be made until back of this form is completed. Also, please provide two (2) copies of affidavit of publication. For further information, please contact: Allan [illegible] (415) 744-1906

COPY FOR ADVERTISEMENT: PLEASE SEE ATTACHED

FINANCIAL DATA			SFO			APPROPRIATION:		
DCN	FY	APPR. CODE	ORG. CODE	PROGRAM ELEM.	OBJ. CLASS	AMOUNT (Dollars)	(Cents)	SITE/PROJECT
	98	B		49X		$400.	00	

AUTHORITY TO ADVERTISE	INSTRUMENT OF ASSIGNMENT
NUMBER: EPA ORDER 120.5a	NUMBER: N/A
DATE: (today's date)	DATE: N/A
SIGNATURE OF AUTHORIZING OFFICIAL: Barbara Brisel	TITLE: Chief, Contracts & Procurement Administrative Mgmt Branch PMDS

INSTRUCTIONS TO PUBLISHERS

Extreme care should be exercised to insure that the specifications for advertising to be set other than solid be definite, clear, and specific since no allowance will be made for paragraphing or for display or leaded or prominent headings, unless specifically ordered, or for additional space required by the use of type other than that specified. Specifications for advertising other than solid and the advertisement copy submitted to the publisher will be attached to the voucher. The following is a sample of solid line advertisement set up in accordance with the usual Government requirements.

DEPARTMENT OF HIGHWAYS & TRAFFIC, D.C. Bids are requested for first spring 1966 cement concrete repair contract, including incidental work, Washington, D.C., Invitation No. C-6576-H, consisting of 11,000 sq. yds. PCC Class BB sidewalk repair and 2,000 cu. yds. PCC Class A pavement, alley, & driveway repair, both cut repairs only. Bidding material available from the Procurement Officer, D.C. Sealed bids to be opened in the Procurement Office at 3:00 p.m., November 16, 1965.

Your bill for this advertising order should be submitted on the "Public Voucher for Advertising" form, which is printed on the reverse of this form, immediately after the last publication of the advertisement. If copies of the printed advertisement are not available, complete the affidavit provided on the voucher. Submit the voucher and a copy of the printed advertisement to ▶

U.S. EPA
Office of the Comptroller (PMD-4)
75 Hawthorne Street
San Francisco, CA 94105-3901

IMPORTANT

Charges for advertising when a cut, matrix, stereotype or electrotype is furnished will be based on actual space used and no allowance will be made for shrinkage.

In no case shall the advertisement extend beyond the date and edition stated in this order.

1143-108

PUBLIC VOUCHER FOR ADVERTISING

		For Agency Use Only
DEPARTMENT OR ESTABLISHMENT, BUREAU OR OFFICE		VOUCHER NUMBER
PLACE VOUCHER PREPARED	DATE PREPARED	SCHEDULE NUMBER
NAME OF PUBLICATION		PAID BY
NAME OF PUBLISHER OR REPRESENTATIVE		
ADDRESS (*Street, room number, city, State, and ZIP code*)		

CHARGES

TYPEFACE (*size of type*) POINT PER (*inch, square, word, or folio*)

		NUMBER OR LINES (*Indicate counted or space*)	COST PER LINE	TOTAL COST
Line Rates	FIRST INSERTION		$	$
	ADDITIONAL INSERTIONS GIVE NUMBER ▶			
	TOTAL			$
		NUMBER OF UNITS (*Indicate inch, square, word, folio*)	COST PER UNIT	TOTAL COST
Other Rates	FIRST INSERTION		$	$
	ADDITIONAL INSERTIONS GIVE NUMBER ▶			
	TOTAL			$

Attach one copy of advertisement *(including upper and lower rules)* to each copy of voucher here. If copy is not available sign the following affidavit.

TOTAL LINE RATES AND OTHER RATES	
LESS DISCOUNT AT %	
BALANCE DUE	$
VERIFIED (*Initials*)	

AFFIDAVIT

This represents a true billing for the attached advertising order, with specifications and copy, which has been completed.

SIGNATURE OF PUBLISHER OR REPRESENTATIVE

TITLE	DATE

FOR AGENCY USE ONLY

ADVERTISEMENT PUBLISHED IN	DATE PUBLISHED
I certify that the advertisement described above appeared in the named publication and that this account is correct and eligible for payment.	
SIGNATURE AND TITLE OF CERTIFYING OFFICER	DATE
SIGNATURE AND TITLE OF AUTHORIZING OFFICER	DATE
ACCOUNTING CLASSIFICATION	PAID BY CHECK NUMBER

[1] If the ability to certify and authority to approve are combined in one person enter "N/A" (*not applicable*) here.

GPO : 1985 O - 465-882

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

FAX TRANSMISSION

DATE: January 7, 1998

SUBJECT: Printing of Public Notice in Classified Section/Legal Notices

FROM: Allan Ota
U.S. EPA, Region 9
Monitoring and Assessment Office (WTR-2)
FAX #: (415) 744-1078
OFFICE #: (415) 744-1980

TO: James Au
Classified Ad Section
Chronicle/Examiner

FAX#: (415) 512-7304
OFFICE #: (415) 777-6549

****

NOTES: There are 3 pages following this cover sheet.

I would like to get a cost estimate for printing this public notice in the Legal Notices Section for one day. Please call me if you need other information or a different format. Thanks in advance for your assistance.

NOTICE OF APPLICATION AND PROPOSED ACTION
U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) REGION IX
75 HAWTHORNE STREET
SAN FRANCISCO, CALIFORNIA 94105-3901

Applications for Permits to Transport
and Dump Materials into Ocean Waters

Public Notice for Ocean Dumping Permit Numbers
OD 98-01 and OD 98-02

Pursuant to Section 102 of the Marine Protection, Research and Sanctuaries Act (MPRSA) of 1972, as amended (33 U.S.C. § 1401 et seq.) and 40 C.F.R. § 222.3 of EPA's Ocean Dumping Regulations (42 Fed. Reg. 2462, Jan. 11, 1977), notice is hereby given by this office of complete applications for permits to transport and dispose fish processing wastes into ocean waters of Tutuila Island, American Samoa. The permit applicants are: STARKIST SAMOA, INC., P.O. Box 368, Pago Pago, American Samoa 96799 and COS SAMOA PACKING COMPANY, INC., P.O. Box 957, Pago Pago, American Samoa 96799.

EPA has made a tentative decision to issue special ocean dumping permits to StarKist Samoa and COS Samoa Packing Company for a three-year period. The Agency has determined that these permits are required for ocean disposal of fish processing wastes produced at canneries in Pago Pago, American Samoa. The fish processing wastes to be disposed from StarKist Samoa are: dissolved air flotation (DAF) sludge, cooker juice and press liquor. The fish processing wastes to be disposed from COS Samoa Packing are: DAF sludge, precooker water and press water. Based on dilution levels expected at the designated ocean disposal site, the fish processing wastes are not expected to cause significant long-term impacts to oceanic water quality, marine ecosystems or human health.

The fish processing wastes will be disposed at an ocean disposal site 5.45 nautical miles southeast of Tutuila Island. The ocean disposal site has center coordinates of 14° 24.00' South latitude by 170° 38.20' West longitude and a radius of 1.5 nautical miles. The water depth at the disposal site is about 9,000 feet. This site was designated for use on February 6, 1990 (55 Fed. Reg. 3948) and was used by the two American Samoa canneries for disposal of fish processing wastes under MPRSA § 102 special permits OD 90-01 and 93-01 (StarKist Samoa), and OD 90-02 and 93-02 (COS Samoa Packing Company) for a cumulative total of six years. No significant long-term environmental impacts were found at the site during site monitoring activities.

During the term of special permits OD 98-01 and OD 98-02, the permittees must continue monitoring programs for the combined fish processing waste streams, disposal vessel navigation and monthly ocean disposal site monitoring. Information compiled during the term of these permits and any previous information about ocean disposal of fish processing wastes off American Samoa will be used by EPA Region IX to determine compliance with EPA's Ocean Dumping Regulations defined at 40 C.F.R. Parts 220 through 228 and the Special MPRSA § 102 permits.

SUMMARY OF INFORMATION AND TENTATIVE DETERMINATION

DAF sludge is waste material that remains after treatment of fish processing wastes to remove grease and suspended particulate matter. DAF sludge also contains aluminum sulfate or alum (an odor reducing chemical) and coagulant polymers (to coagulate suspended matter) that are added during the waste treatment process. Cooker juice or precooker water is a combination of stick water and other process water that collects under the steam precookers at the fish plants. Press liquor or press water is waste water produced at the fish meal plants when fish scrap is cooked and pressed before being dried to produce livestock food meal. The three waste streams will be combined in an onshore storage tank prior to transport to the ocean disposal site.

There are no changes in the overall volumes of fish processing wastes proposed for disposal by either applicant. The proposed disposal volumes are: Starkist Samoa, 200,000 gallons/day; COS Samoa Packing, 200,000 gallons/day; total volume, 400,000 gallons/day.

Based on EPA Region IX's review of data collected under the previous MPRSA § 102 special permits, the following changes are proposed for the new permits: 1) new permit limits for the combined fishwaste have been calculated which are higher than the previous permit limits for the separate waste streams, 2) a new set of confirmatory suspended phase acute toxicity bioassays are required to confirm that disposal operations are similar to the previous permitted actions, 3) a clarification of the requirements for disposal operations within the disposal site, and 4) reporting forms have been modified to simplify the reporting of permit monitoring information. All other general and special conditions are similar to existing conditions in MPRSA § 102 special permits OD 93-01 and OD 93-02.

INITIATION OF HEARINGS AND PUBLIC COMMENTS

Within 30 days of the date of this notice, any person may request a public hearing to consider the issuance of, or the conditions to be imposed upon, these permits. Any such request for a public hearing must: 1) be in writing, 2) identify the person requesting the hearing, 3) state any objections to the issuance of, or to the conditions to be imposed upon, these permits, and 4) state the issues which are proposed to be considered at the hearing. Under 40 C.F.R § 222.4, the Regional Administrator's determination on whether to hold a public hearing shall be based on whether the request presents genuine issues of policy or facts amenable to resolution by public hearing.

Comments on the tentative determination and requests for public hearings may be submitted in writing within 30 days of the date of publication of this notice to: Mr. John Ong, Acting Chief, Monitoring and Assessment Office (WTR-2), U.S. Environmental Protection Agency, Region IX, 75 Hawthorne Street, San Francisco, CA 94105-3901, telephone (415) 744-1867.

The Administrative Record, which includes the applications, the proposed permits, the fact sheet describing the permits, is available for public review Monday to Friday from 9:00 a.m. to 4:00 p.m. at the: EPA Region IX Library, 13th Floor, 75 Hawthorne Street, San Francisco,

CA, (415) 744-1510; EPA Pacific Island Contact Office, 300 Ala Moana Boulevard, Room 5124, Honolulu, HI, (808) 541-2710; and American Samoa EPA, Executive Office Building, Office of the Governor, Pago Pago, American Samoa, (684) 633-2304.

TEMPLATE FOR EDITING

* Ask Pat – where are the applications

NOTICE OF APPLICATION AND PROPOSED ACTION
U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) REGION IX
75 HAWTHORNE STREET
SAN FRANCISCO, CALIFORNIA 94105-3901

Applications for Permits to Transport
and Dump Materials into Ocean Waters

Public Notice for Ocean Dumping Permit Numbers
OD ~~93~~ 98-01 and OD ~~93~~ 98-02

Pursuant to Section 102 of the Marine Protection, Research and Sanctuaries Act (MPRSA) of 1972, as amended (33 U.S.C. § 1401 et seq.) and 40 C.F.R. § 222.3 of EPA's Ocean Dumping Regulations (42 Fed. Reg. 2462, Jan. 11, 1977), notice is hereby given by this office of complete applications for permits to transport and dispose fish processing wastes into ocean waters of Tutuila Island, American Samoa. The permit applicants are: STARKIST SEAFOOD COMPANY, INC. (an affiliate of H.J. HEINZ COMPANY), 180 East Ocean Blvd., Long Beach, CA 90802-4797 and VAN CAMP SEAFOOD COMPANY, INC., 4510 Executive Dr., Suite 300, San Diego, CA 92121-3029, for their respective subsidiary companies: STARKIST SAMOA, INC., P.O. Box 368, Pago Pago, American Samoa 96799 and VCS SAMOA PACKING COMPANY, INC., P.O. Box 957, Pago Pago, American Samoa 96799.

EPA has made a tentative decision to issue special ocean dumping permits to StarKist Samoa and VCS Samoa Packing Company for a three-year period. The Agency has determined that these permits are required for ocean disposal of fish processing wastes produced at canneries in Pago Pago, American Samoa. The fish processing wastes to be disposed from StarKist Samoa are: dissolved air flotation (DAF) sludge, cooker juice and press liquor. The fish processing wastes to be disposed from VCS Samoa Packing are: DAF sludge, precooker water and press water. Based on dilution levels expected at the designated ocean disposal site, the fish processing wastes are not expected to cause significant long-term impacts to oceanic water quality, marine ecosystems or human health.

The fish processing wastes will be disposed at an ocean disposal site 5.45 nautical miles southeast of Tutuila Island. The ocean disposal site has center coordinates of 14° 24.00' South latitude by 170° 38.20' West longitude and a radius of 1.5 nautical miles. The water depth at the disposal site is about 9,000 feet. This site was designated for use on February 6, 1990 (55 Fed. Reg. 3948) and was used by the two American Samoa canneries for disposal of fish processing wastes under MPRSA § 102 special permits OD 90-01 (StarKist Samoa) and OD 90-02 (VCS Samoa Packing Company) for three years. No significant long-term environmental impacts were found at the site during site monitoring activities. (1) – (see back of this page)

During the term of special permits OD ~~93~~ 98-01 and OD ~~93~~ 98-02, the permittees must continue monitoring programs for fish processing waste~~streams~~, disposal vessel navigation and monthly ocean disposal site monitoring. Information compiled during the term of these permits and any previous information about ocean disposal of fish processing wastes off American Samoa will be used by EPA Region IX to determine compliance with EPA's Ocean Dumping Regulations defined at 40 C.F.R. Parts 220 through 228 and the Special MPRSA § 102 permits.

SUMMARY OF INFORMATION AND TENTATIVE DETERMINATION

DAF sludge is waste material that remains after treatment of fish processing wastes to remove grease and suspended particulate matter. DAF sludge also contains aluminum sulfate or alum (an odor reducing chemical) and coagulant polymers (to coagulate suspended matter) that are added during the waste treatment process. Cooker juice or precooker water is a combination of

① The two American Samoa canneries were issued MPRSA §102 special permits OD 93-01 (Starkist Samoa) and OD 93-02 (VCS Samoa Packing Company) for a three-year period extending from September 1, 1993 through August 31, 1996. Administrative extensions have allowed use of the fish waste disposal site after the expiration date. (*) Again, no significant long-term environmental impacts have been detected at the disposal site during this period.

EPA Region IX determined that combined sampling and analyses of the onshore storage tank wastes ~~was sufficient~~ in lieu of sampling and analyses of the individual waste streams.

(*) During the period of the previous special permits,

stick water and other process water that collects under the steam precookers at the fish plants. Press liquor or press water is waste water produced at the fish meal plants when fish scrap is cooked and pressed before being dried to produce livestock food meal.

There are no changes in the volumes of fish processing wastes proposed for disposal by either applicant. The proposed disposal volumes are:

Fish Processing Waste	StarKist Samoa (gallons/day)	VCS Samoa Packing (gallons/day)	Total Volume (gallons/day)
DAF Sludge	60,000	60,000	??
Cooker Juice	100,000	0	??
Precooker Water	0	100,000	??
Press Liquor	40,000	0	??
Press Water	0	40,000	??
Daily Maximum	??	??	??

Based on EPA Region IX's review of data collected under the previous MPRSA § 102 special permits, the following changes are proposed for the new permits: 1) ~~new permit limits have been calculated which are mostly lower than the~~ previous permit limits, 2) ~~analysis of~~ heavy metals ~~in the waste streams has~~ been deleted because data showed low concentrations of all ~~analytes, 3) analysis of~~ petroleum hydrocarbons in the waste streams has been deleted because fish oils interfere with this analysis, ~~4) a new disposal~~ vessel (the FV TASMAN SEA) is authorized ~~and~~ a new set of bioassays ~~and plume modeling are required~~ to confirm that disposal operations are similar to the previous permitted actions, 5) a computerized navigation system is required to plot the course of the vessel accurately during disposal operations, and 6) new reporting forms have been developed to aid in reporting permit monitoring information. All other general and special conditions are similar to existing conditions in MPRSA § 102 special permits OD 90-01 and OD 90-02.

2

and review of bioassay and modeling studies

INITIATION OF HEARINGS AND PUBLIC COMMENTS

Within 30 days of the date of this notice, any person may request a public hearing to consider the issuance of, or the conditions to be imposed upon, these permits. Any such request for a public hearing must: 1) be in writing, 2) identify the person requesting the hearing, 3) state any objections to the issuance of, or to the conditions to be imposed upon, these permits, and 4) state the issues which are proposed to be considered at the hearing. Under 40 C.F.R § 222.4, the Regional Administrator's determination on whether to hold a public hearing shall be based on whether the request presents genuine issues of policy or facts amenable to resolution by public hearing.

Comments on the tentative determination and requests for public hearings may be submitted in writing within 30 days of the date of publication of this notice to: Ms. Janet Y. Hashimoto, Chief, Marine Protection Section (W-7-1), U.S. Environmental Protection Agency, Region IX, 75 Hawthorne Street, San Francisco, CA 94105-3901, telephone (415) 744-1156.

(2) (changes for new permits) (combined)

1) onshore storage tank wastes shall be sampled and analyzed, instead of the individual waste streams

2) as a result of combining the waste streams, the new permit limits are higher than those in the previous permits.

3) a new set of bioassays will be required to confirm no adverse impacts at the ocean disposal site.

4) new reporting forms have been developed, reflecting the changes in sampling and analyses.

5) clarification on vessel operation requirements during disposal operations.

93 93

The Administrative Record, which includes the applications, the draft permits, the fact sheet describing the permits and changes from special permits OD ~~90~~-01 and OD ~~90~~-02, is available for public review Monday to Friday from 9:00 a.m. to 4:00 p.m. at the: EPA Region IX Library, 13th Floor, 75 Hawthorne Street, San Francisco, CA, (415) 744-1510; EPA Pacific Island Contact Office, 300 Ala Moana Boulevard, Room 5124, Honolulu, HI, (808) 541-2710; and American Samoa EPA, Executive Office Building, Office of the Governor, Pago Pago, American Samoa, (684) 633-2304.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

DATE: August 19, 1996

FROM: Norman Lovelace, Chief M. T. Lee
for Office of Pacific Island Programs

TO: Steve Schimmel, Acting Branch Chief
Ecosystem Analysis & Simulation (EAS) Branch

SUBJECT: Review of Modeling Report for EPA Region 9 - American Samoa Ocean Disposal Site for Fish Waste

This memorandum requests assistance from your laboratory in the review of a monitoring report for an EPA-designated fish waste disposal site in Region 9. Special permits for two American Samoan fish canneries are due for renewal following evaluation of monitoring data. One of the required submittals from the canneries is a modeling report that determines compliance with site designation parameters (i.e., review of the model results, including calculations of fate and transport). Presently, there is no one in the Region 9 office with the expertise to review the modeling aspects of this report. Our staff have determined from telephone conversations that Mr. Mohammed Abdelrhman of your laboratory is available to review the findings of this report for Region 9.

Review of this report is crucial to EPA Region 9's overall evaluation of compliance with the special conditions of the permits which were designed to ensure that no adverse environmental impacts occur as a result of disposal of these fish wastes. Please notify us regarding the availability of Mr. Abdelrhman as soon as possible. If you have any questions, please call Pat Young at (415) 744-1594 or Allan Ota at (415) 744-1980. Thank you for your assistance.

cc: Mohammed Abdelrhman, EAS
Edward Dettmann, EAS
Norm Rubenstein, Atlantic Ecology Division
Brian Melzian, Program Operations
Patricia Young, American Samoa Program Office
Allan Ota, Ocean Dumping Program

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

DATE: August 19, 1996

FROM: Norman Lovelace, Chief M. T. Lee
for Office of Pacific Island Programs

TO: Steve Schimmel, Acting Branch Chief
Ecosystem Analysis & Simulation (EAS) Branch

SUBJECT: Review of Modeling Report for EPA Region 9 - American Samoa Ocean Disposal Site for Fish Waste

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cc: Mohammed Abdelrhman, EAS
Edward Dettmann, EAS
Norm Rubenstein, Atlantic Ecology Division
Brian Melzian, Program Operations
Patricia Young, American Samoa Program Office
Allan Ota, Ocean Dumping Program

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

AUG 2 0 1996

James Cox, Director
Engineering and Environmental Affairs
Van Camp Seafood Company, Inc.
4510 Executive Drive, Suite 300
San Diego, CA 92121-3029

Subject: Administrative Extension of MPRSA Section 102 Ocean Dumping Permit, #OD 93-02

Dear Mr. Cox:

EPA Region IX is evaluating the information submitted by StarKist Samoa and VCS Samoa Packing as required by the Marine Protection, Research and Sanctuaries Act (MPRSA) Section 102 special ocean dumping permit. Due to the late submittal by CH2MHILL of the report titled, "Joint Cannery Ocean Dumping Studies in American Samoa", the overall complexity of these evaluations, and the approaching expiration date of MPRSA Section 102 special permit #OD 93-02, EPA Region IX has determined that we will administratively extend MPRSA Section 102 special permit #OD 93-02. The administrative extension is made according to procedures defined in the Administrative Procedures Act (5 U.S.C. § 558). We anticipate that a decision on the new permit will be made within 90 days after expiration (on August 31, 1996) of the existing special permit..

EPA Region IX will inform you as soon as possible about our decision for the final permit, after which we will submit a draft permit for your review. If you have any questions on the administrative extension or your MPRSA Section 102 permit (OD 93-02) requirements, please call me at (415) 744-2125, or you may call Patricia Young at (415) 744-1594.

Sincerely,

A Strauss

Alexis Strauss, Director (acting)
Water Management Division

cc: Tony Tausaga, ASEPA, Pago Pago, American Samoa
U.S. Coast Guard Liaison Officer, Pago Pago, American Samoa
William D. Perez, VCS Samoa Packing, Pago Pago, American Samoa
Michael Burns, Blue North Fisheries, Seattle, WA

Printed on Recycled Paper

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Norman Wei
Corporate Environmental Manager
StarKist Foods, Inc.
1054 Ways Street
Terminal Island, CA 90731

AUG 2 0 1996

Subject: Administrative Extension of MPRSA Section 102 Ocean Dumping Permit, #OD 93-01

Dear Mr. Wei:

EPA Region IX is evaluating the information submitted by StarKist Samoa and VCS Samoa Packing as required by the Marine Protection, Research and Sanctuaries Act (MPRSA) Section 102 special ocean dumping permit. Due to the late submittal by CH2MHILL of the report titled, "Joint Cannery Ocean Dumping Studies in American Samoa", the overall complexity of these evaluations, and the approaching expiration date of MPRSA Section 102 special permit #OD 93-01, EPA Region IX has determined that we will administratively extend MPRSA Section 102 special permit #OD 93-01. The administrative extension is made according to procedures defined in the Administrative Procedures Act (5 U.S.C. § 558). We anticipate that a decision on the new permit will be made within 90 days after expiration (on August 31, 1996) of the existing special permit.

EPA Region IX will inform you as soon as possible about our decision for the final permit, after which we will submit a draft permit for your review. If you have any questions on the administrative extension or your MPRSA Section 102 permit (OD 93-01) requirements, please call me at (415) 744-2125, or you may call Patricia Young at (415) 744-1594.

Sincerely,

Alexis Strauss (acting)
Alexis Strauss, Director
Water Management Division

cc: Tony Tausaga, ASEPA, Pago Pago, American Samoa
U.S. Coast Guard Liaison Officer, Pago Pago, American Samoa
Barry Mills, StarKist Samoa, Pago Pago, American Samoa
Michael Burns, Blue North Fisheries, Seattle, WA

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Norman Wei
Corporate Environmental Manager
StarKist Foods, Inc.
1054 Ways Street
Terminal Island, CA 90731

AUG 2 0 1996

Subject: Administrative Extension of MPRSA Section 102 Ocean Dumping Permit, #OD 93-01

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EPA Region IX is evaluating the information submitted by StarKist Samoa and VCS Samoa Packing as required by the Marine Protection, Research and Sanctuaries Act (MPRSA) Section 102 special ocean dumping permit. Due to the late submittal by CH2MHILL of the report titled, "Joint Cannery Ocean Dumping Studies in American Samoa", the overall complexity of these evaluations, and the approaching expiration date of MPRSA Section 102 special permit #OD 93-01, EPA Region IX has determined that we will administratively extend MPRSA Section 102 special permit #OD 93-01. The administrative extension is made according to procedures defined in the Administrative Procedures Act (5 U.S.C. § 558). We anticipate that a decision on the new permit will be made within 90 days after expiration (on August 31, 1996) of the existing special permit.

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Michael Burns, Blue North Fisheries, Seattle, WA

CONCURRENCES

SYMBOL	W-3-3	L-4	E-4					
SURNAME								
DATE	8-19-96	8/20/96	8/20/96					

EPA Form 1320-1 (12-70) OFFICIAL FILE COPY

*U.S. GPO : 1986-159-319

Fax Transmittal Cover Sheet

To: Allan Ota, - U.S. EPA Region 9 AO

From: Allan Y. Ota, Home

Fax Number: 415-324-2437

Date: Thu, Sep 21, 1995 • 4:11 PM

Transmitting (3) pages, including cover sheet.

If there is difficulty with this transmission, please call: 415-324-2437

DRAFT 9-21-95 FACT SHEET

Fish waste permits for Starkist Samoa and VCS Samoa Packing

CALCULATION OF REVISED PERMIT LIMITS

1. Data collected from the onshore storage tank from September 1993 through August 1994 were used to calculate the revised permit limits. The data for each cannery were evaluated separately.

2. The following calculations were made for each set of data, including mean, standard deviation, and the number of points.

3. Any data values determined to be significantly different from the population of data points by visual inspection of scatter plots, and confirmed to be greater than or less than the mean plus of minus 2 standard deviations, were considered to be outliers. Outlier data points were not used in the permit limit calculations.

4. All procedures for calculating permit limits are discussed in Sections 3.1.1 and 3.1.2 (pages 3-1- to 3-9) of EPA's Guidance Document for Ocean Dumping Permit Writers (January 30, 1988).

a. The mean and standard deviation of each physical or chemical parameter were calculated by the following equations:

$$\text{Mean}_x = \frac{\sum x_i}{N}$$

x_i = each value for the ith constituent
N = the number of data points reported

$$\text{Standard Deviation}_x = \frac{\sum \{x_i - \text{Mean}_x\}^2}{N - 1}$$

b. The permit limit (Upper Limit) was determined by taking the mean and adding the product of a constant multiplied by the standard deviation.

$$\text{Upper Limit}_x = \text{Mean}_x + (k \times \text{Standard Deviation}_x)$$

k = a constant from Table 3-2 in EPA's 1988 Guidance Document.

c. The constant (k) is based on N and two variables, probability (gamma) and proportion (P), used to compute permit limits. In this case, all limits were calculated with gamma = 0.90 and P = 0.95.

Tasman Sea completes 1000th dumping voyage

Allan –
One of life's little success stories.... Look Ma – still afloat!

Pat Cotter:
Just thought you'd like to know the Tasman Sea is still afloat, despite the track record of its predecessors, and still hauling that fish waste!

Allan – could you mail this to Pat C.? Thanks.

in the Samoas."

Bob and his new bride Dawn had no idea what to expect, but looking back now they both agree it was a good move for them as they get to spend much more time together.

The Tasman Sea is classed as a "mud boat" and was originally designed and used for the supply of cargo and liquids to offshore oil rigs. Rumor has it that she was later to be used as a river boat with deluxe accommodations and even a hot tub for the paying guests. She is capsized at the canneries in the early 80's through an error in loading. The next vessel, the *F/V Azuma Maru*, took her place, and was a longliner, prior to serving the canneries. She was last seen heading West.

The *M/V Mataora* was an ex-copra cargo ship from the Cook Islands. She served the northern Cooks for 10 years before coming to Samoa. She now lies on the bottom, off the Island of Rarotonga, filled with old cars and scrap metal collected from an island wide

So, if your walking down by the harbor and you see a blue ship go by that makes you hold your nose, give her a wave and rest assured that Chief Engineer Bob and crew are doing their part to help keep the waters of American Samoa clean for future generations.

SAMOAN
EVERY FRIDAY FROM
MENU
BUFFET Style
Monday to Thursday & Saturday
Also try, Little Sams Famou
LITTLE S
Located in Nu'uuli (next to A

Colin Powell 54%, Bill Clinton 39% in Latest Poll...

WASHINGTON (AP) — Retired Gen. Colin Powell running as the Republican nominee would defeat President Clinton by 15 percentage points if the presidential election were held now, according to a USA TODAY/CNN/Gallup poll.

The survey taken last weekend found Powell would best Clinton 54-to-39 and that Clinton would defeat GOP front-runner Bob Dole, 51 percent to 44 percent. If Powell ran as an independent, he and Clinton would tie at 33 percent and Dole would get 30 percent — a statistical dead heat given the margin of error.

The poll found Dole and Powell deadlocked among Republicans at 31 percent each in a hypothetical race for the GOP nomination, with all other contenders in single digits.

Coors LIGHT
Coors LIG
presents
Ladies Night!
AT
The Country Club
EVERY THURSDAY

Tasman Sea completes 1000th dumping voyage

(Press release)—American Samoa's two canneries yesterday recognized the successful completion of the 1000th voyage of the canneries' waste water by the *F/V Tasman Sea*.

The ship carries waste sludge from the canneries to a federally-approved ocean dumping site, a few miles offshore from the airport.

The ship's Chief Engineer and Manager Bob Dennis has been aboard since she sailed from Seattle, Washington in July, 1993. Bob recalls, "it was a great 11-day voyage across the Pacific Ocean culminating with the last sunrise and landfall here in the Samoas."

Bob and his new bride Dawn had no idea what to expect, but looking back now they both agree it was a good move for them as they get to spend much more time together.

The Tasman Sea is classed as a "mud boat" and was originally designed and used for the supply of cargo and liquids to offshore oil rigs. Rumor has it that she was later to be used as a river boat with deluxe accommodations and even a hot tub for the paying guests. She is owned and operated by Blue North Fisheries.

Bob has done extensive work to modify the Tasman Sea for the hauling of waste water and solids, including above deck pipes to facilitate easier loading and two 20-foot containers for the disposing of waste fish. Bob laughs when he says "our motto is not unlike the postal system's: come wind, high waves, and rain squalls, we deliver our products."

The Tasman Sea follows in the wake of four other famous ocean dumping vessels. In fact, she sails daily over the first one: *"M/V Misimoa"*. The Misimoa capsized at the canneries in the early 80's through an error in loading. The next vessel, the *F/V Azuma Maru*, took her place, and was a longliner, prior to serving the canneries. She was last seen heading West.

The *M/V Mataora* was an ex-copra cargo ship from the Cook Islands. She served the northern Cooks for 10 years before coming to Samoa. She now lies on the bottom, off the Island of Rarotonga, filled with old cars and scrap metal collected from an island wide clean-up done in Raro. And finally the *F/V Astro* finished her contract and was seized by the ASG Port for back fees and sold to a firm Down-Under.

The Tasman Sea, like her past counter-parts, operates on an ocean dumping permit outlined and enforced by the American Samoa EPA and United States Coast Guard. Reports on water quality at the dump site are performed and evaluated and results sent to ASEPA, National Marine Fisheries, U.S. Fish and Wildlife and the Western Pacific Regional Fishery Management Council.

So, if your walking down by the harbor and you see a blue ship go by that makes you hold your nose, give her a wave and rest assured that Chief Engineer Bob and crew are doing their part to help keep the waters of American Samoa clean for future generations.

SAMOAN
EVERY FRIDAY FROM
MENU
Pig, Palusami
Oka
Corned Brisket
with cabbage
Fish, Banana &
Rice
St
M
We'll C
For Bre
at 6
BUFFET
Style
Monday to
Thursday &
Saturday
Also try,
Little Sams
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Colin Powell 54%, Bill Clinton 39% in Latest Poll...

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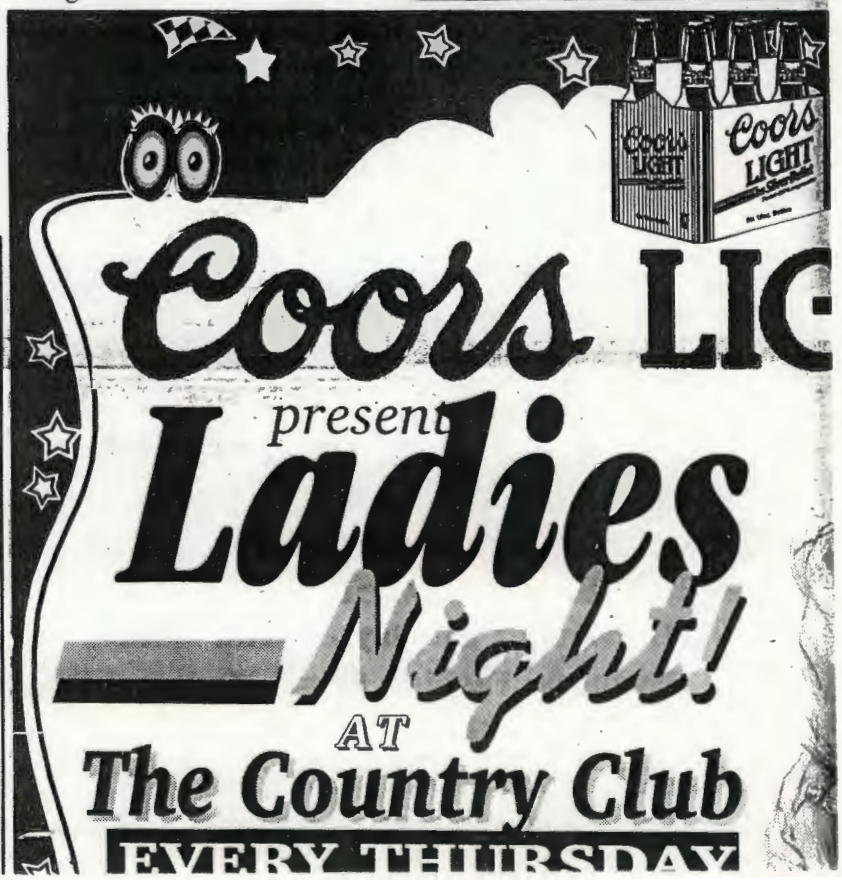


File: FISHLOAD

Evaluation of Fish Cannery Loadings at the American Samoa Ocean Disposal Site

August 1993

1990 Permit# & Waste[1]	Volume[2] gal/day	TS[3] mg/L	TS[4] lb/day	TVS mg/L	TVS lb/day	BOD mg/L	BOD lb/day	O&G mg/L	O&G lb/day	TP mg/L	TP lb/day	TN mg/L	TN lb/day	NH3 mg/L	NH3 lb/day
OD 90-01 DAF Sludge	60000	230460	114990	182210	190916	376520	187868	129590	64660	3050	1522	18100	9031	7500	3742
OD 90-01 Precooker Water	100000	158290	131634	146900	122162	365450	303908	4830	4017	1150	956	21380	17780	21200	17630
OD 90-01 Press Water	40000	271920	90451	385630	128276	399090	132753	62150	20674	1990	662	31550	10495	21170	7042
StarKist Daily Loading	200000		337076		341354		624530		89350		3140		37306		28414
OD 90-02 DAF Sludge	60000	492000	245488	308700	154029	443840	221458	282750	141081	3910	1951	14950	7459	2570	1282
OD 90-02 Cooker Water	100000	257290	213962	358180	297862	60220	50079	207830	172831	2170	1805	20820	17314	2740	2279
OD 90-02 Press Water	40000	463780	154272	384560	127920	524270	174393	386480	128559	6860	2282	32020	10651	4940	1643
VCS Samoa Daily Loading	200000		613722		579811		445931		442471		6037		35424		5204
Total Daily Loading	400000		950798		921165		1070460		531822		9178		72730		33618
% StarKist Load Contribution	50		35		37		58		17		34		51		85
% VCS Samoa Load Contribution	50		65		63		42		83		66		49		15
1993 Permit App.# & Waste[6]	**Volume[6] gal/day**	**TS[7] mg/L**	**TS[4] lb/day**	**TVS mg/L**	**TVS lb/day**	**BOD mg/L**	**BOD lb/day**	**O&G mg/L**	**O&G lb/day**	**TP mg/L**	**TP lb/day**	**TN mg/L**	**TN lb/day**	**NH3 mg/L**	**NH3 lb/day**
Original OD 93-01 DAF Sludge	60000	163430	81545	136180	67948	232320	115918	64100	31983	1640	818	7020	3503	1830	913
Original OD 93-01 Cooker Juice	100000	114180	94952	63400	52723	185150	153971	11810	9821	940	782	7560	6287	690	574
Original OD 93-01 Press Liquor	40000	327870	109063	292280	97224	310790	103381	112080	37282	3160	1051	20360	6773	1390	462
Original StarKist Daily Loading	200000		285560		217896		373270		79087		2651		16562		1949
Original OD 93-02 DAF Sludge	60000	461790	230415	455560	227306	349350	174312	395700	197438	3790	1891	21820	10887	3470	1731
Original OD 93-02 Precooker Water	100000	115180	95784	84450	70229	64650	53763	11180	9297	1850	1538	12830	10669	410	341
Original OD 93-02 Press Water	40000	381510	126905	409310	136153	365550	121597	165860	55172	2950	981	35100	11676	830	276
Original VCS Samoa Daily Loading	200000		453104		433688		349671		261907		4411		33232		2348
Original Total Daily Loading	400000		738664		651584		722941		340994		7062		49795		4298
% StarKist Load Contribution	50		39		33		52		23		38		33		45
% VCS Samoa Load Contribution	50		61		67		48		77		62		67		55
1993 Load - 1990 Load	0		-212135		-269581		-347519		-190827		-2116		-22936		-29321
% Change 1990 to Original 1993	0		-22		-29		-32		-36		-23		-32		-87
Changes to StarKist Permit App.	**Volume[8] gal/day**	**TS[7] mg/L**	**TS[4] lb/day**	**TVS mg/L**	**TVS lb/day**	**BOD mg/L**	**BOD lb/day**	**O&G mg/L**	**O&G lb/day**	**TP mg/L**	**TP lb/day**	**TN mg/L**	**TN lb/day**	**NH3 mg/L**	**NH3 lb/day**
Requested OD 93-01 DAF Sludge	30000	163430	40773	136180	33974	232320	57959	64100	15992	1640	409	7020	1751	1830	457
Requested OD 93-01 Cooker Juice	70000	114180	66466	63400	36906	185150	107780	11810	6875	940	547	7560	4401	690	402
Requested OD 93-01 Press Liquor	100000	327870	272657	292280	243060	310790	258453	112080	93206	3160	2628	20360	16931	1390	1156
Requested StarKist Daily Loading	200000		379896		313941		424192		116072		3584		23084		2014
Same OD 93-02 DAF Sludge	60000	461790	230415	455560	227306	349350	174312	395700	197438	3790	1891	21820	10887	3470	1731
Same OD 93-02 Precooker Water	100000	115180	95784	84450	70229	64650	53763	11180	9297	1850	1538	12830	10669	410	341
Same OD 93-02 Press Water	40000	381510	126905	409310	136153	365550	121597	165860	55172	2950	981	35100	11676	830	276
Same VCS Samoa Daily Loading	200000		453104		433688		349671		261907		4411		33232		2348
Proposed Total Daily Loading	400000		833000		747628		773863		377980		7995		56316		4363
% StarKist Load Contribution	50		46		42		55		31		45		41		46
% Change from Original SK App	0		7		9		3		8		7		8		1
% VCS Samoa Load Contribution	50		54		58		45		69		55		59		54
SK 1993 Requested Load - SK 1990 Load	0		-117799		-173537		-296598		-153842		-1183		-16414		-29256
% Change SK 1990 to SK Requested 1993	0		-12		-19		-28		-29		-13		-23		-87

1. Permits issued on July 31, 1990

- Volumes requested in the canneries' 1990 permit applications.

- OD 90-01 and OD 90-02 permit limits calculated by EPA Region IX based on historical data.

- Loading at the ocean disposal site calculated as follows:

Waste Stream Concentration (mg/L) x 3.875 (L/gallon) x 2.2046 (lbs/kg) x 1/1,000,000 (kg/mg) x Volume Generated (gallons/day) = Loading (lbs/day)

5. On December 8, 1992, StarKist Samoa and VCS Samoa Packing submitted their MPRSA §102 permit applications to EPA Region IX. On May 27, 1993, EPA Region IX determined that the applications were complete.

- Volumes of fish processing wastes in the canneries' December 8, 1992 applications.

- Permit limits calculated by EPA Region IX based on waste stream data collected under MPRSA §102 permits OD 90-01 and OD 90-02.

- On June 30, 1993, StarKist Samoa requested changes in the volumes of fish processing wastes generated at their plant that could be disposed at the ocean site. StarKist Samoa made the following request: a) change DAF Sludge from 60,000 gallons per day to 30,000 gallons per day, b) change Cooker Juice from 100,000 gallons per day to 70,000 gallons per day, and c) change Press Liquor from 40,000 gallons per day to 100,000 gallons per day.

Monthly Volumes of StarKist Samoa Fish Processing Wastes Generated Per Day and Volumes of Fish Processing Wastes Disposed at the Ocean Site

Month _____ 19__

OD 93-01	DAF Sludge Generated (gallons/day)	Cooker Water Generated (gallons/day)	Press Liquor Generated (gallons/day)	Total Generated (gallons/day)
Permit Limits	30,000	70,000	100,000	200,000

Date	DAF Sludge Generated (gallons/day)		Cooker Juice Generated (gallons/day)		Press Liquor Generated (gallons/day)		Total Generated (gallons/day)		Volume Ocean Disposed (gallons/day)	
Monthly Totals										

NOTE: An asterisk (*) to the right of the fish processing waste volume signifies that a violation of the permit limit has occurred. The number of violations are shown in the Monthly Totals row.

Monthly quantities of alum (aluminum sulfate) and coagulant polymer added to the fish processing waste streams:

Aluminum sulfate: _____ pounds/month

Coagulant polymer: _____ pounds/month

Data Form for 3-Month Report on Waste Stream Analyses for StarKist Samoa MPRSA § 102 Permit #OD 93-01

Reporting Period: From _____ 19__ To _____ 19__

StarKist Samoa - Dissolved Air Flotation (DAF) Sludge

Month & Year	Total Solids (mg/L)	Total Volatile Solids (mg/L)	5-Day Biological Oxygen Demand (mg/L)	Oil and Grease (mg/L)	Total Phosphorus (mg/L)	Total Nitrogen (mg/L)	Ammonia (mg/L)	pH (pH units)	Density (g/ml.)
OD 93-01 Permit Limits	163,430	136,180	232,320	64,100	1,640	7,020	1,830	5.3 to 7.0	0.97 to 1.06

StarKist Samoa - Cooker Juice

Month & Year	Total Solids (mg/L)	Total Volatile Solids (mg/L)	5-Day Biological Oxygen Demand (mg/L)	Oil and Grease (mg/L)	Total Phosphorus (mg/L)	Total Nitrogen (mg/L)	Ammonia (mg/L)	pH (pH units)	Density (g/ml.)
OD 93-01 Permit Limits	114,180	63,400	185,150	11,810	940	7,560	690	5.9 to 7.0	0.98 to 1.06

StarKist Samoa - Press Liquor

Month & Year	Total Solids (mg/L)	Total Volatile Solids (mg/L)	5-Day Biological Oxygen Demand (mg/L)	Oil and Grease (mg/L)	Total Phosphorus (mg/L)	Total Nitrogen (mg/L)	Ammonia (mg/L)	pH (pH units)	Density (g/ml.)
OD 93-01 Permit Limits	327,870	292,280	310,790	112,080	3,160	20,360	1,390	5.8 to 7.0	0.99 to 1.08

NOTE: An asterisk (*) next to the waste concentration signifies that a violation of the permit limit has occurred.

MPRSA §102 Special Permit #OD 93-01

Reporting Period: From _____ 19__ To _____ 19__

Month & Year	DAF Sludge Generated (gallons/month)	Cooker Water Generated (gallons/month)	Press Liquor Generated (gallons/month)	Total Generated (gallons/month)	Aluminum sulfate (pounds/month)	Coagulant polymer (pounds/month)	Volume Ocean Disposed (gallons/month)
Cumulative Yearly Totals							

NOTE: A separate table shall be prepared for each calendar year.

Cumulative Yearly Data on Fish Processing Wastes Generated at StarKist Samoa's Plant and Disposed at the Ocean Site.

MPRSA §102 Special Permit #OD 93-01

Reporting Period: From _____ 19__ To _____ 19__

Month & Year	DAF Sludge Generated (gallons/month)	Cooker Water Generated (gallons/month)	Press Liquor Generated (gallons/month)	Total Generated (gallons/month)	Aluminum sulfate (pounds/month)	Coagulant polymer (pounds/month)	Oc (ga
Cumulative Yearly Totals							

NOTE: A separate table shall be prepared for each calendar year.

Long	Lat	Date	Haul #

Fishwaste Data Cover Sheet

Onshore Storage Tank - Single Stream Analysis
Comparison of New (Proposed) Permit Limits
(Using Transformed Data from Statistical Analysis)

Starkist	Van Camp Seafood	
39-41	48-53	Number of Sample Dates Available for Analysis
93,639	40,958	Total Solids
81,035	36,886	Total Volatile Solids
140,436	56,663	5-Day BOD
65,177	122,187	Oil & Grease
1,804	2,902	Total Phosphorus
10,903	11,109	Total Nitrogen
14,286	4,851	Ammonia
6.13-7.12	5.73-7.46	pH
0.97-1.03	0.98-1.02	Density

GENERAL OBSERVATIONS/QUESTIONS

1. I was dissappointed and then frustrated with the format of the data submitted, even with data supplied later on. It was way too time consuming to cut and paste from a word processing document. I am not exaggerating by much when I say that (on a relative basis) for the roughly 15-20 hours that I have spent actually looking at the data (i.e., statistics, etc.), I probably spent close to 100 hours inputting/formatting the data !

2. If we put the data format requirement (i.e., enforceable with penalties) in the new permit, maybe they will pay attention to our needs. I know we made several requests, am I right?

* 3. Calculations were performed on the onshore storage tank data based on the assumption that we are moving toward a simplified (i.e., single stream) analysis relative to the multiple stream analysis under the old permit.

4. In general, VCS seems to be able to generate during production lower values of the measured parameters, relative to Starkist.

5. Are the different values due to different equipment, different processing/cleaning techniques, or different mix of fish processed?

6. Calculations of the individual waste streams can be done; is it necessary at this point?

7. I have not noticed any significant problems in the site monitoring data I have looked at, however, I have not looked at all of the site monitoring data as yet. Have you seen anything that concerns you?

5-31-97

Pat – Here are the preliminary statistical analyses and calculations of permit limits (see item 3). Please look these over – remember that I have supplied the entire worksheets with the actual calculated values at the bottom of the sheet (i.e. transformed converted to untransformed) – row identified ~~with~~ as "Permit Limits" for each parameter.

I'm at sea on an oceanographic survey from June 2-7; I expect to be back in the office on June 9. I'm scheduled to be in the office June 9, 10, and 13 – Monday afternoon or Tuesday morning are open at this point. Let me know your schedule via e-mail.

Allan

OD 93-01									
		Total Volatile	5-Day Biological						
	Total Solids	Solids	Oxygen Demand	Oil and Grease	Total Phosphorus	Total Nitrogen	Ammonia	pH	Density
Month & Year	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(pH units)	(g/mL)
12/10/93	58,300	45,300	73,527	4,950	651	7,000	4,190	6.86	0.95
12/17/93	35,800	20,800	67,247	10,100	502	5,110	3,040	6.5	1
1/21/94	35,400	17,400	57,425	8,110	526	6,380	4,930	6.93	1.03
1/28/94	70,140	52,600	60,958	19,700	1,040	7,850	4,230	6.88	0.99
2/9/94	109,000	89,300	73,236	29,800	1,250	7,290	3,690	6.5	0.98
2/17/94	50,600	34,300	54,610	14,600	915	7,480	4,140	6.73	1.01
3/09/94	50,200	29,200	65,167	4,500	897	1,750	283	6.98	0.97
3/24/94	69,900	46,800	112,261	20,100	3,210	14,300	9,700	7.13	0.96
4/26/94	46,300	26,200	77,425	6,100	985	2,530	5,400	6.85	1.01
5/3/94	51,300	32,900	71,905	7,660	798	5,630	3,960	6.74	0.99
5/23/94	42,100	25,700	58,327	13,669	655	5,120	3,510	6.84	1
5/30/94	73,600	58,100	125,375	22,352	1,072	6,900	4,410	6.18	0.97
6/15/94	30,600	12,800	67,282	6,535	608	4,940	3,420	6.46	1.02
6/22/94	39,100	28,900	38,781	23,013	734	4,600	2,290	6.23	1
7/20/94	46,600	27,000	103,767	26,415	1,740	7,090	5,200	6.73	0.99
7/27/94	36,700	19,600	131,250	14,979	674	5,390	4,470	6.68	1.01
8/16/94	150,000	131,000	96,833	51,903	2,530	5,330	1,910	6.52	0.94
8/25/94	48,600	35,800	103,072	76,256	1,040	3,180	282	5.47	0.97
9/20/94	55,100	38,500	95,483	32,696	1,270	5,190	4,580	6.96	0.98
9/27/94	37,100	24,200	102,428	13,433	618	5,120	3,990	6.62	0.99
10/1/94	54,200	35,300	95,567	15,008	620	5,540	3,060	6.35	1
10/7/94	48,200	26,400	96,644	14,123	512	5,040	3,900	6.52	0.99
11/17/94	49,700	33,300	66,709	18,779	950	8,290	4,300	6.71	1.01
11/23/94	36,700	21,200	66,366	16,179	662	6,150	4,220	6.63	1.01
12/14/94	88,900	63,200	99,026	30,084	1,180	5,060	3,390	6.1	1.03
12/21/94	137,000	113,000	100,911	61,901	1,110	2,370	295	5.4	1
1/27/95	60,800	44,000	74,889	25,340	789	4,100	4,800	6.4	1.01
1/31/95	64000	44700	82,339	22,721	1110	6660	5160	6.9	1.01
2/25/95	64300	49400	95139	56793	997	6660	5170	6.8	0.99
3/2/95	56300	40700	101978	50204	612	3940	3330	6.44	1.01
3-03-95	53,600	38,600	106,856	39,360	933	4500	3650	6.3	1
3-11-95	117,000	84,100	94,628	36,286	3830	4370	3720	6.2	1.01
4-07-95	61,100	39,300	93,505	40,968	3100	2820	2290	6.4	1
4-13-95	27,300	20,700	50,893	17,648	361	1790	1560	6.6	0.99
5-03-95	79,300	60,300	136,750	31,841	1400	6390	434	6.3	1
5-10-95	46,400	33,600	111,611	16,791	666	4820	4050	6.6	1
6/28/95	41500	29300	63726	18098	502	2870	2310	6.49	1.01
7/5/95	53200	38800	113300	13526	791	5570	3870	6.75	1.01
7/6/95	62600	46900	95850	35005	940	9640	5230	6.76	1
7/26/95	65700	45000	67268	18619	1100	5920	4470	6.73	1
08-01-95	60000	36800	77311	13579	817	6350	3990	6.71	1
8/9/95	32500	18600	64220	9103	525	3490	2990	6.56	0.99

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Solids	Total Solids	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Solids Value	Total Solids Value	Squared	Squared
1	58,300	10.97335737	-4640	-0.126568828	21529600	0.01601967
2	35,800	10.48570317	17860	0.361085372	318979600	0.13038265
3	35,400	10.4744671	18260	0.372321445	333427600	0.13862326
4	70,140	11.15824852	-16480	-0.311459979	271590400	0.09700732
5	109,000	11.59910316	-55340	-0.752314617	3062515600	0.56597728
6	50,600	10.83170686	3060	0.015081689	9363600	0.00022746
7	50,200	10.82377031	3460	0.023018239	11971600	0.00052984
8	69,900	11.15482093	-16240	-0.308032384	263737600	0.09488395
9	46,300	10.74289724	7360	0.103891304	54169600	0.0107934
10	51,300	10.84544603	2360	0.001342513	5569600	1.8023E-06
11	42,100	10.64780302	11560	0.198985525	133633600	0.03959524
12	73,600	11.2064003	-19940	-0.35961176	397603600	0.12932062
13	30,600	10.32875529	23060	0.518033257	531763600	0.26835845
14	39,100	10.57387775	14560	0.272910799	211993600	0.0744803
15	46,600	10.74935582	7060	0.097432724	49843600	0.00949314
16	36,700	10.51053203	16960	0.33625651	287641600	0.11306844
17	48,600	10.79137881	5060	0.055409735	25603600	0.00307024
18	55,100	10.916905	-1440	-0.070116451	2073600	0.00491632
19	37,100	10.52137225	16560	0.325416296	274233600	0.10589577
20	54,200	10.90043619	-540	-0.053647643	291600	0.00287807
21	48,200	10.7831143	5460	0.063674244	29811600	0.00405441
22	49,700	10.81376021	3960	0.033028332	15681600	0.00109087
23	36,700	10.51053203	16960	0.33625651	287641600	0.11306844
24	88,900	11.39526742	-35240	-0.548478877	1241857600	0.30082908
25	60,800	11.01534507	-7140	-0.168556523	50979600	0.0284113
26	64,000	11.06663836	-10340	-0.219849818	106915600	0.04833394
27	64,300	11.07131491	-10640	-0.224526366	113209600	0.05041209
28	56,300	10.93844981	-2640	-0.09166127	6969600	0.00840179
29	53,600	10.88930435	60	-0.042515803	3600	0.00180759
30	61,100	11.02026715	-7440	-0.173478601	55353600	0.03009482
31	27,300	10.21464198	26360	0.632146563	694849600	0.39960928
32	79,300	11.28099341	-25640	-0.434204863	657409600	0.18853386
33	46,400	10.74505474	7260	0.101733806	52707600	0.01034977
34	41,500	10.63344871	12160	0.213339838	147865600	0.04551389
35	53,200	10.88181368	460	-0.035025131	211600	0.00122676
36	62,600	11.04452056	-8940	-0.197732013	79923600	0.03909795
37	65,700	11.0928542	-12040	-0.24606566	144961600	0.06054831
38	60,000	11.00209984	-6340	-0.155311297	40195600	0.0241216
39	32,500	10.38899537	21160	0.457793176	447745600	0.20957459
Column Sum	2,092,740	423.0247532			10441831200	3.37060355
Column Sum/N	53,660	10.84678854				
Column Sum/(N-1)					274785031.6	0.08870009
SQRT(Column Sum/(N-1))					16576.64114	0.29782561
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	53660	10.84678854	51368.91719	
		Std Dev	16576.64114	0.297825609	1.346926876	
		Permit Limit	87078.50854	11.44720497	93639.25565	
		Table 3-2 Constant = 2.016				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Vol. Solids	Total Vol. Solids	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Vol. Solids Value	Total Vol. Solids Val	Squared	Squared
1	45,300	10.72106231	-7410	-0.264921535	54908100	0.07018342
2	20,800	9.942708266	17090	0.51343251	292068100	0.26361294
3	17,400	9.764225485	20490	0.691915291	419840100	0.47874677
4	52,600	10.8704714	-14710	-0.414330623	216384100	0.17166986
5	89,300	11.39975677	-51410	-0.943615991	2642988100	0.89041114
6	34,300	10.44290063	3590	0.013240143	12888100	0.0001753
7	29,200	10.28192399	8690	0.174216788	75516100	0.03035149
8	46,800	10.75363848	-8910	-0.297497706	79388100	0.08850488
9	26,200	10.17351469	11690	0.282626086	136656100	0.0798775
10	32,900	10.40122794	4990	0.054912839	24900100	0.00301542
11	25,700	10.15424627	12190	0.301894505	148596100	0.09114029
12	58,100	10.96992094	-20210	-0.513780167	408444100	0.26397006
13	12,800	9.45720045	25090	0.998940326	629508100	0.99788178
14	28,900	10.27159687	8990	0.184543902	80820100	0.03405645
15	27,000	10.20359214	10890	0.252548631	118592100	0.06378081
16	19,600	9.883284845	18290	0.572855931	334524100	0.32816392
17	35,800	10.48570317	2090	-0.029562396	4368100	0.00087394
18	38,500	10.55841352	-610	-0.102272744	372100	0.01045971
19	24,200	10.09410791	13690	0.362032864	187416100	0.13106779
20	35,300	10.47163824	2590	-0.015497467	6708100	0.00024017
21	26,400	10.18111929	11,490	0.275021487	132020100	0.07563682
22	33,300	10.41331268	4,590	0.0428281	21068100	0.00183425
23	21,200	9.961756461	16,690	0.494384315	278556100	0.24441585
24	63,200	11.05405958	-25,310	-0.597918804	640596100	0.3575069
25	44,000	10.69194491	-6,110	-0.235804137	37332100	0.05560359
26	44700	10.70772878	-6,810	-0.251588005	46376100	0.06329652
27	49400	10.8077057	-11,510	-0.351564927	132480100	0.1235979
28	40700	10.61398337	-2,810	-0.157842595	7896100	0.02491428
29	38,600	10.56100756	-710	-0.104866779	504100	0.01099704
30	84,100	11.33976185	-46,210	-0.88362107	2135364100	0.7807862
31	39,300	10.5789798	-1,410	-0.122839022	1988100	0.01508943
32	20,700	9.937888979	17,190	0.518251797	295496100	0.26858492
33	60,300	11.00708738	-22,410	-0.550946607	502208100	0.30354216
34	33,600	10.42228135	4,290	0.03385943	18404100	0.00114646
35	29300	10.2853428	8,590	0.170797981	73788100	0.02917195
36	38800	10.56617553	-910	-0.11003475	828100	0.01210765
37	46900	10.75577295	-9,010	-0.299632178	81180100	0.08977944
38	45000	10.71441777	-7,110	-0.258276993	50552100	0.066707
39	36800	10.51325312	1,090	-0.057112348	1188100	0.00326182
40	18600	9.83091686	19,290	0.625223916	372104100	0.39090495
Column Sum	1,515,600	418.245631			10704816000	6.91706879
Column Sum/N	37,890	10.45614078				
Column Sum/(N-1)					274482461.5	0.17736074
SQRT(Column Sum/(N-1))					16567.51223	0.42114218
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	37,890	10.45614078	34757.15663	
		Std Dev	16567.51223	0.421142183	1.523700907	
		Permit Limit	71190.69959	11.30263656	81035.01009	
		Table 3-2 Constant = 2.010				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	5-Day BOD	5-Day BOD	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	5-Day BOD Value	5-Day BOD Value	Squared	Squared
1	73,527	11.20540796	10743.60976	0.101771847	115425150.6	0.01035751
2	67,247	11.11612769	17023.60976	0.191052125	289803289.1	0.03650091
3	57,425	10.95823503	26845.60976	0.348944784	720686763.2	0.12176246
4	60,958	11.01794038	23312.60976	0.28923943	543477773.6	0.08365945
5	73,236	11.20144238	11034.60976	0.105737429	121762612.5	0.0111804
6	54,610	10.9079723	29660.60976	0.399207516	879751771.1	0.15936664
7	65,167	11.08470848	19103.60976	0.222471327	364947905.7	0.04949349
8	112,261	11.6285818	-27990.39024	-0.321401985	783461946	0.10329924
9	77,425	11.257065	6845.609756	0.050114806	46862372.93	0.00251149
10	71,905	11.18310108	12365.60976	0.124078729	152908304.6	0.01539553
11	58,327	10.97382039	25943.60976	0.333359424	673070887.2	0.11112851
12	125,375	11.73906453	-41104.39024	-0.431884714	1689570897	0.18652441
13	67,282	11.11664802	16988.60976	0.190531791	288612861.4	0.03630236
14	38,781	10.56568571	45489.60976	0.741494096	2069304596	0.54981349
15	103,767	11.54990328	-19496.39024	-0.242723469	380109232.5	0.05891468
16	131,250	11.78485918	-46979.39024	-0.477679369	2207063108	0.22817758
17	96,833	11.48074312	-12562.39024	-0.173563313	157813648.6	0.03012422
18	103,072	11.54318305	-18801.39024	-0.236003241	353492275.1	0.05569753
19	95,483	11.4667035	-11212.39024	-0.159523689	125717695	0.02544781
20	102,428	11.53691539	-18157.39024	-0.22973558	329690820.5	0.05277844
21	95,567	11.46758285	-11296.39024	-0.16040304	127608432.5	0.02572914
22	96,644	11.4787894	-12373.39024	-0.171609592	153100786.1	0.02944985
23	66,709	11.10809516	17561.60976	0.199084656	308410137.2	0.0396347
24	66,366	11.10294016	17904.60976	0.204239655	320575050.5	0.04171384
25	99,026	11.50313772	-14755.39024	-0.19595791	217721541.2	0.0383995
26	100,911	11.52199422	-16640.39024	-0.214814408	276902587.5	0.04614523
27	74,889	11.2237623	9381.609756	0.083417515	88014601.62	0.00695848
28	82,339	11.31860015	1931.609756	-0.011420339	3731116.25	0.00013042
29	95139	11.46309426	-10868.39024	-0.155914448	118121906.5	0.02430932
30	101978	11.53251238	-17707.39024	-0.225332571	313551669.2	0.05077477
31	106,856	11.57923741	-22585.39024	-0.272057601	510099852.5	0.07401534
32	94,628	11.45770869	-10357.39024	-0.150528883	107275532.7	0.02265894
33	93,505	11.44577019	-9234.390244	-0.138590378	85273963.18	0.01920729
34	50,893	10.83748067	33377.60976	0.469699143	1114064833	0.22061728
35	111,611	11.62277489	-27340.39024	-0.315595079	747496938.7	0.09960025
36	63726	11.06234792	20544.60976	0.24483189	422080990	0.05994265
37	113300	11.63779445	-29029.39024	-0.330614636	842705497.9	0.10930604
38	95850	11.47053975	-11579.39024	-0.163359937	134082278.4	0.02668647
39	67268	11.11643992	17002.60976	0.190739892	289088738.5	0.03638171
40	77311	11.25559153	6959.609756	0.051588284	48436167.96	0.00266135
41	64220	11.07006997	20050.60976	0.237109844	402026951.6	0.05622108
Column Sum	3,455,095	463.5943723			18923903484	2.95897982
Column Sum/N	84,271	11.30717981				
Column Sum/(N-1)					473097587.1	0.0739745
SQRT(Column Sum/(N-1))					21750.80658	0.27198253
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	84,271	11.30717981	81404.00981	
		Std Dev	21750.80658	0.271982528	1.312564068	
		Permit Limit	127880.977	11.85250478	140435.6674	
		Table 3-2 Constant = 2.005				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Oil & Grease	Oil & Grease	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Oil & Grease Value	Oil & Grease Value	Squared	Squared
1	4,950	8.507142856	16816.75	1.29748486	282803080.6	1.68346696
2	10,100	9.220290703	11666.75	0.584337013	136113055.6	0.34144974
3	8,110	9.000853147	13656.75	0.803774569	186506820.6	0.64605356
4	19,700	9.888373915	2066.75	-0.083746199	4271455.563	0.00701343
5	29,800	10.30226367	-8033.25	-0.497635957	64533105.56	0.24764155
6	14,600	9.588776808	7166.75	0.215850908	51362305.56	0.04659161
7	4,500	8.411832676	17266.75	1.39279504	298140655.6	1.93987802
8	20,100	9.908475094	1666.75	-0.103847378	2778055.563	0.01078428
9	6,100	8.71604405	15666.75	1.088583666	245447055.6	1.1850144
10	7,660	8.943767263	14106.75	0.860860453	199000395.6	0.74108072
11	13,669	9.522885774	8097.75	0.281741942	65573555.06	0.07937852
12	22,352	10.01467108	-585.25	-0.210043366	342517.5625	0.04411822
13	6,535	8.784927626	15231.75	1.01970009	232006208.1	1.03978827
14	23,013	10.04381455	-1246.25	-0.239186837	1553139.063	0.05721034
15	26,415	10.18168731	-4648.25	-0.377059594	21606228.06	0.14217394
16	14,979	9.614404499	6787.75	0.190223217	46073550.06	0.03618487
17	51,903	10.85713187	-30136.25	-1.052504155	908193564.1	1.107765
18	32,696	10.39500803	-10929.25	-0.590380309	119448505.6	0.34854891
19	13,433	9.505469645	8333.75	0.299158071	69451389.06	0.08949555
20	15,008	9.616338671	6758.75	0.188289045	45680701.56	0.03545276
21	14,123	9.555559953	7643.75	0.249067763	58426914.06	0.06203475
22	18,779	9.840494503	2987.75	-0.035866787	8926650.063	0.00128643
23	16,179	9.691469384	5587.75	0.113158332	31222950.06	0.01280481
24	30,084	10.31174875	-8317.25	-0.507121032	69176647.56	0.25717174
25	25,340	10.14013945	-3573.25	-0.335511738	12768115.56	0.11256813
26	22,721	10.03104489	-954.25	-0.22641717	910593.0625	0.05126473
27	56793	10.94716836	-35026.25	-1.142540642	1226838189	1.30539912
28	50204	10.82384998	-28437.25	-1.019222268	808677187.6	1.03881403
29	39,360	10.58050535	-17593.25	-0.775877635	309522445.6	0.60198611
30	36,286	10.49918727	-14519.25	-0.694559555	210808620.6	0.48241298
31	40,968	10.62054655	-19201.25	-0.815918837	368688001.6	0.66572355
32	17,648	9.778377741	4118.75	0.026249974	16964101.56	0.00068906
33	31,841	10.36851005	-10074.25	-0.563882331	101490513.1	0.31796328
34	16,791	9.728598308	4975.75	0.076029408	24758088.06	0.00578047
35	18098	9.803556714	3668.75	0.001071002	13459726.56	1.147E-06
36	13526	9.512369038	8240.75	0.292258678	67909960.56	0.08541513
37	35005	10.46324619	-13238.25	-0.658618472	175251263.1	0.43377829
38	18619	9.831937844	3147.75	-0.027310128	9908330.063	0.00074584
39	13579	9.516279761	8187.75	0.288347955	67039250.06	0.08314454
40	9103	9.116359309	12663.75	0.688268407	160370564.1	0.4737134
Column Sum	870,670	392.1851086			6724003456	15.8217882
Column Sum/N	21,767	9.804627716				
Column Sum/(N-1)					172410345	0.40568688
SQRT(Column Sum/(N-1))					13130.51199	0.63693554
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	21,767	9.804627716	18117.39338	
		Std Dev	13130.51199	0.636935536	1.890678077	
		Permit Limit	48159.07909	11.08486814	65177.40526	
		Table 3-2 Constant = 2.010				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Phos	Total Phos	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Phos Value	Total Phos Value	Squared	Squared
1	651	6.478509642	248.5384615	0.247821143	61771.36686	0.06141532
2	502	6.21860012	397.5384615	0.507730665	158036.8284	0.25779043
3	526	6.265301213	373.5384615	0.461029572	139530.9822	0.21254827
4	1,040	6.946975992	-140.4615385	-0.220645207	19729.44379	0.04868431
5	1,250	7.13089883	-350.4615385	-0.404568045	122823.2899	0.1636753
6	915	6.818924065	-15.46153846	-0.09259328	239.0591716	0.00857352
7	897	6.799055862	2.538461538	-0.072725077	6.443786982	0.00528894
8	985	6.892641641	-85.46153846	-0.166310856	7303.674556	0.0276593
9	798	6.682108597	101.5384615	0.044222187	10310.05917	0.0019556
10	655	6.484635236	244.5384615	0.241695549	59799.05917	0.05841674
11	1,072	6.977281342	-172.4615385	-0.250950557	29742.98225	0.06297618
12	608	6.410174882	291.5384615	0.316155903	84994.67456	0.09995455
13	734	6.598509029	165.5384615	0.127821756	27402.98225	0.0163384
14	1,740	7.461640392	-840.4615385	-0.735309607	706375.5976	0.54068022
15	674	6.513230111	225.5384615	0.213100674	50867.59763	0.0454119
16	2,530	7.835974582	-1630.461538	-1.109643797	2658404.828	1.23130936
17	1,040	6.946975992	-140.4615385	-0.220645207	19729.44379	0.04868431
18	1,270	7.146772179	-370.4615385	-0.420441395	137241.7515	0.17677097
19	618	6.426488457	281.5384615	0.299842327	79263.90533	0.08990542
20	620	6.429719478	279.5384615	0.296611307	78141.75148	0.08797827
21	512	6.238324625	387.5384615	0.48800616	150186.0592	0.23815001
22	950	6.856461985	-50.46153846	-0.1301312	2546.366864	0.01693413
23	662	6.495265556	237.5384615	0.231065229	56424.52071	0.05339114
24	1,180	7.073269717	-280.4615385	-0.346938933	78658.67456	0.12036662
25	1,110	7.012115294	-210.4615385	-0.285784509	44294.05917	0.08167279
26	789	6.670766321	110.5384615	0.055564464	12218.75148	0.00308741
27	1,110	7.012115294	-210.4615385	-0.285784509	44294.05917	0.08167279
28	997	6.90475077	-97.46153846	-0.178419985	9498.751479	0.03183369
29	612	6.416732283	287.5384615	0.309598502	82678.36686	0.09585123
30	933	6.838405201	-33.46153846	-0.112074416	1119.674556	0.01256067
31	361	5.888877958	538.5384615	0.837452827	290023.6746	0.70132724
32	1,400	7.244227516	-500.4615385	-0.517896731	250461.7515	0.26821702
33	666	6.501289671	233.5384615	0.225041114	54540.21302	0.0506435
34	502	6.21860012	397.5384615	0.507730665	158036.8284	0.25779043
35	791	6.673297968	108.5384615	0.053032817	11780.59763	0.00281248
36	940	6.845879875	-40.46153846	-0.11954909	1637.136095	0.01429199
37	1,100	7.003065459	-200.4615385	-0.276734674	40184.8284	0.07658208
38	817	6.705639095	82.53846154	0.02069169	6812.597633	0.00042815
39	525	6.263398263	374.5384615	0.462932522	140279.0592	0.21430652
Column Sum	35,082	262.3269006			5887391.692	5.56793718
Column Sum/N	900	6.726330785				
Column Sum/(N-1)					154931.3603	0.14652466
SQRT(Column Sum/(N-1))					393.6132116	0.3827854
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	900	6.726330785	834.081221	
		Std Dev	393.6132116	0.3827854	1.466363315	
		Permit Limit	1693.062696	7.498026152	1804.477133	
		Table 3-2 Constant = 2.016				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Nitrogen	Total Nitrogen	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Nitrogen Value	Total Nitrogen Value	Squared	Squared
1	7,000	8.853665428	-1726.341463	-0.350639201	2980254.848	0.12294785
2	5,110	8.538954683	163.6585366	-0.035928456	26784.1166	0.00129085
3	6,380	8.760923376	-1106.341463	-0.257897149	1223991.434	0.06651094
4	7,850	8.968268811	-2576.341463	-0.465242584	6637535.336	0.21645066
5	7,290	8.894258825	-2016.341463	-0.391232598	4065632.897	0.15306295
6	7,480	8.919988071	-2206.341463	-0.416961844	4867942.653	0.17385718
7	1,750	7.467371067	3523.658537	1.03565516	12416169.48	1.07258161
8	2,530	7.835974582	2743.658537	0.667051645	7527662.165	0.4449579
9	5,630	8.635864721	-356.3414634	-0.132838494	126979.2385	0.01764607
10	5,120	8.540909718	153.6585366	-0.037883491	23610.94587	0.00143516
11	6,900	8.839276691	-1626.341463	-0.336250464	2644986.556	0.11306437
12	4,940	8.50512061	333.6585366	-0.002094383	111328.019	4.3864E-06
13	4,600	8.433811582	673.6585366	0.069214645	453815.8239	0.00479067
14	7,090	8.86644062	-1816.341463	-0.363414392	3299096.312	0.13207002
15	5,390	8.592300664	-116.3414634	-0.089274437	13535.33611	0.00796993
16	5,330	8.581106517	-56.34146341	-0.07808029	3174.3605	0.00609653
17	3,180	8.064636476	2093.658537	0.438389751	4383406.068	0.19218557
18	5,190	8.554488976	83.65853659	-0.051462749	6998.750744	0.00264841
19	5,120	8.540909718	153.6585366	-0.037883491	23610.94587	0.00143516
20	5,540	8.61974978	-266.3414634	-0.116723553	70937.77513	0.01362439
21	5,040	8.525161361	233.6585366	-0.022135134	54596.31172	0.00048996
22	8,290	9.022805248	-3016.341463	-0.519779021	9098315.824	0.27017023
23	6,150	8.724207361	-876	-0.221181134	767974.3605	0.04892109
24	5,060	8.529121762	213.6585366	-0.026095535	45649.97026	0.00068098
25	2,370	7.770645234	2903.658537	0.732380993	8431232.897	0.53638192
26	4,100	8.318742253	1173.658537	0.184283974	1377474.36	0.03396058
27	6660	8.803874764	-1386.341463	-0.300848536	1921942.653	0.09050984
28	6660	8.803874764	-1386.341463	-0.300848536	1921942.653	0.09050984
29	3940	8.278936002	1333.658537	0.224090225	1778645.092	0.05021643
30	4500	8.411832676	773.6585366	0.091193551	598547.5312	0.00831626
31	4370	8.382518288	903.6585366	0.120507939	816598.7507	0.01452216
32	2820	7.944492164	2453.658537	0.558534063	6020440.214	0.3119603
33	1790	7.489970899	3483.658537	1.013055328	12135876.8	1.0262811
34	6390	8.762489547	-1116.341463	-0.25946332	1246218.263	0.06732121
35	4820	8.480529207	453.6585366	0.02249702	205806.0678	0.00050612
36	2870	7.962067309	2403.658537	0.540958918	5777574.36	0.29263655
37	5570	8.625150333	-296.3414634	-0.122124106	87818.26294	0.0149143
38	9640	9.173676388	-4366.341463	-0.670650161	19064937.78	0.44977164
39	5920	8.686091728	-646.3414634	-0.183065501	417757.2873	0.03351298
40	6350	8.756210092	-1076.341463	-0.253183865	1158510.946	0.06410207
41	3490	8.157657015	1783.658537	0.345369212	3181437.775	0.11927989
Column Sum	216,220	348.6240753			127016751.2	6.26959606
Column Sum/N	5,274	8.503026227				
Column Sum/(N-1)					3175418.78	0.1567399
SQRT(Column Sum/(N-1))					1781.970477	0.3959039
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	5,274	8.503026227	4929.664574	
		Std Dev	1781.970477	0.395903905	1.485726539	
		Permit Limit	8846.509343	9.296813556	10903.22129	
		Table 3-2 Constant = 2.005				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Ammonia	Ammonia	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Ammonia Value	Ammonia Value	Squared	Squared
1	4,190	8.340456013	-675.0243902	-0.358564599	455657.9274	0.12856857
2	3,040	8.019612794	474.9756098	-0.037721381	225601.8299	0.0014229
3	4,930	8.503094267	-1415.02439	-0.521202853	2002294.025	0.27165241
4	4,230	8.349957272	-715.0243902	-0.368065858	511259.8786	0.13547248
5	3,690	8.213381737	-175.0243902	-0.231490323	30633.53718	0.05358777
6	4,140	8.328451067	-625.0243902	-0.346559653	390655.4884	0.12010359
7	283	5.645446898	3231.97561	2.336444516	10445666.34	5.45897298
8	5,400	8.594154233	-1885.02439	-0.612262819	3553316.952	0.37486576
9	3,960	8.283999304	-445.0243902	-0.302107891	198046.7079	0.09126918
10	3,510	8.163371316	4.975609756	-0.181479903	24.75669244	0.03293496
11	4,410	8.391629968	-895.0243902	-0.409738555	801068.6591	0.16788568
12	3,420	8.13739583	94.97560976	-0.155504416	9020.366449	0.02418162
13	2,290	7.736307097	1224.97561	0.245584317	1500565.244	0.06031166
14	5,200	8.556413905	-1685.02439	-0.574522491	2839307.196	0.33007609
15	4,470	8.405143688	-955.0243902	-0.423252274	912071.586	0.17914249
16	1,910	7.554858521	1604.97561	0.427032893	2575946.708	0.18235709
17	282	5.641907071	3232.97561	2.339984343	10452131.29	5.47552672
18	4,580	8.429454277	-1065.02439	-0.447562863	1134276.952	0.20031252
19	3,990	8.29154651	-475.0243902	-0.309655096	225648.1713	0.09588628
20	3,060	8.026170195	454.9756098	-0.044278781	207002.8055	0.00196061
21	3,900	8.268731832	-385.0243902	-0.286840418	148243.7811	0.08227743
22	4,300	8.366370302	-785.0243902	-0.384478888	616263.2933	0.14782402
23	4,220	8.347590407	-705.0243902	-0.365698993	497059.3908	0.13373575
24	3,390	8.1285852	124.9756098	-0.146693787	15618.90303	0.02151907
25	295	5.686975356	3219.97561	2.294916057	10368242.93	5.26663971
26	4,800	8.476371197	-1285.02439	-0.494479783	1651287.684	0.24451026
27	5160	8.548691858	-1645.02439	-0.566800445	2706105.244	0.32126274
28	5170	8.550627968	-1655.02439	-0.568736554	2739105.732	0.32346127
29	3330	8.110727583	184.9756098	-0.128836169	34215.9762	0.01659876
30	3650	8.202482447	-135.0243902	-0.220591033	18231.58596	0.0486604
31	3720	8.221478947	-205.0243902	-0.239587534	42035.00059	0.05740219
32	2290	7.736307097	1224.97561	0.245584317	1500565.244	0.06031166
33	1560	7.3524411	1954.97561	0.629450313	3821929.635	0.3962077
34	434	6.073044534	3080.97561	1.90884688	9492410.708	3.64369641
35	4050	8.30647216	-535.0243902	-0.324580746	286251.0982	0.10535266
36	2310	7.745002804	1204.97561	0.23688861	1451966.22	0.05611621
37	3870	8.261009786	-355.0243902	-0.279118372	126042.3177	0.07790707
38	5230	8.562166557	-1715.02439	-0.580275143	2941308.659	0.33671924
39	4470	8.405143688	-955.0243902	-0.423252274	912071.586	0.17914249
40	3990	8.29154651	-475.0243902	-0.309655096	225648.1713	0.09588628
41	2990	8.003028666	524.9756098	-0.021137253	275599.3908	0.00044678
Column Sum	144,114	327.257548			78340398.98	25.0021694
Column Sum/N	3,515	7.981891414				
Column Sum/(N-1)					1958509.974	0.62505424
SQRT(Column Sum/(N-1))					1399.467747	0.79060372
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	3,515	7.981891414	2927.462874	
		Std Dev	1399.467747	0.790603716	2.204727054	
		Permit Limit	6320.908442	9.567051865	14286.23642	
		Table 3-2 Constant = 2.005				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	pH	pH	Minus Untransformed	Minus Transformed	Column D	Column E
	(pH Units)	(pH Units)	pH Value	pH Value	Squared	Squared
1	6.86	1.925707442	-0.24575	-0.03715347	0.060393063	0.00138038
2	6.5	1.871802177	0.11425	0.016751795	0.013053063	0.00028062
3	6.93	1.935859813	-0.31575	-0.047305841	0.099698062	0.00223784
4	6.88	1.928618652	-0.26575	-0.04006468	0.070623062	0.00160518
5	6.5	1.871802177	0.11425	0.016751795	0.013053063	0.00028062
6	6.73	1.906575144	-0.11575	-0.018021172	0.013398063	0.00032476
7	6.98	1.943048917	-0.36575	-0.054494945	0.133773063	0.0029697
8	7.13	1.964311234	-0.51575	-0.075757262	0.265998063	0.00573916
9	6.85	1.924248652	-0.23575	-0.03569468	0.055578062	0.00127411
10	6.74	1.908059925	-0.12575	-0.019505953	0.015813063	0.00038048
11	6.84	1.922787732	-0.22575	-0.03423376	0.050963062	0.00117195
12	6.18	1.821318271	0.43425	0.0672357	0.188573063	0.00452064
13	6.46	1.865629318	0.15425	0.022924654	0.023793063	0.00052554
14	6.23	1.829376333	0.38425	0.059177639	0.147648063	0.00350199
15	6.73	1.906575144	-0.11575	-0.018021172	0.013398063	0.00032476
16	6.68	1.899117988	-0.06575	-0.010564016	0.004323062	0.0001116
17	6.52	1.874874376	0.09425	0.013679596	0.008883063	0.00018713
18	6.96	1.940179474	-0.34575	-0.051625502	0.119543063	0.00266519
19	6.62	1.89009537	-0.00575	-0.001541398	3.30625E-05	2.3759E-06
20	6.35	1.848454813	0.26425	0.040099159	0.069828063	0.00160794
21	6.52	1.874874376	0.09425	0.013679596	0.008883063	0.00018713
22	6.71	1.903598951	-0.09575	-0.015044979	0.009168062	0.00022635
23	6.63	1.891604804	-0.01575	-0.003050832	0.000248062	9.3076E-06
24	6.1	1.808288771	0.51425	0.080265201	0.264453063	0.0064425
25	6.4	1.85629799	0.21425	0.032255982	0.045903062	0.00104045
26	6.9	1.931521412	-0.28575	-0.04296744	0.081653063	0.0018462
27	6.8	1.916922612	-0.18575	-0.02836864	0.034503062	0.00080478
28	6.44	1.86252854	0.17425	0.026025432	0.030363062	0.00067732
29	6.3	1.840549633	0.31425	0.048004339	0.098753063	0.00230442
30	6.2	1.824549292	0.41425	0.06400468	0.171603063	0.0040966
31	6.4	1.85629799	0.21425	0.032255982	0.045903062	0.00104045
32	6.6	1.887069649	0.01425	0.001484323	0.000203063	2.2032E-06
33	6.3	1.840549633	0.31425	0.048004339	0.098753063	0.00230442
34	6.6	1.887069649	0.01425	0.001484323	0.000203063	2.2032E-06
35	6.49	1.870262531	0.12425	0.018291441	0.015438063	0.00033458
36	6.75	1.909542505	-0.13575	-0.020988533	0.018428062	0.00044052
37	6.76	1.91102289	-0.14575	-0.022468918	0.021243062	0.00050485
38	6.73	1.906575144	-0.11575	-0.018021172	0.013398063	0.00032476
39	6.71	1.903598951	-0.09575	-0.015044979	0.009168062	0.00022635
40	6.56	1.880990603	0.05425	0.007563369	0.002943063	5.7205E-05
Column Sum	264.57	75.54215888			2.3395775	0.05396459
Column Sum/N	6.61	1.888553972				
Column Sum/(N-1)					0.059989167	0.00138371
SQRT(Column Sum/(N-1))					0.24492686	0.03719822
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	6.61	1.888553972	6.609803805	
		Std Dev	0.24492686	0.037198217	1.03789873	
		Upper Permit Limit	7.106552988	1.963322389	7.122953015	
		Lower Permit Limit	6.121947012	1.813785555	6.133622706	
		Table 3-2 Constant = 2.010				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Density	Density	Minus Untransformed	Minus Transformed	Column D	Column E
	(g/mL)	(g/mL)	Density Value	Density Value	Squared	Squared
1	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
2	1.03	0.029558802	-0.031	-0.030679583	0.000961	0.00094124
3	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
4	0.98	-0.020202707	0.019	0.019081927	0.000361	0.00036412
5	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
6	0.97	-0.030459207	0.029	0.029338427	0.000841	0.00086074
7	0.96	-0.040821995	0.039	0.039701214	0.001521	0.00157619
8	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
9	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
10	1	0.019802627	-0.021	-0.020923408	0.000441	0.00043779
11	0.97	-0.030459207	0.029	0.029338427	0.000841	0.00086074
12	1.02	0.019802627	-0.021	-0.020923408	0.000441	0.00043779
13	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
14	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
15	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
16	0.97	-0.030459207	0.029	0.029338427	0.000841	0.00086074
17	0.98	-0.020202707	0.019	0.019081927	0.000361	0.00036412
18	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
19	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
20	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
21	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
22	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
23	1.03	0.029558802	-0.031	-0.030679583	0.000961	0.00094124
24	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
25	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
26	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
27	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
28	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
29	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
30	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
31	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
32	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
33	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
34	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
35	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
36	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
37	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
38	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
39	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
40	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
Column Sum	39.96	-0.04483122			0.00956	0.00964469
Column Sum/N	1.00	-0.00112078				
Column Sum/(N-1)					0.000245128	0.0002473
SQRT(Column Sum/(N-1))					0.015656571	0.01572576
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1.00	-0.00112078	0.998879847	
		Std Dev	0.015656571	0.015725763	1.015850064	
		Upper Permit Limit	1.030469707	0.030488004	1.030957522	
		Lower Permit Limit	0.967530293	-0.032729565	0.967800252	
		Table 3-2 Constant = 2.010				

SAMPLE DATE	TOTAL SOLIDS (MG/L)	TOTAL VOLATILE SOLIDS(MG/L)	BOD5 (MG/L)	OIL/GREASE (MG/L)	PHOSPHORUS MG/L)	TOTAL NITROGEN (MG/L)	AMMONIA (MG/L)	PH	DENSITY (G/ML)
09-08-93	17,300	9,920	425,000	20,588	3,500	19,040	8,400	6.65	0.98
10-06-93	6,790	897	33,500	33,370	750	2,940	560	7.06	1.02
10-14-93	8,480	3,390	255,000	5,680	1,400	3,080	840	6.61	1.01
11-03-93	19,200	9,270	30,700	16,700	2,400	5,880	3,450	7.39	1.03
11-09-93	27,500	13,900	32,000	8,520	2,100	6,160	3,480	6.73	1.03
11-16-93	17,600	8,890	27,100	14,580	2,200	7,840	6,580	6.87	1.00
12-06-93	12,100	6,270	13,800	4,006	600	4,480	1,880	6.43	1.02
12-13-93	33,200	25,000	21,000	5,240	1,200	8,120	1,180	6.28	1.02
01-04-94	15,600	7,170	24,400	2,460	1,000	5,880	2,650	6.86	1.01
01-10-94	7,730	2,440	13,200	10,240	1,200	5,880	1,850	6.74	1.02
02-01-94	16,300	8,430	24,100	7,240	1,000	5,880	2,390	6.93	0.98
02-07-94	14,500	7,050	18,000	3,700	1,000	4,760	2,000	6.96	1.00
03-01-94	11,900	5,090	19,900	1,958	600	7,280	2,290	6.94	1.00
03-07-94	9,900	2,870	20,100	17,440	800	6,160	2,500	6.68	0.99
04-04-94	12,000	5,820	18,900	19,040	1,900	5,880	2,050	7.00	0.98
04-11-94	12,700	5,980	19,300	16,200	2,000	7,280	2,300	6.72	1.01
05-02-94	5,390	1,430	11,300	9,780	1,200	1,960	1,960	7.36	1.01
05-10-94	9,350	5,940	14,400	8,880	1,200	4,760	1,590	6.32	0.98
06-07-94	33,500	27,000	350,000	28,120	1,000	4,480	2,030	6.02	0.99
06-14-94	45,900	38,400	480,000	37,900	1,000	7,560	2,250	6.16	1.00
07-05-94	22,000	16,400	22,500	7,212	1,000	2,800	1,220	6.25	1.00
07-12-94	64,800	55,300	54,500	28,840	700	4,480	1,440	6.20	1.00
08-01-94	72,400	59,200	73,200	5,788	1,200	3,080	2,800	6.00	0.99
08-08-94	18,700	10,700	26,400	57,260	1,000	7,560	2,240	6.02	1.00
09-06-94	45,300	35,300	57,800	37,660	2,400	3,920	3,370	6.50	1.00
09-12-94	86,300	72,800	99,800	19,460	1,200	4,480	3,530	6.03	1.00
10-03-94	16,200	8,300	21,600	15,940	1,200	8,960	2,960	6.00	1.01
10-25-94	26,000	20,000	23,300	160,000	1,200	6,160	2,170	5.90	0.99
11-01-94	22,600	10,300	24,200	919	1,700	7,280	3,340	5.30	1.00
11-06-94	24,600	15,400	20,700	1,789	1,200	7,560	3,240	5.60	0.99
12-05-94	20,700	11,000	16,000	13,360	2,000	5,320	3,530	5.40	1.00
12-12-94	18,400	8,850	15,600	1,161	1,500	7,560	3,930	5.00	1.00
01-03-95	22,600	13,000	32,400	62,820	2,000	4,480	3,310	6.70	1.00
01-13-95	10,000	3,190	16,500	62,000	1,000	5,320	2,800	5.00	1.01
02-01-95	12,300	3,420	20,300	68,020	1,300	7,280	3,320	6.80	0.99
02-16-95	13,700	5,730	18,600	49,140	1,700	7,560	2,870	6.70	0.99
03-01-95	12,600	2,170	21,000	10,460	1,200	6,160	3,720	6.50	1.00
03-09-95	16,900	7,200	39,100	7,600	1,200	4,480	2,710	6.00	1.01
04-03-95	16,700	7,490	21,500	9,360	2,000	5,264	2,550	6.80	0.99
04-13-95	19,300	12,200	26,600	7,600	1,200	6,348	2,690		1.00
05-01-95	24,000	16,100	36,200	11,440	1,800	5,040	2,730	6.60	1.00
05-12-95	15,700	9,500	22,900	2,240	1,300	7,840	2,420		1.00
06-01-95	16,100	8,690	29,100	14,780	1,000	7,840	2,340	6.80	0.99
06-16-95	15,700	7,460	27,400	15,580	700	4,760	2,050	6.60	0.99
07-05-95	15,700	7,280	19,400	404,200	1,200	6,160	2,170	6.90	1.00
07-18-95	15,600	7,260	18,000	78,640	287	7,560	2,210	7.10	1.00
08-02-95	17,000	7,510	20,500	259,880	310	7,560	2,400	6.60	1.00
08-17-95	14,700	6,640	18,700	10,120	333	8,400	2,290	6.80	0.99
09-06-95	10,600	3,860	18,900		507	8,960	2,300	6.60	1.00
09-12-95	37,000	27,900	43,500	23,800	780	17,640	2,760	6.70	1.00
10-03-95	35,400	25,200	32,000	20,500	793	8,120	2,900	7.00	1.00
11-06-95	14,700	7,540	29,200	24,600	368	5,880	2,870	6.20	1.00
12-06-95	18,700	9,760	24,600	59,920	1,059	8,400	2,670	6.60	1.00

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Solids	Total Solids	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Solids Value	Total Solids Value	Squared	Squared
1	17,300	9.75846178	1228.8	-0.034464829	1509949.44	0.001187824
2	6,790	8.823206221	11738.8	0.900790731	137799425.4	0.811423941
3	8,480	9.045465729	10048.8	0.678531223	100978381.4	0.46040462
4	19,200	9.862665558	-671.2	-0.138668607	450509.44	0.019228982
5	27,500	10.22194128	-8971.2	-0.497944332	80482429.44	0.247948558
6	17,600	9.775654181	928.8	-0.05165723	862669.44	0.002668469
7	12,100	9.400960732	6428.8	0.32303622	41329469.44	0.104352399
8	33,200	10.41030515	-14671.2	-0.686308204	215244109.4	0.47101895
9	15,600	9.655026193	2928.8	0.068970758	8577869.44	0.004756965
10	7,730	8.952864142	10798.8	0.77113281	116614081.4	0.59464581
11	16,300	9.698920387	2228.8	0.025076565	4967549.44	0.000628834
12	14,500	9.581903928	4028.8	0.142093023	16231229.44	0.020190427
13	11,900	9.384293679	6628.8	0.339703272	43940989.44	0.115398313
14	9,900	9.200290036	8628.8	0.523706915	74456189.44	0.274268933
15	12,000	9.392661929	6528.8	0.331335023	42625229.44	0.109782897
16	12,700	9.449357272	5828.8	0.274639679	33974909.44	0.075426953
17	5,390	8.592300664	13138.8	1.131696287	172628065.4	1.280736487
18	9,350	9.143131622	9178.8	0.580865329	84250369.44	0.337404531
19	33,500	10.41930072	-14971.2	-0.695303766	224136829.4	0.483447328
20	45,900	10.7342204	-27371.2	-1.010223445	749182589.4	1.020551408
21	22,000	9.998797732	-3471.2	-0.274800781	12049229.44	0.075515469
22	18,700	9.836278803	-171.2	-0.112281851	29309.44	0.012607214
23	45,300	10.72106231	-26771.2	-0.99706536	716697149.4	0.994139332
24	16,200	9.692766521	2328.8	0.03123043	5423309.44	0.00097534
25	26,000	10.16585182	-7471.2	-0.441854866	55818829.44	0.195235722
26	22,600	10.02570519	-4071.2	-0.301708234	16574669.44	0.091027858
27	24,600	10.11050172	-6071.2	-0.386504771	36859469.44	0.149385938
28	20,700	9.937888979	-2171.2	-0.213892028	4714109.44	0.0457498
29	18,400	9.820105944	128.8	-0.096108992	16589.44	0.009236938
30	22,600	10.02570519	-4071.2	-0.301708234	16574669.44	0.091027858
31	10,000	9.210340372	8528.8	0.513656579	72740429.44	0.263843082
32	12,300	9.417354541	6228.8	0.30664241	38797949.44	0.094029568
33	13,700	9.525151112	4828.8	0.19884584	23317309.44	0.039539668
34	12,600	9.441452093	5928.8	0.282544858	35150669.44	0.079831597
35	16,900	9.735068901	1628.8	-0.01107195	2652989.44	0.000122588
36	16,700	9.723163998	1828.8	0.000832953	3344509.44	6.93811E-07
37	19,300	9.867860375	-771.2	-0.143863424	594749.44	0.020696685
38	24,000	10.08580911	-5471.2	-0.361812158	29934029.44	0.130908038
39	15,700	9.661415991	2828.8	0.06258096	8002109.44	0.003916377
40	16,100	9.686574551	2428.8	0.0374224	5899069.44	0.001400436
41	15,700	9.661415991	2828.8	0.06258096	8002109.44	0.003916377
42	15,700	9.661415991	2828.8	0.06258096	8002109.44	0.003916377
43	15,600	9.655026193	2928.8	0.068970758	8577869.44	0.004756965
44	17,000	9.740968623	1528.8	-0.016971672	2337229.44	0.000288038
45	14,700	9.595602773	3828.8	0.128394179	14659709.44	0.016485065
46	10,600	9.26860928	7928.8	0.455387671	62865869.44	0.207377931
47	37,000	10.51867319	-18471.2	-0.79467624	341185229.4	0.631510327
48	35,400	10.4744671	-16871.2	-0.750470148	284637389.4	0.563205443
49	14,700	9.595602773	3828.8	0.128394179	14659709.44	0.016485065
50	18,700	9.836278803	-171.2	-0.112281851	29309.44	0.012607214
Column Sum	926,440	486.1998476			3980390528	10.19521163
Column Sum/N	18,529	9.723996951				
Column Sum/(N-1)					81232459.76	0.208065544
SQRT(Column Sum/(N-1))					9012.905178	0.456142021
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	18528.8	9.723996951	16713.91611	
		Std Dev	9012.905178	0.456142021	1.577974435	
		Permit Limit	36239.15868	10.62031602	40958.55673	
		Table 3-2 Constant = 1.965				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Vol. Solids	Total Vol. Solids	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Vol. Solids Value	Total Vol. Solids Val	Squared	Squared
1	9,920	9.2023082	690.14	-0.204513705	476293.2196	0.041825856
2	897	6.799055862	9713.14	2.198738633	94345088.66	4.834451577
3	3,390	8.1285852	7220.14	0.869209295	52130421.62	0.755524798
4	9,270	9.134538659	1340.14	-0.136744163	1795975.22	0.018698966
5	13,900	9.539644119	-3289.86	-0.541849624	10823178.82	0.293601015
6	8,890	9.092682329	1720.14	-0.094887833	2958881.62	0.009003701
7	6,270	8.743531634	4340.14	0.254262862	18836815.22	0.064649603
8	25,000	10.1266311	-14389.86	-1.128836609	207068070.8	1.274272089
9	7,170	8.877660934	3440.14	0.120133562	11834563.22	0.014432073
10	2,440	7.799753318	8170.14	1.198041177	66751187.62	1.435302661
11	8,430	9.039552051	2180.14	-0.041757556	4753010.42	0.001743693
12	7,050	8.860782896	3560.14	0.137011599	12674596.82	0.018772178
13	5,090	8.53503311	5520.14	0.462761386	30471945.62	0.2141481
14	2,870	7.962067309	7740.14	1.035727186	59909767.22	1.072730805
15	5,820	8.669055541	4790.14	0.328738954	22945441.22	0.1080693
16	5,980	8.696175847	4630.14	0.301618648	21438196.42	0.090973809
17	1,430	7.265429723	9180.14	1.732364772	84274970.42	3.001087703
18	5,940	8.689464412	4670.14	0.308330083	21810207.62	0.09506744
19	27,000	10.20359214	-16389.86	-1.20579765	268627510.8	1.453947972
20	38,400	10.55581274	-27789.86	-1.558018243	772276318.8	2.427420847
21	16,400	9.705036614	-5789.86	-0.707242119	33522478.82	0.500191414
22	10,700	9.27799902	-90	-0.280204525	8074.8196	0.078514576
23	35,300	10.47163824	-24,690	-1.473843748	609589186.8	2.172215393
24	8,300	9.024010794	2,310	-0.026216299	5336746.82	0.000687294
25	20,000	9.903487553	-9,390	-0.905693057	88169470.82	0.820279914
26	10,300	9.239899174	310	-0.242104679	96186.8196	0.058614676
27	15,400	9.642122788	-4,790	-0.644328293	22942758.82	0.415158949
28	11,000	9.305650552	-390	-0.307856057	151990.8196	0.094775352
29	8,850	9.088172738	1,760	-0.090378243	3098092.82	0.008168227
30	13,000	9.472704636	-2,390	-0.474910141	5711430.82	0.225539642
31	3,190	8.067776196	7,420	0.930018299	55058477.62	0.864934037
32	3,420	8.13739583	7,190	0.860398665	51698113.22	0.740285863
33	5,730	8.65347081	4,880	0.344323685	23815766.42	0.1185588
34	2,170	7.682482447	8,440	1.315312049	71235963.22	1.730045785
35	7,200	8.881836305	3,410	0.11595819	11629054.82	0.013446302
36	7,490	8.921324077	3,120	0.076470419	9735273.62	0.005847725
37	12,200	9.409191231	-1,590	-0.411396736	2527654.82	0.169247274
38	16,100	9.686574551	-5,490	-0.688780056	30138562.82	0.474417965
39	9,500	9.159047078	1,110	-0.161252582	1232410.82	0.026002395
40	8,690	9.069928218	1,920	-0.072133723	3686937.62	0.005203274
41	7,460	8.917310693	3,150	0.080483802	9923382.02	0.006477642
42	7,280	8.892886141	3,330	0.104908354	11089832.42	0.011005763
43	7,260	8.890135108	3,350	0.107659387	11223438.02	0.011590544
44	7,510	8.923990745	3,100	0.07380375	9610868.02	0.005446994
45	6,640	8.800867242	3,970	0.196927253	15762011.62	0.038780343
46	3,860	8.258422462	6,750	0.739372033	45564390.02	0.546671003
47	27,900	10.23638197	-17,290	-1.238587473	298939258.8	1.534098927
48	25,200	10.13459927	-14,590	-1.136804778	212864014.8	1.292325104
49	7,540	8.927977461	3,070	0.069817034	9425759.62	0.004874418
50	9,760	9.186047679	850	-0.188253184	722738.0196	0.035439261
Column Sum	530,507	449.8897248			3420712768	29.23456904
Column Sum/N	10,610	8.997794495				
Column Sum/(N-1)					69810464.65	0.596623858
SQRT(Column Sum/(N-1))					8355.265684	0.772414305
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	10,610	8.997794495	8085.23223	
		Std Dev	8355.265684	0.772414305	2.164986887	
		Permit Limit	27028.23707	10.5155886	36886.04609	
		Table 3-2 Constant = 1.965				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	5-Day BOD	5-Day BOD	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	5-Day BOD Value	5-Day BOD Value	Squared	Squared
1	33,500	10.41930072	-6281.632653	-0.312935856	39458908.79	0.09792885
2	30,700	10.33201793	-3481.632653	-0.225653072	12121765.93	0.050919309
3	32,000	10.37349118	-4781.632653	-0.26712632	22864010.83	0.071356471
4	27,100	10.20728901	118.3673469	-0.100924145	14010.82882	0.010185683
5	13,800	9.532423871	13418.36735	0.57394099	180052582.3	0.329408261
6	21,000	9.952277717	6218.367347	0.154087145	38668092.46	0.023742848
7	24,400	10.10233841	2818.367347	0.00402645	7943194.502	1.62123E-05
8	13,200	9.487972109	14018.36735	0.618392753	196514623.1	0.382409597
9	24,100	10.08996712	3118.367347	0.016397742	9724214.91	0.000268886
10	18,000	9.798127037	9218.367347	0.308237825	84978296.54	0.095010557
11	19,900	9.898475011	7318.367347	0.207889851	53558500.62	0.04321819
12	20,100	9.908475094	7118.367347	0.197889768	50671153.69	0.03916036
13	18,900	9.846917201	8318.367347	0.259447661	69195235.32	0.067313089
14	19,300	9.867860375	7918.367347	0.238504487	62700541.44	0.05688439
15	11,300	9.332558005	15918.36735	0.773806857	253394419	0.598777052
16	14,400	9.574983486	12818.36735	0.531381376	164310541.4	0.282366167
17	22,500	10.02127059	4718.367347	0.085094273	22262990.42	0.007241035
18	54,500	10.90595598	-27281.63265	-0.799591119	744287480.2	0.639345958
19	73,200	11.2009507	-45981.63265	-1.094585838	2114310541	1.198118157
20	26,400	10.18111929	818.3673469	-0.074754428	669725.1145	0.005588224
21	57,800	10.96474405	-30581.63265	-0.858379193	935236255.7	0.736814839
22	99,800	11.51092346	-72581.63265	-1.404558601	5268093399	1.972784863
23	21,600	9.980448594	5618.367347	0.125916268	31566051.65	0.015854907
24	23,300	10.05620864	3918.367347	0.050156222	15353602.67	0.002515647
25	24,200	10.09410791	3018.367347	0.012256949	9110541.441	0.000150233
26	20,700	9.937888979	6518.367347	0.168475882	42489112.87	0.028384123
27	16,000	9.680344001	11218.36735	0.42602086	125851765.9	0.181493774
28	15,600	9.655026193	11618.36735	0.451338668	134986459.8	0.203706594
29	32,400	10.3859137	-5181.632653	-0.27954884	26849316.95	0.078147554
30	16,500	9.71111566	10718.36735	0.395249202	114883398.6	0.156221931
31	20,300	9.918376165	6918.367347	0.187988697	47863806.75	0.03533975
32	18,600	9.83091686	8618.367347	0.275448002	74276255.73	0.075871602
33	21,000	9.952277717	6218.367347	0.154087145	38668092.46	0.023742848
34	39,100	10.57387775	-11881.63265	-0.467512884	141173194.5	0.218568297
35	21,500	9.975808214	5718.367347	0.130556648	32699725.11	0.017045038
36	26,600	10.18866649	618.3673469	-0.082301633	382378.1758	0.006773559
37	36,200	10.4968144	-8981.632653	-0.390449536	80669725.11	0.15245084
38	22,900	10.03889219	4318.367347	0.067472672	18648296.54	0.004552561
39	29,100	10.27849345	-1881.632653	-0.172128592	3540541.441	0.029628252
40	27,400	10.21829829	-181.6326531	-0.111933431	32990.42066	0.012529093
41	19,400	9.873028345	7818.367347	0.233336517	61126867.97	0.05444593
42	18,000	9.798127037	9218.367347	0.308237825	84978296.54	0.095010557
43	20,500	9.928180165	6718.367347	0.178184697	45136459.81	0.031749786
44	18,700	9.836278803	8518.367347	0.270086059	72562582.26	0.072946479
45	18,900	9.846917201	8318.367347	0.259447661	69195235.32	0.067313089
46	43,500	10.68051622	-16281.63265	-0.574151355	265091561.8	0.329649779
47	32,000	10.37349118	-4781.632653	-0.26712632	22864010.83	0.071356471
48	29,200	10.28192399	-1981.632653	-0.175559127	3926867.972	0.030821007
49	24,600	10.11050172	2618.367347	-0.00413686	6855847.564	1.71136E-05
Column Sum	1,333,700	495.2118782			11901813469	8.705145811
Column Sum/N	27,218	10.10636486				
Column Sum/(N-1)					247954447.3	0.181357204
SQRT(Column Sum/(N-1))					15746.56938	0.425860546
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	27,218	10.10636486	24498.44344	
		Std Dev	15746.56938	0.425860546	1.530907269	
		Permit Limit	58223.36246	10.94488428	56663.42819	
		Table 3-2 Constant = 1.969				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Oil & Grease	Oil & Grease	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Oil & Grease Value	Oil & Grease Value	Squared	Squared
1	20,588	9.932463661	2605.02	-0.447627608	6786129.2	0.200370476
2	33,370	10.41541257	-10176.98	-0.930576519	103570921.9	0.865972658
3	5,680	8.644706512	17513.02	0.840129541	306705869.5	0.705817645
4	16,700	9.723163998	6493.02	-0.238327946	42159308.72	0.05680021
5	8,520	9.05017162	14673.02	0.434664433	215297515.9	0.188933169
6	14,580	9.587406006	8613.02	-0.102569953	74184113.52	0.010520595
7	4,006	8.295548516	19187.02	1.189287536	368141736.5	1.414404844
8	5,240	8.564076777	17953.02	0.920759275	322310927.1	0.847797643
9	2,460	7.807916629	20733.02	1.676919424	429858118.3	2.812058753
10	10,240	9.234056899	12953.02	0.250779154	167780727.1	0.062890184
11	7,240	8.887376485	15953.02	0.597459567	254498847.1	0.356957934
12	3,700	8.216088099	19493.02	1.268747954	379977828.7	1.609721371
13	1,958	7.579678823	21235.02	1.905157229	450926074.4	3.629624069
14	17,440	9.766521697	5753.02	-0.281685645	33097239.12	0.079346803
15	19,040	9.854297308	4153.02	-0.369461256	17247575.12	0.13650162
16	16,200	9.692766521	6993.02	-0.207930469	48902328.72	0.04323508
17	9,780	9.188094763	13413.02	0.29674129	179909105.5	0.088055393
18	8,880	9.091556836	14313.02	0.393279217	204862541.5	0.154668542
19	28,120	10.24423635	-4926.98	-0.759400293	24275131.92	0.576688806
20	37,900	10.54270639	-14706.98	-1.057870339	216295260.7	1.119089653
21	7,212	8.883501584	15981.02	0.601334468	255393000.2	0.361603143
22	28,840	10.26951859	-5646.98	-0.784682539	31888383.12	0.615726687
23	5,788	8.663542088	17405.02	0.821293965	302934721.2	0.674523777
24	57,260	10.95535758	-34066.98	-1.470521526	1160559126	2.162433559
25	37,660	10.5363538	-14466.98	-1.05151775	209293510.3	1.105689578
26	19,460	9.876116356	3733.02	-0.391280303	13935438.32	0.153100276
27	15,940	9.676586952	7253.02	-0.1917509	52606299.12	0.036768408
28	160,000	11.98292909	-136806.98	-2.498093042	18716149777	6.240468845
29	919	6.823286122	22274.02	2.66154993	496131967	7.083848031
30	1,789	7.489412084	21404.02	1.995423969	458132072.2	3.981716816
31	13,360	9.500020447	9833.02	-0.015184395	96688282.32	0.000230566
32	1,161	7.057036982	22032.02	2.427799071	485409905.3	5.894208328
33	62,820	11.04802877	-39626.98	-1.563192721	1570297544	2.443571482
34	62,000	11.03488966	-38806.98	-1.550053611	1505981697	2.402666198
35	68,020	11.12755706	-44826.98	-1.642721006	2009458136	2.698532304
36	49,140	10.80242865	-25946.98	-1.317592594	673245771.1	1.736050242
37	10,460	9.255313738	12733.02	0.229522315	162129798.3	0.052680493
38	7,600	8.935903526	15593.02	0.548932526	243142272.7	0.301326918
39	9,360	9.144200569	13833.02	0.340635483	191352442.3	0.116032532
40	7,600	8.935903526	15593.02	0.548932526	243142272.7	0.301326918
41	11,440	9.344871265	11753.02	0.139964788	138133479.1	0.019590142
42	2,240	7.714231145	20953.02	1.770604908	439029047.1	3.135041739
43	14,780	9.601030195	8413.02	-0.116194142	70778905.52	0.013501079
44	15,580	9.653743319	7613.02	-0.168907267	57958073.52	0.028529665
45	78,640	11.27263575	-55446.98	-1.787799702	3074367591	3.196227775
46	10,120	9.222268943	13073.02	0.26256711	170903851.9	0.068941487
47	23,800	10.07744086	-606.98	-0.592604807	368424.7204	0.351180457
48	20,500	9.928180165	2693.02	-0.443344113	7252356.72	0.196554002
49	24,600	10.11050172	-1406.98	-0.625665669	1979592.72	0.39145753
50	59,920	11.00076562	-36726.98	-1.515929566	1348871060	2.298042448
Column Sum	1,159,651	474.2418026			38034302099	63.02102687
Column Sum/N	23,193	9.484836053				
Column Sum/(N-1)					776210246.9	1.286143406
SQRT(Column Sum/(N-1))					27860.55001	1.134082627
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	23,193	9.484836053	13158.6689	
		Std Dev	27860.55001	1.134082627	3.108320746	
		Permit Limit	77939.00077	11.71330842	122187.0584	
		Table 3-2 Constant = 1.965				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Phos	Total Phos	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Phos Value	Total Phos Value	Squared	Squared
1	750	6.620073207	459.3653846	0.366812525	211016.5566	0.134551428
2	1,400	7.244227516	-190.6346154	-0.257341785	36341.55658	0.066224794
3	2,400	7.783224016	-1190.634615	-0.796338285	1417610.787	0.634154665
4	2,100	7.649692624	-890.6346154	-0.662806893	793230.0181	0.439312977
5	2,200	7.696212639	-990.6346154	-0.709326908	981356.9412	0.503144663
6	600	6.396929655	609.3653846	0.589956076	371326.172	0.348048171
7	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
8	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
9	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
10	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
11	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
12	600	6.396929655	609.3653846	0.589956076	371326.172	0.348048171
13	800	6.684611728	409.3653846	0.302274003	167580.0181	0.091369573
14	1,900	7.549609165	-690.6346154	-0.562723434	476976.172	0.316657663
15	2,000	7.60090246	-790.6346154	-0.614016728	625103.095	0.377016543
16	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
17	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
18	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
19	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
20	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
21	700	6.551080335	509.3653846	0.435805396	259453.095	0.189926343
22	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
23	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
24	2,400	7.783224016	-1190.634615	-0.796338285	1417610.787	0.634154665
25	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
26	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
27	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
28	1,700	7.43838353	-490.6346154	-0.451497799	240722.3258	0.203850262
29	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
30	2,000	7.60090246	-790.6346154	-0.614016728	625103.095	0.377016543
31	1,500	7.313220387	-290.6346154	-0.326334656	84468.47966	0.106494308
32	2,000	7.60090246	-790.6346154	-0.614016728	625103.095	0.377016543
33	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
34	1,300	7.170119543	-90.63461538	-0.183233812	8214.633506	0.03357463
35	1,700	7.43838353	-490.6346154	-0.451497799	240722.3258	0.203850262
36	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
37	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
38	2,000	7.60090246	-790.6346154	-0.614016728	625103.095	0.377016543
39	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
40	1,800	7.495541944	-590.6346154	-0.508656213	348849.2489	0.258731143
41	1,300	7.170119543	-90.63461538	-0.183233812	8214.633506	0.03357463
42	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
43	700	6.551080335	509.3653846	0.435805396	259453.095	0.189926343
44	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
45	287	5.659482216	922.3653846	1.327403515	850757.9027	1.762000092
46	310	5.736572297	899.3653846	1.250313434	808858.095	1.563283682
47	333	5.80814249	876.3653846	1.178743241	768016.2874	1.389435628
48	507	6.228511004	702.3653846	0.758374727	493317.1335	0.575132227
49	780	6.65929392	429.3653846	0.327591811	184354.6335	0.107316395
50	793	6.675823222	416.3653846	0.311062509	173360.1335	0.096759885
51	368	5.908082938	841.3653846	1.078802793	707895.7104	1.163815466
53	1,059	6.965080346	150.3653846	0.021805385	22609.74889	0.000475475
Column Sum	62,887	363.318058			14599700.06	13.09666362
Column Sum/N	1,209	6.986885731				
Column Sum/(N-1)					280763.4626	0.251858916
SQRT(Column Sum/(N-1))					529.8711755	0.501855473
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1,209	6.986885731	1082.345507	
		Std Dev	529.8711755	0.501855473	1.651783268	
		Permit Limit	2250.562245	7.973031736	2901.641051	
		Table 3-2 Constant = 1.965				

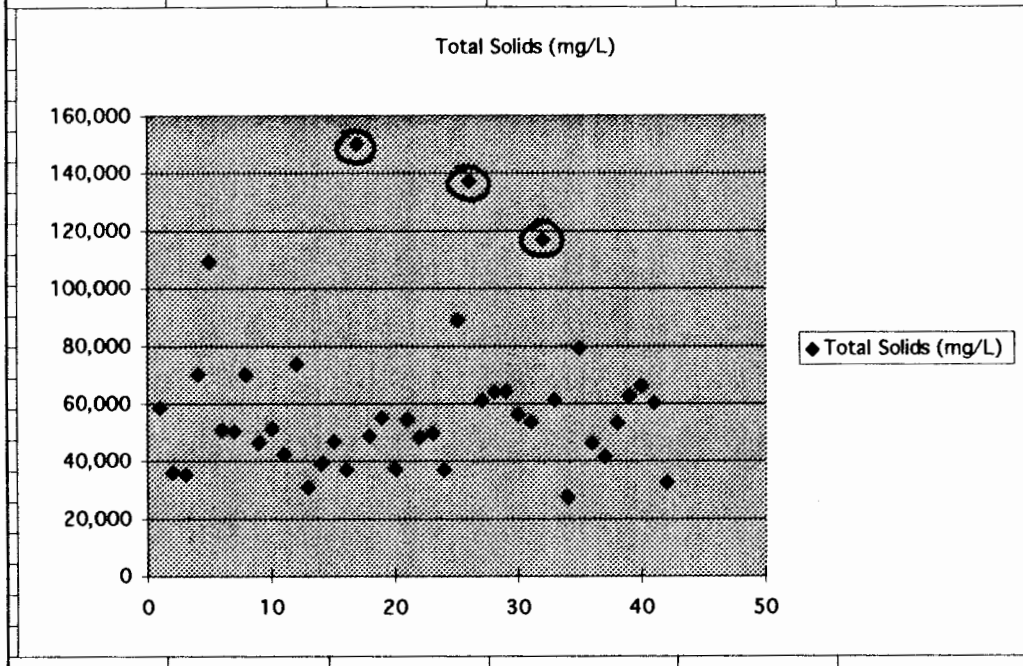
CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Nitrogen	Total Nitrogen	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Nitrogen Value	Total Nitrogen Valu	Squared	Squared
1	2,940	7.98616486	3115.529412	0.674012305	9706523.516	0.454292587
2	3,080	8.032684876	2975.529412	0.627492289	8853775.28	0.393746573
3	5,880	8.679312041	175.5294118	-0.019134876	30810.57439	0.000366143
4	6,160	8.725832057	-104.4705882	-0.065654891	10914.10381	0.004310565
5	7,840	8.966994113	-1784.470588	-0.306816948	3184335.28	0.09413664
6	4,480	8.407378325	1575.529412	0.25279884	2482292.927	0.063907253
7	8,120	9.002085433	-2064.470588	-0.341908268	4262038.81	0.116901264
8	5,880	8.679312041	175.5294118	-0.019134876	30810.57439	0.000366143
9	5,880	8.679312041	175.5294118	-0.019134876	30810.57439	0.000366143
10	5,880	8.679312041	175.5294118	-0.019134876	30810.57439	0.000366143
11	4,760	8.468002947	1295.529412	0.192174218	1678396.457	0.03693093
12	7,280	8.892886141	-1224.470588	-0.232708976	1499328.221	0.054153467
13	6,160	8.725832057	-104.4705882	-0.065654891	10914.10381	0.004310565
14	5,880	8.679312041	175.5294118	-0.019134876	30810.57439	0.000366143
15	7,280	8.892886141	-1224.470588	-0.232708976	1499328.221	0.054153467
16	1,960	7.580699752	4095.529412	1.079477413	16773361.16	1.165271485
17	4,760	8.468002947	1295.529412	0.192174218	1678396.457	0.03693093
18	4,480	8.407378325	1575.529412	0.25279884	2482292.927	0.063907253
19	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
20	2,800	7.937374696	3255.529412	0.722802469	10598471.75	0.522443409
21	4,480	8.407378325	1575.529412	0.25279884	2482292.927	0.063907253
22	3,080	8.032684876	2975.529412	0.627492289	8853775.28	0.393746573
23	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
24	3,920	8.273846933	2,136	0.386330233	4560485.869	0.149251049
25	4,480	8.407378325	1575.529412	0.25279884	2482292.927	0.063907253
26	8,960	9.100525506	-2904.470588	-0.440348341	8435949.398	0.193906661
27	6,160	8.725832057	-104.4705882	-0.065654891	10914.10381	0.004310565
28	7,280	8.892886141	-1224.470588	-0.232708976	1499328.221	0.054153467
29	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
30	5,320	8.579228582	735.5294118	0.080948583	541003.5156	0.006552673
31	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
32	4,480	8.407378325	1575.529412	0.25279884	2482292.927	0.063907253
33	5,320	8.579228582	735.5294118	0.080948583	541003.5156	0.006552673
34	7,280	8.892886141	-1224.470588	-0.232708976	1499328.221	0.054153467
35	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
36	6,160	8.725832057	-104.4705882	-0.065654891	10914.10381	0.004310565
37	4,480	8.407378325	1575.529412	0.25279884	2482292.927	0.063907253
38	5,264	8.568646473	791.5294118	0.091530692	626518.8097	0.008377868
39	6,348	8.755895082	-292.4705882	-0.095717916	85539.04498	0.00916192
40	5,040	8.525161361	1015.529412	0.135015804	1031299.986	0.018229267
41	7,840	8.966994113	-1784.470588	-0.306816948	3184335.28	0.09413664
42	7,840	8.966994113	-1784.470588	-0.306816948	3184335.28	0.09413664
43	4,760	8.468002947	1295.529412	0.192174218	1678396.457	0.03693093
44	6,160	8.725832057	-104.4705882	-0.065654891	10914.10381	0.004310565
45	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
46	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
47	8,400	9.035986985	-2344.470588	-0.375809819	5496542.339	0.14123302
48	8,960	9.100525506	-2904.470588	-0.440348341	8435949.398	0.193906661
49	8,120	9.002085433	-2064.470588	-0.341908268	4262038.81	0.116901264
50	5,880	8.679312041	175.5294118	-0.019134876	30810.57439	0.000366143
51	8,400	9.035986985	-2344.470588	-0.375809819	5496542.339	0.14123302
Column Sum	308,832	441.6690354			150123540.7	5.560717534
Column Sum/N	6,056	8.660177165				
Column Sum/(N-1)					3002470.814	0.111214351
SQRT(Column Sum/(N-1))					1732.763923	0.333488157
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	6,056	8.660177165	5768.55656	
		Std Dev	1732.763923	0.333488157	1.395828515	
		Permit Limit	9460.410521	9.315481393	11108.67255	
		Table 3-2 Constant = 1.965				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Ammonia	Ammonia	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Ammonia Value	Ammonia Value	Squared	Squared
1	560	6.327936784	1932.156863	1.43814855	3733230.142	2.068271253
2	840	6.733401892	1652.156863	1.032683442	2729622.299	1.066435092
3	3,450	8.14612951	-957.8431373	-0.380044176	917463.4756	0.144433576
4	3,480	8.154787573	-987.8431373	-0.388702239	975834.0638	0.15108943
5	1,880	7.539027056	612.1568627	0.227058278	374736.0246	0.051555462
6	1,180	7.073269717	1312.156863	0.692815617	1721755.632	0.479993479
7	2,650	7.882314919	-157.8431373	-0.116229585	24914.45598	0.013509316
8	1,850	7.522940918	642.1568627	0.243144416	412365.4364	0.059119207
9	2,390	7.779048645	102.1568627	-0.012963311	10436.02461	0.000168047
10	2,000	7.60090246	492.1568627	0.165182875	242218.3775	0.027285382
11	2,290	7.736307097	202.1568627	0.029778238	40867.39715	0.000886743
12	2,500	7.824046011	-7.843137255	-0.057960677	61.514802	0.00335944
13	2,050	7.625595072	442.1568627	0.140490262	195502.6913	0.019737514
14	2,300	7.740664402	192.1568627	0.025420932	36924.2599	0.000646224
15	1,960	7.580699752	532.1568627	0.185385582	283190.9266	0.034367814
16	1,590	7.371489295	902.1568627	0.394596039	813887.005	0.155706034
17	2,030	7.615791072	462.1568627	0.150294262	213588.9658	0.022588365
18	2,250	7.718685495	242.1568627	0.047399839	58639.94617	0.002246745
19	1,220	7.106606138	1272.156863	0.659479196	1618383.083	0.434912811
20	1,440	7.272398393	1052.156863	0.493686942	1107034.064	0.243726796
21	2,800	7.937374696	-307.8431373	-0.171289362	94767.39715	0.029340046
22	2,240	7.714231145	252.1568627	0.051854189	63583.08343	0.002688857
23	3,370	8.122668023	-877.8431373	-0.356582689	770608.5736	0.127151214
24	3,530	8.16905315	-1037.843137	-0.402967816	1077118.378	0.162383061
25	2,960	7.992944547	-467.8431373	-0.226859213	218877.2011	0.051465103
26	2,170	7.682482447	322.1568627	0.083602888	103785.0442	0.006989443
27	3,340	8.113726086	-847.8431373	-0.347640752	718837.9854	0.120854092
28	3,240	8.083328609	-747.8431373	-0.317243275	559269.3579	0.100643295
29	3,530	8.16905315	-1037.843137	-0.402967816	1077118.378	0.162383061
30	3,930	8.276394705	-1437.843137	-0.510309371	2067392.887	0.260415654
31	3,310	8.104703468	-817.8431373	-0.338618134	668867.3972	0.114662241
32	2,800	7.937374696	-307.8431373	-0.171289362	94767.39715	0.029340046
33	3,320	8.107720062	-827.8431373	-0.341634728	685324.2599	0.116714287
34	2,870	7.962067309	-377.8431373	-0.195981975	142765.4364	0.038408934
35	3,720	8.221478947	-1227.843137	-0.455393613	1507598.77	0.207383343
36	2,710	7.904703914	-217.8431373	-0.13861858	47455.63245	0.019215111
37	2,550	7.843848638	-57.84313725	-0.077763304	3345.828527	0.006047131
38	2,690	7.897296473	-197.8431373	-0.131211138	39141.90696	0.017216363
39	2,730	7.912056888	-237.8431373	-0.145971554	56569.35794	0.021307695
40	2,420	7.791522819	72.15686275	-0.025437485	5206.612841	0.000647066
41	2,340	7.757906208	152.1568627	0.008179126	23151.71088	6.68981E-05
42	2,050	7.625595072	442.1568627	0.140490262	195502.6913	0.019737514
43	2,170	7.682482447	322.1568627	0.083602888	103785.0442	0.006989443
44	2,210	7.700747795	282.1568627	0.06533754	79612.49519	0.004268994
45	2,400	7.783224016	92.15686275	-0.017138682	8492.887351	0.000293734
46	2,290	7.736307097	202.1568627	0.029778238	40867.39715	0.000886743
47	2,300	7.740664402	192.1568627	0.025420932	36924.2599	0.000646224
48	2,760	7.922985959	-267.8431373	-0.156900625	71739.94617	0.024617806
49	2,900	7.972466016	-407.8431373	-0.206380682	166336.0246	0.042592986
50	2,870	7.962067309	-377.8431373	-0.195981975	142765.4364	0.038408934
51	2,670	7.889833751	-177.8431373	-0.123748417	31628.18147	0.015313671
Column Sum	127,100	396.070352			26413862.75	6.729117718
Column Sum/N	2,492	7.766085334				
Column Sum/(N-1)					528277.2549	0.134582354
SQRT(Column Sum/(N-1))					726.8268397	0.366854677
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	2,492	7.766085334	2359.217639	
		Std Dev	726.8268397	0.366854677	1.443188176	
		Permit Limit	3920.371603	8.486954775	4851.070957	
		Table 3-2 Constant = 1.965				

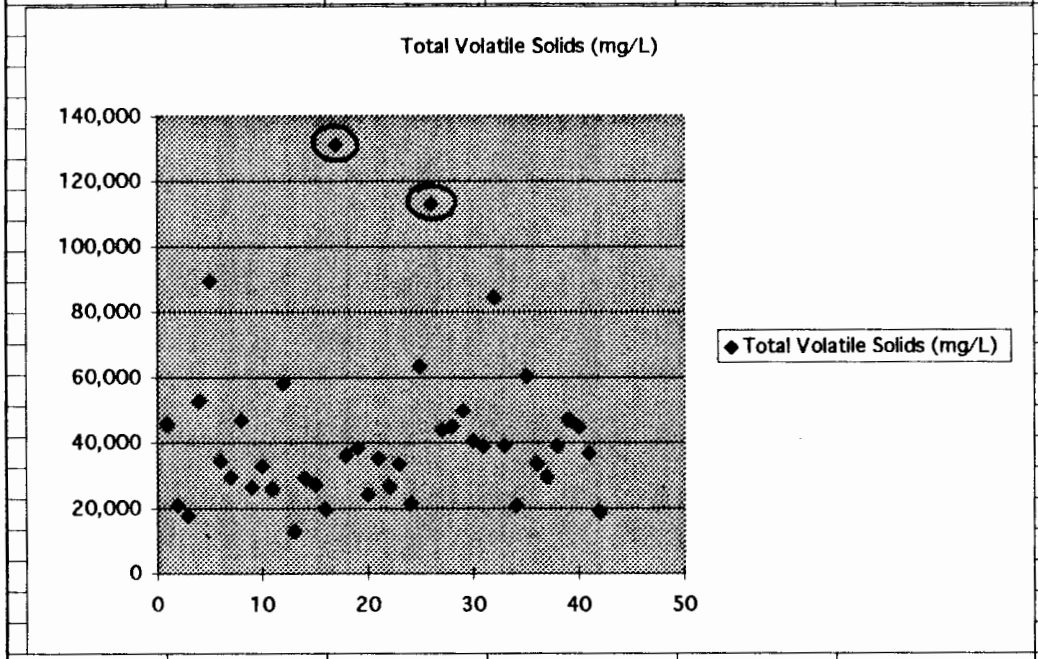
CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	pH	pH	Minus Untransformed	Minus Transformed	Column D	Column E
	(pH Units)	(pH Units)	pH Value	pH Value	Squared	Squared
1	6.65	1.894616855	-0.095625	-0.01662878	0.009144141	0.000276516
2	7.06	1.954445052	-0.505625	-0.076456977	0.255656641	0.005845669
3	6.61	1.888583654	-0.055625	-0.01059558	0.003094141	0.000112266
4	7.39	2.000127735	-0.835625	-0.122139661	0.698269141	0.014918097
5	6.73	1.906575144	-0.175625	-0.028587069	0.030844141	0.000817221
6	6.87	1.927164106	-0.315625	-0.049176032	0.099619141	0.002418282
7	6.43	1.860974538	0.124375	0.017013536	0.015469141	0.00028946
8	6.28	1.83736998	0.274375	0.040618094	0.075281641	0.00164983
9	6.86	1.925707442	-0.305625	-0.047719368	0.093406641	0.002277138
10	6.74	1.908059925	-0.185625	-0.030071851	0.034456641	0.000904316
11	6.93	1.935859813	-0.375625	-0.057871739	0.141094141	0.003349138
12	6.96	1.940179474	-0.405625	-0.0621914	0.164531641	0.00386777
13	6.94	1.937301775	-0.385625	-0.0593137	0.148706641	0.003518115
14	6.68	1.899117988	-0.125625	-0.021129913	0.015781641	0.000446473
15	7.00	1.945910149	-0.445625	-0.067922075	0.198581641	0.004613408
16	6.72	1.905088155	-0.165625	-0.02710008	0.027431641	0.000734414
17	7.36	1.996059933	-0.805625	-0.118071859	0.649031641	0.013940964
18	6.32	1.843719208	0.234375	0.034268866	0.054931641	0.001174355
19	6.02	1.795087259	0.534375	0.082900815	0.285556641	0.006872545
20	6.16	1.818076778	0.394375	0.059911297	0.155531641	0.003589363
21	6.25	1.832581464	0.304375	0.04540661	0.092644141	0.00206176
22	6.20	1.824549292	0.354375	0.053438782	0.125581641	0.002855703
23	6.00	1.791759469	0.554375	0.086228605	0.307331641	0.007435372
24	6.02	1.795087259	0.534375	0.082900815	0.285556641	0.006872545
25	6.50	1.871802177	0.054375	0.006185897	0.002956641	3.82653E-05
26	6.03	1.796747011	0.524375	0.081241063	0.274969141	0.00660011
27	6.00	1.791759469	0.554375	0.086228605	0.307331641	0.007435372
28	5.90	1.774952351	0.654375	0.103035723	0.428206641	0.01061636
29	5.60	1.722766598	0.954375	0.155221476	0.910831641	0.024093707
30	5.40	1.686398954	1.154375	0.191589121	1.332581641	0.036706391
31	6.70	1.902107526	-0.145625	-0.024119452	0.021206641	0.000581748
32	6.80	1.916922612	-0.245625	-0.038934538	0.060331641	0.001515898
33	6.70	1.902107526	-0.145625	-0.024119452	0.021206641	0.000581748
34	6.50	1.871802177	0.054375	0.006185897	0.002956641	3.82653E-05
35	6.00	1.791759469	0.554375	0.086228605	0.307331641	0.007435372
36	6.80	1.916922612	-0.245625	-0.038934538	0.060331641	0.001515898
37	6.60	1.887069649	-0.045625	-0.009081575	0.002081641	8.2475E-05
38	6.80	1.916922612	-0.245625	-0.038934538	0.060331641	0.001515898
39	6.60	1.887069649	-0.045625	-0.009081575	0.002081641	8.2475E-05
40	6.90	1.931521412	-0.345625	-0.053533337	0.119456641	0.002865818
41	7.10	1.960094784	-0.545625	-0.08210671	0.297706641	0.006741512
42	6.60	1.887069649	-0.045625	-0.009081575	0.002081641	8.2475E-05
43	6.80	1.916922612	-0.245625	-0.038934538	0.060331641	0.001515898
44	6.60	1.887069649	-0.045625	-0.009081575	0.002081641	8.2475E-05
45	6.70	1.902107526	-0.145625	-0.024119452	0.021206641	0.000581748
46	7.00	1.945910149	-0.445625	-0.067922075	0.198581641	0.004613408
47	6.20	1.824549292	0.354375	0.053438782	0.125581641	0.002855703
48	6.60	1.887069649	-0.045625	-0.009081575	0.002081641	8.2475E-05
Column Sum	314.61	90.14342756			8.59138125	0.209102221
Column Sum/N	6.55	1.877988074				
Column Sum/(N-1)					0.182795346	0.004448983
SQRT(Column Sum/(N-1))					0.427545724	0.0667007
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	6.55	1.877988074	6.540332951	
		Std Dev	0.427545724	0.0667007	1.068975486	
		Upper Permit Limit	7.397922713	2.009588556	7.460247242	
		Lower Permit Limit	5.710827287	1.746387592	5.733852208	
		Table 3-2 Constant = 1.973				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Density	Density	Minus Untransformed	Minus Transformed	Column D	Column E
	(g/mL)	(g/mL)	Density Value	Density Value	Squared	Squared
1	0.98	-0.020202707	0.019215686	0.019369341	0.000369243	0.000375171
2	1.02	0.019802627	-0.020784314	-0.020635994	0.000431988	0.000425844
3	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
4	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
5	1.02	0.019802627	-0.020784314	-0.020635994	0.000431988	0.000425844
6	1.02	0.019802627	-0.020784314	-0.020635994	0.000431988	0.000425844
7	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
8	1.02	0.019802627	-0.020784314	-0.020635994	0.000431988	0.000425844
9	0.98	-0.020202707	0.019215686	0.019369341	0.000369243	0.000375171
10	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
11	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
12	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
13	0.98	-0.020202707	0.019215686	0.019369341	0.000369243	0.000375171
14	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
15	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
16	0.98	-0.020202707	0.019215686	0.019369341	0.000369243	0.000375171
17	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
18	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
19	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
20	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
21	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
22	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
23	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
24	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
25	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
26	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
27	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
28	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
29	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
30	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
31	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
32	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
33	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
34	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
35	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
36	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
37	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
38	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
39	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
40	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
41	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
42	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
43	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
44	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
45	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
46	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
47	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
48	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
49	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
50	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
51	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
Column Sum	50.96	-0.042501699			0.004968627	0.00496992
Column Sum/N	1.00	-0.000833367				
Column Sum/(N-1)					9.93725E-05	9.93984E-05
SQRT(Column Sum/(N-1))					0.009968578	0.009969874
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1.00	-0.000833367	0.999166981	
		Std Dev	0.009968578	0.009969874	1.010019739	
		Upper Permit Limit	1.018803942	0.018757436	1.018934462	
		Lower Permit Limit	0.97962743	-0.020424169	0.979782991	
		Table 3-2 Constant = 1.965				

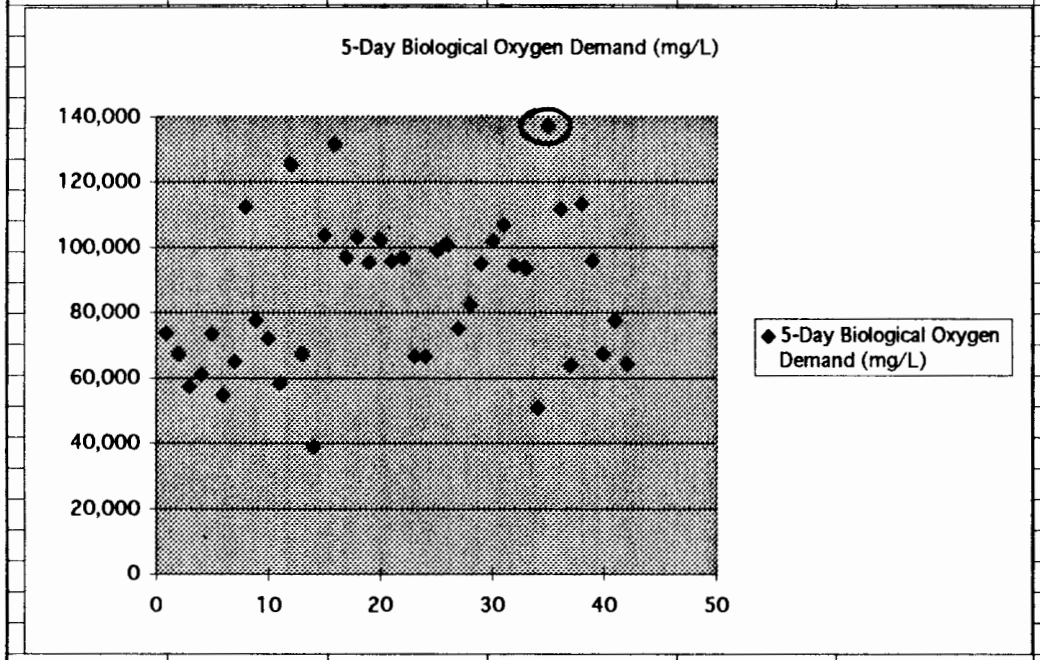
OD 93-01									
Permit Limits	No limit								
		Total Volatile	5-Day Biological						
	Total Solids	Solids	Oxygen Demand	Oil and Grease	Total Phosphorus	Total Nitrogen	Ammonia	pH	Density
Month & Year	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(pH units)	(g/mL)
12/10/93	58,300	45,300	73,527	4,950	651	7,000	4,190	6.86	* 0.95
12/17/93	35,800	20,800	67,247	10,100	502	5,110	3,040	6.50	1.00
1/21/94	35,400	17,400	57,425	8,110	526	6,380	4,930	6.93	1.03
1/28/94	70,140	52,600	60,958	19,700	1,040	7,850	4,230	6.88	0.99
2/9/94	109,000	89,300	73,236	29,800	1,250	7,290	3,690	6.50	0.98
2/17/94	50,600	34,300	54,610	14,600	915	7,480	4,140	6.73	1.01
3/09/94	50,200	29,200	65,167	4,500	897	1,750	283	6.98	0.97
3/24/94	69,900	46,800	112,261	20,100	* 3,210	* 14,300	* 9,700	7.13	0.96
4/26/94	46,300	26,200	77,425	6,100	985	2,530	5,400	6.85	1.01
5/3/94	51,300	32,900	71,905	7,660	798	5,630	3,960	6.74	0.99
5/23/94	42,100	25,700	58,327	13,669	655	5,120	3,510	6.84	1.02
5/30/94	73,600	58,100	125,375	22,352	1,072	6,900	4,410	6.18	0.97
6/15/94	30,600	12,800	67,282	6,535	608	4,940	3,420	6.46	1.02
6/22/94	39,100	28,900	38,781	23,013	734	4,600	2,290	6.23	1.00
7/20/94	46,600	27,000	103,767	26,415	1,740	7,090	5,200	6.73	0.99
7/27/94	36,700	19,600	131,250	14,979	674	5,390	4,470	6.68	1.01
8/16/94	* 150,000	* 131,000	96,833	51,903	2,530	5,330	1,910	6.52	* 0.94
8/25/94	48,600	35,800	103,072	* 76,256	1,040	3,180	282	* 5.47	0.97
9/20/94	55,100	38,500	95,483	32,696	1,270	5,190	4,580	6.96	0.98
9/27/94	37,100	24,200	102,428	13,433	618	5,120	3,990	6.62	0.99
10/1/94	54,200	35,300	95,567	15,008	620	5,540	3,060	6.35	1.00
10/7/94	48,200	26,400	96,644	14,123	512	5,040	3,900	6.52	0.99
11/17/94	49,700	33,300	66,709	18,779	950	8,290	4,300	6.71	1.01
11/23/94	36,700	21,200	66,366	16,179	662	6,150	4,220	6.63	1.01
12/14/94	88,900	63,200	99,026	30,084	1,180	5,060	3,390	6.10	1.03
12/21/94	* 137,000	* 113,000	100,911	* 61,901	1,110	2,370	295	* 5.40	1.00
1/27/95	60,800	44,000	74,889	25,340	789	4,100	4,800	6.40	1.01
1/31/95	64,000	44,700	82,339	22,721	1,110	6,660	5,160	6.90	1.01
2/25/95	64,300	49,400	95,139	56,793	997	6,660	5,170	6.80	0.99
3/2/95	56,300	40,700	101,978	50,204	612	3,940	3,330	6.44	1.01
3-03-95	53,600	38,600	106,856	39,360	933	4,500	3,650	6.30	1.00
3-11-95	* 117,000	84,100	94,628	36,286	* 3,830	4,370	3,720	6.20	1.01
4-07-95	61,100	39,300	93,505	40,968	* 3,100	2,820	2,290	6.40	1.00
4-13-95	27,300	20,700	50,893	17,648	361	1,790	1,560	6.60	0.99
5-03-95	79,300	60,300	* 136,750	31,841	1,400	6,390	434	6.30	1.00
5-10-95	46,400	33,600	111,611	16,791	666	4,820	4,050	6.60	1.00
6/28/95	41,500	29,300	63,726	18,098	502	2,870	2,310	6.49	1.01
7/5/95	53,200	38,800	113,300	13,526	791	5,570	3,870	6.75	1.01
7/6/95	62,600	46,900	95,850	35,005	940	9,640	5,230	6.76	1.00
7/26/95	65,700	45,000	67,268	18,619	1,100	5,920	4,470	6.73	1.00
08-01-95	60,000	36,800	77,311	13,579	817	6,350	3,990	6.71	1.00
8/9/95	32,500	18,600	64,220	9,103	525	3,490	2,990	6.56	0.99



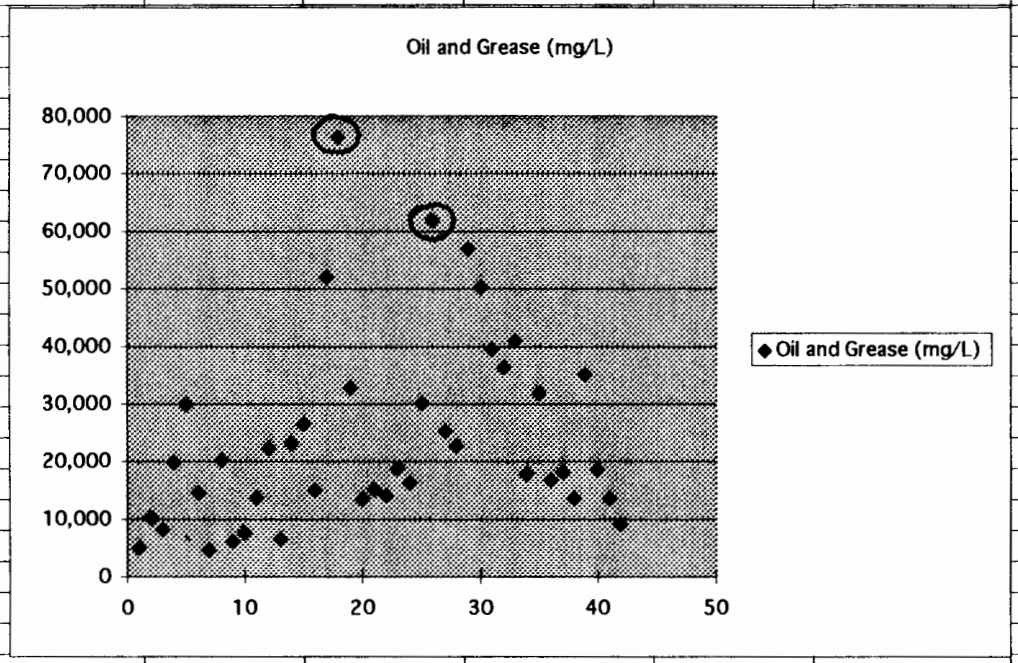
Mean =	59,446
Standard Deviation =	26721.0422
2 x Standard Deviation =	53442.0844
Outliers Deleted Above	112,888



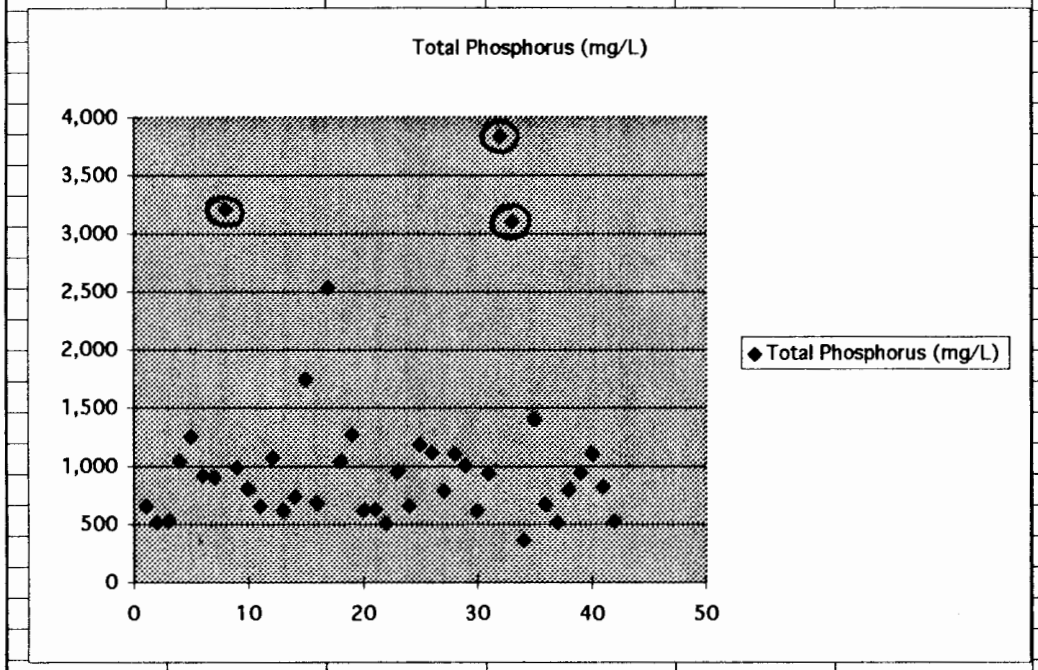
Mean =	41,895
Standard Deviation =	24366.1296
2 x Standard Deviation =	48732.2591
Outliers Deleted Above	90,627



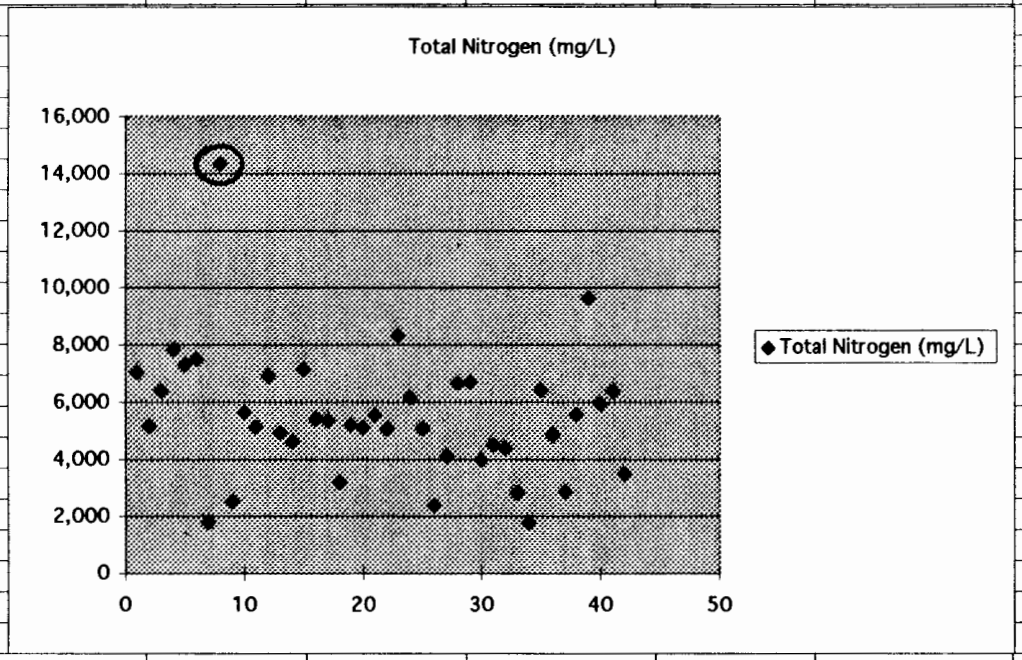
Mean =	85,520
Standard Deviation =	22959.3577
2 x Standard Deviation =	45918.7155
Outliers Deleted Above	131,439



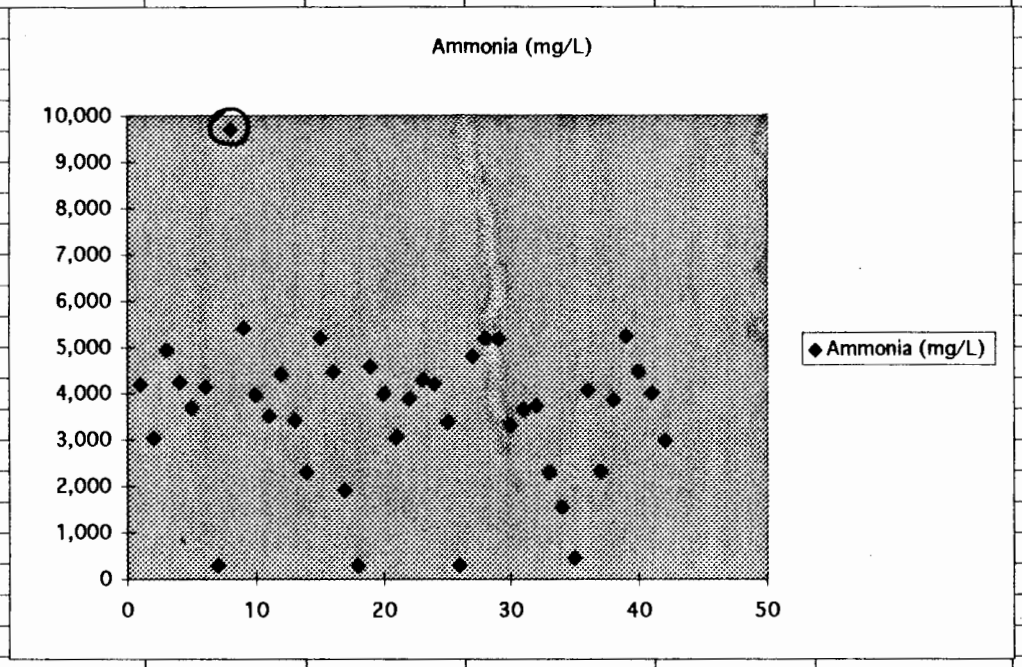
Mean =	24,020
Standard Deviation =	16447.0019
2 x Standard Deviation =	32894.0038
Outliers Deleted Above	56,914



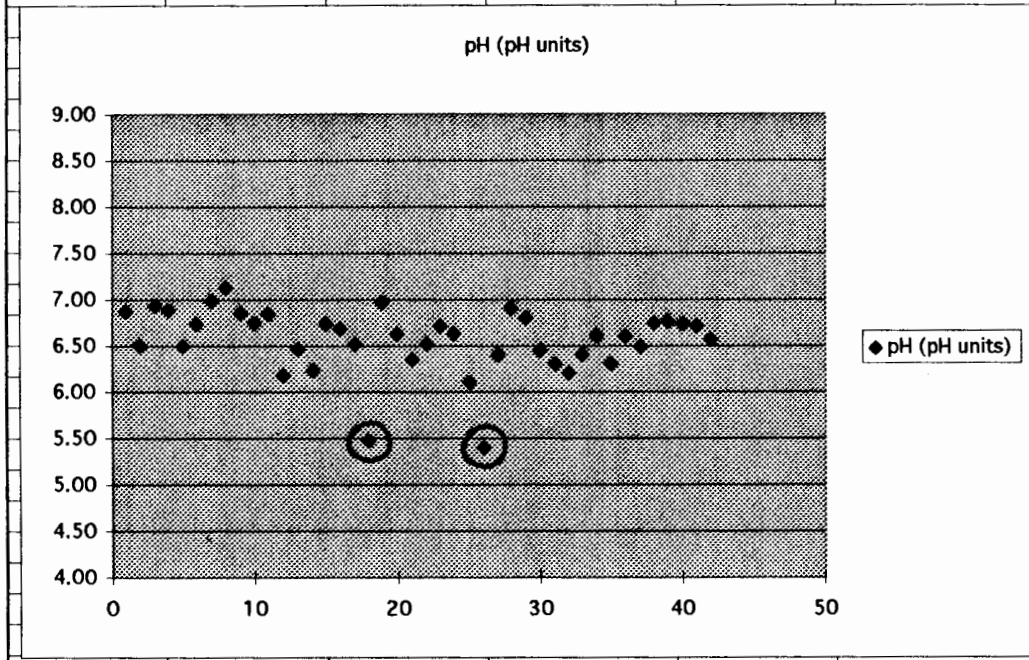
Mean =	1,077
Standard Deviation =	754.447408
2 x Standard Deviation =	1508.89482
Outliers Deleted Above	2,586



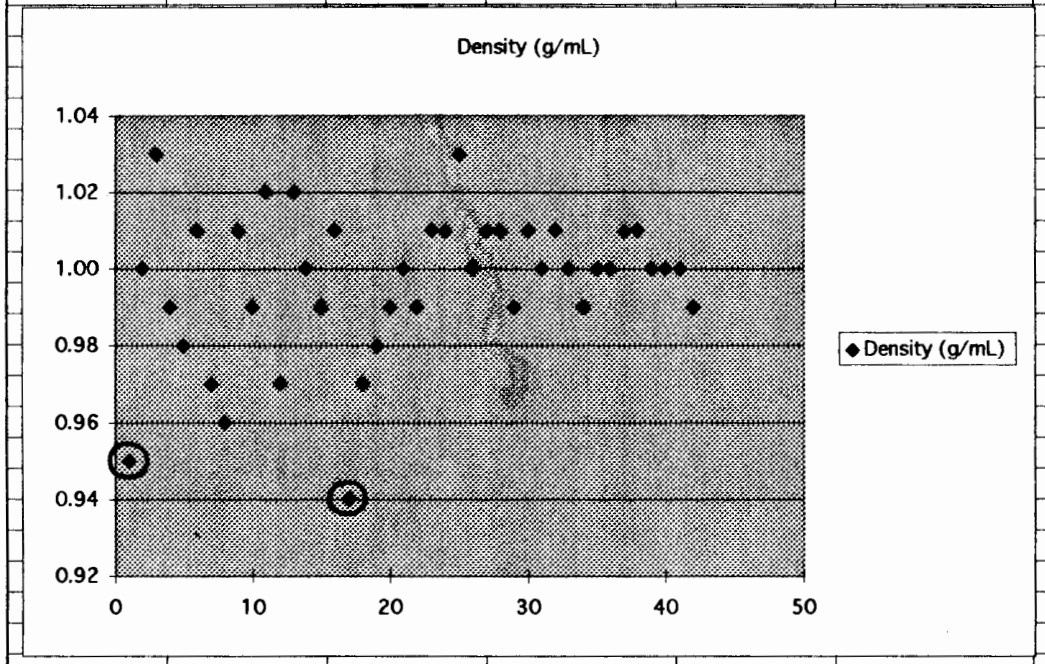
Mean =	5,489
Standard Deviation =	2244.5148
2 x Standard Deviation =	4489.0296
Outliers Deleted Above	9,978



Mean =	3,662
Standard Deviation =	1679.75102
2 x Standard Deviation =	3359.50205
Outliers Deleted Above	7,022

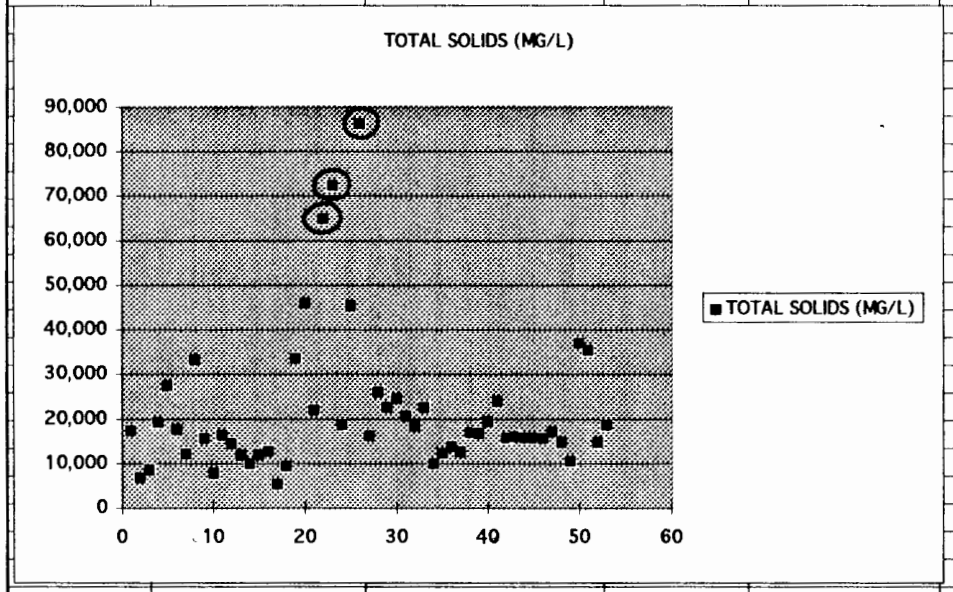


Mean =	6.56
Standard Deviation =	0.34889539
2 x Standard Deviation =	0.69779077
Outliers Deleted Above	7.26
Outliers Deleted Below	5.86

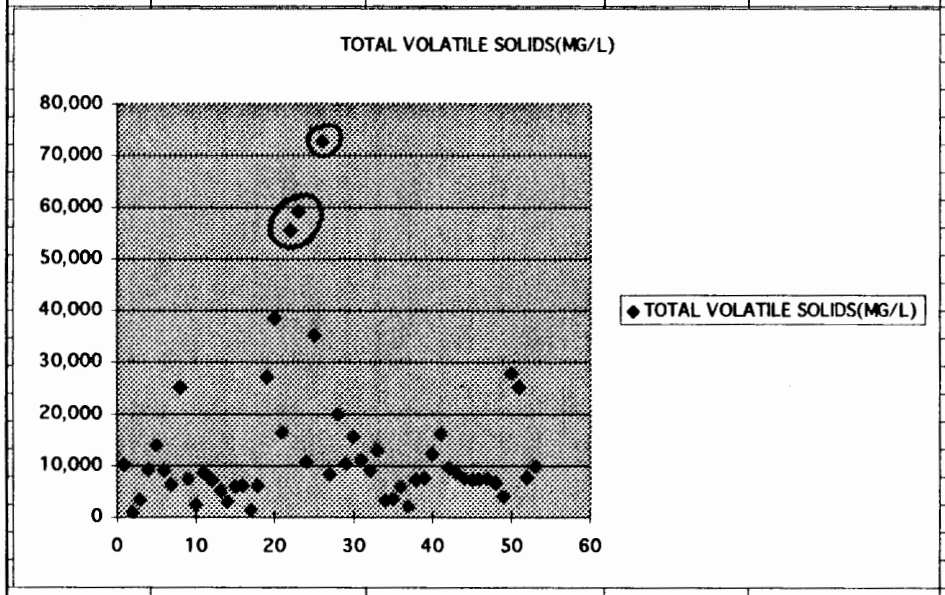


Mean =	1.00
Standard Deviation =	0.01923176
2 x Standard Deviation =	0.03846352
Outliers Deleted Above	1.03
Outliers Deleted Below	0.96

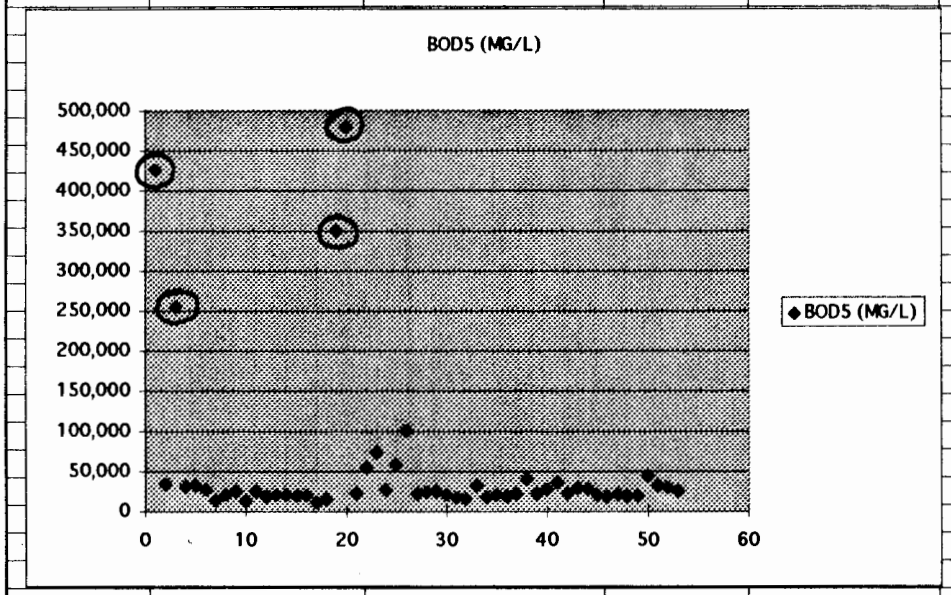
SAMPLE DATE	TOTAL SOLIDS (MG/L)	TOTAL VOLATILE SOLIDS(MG/L)	BOD5 (MG/L)	OIL/GREASE (MG/L)	PHOSPHORUS MG/L)	TOTAL NITROGEN (MG/L)	AMMONIA (MG/L)	PH	DENSITY (G/ML)
09-08-93	17,300	9,920	* 425,000	20,588	* 3,500	* 19,040	* 8,400	6.65	0.98
10-06-93	6,790	897	33,500	33,370	750	2,940	560	7.06	1.02
10-14-93	8,480	3,390	* 255,000	5,680	1,400	3,080	840	6.61	1.01
11-03-93	19,200	9,270	30,700	16,700	2,400	5,880	3,450	7.39	* 1.03
11-09-93	27,500	13,900	32,000	8,520	2,100	6,160	3,480	6.73	* 1.03
11-16-93	17,600	8,890	27,100	14,580	2,200	7,840	* 6,580	6.87	1.00
12-06-93	12,100	6,270	13,800	4,006	600	4,480	1,880	6.43	1.02
12-13-93	33,200	25,000	21,000	5,240	1,200	8,120	1,180	6.28	1.02
01-04-94	15,600	7,170	24,400	2,460	1,000	5,880	2,650	6.86	1.01
01-10-94	7,730	2,440	13,200	10,240	1,200	5,880	1,850	6.74	1.02
02-01-94	16,300	8,430	24,100	7,240	1,000	5,880	2,390	6.93	0.98
02-07-94	14,500	7,050	18,000	3,700	1,000	4,760	2,000	6.96	1.00
03-01-94	11,900	5,090	19,900	1,958	600	7,280	2,290	6.94	1.00
03-07-94	9,900	2,870	20,100	17,440	800	6,160	2,500	6.68	0.99
04-04-94	12,000	5,820	18,900	19,040	1,900	5,880	2,050	7.00	0.98
04-11-94	12,700	5,980	19,300	16,200	2,000	7,280	2,300	6.72	1.01
05-02-94	5,390	1,430	11,300	9,780	1,200	1,960	1,960	7.36	1.01
05-10-94	9,350	5,940	14,400	8,880	1,200	4,760	1,590	6.32	0.98
06-07-94	33,500	27,000	* 350,000	28,120	1,000	4,480	2,030	6.02	0.99
06-14-94	45,900	38,400	* 480,000	37,900	1,000	7,560	2,250	6.16	1.00
07-05-94	22,000	16,400	22,500	7,212	1,000	2,800	1,220	6.25	1.00
07-12-94	* 64,800	* 55,300	54,500	28,840	700	4,480	1,440	6.20	1.00
08-01-94	* 72,400	* 59,200	73,200	5,788	1,200	3,080	2,800	6.00	0.99
08-08-94	18,700	10,700	26,400	57,260	1,000	7,560	2,240	6.02	1.00
09-06-94	45,300	35,300	57,800	37,660	2,400	3,920	3,370	6.50	1.00
09-12-94	* 86,300	* 72,800	99,800	19,460	1,200	4,480	3,530	6.03	1.00
10-03-94	16,200	8,300	21,600	15,940	1,200	8,960	2,960	6.00	1.01
10-25-94	26,000	20,000	23,300	160,000	1,200	6,160	2,170	5.90	0.99
11-01-94	22,600	10,300	24,200	919	1,700	7,280	3,340	* 5.30	1.00
11-06-94	24,600	15,400	20,700	1,789	1,200	7,560	3,240	5.60	0.99
12-05-94	20,700	11,000	16,000	13,360	2,000	5,320	3,530	5.40	1.00
12-12-94	18,400	8,850	15,600	1,161	1,500	7,560	3,930	* 5.00	1.00
01-03-95	22,600	13,000	32,400	62,820	2,000	4,480	3,310	6.70	1.00
01-13-95	10,000	3,190	16,500	62,000	1,000	5,320	2,800	* 5.00	1.01
02-01-95	12,300	3,420	20,300	68,020	1,300	7,280	3,320	6.80	0.99
02-16-95	13,700	5,730	18,600	49,140	1,700	7,560	2,870	6.70	0.99
03-01-95	12,600	2,170	21,000	10,460	1,200	6,160	3,720	6.50	1.00
03-09-95	16,900	7,200	39,100	7,600	1,200	4,480	2,710	6.00	1.01
04-03-95	16,700	7,490	21,500	9,360	2,000	5,264	2,550	6.80	0.99
04-13-95	19,300	12,200	26,600	7,600	1,200	6,348	2,690		1.00
05-01-95	24,000	16,100	36,200	11,440	1,800	5,040	2,730	6.60	1.00
05-12-95	15,700	9,500	22,900	2,240	1,300	7,840	2,420		1.00
06-01-95	16,100	8,690	29,100	14,780	1,000	7,840	2,340	6.80	0.99
06-16-95	15,700	7,460	27,400	15,580	700	4,760	2,050	6.60	0.99
07-05-95	15,700	7,280	19,400	* 404,200	1,200	6,160	2,170	6.90	1.00
07-18-95	15,600	7,260	18,000	78,640	287	7,560	2,210	7.10	1.00
08-02-95	17,000	7,510	20,500	* 259,880	310	7,560	2,400	6.60	1.00
08-17-95	14,700	6,640	18,700	10,120	333	8,400	2,290	6.80	0.99
09-06-95	10,600	3,860	18,900		507	8,960	2,300	6.60	1.00
09-12-95	37,000	27,900	43,500	23,800	780	* 17,640	2,760	6.70	1.00
10-03-95	35,400	25,200	32,000	20,500	793	8,120	2,900	7.00	1.00
11-06-95	14,700	7,540	29,200	24,600	368	5,880	2,870	6.20	1.00
12-06-95	18,700	9,760	24,600	59,920	1,059	8,400	2,670	6.60	1.00



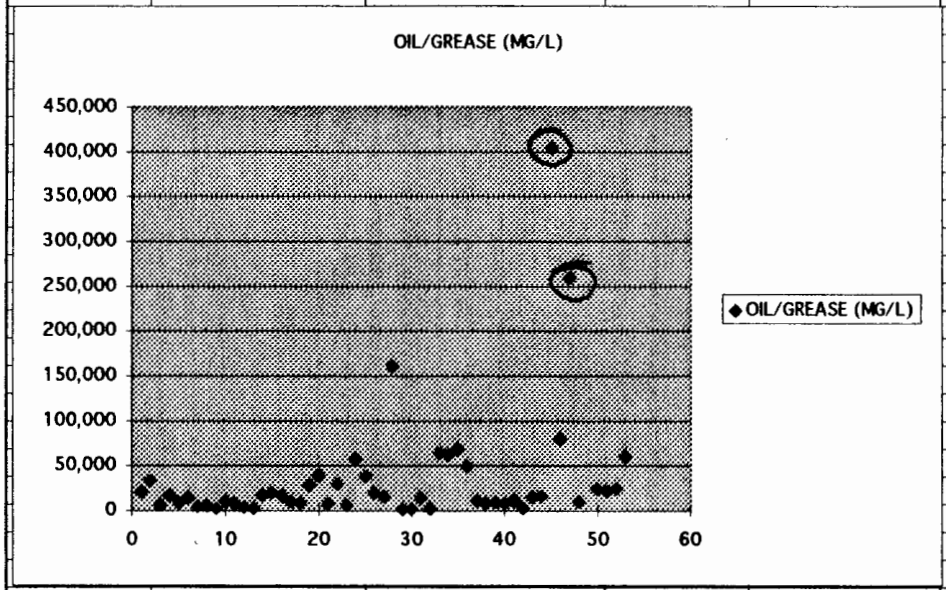
Mean =	21,697
Standard Deviation =	15862.6772
2 x Standard Deviation =	31725.3545
Outliers Deleted Above	53,422



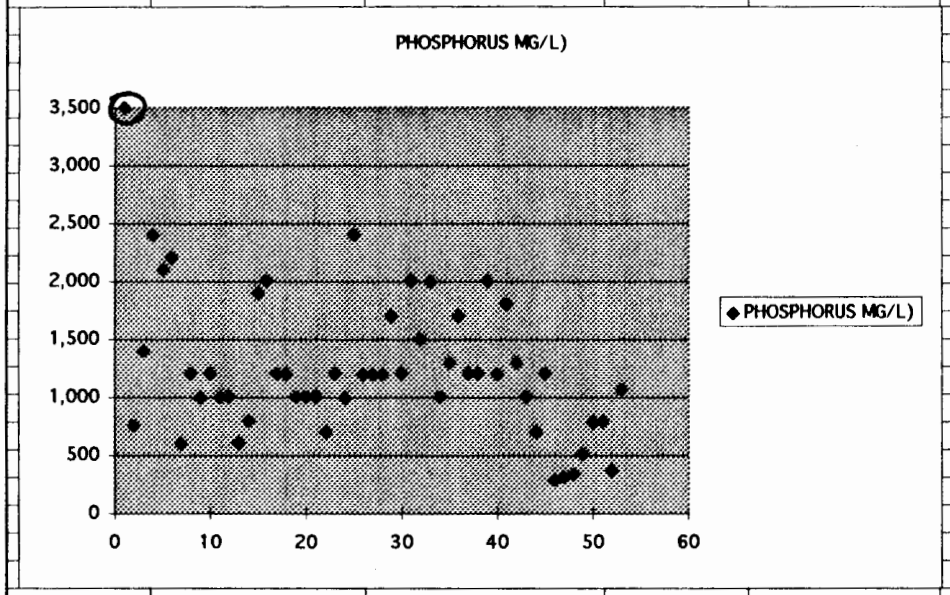
Mean =	13,544
Standard Deviation =	14669.6946
2 x Standard Deviation =	29339.3892
Outliers Deleted Above	42,883



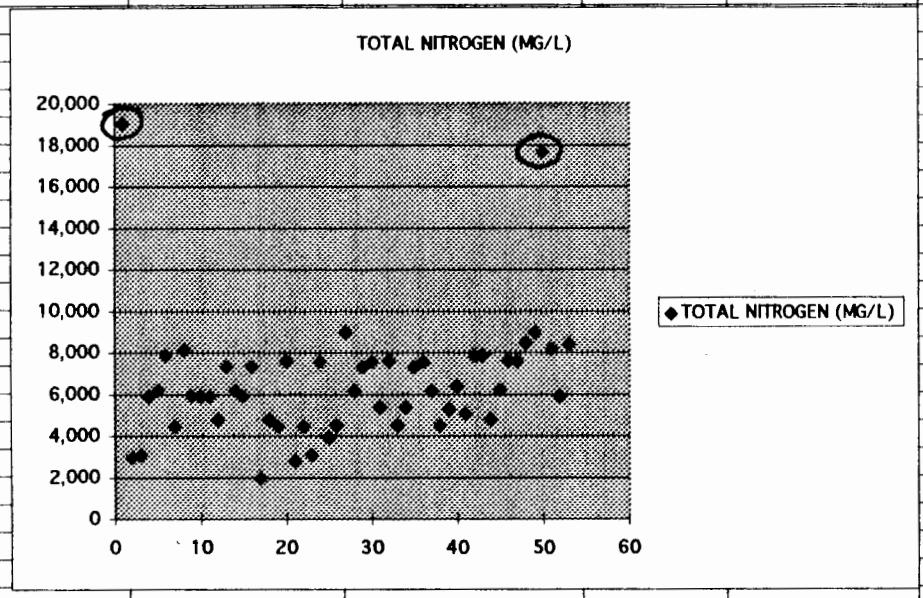
Mean =	53,655
Standard Deviation =	97485.2091
2 x Standard Deviation =	194970.418
Outliers Deleted Above	248,625



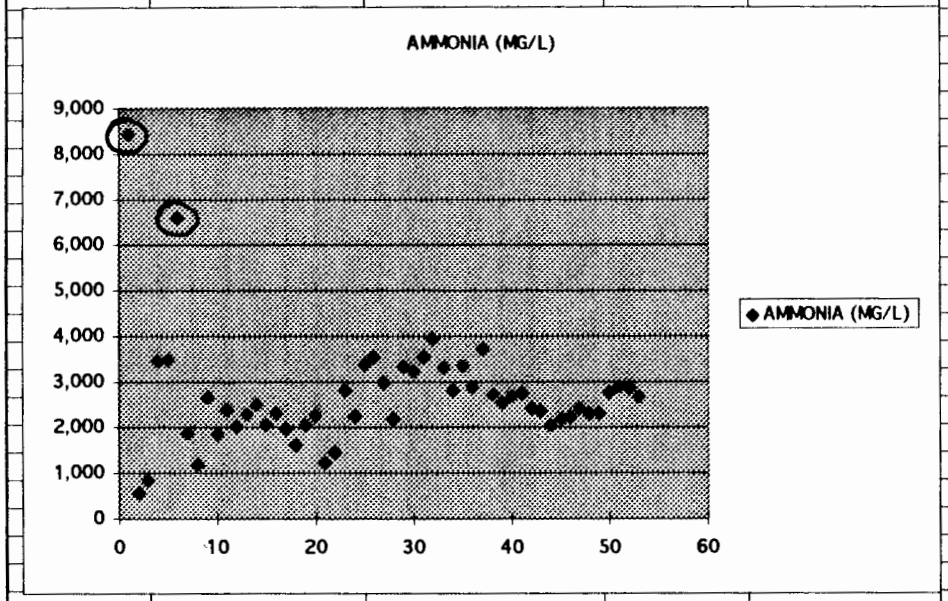
Mean =	35,072
Standard Deviation =	67429.546
2 x Standard Deviation =	134859.092
Outliers Deleted Above	169,931



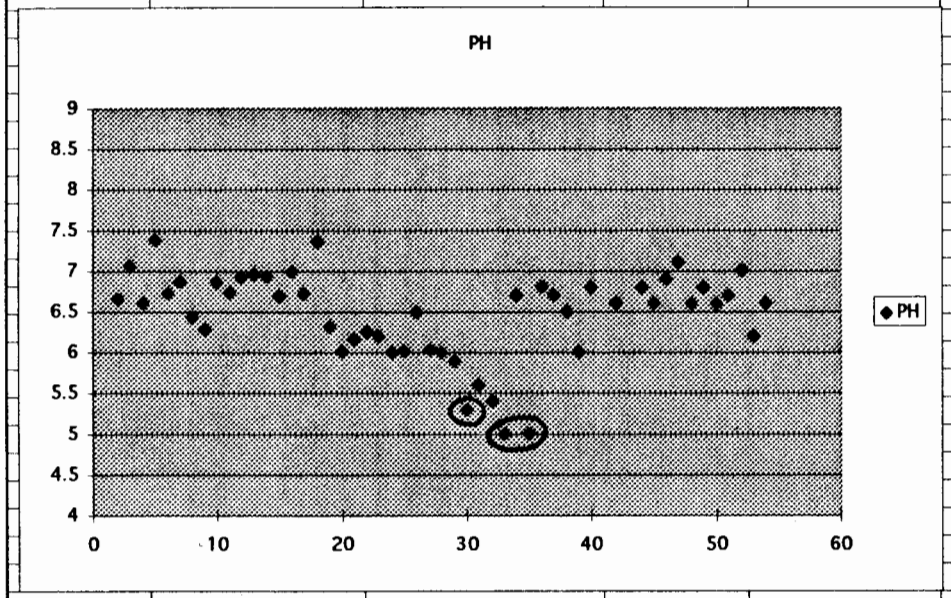
Mean =	1,253
Standard Deviation =	616.24962
2 x Standard Deviation =	1232.49924
Outliers Deleted Above	2,485



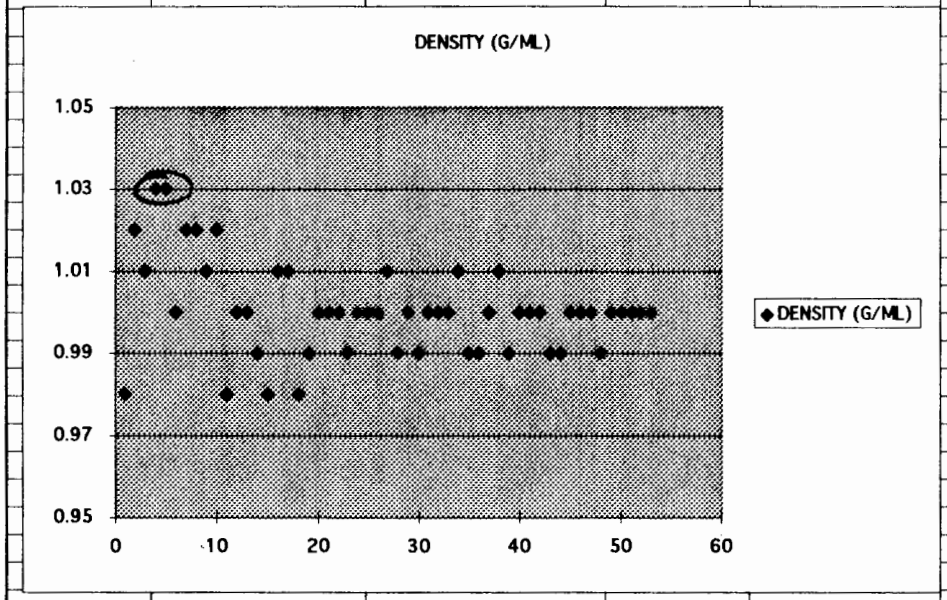
Mean =	6,519
Standard Deviation =	2913.92768
2 x Standard Deviation =	5827.85537
Outliers Deleted Above	12,347



Mean =	2,681
Standard Deviation =	1210.0681
2 x Standard Deviation =	2420.1362
Outliers Deleted Above	5,101



Mean =	6.47
Standard Deviation =	0.5408092
2 x Standard Deviation =	1.0816184
Outliers Deleted Above	7.55
Outliers Deleted Below	5.39



Mean =	1.00
Standard Deviation =	0.01142909
2 x Standard Deviation =	0.02285818
Outliers Deleted Above	1.02
Outliers Deleted Below	0.98

Onshore Storage Tank - Single Stream Analysis
Comparison of New (Proposed) Permit Limits
(Using Transformed Data from Statistical Analysis)

Starkist	Van Camp Seafood	
39-41	48-53	Number of Sample Dates Available for Analysis
93,639	40,958	Total Solids
81,035	36,886	Total Volatile Solids
140,436	56,663	5-Day BOD
65,177	122,187	Oil & Grease
1,804	2,902	Total Phosphorus
10,903	11,109	Total Nitrogen
14,286	4,851	Ammonia
6.13-7.12	5.73-7.46	pH
0.97-1.03	0.98-1.02	Density

GENERAL OBSERVATIONS/QUESTIONS

1. I was dissappointed and then frustrated with the format of the data submitted, even with data supplied later on. It was way too time consuming to cut and paste from a word processing document. I am not exaggerating by much when I say that (on a relative basis) for the roughly 15-20 hours that I have spent actually looking at the data (i.e., statistics, etc.), I probably spent close to 100 hours inputting/formatting the data !

2. If we put the data format requirement (i.e., enforceable with penalties) in the new permit, maybe they will pay attention to our needs. I know we made several requests, am I right?

* 3. Calculations were performed on the onshore storage tank data based on the assumption that we are moving toward a simplified (i.e., single stream) analysis relative to the multiple stream analysis under the old permit.

4. In general, VCS seems to be able to generate during production lower values of the measured parameters, relative to Starkist.

5. Are the different values due to different equipment, different processing/cleaning techniques, or different mix of fish processed?

6. Calculations of the individual waste streams can be done; is it necessary at this point?

7. I have not noticed any significant problems in the site monitoring data I have looked at, however, I have not looked at all of the site monitoring data as yet. Have you seen anything that concerns you?

5-31-97

Pat – Here are the preliminary statistical analyses and calculations of permit limits (see item 3). Please look these over – remember that I have supplied the entire worksheets with the actual calculated values at the bottom of the sheet (ie. transformed converted to untransformed) – row identified ~~with~~ as "Permit Limits" for each parameter.

I'm at sea on an oceanographic survey from June 2-7; I expect to be back in the office on June 9. I'm scheduled to be in the office June 9, 10, and 13 – Monday afternoon or Tuesday morning are open at this point. Let me know your schedule via e-mail.

Allan

OD 93-01									
		Total Volatile	5-Day Biological						
	Total Solids	Solids	Oxygen Demand	Oil and Grease	Total Phosphorus	Total Nitrogen	Ammonia	pH	Density
Month & Year	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(pH units)	(g/mL)
12/10/93	58,300	45,300	73,527	4,950	651	7,000	4,190	6.86	0.95
12/17/93	35,800	20,800	67,247	10,100	502	5,110	3,040	6.5	1
1/21/94	35,400	17,400	57,425	8,110	526	6,380	4,930	6.93	1.03
1/28/94	70,140	52,600	60,958	19,700	1,040	7,850	4,230	6.88	0.99
2/9/94	109,000	89,300	73,236	29,800	1,250	7,290	3,690	6.5	0.98
2/17/94	50,600	34,300	54,610	14,600	915	7,480	4,140	6.73	1.01
3/09/94	50,200	29,200	65,167	4,500	897	1,750	283	6.98	0.97
3/24/94	69,900	46,800	112,261	20,100	3,210	14,300	9,700	7.13	0.96
4/26/94	46,300	26,200	77,425	6,100	985	2,530	5,400	6.85	1.01
5/3/94	51,300	32,900	71,905	7,660	798	5,630	3,960	6.74	0.99
5/23/94	42,100	25,700	58,327	13,669	655	5,120	3,510	6.84	1
5/30/94	73,600	58,100	125,375	22,352	1,072	6,900	4,410	6.18	0.97
6/15/94	30,600	12,800	67,282	6,535	608	4,940	3,420	6.46	1.02
6/22/94	39,100	28,900	38,781	23,013	734	4,600	2,290	6.23	1
7/20/94	46,600	27,000	103,767	26,415	1,740	7,090	5,200	6.73	0.99
7/27/94	36,700	19,600	131,250	14,979	674	5,390	4,470	6.68	1.01
8/16/94	150,000	131,000	96,833	51,903	2,530	5,330	1,910	6.52	0.94
8/25/94	48,600	35,800	103,072	76,256	1,040	3,180	282	5.47	0.97
9/20/94	55,100	38,500	95,483	32,696	1,270	5,190	4,580	6.96	0.98
9/27/94	37,100	24,200	102,428	13,433	618	5,120	3,990	6.62	0.99
10/1/94	54,200	35,300	95,567	15,008	620	5,540	3,060	6.35	1
10/7/94	48,200	26,400	96,644	14,123	512	5,040	3,900	6.52	0.99
11/17/94	49,700	33,300	66,709	18,779	950	8,290	4,300	6.71	1.01
11/23/94	36,700	21,200	66,366	16,179	662	6,150	4,220	6.63	1.01
12/14/94	88,900	63,200	99,026	30,084	1,180	5,060	3,390	6.1	1.03
12/21/94	137,000	113,000	100,911	61,901	1,110	2,370	295	5.4	1
1/27/95	60,800	44,000	74,889	25,340	789	4,100	4,800	6.4	1.01
1/31/95	64000	44700	82,339	22,721	1110	6660	5160	6.9	1.01
2/25/95	64300	49400	95139	56793	997	6660	5170	6.8	0.99
3/2/95	56300	40700	101978	50204	612	3940	3330	6.44	1.01
3-03-95	53,600	38,600	106,856	39,360	933	4500	3650	6.3	1
3-11-95	117,000	84,100	94,628	36,286	3830	4370	3720	6.2	1.01
4-07-95	61,100	39,300	93,505	40,968	3100	2820	2290	6.4	1
4-13-95	27,300	20,700	50,893	17,648	361	1790	1560	6.6	0.99
5-03-95	79,300	60,300	136,750	31,841	1400	6390	434	6.3	1
5-10-95	46,400	33,600	111,611	16,791	666	4820	4050	6.6	1
6/28/95	41500	29300	63726	18098	502	2870	2310	6.49	1.01
7/5/95	53200	38800	113300	13526	791	5570	3870	6.75	1.01
7/6/95	62600	46900	95850	35005	940	9640	5230	6.76	1
7/26/95	65700	45000	67268	18619	1100	5920	4470	6.73	1
08-01-95	60000	36800	77311	13579	817	6350	3990	6.71	1
8/9/95	32500	18600	64220	9103	525	3490	2990	6.56	0.99

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Solids	Total Solids	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Solids Value	Total Solids Value	Squared	Squared
1	58,300	10.97335737	-4640	-0.126568828	21529600	0.01601967
2	35,800	10.48570317	17860	0.361085372	318979600	0.13038265
3	35,400	10.4744671	18260	0.372321445	333427600	0.13862326
4	70,140	11.15824852	-16480	-0.311459979	271590400	0.09700732
5	109,000	11.59910316	-55340	-0.752314617	3062515600	0.56597728
6	50,600	10.83170686	3060	0.015081689	9363600	0.00022746
7	50,200	10.82377031	3460	0.023018239	11971600	0.00052984
8	69,900	11.15482093	-16240	-0.308032384	263737600	0.09488395
9	46,300	10.74289724	7360	0.103891304	54169600	0.0107934
10	51,300	10.84544603	2360	0.001342513	5569600	1.8023E-06
11	42,100	10.64780302	11560	0.198985525	133633600	0.03959524
12	73,600	11.2064003	-19940	-0.35961176	397603600	0.12932062
13	30,600	10.32875529	23060	0.518033257	531763600	0.26835845
14	39,100	10.57387775	14560	0.272910799	211993600	0.0744803
15	46,600	10.74935582	7060	0.097432724	49843600	0.00949314
16	36,700	10.51053203	16960	0.33625651	287641600	0.11306844
17	48,600	10.79137881	5060	0.055409735	25603600	0.00307024
18	55,100	10.916905	-1440	-0.070116451	2073600	0.00491632
19	37,100	10.52137225	16560	0.325416296	274233600	0.10589577
20	54,200	10.90043619	-540	-0.053647643	291600	0.00287807
21	48,200	10.7831143	5460	0.063674244	29811600	0.00405441
22	49,700	10.81376021	3960	0.033028332	15681600	0.00109087
23	36,700	10.51053203	16960	0.33625651	287641600	0.11306844
24	88,900	11.39526742	-35240	-0.548478877	1241857600	0.30082908
25	60,800	11.01534507	-7140	-0.168556523	50979600	0.0284113
26	64,000	11.06663836	-10340	-0.219849818	106915600	0.04833394
27	64,300	11.07131491	-10640	-0.224526366	113209600	0.05041209
28	56,300	10.93844981	-2640	-0.09166127	6969600	0.00840179
29	53,600	10.88930435	60	-0.042515803	3600	0.00180759
30	61,100	11.02026715	-7440	-0.173478601	55353600	0.03009482
31	27,300	10.21464198	26360	0.632146563	694849600	0.39960928
32	79,300	11.28099341	-25640	-0.434204863	657409600	0.18853386
33	46,400	10.74505474	7260	0.101733806	52707600	0.01034977
34	41,500	10.63344871	12160	0.213339838	147865600	0.04551389
35	53,200	10.88181368	460	-0.035025131	211600	0.00122676
36	62,600	11.04452056	-8940	-0.197732013	79923600	0.03909795
37	65,700	11.0928542	-12040	-0.24606566	144961600	0.06054831
38	60,000	11.00209984	-6340	-0.155311297	40195600	0.0241216
39	32,500	10.38899537	21160	0.457793176	447745600	0.20957459
Column Sum	2,092,740	423.0247532			10441831200	3.37060355
Column Sum/N	53,660	10.84678854				
Column Sum/(N-1)					274785031.6	0.08870009
SQRT(Column Sum/(N-1))					16576.64114	0.29782561
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	53660	10.84678854	51368.91719	
		Std Dev	16576.64114	0.297825609	1.346926876	
		Permit Limit	87078.50854	11.44720497	93639.25565	
		Table 3-2 Constant = 2.016				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Vol. Solids	Total Vol. Solids	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Vol. Solids Value	Total Vol. Solids Val	Squared	Squared
1	45,300	10.72106231	-7410	-0.264921535	54908100	0.07018342
2	20,800	9.942708266	17090	0.51343251	292068100	0.26361294
3	17,400	9.764225485	20490	0.691915291	419840100	0.47874677
4	52,600	10.8704714	-14710	-0.414330623	216384100	0.17166986
5	89,300	11.39975677	-51410	-0.943615991	2642988100	0.89041114
6	34,300	10.44290063	3590	0.013240143	12888100	0.0001753
7	29,200	10.28192399	8690	0.174216788	75516100	0.03035149
8	46,800	10.75363848	-8910	-0.297497706	79388100	0.08850488
9	26,200	10.17351469	11690	0.282626086	136656100	0.0798775
10	32,900	10.40122794	4990	0.054912839	24900100	0.00301542
11	25,700	10.15424627	12190	0.301894505	148596100	0.09114029
12	58,100	10.96992094	-20210	-0.513780167	408444100	0.26397006
13	12,800	9.45720045	25090	0.998940326	629508100	0.99788178
14	28,900	10.27159687	8990	0.184543902	80820100	0.03405645
15	27,000	10.20359214	10890	0.252548631	118592100	0.06378081
16	19,600	9.883284845	18290	0.572855931	334524100	0.32816392
17	35,800	10.48570317	2090	-0.029562396	4368100	0.00087394
18	38,500	10.55841352	-610	-0.102272744	372100	0.01045971
19	24,200	10.09410791	13690	0.362032864	187416100	0.13106779
20	35,300	10.47163824	2590	-0.015497467	6708100	0.00024017
21	26,400	10.18111929	11,490	0.275021487	132020100	0.07563682
22	33,300	10.41331268	4,590	0.0428281	21068100	0.00183425
23	21,200	9.961756461	16,690	0.494384315	278556100	0.24441585
24	63,200	11.05405958	-25,310	-0.597918804	640596100	0.3575069
25	44,000	10.69194491	-6,110	-0.235804137	37332100	0.05560359
26	44700	10.70772878	-6,810	-0.251588005	46376100	0.06329652
27	49400	10.8077057	-11,510	-0.351564927	132480100	0.1235979
28	40700	10.61398337	-2,810	-0.157842595	7896100	0.02491428
29	38,600	10.56100756	-710	-0.104866779	504100	0.01099704
30	84,100	11.33976185	-46,210	-0.88362107	2135364100	0.7807862
31	39,300	10.5789798	-1,410	-0.122839022	1988100	0.01508943
32	20,700	9.937888979	17,190	0.518251797	295496100	0.26858492
33	60,300	11.00708738	-22,410	-0.550946607	502208100	0.30354216
34	33,600	10.42228135	4,290	0.03385943	18404100	0.00114646
35	29300	10.2853428	8,590	0.170797981	73788100	0.02917195
36	38800	10.56617553	-910	-0.11003475	828100	0.01210765
37	46900	10.75577295	-9,010	-0.299632178	81180100	0.08977944
38	45000	10.71441777	-7,110	-0.258276993	50552100	0.066707
39	36800	10.51325312	1,090	-0.057112348	1188100	0.00326182
40	18600	9.83091686	19,290	0.625223916	372104100	0.39090495
Column Sum	1,515,600	418.245631			10704816000	6.91706879
Column Sum/N	37,890	10.45614078				
Column Sum/(N-1)					274482461.5	0.17736074
SQRT(Column Sum/(N-1))					16567.51223	0.42114218
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	37,890	10.45614078	34757.15663	
		Std Dev	16567.51223	0.421142183	1.523700907	
		Permit Limit	71190.69959	11.30263656	81035.01009	
		Table 3-2 Constant = 2.010				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	5-Day BOD	5-Day BOD	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	5-Day BOD Value	5-Day BOD Value	Squared	Squared
1	73,527	11.20540796	10743.60976	0.101771847	115425150.6	0.01035751
2	67,247	11.11612769	17023.60976	0.191052125	289803289.1	0.03650091
3	57,425	10.95823503	26845.60976	0.348944784	720686763.2	0.12176246
4	60,958	11.01794038	23312.60976	0.28923943	543477773.6	0.08365945
5	73,236	11.20144238	11034.60976	0.105737429	121762612.5	0.0111804
6	54,610	10.9079723	29660.60976	0.399207516	879751771.1	0.15936664
7	65,167	11.08470848	19103.60976	0.222471327	364947905.7	0.04949349
8	112,261	11.6285818	-27990.39024	-0.321401985	783461946	0.10329924
9	77,425	11.257065	6845.609756	0.050114806	46862372.93	0.00251149
10	71,905	11.18310108	12365.60976	0.124078729	152908304.6	0.01539553
11	58,327	10.97382039	25943.60976	0.333359424	673070887.2	0.11112851
12	125,375	11.73906453	-41104.39024	-0.431884714	1689570897	0.18652441
13	67,282	11.11664802	16988.60976	0.190531791	288612861.4	0.03630236
14	38,781	10.56568571	45489.60976	0.741494096	2069304596	0.54981349
15	103,767	11.54990328	-19496.39024	-0.242723469	380109232.5	0.05891468
16	131,250	11.78485918	-46979.39024	-0.477679369	2207063108	0.22817758
17	96,833	11.48074312	-12562.39024	-0.173563313	157813648.6	0.03012422
18	103,072	11.54318305	-18801.39024	-0.236003241	353492275.1	0.05569753
19	95,483	11.4667035	-11212.39024	-0.159523689	125717695	0.02544781
20	102,428	11.53691539	-18157.39024	-0.22973558	329690820.5	0.05277844
21	95,567	11.46758285	-11296.39024	-0.16040304	127608432.5	0.02572914
22	96,644	11.4787894	-12373.39024	-0.171609592	153100786.1	0.02944985
23	66,709	11.10809516	17561.60976	0.199084656	308410137.2	0.0396347
24	66,366	11.10294016	17904.60976	0.204239655	320575050.5	0.04171384
25	99,026	11.50313772	-14755.39024	-0.19595791	217721541.2	0.0383995
26	100,911	11.52199422	-16640.39024	-0.214814408	276902587.5	0.04614523
27	74,889	11.2237623	9381.609756	0.083417515	88014601.62	0.00695848
28	82,339	11.31860015	1931.609756	-0.011420339	3731116.25	0.00013042
29	95139	11.46309426	-10868.39024	-0.155914448	118121906.5	0.02430932
30	101978	11.53251238	-17707.39024	-0.225332571	313551669.2	0.05077477
31	106,856	11.57923741	-22585.39024	-0.272057601	510099852.5	0.07401534
32	94,628	11.45770869	-10357.39024	-0.150528883	107275532.7	0.02265894
33	93,505	11.44577019	-9234.390244	-0.138590378	85273963.18	0.01920729
34	50,893	10.83748067	33377.60976	0.469699143	1114064833	0.22061728
35	111,611	11.62277489	-27340.39024	-0.315595079	747496938.7	0.09960025
36	63726	11.06234792	20544.60976	0.24483189	422080990	0.05994265
37	113300	11.63779445	-29029.39024	-0.330614636	842705497.9	0.10930604
38	95850	11.47053975	-11579.39024	-0.163359937	134082278.4	0.02668647
39	67268	11.11643992	17002.60976	0.190739892	289088738.5	0.03638171
40	77311	11.25559153	6959.609756	0.051588284	48436167.96	0.00266135
41	64220	11.07006997	20050.60976	0.237109844	402026951.6	0.05622108
Column Sum	3,455,095	463.5943723			18923903484	2.95897982
Column Sum/N	84,271	11.30717981				
Column Sum/(N-1)					473097587.1	0.0739745
SQRT(Column Sum/(N-1))					21750.80658	0.27198253
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	84,271	11.30717981	81404.00981	
		Std Dev	21750.80658	0.271982528	1.312564068	
		Permit Limit	127880.977	11.85250478	140435.6674	
		Table 3-2 Constant = 2.005				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Oil & Grease	Oil & Grease	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Oil & Grease Value	Oil & Grease Value	Squared	Squared
1	4,950	8.507142856	16816.75	1.29748486	282803080.6	1.68346696
2	10,100	9.220290703	11666.75	0.584337013	136113055.6	0.34144974
3	8,110	9.000853147	13656.75	0.803774569	186506820.6	0.64605356
4	19,700	9.888373915	2066.75	-0.083746199	4271455.563	0.00701343
5	29,800	10.30226367	-8033.25	-0.497635957	64533105.56	0.24764155
6	14,600	9.588776808	7166.75	0.215850908	51362305.56	0.04659161
7	4,500	8.411832676	17266.75	1.39279504	298140655.6	1.93987802
8	20,100	9.908475094	1666.75	-0.103847378	2778055.563	0.01078428
9	6,100	8.71604405	15666.75	1.088583666	245447055.6	1.1850144
10	7,660	8.943767263	14106.75	0.860860453	199000395.6	0.74108072
11	13,669	9.522885774	8097.75	0.281741942	65573555.06	0.07937852
12	22,352	10.01467108	-585.25	-0.210043366	342517.5625	0.04411822
13	6,535	8.784927626	15231.75	1.01970009	232006208.1	1.03978827
14	23,013	10.04381455	-1246.25	-0.239186837	1553139.063	0.05721034
15	26,415	10.18168731	-4648.25	-0.377059594	21606228.06	0.14217394
16	14,979	9.614404499	6787.75	0.190223217	46073550.06	0.03618487
17	51,903	10.85713187	-30136.25	-1.052504155	908193564.1	1.107765
18	32,696	10.39500803	-10929.25	-0.590380309	119448505.6	0.34854891
19	13,433	9.505469645	8333.75	0.299158071	69451389.06	0.08949555
20	15,008	9.616338671	6758.75	0.188289045	45680701.56	0.03545276
21	14,123	9.555559953	7643.75	0.249067763	58426914.06	0.06203475
22	18,779	9.840494503	2987.75	-0.035866787	8926650.063	0.00128643
23	16,179	9.691469384	5587.75	0.113158332	31222950.06	0.01280481
24	30,084	10.31174875	-8317.25	-0.507121032	69176647.56	0.25717174
25	25,340	10.14013945	-3573.25	-0.335511738	12768115.56	0.11256813
26	22,721	10.03104489	-954.25	-0.22641717	910593.0625	0.05126473
27	56793	10.94716836	-35026.25	-1.142540642	1226838189	1.30539912
28	50204	10.82384998	-28437.25	-1.019222268	808677187.6	1.03881403
29	39,360	10.58050535	-17593.25	-0.775877635	309522445.6	0.60198611
30	36,286	10.49918727	-14519.25	-0.694559555	210808620.6	0.48241298
31	40,968	10.62054655	-19201.25	-0.815918837	368688001.6	0.66572355
32	17,648	9.778377741	4118.75	0.026249974	16964101.56	0.00068906
33	31,841	10.36851005	-10074.25	-0.563882331	101490513.1	0.31796328
34	16,791	9.728598308	4975.75	0.076029408	24758088.06	0.00578047
35	18098	9.803556714	3668.75	0.001071002	13459726.56	1.147E-06
36	13526	9.512369038	8240.75	0.292258678	67909960.56	0.08541513
37	35005	10.46324619	-13238.25	-0.658618472	175251263.1	0.43377829
38	18619	9.831937844	3147.75	-0.027310128	9908330.063	0.00074584
39	13579	9.516279761	8187.75	0.288347955	67039250.06	0.08314454
40	9103	9.116359309	12663.75	0.688268407	160370564.1	0.4737134
Column Sum	870,670	392.1851086			6724003456	15.8217882
Column Sum/N	21,767	9.804627716				
Column Sum/(N-1)					172410345	0.40568688
SQRT(Column Sum/(N-1))					13130.51199	0.63693554
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	21,767	9.804627716	18117.39338	
		Std Dev	13130.51199	0.636935536	1.890678077	
		Permit Limit	48159.07909	11.08486814	65177.40526	
		Table 3-2 Constant = 2.010				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Phos	Total Phos	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Phos Value	Total Phos Value	Squared	Squared
1	651	6.478509642	248.5384615	0.247821143	61771.36686	0.06141532
2	502	6.21860012	397.5384615	0.507730665	158036.8284	0.25779043
3	526	6.265301213	373.5384615	0.461029572	139530.9822	0.21254827
4	1,040	6.946975992	-140.4615385	-0.220645207	19729.44379	0.04868431
5	1,250	7.13089883	-350.4615385	-0.404568045	122823.2899	0.1636753
6	915	6.818924065	-15.46153846	-0.09259328	239.0591716	0.00857352
7	897	6.799055862	2.538461538	-0.072725077	6.443786982	0.00528894
8	985	6.892641641	-85.46153846	-0.166310856	7303.674556	0.0276593
9	798	6.682108597	101.5384615	0.044222187	10310.05917	0.0019556
10	655	6.484635236	244.5384615	0.241695549	59799.05917	0.05841674
11	1,072	6.977281342	-172.4615385	-0.250950557	29742.98225	0.06297618
12	608	6.410174882	291.5384615	0.316155903	84994.67456	0.09995455
13	734	6.598509029	165.5384615	0.127821756	27402.98225	0.0163384
14	1,740	7.461640392	-840.4615385	-0.735309607	706375.5976	0.54068022
15	674	6.513230111	225.5384615	0.213100674	50867.59763	0.0454119
16	2,530	7.835974582	-1630.461538	-1.109643797	2658404.828	1.23130936
17	1,040	6.946975992	-140.4615385	-0.220645207	19729.44379	0.04868431
18	1,270	7.146772179	-370.4615385	-0.420441395	137241.7515	0.17677097
19	618	6.426488457	281.5384615	0.299842327	79263.90533	0.08990542
20	620	6.429719478	279.5384615	0.296611307	78141.75148	0.08797827
21	512	6.238324625	387.5384615	0.48800616	150186.0592	0.23815001
22	950	6.856461985	-50.46153846	-0.1301312	2546.366864	0.01693413
23	662	6.495265556	237.5384615	0.231065229	56424.52071	0.05339114
24	1,180	7.073269717	-280.4615385	-0.346938933	78658.67456	0.12036662
25	1,110	7.012115294	-210.4615385	-0.285784509	44294.05917	0.08167279
26	789	6.670766321	110.5384615	0.055564464	12218.75148	0.00308741
27	1,110	7.012115294	-210.4615385	-0.285784509	44294.05917	0.08167279
28	997	6.90475077	-97.46153846	-0.178419985	9498.751479	0.03183369
29	612	6.416732283	287.5384615	0.309598502	82678.36686	0.09585123
30	933	6.838405201	-33.46153846	-0.112074416	1119.674556	0.01256067
31	361	5.888877958	538.5384615	0.837452827	290023.6746	0.70132724
32	1,400	7.244227516	-500.4615385	-0.517896731	250461.7515	0.26821702
33	666	6.501289671	233.5384615	0.225041114	54540.21302	0.0506435
34	502	6.21860012	397.5384615	0.507730665	158036.8284	0.25779043
35	791	6.673297968	108.5384615	0.053032817	11780.59763	0.00281248
36	940	6.845879875	-40.46153846	-0.11954909	1637.136095	0.01429199
37	1,100	7.003065459	-200.4615385	-0.276734674	40184.8284	0.07658208
38	817	6.705639095	82.53846154	0.02069169	6812.597633	0.00042815
39	525	6.263398263	374.5384615	0.462932522	140279.0592	0.21430652
Column Sum	35,082	262.3269006			5887391.692	5.56793718
Column Sum/N	900	6.726330785				
Column Sum/(N-1)					154931.3603	0.14652466
SQRT(Column Sum/(N-1))					393.6132116	0.3827854
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	900	6.726330785	834.081221	
		Std Dev	393.6132116	0.3827854	1.466363315	
		Permit Limit	1693.062696	7.498026152	1804.477133	
		Table 3-2 Constant = 2.016				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Nitrogen	Total Nitrogen	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Nitrogen Value	Total Nitrogen Valu	Squared	Squared
1	7,000	8.853665428	-1726.341463	-0.350639201	2980254.848	0.12294785
2	5,110	8.538954683	163.6585366	-0.035928456	26784.1166	0.00129085
3	6,380	8.760923376	-1106.341463	-0.257897149	1223991.434	0.06651094
4	7,850	8.968268811	-2576.341463	-0.465242584	6637535.336	0.21645066
5	7,290	8.894258825	-2016.341463	-0.391232598	4065632.897	0.15306295
6	7,480	8.919988071	-2206.341463	-0.416961844	4867942.653	0.17385718
7	1,750	7.467371067	3523.658537	1.03565516	12416169.48	1.07258161
8	2,530	7.835974582	2743.658537	0.667051645	7527662.165	0.4449579
9	5,630	8.635864721	-356.3414634	-0.132838494	126979.2385	0.01764607
10	5,120	8.540909718	153.6585366	-0.037883491	23610.94587	0.00143516
11	6,900	8.839276691	-1626.341463	-0.336250464	2644986.556	0.11306437
12	4,940	8.50512061	333.6585366	-0.002094383	111328.019	4.3864E-06
13	4,600	8.433811582	673.6585366	0.069214645	453815.8239	0.00479067
14	7,090	8.86644062	-1816.341463	-0.363414392	3299096.312	0.13207002
15	5,390	8.592300664	-116.3414634	-0.089274437	13535.33611	0.00796993
16	5,330	8.581106517	-56.34146341	-0.07808029	3174.3605	0.00609653
17	3,180	8.064636476	2093.658537	0.438389751	4383406.068	0.19218557
18	5,190	8.554488976	83.65853659	-0.051462749	6998.750744	0.00264841
19	5,120	8.540909718	153.6585366	-0.037883491	23610.94587	0.00143516
20	5,540	8.61974978	-266.3414634	-0.116723553	70937.77513	0.01362439
21	5,040	8.525161361	233.6585366	-0.022135134	54596.31172	0.00048996
22	8,290	9.022805248	-3016.341463	-0.519779021	9098315.824	0.27017023
23	6,150	8.724207361	-876	-0.221181134	767974.3605	0.04892109
24	5,060	8.529121762	213.6585366	-0.026095535	45649.97026	0.00068098
25	2,370	7.770645234	2903.658537	0.732380993	8431232.897	0.53638192
26	4,100	8.318742253	1173.658537	0.184283974	1377474.36	0.03396058
27	6660	8.803874764	-1386.341463	-0.300848536	1921942.653	0.09050984
28	6660	8.803874764	-1386.341463	-0.300848536	1921942.653	0.09050984
29	3940	8.278936002	1333.658537	0.224090225	1778645.092	0.05021643
30	4500	8.411832676	773.6585366	0.091193551	598547.5312	0.00831626
31	4370	8.382518288	903.6585366	0.120507939	816598.7507	0.01452216
32	2820	7.944492164	2453.658537	0.558534063	6020440.214	0.3119603
33	1790	7.489970899	3483.658537	1.013055328	12135876.8	1.0262811
34	6390	8.762489547	-1116.341463	-0.25946332	1246218.263	0.06732121
35	4820	8.480529207	453.6585366	0.02249702	205806.0678	0.00050612
36	2870	7.962067309	2403.658537	0.540958918	5777574.36	0.29263655
37	5570	8.625150333	-296.3414634	-0.122124106	87818.26294	0.0149143
38	9640	9.173676388	-4366.341463	-0.670650161	19064937.78	0.44977164
39	5920	8.686091728	-646.3414634	-0.183065501	417757.2873	0.03351298
40	6350	8.756210092	-1076.341463	-0.253183865	1158510.946	0.06410207
41	3490	8.157657015	1783.658537	0.345369212	3181437.775	0.11927989
Column Sum	216,220	348.6240753			127016751.2	6.26959606
Column Sum/N	5,274	8.503026227				
Column Sum/(N-1)					3175418.78	0.1567399
SQRT(Column Sum/(N-1))					1781.970477	0.3959039
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	5,274	8.503026227	4929.664574	
		Std Dev	1781.970477	0.395903905	1.485726539	
		Permit Limit	8846.509343	9.296813556	10903.22129	
		Table 3-2 Constant = 2.005				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Ammonia	Ammonia	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Ammonia Value	Ammonia Value	Squared	Squared
1	4,190	8.340456013	-675.0243902	-0.358564599	455657.9274	0.12856857
2	3,040	8.019612794	474.9756098	-0.037721381	225601.8299	0.0014229
3	4,930	8.503094267	-1415.02439	-0.521202853	2002294.025	0.27165241
4	4,230	8.349957272	-715.0243902	-0.368065858	511259.8786	0.13547248
5	3,690	8.213381737	-175.0243902	-0.231490323	30633.53718	0.05358777
6	4,140	8.328451067	-625.0243902	-0.346559653	390655.4884	0.12010359
7	283	5.645446898	3231.97561	2.336444516	10445666.34	5.45897298
8	5,400	8.594154233	-1885.02439	-0.612262819	3553316.952	0.37486576
9	3,960	8.283999304	-445.0243902	-0.302107891	198046.7079	0.09126918
10	3,510	8.163371316	4.975609756	-0.181479903	24.75669244	0.03293496
11	4,410	8.391629968	-895.0243902	-0.409738555	801068.6591	0.16788568
12	3,420	8.13739583	94.97560976	-0.155504416	9020.366449	0.02418162
13	2,290	7.736307097	1224.97561	0.245584317	1500565.244	0.06031166
14	5,200	8.556413905	-1685.02439	-0.574522491	2839307.196	0.33007609
15	4,470	8.405143688	-955.0243902	-0.423252274	912071.586	0.17914249
16	1,910	7.554858521	1604.97561	0.427032893	2575946.708	0.18235709
17	282	5.641907071	3232.97561	2.339984343	10452131.29	5.47552672
18	4,580	8.429454277	-1065.02439	-0.447562863	1134276.952	0.20031252
19	3,990	8.29154651	-475.0243902	-0.309655096	225648.1713	0.09588628
20	3,060	8.026170195	454.9756098	-0.044278781	207002.8055	0.00196061
21	3,900	8.268731832	-385.0243902	-0.286840418	148243.7811	0.08227743
22	4,300	8.366370302	-785.0243902	-0.384478888	616263.2933	0.14782402
23	4,220	8.347590407	-705.0243902	-0.365698993	497059.3908	0.13373575
24	3,390	8.1285852	124.9756098	-0.146693787	15618.90303	0.02151907
25	295	5.686975356	3219.97561	2.294916057	10368242.93	5.26663971
26	4,800	8.476371197	-1285.02439	-0.494479783	1651287.684	0.24451026
27	5160	8.548691858	-1645.02439	-0.566800445	2706105.244	0.32126274
28	5170	8.550627968	-1655.02439	-0.568736554	2739105.732	0.32346127
29	3330	8.110727583	184.9756098	-0.128836169	34215.9762	0.01659876
30	3650	8.202482447	-135.0243902	-0.220591033	18231.58596	0.0486604
31	3720	8.221478947	-205.0243902	-0.239587534	42035.00059	0.05740219
32	2290	7.736307097	1224.97561	0.245584317	1500565.244	0.06031166
33	1560	7.3524411	1954.97561	0.629450313	3821929.635	0.3962077
34	434	6.073044534	3080.97561	1.90884688	9492410.708	3.64369641
35	4050	8.30647216	-535.0243902	-0.324580746	286251.0982	0.10535266
36	2310	7.745002804	1204.97561	0.23688861	1451966.22	0.05611621
37	3870	8.261009786	-355.0243902	-0.279118372	126042.3177	0.07790707
38	5230	8.562166557	-1715.02439	-0.580275143	2941308.659	0.33671924
39	4470	8.405143688	-955.0243902	-0.423252274	912071.586	0.17914249
40	3990	8.29154651	-475.0243902	-0.309655096	225648.1713	0.09588628
41	2990	8.003028666	524.9756098	-0.021137253	275599.3908	0.00044678
Column Sum	144,114	327.257548			78340398.98	25.0021694
Column Sum/N	3,515	7.981891414				
Column Sum/(N-1)					1958509.974	0.62505424
SQRT(Column Sum/(N-1))					1399.467747	0.79060372
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	3,515	7.981891414	2927.462874	
		Std Dev	1399.467747	0.790603716	2.204727054	
		Permit Limit	6320.908442	9.567051865	14286.23642	
		Table 3-2 Constant = 2.005				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	pH	pH	Minus Untransformed	Minus Transformed	Column D	Column E
	(pH Units)	(pH Units)	pH Value	pH Value	Squared	Squared
1	6.86	1.925707442	-0.24575	-0.03715347	0.060393063	0.00138038
2	6.5	1.871802177	0.11425	0.016751795	0.013053063	0.00028062
3	6.93	1.935859813	-0.31575	-0.047305841	0.099698062	0.00223784
4	6.88	1.928618652	-0.26575	-0.04006468	0.070623062	0.00160518
5	6.5	1.871802177	0.11425	0.016751795	0.013053063	0.00028062
6	6.73	1.906575144	-0.11575	-0.018021172	0.013398063	0.00032476
7	6.98	1.943048917	-0.36575	-0.054494945	0.133773063	0.0029697
8	7.13	1.964311234	-0.51575	-0.075757262	0.265998063	0.00573916
9	6.85	1.924248652	-0.23575	-0.03569468	0.055578062	0.00127411
10	6.74	1.908059925	-0.12575	-0.019505953	0.015813063	0.00038048
11	6.84	1.922787732	-0.22575	-0.03423376	0.050963062	0.00117195
12	6.18	1.821318271	0.43425	0.0672357	0.188573063	0.00452064
13	6.46	1.865629318	0.15425	0.022924654	0.023793063	0.00052554
14	6.23	1.829376333	0.38425	0.059177639	0.147648063	0.00350199
15	6.73	1.906575144	-0.11575	-0.018021172	0.013398063	0.00032476
16	6.68	1.899117988	-0.06575	-0.010564016	0.004323062	0.0001116
17	6.52	1.874874376	0.09425	0.013679596	0.008883063	0.00018713
18	6.96	1.940179474	-0.34575	-0.051625502	0.119543063	0.00266519
19	6.62	1.89009537	-0.00575	-0.001541398	3.30625E-05	2.3759E-06
20	6.35	1.848454813	0.26425	0.040099159	0.069828063	0.00160794
21	6.52	1.874874376	0.09425	0.013679596	0.008883063	0.00018713
22	6.71	1.903598951	-0.09575	-0.015044979	0.009168062	0.00022635
23	6.63	1.891604804	-0.01575	-0.003050832	0.000248062	9.3076E-06
24	6.1	1.808288771	0.51425	0.080265201	0.264453063	0.0064425
25	6.4	1.85629799	0.21425	0.032255982	0.045903062	0.00104045
26	6.9	1.931521412	-0.28575	-0.04296744	0.081653063	0.0018462
27	6.8	1.916922612	-0.18575	-0.02836864	0.034503062	0.00080478
28	6.44	1.86252854	0.17425	0.026025432	0.030363062	0.00067732
29	6.3	1.840549633	0.31425	0.048004339	0.098753063	0.00230442
30	6.2	1.824549292	0.41425	0.06400468	0.171603063	0.0040966
31	6.4	1.85629799	0.21425	0.032255982	0.045903062	0.00104045
32	6.6	1.887069649	0.01425	0.001484323	0.000203063	2.2032E-06
33	6.3	1.840549633	0.31425	0.048004339	0.098753063	0.00230442
34	6.6	1.887069649	0.01425	0.001484323	0.000203063	2.2032E-06
35	6.49	1.870262531	0.12425	0.018291441	0.015438063	0.00033458
36	6.75	1.909542505	-0.13575	-0.020988533	0.018428062	0.00044052
37	6.76	1.91102289	-0.14575	-0.022468918	0.021243062	0.00050485
38	6.73	1.906575144	-0.11575	-0.018021172	0.013398063	0.00032476
39	6.71	1.903598951	-0.09575	-0.015044979	0.009168062	0.00022635
40	6.56	1.880990603	0.05425	0.007563369	0.002943063	5.7205E-05
Column Sum	264.57	75.54215888			2.3395775	0.05396459
Column Sum/N	6.61	1.888553972				
Column Sum/(N-1)					0.059989167	0.00138371
SQRT(Column Sum/(N-1))					0.24492686	0.03719822
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	6.61	1.888553972	6.609803805	
		Std Dev	0.24492686	0.037198217	1.03789873	
		Upper Permit Limit	7.106552988	1.963322389	7.122953015	
		Lower Permit Limit	6.121947012	1.813785555	6.133622706	
		Table 3-2 Constant = 2.010				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Density	Density	Minus Untransformed	Minus Transformed	Column D	Column E
	(g/mL)	(g/mL)	Density Value	Density Value	Squared	Squared
1	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
2	1.03	0.029558802	-0.031	-0.030679583	0.000961	0.00094124
3	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
4	0.98	-0.020202707	0.019	0.019081927	0.000361	0.00036412
5	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
6	0.97	-0.030459207	0.029	0.029338427	0.000841	0.00086074
7	0.96	-0.040821995	0.039	0.039701214	0.001521	0.00157619
8	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
9	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
10	1	0.019802627	-0.021	-0.020923408	0.000441	0.00043779
11	0.97	-0.030459207	0.029	0.029338427	0.000841	0.00086074
12	1.02	0.019802627	-0.021	-0.020923408	0.000441	0.00043779
13	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
14	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
15	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
16	0.97	-0.030459207	0.029	0.029338427	0.000841	0.00086074
17	0.98	-0.020202707	0.019	0.019081927	0.000361	0.00036412
18	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
19	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
20	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
21	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
22	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
23	1.03	0.029558802	-0.031	-0.030679583	0.000961	0.00094124
24	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
25	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
26	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
27	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
28	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
29	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
30	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
31	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
32	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
33	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
34	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
35	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
36	1.01	0.009950331	-0.011	-0.011071111	0.000121	0.00012257
37	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
38	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
39	1	0	-0.001	-0.00112078	0.000001	1.2561E-06
40	0.99	-0.010050336	0.009	0.008929555	8.1E-05	7.9737E-05
Column Sum	39.96	-0.04483122			0.00956	0.00964469
Column Sum/N	1.00	-0.00112078				
Column Sum/(N-1)					0.000245128	0.0002473
SQRT(Column Sum/(N-1))					0.015656571	0.01572576
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1.00	-0.00112078	0.998879847	
		Std Dev	0.015656571	0.015725763	1.015850064	
		Upper Permit Limit	1.030469707	0.030488004	1.030957522	
		Lower Permit Limit	0.967530293	-0.032729565	0.967800252	
		Table 3-2 Constant = 2.010				

SAMPLE DATE	TOTAL SOLIDS (MG/L)	TOTAL VOLATILE SOLIDS(MG/L)	BOD5 (MG/L)	OIL/GREASE (MG/L)	PHOSPHORUS MG/L)	TOTAL NITROGEN (MG/L)	AMMONIA (MG/L)	PH	DENSITY (G/ML)
09-08-93	17,300	9,920	425,000	20,588	3,500	19,040	8,400	6.65	0.98
10-06-93	6,790	897	33,500	33,370	750	2,940	560	7.06	1.02
10-14-93	8,480	3,390	255,000	5,680	1,400	3,080	840	6.61	1.01
11-03-93	19,200	9,270	30,700	16,700	2,400	5,880	3,450	7.39	1.03
11-09-93	27,500	13,900	32,000	8,520	2,100	6,160	3,480	6.73	1.03
11-16-93	17,600	8,890	27,100	14,580	2,200	7,840	6,580	6.87	1.00
12-06-93	12,100	6,270	13,800	4,006	600	4,480	1,880	6.43	1.02
12-13-93	33,200	25,000	21,000	5,240	1,200	8,120	1,180	6.28	1.02
01-04-94	15,600	7,170	24,400	2,460	1,000	5,880	2,650	6.86	1.01
01-10-94	7,730	2,440	13,200	10,240	1,200	5,880	1,850	6.74	1.02
02-01-94	16,300	8,430	24,100	7,240	1,000	5,880	2,390	6.93	0.98
02-07-94	14,500	7,050	18,000	3,700	1,000	4,760	2,000	6.96	1.00
03-01-94	11,900	5,090	19,900	1,958	600	7,280	2,290	6.94	1.00
03-07-94	9,900	2,870	20,100	17,440	800	6,160	2,500	6.68	0.99
04-04-94	12,000	5,820	18,900	19,040	1,900	5,880	2,050	7.00	0.98
04-11-94	12,700	5,980	19,300	16,200	2,000	7,280	2,300	6.72	1.01
05-02-94	5,390	1,430	11,300	9,780	1,200	1,960	1,960	7.36	1.01
05-10-94	9,350	5,940	14,400	8,880	1,200	4,760	1,590	6.32	0.98
06-07-94	33,500	27,000	350,000	28,120	1,000	4,480	2,030	6.02	0.99
06-14-94	45,900	38,400	480,000	37,900	1,000	7,560	2,250	6.16	1.00
07-05-94	22,000	16,400	22,500	7,212	1,000	2,800	1,220	6.25	1.00
07-12-94	64,800	55,300	54,500	28,840	700	4,480	1,440	6.20	1.00
08-01-94	72,400	59,200	73,200	5,788	1,200	3,080	2,800	6.00	0.99
08-08-94	18,700	10,700	26,400	57,260	1,000	7,560	2,240	6.02	1.00
09-06-94	45,300	35,300	57,800	37,660	2,400	3,920	3,370	6.50	1.00
09-12-94	86,300	72,800	99,800	19,460	1,200	4,480	3,530	6.03	1.00
10-03-94	16,200	8,300	21,600	15,940	1,200	8,960	2,960	6.00	1.01
10-25-94	26,000	20,000	23,300	160,000	1,200	6,160	2,170	5.90	0.99
11-01-94	22,600	10,300	24,200	919	1,700	7,280	3,340	5.30	1.00
11-06-94	24,600	15,400	20,700	1,789	1,200	7,560	3,240	5.60	0.99
12-05-94	20,700	11,000	16,000	13,360	2,000	5,320	3,530	5.40	1.00
12-12-94	18,400	8,850	15,600	1,161	1,500	7,560	3,930	5.00	1.00
01-03-95	22,600	13,000	32,400	62,820	2,000	4,480	3,310	6.70	1.00
01-13-95	10,000	3,190	16,500	62,000	1,000	5,320	2,800	5.00	1.01
02-01-95	12,300	3,420	20,300	68,020	1,300	7,280	3,320	6.80	0.99
02-16-95	13,700	5,730	18,600	49,140	1,700	7,560	2,870	6.70	0.99
03-01-95	12,600	2,170	21,000	10,460	1,200	6,160	3,720	6.50	1.00
03-09-95	16,900	7,200	39,100	7,600	1,200	4,480	2,710	6.00	1.01
04-03-95	16,700	7,490	21,500	9,360	2,000	5,264	2,550	6.80	0.99
04-13-95	19,300	12,200	26,600	7,600	1,200	6,348	2,690		1.00
05-01-95	24,000	16,100	36,200	11,440	1,800	5,040	2,730	6.60	1.00
05-12-95	15,700	9,500	22,900	2,240	1,300	7,840	2,420		1.00
06-01-95	16,100	8,690	29,100	14,780	1,000	7,840	2,340	6.80	0.99
06-16-95	15,700	7,460	27,400	15,580	700	4,760	2,050	6.60	0.99
07-05-95	15,700	7,280	19,400	404,200	1,200	6,160	2,170	6.90	1.00
07-18-95	15,600	7,260	18,000	78,640	287	7,560	2,210	7.10	1.00
08-02-95	17,000	7,510	20,500	259,880	310	7,560	2,400	6.60	1.00
08-17-95	14,700	6,640	18,700	10,120	333	8,400	2,290	6.80	0.99
09-06-95	10,600	3,860	18,900		507	8,960	2,300	6.60	1.00
09-12-95	37,000	27,900	43,500	23,800	780	17,640	2,760	6.70	1.00
10-03-95	35,400	25,200	32,000	20,500	793	8,120	2,900	7.00	1.00
11-06-95	14,700	7,540	29,200	24,600	368	5,880	2,670	6.20	1.00
12-06-95	18,700	9,760	24,600	59,920	1,059	8,400	2,670	6.60	1.00

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Solids	Total Solids	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Solids Value	Total Solids Value	Squared	Squared
1	17,300	9.75846178	1228.8	-0.034464829	1509949.44	0.001187824
2	6,790	8.823206221	11738.8	0.900790731	137799425.4	0.811423941
3	8,480	9.045465729	10048.8	0.678531223	100978381.4	0.46040462
4	19,200	9.862665558	-671.2	-0.138668607	450509.44	0.019228982
5	27,500	10.22194128	-8971.2	-0.497944332	80482429.44	0.247948558
6	17,600	9.775654181	928.8	-0.05165723	862669.44	0.002668469
7	12,100	9.400960732	6428.8	0.32303622	41329469.44	0.104352399
8	33,200	10.41030515	-14671.2	-0.686308204	215244109.4	0.47101895
9	15,600	9.655026193	2928.8	0.068970758	8577869.44	0.004756965
10	7,730	8.952864142	10798.8	0.77113281	116614081.4	0.59464581
11	16,300	9.698920387	2228.8	0.025076565	4967549.44	0.000628834
12	14,500	9.581903928	4028.8	0.142093023	16231229.44	0.020190427
13	11,900	9.384293679	6628.8	0.339703272	43940989.44	0.115398313
14	9,900	9.200290036	8628.8	0.523706915	74456189.44	0.274268933
15	12,000	9.392661929	6528.8	0.331335023	42625229.44	0.109782897
16	12,700	9.449357272	5828.8	0.274639679	33974909.44	0.075426953
17	5,390	8.592300664	13138.8	1.131696287	172628065.4	1.280736487
18	9,350	9.143131622	9178.8	0.580865329	84250369.44	0.337404531
19	33,500	10.41930072	-14971.2	-0.695303766	224136829.4	0.483447328
20	45,900	10.7342204	-27371.2	-1.010223445	749182589.4	1.020551408
21	22,000	9.998797732	-3471.2	-0.274800781	12049229.44	0.075515469
22	18,700	9.836278803	-171.2	-0.112281851	29309.44	0.012607214
23	45,300	10.72106231	-26771.2	-0.99706536	716697149.4	0.994139332
24	16,200	9.692766521	2328.8	0.03123043	5423309.44	0.00097534
25	26,000	10.16585182	-7471.2	-0.441854866	55818829.44	0.195235722
26	22,600	10.02570519	-4071.2	-0.301708234	16574669.44	0.091027858
27	24,600	10.11050172	-6071.2	-0.386504771	36859469.44	0.149385938
28	20,700	9.937888979	-2171.2	-0.213892028	4714109.44	0.0457498
29	18,400	9.820105944	128.8	-0.096108992	16589.44	0.009236938
30	22,600	10.02570519	-4071.2	-0.301708234	16574669.44	0.091027858
31	10,000	9.210340372	8528.8	0.513656579	72740429.44	0.263843082
32	12,300	9.417354541	6228.8	0.30664241	38797949.44	0.094029568
33	13,700	9.525151112	4828.8	0.19884584	23317309.44	0.039539668
34	12,600	9.441452093	5928.8	0.282544858	35150669.44	0.079831597
35	16,900	9.735068901	1628.8	-0.01107195	2652989.44	0.000122588
36	16,700	9.723163998	1828.8	0.000832953	3344509.44	6.93811E-07
37	19,300	9.867860375	-771.2	-0.143863424	594749.44	0.020696685
38	24,000	10.08580911	-5471.2	-0.361812158	29934029.44	0.130908038
39	15,700	9.661415991	2828.8	0.06258096	8002109.44	0.003916377
40	16,100	9.686574551	2428.8	0.0374224	5899069.44	0.001400436
41	15,700	9.661415991	2828.8	0.06258096	8002109.44	0.003916377
42	15,700	9.661415991	2828.8	0.06258096	8002109.44	0.003916377
43	15,600	9.655026193	2928.8	0.068970758	8577869.44	0.004756965
44	17,000	9.740968623	1528.8	-0.016971672	2337229.44	0.000288038
45	14,700	9.595602773	3828.8	0.128394179	14659709.44	0.016485065
46	10,600	9.26860928	7928.8	0.455387671	62865869.44	0.207377931
47	37,000	10.51867319	-18471.2	-0.79467624	341185229.4	0.631510327
48	35,400	10.4744671	-16871.2	-0.750470148	284637389.4	0.563205443
49	14,700	9.595602773	3828.8	0.128394179	14659709.44	0.016485065
50	18,700	9.836278803	-171.2	-0.112281851	29309.44	0.012607214
Column Sum	926,440	486.1998476			3980390528	10.19521163
Column Sum/N	18,529	9.723996951				
Column Sum/(N-1)					81232459.76	0.208065544
SQRT(Column Sum/(N-1))					9012.905178	0.456142021
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	18528.8	9.723996951	16713.91611	
		Std Dev	9012.905178	0.456142021	1.577974435	
		Permit Limit	36239.15868	10.62031602	40958.55673	
		Table 3-2 Constant = 1.965				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Vol. Solids	Total Vol. Solids	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Vol. Solids Value	Total Vol. Solids Val	Squared	Squared
1	9,920	9.2023082	690.14	-0.204513705	476293.2196	0.041825856
2	897	6.799055862	9713.14	2.198738633	94345088.66	4.834451577
3	3,390	8.1285852	7220.14	0.869209295	52130421.62	0.755524798
4	9,270	9.134538659	1340.14	-0.136744163	1795975.22	0.018698966
5	13,900	9.539644119	-3289.86	-0.541849624	10823178.82	0.293601015
6	8,890	9.092682329	1720.14	-0.094887833	2958881.62	0.009003701
7	6,270	8.743531634	4340.14	0.254262862	18836815.22	0.064649603
8	25,000	10.1266311	-14389.86	-1.128836609	207068070.8	1.274272089
9	7,170	8.877660934	3440.14	0.120133562	11834563.22	0.014432073
10	2,440	7.799753318	8170.14	1.198041177	66751187.62	1.435302661
11	8,430	9.039552051	2180.14	-0.041757556	4753010.42	0.001743693
12	7,050	8.860782896	3560.14	0.137011599	12674596.82	0.018772178
13	5,090	8.53503311	5520.14	0.462761386	30471945.62	0.2141481
14	2,870	7.962067309	7740.14	1.035727186	59909767.22	1.072730805
15	5,820	8.669055541	4790.14	0.328738954	22945441.22	0.1080693
16	5,980	8.696175847	4630.14	0.301618648	21438196.42	0.090973809
17	1,430	7.265429723	9180.14	1.732364772	84274970.42	3.001087703
18	5,940	8.689464412	4670.14	0.308330083	21810207.62	0.09506744
19	27,000	10.20359214	-16389.86	-1.20579765	268627510.8	1.453947972
20	38,400	10.55581274	-27789.86	-1.558018243	772276318.8	2.427420847
21	16,400	9.705036614	-5789.86	-0.707242119	33522478.82	0.500191414
22	10,700	9.27799902	-90	-0.280204525	8074.8196	0.078514576
23	35,300	10.47163824	-24,690	-1.473843748	609589186.8	2.172215393
24	8,300	9.024010794	2,310	-0.026216299	5336746.82	0.000687294
25	20,000	9.903487553	-9,390	-0.905693057	88169470.82	0.820279914
26	10,300	9.239899174	310	-0.242104679	96186.8196	0.058614676
27	15,400	9.642122788	-4,790	-0.644328293	22942758.82	0.415158949
28	11,000	9.305650552	-390	-0.307856057	151990.8196	0.094775352
29	8,850	9.088172738	1,760	-0.090378243	3098092.82	0.008168227
30	13,000	9.472704636	-2,390	-0.474910141	5711430.82	0.225539642
31	3,190	8.067776196	7,420	0.930018299	55058477.62	0.864934037
32	3,420	8.13739583	7,190	0.860398665	51698113.22	0.740285863
33	5,730	8.65347081	4,880	0.344323685	23815766.42	0.1185588
34	2,170	7.682482447	8,440	1.315312049	71235963.22	1.730045785
35	7,200	8.881836305	3,410	0.11595819	11629054.82	0.013446302
36	7,490	8.921324077	3,120	0.076470419	9735273.62	0.005847725
37	12,200	9.409191231	-1,590	-0.411396736	2527654.82	0.169247274
38	16,100	9.686574551	-5,490	-0.688780056	30138562.82	0.474417965
39	9,500	9.159047078	1,110	-0.161252582	1232410.82	0.026002395
40	8,690	9.069928218	1,920	-0.072133723	3686937.62	0.005203274
41	7,460	8.917310693	3,150	0.080483802	9923382.02	0.006477642
42	7,280	8.892886141	3,330	0.104908354	11089832.42	0.011005763
43	7,260	8.890135108	3,350	0.107659387	11223438.02	0.011590544
44	7,510	8.923990745	3,100	0.07380375	9610868.02	0.005446994
45	6,640	8.800867242	3,970	0.196927253	15762011.62	0.038780343
46	3,860	8.258422462	6,750	0.739372033	45564390.02	0.546671003
47	27,900	10.23638197	-17,290	-1.238587473	298939258.8	1.534098927
48	25,200	10.13459927	-14,590	-1.136804778	212864014.8	1.292325104
49	7,540	8.927977461	3,070	0.069817034	9425759.62	0.004874418
50	9,760	9.186047679	850	-0.188253184	722738.0196	0.035439261
Column Sum	530,507	449.8897248			3420712768	29.23456904
Column Sum/N	10,610	8.997794495				
Column Sum/(N-1)					69810464.65	0.596623858
SQRT(Column Sum/(N-1))					8355.265684	0.772414305
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	10,610	8.997794495	8085.23223	
		Std Dev	8355.265684	0.772414305	2.164986887	
		Permit Limit	27028.23707	10.5155886	36886.04609	
		Table 3-2 Constant = 1.965				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	5-Day BOD	5-Day BOD	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	5-Day BOD Value	5-Day BOD Value	Squared	Squared
1	33,500	10.41930072	-6281.632653	-0.312935856	39458908.79	0.09792885
2	30,700	10.33201793	-3481.632653	-0.225653072	12121765.93	0.050919309
3	32,000	10.37349118	-4781.632653	-0.26712632	22864010.83	0.071356471
4	27,100	10.20728901	118.3673469	-0.100924145	14010.82882	0.010185683
5	13,800	9.532423871	13418.36735	0.57394099	180052582.3	0.329408261
6	21,000	9.952277717	6218.367347	0.154087145	38668092.46	0.023742848
7	24,400	10.10233841	2818.367347	0.00402645	7943194.502	1.62123E-05
8	13,200	9.487972109	14018.36735	0.618392753	196514623.1	0.382409597
9	24,100	10.08996712	3118.367347	0.016397742	9724214.91	0.000268886
10	18,000	9.798127037	9218.367347	0.308237825	84978296.54	0.095010557
11	19,900	9.898475011	7318.367347	0.207889851	53558500.62	0.04321819
12	20,100	9.908475094	7118.367347	0.197889768	50671153.69	0.03916036
13	18,900	9.846917201	8318.367347	0.259447661	69195235.32	0.067313089
14	19,300	9.867860375	7918.367347	0.238504487	62700541.44	0.05688439
15	11,300	9.332558005	15918.36735	0.773806857	253394419	0.598777052
16	14,400	9.574983486	12818.36735	0.531381376	164310541.4	0.282366167
17	22,500	10.02127059	4718.367347	0.085094273	22262990.42	0.007241035
18	54,500	10.90595598	-27281.63265	-0.799591119	744287480.2	0.639345958
19	73,200	11.2009507	-45981.63265	-1.094585838	2114310541	1.198118157
20	26,400	10.18111929	818.3673469	-0.074754428	669725.1145	0.005588224
21	57,800	10.96474405	-30581.63265	-0.858379193	935236255.7	0.736814839
22	99,800	11.51092346	-72581.63265	-1.404558601	5268093399	1.972784863
23	21,600	9.980448594	5618.367347	0.125916268	31566051.65	0.015854907
24	23,300	10.05620864	3918.367347	0.050156222	15353602.67	0.002515647
25	24,200	10.09410791	3018.367347	0.012256949	9110541.441	0.000150233
26	20,700	9.937888979	6518.367347	0.168475882	42489112.87	0.028384123
27	16,000	9.680344001	11218.36735	0.42602086	125851765.9	0.181493774
28	15,600	9.655026193	11618.36735	0.451338668	134986459.8	0.203706594
29	32,400	10.3859137	-5181.632653	-0.27954884	26849316.95	0.078147554
30	16,500	9.71111566	10718.36735	0.395249202	114883398.6	0.156221931
31	20,300	9.918376165	6918.367347	0.187988697	47863806.75	0.03533975
32	18,600	9.83091686	8618.367347	0.275448002	74276255.73	0.075871602
33	21,000	9.952277717	6218.367347	0.154087145	38668092.46	0.023742848
34	39,100	10.57387775	-11881.63265	-0.467512884	141173194.5	0.218568297
35	21,500	9.975808214	5718.367347	0.130556648	32699725.11	0.017045038
36	26,600	10.18866649	618.3673469	-0.082301633	382378.1758	0.006773559
37	36,200	10.4968144	-8981.632653	-0.390449536	80669725.11	0.15245084
38	22,900	10.03889219	4318.367347	0.067472672	18648296.54	0.004552561
39	29,100	10.27849345	-1881.632653	-0.172128592	3540541.441	0.029628252
40	27,400	10.21829829	-181.6326531	-0.111933431	32990.42066	0.012529093
41	19,400	9.873028345	7818.367347	0.233336517	61126867.97	0.05444593
42	18,000	9.798127037	9218.367347	0.308237825	84978296.54	0.095010557
43	20,500	9.928180165	6718.367347	0.178184697	45136459.81	0.031749786
44	18,700	9.836278803	8518.367347	0.270086059	72562582.26	0.072946479
45	18,900	9.846917201	8318.367347	0.259447661	69195235.32	0.067313089
46	43,500	10.68051622	-16281.63265	-0.574151355	265091561.8	0.329649779
47	32,000	10.37349118	-4781.632653	-0.26712632	22864010.83	0.071356471
48	29,200	10.28192399	-1981.632653	-0.175559127	3926867.972	0.030821007
49	24,600	10.11050172	2618.367347	-0.00413686	6855847.564	1.71136E-05
Column Sum	1,333,700	495.2118782			11901813469	8.705145811
Column Sum/N	27,218	10.10636486				
Column Sum/(N-1)					247954447.3	0.181357204
SQRT(Column Sum/(N-1))					15746.56938	0.425860546
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	27,218	10.10636486	24498.44344	
		Std Dev	15746.56938	0.425860546	1.530907269	
		Permit Limit	58223.36246	10.94488428	56663.42819	
		Table 3-2 Constant = 1.969				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Oil & Grease	Oil & Grease	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Oil & Grease Value	Oil & Grease Value	Squared	Squared
1	20,588	9.932463661	2605.02	-0.447627608	6786129.2	0.200370476
2	33,370	10.41541257	-10176.98	-0.930576519	103570921.9	0.865972658
3	5,680	8.644706512	17513.02	0.840129541	306705869.5	0.705817645
4	16,700	9.723163998	6493.02	-0.238327946	42159308.72	0.05680021
5	8,520	9.05017162	14673.02	0.434664433	215297515.9	0.188933169
6	14,580	9.587406006	8613.02	-0.102569953	74184113.52	0.010520595
7	4,006	8.295548516	19187.02	1.189287536	368141736.5	1.414404844
8	5,240	8.564076777	17953.02	0.920759275	322310927.1	0.847797643
9	2,460	7.807916629	20733.02	1.676919424	429858118.3	2.812058753
10	10,240	9.234056899	12953.02	0.250779154	167780727.1	0.062890184
11	7,240	8.887376485	15953.02	0.597459567	254498847.1	0.356957934
12	3,700	8.216088099	19493.02	1.268747954	379977828.7	1.609721371
13	1,958	7.579678823	21235.02	1.905157229	450926074.4	3.629624069
14	17,440	9.766521697	5753.02	-0.281685645	33097239.12	0.079346803
15	19,040	9.854297308	4153.02	-0.369461256	17247575.12	0.13650162
16	16,200	9.692766521	6993.02	-0.207930469	48902328.72	0.04323508
17	9,780	9.188094763	13413.02	0.29674129	179909105.5	0.088055393
18	8,880	9.091556836	14313.02	0.393279217	204862541.5	0.154668542
19	28,120	10.24423635	-4926.98	-0.759400293	24275131.92	0.576688806
20	37,900	10.54270639	-14706.98	-1.057870339	216295260.7	1.119089653
21	7,212	8.883501584	15981.02	0.601334468	255393000.2	0.361603143
22	28,840	10.26951859	-5646.98	-0.784682539	31888383.12	0.615726687
23	5,788	8.663542088	17405.02	0.821293965	302934721.2	0.674523777
24	57,260	10.95535758	-34066.98	-1.470521526	1160559126	2.162433559
25	37,660	10.5363538	-14466.98	-1.05151775	209293510.3	1.105689578
26	19,460	9.876116356	3733.02	-0.391280303	13935438.32	0.153100276
27	15,940	9.676586952	7253.02	-0.1917509	52606299.12	0.036768408
28	160,000	11.98292909	-136806.98	-2.498093042	18716149777	6.240468845
29	919	6.823286122	22274.02	2.66154993	496131967	7.083848031
30	1,789	7.489412084	21404.02	1.995423969	458132072.2	3.981716816
31	13,360	9.500020447	9833.02	-0.015184395	96688282.32	0.000230566
32	1,161	7.057036982	22032.02	2.427799071	485409905.3	5.894208328
33	62,820	11.04802877	-39626.98	-1.563192721	1570297544	2.443571482
34	62,000	11.03488966	-38806.98	-1.550053611	1505981697	2.402666198
35	68,020	11.12755706	-44826.98	-1.642721006	2009458136	2.698532304
36	49,140	10.80242865	-25946.98	-1.317592594	673245771.1	1.736050242
37	10,460	9.255313738	12733.02	0.229522315	162129798.3	0.052680493
38	7,600	8.935903526	15593.02	0.548932526	243142272.7	0.301326918
39	9,360	9.144200569	13833.02	0.340635483	191352442.3	0.116032532
40	7,600	8.935903526	15593.02	0.548932526	243142272.7	0.301326918
41	11,440	9.344871265	11753.02	0.139964788	138133479.1	0.019590142
42	2,240	7.714231145	20953.02	1.770604908	439029047.1	3.135041739
43	14,780	9.601030195	8413.02	-0.116194142	70778905.52	0.013501079
44	15,580	9.653743319	7613.02	-0.168907267	57958073.52	0.028529665
45	78,640	11.27263575	-55446.98	-1.787799702	3074367591	3.196227775
46	10,120	9.222268943	13073.02	0.26256711	170903851.9	0.068941487
47	23,800	10.07744086	-606.98	-0.592604807	368424.7204	0.351180457
48	20,500	9.928180165	2693.02	-0.443344113	7252356.72	0.196554002
49	24,600	10.11050172	-1406.98	-0.625665669	1979592.72	0.39145753
50	59,920	11.00076562	-36726.98	-1.515929566	1348871060	2.298042448
Column Sum	1,159,651	474.2418026			38034302099	63.02102687
Column Sum/N	23,193	9.484836053				
Column Sum/(N-1)					776210246.9	1.286143406
SQRT(Column Sum/(N-1))					27860.55001	1.134082627
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	23,193	9.484836053	13158.6689	
		Std Dev	27860.55001	1.134082627	3.108320746	
		Permit Limit	77939.00077	11.71330842	122187.0584	
		Table 3-2 Constant = 1.965				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Phos	Total Phos	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Phos Value	Total Phos Value	Squared	Squared
1	750	6.620073207	459.3653846	0.366812525	211016.5566	0.134551428
2	1,400	7.244227516	-190.6346154	-0.257341785	36341.55658	0.066224794
3	2,400	7.783224016	-1190.634615	-0.796338285	1417610.787	0.634154665
4	2,100	7.649692624	-890.6346154	-0.662806893	793230.0181	0.439312977
5	2,200	7.696212639	-990.6346154	-0.709326908	981356.9412	0.503144663
6	600	6.396929655	609.3653846	0.589956076	371326.172	0.348048171
7	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
8	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
9	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
10	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
11	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
12	600	6.396929655	609.3653846	0.589956076	371326.172	0.348048171
13	800	6.684611728	409.3653846	0.302274003	167580.0181	0.091369573
14	1,900	7.549609165	-690.6346154	-0.562723434	476976.172	0.316657663
15	2,000	7.60090246	-790.6346154	-0.614016728	625103.095	0.377016543
16	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
17	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
18	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
19	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
20	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
21	700	6.551080335	509.3653846	0.435805396	259453.095	0.189926343
22	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
23	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
24	2,400	7.783224016	-1190.634615	-0.796338285	1417610.787	0.634154665
25	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
26	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
27	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
28	1,700	7.43838353	-490.6346154	-0.451497799	240722.3258	0.203850262
29	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
30	2,000	7.60090246	-790.6346154	-0.614016728	625103.095	0.377016543
31	1,500	7.313220387	-290.6346154	-0.326334656	84468.47966	0.106494308
32	2,000	7.60090246	-790.6346154	-0.614016728	625103.095	0.377016543
33	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
34	1,300	7.170119543	-90.63461538	-0.183233812	8214.633506	0.03357463
35	1,700	7.43838353	-490.6346154	-0.451497799	240722.3258	0.203850262
36	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
37	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
38	2,000	7.60090246	-790.6346154	-0.614016728	625103.095	0.377016543
39	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
40	1,800	7.495541944	-590.6346154	-0.508656213	348849.2489	0.258731143
41	1,300	7.170119543	-90.63461538	-0.183233812	8214.633506	0.03357463
42	1,000	6.907755279	209.3653846	0.079130452	43833.86428	0.006261628
43	700	6.551080335	509.3653846	0.435805396	259453.095	0.189926343
44	1,200	7.090076836	9.365384615	-0.103191105	87.71042899	0.010648404
45	287	5.659482216	922.3653846	1.327403515	850757.9027	1.762000092
46	310	5.736572297	899.3653846	1.250313434	808858.095	1.563283682
47	333	5.80814249	876.3653846	1.178743241	768016.2874	1.389435628
48	507	6.228511004	702.3653846	0.758374727	493317.1335	0.575132227
49	780	6.65929392	429.3653846	0.327591811	184354.6335	0.107316395
50	793	6.675823222	416.3653846	0.311062509	173360.1335	0.096759885
51	368	5.908082938	841.3653846	1.078802793	707895.7104	1.163815466
53	1,059	6.965080346	150.3653846	0.021805385	22609.74889	0.000475475
Column Sum	62,887	363.318058			14599700.06	13.09666362
Column Sum/N	1,209	6.986885731				
Column Sum/(N-1)					280763.4626	0.251858916
SQRT(Column Sum/(N-1))					529.8711755	0.501855473
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1,209	6.986885731	1082.345507	
		Std Dev	529.8711755	0.501855473	1.651783268	
		Permit Limit	2250.562245	7.973031736	2901.641051	
		Table 3-2 Constant = 1.965				

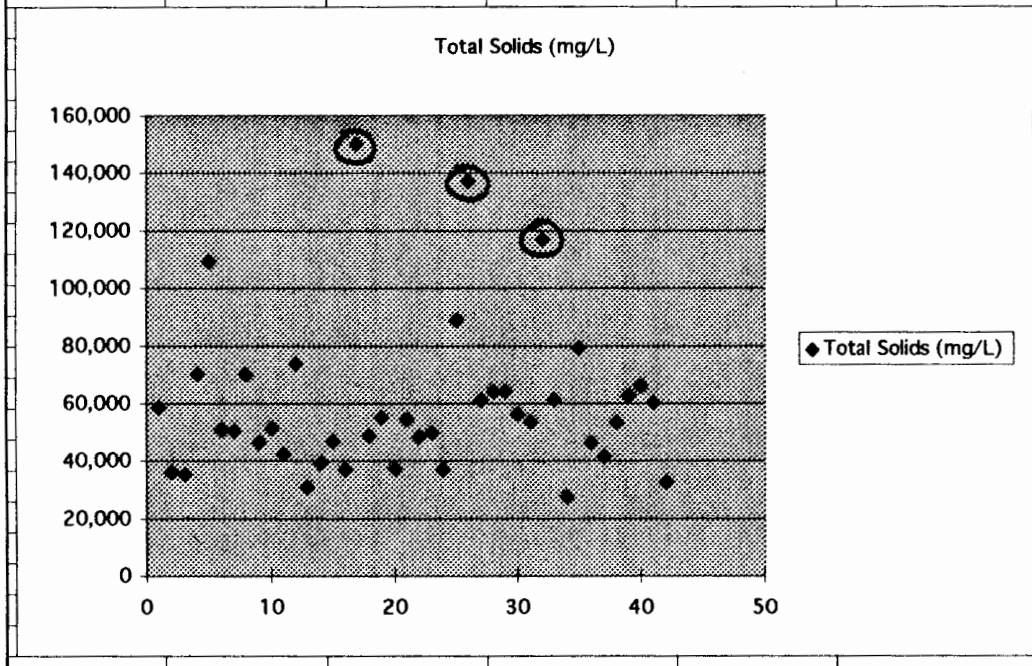
CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Nitrogen	Total Nitrogen	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Nitrogen Value	Total Nitrogen Value	Squared	Squared
1	2,940	7.98616486	3115.529412	0.674012305	9706523.516	0.454292587
2	3,080	8.032684876	2975.529412	0.627492289	8853775.28	0.393746573
3	5,880	8.679312041	175.5294118	-0.019134876	30810.57439	0.000366143
4	6,160	8.725832057	-104.4705882	-0.065654891	10914.10381	0.004310565
5	7,840	8.966994113	-1784.470588	-0.306816948	3184335.28	0.09413664
6	4,480	8.407378325	1575.529412	0.25279884	2482292.927	0.063907253
7	8,120	9.002085433	-2064.470588	-0.341908268	4262038.81	0.116901264
8	5,880	8.679312041	175.5294118	-0.019134876	30810.57439	0.000366143
9	5,880	8.679312041	175.5294118	-0.019134876	30810.57439	0.000366143
10	5,880	8.679312041	175.5294118	-0.019134876	30810.57439	0.000366143
11	4,760	8.468002947	1295.529412	0.192174218	1678396.457	0.03693093
12	7,280	8.892886141	-1224.470588	-0.232708976	1499328.221	0.054153467
13	6,160	8.725832057	-104.4705882	-0.065654891	10914.10381	0.004310565
14	5,880	8.679312041	175.5294118	-0.019134876	30810.57439	0.000366143
15	7,280	8.892886141	-1224.470588	-0.232708976	1499328.221	0.054153467
16	1,960	7.580699752	4095.529412	1.079477413	16773361.16	1.165271485
17	4,760	8.468002947	1295.529412	0.192174218	1678396.457	0.03693093
18	4,480	8.407378325	1575.529412	0.25279884	2482292.927	0.063907253
19	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
20	2,800	7.937374696	3255.529412	0.722802469	10598471.75	0.522443409
21	4,480	8.407378325	1575.529412	0.25279884	2482292.927	0.063907253
22	3,080	8.032684876	2975.529412	0.627492289	8853775.28	0.393746573
23	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
24	3,920	8.273846933	2,136	0.386330233	4560485.869	0.149251049
25	4,480	8.407378325	1575.529412	0.25279884	2482292.927	0.063907253
26	8,960	9.100525506	-2904.470588	-0.440348341	8435949.398	0.193906661
27	6,160	8.725832057	-104.4705882	-0.065654891	10914.10381	0.004310565
28	7,280	8.892886141	-1224.470588	-0.232708976	1499328.221	0.054153467
29	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
30	5,320	8.579228582	735.5294118	0.080948583	541003.5156	0.006552673
31	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
32	4,480	8.407378325	1575.529412	0.25279884	2482292.927	0.063907253
33	5,320	8.579228582	735.5294118	0.080948583	541003.5156	0.006552673
34	7,280	8.892886141	-1224.470588	-0.232708976	1499328.221	0.054153467
35	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
36	6,160	8.725832057	-104.4705882	-0.065654891	10914.10381	0.004310565
37	4,480	8.407378325	1575.529412	0.25279884	2482292.927	0.063907253
38	5,264	8.568646473	791.5294118	0.091530692	626518.8097	0.008377868
39	6,348	8.755895082	-292.4705882	-0.095717916	85539.04498	0.00916192
40	5,040	8.525161361	1015.529412	0.135015804	1031299.986	0.018229267
41	7,840	8.966994113	-1784.470588	-0.306816948	3184335.28	0.09413664
42	7,840	8.966994113	-1784.470588	-0.306816948	3184335.28	0.09413664
43	4,760	8.468002947	1295.529412	0.192174218	1678396.457	0.03693093
44	6,160	8.725832057	-104.4705882	-0.065654891	10914.10381	0.004310565
45	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
46	7,560	8.930626469	-1504.470588	-0.270449304	2263431.751	0.073142826
47	8,400	9.035986985	-2344.470588	-0.375809819	5496542.339	0.14123302
48	8,960	9.100525506	-2904.470588	-0.440348341	8435949.398	0.193906661
49	8,120	9.002085433	-2064.470588	-0.341908268	4262038.81	0.116901264
50	5,880	8.679312041	175.5294118	-0.019134876	30810.57439	0.000366143
51	8,400	9.035986985	-2344.470588	-0.375809819	5496542.339	0.14123302
Column Sum	308,832	441.6690354			150123540.7	5.560717534
Column Sum/N	6,056	8.660177165				
Column Sum/(N-1)					3002470.814	0.111214351
SQRT(Column Sum/(N-1))					1732.763923	0.333488157
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	6,056	8.660177165	5768.55656	
		Std Dev	1732.763923	0.333488157	1.395828515	
		Permit Limit	9460.410521	9.315481393	11108.67255	
		Table 3-2 Constant = 1.965				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Ammonia	Ammonia	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Ammonia Value	Ammonia Value	Squared	Squared
1	560	6.327936784	1932.156863	1.43814855	3733230.142	2.068271253
2	840	6.733401892	1652.156863	1.032683442	2729622.299	1.066435092
3	3,450	8.14612951	-957.8431373	-0.380044176	917463.4756	0.144433576
4	3,480	8.154787573	-987.8431373	-0.388702239	975834.0638	0.15108943
5	1,880	7.539027056	612.1568627	0.227058278	374736.0246	0.051555462
6	1,180	7.073269717	1312.156863	0.692815617	1721755.632	0.479993479
7	2,650	7.882314919	-157.8431373	-0.116229585	24914.45598	0.013509316
8	1,850	7.522940918	642.1568627	0.243144416	412365.4364	0.059119207
9	2,390	7.779048645	102.1568627	-0.012963311	10436.02461	0.000168047
10	2,000	7.60090246	492.1568627	0.165182875	242218.3775	0.027285382
11	2,290	7.736307097	202.1568627	0.029778238	40867.39715	0.000886743
12	2,500	7.824046011	-7.843137255	-0.057960677	61.514802	0.00335944
13	2,050	7.625595072	442.1568627	0.140490262	195502.6913	0.019737514
14	2,300	7.740664402	192.1568627	0.025420932	36924.2599	0.000646224
15	1,960	7.580699752	532.1568627	0.185385582	283190.9266	0.034367814
16	1,590	7.371489295	902.1568627	0.394596039	813887.005	0.155706034
17	2,030	7.615791072	462.1568627	0.150294262	213588.9658	0.022588365
18	2,250	7.718685495	242.1568627	0.047399839	58639.94617	0.002246745
19	1,220	7.106606138	1272.156863	0.659479196	1618383.083	0.434912811
20	1,440	7.272398393	1052.156863	0.493686942	1107034.064	0.243726796
21	2,800	7.937374696	-307.8431373	-0.171289362	94767.39715	0.029340046
22	2,240	7.714231145	252.1568627	0.051854189	63583.08343	0.002688857
23	3,370	8.122668023	-877.8431373	-0.356582689	770608.5736	0.127151214
24	3,530	8.16905315	-1037.843137	-0.402967816	1077118.378	0.162383061
25	2,960	7.992944547	-467.8431373	-0.226859213	218877.2011	0.051465103
26	2,170	7.682482447	322.1568627	0.083602888	103785.0442	0.006989443
27	3,340	8.113726086	-847.8431373	-0.347640752	718837.9854	0.120854092
28	3,240	8.083328609	-747.8431373	-0.317243275	559269.3579	0.100643295
29	3,530	8.16905315	-1037.843137	-0.402967816	1077118.378	0.162383061
30	3,930	8.276394705	-1437.843137	-0.510309371	2067392.887	0.260415654
31	3,310	8.104703468	-817.8431373	-0.338618134	668867.3972	0.114662241
32	2,800	7.937374696	-307.8431373	-0.171289362	94767.39715	0.029340046
33	3,320	8.107720062	-827.8431373	-0.341634728	685324.2599	0.116714287
34	2,870	7.962067309	-377.8431373	-0.195981975	142765.4364	0.038408934
35	3,720	8.221478947	-1227.843137	-0.455393613	1507598.77	0.207383343
36	2,710	7.904703914	-217.8431373	-0.13861858	47455.63245	0.019215111
37	2,550	7.843848638	-57.84313725	-0.077763304	3345.828527	0.006047131
38	2,690	7.897296473	-197.8431373	-0.131211138	39141.90696	0.017216363
39	2,730	7.912056888	-237.8431373	-0.145971554	56569.35794	0.021307695
40	2,420	7.791522819	72.15686275	-0.025437485	5206.612841	0.000647066
41	2,340	7.757906208	152.1568627	0.008179126	23151.71088	6.68981E-05
42	2,050	7.625595072	442.1568627	0.140490262	195502.6913	0.019737514
43	2,170	7.682482447	322.1568627	0.083602888	103785.0442	0.006989443
44	2,210	7.700747795	282.1568627	0.06533754	79612.49519	0.004268994
45	2,400	7.783224016	92.15686275	-0.017138682	8492.887351	0.000293734
46	2,290	7.736307097	202.1568627	0.029778238	40867.39715	0.000886743
47	2,300	7.740664402	192.1568627	0.025420932	36924.2599	0.000646224
48	2,760	7.922985959	-267.8431373	-0.156900625	71739.94617	0.024617806
49	2,900	7.972466016	-407.8431373	-0.206380682	166336.0246	0.042592986
50	2,870	7.962067309	-377.8431373	-0.195981975	142765.4364	0.038408934
51	2,670	7.889833751	-177.8431373	-0.123748417	31628.18147	0.015313671
Column Sum	127,100	396.070352			26413862.75	6.729117718
Column Sum/N	2,492	7.766085334				
Column Sum/(N-1)					528277.2549	0.134582354
SQRT(Column Sum/(N-1))					726.8268397	0.366854677
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	2,492	7.766085334	2359.217639	
		Std Dev	726.8268397	0.366854677	1.443188176	
		Permit Limit	3920.371603	8.486954775	4851.070957	
		Table 3-2 Constant = 1.965				

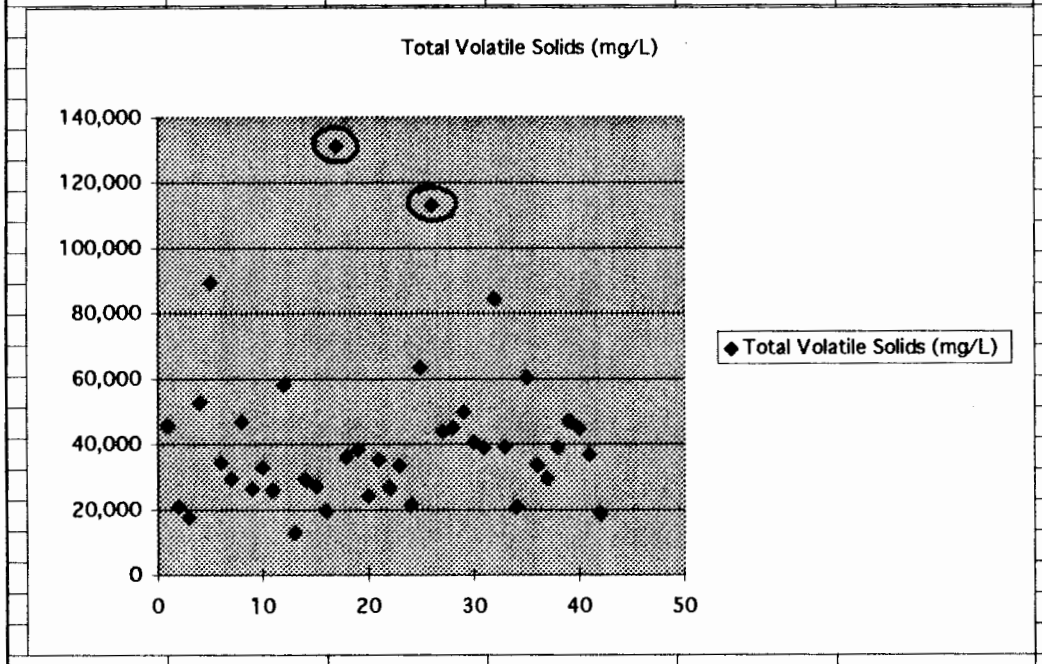
CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	pH	pH	Minus Untransformed	Minus Transformed	Column D	Column E
	(pH Units)	(pH Units)	pH Value	pH Value	Squared	Squared
1	6.65	1.894616855	-0.095625	-0.01662878	0.009144141	0.000276516
2	7.06	1.954445052	-0.505625	-0.076456977	0.255656641	0.005845669
3	6.61	1.888583654	-0.055625	-0.01059558	0.003094141	0.000112266
4	7.39	2.000127735	-0.835625	-0.122139661	0.698269141	0.014918097
5	6.73	1.906575144	-0.175625	-0.028587069	0.030844141	0.000817221
6	6.87	1.927164106	-0.315625	-0.049176032	0.099619141	0.002418282
7	6.43	1.860974538	0.124375	0.017013536	0.015469141	0.00028946
8	6.28	1.83736998	0.274375	0.040618094	0.075281641	0.00164983
9	6.86	1.925707442	-0.305625	-0.047719368	0.093406641	0.002277138
10	6.74	1.908059925	-0.185625	-0.030071851	0.034456641	0.000904316
11	6.93	1.935859813	-0.375625	-0.057871739	0.141094141	0.003349138
12	6.96	1.940179474	-0.405625	-0.0621914	0.164531641	0.00386777
13	6.94	1.937301775	-0.385625	-0.0593137	0.148706641	0.003518115
14	6.68	1.899117988	-0.125625	-0.021129913	0.015781641	0.000446473
15	7.00	1.945910149	-0.445625	-0.067922075	0.198581641	0.004613408
16	6.72	1.905088155	-0.165625	-0.02710008	0.027431641	0.000734414
17	7.36	1.996059933	-0.805625	-0.118071859	0.649031641	0.013940964
18	6.32	1.843719208	0.234375	0.034268866	0.054931641	0.001174355
19	6.02	1.795087259	0.534375	0.082900815	0.285556641	0.006872545
20	6.16	1.818076778	0.394375	0.059911297	0.155531641	0.003589363
21	6.25	1.832581464	0.304375	0.04540661	0.092644141	0.00206176
22	6.20	1.824549292	0.354375	0.053438782	0.125581641	0.002855703
23	6.00	1.791759469	0.554375	0.086228605	0.307331641	0.007435372
24	6.02	1.795087259	0.534375	0.082900815	0.285556641	0.006872545
25	6.50	1.871802177	0.054375	0.006185897	0.002956641	3.82653E-05
26	6.03	1.796747011	0.524375	0.081241063	0.274969141	0.00660011
27	6.00	1.791759469	0.554375	0.086228605	0.307331641	0.007435372
28	5.90	1.774952351	0.654375	0.103035723	0.428206641	0.01061636
29	5.60	1.722766598	0.954375	0.155221476	0.910831641	0.024093707
30	5.40	1.686398954	1.154375	0.191589121	1.332581641	0.036706391
31	6.70	1.902107526	-0.145625	-0.024119452	0.021206641	0.000581748
32	6.80	1.916922612	-0.245625	-0.038934538	0.060331641	0.001515898
33	6.70	1.902107526	-0.145625	-0.024119452	0.021206641	0.000581748
34	6.50	1.871802177	0.054375	0.006185897	0.002956641	3.82653E-05
35	6.00	1.791759469	0.554375	0.086228605	0.307331641	0.007435372
36	6.80	1.916922612	-0.245625	-0.038934538	0.060331641	0.001515898
37	6.60	1.887069649	-0.045625	-0.009081575	0.002081641	8.2475E-05
38	6.80	1.916922612	-0.245625	-0.038934538	0.060331641	0.001515898
39	6.60	1.887069649	-0.045625	-0.009081575	0.002081641	8.2475E-05
40	6.90	1.931521412	-0.345625	-0.053533337	0.119456641	0.002865818
41	7.10	1.960094784	-0.545625	-0.08210671	0.297706641	0.006741512
42	6.60	1.887069649	-0.045625	-0.009081575	0.002081641	8.2475E-05
43	6.80	1.916922612	-0.245625	-0.038934538	0.060331641	0.001515898
44	6.60	1.887069649	-0.045625	-0.009081575	0.002081641	8.2475E-05
45	6.70	1.902107526	-0.145625	-0.024119452	0.021206641	0.000581748
46	7.00	1.945910149	-0.445625	-0.067922075	0.198581641	0.004613408
47	6.20	1.824549292	0.354375	0.053438782	0.125581641	0.002855703
48	6.60	1.887069649	-0.045625	-0.009081575	0.002081641	8.2475E-05
Column Sum	314.61	90.14342756			8.59138125	0.209102221
Column Sum/N	6.55	1.877988074				
Column Sum/(N-1)					0.182795346	0.004448983
SQRT(Column Sum/(N-1))					0.427545724	0.0667007
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	6.55	1.877988074	6.540332951	
		Std Dev	0.427545724	0.0667007	1.068975486	
		Upper Permit Limit	7.397922713	2.009588556	7.460247242	
		Lower Permit Limit	5.710827287	1.746387592	5.733852208	
		Table 3-2 Constant = 1.973				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Density	Density	Minus Untransformed	Minus Transformed	Column D	Column E
	(g/mL)	(g/mL)	Density Value	Density Value	Squared	Squared
1	0.98	-0.020202707	0.019215686	0.019369341	0.000369243	0.000375171
2	1.02	0.019802627	-0.020784314	-0.020635994	0.000431988	0.000425844
3	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
4	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
5	1.02	0.019802627	-0.020784314	-0.020635994	0.000431988	0.000425844
6	1.02	0.019802627	-0.020784314	-0.020635994	0.000431988	0.000425844
7	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
8	1.02	0.019802627	-0.020784314	-0.020635994	0.000431988	0.000425844
9	0.98	-0.020202707	0.019215686	0.019369341	0.000369243	0.000375171
10	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
11	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
12	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
13	0.98	-0.020202707	0.019215686	0.019369341	0.000369243	0.000375171
14	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
15	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
16	0.98	-0.020202707	0.019215686	0.019369341	0.000369243	0.000375171
17	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
18	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
19	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
20	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
21	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
22	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
23	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
24	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
25	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
26	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
27	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
28	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
29	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
30	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
31	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
32	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
33	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
34	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
35	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
36	1.01	0.009950331	-0.010784314	-0.010783697	0.000116301	0.000116288
37	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
38	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
39	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
40	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
41	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
42	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
43	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
44	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
45	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
46	0.99	-0.010050336	0.009215686	0.009216969	8.49289E-05	8.49525E-05
47	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
48	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
49	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
50	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
51	1.00	0	-0.000784314	-0.000833367	6.15148E-07	6.945E-07
Column Sum	50.96	-0.042501699			0.004968627	0.00496992
Column Sum/N	1.00	-0.000833367				
Column Sum/(N-1)					9.93725E-05	9.93984E-05
SQRT(Column Sum/(N-1))					0.009968578	0.009969874
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1.00	-0.000833367	0.999166981	
		Std Dev	0.009968578	0.009969874	1.010019739	
		Upper Permit Limit	1.018803942	0.018757436	1.018934462	
		Lower Permit Limit	0.97962743	-0.020424169	0.979782991	
		Table 3-2 Constant = 1.965				

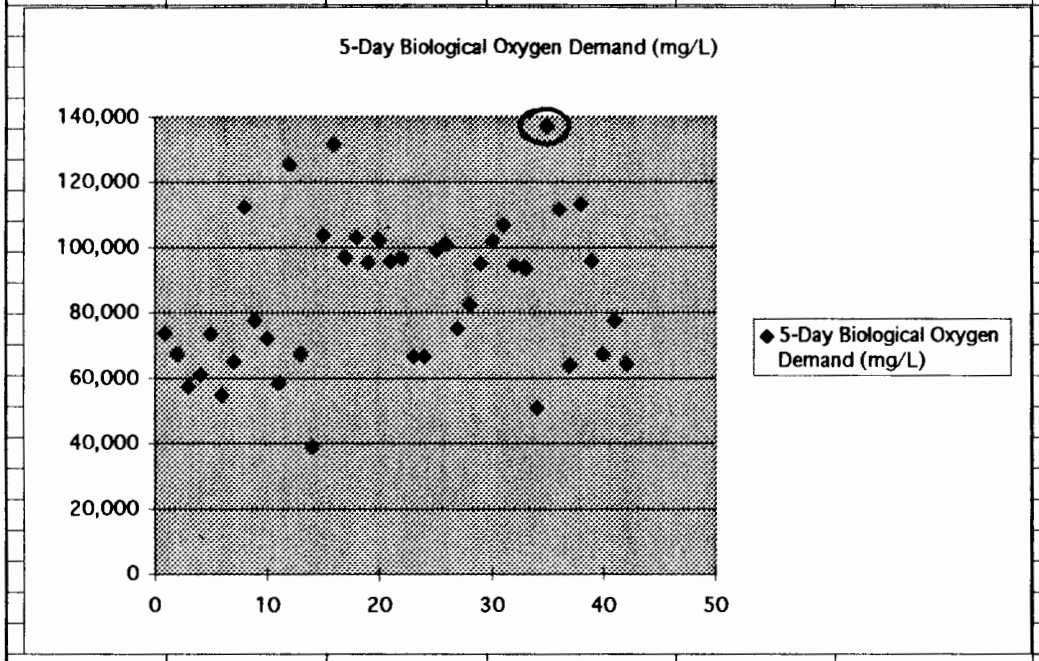
OD 93-01									
Permit Limits	No limit								
		Total Volatile	5-Day Biological						
	Total Solids	Solids	Oxygen Demand	Oil and Grease	Total Phosphorus	Total Nitrogen	Ammonia	pH	Density
Month & Year	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(pH units)	(g/mL)
12/10/93	58,300	45,300	73,527	4,950	651	7,000	4,190	6.86	* 0.95
12/17/93	35,800	20,800	67,247	10,100	502	5,110	3,040	6.50	1.00
1/21/94	35,400	17,400	57,425	8,110	526	6,380	4,930	6.93	1.03
1/28/94	70,140	52,600	60,958	19,700	1,040	7,850	4,230	6.88	0.99
2/9/94	109,000	89,300	73,236	29,800	1,250	7,290	3,690	6.50	0.98
2/17/94	50,600	34,300	54,610	14,600	915	7,480	4,140	6.73	1.01
3/09/94	50,200	29,200	65,167	4,500	897	1,750	283	6.98	0.97
3/24/94	69,900	46,800	112,261	20,100	* 3,210	* 14,300	* 9,700	7.13	0.96
4/26/94	46,300	26,200	77,425	6,100	985	2,530	5,400	6.85	1.01
5/3/94	51,300	32,900	71,905	7,660	798	5,630	3,960	6.74	0.99
5/23/94	42,100	25,700	58,327	13,669	655	5,120	3,510	6.84	1.02
5/30/94	73,600	58,100	125,375	22,352	1,072	6,900	4,410	6.18	0.97
6/15/94	30,600	12,800	67,282	6,535	608	4,940	3,420	6.46	1.02
6/22/94	39,100	28,900	38,781	23,013	734	4,600	2,290	6.23	1.00
7/20/94	46,600	27,000	103,767	26,415	1,740	7,090	5,200	6.73	0.99
7/27/94	36,700	19,600	131,250	14,979	674	5,390	4,470	6.68	1.01
8/16/94	* 150,000	* 131,000	96,833	51,903	2,530	5,330	1,910	6.52	* 0.94
8/25/94	48,600	35,800	103,072	* 76,256	1,040	3,180	282	* 5.47	0.97
9/20/94	55,100	38,500	95,483	32,696	1,270	5,190	4,580	6.96	0.98
9/27/94	37,100	24,200	102,428	13,433	618	5,120	3,990	6.62	0.99
10/1/94	54,200	35,300	95,567	15,008	620	5,540	3,060	6.35	1.00
10/7/94	48,200	26,400	96,644	14,123	512	5,040	3,900	6.52	0.99
11/17/94	49,700	33,300	66,709	18,779	950	8,290	4,300	6.71	1.01
11/23/94	36,700	21,200	66,366	16,179	662	6,150	4,220	6.63	1.01
12/14/94	88,900	63,200	99,026	30,084	1,180	5,060	3,390	6.10	1.03
12/21/94	* 137,000	* 113,000	100,911	* 61,901	1,110	2,370	295	* 5.40	1.00
1/27/95	60,800	44,000	74,889	25,340	789	4,100	4,800	6.40	1.01
1/31/95	64,000	44,700	82,339	22,721	1,110	6,660	5,160	6.90	1.01
2/25/95	64,300	49,400	95,139	56,793	997	6,660	5,170	6.80	0.99
3/2/95	56,300	40,700	101,978	50,204	612	3,940	3,330	6.44	1.01
3-03-95	53,600	38,600	106,856	39,360	933	4,500	3,650	6.30	1.00
3-11-95	* 117,000	84,100	94,628	36,286	* 3,830	4,370	3,720	6.20	1.01
4-07-95	61,100	39,300	93,505	40,968	* 3,100	2,820	2,290	6.40	1.00
4-13-95	27,300	20,700	50,893	17,648	361	1,790	1,560	6.60	0.99
5-03-95	79,300	60,300	* 136,750	31,841	1,400	6,390	434	6.30	1.00
5-10-95	46,400	33,600	111,611	16,791	666	4,820	4,050	6.60	1.00
6/28/95	41,500	29,300	63,726	18,098	502	2,870	2,310	6.49	1.01
7/5/95	53,200	38,800	113,300	13,526	791	5,570	3,870	6.75	1.01
7/6/95	62,600	46,900	95,850	35,005	940	9,640	5,230	6.76	1.00
7/26/95	65,700	45,000	67,268	18,619	1,100	5,920	4,470	6.73	1.00
08-01-95	60,000	36,800	77,311	13,579	817	6,350	3,990	6.71	1.00
8/9/95	32,500	18,600	64,220	9,103	525	3,490	2,990	6.56	0.99



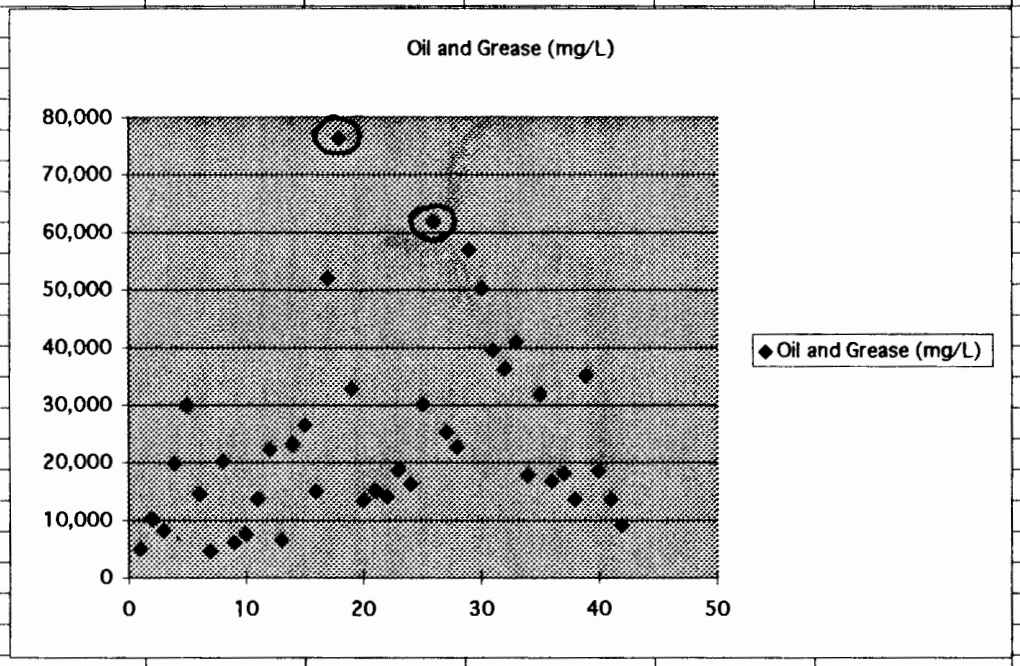
Mean =	59,446
Standard Deviation =	26721.0422
2 x Standard Deviation =	53442.0844
Outliers Deleted Above	112,888



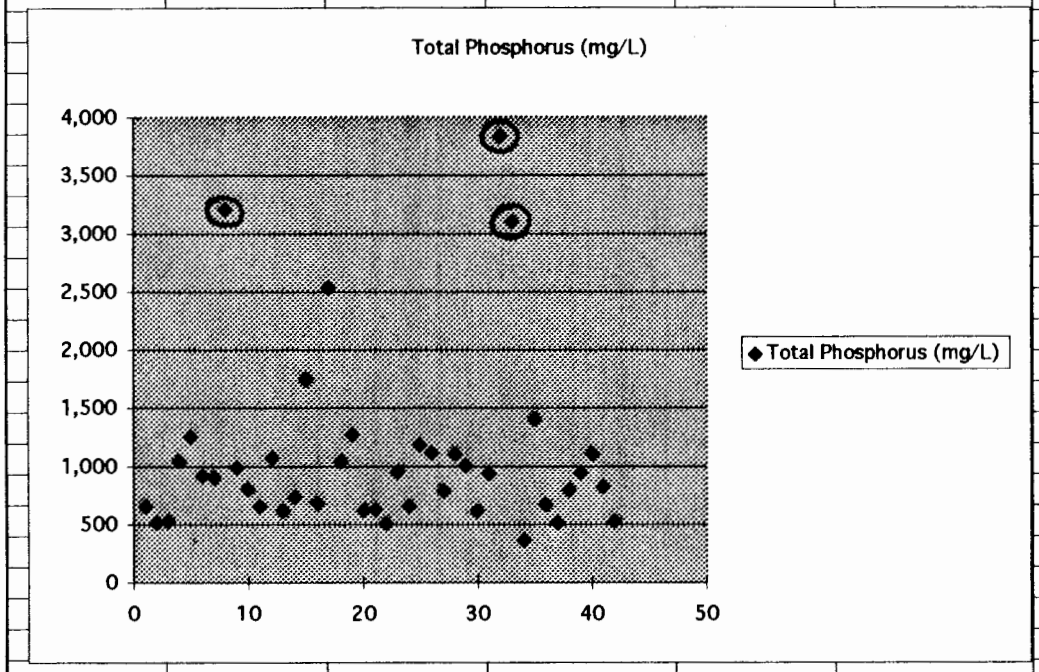
Mean =	41,895
Standard Deviation =	24366.1296
2 x Standard Deviation =	48732.2591
Outliers Deleted Above	90,627



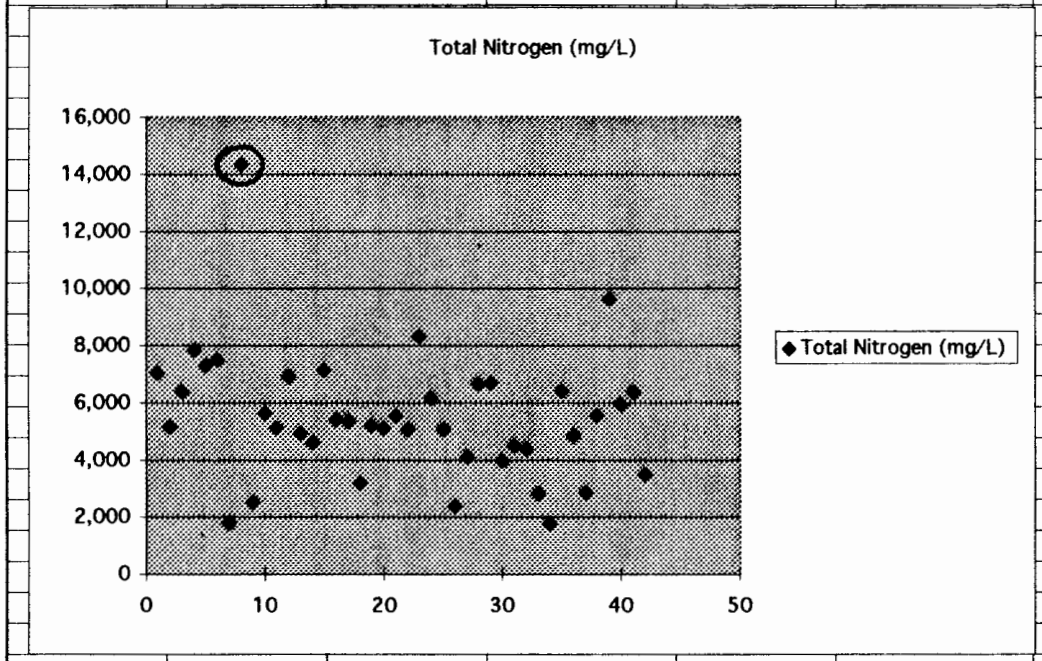
Mean =	85,520
Standard Deviation =	22959.3577
2 x Standard Deviation =	45918.7155
Outliers Deleted Above	131,439



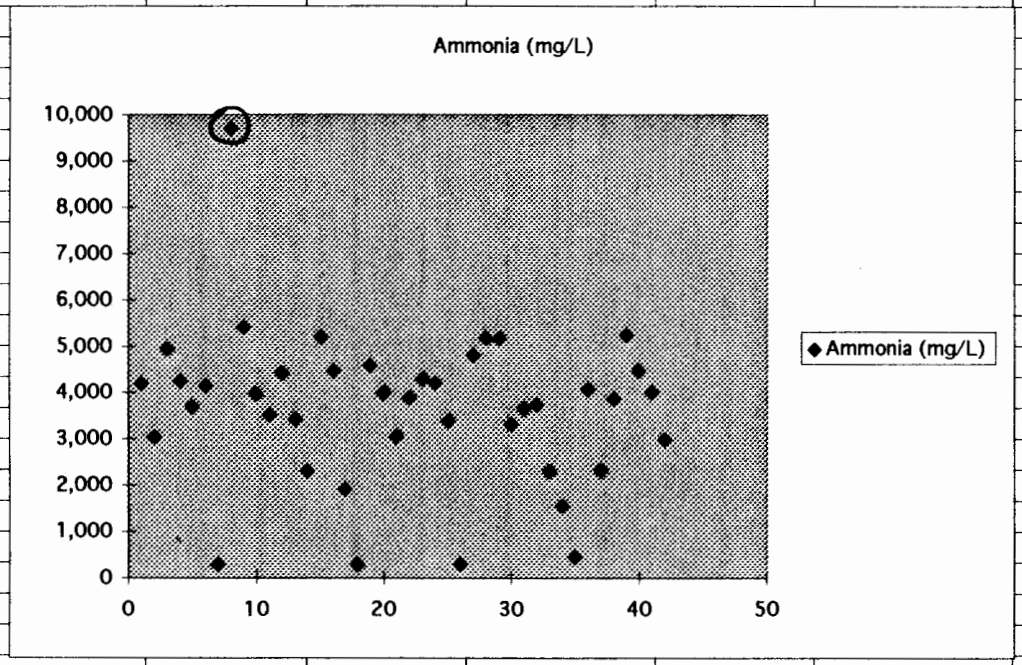
Mean =	24,020
Standard Deviation =	16447.0019
2 x Standard Deviation =	32894.0038
Outliers Deleted Above	56,914



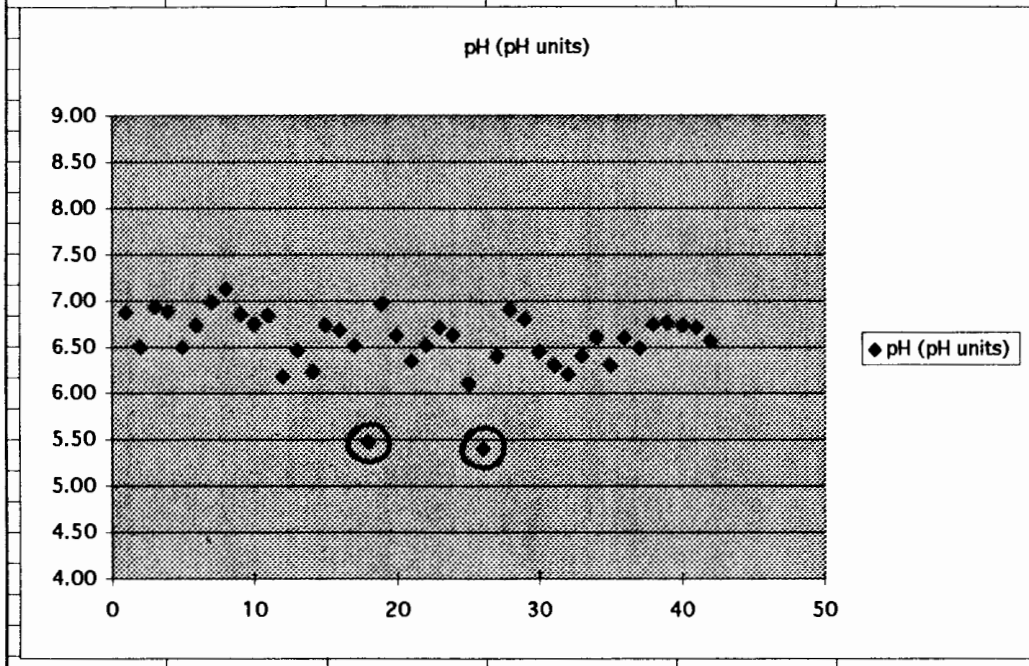
Mean =	1,077
Standard Deviation =	754.447408
2 x Standard Deviation =	1508.89482
Outliers Deleted Above	2,586



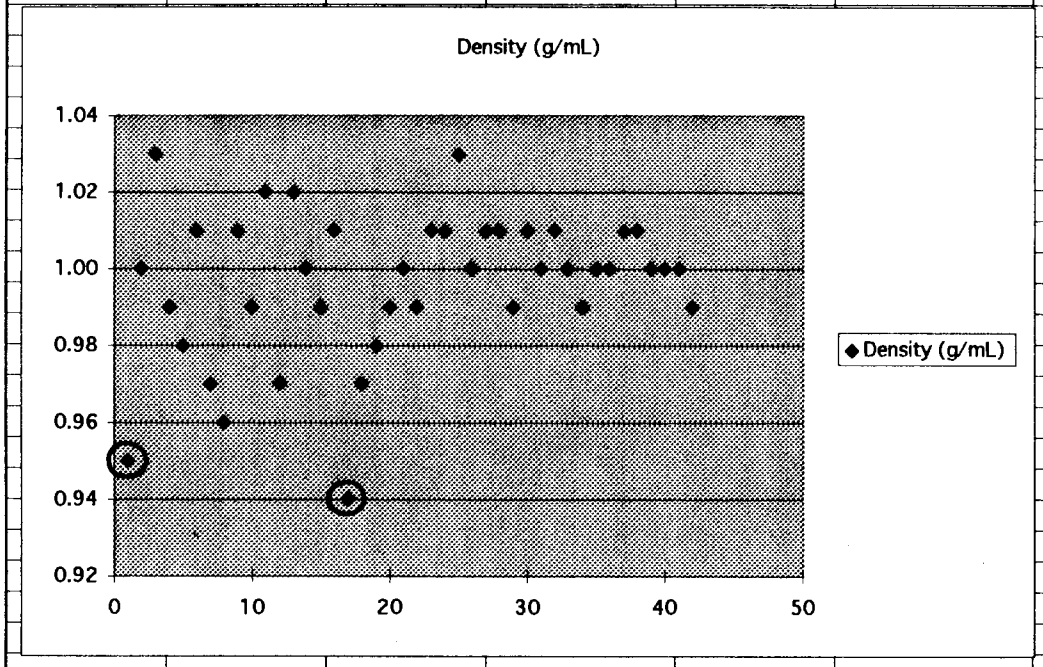
Mean =	5,489
Standard Deviation =	2244.5148
2 x Standard Deviation =	4489.0296
Outliers Deleted Above	9,978



Mean =	3,662
Standard Deviation =	1679.75102
2 x Standard Deviation =	3359.50205
Outliers Deleted Above	7,022

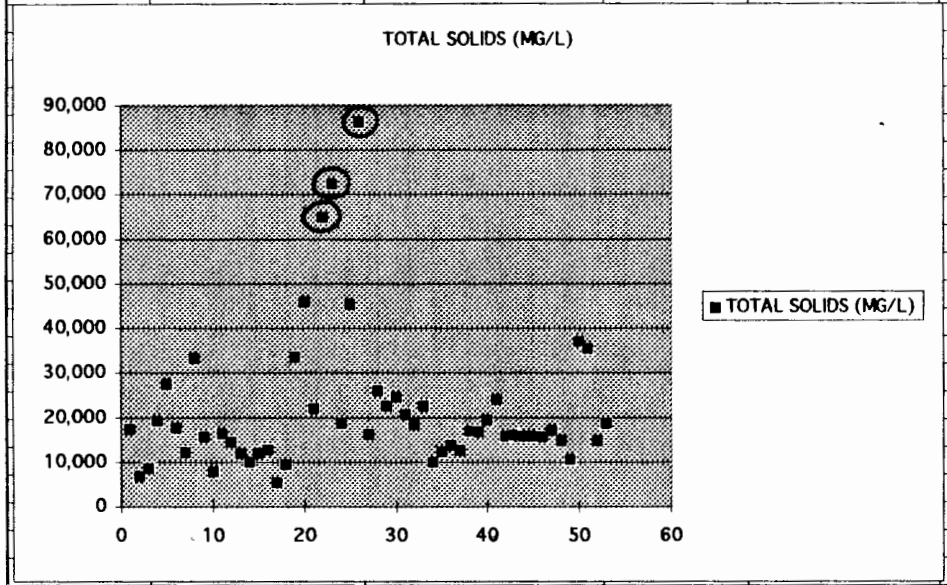


Mean =	6.56
Standard Deviation =	0.34889539
2 x Standard Deviation =	0.69779077
Outliers Deleted Above	7.26
Outliers Deleted Below	5.86

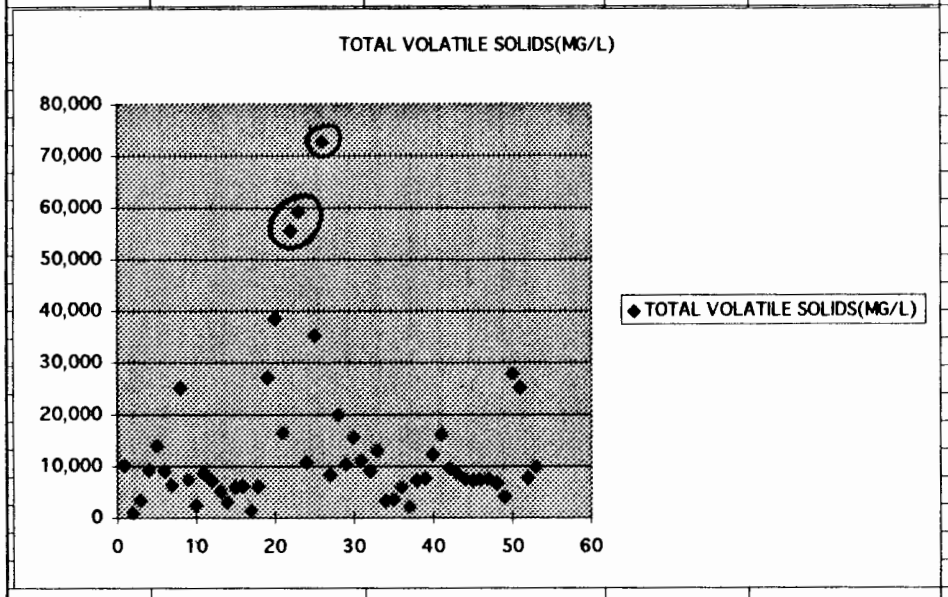


Mean =	1.00
Standard Deviation =	0.01923176
2 x Standard Deviation =	0.03846352
Outliers Deleted Above	1.03
Outliers Deleted Below	0.96

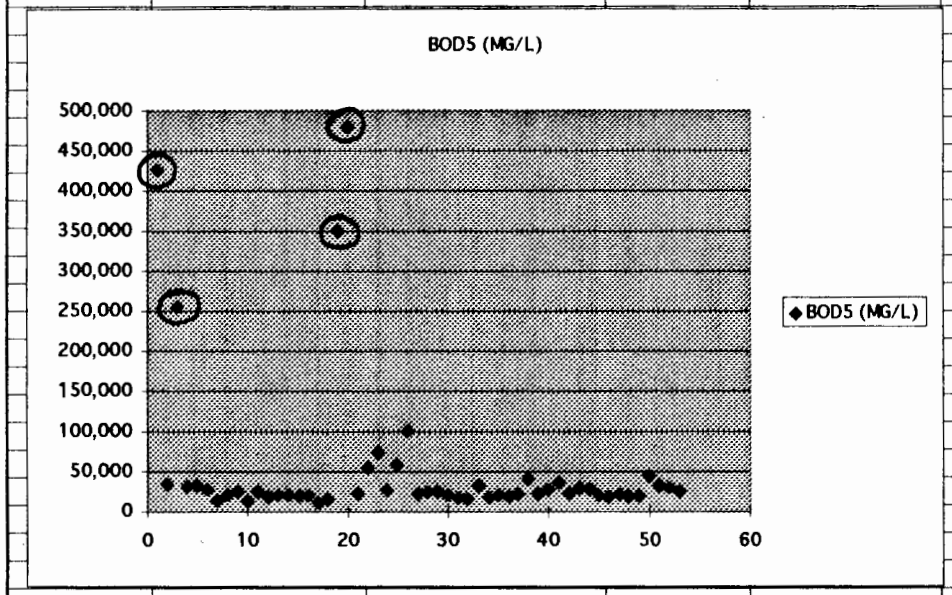
SAMPLE DATE	TOTAL SOLIDS (MG/L)	TOTAL VOLATILE SOLIDS(MG/L)	BOD5 (MG/L)	OIL/GREASE (MG/L)	PHOSPHORUS MG/L)	TOTAL NITROGEN (MG/L)	AMMONIA (MG/L)	PH	DENSITY (G/ML)
09-08-93	17,300	9,920	* 425,000	20,588	* 3,500	* 19,040	* 8,400	6.65	0.98
10-06-93	6,790	897	33,500	33,370	750	2,940	560	7.06	1.02
10-14-93	8,480	3,390	* 255,000	5,680	1,400	3,080	840	6.61	1.01
11-03-93	19,200	9,270	30,700	16,700	2,400	5,880	3,450	7.39	* 1.03
11-09-93	27,500	13,900	32,000	8,520	2,100	6,160	3,480	6.73	* 1.03
11-16-93	17,600	8,890	27,100	14,580	2,200	7,840	* 6,580	6.87	1.00
12-06-93	12,100	6,270	13,800	4,006	600	4,480	1,880	6.43	1.02
12-13-93	33,200	25,000	21,000	5,240	1,200	8,120	1,180	6.28	1.02
01-04-94	15,600	7,170	24,400	2,460	1,000	5,880	2,650	6.86	1.01
01-10-94	7,730	2,440	13,200	10,240	1,200	5,880	1,850	6.74	1.02
02-01-94	16,300	8,430	24,100	7,240	1,000	5,880	2,390	6.93	0.98
02-07-94	14,500	7,050	18,000	3,700	1,000	4,760	2,000	6.96	1.00
03-01-94	11,900	5,090	19,900	1,958	600	7,280	2,290	6.94	1.00
03-07-94	9,900	2,870	20,100	17,440	800	6,160	2,500	6.68	0.99
04-04-94	12,000	5,820	18,900	19,040	1,900	5,880	2,050	7.00	0.98
04-11-94	12,700	5,980	19,300	16,200	2,000	7,280	2,300	6.72	1.01
05-02-94	5,390	1,430	11,300	9,780	1,200	1,960	1,960	7.36	1.01
05-10-94	9,350	5,940	14,400	8,880	1,200	4,760	1,590	6.32	0.98
06-07-94	33,500	27,000	* 350,000	28,120	1,000	4,480	2,030	6.02	0.99
06-14-94	45,900	38,400	* 480,000	37,900	1,000	7,560	2,250	6.16	1.00
07-05-94	22,000	16,400	22,500	7,212	1,000	2,800	1,220	6.25	1.00
07-12-94	* 64,800	* 55,300	54,500	28,840	700	4,480	1,440	6.20	1.00
08-01-94	* 72,400	* 59,200	73,200	5,788	1,200	3,080	2,800	6.00	0.99
08-08-94	18,700	10,700	26,400	57,260	1,000	7,560	2,240	6.02	1.00
09-06-94	45,300	35,300	57,800	37,660	2,400	3,920	3,370	6.50	1.00
09-12-94	* 86,300	* 72,800	99,800	19,460	1,200	4,480	3,530	6.03	1.00
10-03-94	16,200	8,300	21,600	15,940	1,200	8,960	2,960	6.00	1.01
10-25-94	26,000	20,000	23,300	160,000	1,200	6,160	2,170	5.90	0.99
11-01-94	22,600	10,300	24,200	919	1,700	7,280	3,340	* 5.30	1.00
11-06-94	24,600	15,400	20,700	1,789	1,200	7,560	3,240	5.60	0.99
12-05-94	20,700	11,000	16,000	13,360	2,000	5,320	3,530	5.40	1.00
12-12-94	18,400	8,850	15,600	1,161	1,500	7,560	3,930	* 5.00	1.00
01-03-95	22,600	13,000	32,400	62,820	2,000	4,480	3,310	6.70	1.00
01-13-95	10,000	3,190	16,500	62,000	1,000	5,320	2,800	* 5.00	1.01
02-01-95	12,300	3,420	20,300	68,020	1,300	7,280	3,320	6.80	0.99
02-16-95	13,700	5,730	18,600	49,140	1,700	7,560	2,870	6.70	0.99
03-01-95	12,600	2,170	21,000	10,460	1,200	6,160	3,720	6.50	1.00
03-09-95	16,900	7,200	39,100	7,600	1,200	4,480	2,710	6.00	1.01
04-03-95	16,700	7,490	21,500	9,360	2,000	5,264	2,550	6.80	0.99
04-13-95	19,300	12,200	26,600	7,600	1,200	6,348	2,690		1.00
05-01-95	24,000	16,100	36,200	11,440	1,800	5,040	2,730	6.60	1.00
05-12-95	15,700	9,500	22,900	2,240	1,300	7,840	2,420		1.00
06-01-95	16,100	8,690	29,100	14,780	1,000	7,840	2,340	6.80	0.99
06-16-95	15,700	7,460	27,400	15,580	700	4,760	2,050	6.60	0.99
07-05-95	15,700	7,280	19,400	* 404,200	1,200	6,160	2,170	6.90	1.00
07-18-95	15,600	7,260	18,000	78,640	287	7,560	2,210	7.10	1.00
08-02-95	17,000	7,510	20,500	* 259,880	310	7,560	2,400	6.60	1.00
08-17-95	14,700	6,640	18,700	10,120	333	8,400	2,290	6.80	0.99
09-06-95	10,600	3,860	18,900		507	8,960	2,300	6.60	1.00
09-12-95	37,000	27,900	43,500	23,800	780	* 17,640	2,760	6.70	1.00
10-03-95	35,400	25,200	32,000	20,500	793	8,120	2,900	7.00	1.00
11-06-95	14,700	7,540	29,200	24,600	368	5,880	2,870	6.20	1.00
12-06-95	18,700	9,760	24,600	59,920	1,059	8,400	2,670	6.60	1.00



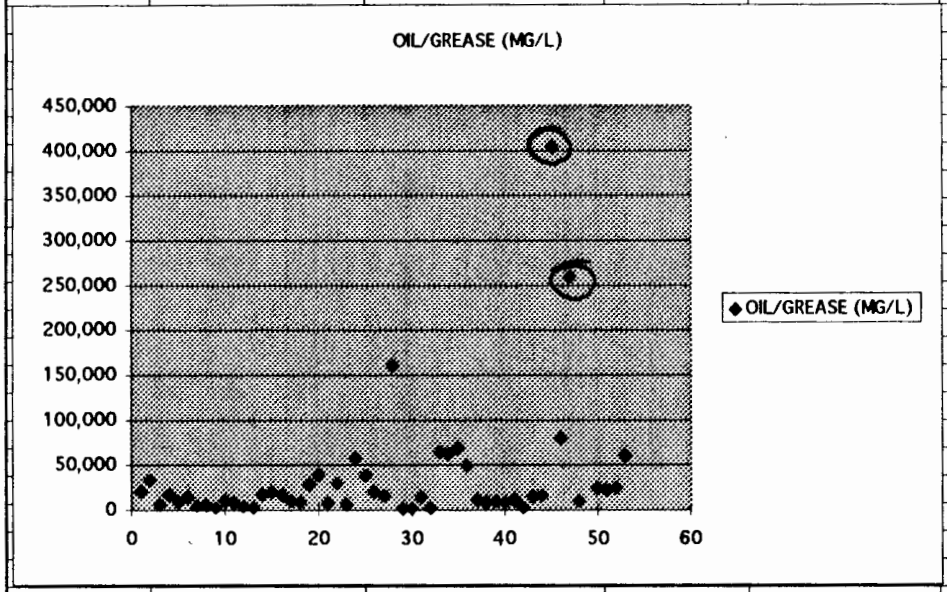
Mean =	21,697
Standard Deviation =	15862.6772
2 x Standard Deviation =	31725.3545
Outliers Deleted Above	53,422



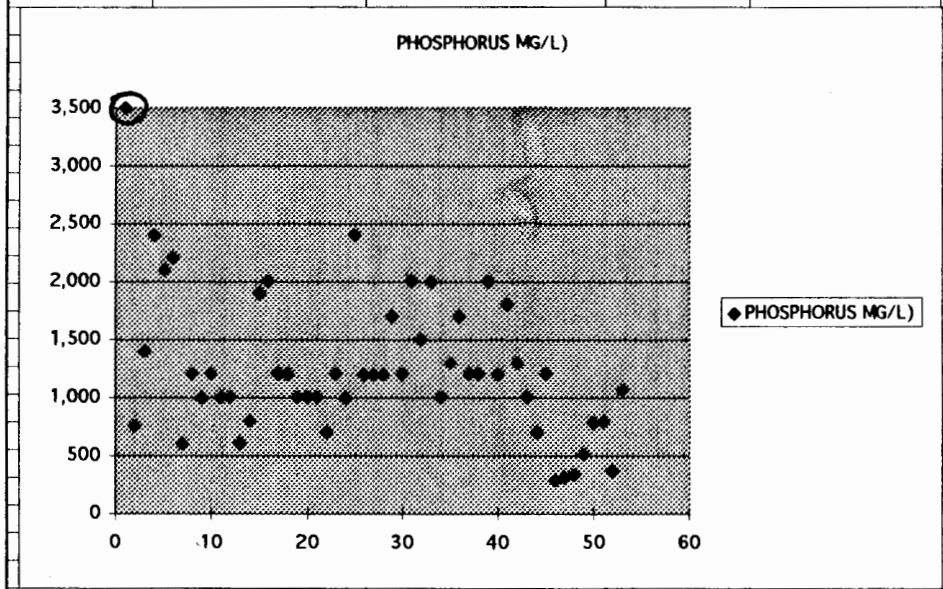
Mean =	13,544
Standard Deviation =	14669.6946
2 x Standard Deviation =	29339.3892
Outliers Deleted Above	42,883



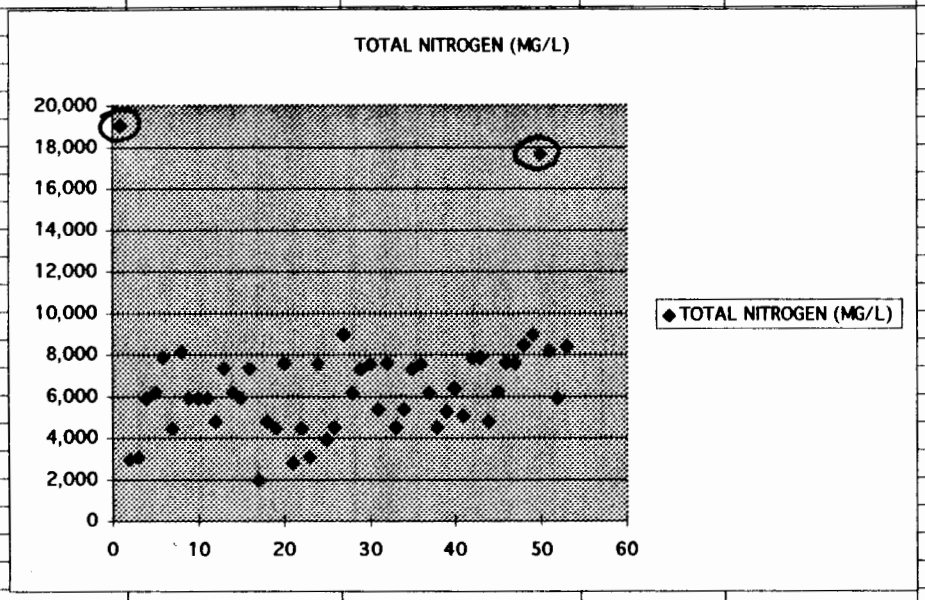
Mean =	53,655
Standard Deviation =	97485.2091
2 x Standard Deviation =	194970.418
Outliers Deleted Above	248,625



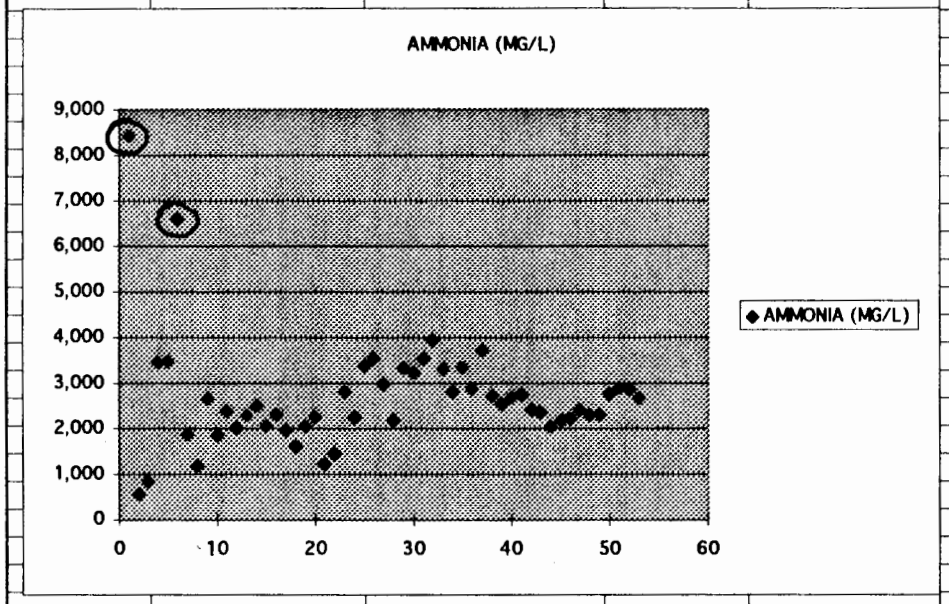
Mean =	35,072
Standard Deviation =	67429.546
2 x Standard Deviation =	134859.092
Outliers Deleted Above	169,931



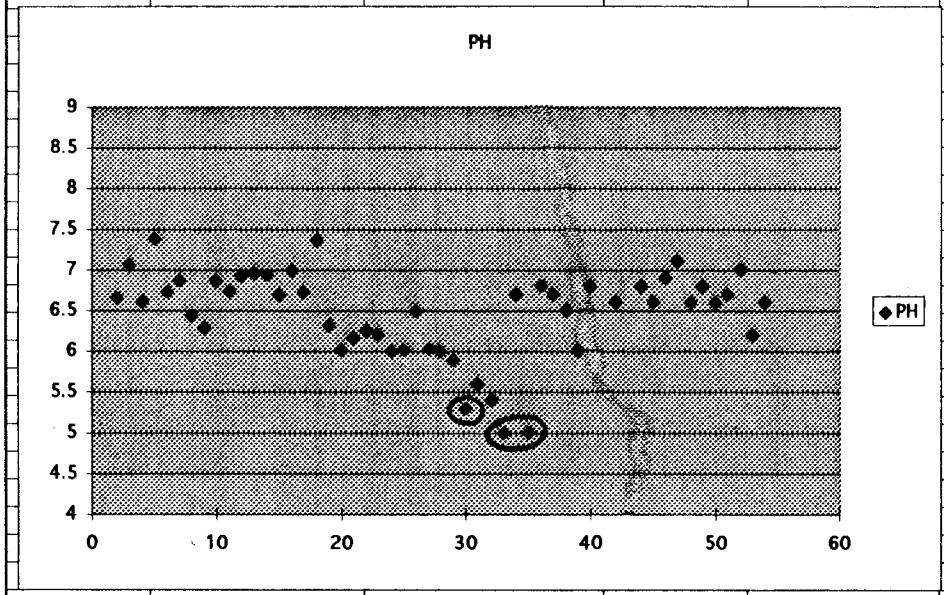
Mean =	1,253
Standard Deviation =	616.24962
2 x Standard Deviation =	1232.49924
Outliers Deleted Above	2,485



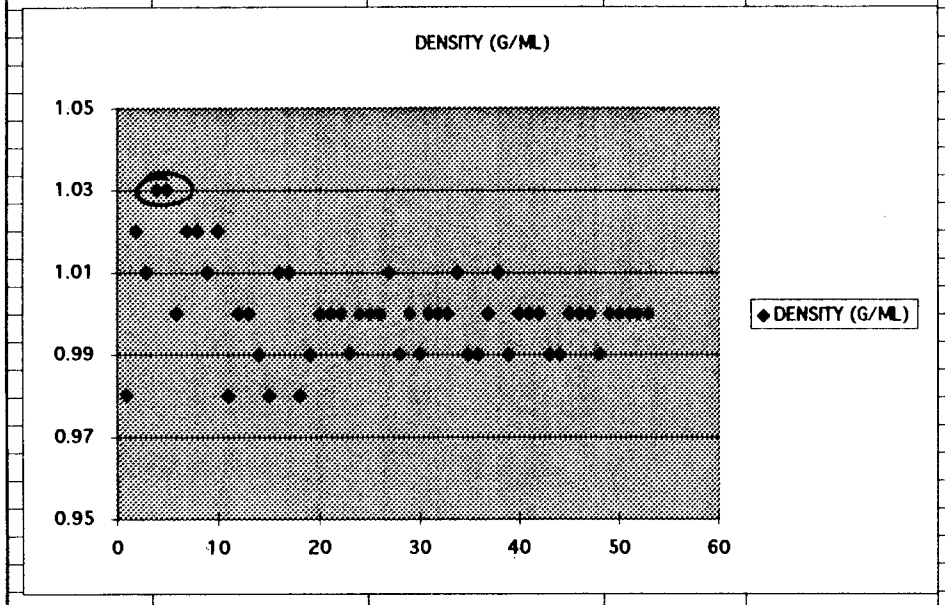
Mean =	6,519
Standard Deviation =	2913.92768
2 x Standard Deviation =	5827.85537
Outliers Deleted Above	12,347



Mean =	2,681
Standard Deviation =	1210.0681
2 x Standard Deviation =	2420.1362
Outliers Deleted Above	5,101



Mean =	6.47
Standard Deviation =	0.5408092
2 x Standard Deviation =	1.0816184
Outliers Deleted Above	7.55
Outliers Deleted Below	5.39



Mean =	1.00
Standard Deviation =	0.01142909
2 x Standard Deviation =	0.02285818
Outliers Deleted Above	1.02
Outliers Deleted Below	0.98

Waste Stream Analysis for VCS Samoa Packing
MPRSA Permit #OD 93-02
Onshore Storage Tank - All Constituents

Month/Day/Year	Total Solids (mg/L)	Total Volatile Solids (mg/L)	5-Day Biological Oxygen Demand (mg/L)	Oil & Grease (mg/L)	Total Phosphorus (mg/L)	Total Nitrogen (mg/L)	Ammonia (mg/L)	pH (pH units)	Density (g/mL)
9/8/93	17300	9920	425000	20588	3500	19040	8400	6.65	0.98
10/6/93	6790	897	33500	33370	750	2940	560	7.06	1.02
10/14/93	8480	3390	255000	5680	1400	3080	840	6.61	1.01
11/3/93	19200	9270	30700	16700	2400	5880	3450	7.39	1.03
11/9/93	27500	13900	32000	8520	2100	6160	3480	6.73	1.03
11/16/93	17600	8890	27100	14580	2200	7840	6580	6.87	1
12/6/93	12100	6270	13600	4006	600	4480	1880	6.43	1.02
12/13/93	33200	25000	21000	5240	1200	8120	1180	6.28	1.02
1/4/94	15600	7170	24400	2460	1000	5880	2650	6.86	1.01
1/10/94	7730	2440	13200	10240	1200	5880	1850	6.74	1.02
2/1/94	16300	8430	24100	7240	1000	5880	2390	6.93	0.98
2/7/94	14500	7050	18000	3700	1000	4760	2000	6.96	1
3/1/94	11900	5090	19900	1958	600	7280	2290	6.94	1
3/7/94	9900	2870	20100	17440	800	6160	2500	6.68	0.99
4/4/94	12000	5820	18900	19040	1900	5880	2050	7	0.98
4/11/94	12700	5980	19300	16200	2000	7280	2300	6.72	1.01
5/2/94	5390	1430	11300	9780	1200	1960	1960	7.36	1.01
5/10/94	9350	5940	14400	8880	1200	4760	1590	6.32	0.98
6/7/94	33500	27000	350000	28120	1000	4480	2030	6.02	0.99
6/14/94	45900	38400	480000	37900	1000	7560	2250	6.16	1
7/5/94	22000	16400	22500	7212	1000	2800	1220	6.25	1
7/12/94	64800	55300	54500	28840	700	4480	1440	6.2	1
8/1/94	72400	59200	73200	5788	1200	3080	2800	6	0.99
8/8/94	18700	10700	26400	57260	1000	7560	2240	6.02	1
9/6/94	45300	35300	57800	37660	2400	3920	3370	6.5	1
9/12/94	86300	72800	99800	19460	1200	4480	3530	6.03	1

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Solids	Total Solids	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Solids Value	Total Solids Value	Squared	Squared
1	17300	9.75846178	1088.695652	-0.103719587	1185258.223	0.010757753
2	6790	8.823206221	11598.69565	0.831535973	134529740.8	0.691452074
3	8480	9.045465729	9908.695652	0.609276465	98182249.53	0.371217811
4	19200	9.862665558	-811.3043478	-0.207923364	658214.7448	0.043232125
5	27500	10.22194128	-9111.304348	-0.56719909	83015866.92	0.321714808
6	17600	9.775654181	788.6956522	-0.120911987	622040.8318	0.014619709
7	12100	9.400960732	6288.695652	0.253781462	39547693.01	0.06440503
8	33200	10.41030515	-14811.30435	-0.755562961	219374736.5	0.570875389
9	15600	9.655026193	2788.695652	-0.000284	7776823.44	8.06558E-08
10	7730	8.952864142	10658.69565	0.701878052	113607793	0.4926328
11	16300	9.698920387	2088.695652	-0.044178193	4362649.527	0.001951713
12	14500	9.581903928	3888.695652	0.072838265	15121953.88	0.005305413
13	11900	9.384293679	6488.695652	0.270448514	42103171.27	0.073142399
14	9900	9.200290036	8488.695652	0.454452157	72057953.88	0.206526763
15	12000	9.392661929	6388.695652	0.262080265	40815432.14	0.068686065
16	12700	9.449357272	5688.695652	0.205384921	32361258.22	0.042182966
17	5390	8.592300664	12998.69565	1.06244153	168966088.7	1.128782004
18	9350	9.143131622	9038.695652	0.511610571	81698019.09	0.261745377
19	33500	10.41930072	-15111.30435	-0.764558524	228351519.1	0.584549737
20	45900	10.7342204	-27511.30435	-1.079478202	756871866.9	1.16527319
21	22000	9.998797732	-3611.304348	-0.344055539	13041519.09	0.118374214
22	18700	9.836278803	-311.3043478	-0.181536609	96910.39698	0.032955541
23	45300	10.72106231	-26911.30435	-1.066320118	724218301.7	1.137038594
Column Sum	422940	222.0590705			2878567061	7.407421554
Column Sum/N	18388.69565	9.654742194				
Column Sum/(N-1)					130843957.3	0.33670098
SQRT(Column Sum/(N-1))					11438.70435	0.580259407
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	18388.69565	9.654742194	15595.57023	
		Std Dev	11438.70435	0.580259407	1.786501802	
		Permit Limit	43084.85835	10.90752225	54585.42877	
		Table 3-2 Constant = 2.159; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	18388.69565	9.654742194	15595.57023	
		Std Dev	11438.70435	0.580259407	1.786501802	
		Permit Limit	38109.02196	10.65510941	42408.72557	
		Table 3-2 Constant = 1.724; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Vol. Solids	Total Vol. Solids	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Vol. Solids Value	Total Vol. Solids Value	Squared	Squared
1	9920	9.2023082	1278.130435	-0.272915548	1633617.408	0.074482896
2	897	6.799055862	10301.13043	2.13033679	106113288.2	4.538334841
3	3390	8.1285852	7808.130435	0.800807452	60966900.89	0.641292575
4	9270	9.134538659	1928.130435	-0.205146006	3717686.974	0.042084884
5	13900	9.539644119	-2701.869565	-0.610251467	7300099.147	0.372406853
6	8890	9.092682329	2308.130435	-0.163289676	5327466.104	0.026663518
7	6270	8.743531634	4928.130435	0.185861019	24286469.58	0.034544318
8	25000	10.1266311	-13801.86957	-1.197238451	190491603.5	1.433379909
9	7170	8.877660934	4028.130435	0.051731719	16225834.8	0.002676171
10	2440	7.799753318	8758.130435	1.129639334	76704848.71	1.276085025
11	8430	9.039552051	2768.130435	-0.110159399	7662546.104	0.012135093
12	7050	8.860782896	4148.130435	0.068609757	17206986.1	0.004707299
13	5090	8.53503311	6108.130435	0.394359543	37309257.41	0.155519449
14	2870	7.962067309	8328.130435	0.967325344	69357756.54	0.935718321
15	5820	8.669055541	5378.130435	0.260337112	28924286.97	0.067775412
16	5980	8.696175847	5218.130435	0.233216806	27228885.23	0.054390078
17	1430	7.265429723	9768.130435	1.663962929	95416372.19	2.76877263
18	5940	8.689464412	5258.130435	0.23992824	27647935.67	0.05756556
19	27000	10.20359214	-15801.86957	-1.274199492	249699081.8	1.623584347
20	38400	10.55581274	-27201.86957	-1.626420086	739941707.8	2.645242296
21	16400	9.705036614	-5201.869565	-0.775643961	27059446.97	0.601623555
22	10700	9.27799902	498.1304348	-0.348606368	248133.9301	0.1215264
23	35300	10.47163824	-24101.86957	-1.54224559	580900116.5	2.378521461
Column Sum	257557	205.376031			2401370329	19.86903289
Column Sum/N	11198.13043	8.929392652				
Column Sum/(N-1)					109153196.8	0.903137859
SQRT(Column Sum/(N-1))					10447.64073	0.950335656
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	11198.13043	8.929392652	7550.678098	
		Std Dev	10447.64073	0.950335656	2.586577713	
		Permit Limit	33754.58676	10.98116733	58757.10339	
		Table 3-2 Constant = 2.159; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	11198.13043	8.929392652	7550.678098	
		Std Dev	10447.64073	0.950335656	2.586577713	
		Permit Limit	29209.86305	10.56777132	38861.96637	
		Table 3-2 Constant = 1.724; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	5-Day BOD	5-Day BOD	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	5-Day BOD Value	5-Day BOD Value	Squared	Squared
1	33500	10.41930072	-2777.272727	-0.259780793	7713243.802	0.06748606
2	30700	10.33201793	22.72727273	-0.172498009	516.5289256	0.029755563
3	32000	10.37349118	-1277.272727	-0.213971257	1631425.62	0.045783699
4	27100	10.20728901	3622.727273	-0.047769082	13124152.89	0.002281885
5	13800	9.532423871	16922.72727	0.627096054	286378698.3	0.393249461
6	21000	9.952277717	9722.727273	0.207242208	94531425.62	0.042949333
7	24400	10.10233841	6322.727273	0.057181514	39976880.17	0.003269726
8	13200	9.487972109	17522.72727	0.671547816	307045971.1	0.45097647
9	24100	10.08996712	6622.727273	0.069552806	43860516.53	0.004837593
10	18000	9.798127037	12722.72727	0.361392888	161867789.3	0.13060482
11	19900	9.898475011	10822.72727	0.261044914	117131425.6	0.068144447
12	20100	9.908475094	10622.72727	0.251044831	112842334.7	0.063023507
13	18900	9.846917201	11822.72727	0.312602724	139776880.2	0.097720463
14	19300	9.867860375	11422.72727	0.29165955	130478698.3	0.085065293
15	11300	9.332558005	19422.72727	0.82696192	377242334.7	0.683866018
16	14400	9.574983486	16322.72727	0.584536439	266431425.6	0.341682849
17	22500	10.02127059	8222.727273	0.138249337	67613243.8	0.019112879
18	54500	10.90595598	-23777.27273	-0.746436056	565358698.3	0.557166785
19	73200	11.2009507	-42477.27273	-1.041430775	1804318698	1.084578059
20	26400	10.18111929	4322.727273	-0.021599364	18685971.07	0.000466533
21	57800	10.96474405	-27077.27273	-0.80522413	733178698.3	0.648385899
22	99800	11.51092346	-69077.27273	-1.351403537	4771669607	1.826291521
Column Sum	675900	223.5094383			10060858636	6.646698861
Column Sum/N	30722.72727	10.15951992				
Column Sum/(N-1)					479088506.5	0.31650947
SQRT(Column Sum/(N-1))					21888.09052	0.562591743
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	30722.72727	10.15951992	25835.89092	
		Std Dev	21888.09052	0.562591743	1.755215679	
		Permit Limit	78307.43606	11.38259437	87780.47503	
		Table 3-2 Constant = 2.174; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	30722.72727	10.15951992	25835.89092	
		Std Dev	21888.09052	0.562591743	1.755215679	
		Permit Limit	68720.45241	11.13617919	68609.01309	
		Table 3-2 Constant = 1.736; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Oil & Grease	Oil & Grease	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Oil & Grease Value	Oil & Grease Value	Squared	Squared
1	20588	9.932463661	-8693.818182	-0.793699746	75582474.58	0.629959287
2	5680	8.644706512	6214.181818	0.494057403	38616055.67	0.244092717
3	16700	9.723163998	-4805.818182	-0.584400084	23095888.4	0.341523458
4	8520	9.05017162	3374.181818	0.088592295	11385102.94	0.007848595
5	14580	9.587406006	-2685.818182	-0.448642091	7213619.306	0.201279726
6	4006	8.295548516	7888.181818	0.843215398	62223412.4	0.711012208
7	5240	8.564076777	6654.181818	0.574687137	44278135.67	0.330265305
8	2460	7.807916629	9434.181818	1.330847285	89003786.58	1.771154497
9	10240	9.234056899	1654.181818	-0.095292984	2736317.488	0.009080753
10	7240	8.887376485	4654.181818	0.251387429	21661408.4	0.063195639
11	3700	8.216088099	8194.181818	0.922675816	67144615.67	0.851330661
12	1958	7.579678823	9936.181818	1.559085091	98727709.12	2.430746322
13	17440	9.766521697	-5545.818182	-0.627757783	30756099.31	0.394079834
14	19040	9.854297308	-7145.818182	-0.715533394	51062717.49	0.511988038
15	16200	9.692766521	-4305.818182	-0.554002607	18540070.21	0.306918888
16	9780	9.188094763	2114.181818	-0.049330849	4469764.76	0.002433533
17	8880	9.091556836	3014.181818	0.047207078	9085292.033	0.002228508
18	28120	10.24423635	-16225.81818	-1.105472432	263277175.7	1.222069297
19	7212	8.883501584	4682.181818	0.25526233	21922826.58	0.065158857
20	28840	10.26951859	-16945.81818	-1.130754677	287160753.9	1.27860614
21	5788	8.663542088	6106.181818	0.475221827	37285456.4	0.225835784
22	19460	9.876116356	-7565.818182	-0.737352441	57241604.76	0.543688623
Column Sum	261672	201.0528061			1322470287	12.14449667
Column Sum/N	11894.18182	9.138763914				
Column Sum/(N-1)					62974775.58	0.578309365
SQRT(Column Sum/(N-1))					7935.664785	0.760466544
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	11894.18182	9.138763914	9309.250985	
		Std Dev	7935.664785	0.760466544	2.139274054	
		Permit Limit	29146.31706	10.79201818	48631.08342	
		Table 3-2 Constant = 2.174; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	11894.18182	9.138763914	9309.250985	
		Std Dev	7935.664785	0.760466544	2.139274054	
		Permit Limit	25670.49589	10.45893384	34854.37114	
		Table 3-2 Constant = 1.736; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Phos	Total Phos	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Phos Value	Total Phos Value	Squared	Squared
1	750	6.620073207	532	0.453985393	283024	0.206102737
2	1400	7.244227516	-118	-0.170168916	13924	0.02895746
3	2400	7.783224016	-1118	-0.709165417	1249924	0.502915589
4	2100	7.649692624	-818	-0.575634024	669124	0.33135453
5	2200	7.696212639	-918	-0.62215404	842724	0.38707565
6	600	6.396929655	682	0.677128944	465124	0.458503607
7	1200	7.090076836	82	-0.016018236	6724	0.000256584
8	1000	6.907755279	282	0.16630332	79524	0.027656794
9	1200	7.090076836	82	-0.016018236	6724	0.000256584
10	1000	6.907755279	282	0.16630332	79524	0.027656794
11	1000	6.907755279	282	0.16630332	79524	0.027656794
12	600	6.396929655	682	0.677128944	465124	0.458503607
13	800	6.684611728	482	0.389446872	232324	0.151668866
14	1900	7.549609165	-618	-0.475550566	381924	0.226148341
15	2000	7.60090246	-718	-0.52684386	515524	0.277564453
16	1200	7.090076836	82	-0.016018236	6724	0.000256584
17	1200	7.090076836	82	-0.016018236	6724	0.000256584
18	1000	6.907755279	282	0.16630332	79524	0.027656794
19	1000	6.907755279	282	0.16630332	79524	0.027656794
20	1000	6.907755279	282	0.16630332	79524	0.027656794
21	700	6.551080335	582	0.522978264	338724	0.273506265
22	1200	7.090076836	82	-0.016018236	6724	0.000256584
23	1000	6.907755279	282	0.16630332	79524	0.027656794
24	2400	7.783224016	-1118	-0.709165417	1249924	0.502915589
25	1200	7.090076836	82	-0.016018236	6724	0.000256584
Column Sum	32050	176.851465			7304400	4.000353756
Column Sum/N	1282	7.074058599				
Column Sum/(N-1)					304350	0.166681407
SQRT(Column Sum/(N-1))					551.6792546	0.408266343
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1282	7.074058599	1180.931248	
		Std Dev	551.6792546	0.408266343	1.504207742	
		Permit Limit	2458.180171	7.944482442	2819.972584	
		Table 3-2 Constant = 2.132; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1282	7.074058599	1180.931248	
		Std Dev	551.6792546	0.408266343	1.504207742	
		Permit Limit	2220.958091	7.768927914	2365.933445	
		Table 3-2 Constant = 1.702; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Nitrogen	Total Nitrogen	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Nitrogen Value	Total Nitrogen Value	Squared	Squared
1	2940	7.98616486	2363.2	0.528767311	5584714.24	0.279594869
2	3080	8.032684876	2223.2	0.482247295	4942618.24	0.232562454
3	5880	8.679312041	-576.8	-0.16437987	332698.24	0.027020742
4	6160	8.725832057	-856.8	-0.210899886	734106.24	0.044478762
5	7840	8.966994113	-2536.8	-0.452061942	6435354.24	0.20436
6	4480	8.407378325	823.2	0.107553846	677658.24	0.01156783
7	8120	9.002085433	-2816.8	-0.487153262	7934362.24	0.237318301
8	5880	8.679312041	-576.8	-0.16437987	332698.24	0.027020742
9	5880	8.679312041	-576.8	-0.16437987	332698.24	0.027020742
10	5880	8.679312041	-576.8	-0.16437987	332698.24	0.027020742
11	4760	8.468002947	543.2	0.046929224	295066.24	0.002202352
12	7280	8.892886141	-1976.8	-0.37795397	3907738.24	0.142849204
13	6160	8.725832057	-856.8	-0.210899886	734106.24	0.044478762
14	5880	8.679312041	-576.8	-0.16437987	332698.24	0.027020742
15	7280	8.892886141	-1976.8	-0.37795397	3907738.24	0.142849204
16	1960	7.580699752	3343.2	0.934232419	11176986.24	0.872790212
17	4760	8.468002947	543.2	0.046929224	295066.24	0.002202352
18	4480	8.407378325	823.2	0.107553846	677658.24	0.01156783
19	7560	8.930626469	-2256.8	-0.415694298	5093146.24	0.17280175
20	2800	7.937374696	2503.2	0.577557475	6266010.24	0.333572637
21	4480	8.407378325	823.2	0.107553846	677658.24	0.01156783
22	3080	8.032684876	2223.2	0.482247295	4942618.24	0.232562454
23	7560	8.930626469	-2256.8	-0.415694298	5093146.24	0.17280175
24	3920	8.273846933	1383.2	0.241085238	1913242.24	0.058122092
25	4480	8.407378325	823.2	0.107553846	677658.24	0.01156783
Column Sum	132580	212.8733043			73630144	3.356922178
Column Sum/N	5303.2	8.514932171				
Column Sum/(N-1)					3067922.667	0.139871757
SQRT(Column Sum/(N-1))					1751.548648	0.373994328
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	5303.2	8.514932171	4988.707669	
		Std Dev	1751.548648	0.373994328	1.453528906	
		Permit Limit	9037.501718	9.312288078	11073.25564	
		Table 3-2 Constant = 2.132; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	5303.2	8.514932171	4988.707669	
		Std Dev	1751.548648	0.373994328	1.453528906	
		Permit Limit	8284.335799	9.151470517	9428.294661	
		Table 3-2 Constant = 1.702; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Ammonia	Ammonia	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Ammonia Value	Ammonia Value	Squared	Squared
1	560	6.327936784	1600.416667	1.2677036	2561333.507	1.607072418
2	840	6.733401892	1320.416667	0.862238492	1743500.174	0.743455217
3	3450	8.14612951	-1289.583333	-0.550489126	1663025.174	0.303038278
4	3480	8.154787573	-1319.583333	-0.559147189	1741300.174	0.312645579
5	1880	7.539027056	280.4166667	0.056613328	78633.50694	0.003205069
6	1180	7.073269717	980.4166667	0.522370666	961216.8403	0.272871113
7	2650	7.882314919	-489.5833333	-0.286674535	239691.8403	0.082182289
8	1850	7.522940918	310.4166667	0.072699466	96358.50694	0.005285212
9	2390	7.779048645	-229.5833333	-0.183408261	52708.50694	0.03363859
10	2000	7.60090246	160.4166667	-0.005262076	25733.50694	2.76894E-05
11	2290	7.736307097	-129.5833333	-0.140666713	16791.84028	0.019787124
12	2500	7.824046011	-339.5833333	-0.228405627	115316.8403	0.05216913
13	2050	7.625595072	110.4166667	-0.029954688	12191.84028	0.000897283
14	2300	7.740664402	-139.5833333	-0.145024018	19483.50694	0.021031966
15	1960	7.580699752	200.4166667	0.014940632	40166.84028	0.000223222
16	1590	7.371489295	570.4166667	0.224151089	325375.1736	0.050243711
17	2030	7.615791072	130.4166667	-0.020150688	17008.50694	0.00040605
18	2250	7.718685495	-89.58333333	-0.123045111	8025.173611	0.015140099
19	1220	7.106606138	940.4166667	0.489034246	884383.5069	0.239154494
20	1440	7.272398393	720.4166667	0.323241991	519000.1736	0.104485385
21	2800	7.937374696	-639.5833333	-0.341734312	409066.8403	0.11678234
22	2240	7.714231145	-79.58333333	-0.118590761	6333.506944	0.014063769
23	3370	8.122668023	-1209.583333	-0.527027639	1463091.84	0.277758133
24	3530	8.16905315	-1369.583333	-0.573412766	1875758.507	0.3288022
Column Sum	51850	182.2953692			14875495.83	4.604366362
Column Sum/N	2160.416667	7.595640384				
Column Sum/(N-1)					646760.6884	0.200189842
SQRT(Column Sum/(N-1))					804.2143299	0.447425795
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	2160.416667	7.595640384	1989.50349	
		Std Dev	804.2143299	0.447425795	1.56428022	
		Permit Limit	3885.456404	8.555368714	5194.567847	
		Table 3-2 Constant = 2.145; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	2160.416667	7.595640384	1989.50349	
		Std Dev	804.2143299	0.447425795	1.56428022	
		Permit Limit	3537.231599	8.361633345	4279.679252	
		Table 3-2 Constant = 1.712; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	pH	pH	Minus Untransformed	Minus Transformed	Column D	Column E
	(pH Units)	(pH Units)	pH Value	pH Value	Squared	Squared
1	6.65	1.894616855	-0.045769231	-0.008749484	0.002094822	7.65535E-05
2	7.06	1.954445052	-0.455769231	-0.068577681	0.207725592	0.004702898
3	6.61	1.888583654	-0.005769231	-0.002716283	3.3284E-05	7.3782E-06
4	7.39	2.000127735	-0.785769231	-0.114260364	0.617433284	0.013055431
5	6.73	1.906575144	-0.125769231	-0.020707773	0.015817899	0.000428812
6	6.87	1.927164106	-0.265769231	-0.041296736	0.070633284	0.00170542
7	6.43	1.860974538	0.174230769	0.024892832	0.030356361	0.000619653
8	6.28	1.83736998	0.324230769	0.04849739	0.105125592	0.002351997
9	6.86	1.925707442	-0.255769231	-0.039840071	0.065417899	0.001587231
10	6.74	1.908059925	-0.135769231	-0.022192554	0.018433284	0.000492509
11	6.93	1.935859813	-0.325769231	-0.049992443	0.106125592	0.002499244
12	6.96	1.940179474	-0.355769231	-0.054312104	0.126571746	0.002949805
13	6.94	1.937301775	-0.335769231	-0.051434404	0.112740976	0.002645498
14	6.68	1.899117988	-0.075769231	-0.013250617	0.005740976	0.000175579
15	7	1.945910149	-0.395769231	-0.060042779	0.156633284	0.003605135
16	6.72	1.905088155	-0.115769231	-0.019220784	0.013402515	0.000369439
17	7.36	1.996059933	-0.755769231	-0.110192562	0.57118713	0.012142401
18	6.32	1.843719208	0.284230769	0.042148162	0.08078713	0.001776468
19	6.02	1.795087259	0.584230769	0.090780111	0.341325592	0.008241029
20	6.16	1.818076778	0.444230769	0.067790593	0.197340976	0.004595564
21	6.25	1.832581464	0.354230769	0.053285907	0.125479438	0.002839388
22	6.2	1.824549292	0.404230769	0.061318078	0.163402515	0.003759907
23	6	1.791759469	0.604230769	0.094107901	0.365094822	0.008856297
24	6.02	1.795087259	0.584230769	0.090780111	0.341325592	0.008241029
25	6.5	1.871802177	0.104230769	0.014065194	0.010864053	0.00019783
26	6.03	1.796747011	0.574230769	0.08912036	0.329740976	0.007942439
Column Sum	171.71	49.03255163			4.180834615	0.095864933
Column Sum/N	6.604230769	1.885867371				
Column Sum/(N-1)					0.167233385	0.003834597
SQRT(Column Sum/(N-1))					0.408941786	0.061924126
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	6.604230769	1.885867371	6.59206973	
		Std Dev	0.408941786	0.061924126	1.06388162	
		Upper Permit Limit	7.47200524	2.017270365	7.517776116	
		Lower Permit Limit	5.736456299	1.754464376	5.780350818	
		Table 3-2 Constant = 2.122				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	6.604230769	1.885867371	6.59206973	
		Std Dev	0.408941786	0.061924126	1.06388162	
		Upper Permit Limit	7.296569214	1.990704915	7.320692411	
		Lower Permit Limit	5.911892325	1.781029826	5.935966284	
		Table 3-2 Constant = 1.693				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Density	Density	Minus Untransformed	Minus Transformed	Column D	Column E
	(g/mL)	(g/mL)	Density Value	Density Value	Squared	Squared
1	0.98	-0.020202707	0.022692308	0.022786077	0.000514941	0.000519205
2	1.02	0.019802627	-0.017307692	-0.017219258	0.000299556	0.000296503
3	1.01	0.009950331	-0.007307692	-0.007366962	5.34024E-05	5.42721E-05
4	1.03	0.029558802	-0.027307692	-0.026975433	0.00074571	0.000727674
5	1.03	0.029558802	-0.027307692	-0.026975433	0.00074571	0.000727674
6	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
7	1.02	0.019802627	-0.017307692	-0.017219258	0.000299556	0.000296503
8	1.02	0.019802627	-0.017307692	-0.017219258	0.000299556	0.000296503
9	1.01	0.009950331	-0.007307692	-0.007366962	5.34024E-05	5.42721E-05
10	1.02	0.019802627	-0.017307692	-0.017219258	0.000299556	0.000296503
11	0.98	-0.020202707	0.022692308	0.022786077	0.000514941	0.000519205
12	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
13	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
14	0.99	-0.010050336	0.012692308	0.012633705	0.000161095	0.000159611
15	0.98	-0.020202707	0.022692308	0.022786077	0.000514941	0.000519205
16	1.01	0.009950331	-0.007307692	-0.007366962	5.34024E-05	5.42721E-05
17	1.01	0.009950331	-0.007307692	-0.007366962	5.34024E-05	5.42721E-05
18	0.98	-0.020202707	0.022692308	0.022786077	0.000514941	0.000519205
19	0.99	-0.010050336	0.012692308	0.012633705	0.000161095	0.000159611
20	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
21	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
22	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
23	0.99	-0.010050336	0.012692308	0.012633705	0.000161095	0.000159611
24	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
25	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
26	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
Column Sum	26.07	0.0671676			0.005511538	0.005474165
Column Sum/N	1.002692308	0.002583369				
Column Sum/(N-1)					0.000220462	0.000218967
SQRT(Column Sum/(N-1))					0.014847947	0.01479752
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1.002692308	0.002583369	1.002586709	
		Std Dev	0.014847947	0.01479752	1.014907545	
		Upper Permit Limit	1.034199652	0.033983706	1.034567749	
		Lower Permit Limit	0.971184964	-0.028816967	0.971594282	
		Table 3-2 Constant = 2.122				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1.002692308	0.002583369	1.002586709	
		Std Dev	0.014847947	0.01479752	1.014907545	
		Upper Permit Limit	1.027829882	0.02763557	1.028020974	
		Lower Permit Limit	0.977554733	-0.022468831	0.977781713	
		Table 3-2 Constant = 1.693				

Waste Stream Analysis for VCS Samoa Packing
MPRSA Permit #OD 93-02
Onshore Storage Tank - All Constituents

Month/Day/Year	Total Solids (mg/L)	Total Volatile Solids (mg/L)	5-Day Biological Oxygen Demand (mg/L)	Oil & Grease (mg/L)	Total Phosphorus (mg/L)	Total Nitrogen (mg/L)	Ammonia (mg/L)	pH (pH units)	Density (g/mL)
9/8/93	17300	9920	425000	20588	3500	19040	8400	6.65	0.98
10/6/93	6790	897	33500	33370	750	2940	560	7.06	1.02
10/14/93	8480	3390	255000	5680	1400	3080	840	6.61	1.01
11/3/93	19200	9270	30700	16700	2400	5880	3450	7.39	1.03
11/9/93	27500	13900	32000	8520	2100	6160	3480	6.73	1.03
11/16/93	17600	8890	27100	14580	2200	7840	6580	6.87	1
12/6/93	12100	6270	13800	4006	600	4480	1880	6.43	1.02
12/13/93	33200	25000	21000	5240	1200	8120	1180	6.28	1.02
1/4/94	15600	7170	24400	2460	1000	5880	2650	6.86	1.01
1/10/94	7730	2440	13200	10240	1200	5880	1850	6.74	1.02
2/1/94	16300	8430	24100	7240	1000	5880	2390	6.93	0.98
2/7/94	14500	7050	18000	3700	1000	4760	2000	6.96	1
3/1/94	11900	5090	19900	1958	600	7280	2290	6.94	1
3/7/94	9900	2870	20100	17440	800	6160	2500	6.68	0.99
4/4/94	12000	5820	18900	19040	1900	5880	2050	7	0.98
4/11/94	12700	5980	19300	16200	2000	7280	2300	6.72	1.01
5/2/94	5390	1430	11300	9780	1200	1960	1960	7.36	1.01
5/10/94	9350	5940	14400	8880	1200	4760	1590	6.32	0.98
6/7/94	33500	27000	350000	28120	1000	4480	2030	6.02	0.99
6/14/94	45900	38400	480000	37900	1000	7560	2250	6.16	1
7/5/94	22000	16400	22500	7212	1000	2800	1220	6.25	1
7/12/94	64800	55300	54500	28840	700	4480	1440	6.2	1
8/1/94	72400	59200	73200	5788	1200	3080	2800	6	0.99
8/8/94	18700	10700	26400	57260	1000	7560	2240	6.02	1
9/6/94	45300	35300	57800	37660	2400	3920	3370	6.5	1
9/12/94	86300	72800	99800	19460	1200	4480	3530	6.03	1

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Solids	Total Solids	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Solids Value	Total Solids Value	Squared	Squared
1	17300	9.75846178	1088.695652	-0.103719587	1185258.223	0.010757753
2	6790	8.823206221	11598.69565	0.831535973	134529740.8	0.691452074
3	8480	9.045465729	9908.695652	0.609276465	98182249.53	0.371217811
4	19200	9.862665558	-811.3043478	-0.207923364	658214.7448	0.043232125
5	27500	10.22194128	-9111.304348	-0.56719909	83015866.92	0.321714808
6	17600	9.775654181	788.6956522	-0.120911987	622040.8318	0.014619709
7	12100	9.400960732	6288.695652	0.253781462	39547693.01	0.06440503
8	33200	10.41030515	-14811.30435	-0.755562961	219374736.5	0.570875389
9	15600	9.655026193	2788.695652	-0.000284	7776823.44	8.06558E-08
10	7730	8.952864142	10658.69565	0.701878052	113607793	0.4926328
11	16300	9.698920387	2088.695652	-0.044178193	4362649.527	0.001951713
12	14500	9.581903928	3888.695652	0.072838265	15121953.88	0.005305413
13	11900	9.384293679	6488.695652	0.270448514	42103171.27	0.073142399
14	9900	9.200290036	8488.695652	0.454452157	72057953.88	0.206526763
15	12000	9.392661929	6388.695652	0.262080265	40815432.14	0.068686065
16	12700	9.449357272	5688.695652	0.205384921	32361258.22	0.042182966
17	5390	8.592300664	12998.69565	1.06244153	168966088.7	1.128782004
18	9350	9.143131622	9038.695652	0.511610571	81698019.09	0.261745377
19	33500	10.41930072	-15111.30435	-0.764558524	228351519.1	0.584549737
20	45900	10.7342204	-27511.30435	-1.079478202	756871866.9	1.16527319
21	22000	9.998797732	-3611.304348	-0.344055539	13041519.09	0.118374214
22	18700	9.836278803	-311.3043478	-0.181536609	96910.39698	0.032955541
23	45300	10.72106231	-26911.30435	-1.066320118	724218301.7	1.137038594
Column Sum	422940	222.0590705			2878567061	7.407421554
Column Sum/N	18388.69565	9.654742194				
Column Sum/(N-1)					130843957.3	0.33670098
SQRT(Column Sum/(N-1))					11438.70435	0.580259407
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	18388.69565	9.654742194	15595.57023	
		Std Dev	11438.70435	0.580259407	1.786501802	
		Permit Limit	43084.85835	10.90752225	54585.42877	
		Table 3-2 Constant = 2.159; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	18388.69565	9.654742194	15595.57023	
		Std Dev	11438.70435	0.580259407	1.786501802	
		Permit Limit	38109.02196	10.65510941	42408.72557	
		Table 3-2 Constant = 1.724; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Vol. Solids	Total Vol. Solids	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Vol. Solids Value	Total Vol. Solids Value	Squared	Squared
1	9920	9.2023082	1278.130435	-0.272915548	1633617.408	0.074482896
2	897	6.799055862	10301.13043	2.13033679	106113288.2	4.538334841
3	3390	8.1285852	7808.130435	0.800807452	60966900.89	0.641292575
4	9270	9.134538659	1928.130435	-0.205146006	3717686.974	0.042084884
5	13900	9.539644119	-2701.869565	-0.610251467	7300099.147	0.372406853
6	8890	9.092682329	2308.130435	-0.163289676	5327466.104	0.026663518
7	6270	8.743531634	4928.130435	0.185861019	24286469.58	0.034544318
8	25000	10.1266311	-13801.86957	-1.197238451	190491603.5	1.433379909
9	7170	8.877660934	4028.130435	0.051731719	16225834.8	0.002676171
10	2440	7.799753318	8758.130435	1.129639334	76704848.71	1.276085025
11	8430	9.039552051	2768.130435	-0.110159399	7662546.104	0.012135093
12	7050	8.860782896	4148.130435	0.068609757	17206986.1	0.004707299
13	5090	8.53503311	6108.130435	0.394359543	37309257.41	0.155519449
14	2870	7.962067309	8328.130435	0.967325344	69357756.54	0.935718321
15	5820	8.669055541	5378.130435	0.260337112	28924286.97	0.067775412
16	5980	8.696175847	5218.130435	0.233216806	27228885.23	0.054390078
17	1430	7.265429723	9768.130435	1.663962929	95416372.19	2.76877263
18	5940	8.689464412	5258.130435	0.23992824	27647935.67	0.05756556
19	27000	10.20359214	-15801.86957	-1.274199492	249699081.8	1.623584347
20	38400	10.55581274	-27201.86957	-1.626420086	739941707.8	2.645242296
21	16400	9.705036614	-5201.869565	-0.775643961	27059446.97	0.601623555
22	10700	9.27799902	498.1304348	-0.348606368	248133.9301	0.1215264
23	35300	10.47163824	-24101.86957	-1.54224559	580900116.5	2.378521461
Column Sum	257557	205.376031			2401370329	19.86903289
Column Sum/N	11198.13043	8.929392652				
Column Sum/(N-1)					109153196.8	0.903137859
SQRT(Column Sum/(N-1))					10447.64073	0.950335656
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	11198.13043	8.929392652	7550.678098	
		Std Dev	10447.64073	0.950335656	2.586577713	
		Permit Limit	33754.58676	10.98116733	58757.10339	
		Table 3-2 Constant = 2.159; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	11198.13043	8.929392652	7550.678098	
		Std Dev	10447.64073	0.950335656	2.586577713	
		Permit Limit	29209.86305	10.56777132	38861.96637	
		Table 3-2 Constant = 1.724; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	5-Day BOD	5-Day BOD	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	5-Day BOD Value	5-Day BOD Value	Squared	Squared
1	33500	10.41930072	-2777.272727	-0.259780793	7713243.802	0.06748606
2	30700	10.33201793	22.72727273	-0.172498009	516.5289256	0.029755563
3	32000	10.37349118	-1277.272727	-0.213971257	1631425.62	0.045783699
4	27100	10.20728901	3622.727273	-0.047769082	13124152.89	0.002281885
5	13800	9.532423871	16922.72727	0.627096054	286378698.3	0.393249461
6	21000	9.952277717	9722.727273	0.207242208	94531425.62	0.042949333
7	24400	10.10233841	6322.727273	0.057181514	39976880.17	0.003269726
8	13200	9.487972109	17522.72727	0.671547816	307045971.1	0.45097647
9	24100	10.08996712	6622.727273	0.069552806	43860516.53	0.004837593
10	18000	9.798127037	12722.72727	0.361392888	161867789.3	0.13060482
11	19900	9.898475011	10822.72727	0.261044914	117131425.6	0.068144447
12	20100	9.908475094	10622.72727	0.251044831	112842334.7	0.063023507
13	18900	9.846917201	11822.72727	0.312602724	139776880.2	0.097720463
14	19300	9.867860375	11422.72727	0.29165955	130478698.3	0.085065293
15	11300	9.332558005	19422.72727	0.82696192	377242334.7	0.683866018
16	14400	9.574983486	16322.72727	0.584536439	266431425.6	0.341682849
17	22500	10.02127059	8222.727273	0.138249337	67613243.8	0.019112879
18	54500	10.90595598	-23777.27273	-0.746436056	565358698.3	0.557166785
19	73200	11.2009507	-42477.27273	-1.041430775	1804318698	1.084578059
20	26400	10.18111929	4322.727273	-0.021599364	18685971.07	0.000466533
21	57800	10.96474405	-27077.27273	-0.80522413	733178698.3	0.648385899
22	99800	11.51092346	-69077.27273	-1.351403537	4771669607	1.826291521
Column Sum	675900	223.5094383			10060858636	6.646698861
Column Sum/N	30722.72727	10.15951992				
Column Sum/(N-1)					479088506.5	0.31650947
SQRT(Column Sum/(N-1))					21888.09052	0.562591743
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	30722.72727	10.15951992	25835.89092	
		Std Dev	21888.09052	0.562591743	1.755215679	
		Permit Limit	78307.43606	11.38259437	87780.47503	
		Table 3-2 Constant = 2.174; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	30722.72727	10.15951992	25835.89092	
		Std Dev	21888.09052	0.562591743	1.755215679	
		Permit Limit	68720.45241	11.13617919	68609.01309	
		Table 3-2 Constant = 1.736; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Oil & Grease	Oil & Grease	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Oil & Grease Value	Oil & Grease Value	Squared	Squared
1	20588	9.932463661	-8693.818182	-0.793699746	75582474.58	0.629959287
2	5680	8.644706512	6214.181818	0.494057403	38616055.67	0.244092717
3	16700	9.723163998	-4805.818182	-0.584400084	23095888.4	0.341523458
4	8520	9.05017162	3374.181818	0.088592295	11385102.94	0.007848595
5	14580	9.587406006	-2685.818182	-0.448642091	7213619.306	0.201279726
6	4006	8.295548516	7888.181818	0.843215398	62223412.4	0.711012208
7	5240	8.564076777	6654.181818	0.574687137	44278135.67	0.330265305
8	2460	7.807916629	9434.181818	1.330847285	89003786.58	1.771154497
9	10240	9.234056899	1654.181818	-0.095292984	2736317.488	0.009080753
10	7240	8.887376485	4654.181818	0.251387429	21661408.4	0.063195639
11	3700	8.216088099	8194.181818	0.922675816	67144615.67	0.851330661
12	1958	7.579678823	9936.181818	1.559085091	98727709.12	2.430746322
13	17440	9.766521697	-5545.818182	-0.627757783	30756099.31	0.394079834
14	19040	9.854297308	-7145.818182	-0.715533394	51062717.49	0.511988038
15	16200	9.692766521	-4305.818182	-0.554002607	18540070.21	0.306918888
16	9780	9.188094763	2114.181818	-0.049330849	4469764.76	0.002433533
17	8880	9.091556836	3014.181818	0.047207078	9085292.033	0.002228508
18	28120	10.24423635	-16225.81818	-1.105472432	263277175.7	1.222069297
19	7212	8.883501584	4682.181818	0.25526233	21922826.58	0.065158857
20	28840	10.26951859	-16945.81818	-1.130754677	287160753.9	1.27860614
21	5788	8.663542088	6106.181818	0.475221827	37285456.4	0.225835784
22	19460	9.876116356	-7565.818182	-0.737352441	57241604.76	0.543688623
Column Sum	261672	201.0528061			1322470287	12.14449667
Column Sum/N	11894.18182	9.138763914				
Column Sum/(N-1)					62974775.58	0.578309365
SQRT(Column Sum/(N-1))					7935.664785	0.760466544
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	11894.18182	9.138763914	9309.250985	
		Std Dev	7935.664785	0.760466544	2.139274054	
		Permit Limit	29146.31706	10.79201818	48631.08342	
		Table 3-2 Constant = 2.174; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	11894.18182	9.138763914	9309.250985	
		Std Dev	7935.664785	0.760466544	2.139274054	
		Permit Limit	25670.49589	10.45893384	34854.37114	
		Table 3-2 Constant = 1.736; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Phos	Total Phos	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Phos Value	Total Phos Value	Squared	Squared
1	750	6.620073207	532	0.453985393	283024	0.206102737
2	1400	7.244227516	-118	-0.170168916	13924	0.02895746
3	2400	7.783224016	-1118	-0.709165417	1249924	0.502915589
4	2100	7.649692624	-818	-0.575634024	669124	0.33135453
5	2200	7.696212639	-918	-0.62215404	842724	0.38707565
6	600	6.396929655	682	0.677128944	465124	0.458503607
7	1200	7.090076836	82	-0.016018236	6724	0.000256584
8	1000	6.907755279	282	0.16630332	79524	0.027656794
9	1200	7.090076836	82	-0.016018236	6724	0.000256584
10	1000	6.907755279	282	0.16630332	79524	0.027656794
11	1000	6.907755279	282	0.16630332	79524	0.027656794
12	600	6.396929655	682	0.677128944	465124	0.458503607
13	800	6.684611728	482	0.389446872	232324	0.151668866
14	1900	7.549609165	-618	-0.475550566	381924	0.226148341
15	2000	7.60090246	-718	-0.52684386	515524	0.277564453
16	1200	7.090076836	82	-0.016018236	6724	0.000256584
17	1200	7.090076836	82	-0.016018236	6724	0.000256584
18	1000	6.907755279	282	0.16630332	79524	0.027656794
19	1000	6.907755279	282	0.16630332	79524	0.027656794
20	1000	6.907755279	282	0.16630332	79524	0.027656794
21	700	6.551080335	582	0.522978264	338724	0.273506265
22	1200	7.090076836	82	-0.016018236	6724	0.000256584
23	1000	6.907755279	282	0.16630332	79524	0.027656794
24	2400	7.783224016	-1118	-0.709165417	1249924	0.502915589
25	1200	7.090076836	82	-0.016018236	6724	0.000256584
Column Sum	32050	176.851465			7304400	4.000353756
Column Sum/N	1282	7.074058599				
Column Sum/(N-1)					304350	0.166681407
SQRT(Column Sum/(N-1))					551.6792546	0.408266343
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1282	7.074058599	1180.931248	
		Std Dev	551.6792546	0.408266343	1.504207742	
		Permit Limit	2458.180171	7.944482442	2819.972584	
		Table 3-2 Constant = 2.132; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1282	7.074058599	1180.931248	
		Std Dev	551.6792546	0.408266343	1.504207742	
		Permit Limit	2220.958091	7.768927914	2365.933445	
		Table 3-2 Constant = 1.702; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Total Nitrogen	Total Nitrogen	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Total Nitrogen Value	Total Nitrogen Value	Squared	Squared
1	2940	7.98616486	2363.2	0.528767311	5584714.24	0.279594869
2	3080	8.032684876	2223.2	0.482247295	4942618.24	0.232562454
3	5880	8.679312041	-576.8	-0.16437987	332698.24	0.027020742
4	6160	8.725832057	-856.8	-0.210899886	734106.24	0.044478762
5	7840	8.966994113	-2536.8	-0.452061942	6435354.24	0.20436
6	4480	8.407378325	823.2	0.107553846	677658.24	0.01156783
7	8120	9.002085433	-2816.8	-0.487153262	7934362.24	0.237318301
8	5880	8.679312041	-576.8	-0.16437987	332698.24	0.027020742
9	5880	8.679312041	-576.8	-0.16437987	332698.24	0.027020742
10	5880	8.679312041	-576.8	-0.16437987	332698.24	0.027020742
11	4760	8.468002947	543.2	0.046929224	295066.24	0.002202352
12	7280	8.892886141	-1976.8	-0.37795397	3907738.24	0.142849204
13	6160	8.725832057	-856.8	-0.210899886	734106.24	0.044478762
14	5880	8.679312041	-576.8	-0.16437987	332698.24	0.027020742
15	7280	8.892886141	-1976.8	-0.37795397	3907738.24	0.142849204
16	1960	7.580699752	3343.2	0.934232419	11176986.24	0.872790212
17	4760	8.468002947	543.2	0.046929224	295066.24	0.002202352
18	4480	8.407378325	823.2	0.107553846	677658.24	0.01156783
19	7560	8.930626469	-2256.8	-0.415694298	5093146.24	0.17280175
20	2800	7.937374696	2503.2	0.577557475	6266010.24	0.333572637
21	4480	8.407378325	823.2	0.107553846	677658.24	0.01156783
22	3080	8.032684876	2223.2	0.482247295	4942618.24	0.232562454
23	7560	8.930626469	-2256.8	-0.415694298	5093146.24	0.17280175
24	3920	8.273846933	1383.2	0.241085238	1913242.24	0.058122092
25	4480	8.407378325	823.2	0.107553846	677658.24	0.01156783
Column Sum	132580	212.8733043			73630144	3.356922178
Column Sum/N	5303.2	8.514932171				
Column Sum/(N-1)					3067922.667	0.139871757
SQRT(Column Sum/(N-1))					1751.548648	0.373994328
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	5303.2	8.514932171	4988.707669	
		Std Dev	1751.548648	0.373994328	1.453528906	
		Permit Limit	9037.501718	9.312288078	11073.25564	
		Table 3-2 Constant = 2.132; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	5303.2	8.514932171	4988.707669	
		Std Dev	1751.548648	0.373994328	1.453528906	
		Permit Limit	8284.335799	9.151470517	9428.294661	
		Table 3-2 Constant = 1.702; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Ammonia	Ammonia	Minus Untransformed	Minus Transformed	Column D	Column E
	(mg/L)	(mg/L)	Ammonia Value	Ammonia Value	Squared	Squared
1	560	6.327936784	1600.416667	1.2677036	2561333.507	1.607072418
2	840	6.733401892	1320.416667	0.862238492	1743500.174	0.743455217
3	3450	8.14612951	-1289.583333	-0.550489126	1663025.174	0.303038278
4	3480	8.154787573	-1319.583333	-0.559147189	1741300.174	0.312645579
5	1880	7.539027056	280.4166667	0.056613328	78633.50694	0.003205069
6	1180	7.073269717	980.4166667	0.522370666	961216.8403	0.272871113
7	2650	7.882314919	-489.5833333	-0.286674535	239691.8403	0.082182289
8	1850	7.522940918	310.4166667	0.072699466	96358.50694	0.005285212
9	2390	7.779048645	-229.5833333	-0.183408261	52708.50694	0.03363859
10	2000	7.60090246	160.4166667	-0.005262076	25733.50694	2.76894E-05
11	2290	7.736307097	-129.5833333	-0.140666713	16791.84028	0.019787124
12	2500	7.824046011	-339.5833333	-0.228405627	115316.8403	0.05216913
13	2050	7.625595072	110.4166667	-0.029954688	12191.84028	0.000897283
14	2300	7.740664402	-139.5833333	-0.145024018	19483.50694	0.021031966
15	1960	7.580699752	200.4166667	0.014940632	40166.84028	0.000223222
16	1590	7.371489295	570.4166667	0.224151089	325375.1736	0.050243711
17	2030	7.615791072	130.4166667	-0.020150688	17008.50694	0.00040605
18	2250	7.718685495	-89.58333333	-0.123045111	8025.173611	0.015140099
19	1220	7.106606138	940.4166667	0.489034246	884383.5069	0.239154494
20	1440	7.272398393	720.4166667	0.323241991	519000.1736	0.104485385
21	2800	7.937374696	-639.5833333	-0.341734312	409066.8403	0.11678234
22	2240	7.714231145	-79.58333333	-0.118590761	6333.506944	0.014063769
23	3370	8.122668023	-1209.583333	-0.527027639	1463091.84	0.277758133
24	3530	8.16905315	-1369.583333	-0.573412766	1875758.507	0.3288022
Column Sum	51850	182.2953692			14875495.83	4.604366362
Column Sum/N	2160.416667	7.595640384				
Column Sum/(N-1)					646760.6884	0.200189842
SQRT(Column Sum/(N-1))					804.2143299	0.447425795
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	2160.416667	7.595640384	1989.50349	
		Std Dev	804.2143299	0.447425795	1.56428022	
		Permit Limit	3885.456404	8.555368714	5194.567847	
		Table 3-2 Constant = 2.145; P=0.95				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	2160.416667	7.595640384	1989.50349	
		Std Dev	804.2143299	0.447425795	1.56428022	
		Permit Limit	3537.231599	8.361633345	4279.679252	
		Table 3-2 Constant = 1.712; P=0.90				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	pH	pH	Minus Untransformed	Minus Transformed	Column D	Column E
	(pH Units)	(pH Units)	pH Value	pH Value	Squared	Squared
1	6.65	1.894616855	-0.045769231	-0.008749484	0.002094822	7.65535E-05
2	7.06	1.954445052	-0.455769231	-0.068577681	0.207725592	0.004702898
3	6.61	1.888583654	-0.005769231	-0.002716283	3.3284E-05	7.3782E-06
4	7.39	2.000127735	-0.785769231	-0.114260364	0.617433284	0.013055431
5	6.73	1.906575144	-0.125769231	-0.020707773	0.015817899	0.000428812
6	6.87	1.927164106	-0.265769231	-0.041296736	0.070633284	0.00170542
7	6.43	1.860974538	0.174230769	0.024892832	0.030356361	0.000619653
8	6.28	1.83736998	0.324230769	0.04849739	0.105125592	0.002351997
9	6.86	1.925707442	-0.255769231	-0.039840071	0.065417899	0.001587231
10	6.74	1.908059925	-0.135769231	-0.022192554	0.018433284	0.000492509
11	6.93	1.935859813	-0.325769231	-0.049992443	0.106125592	0.002499244
12	6.96	1.940179474	-0.355769231	-0.054312104	0.126571746	0.002949805
13	6.94	1.937301775	-0.335769231	-0.051434404	0.112740976	0.002645498
14	6.68	1.899117988	-0.075769231	-0.013250617	0.005740976	0.000175579
15	7	1.945910149	-0.395769231	-0.060042779	0.156633284	0.003605135
16	6.72	1.905088155	-0.115769231	-0.019220784	0.013402515	0.000369439
17	7.36	1.996059933	-0.755769231	-0.110192562	0.57118713	0.012142401
18	6.32	1.843719208	0.284230769	0.042148162	0.08078713	0.001776468
19	6.02	1.795087259	0.584230769	0.090780111	0.341325592	0.008241029
20	6.16	1.818076778	0.444230769	0.067790593	0.197340976	0.004595564
21	6.25	1.832581464	0.354230769	0.053285907	0.125479438	0.002839388
22	6.2	1.824549292	0.404230769	0.061318078	0.163402515	0.003759907
23	6	1.791759469	0.604230769	0.094107901	0.365094822	0.008856297
24	6.02	1.795087259	0.584230769	0.090780111	0.341325592	0.008241029
25	6.5	1.871802177	0.104230769	0.014065194	0.010864053	0.00019783
26	6.03	1.796747011	0.574230769	0.08912036	0.329740976	0.007942439
Column Sum	171.71	49.03255163			4.180834615	0.095864933
Column Sum/N	6.604230769	1.885867371				
Column Sum/(N-1)					0.167233385	0.003834597
SQRT(Column Sum/(N-1))					0.408941786	0.061924126
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	6.604230769	1.885867371	6.59206973	
		Std Dev	0.408941786	0.061924126	1.06388162	
		Upper Permit Limit	7.47200524	2.017270365	7.517776116	
		Lower Permit Limit	5.736456299	1.754464376	5.780350818	
		Table 3-2 Constant = 2.122				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	6.604230769	1.885867371	6.59206973	
		Std Dev	0.408941786	0.061924126	1.06388162	
		Upper Permit Limit	7.296569214	1.990704915	7.320692411	
		Lower Permit Limit	5.911892325	1.781029826	5.935966284	
		Table 3-2 Constant = 1.693				

CALCULATIONS FOR NEW PERMIT LIMITS						
Column A	Column B	Column C	Column D	Column E	Column F	Column G
	Untransformed	Transformed	Untransformed Mean	Transformed Mean		
Sample Number	Density	Density	Minus Untransformed	Minus Transformed	Column D	Column E
	(g/mL)	(g/mL)	Density Value	Density Value	Squared	Squared
1	0.98	-0.020202707	0.022692308	0.022786077	0.000514941	0.000519205
2	1.02	0.019802627	-0.017307692	-0.017219258	0.000299556	0.000296503
3	1.01	0.009950331	-0.007307692	-0.007366962	5.34024E-05	5.42721E-05
4	1.03	0.029558802	-0.027307692	-0.026975433	0.00074571	0.000727674
5	1.03	0.029558802	-0.027307692	-0.026975433	0.00074571	0.000727674
6	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
7	1.02	0.019802627	-0.017307692	-0.017219258	0.000299556	0.000296503
8	1.02	0.019802627	-0.017307692	-0.017219258	0.000299556	0.000296503
9	1.01	0.009950331	-0.007307692	-0.007366962	5.34024E-05	5.42721E-05
10	1.02	0.019802627	-0.017307692	-0.017219258	0.000299556	0.000296503
11	0.98	-0.020202707	0.022692308	0.022786077	0.000514941	0.000519205
12	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
13	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
14	0.99	-0.010050336	0.012692308	0.012633705	0.000161095	0.000159611
15	0.98	-0.020202707	0.022692308	0.022786077	0.000514941	0.000519205
16	1.01	0.009950331	-0.007307692	-0.007366962	5.34024E-05	5.42721E-05
17	1.01	0.009950331	-0.007307692	-0.007366962	5.34024E-05	5.42721E-05
18	0.98	-0.020202707	0.022692308	0.022786077	0.000514941	0.000519205
19	0.99	-0.010050336	0.012692308	0.012633705	0.000161095	0.000159611
20	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
21	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
22	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
23	0.99	-0.010050336	0.012692308	0.012633705	0.000161095	0.000159611
24	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
25	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
26	1	0	0.002692308	0.002583369	7.24852E-06	6.6738E-06
Column Sum	26.07	0.0671676			0.005511538	0.005474165
Column Sum/N	1.002692308	0.002583369				
Column Sum/(N-1)					0.000220462	0.000218967
SQRT(Column Sum/(N-1))					0.014847947	0.01479752
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1.002692308	0.002583369	1.002586709	
		Std Dev	0.014847947	0.01479752	1.014907545	
		Upper Permit Limit	1.034199652	0.033983706	1.034567749	
		Lower Permit Limit	0.971184964	-0.028816967	0.971594282	
		Table 3-2 Constant = 2.122				
					Transformed converted	
			Untransformed	Transformed	to Untransformed	
		Mean	1.002692308	0.002583369	1.002586709	
		Std Dev	0.014847947	0.01479752	1.014907545	
		Upper Permit Limit	1.027829882	0.02763557	1.028020974	
		Lower Permit Limit	0.977554733	-0.022468831	0.977781713	
		Table 3-2 Constant = 1.693				

VCS Data 1993-1995(6)

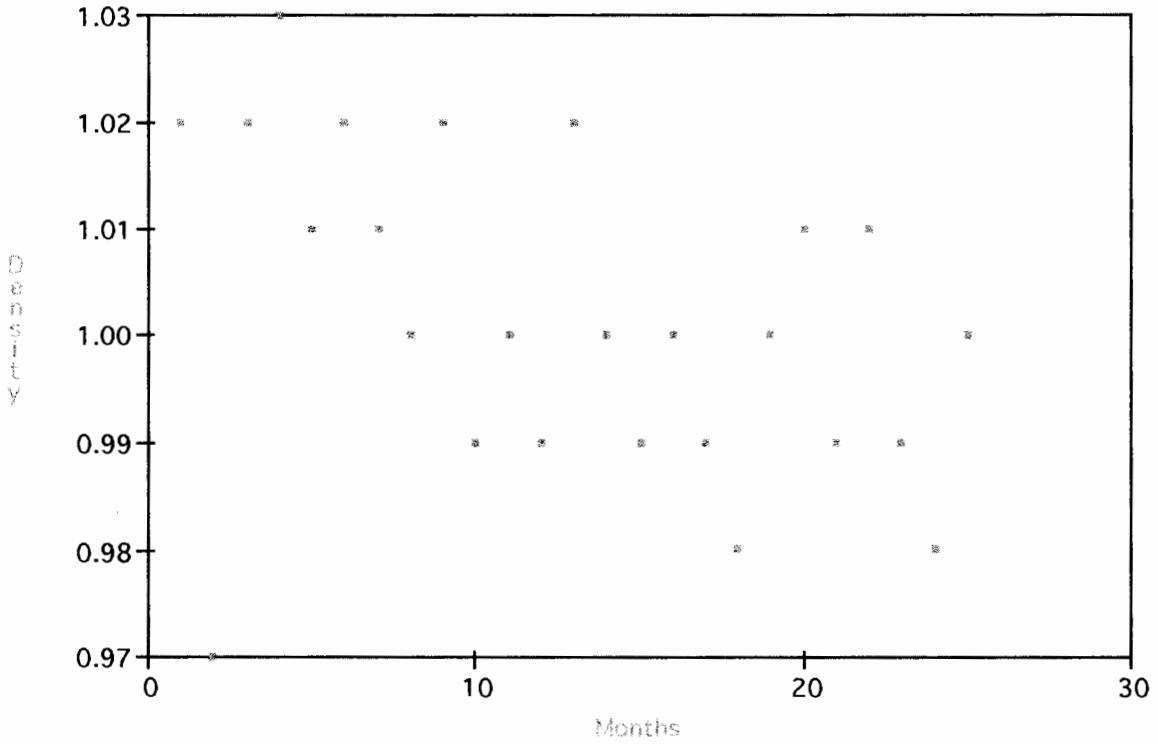
	Months	Total Solids	Tot Vol Solids	5-Day BOD	Oil & Grease	Tot Phosph	Tot Nitrog
1	1	79200	66200	73000	16600	500	13440
2	2	174000	152000	400000	11228	1000	4760
3	3	143000	114000	45000	74400	2100	15400
4	4	201000	174000	75900	44046	1000	9800
5	5	260000	232000	178000	7390	1200	4760
6	6	170000	150000	187000	5320	400	1120
7	7	177000	158000	197000	9102	800	3080
8	8	144000	128000	105000	56220	1200	5320
9	9	233000	166000	214000	4420	1000	4200
10	10	284000	268000	250000	41940	12000	8680
11	11	156000	138000	104000	5850	1000	5600
12	12	57600	50600	42000	4090	1000	3920
13	13	202000	184000	155600	56960	1700	5880
14	14	115000	101000	148000	51960	700	7280
15	15	37700	30700	21700	9236	2200	5040
16	16	76300	67100	17600	31233	1200	7000
17	17	70000	58200	32400	95500	1200	3360
18	18	88400	73600	51900	138380	1100	5880
19	19	58600	52600	56500	49620	1400	4480
20	20	50700	42500	24300	36620	1800	5824
21	21	33100	27300	33500	14140	1400	5880
22	22	65400	58700	54000	76760	1300	8960
23	23	95400	81300	61100	73600	1000	7280
24	24	38800	33400	44600	68100	73	7280
25	25	107000	101000	93000	14580	187	6160

VCS Data 1993-1995(6)

	Ammonia	pH	Density
1	2910	6.2	1.02
2	560	5.9	0.97
3	2420	6.17	1.02
4	2360	6.02	1.03
5	2870	6.18	1.01
6	1450	5.74	1.02
7	2020	5.57	1.01
8	1960	6.94	1.00
9	2540	6.14	1.02
10	2110	6.08	0.99
11	2050	6.00	1.00
12	2680	6.14	0.99
13	3230	6.00	1.02
14	1940	5.30	1.00
15	1900	5.30	0.99
16	1650	6.00	1.00
17	1140	6.50	0.99
18	1920	6.50	0.98
19	918	5.90	1.00
20	1180	6.40	1.01
21	1140	5.90	0.99
22	1220	6.60	1.01
23	2360	6.50	0.99
24	1650	6.40	0.98
25	820	6.00	1.00

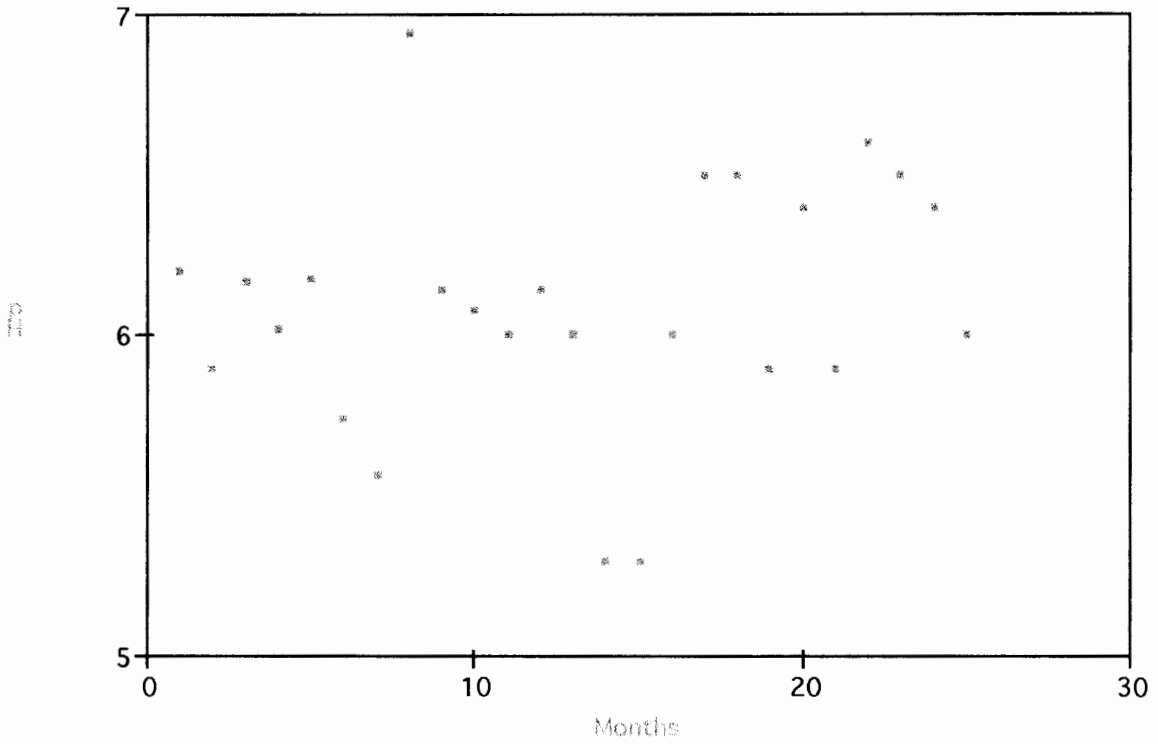
Data File: VCS Data 1993-1995(6)

Variable:	Density	Observations:	25
Minimum:	0.970	Maximum:	1.030
Range:	0.060	Median:	1.000
Mean:	1.002	Standard Error:	0.003
Variance:		0.000	
Standard Deviation:		0.015	
Coefficient of Variation:		1.516	
Skewness:	-0.053	Kurtosis:	-0.907


1.03
1.02
1.01
1.00
0.99
0.98
0.97
0
10
20
30
Months

Data File: VCS Data 1993-1995(6)

Variable:	pH	Observations:	25
Minimum:	5.300	Maximum:	6.940
Range:	1.640	Median:	6.080
Mean:	6.095	Standard Error:	0.076
Variance:	0.146		
Standard Deviation:	0.382		
Coefficient of Variation:	6.262		
Skewness:	-0.167	Kurtosis:	-0.044


7
6
5
0
10
20
30
Months

Data File: VCS Data 1993-1995(6)

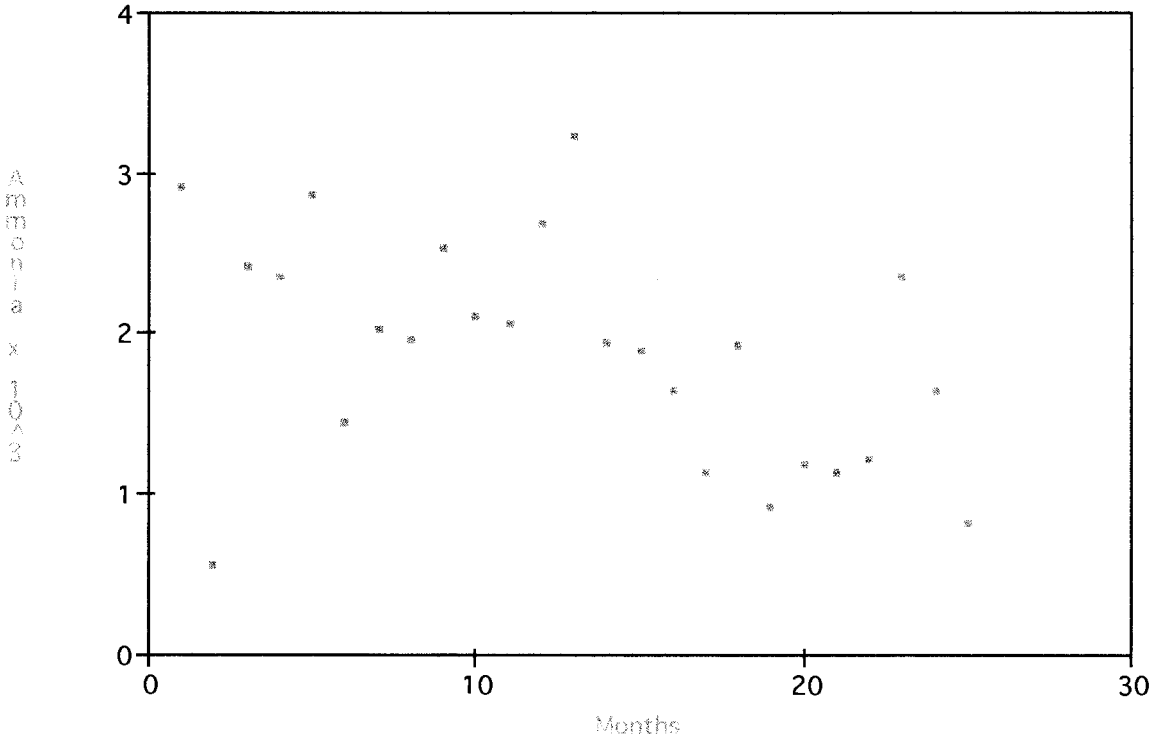
Variable: Ammonia Observations: 25

Minimum:	560.000	Maximum:	3230.000
Range:	2670.000	Median:	1940.000

Mean: 1879.920 Standard Error: 140.877

Variance:	496160.160
Standard Deviation:	704.386
Coefficient of Variation:	37.469

Skewness: -0.023 Kurtosis: -0.981


Ammonia x 10^3
4
3
2
1
0
0
10
20
30
Months

Data File: VCS Data 1993-1995(6)

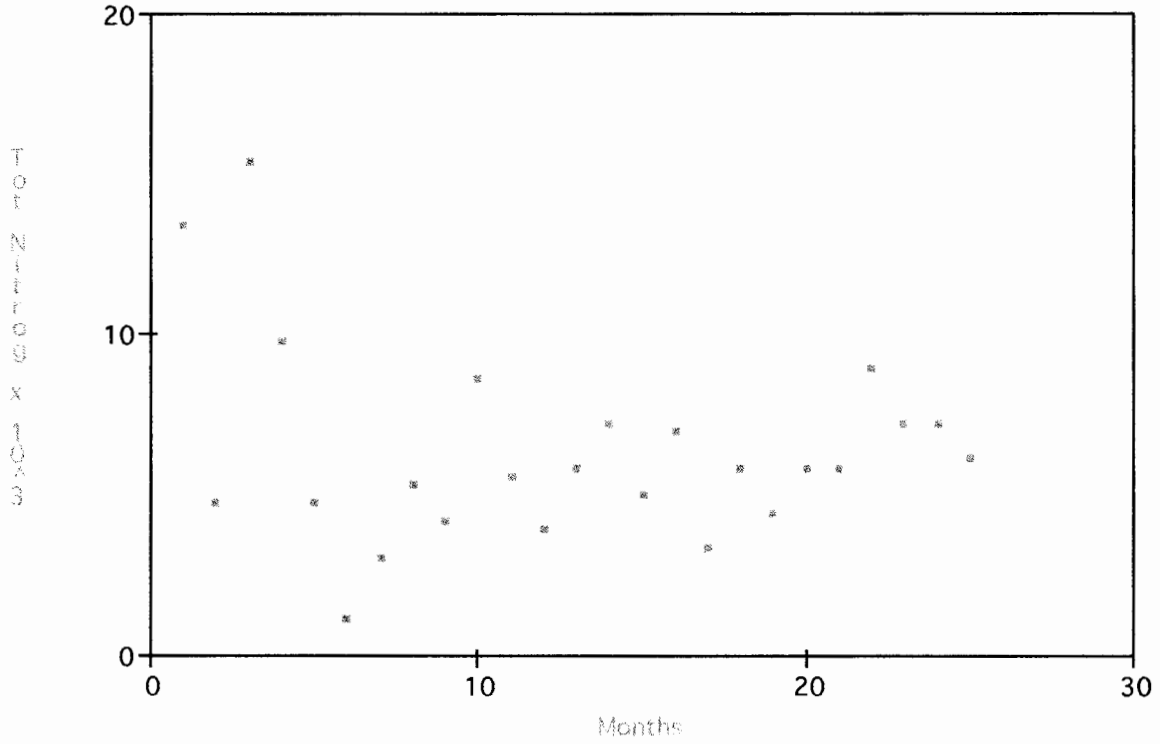
Variable: Tot Nitrog Observations: 25

Minimum:	1120.000	Maximum:	15400.000
Range:	14280.000	Median:	5880.000

Mean: 6415.360 Standard Error: 618.608

Variance:	9566911.573
Standard Deviation:	3093.042
Coefficient of Variation:	48.213

Skewness: 1.188 Kurtosis: 1.479


20
10
0
0
10
20
30
Months
TOT NITROG X 10X3

Data File: VCS Data 1993-1995(6)

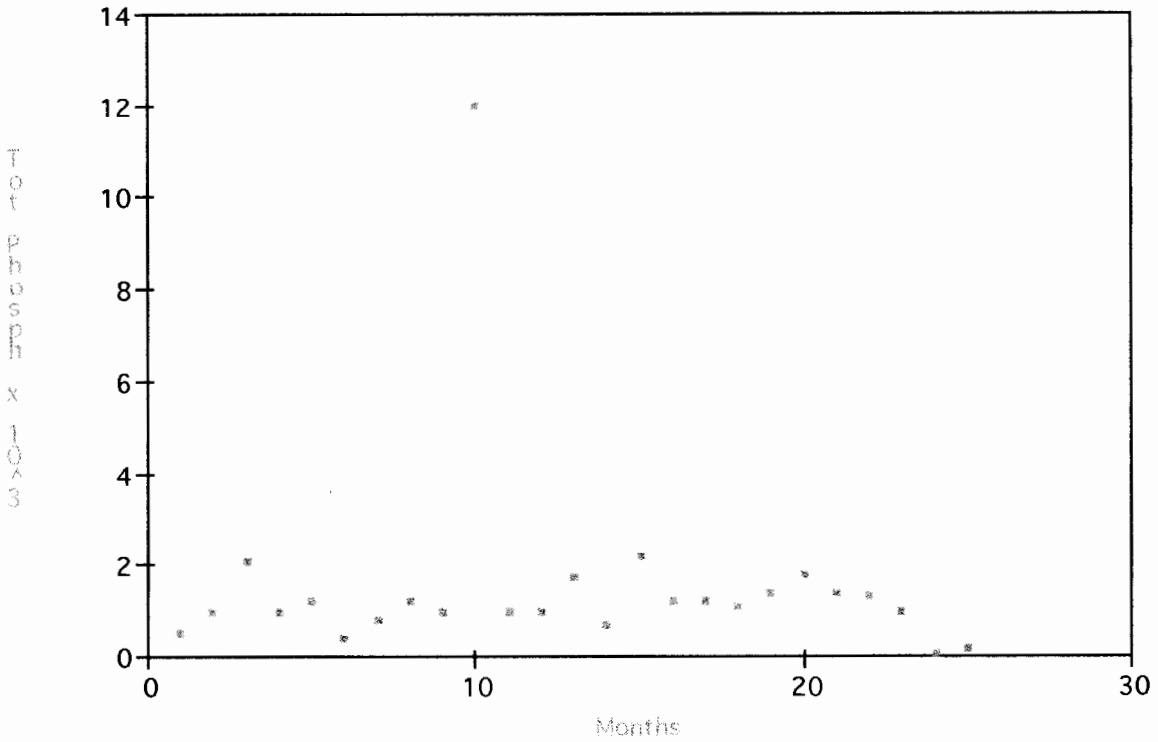
Variable: Tot Phosph Observations: 25

Minimum:	73.000	Maximum:	12000.000
Range:	11927.000	Median:	1100.000

Mean: 1538.400 Standard Error: 447.909

Variance:	5015559.750
Standard Deviation:	2239.545
Coefficient of Variation:	145.576

Skewness: 4.042 Kurtosis: 16.066


14
12
10
8
6
4
2
0
Tot Phosph x 10x3
0
10
20
30
Months

Data File: VCS Data 1993-1995(6)

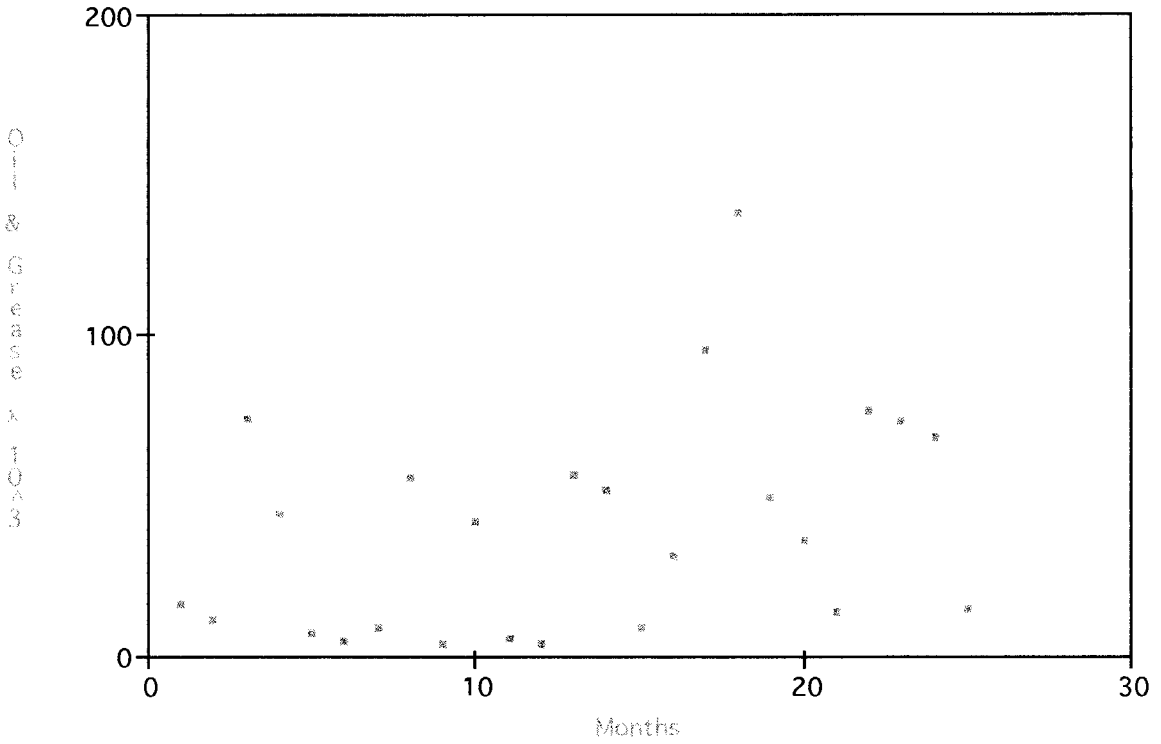
Variable: Oil & Grease Observations: 25

Minimum:	4090.000	Maximum:	138380.000
Range:	134290.000	Median:	36620.000

Mean: 39891.800 Standard Error: 6914.449

Variance:	1195239971.167
Standard Deviation:	34572.243
Coefficient of Variation:	86.665

Skewness: 0.927 Kurtosis: 0.353


200
100
0
0
10
20
30
Months
Oil & Grease x 10^3

Data File: VCS Data 1993-1995(6)

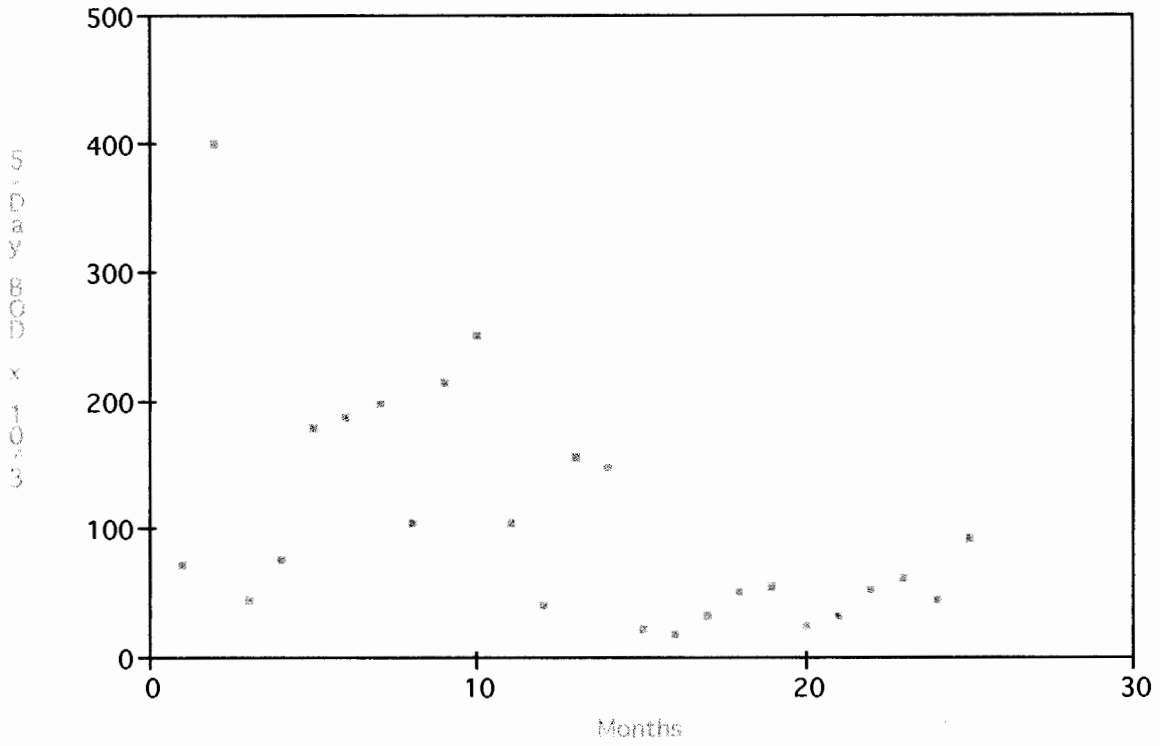
Variable: 5-Day BOD Observations: 25

Minimum:	17600.000	Maximum:	400000.000
Range:	382400.000	Median:	73000.000

Mean: 106604.000 Standard Error: 18220.832

Variance:	8299967900.000
Standard Deviation:	91104.160
Coefficient of Variation:	85.460

Skewness: 1.441 Kurtosis: 1.880


500
400
300
200
100
0
0
10
20
30
Months
5 Day BOD x 10³

Data File: VCS Data 1993-1995(6)

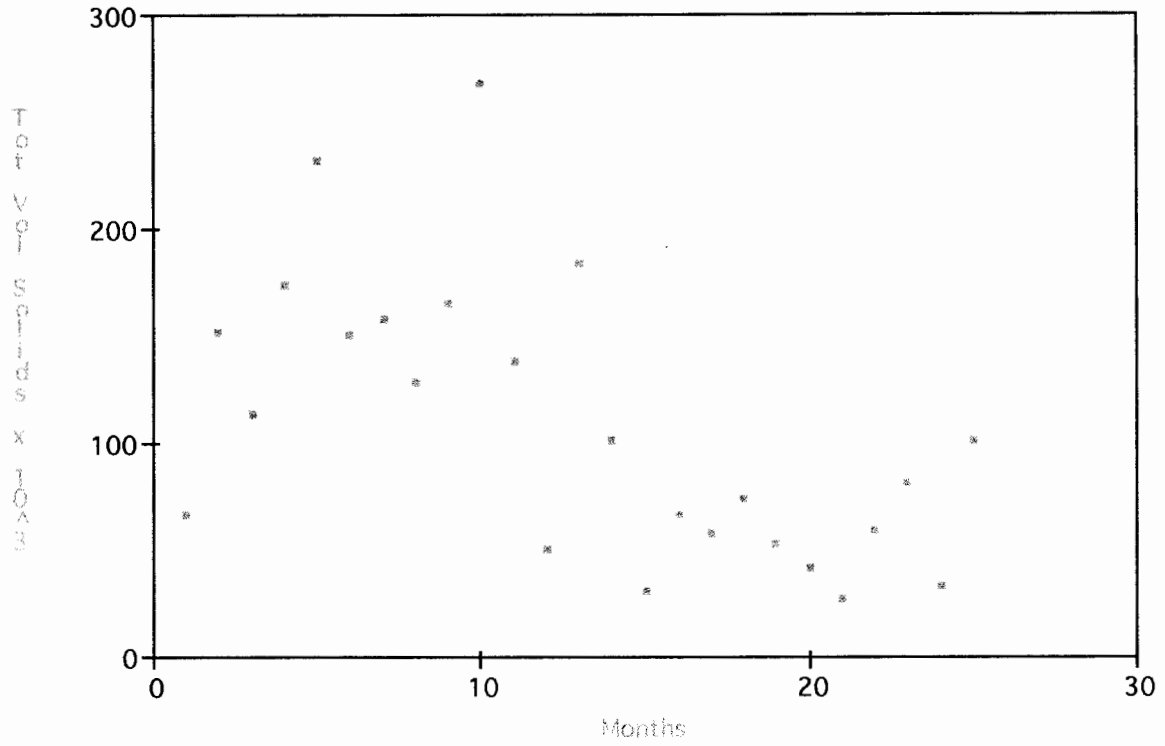
Variable: Tot Vol Solids Observations: 25

Minimum:	27300.000	Maximum:	268000.000
Range:	240700.000	Median:	101000.000

Mean: 108328.000 Standard Error: 12976.726

Variance:	4209885433.333
Standard Deviation:	64883.630
Coefficient of Variation:	59.896

Skewness: 0.682 Kurtosis: -0.448


300
200
100
0
0
10
20
30
Months

Data File:

Variable: Observations:

Minimum: Maximum:

Range: Median:

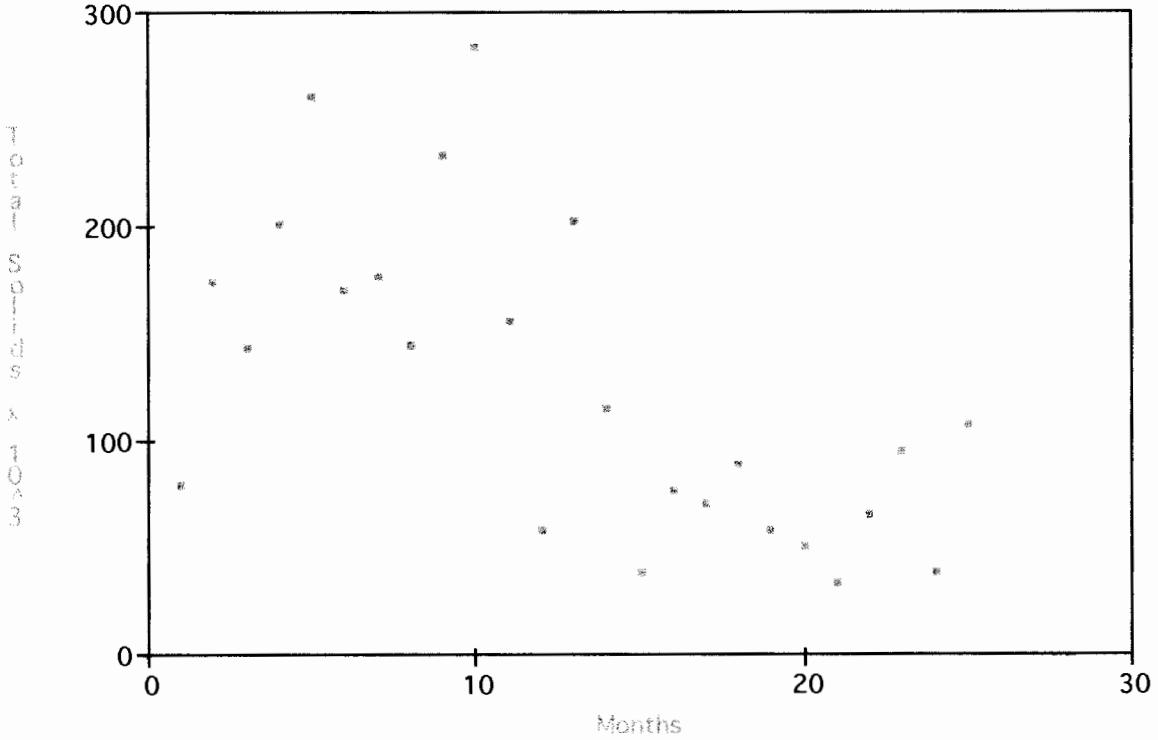
Mean: Standard Error:

Variance:

Standard Deviation:

Coefficient of Variation:

Skewness: Kurtosis:


300
200
100
0
0
10
20
30
Months

VCS Onshore 1995-96

	Month	Total Solids	Tot Vol Solids	5-Day BOD	Oil & Grease	Tot Phosph	Tot Nitrog
1	1	35400	25200	32000	20500	793	8120
2	2	14700	7540	29200	24600	368	5880
3	3	18700	9760	24600	59920	1059	8400
4	4	16600	7860	23900	115060	655	7280
5	5	74300	69400	41300	178560	616	6720
6	6	18200	11900	23100	12468	1287	8960

VCS Onshore 1995-96

	Ammonia	pH	Density
1	2900	7.00	1.00
2	2870	6.20	1.00
3	2670	6.60	1.00
4	2790	6.5	1.00
5	1260	6.7	1.00
6	2150	6.5	1.00

Data File: VCS Onshore 1995-96

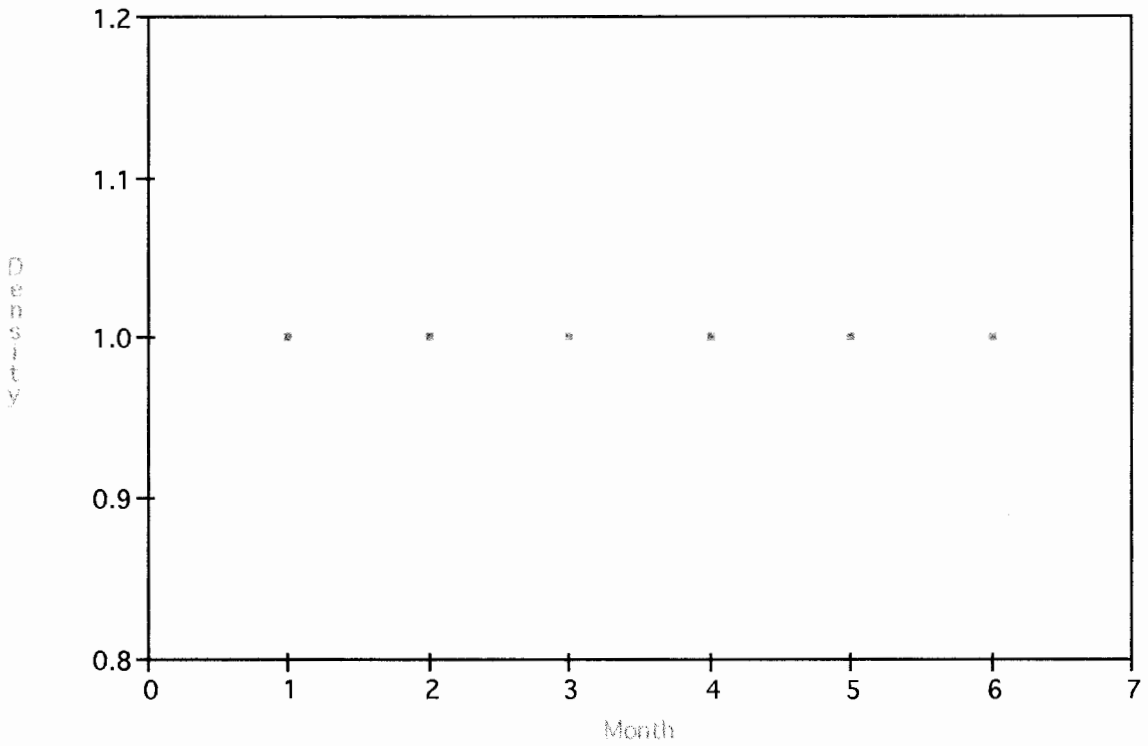
Variable: Density Observations: 6

Minimum:	1.000	Maximum:	1.000
Range:	0.000	Median:	1.000

Mean: 1.000 Standard Error: 0.000

Variance:	0.000
Standard Deviation:	0.000
Coefficient of Variation:	0.000

Skewness: NAN(004).000 Kurtosis: NAN(004).000


1.2
1.1
1.0
0.9
0.8
Density
0
1
2
3
4
5
6
7
Month

Data File: VCS Onshore 1995-96

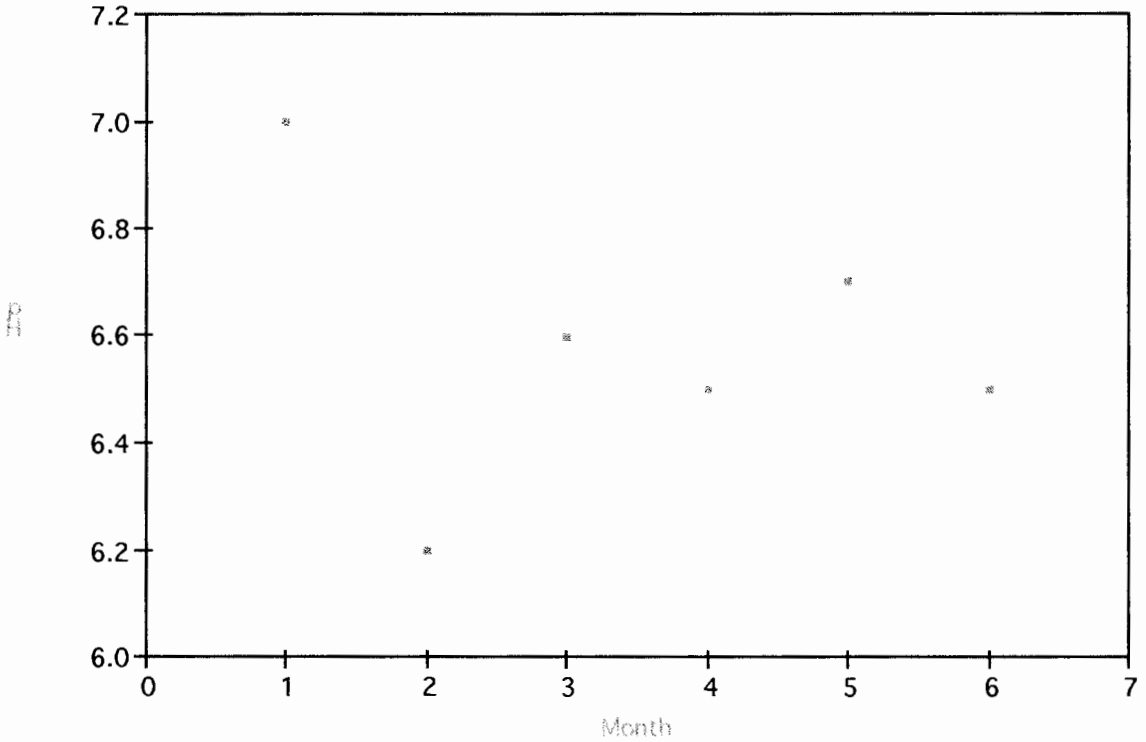
Variable: pH Observations: 6

Minimum:	6.200	Maximum:	7.000
Range:	0.800	Median:	6.550

Mean:	6.583	Standard Error:	0.108

Variance:	0.070
Standard Deviation:	0.264
Coefficient of Variation:	4.009

Skewness:	0.149	Kurtosis:	-1.214


7.2
7.0
6.8
6.6
6.4
6.2
6.0
PH
0
1
2
3
4
5
6
7
Month

Data File: VCS Onshore 1995-96

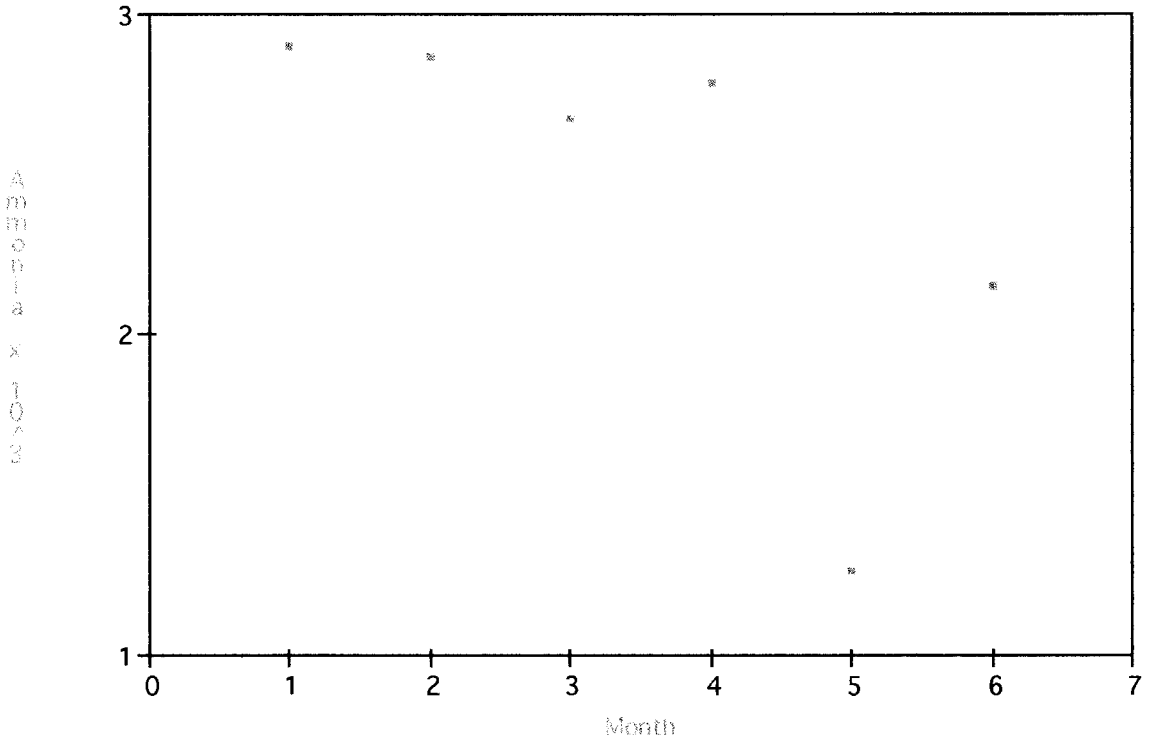
Variable: Ammonia Observations: 6

Minimum:	1260.000	Maximum:	2900.000
Range:	1640.000	Median:	2730.000

Mean: 2440.000 Standard Error: 261.304

Variance:	409680.000
Standard Deviation:	640.062
Coefficient of Variation:	26.232

Skewness: -0.912 Kurtosis: -0.972


3
2
1
0
1
2
3
4
5
6
7
Month
Ammonia x 10x2

Data File: VCS Onshore 1995-96

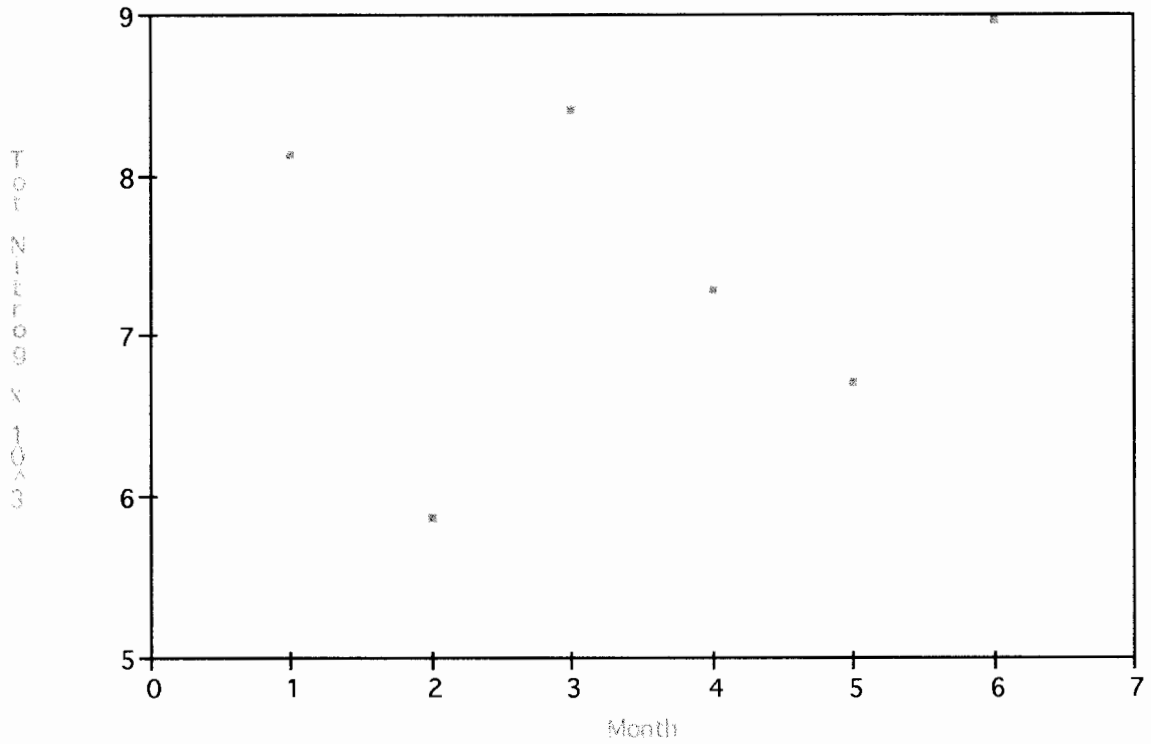
Variable: Tot Nitrog Observations: 6

Minimum:	5880.000	Maximum:	8960.000
Range:	3080.000	Median:	7700.000

Mean: 7560.000 Standard Error: 468.530

Variance:	1317120.000
Standard Deviation:	1147.658
Coefficient of Variation:	15.181

Skewness: -0.203 Kurtosis: -1.760


9
8
7
6
5
0
1
2
3
4
5
6
7
Month
TOT NITROG X 10×3

Data File: VCS Onshore 1995-96

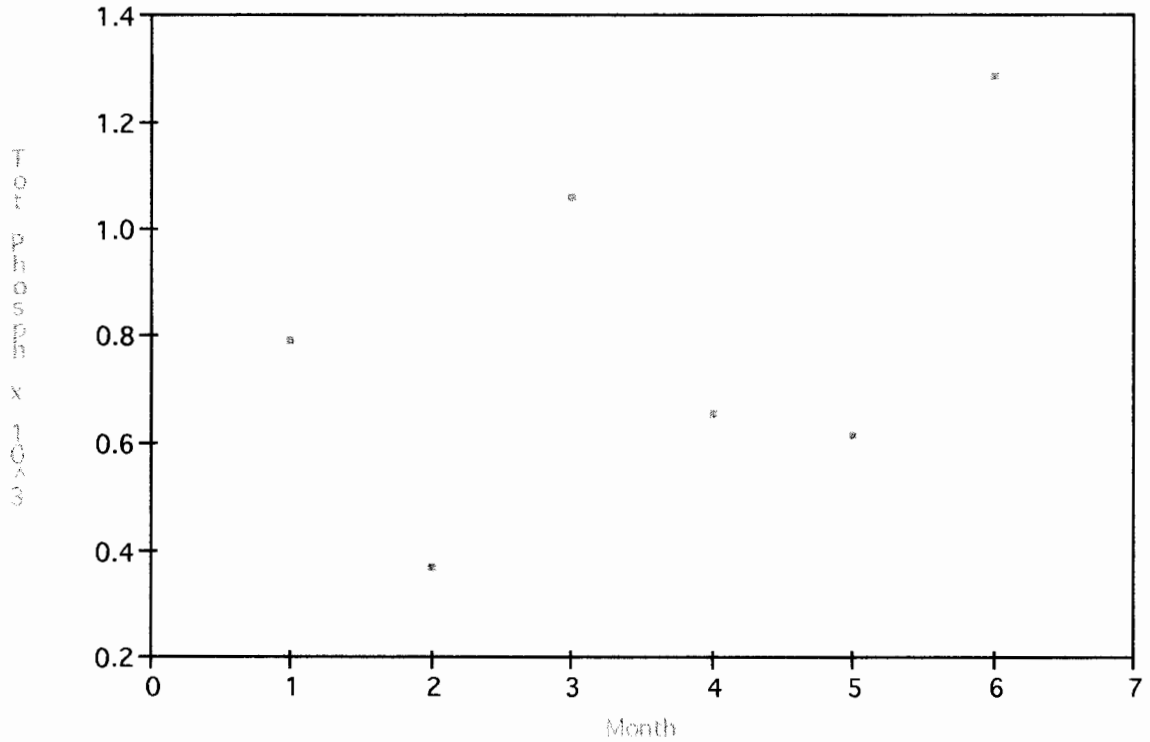
Variable: Tot Phosph Observations: 6

Minimum:	368.000	Maximum:	1287.000
Range:	919.000	Median:	724.000

Mean:	796.333	Standard Error:	134.873

Variance:	109144.667
Standard Deviation:	330.370
Coefficient of Variation:	41.486

Skewness:	0.226	Kurtosis:	-1.631


1.4
1.2
1.0
0.8
0.6
0.4
0.2
Tot Press x 10x3
0
1
2
3
4
5
6
7
Month

Data File: VCS Onshore 1995-96

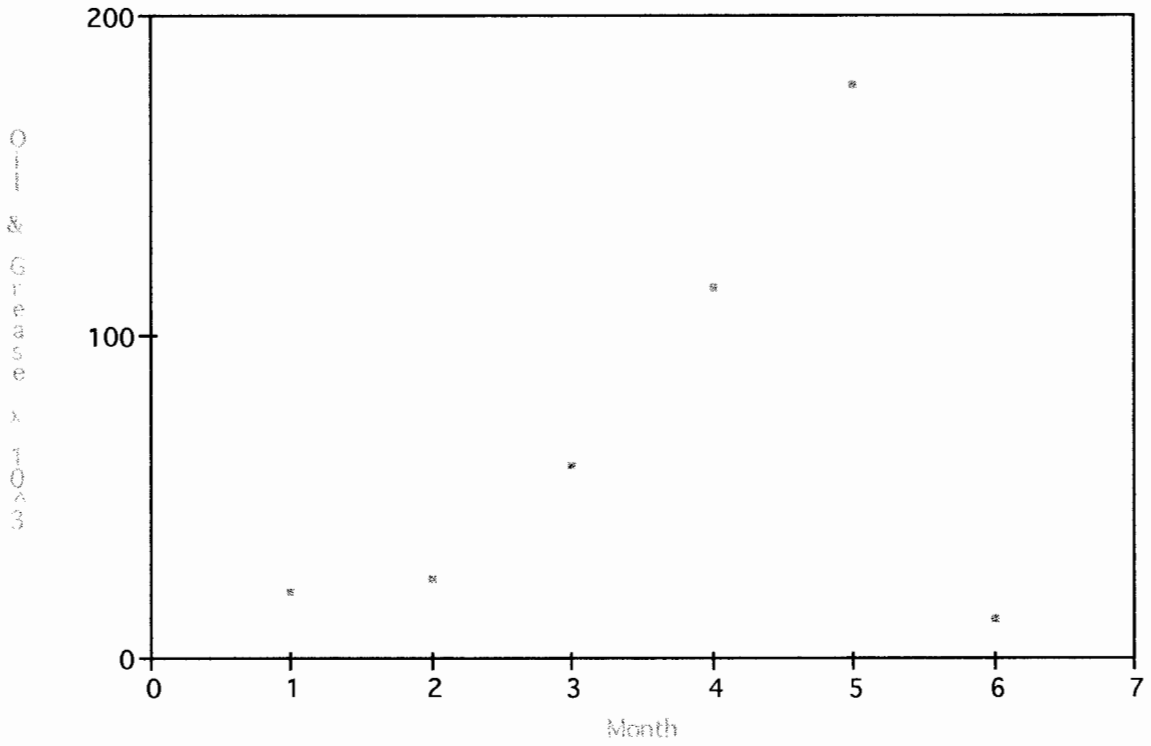
Variable: Oil & Grease Observations: 6

Minimum:	12468.000	Maximum:	178560.000
Range:	166092.000	Median:	42260.000

Mean: 68518.000 Standard Error: 26910.622

Variance:	4345089336.000
Standard Deviation:	65917.292
Coefficient of Variation:	96.204

Skewness: 0.618 Kurtosis: -1.497


200
100
0
0
1
2
3
4
5
6
7
Month

Data File: VCS Onshore 1995-96

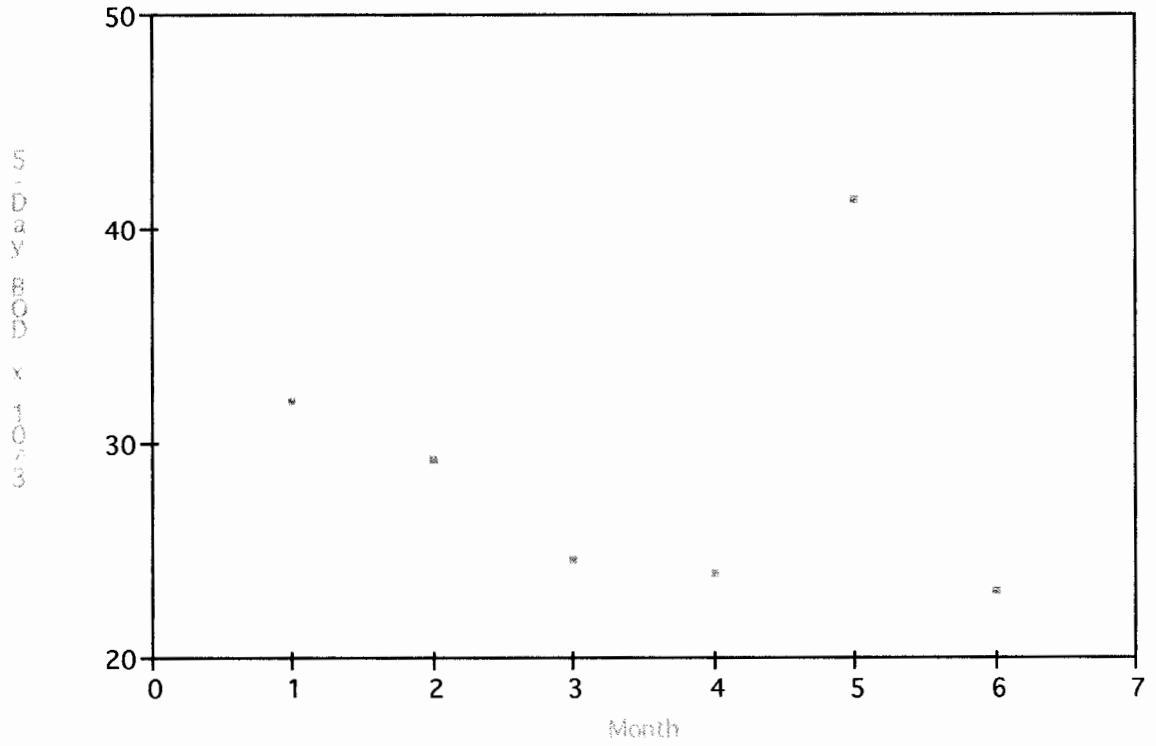
Variable: 5-Day BOD Observations: 6

Minimum:	23100.000	Maximum:	41300.000
Range:	18200.000	Median:	26900.000

Mean: 29016.667 Standard Error: 2831.421

Variance:	48101666.667
Standard Deviation:	6935.537
Coefficient of Variation:	23.902

Skewness: 0.726 Kurtosis: -1.189


50
40
30
20
0
1
2
3
4
5
6
7
Month

Data File: VCS Onshore 1995-96

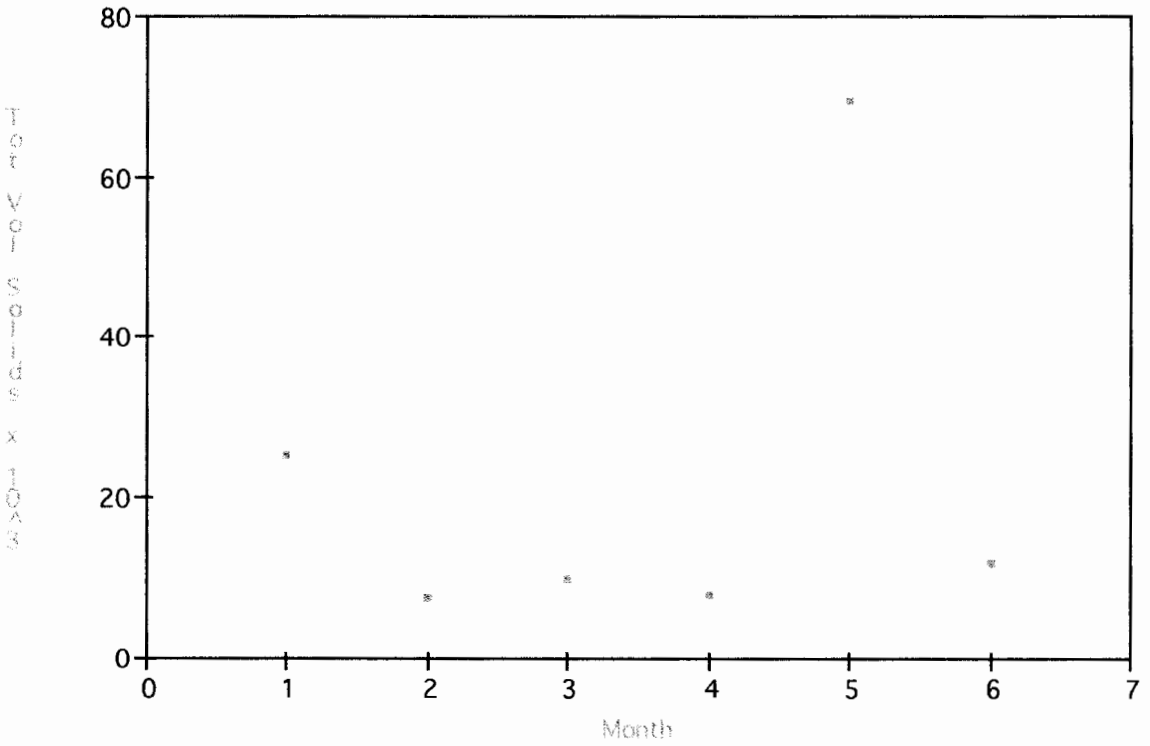
Variable: Tot Vol Solids Observations: 6

Minimum:	7540.000	Maximum:	69400.000
Range:	61860.000	Median:	10830.000

Mean: 21943.333 Standard Error: 9862.115

Variance:	583567906.667
Standard Deviation:	24157.150
Coefficient of Variation:	110.089

Skewness: 1.162 Kurtosis: -0.462


80
60
40
20
0
0
1
2
3
4
5
6
7
Month
Total Voids x 10^3

Data File: VCS Onshore 1995-96

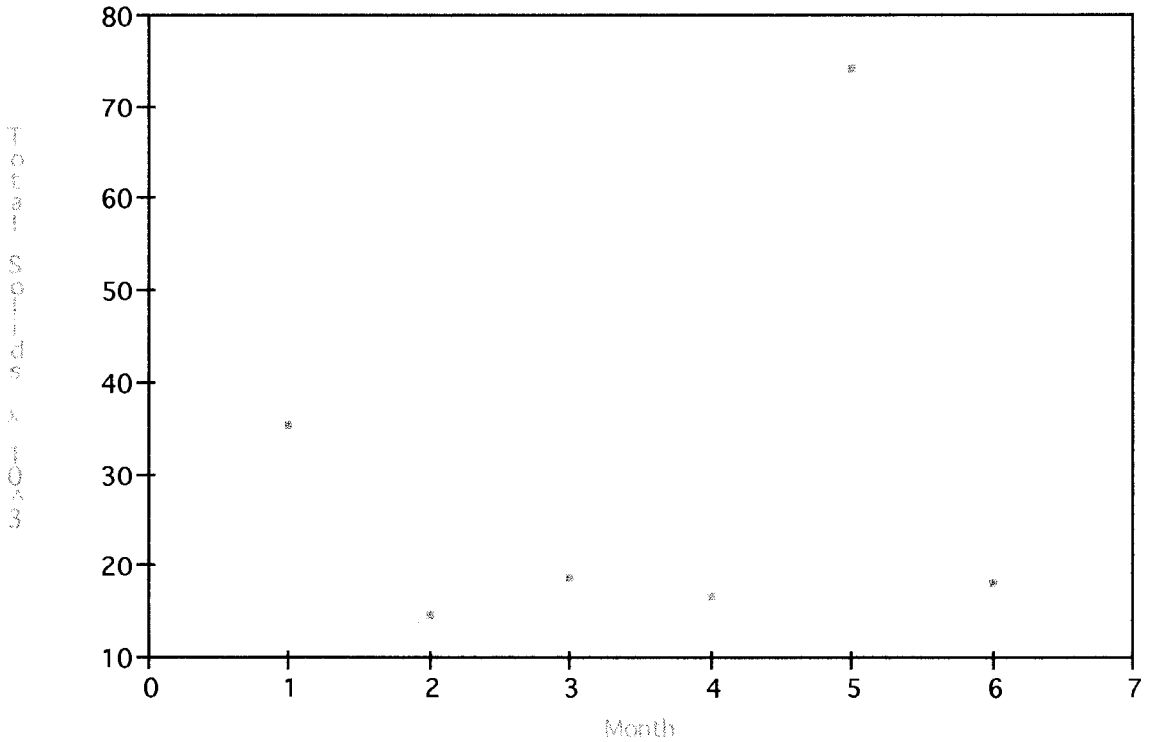
Variable: Total Solids Observations: 6

Minimum:	14700.000	Maximum:	74300.000
Range:	59600.000	Median:	18450.000

Mean: 29650.000 Standard Error: 9436.622

Variance:	534299000.000
Standard Deviation:	23114.909
Coefficient of Variation:	77.959

Skewness: 1.091 Kurtosis: -0.614


80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
Month