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ENVIRONMENTAL MONITORING FINAL REPORT
GROUNDWATER CHEMICAL ANALYSES

Work Performed Under Contract No. AC05-78OR03054

Dames & Moore
Lexington, Kentucky

and

International Coal Refining Company
Allentown, Pennsylvania

Technical Information Center
Office of Scientific and Technical Information
United States Department of Energy

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ENVIRONMENTAL MONITORING FINAL REPORT:
GROUNDWATER CHEMICAL ANALYSES

Prepared by

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Lexington, Kentucky

under subcontract to
INTERNATIONAL COAL REFINING COMPANY
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ABSTRACT

This report presents the results of analyses of groundwater quality at the SRC-I Demonstration Plant site in Newman, Kentucky. Samples were obtained from a network of 23 groundwater observation wells installed during previous studies. The groundwater was well within U.S. EPA Interim Primary Drinking Water Standards for trace metals, radioactivity, and pesticides, but exceeded the standard for coliform bacteria. Several U.S. EPA Secondary Drinking Water Standards were exceeded, namely, manganese, color, iron, and total dissolved solids. Based on the results, Dames & Moore recommend that all wells should be sterilized and those wells built in 1980 should be redeveloped.

INTRODUCTION

Dames & Moore investigated the quality of groundwater at the proposed SRC-I Demonstration Plant site in Newman, Kentucky during late April and early May, 1982. The overall objective was to determine base-line groundwater conditions beneath the site using a monitoring well network installed during previous studies (Dames & Moore, 1984a).

The initial plan consisted of monthly water-level measurements of the complete network of existing wells and quarterly water-quality analyses, over a 1-year period (Figure 1). The first quarterly analysis was to consist of samples from the entire monitoring well network, while the remaining quarterly samples were to be obtained from a set of six wells to acquire temporal data at selected locations within the site.

However, this program was subsequently reduced in scope by International Coal Refining Company (ICRC), so that it consisted of initial sampling of all the monitoring wells and measurement of one set of water levels. This report presents the results of the water-quality analyses; the water-level determinations are presented separately (Dames & Moore, 1984a).

QUALITY ASSURANCE

A quality assurance (QA) program was established for this investigation to ensure that the sampling procedures and laboratory analyses would result in valid determination of groundwater quality. An internal Dames & Moore quality assurance team headed by a project quality assurance coordinator performed the work.

Field Audit

Quality assurance was provided in the field by thoroughly cleaning the sampling equipment before its use (see Procedures section), and by using dedicated Teflon tubing for sampling. Furthermore, distilled water was flushed through each pump before it was installed in a well, and an additional six well volumes was pumped before a sample was actually collected for analysis. A field audit was performed to verify that these procedures were being followed and to correct any problems

revealed during the QA audit. The field procedures are further described in the Procedures section.

Prequalification Audit

Dames & Moore conducted a preliminary prequalification audit to ensure that the laboratory and procedures selected were capable of producing accurate and precise results. A subsequent laboratory audit was performed during actual analysis of groundwater samples for further verification.

Laboratory Audit

Laboratory audit assurance consisted of the internal program of the laboratory of McCoy & McCoy (Madisonville, Kentucky), plus an external program implemented by Dames & Moore. McCoy & McCoy's internal program consisted of analyzing Environmental Protection Agency (EPA) spikes and reference samples of every seventh sample to maintain accuracy and precision of their equipment and results. Results of these spikes and references had to fall within a 95% confidence interval furnished by the EPA and the equipment reference manufacturers. McCoy & McCoy also performed duplicate runs when required for specific tests in which statistical data were produced by the equipment (flame atomic adsorption) or whenever a result appeared to be widely divergent from other observations in the sampling program.

Dames & Moore ensured control of the laboratory analyses by providing EPA-prepared spikes; resulting analyses were required to fall within the 95% confidence intervals provided. Any analyses outside the confidence interval after checking data reduction, rechecking the equipment, and making appropriate corrections were rerun until the 95% level was obtained. The analyses were also rerun for each monitoring well to achieve representative results.

PROCEDURES

Field

The field sampling procedures were prepared by Dames & Moore and ICRC to ensure accurate results and to prevent any induced contamination

from the equipment or cross-contamination between wells. The monitoring wells installed during this investigation (Dames & Moore, 1984a) consisted of stainless steel, not polyvinyl chloride (PVC), pipes and screens, to prevent contamination by PVC leaching. However, PVC water-level-monitoring wells installed in 1981 (Dames & Moore, 1981a, 1984a) were also used in order to provide complete areal coverage of the site and data on possible PVC contamination of the water.

The stainless steel wells were developed 2 weeks prior to sampling (procedures are described in Dames & Moore, 1984a) so that any fine material that might interfere with groundwater analysis was removed from both the wells and the surrounding aquifer. The older wells, which were initially developed for reading water levels, were not redeveloped before sampling; the presence of suspended sediment and organic material in these wells is discussed in another section of this report.

Sampling equipment consisted of a Johnson-Keck SP-1 submersible, 2-in., stainless steel pump and dedicated Teflon discharge tubing for each well. Before being transported to the field, this equipment was thoroughly cleaned using the following rinses: tap water; warm, soapy tap water; tap water; acetone; hexane; and distilled water. Acetone was used instead of methanol because of a supplier error in stocking the required amount of methanol. The change to an acetone rinse was documented as to proper procedure by Dames & Moore in-house procedures and discussions with the Kentucky Department of Natural Resources laboratory (personal communication, 1981). After both external and internal surfaces of the tubing and pump were rinsed, the equipment was stored in clean containers for transportation to the field. This procedure was also followed after field disassembly and was repeated prior to reuse.

During the sampling program, one of the submersible pumps malfunctioned, necessitating its replacement by the manufacturer. However, suitable solvents for washing any organic material from the new pump were unavailable in the Owensboro area. Consequently, the pump was thoroughly washed with distilled water and flushed with either six volumes of distilled water for equipment blanks or six volumes of well water before sampling, for the remainder of the field sampling program. Analysis of the data collected indicated that no contamination occurred due to the equipment.

A Hydrolab Digital 4001 meter was used to measure temperature, dissolved oxygen, pH, and specific conductance. Calibrating the meter before use and recalibrating after sampling indicated that calibration did not change during the sampling. The Hydrolab was calibrated for: (1) pH using standard buffer solutions with pH's of 4, 7, and 9; (2) specific conductivity using 0.002 and 0.005 M KCl solutions with respective conductivities of 292 and 717.8 $\mu\text{mhos/cm}$; and (3) dissolved oxygen using water-saturated air at the temperature of the dissolved oxygen cell (100% humidity), as recommended by the manufacturers. Temperature was set by the manufacturer to within 0.2°C.

Sampling procedures consisted of first flushing six volumes of distilled water through the pump (equivalent to six volumes of the amount of water in each well). Each well had an equipment blank collected from the distilled water before the pump was installed. A sample was also collected from the distilled water. All equipment blanks are being stored at the laboratory for any future analyses.

The submersible pump was then installed in the well, where an additional six volumes of water was discharged before the actual water sample was obtained. Samples were collected from the discharge tube directly into the sample bottles supplied by McCoy & McCoy Laboratories. Field personnel wore Teflon gloves and discarded them after each well sampling to prevent contamination. Sample bottle specifications provided by the laboratory are listed in Table 1.

Field trip blanks were collected every third day of the sampling program to determine the presence of volatile organics in the atmosphere that had the potential to contaminate the groundwater samples during collection. These bottles were supplied by McCoy & McCoy; one blank remained open the entire day, one remained closed, and others were opened during sample collection at various wells.

After samples were obtained from each well, the Teflon tubing was replaced in its container and marked as to its use (well number) for subsequent transport to the laboratory for cleaning and storage.

Laboratory

Samples were analyzed in the laboratory by EPA-approved methods; organic analyses were done by either gas chromatography or gas chroma-

tography/mass spectroscopy. Detection limits for each parameter were also determined by the individual chemistry of each parameter, the amount of sample provided, and the capabilities of the instrumentation.

RESULTS

Quality Assurance

Quality assurance audits were reviewed upon receipt by project management personnel, at which time responses were prepared. All unsatisfactory audit items were corrected or documented as to their satisfactory performance in files housed in Lexington.

Questions regarding analysis for total metals or for dissolved metals were resolved by checking references in EPA's Interim Primary Drinking Water Regulation 40 CFR 141.23 (f) (August 27, 1980). This document states that techniques applying to total metals should be used, and an in-house communication with George Dickson, EPA Office of Solid Waste, on October 9, 1981, confirmed this.

Precision and accuracy testing was performed routinely by McCoy & McCoy Laboratories, as part of their in-house QA program. Reference standards and EPA spikes were analyzed as every seventh sample; confidence limits of 95% and duplicate analyses of every seventh analysis were required.

Field Sampling

Results of the sampling program indicate that the groundwater is generally hard, containing exclusively bicarbonate alkalinity, and that several wells contained high amounts of suspended solids, manganese, iron, color, total dissolved solids, and bacteria (Table 2). Total dissolved solids, which averaged 370 mg/L, consisted mostly of magnesium and calcium bicarbonates, sulfates, and chlorides.

To get an indication of the quality of the groundwater, the results (Table 2) were compared to EPA Primary and Secondary Drinking Water Standards (Table 3). Manganese was the parameter most frequently in noncompliance, with 86% of the observations exceeding the Secondary Drinking Water Standard of 0.05 mg/L (Table 4). Color and iron both exceeded the standards 57% of the time, and total dissolved solids

exceeded the standard in 10% of the samples. Parameters on the federal list of Secondary Drinking Water Standards (40 CFR 143), which became effective on January 19, 1981, are intended to control contaminants that affect aesthetics, such as taste and color, that determine the public's acceptance of drinking water.

Coliform bacteria was the only parameter on the list of Primary Drinking Water Standards for which a noncompliance concentration was reported (Well No. 112). However, other tests for total coliform bacteria showed confluent growths of bacteria that were not all coliform colonies; therefore, specific coliform counts could not be determined (D. Wolfe, McCoy & McCoy, personal communication, July 30, 1982). None of the parameters analyzed revealed any variation from naturally occurring concentrations in groundwater (Table 5).

Further examination of the data revealed that some differences apparently existed between the wells that were recently developed (101, 102, and 104-114) and those that were drilled in 1980 (A, B, C, D, 8, 66, PVC-1, and PVC-2). As explained under Procedures, the recently drilled wells were developed by extensive flushing of suspended materials in the strata surrounding the wells. The wells drilled in 1980 to measure water levels were not developed in this manner.

To test these differences, a Student's t test was run on the total suspended solids (TSS) readings of the new wells versus those of the old wells. Because a significant difference ($p > 0.05$) was found between the means of the two sets of data, the data probably were not from the same population; that is, they had a different parametric mean.

Regression analyses were also performed for several parameters to test their relationship to the TSS. Silica, aluminum, turbidity, and iron all had regression coefficients above 0.78, indicating that these parameters are very dependent on the amount of TSS. The silica and aluminum are probably due to silt or clay particulate matter. Iron is usually associated with suspended matter and is often high in groundwaters of the region. Turbidity, of course, is a direct function of the amount of suspended matter. Manganese (0.13), color (0.13), and total organic carbon (TOC) (0.24) had low regression coefficients when run against TSS.

Because reddish organic matter was evident in some of the samples, it is possible that the bacteria present in the groundwater were iron bacteria. These bacteria live in groundwater high in iron, take oxygen from bicarbonates and carbon dioxide, and oxidize iron and manganese (Johnson Divison, UOP, Inc., 1980). Total organic carbon (TOC) should indicate the presence of such bacteria. Regression coefficients of bicarbonate, manganese, iron, and color vs. TOC were run. Bicarbonate (0.74) and manganese (0.61) had the strongest relationship to the amount of TOC, whereas iron (0.35) and color (0.41) showed little relation.

Data for some of the wells monitored were not truly representative of the groundwater quality in the area. Thus, the results of Table 2 were used to construct confidence intervals around the means. Values that fell outside the confidence interval were not considered to be members of the population and were discarded. That is, it was assumed that the population mean was a true indication of the parametric mean, and that values lying outside the 95% confidence interval had too low a probability (<0.05) to be considered part of that population by chance. After the initial values were eliminated, the mean and confidence interval were recalculated; these results are presented in Table 6.

Most parameters had only a few observations that could be discarded on the basis of probability. Gross alpha was the only parameter for which three parameters fell outside the confidence interval. Total dissolved solids (TDS), nitrate, sulfur, TSS, turbidity, dissolved oxygen, bismuth, copper, iron, chlororganics, monocyclic hydrocarbons, phenols, and uranium each had two observations outside the confidence interval.

Those wells containing the greatest number of deviant observations were 66(10), 106(7), PVC-1(6), and 101(6). These wells must be considered the least representative of groundwater quality in the Newman site area. Wells 66 and PVC-1 are older, undeveloped wells, and well 101 could never be properly cleaned during development (see Dames & Moore, 1984a); however, well 106 had no obvious reason for having a relatively high number of deviant observations.

Comparing the results of the current study with those of samples collected from domestic wells in 1980 (Dames & Moore, 1981b) revealed that both sets of data are generally the same. The earlier samples were statistically lower in iron and manganese, but higher in nitrate, zinc, and specific conductance. These variations may result from (1) different laboratories' analyses and detection limits; (2) different sampling locations (monitoring wells vs. domestic wells); (3) zinc being dissolved from galvanized pipes and possible elevated nitrate levels from septic tanks near the houses; and (4) variations in temporal chemical composition.

Quality Assurance Check

Overall, there was close agreement between the observed results and those for samples provided by the U.S. EPA. Lab results usually fell within the 95% confidence interval provided by the EPA for each parameter. Several of the trace metals (aluminum, beryllium, cobalt, nickel, and zinc) and phenol were present in the QA samples in levels below the detection limit of the laboratory procedures. The analysis for iron did not fall within the confidence interval; however, the value obtained after rerunning the test, checking equipment calibration, and reducing data was only 0.02 ppm above the lower detection limit and 0.03 ppm above the upper confidence limit supplied by EPA. This discrepancy can probably be explained by the proximity of the observation to the lower detection limit of the testing procedure. Because the mean value for the monitoring wells was 2.08 ppm, the discrepancy should have no bearing on the results.

The original analysis also indicated that the values for vanadium and lead were outside the confidence intervals. The vanadium value reported by the laboratory was below its detection limit and should have been reported as such. The lead value was rerun after changing the instrument, at which time it fell within the confidence interval. The lead analyses were then rerun for the entire set of monitoring wells.

Trip Blank Samples

No volatile organics were found in any of the trip blank samples, indicating no background contamination of the well samples.

CONCLUSIONS

The groundwater at the proposed SRC-I Demonstration Plant site in Newman, Kentucky was well within the U.S. EPA Interim Primary Drinking Water Standards for trace metals, radioactivity, and pesticides. Total coliform bacteria was the only primary standard which was exceeded. No source for the coliform was found, and it may be that confluent growths of iron bacteria made coliform counts impossible (D. Wolfe, McCoy & McCoy, personal communication, July 30, 1982).

The U.S. EPA Secondary Drinking Water Standards for parameters primarily associated with the aesthetic qualities of the water indicated that limits for manganese were exceeded in 86% of the 21 wells; limits for color and iron were exceeded in 57% of the wells; and limits for total dissolved solids were exceeded in 10% of the wells. Regression analysis indicated that the high iron value may be partly attributed to a high suspended sediment concentration in several wells, although alluvial groundwater in the area is typically high in iron (Gallagher and Price, 1966) (0.5 to 10 ppm) and manganese (U.S. Army Corps of Engineers, 1975). Aluminum and silica were also found to be associated with suspended matter, probably clay and silt particulates.

As noted above, iron standards are often exceeded in groundwater in alluvial aquifers. Hem (1978) notes that some groundwaters containing high iron concentrations also contain high manganese concentrations. High manganese concentrations were also noted in the 1980 groundwater data (Dames & Moore, 1981) and are probably typical of the groundwater in the alluvial deposits at the proposed plant site. The two wells in which the total dissolved solids (TDS) concentrations were above the drinking water regulations (B106 and B) are outside the 95% confidence intervals. However, an unexplained elevated concentration of sulfate produced the high TDS value in B106, and an unexplained high concentration of magnesium produced the elevated TDS value in B.

The summarized groundwater statistical data shown in Table 6, composed of analyses of samples falling within the 95% confidence intervals of the mean, are considered representative of the base-line groundwater conditions.

RECOMMENDATIONS

The results of this initial round of groundwater sampling indicate that all wells should be sterilized and those wells build in 1980 should be redeveloped. This action is dictated by the deviant results due to high suspended sediment in the old wells and the high bacteria count in all the wells. Each 1980 well should be flushed with a chlorine solution and redeveloped following procedures outlined by Dames & Moore (1984a). The wells installed during this investigation should be flushed with a chlorine solution and then thoroughly pumped to remove the chlorine solution.

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Table 1
Sample Container Specifications

Bottle	Material	Cap liner	Preservative	Parameters
(1) 5 gal	Plastic	Plastic and foil	None	Radiation parameters, metals, SO_4 , NO_3 , CO_2 , alkalinity, etc.
(2) 1 L	Glass	Teflon	None	Pesticides and herbicides
(3) 1 gal	Glass	Plastic and foil	None	Inorganics and organics
(4) Mason jar (1 qt)	Glass	Rubber, metal, and foil	H_2SO_4	TOX, TOC, and COD ^a
(5) Mason jar (1 qt)	Glass	Rubber, metal, and foil	H_3PO_4	Phenols
(6) 250 mL	Glass	Teflon	Sodium thiosulfate	Total coliform
(7) 250 mL	Glass	Teflon	Sodium thiosulfate	Fecal coliform
(8) 250 mL	Glass	Teflon	NaOH	CN

^aTotal oxygen, total organic carbon, and chemical oxygen demand.

Table 2
Data Summary of Groundwater Samples from
21 Wells, April 26 to May 8, 1982^a

Parameter	Mean	Standard deviation	Minimum	Maximum
Acidity	-199.2	-44.7	-299	-129
Alkalinity, total	262.70	51.47	164.6	385.2
Alkalinity, phenolphthalein	0	0	0	0
Alkalinity, bicarbonate	262.70	51.47	164.6	385.2
Alkalinity, methyl orange	262.70	51.47	164.6	385.2
Calcium	99.21	23.12	56.5	139.7
Carbon, total organic	37.9	26.4	1.7	109.8
Chemical oxygen demand	5.5	6.2	1	31
Chloride	14.7	9.6	3	51
Coliform, total (mpn) ^h	Confluent	--	--	--
Coliform, fecal (mpn)	<1 ^b	--	--	--
Color	38.6	36.6	3	100
Cyanide	<0.02 ^b	--	--	--
Density (g/mL at 25°C)	0.99825	0.00304	0.9971	1.0111
Dissolved solids, total	370.4	84.3	218	566
Fluoride	0.297	0.180	0.10	0.83
Hardness	238.0	39.4	163	330
Magnesium	32.95	23.34	13.8	127.3
Nitrogen, ammonium	1.38	0.65	0.7	3.2
Nitrogen, Kjeldahl	5.45	4.35	2.8	24
Nitrogen, nitrate	0.97	1.39	0.1	4.9
Odor (T.O.N.)	1.2	0.4	1	2
Phosphate	<0.112	0.043	<0.1	0.3

Table 2 (Continued)

Parameter	Mean	Standard deviation	Minimum	Maximum
Silica	24.10	12.52	11.7	63
Sodium	12.357	9.279	3.71	43.46
Sulfate	44.8	39.4	16	200
Sulfur, inorganic as S	8.6	5.0	2.7	22.0
Suspended solids, total	88.0	150.1	1	474
Turbidity (N.T.U.) ^h	40.6	62.8	0.1	220
Dissolved oxygen	0.83	0.79	0.2	3
Specific conductance (μ mhos/cm)	471.6	117.1	265	759
pH (standard units)	6.9	--	6.7	7.3
Temperature (°C)	14.18	0.47	13.2	15.1
Aluminum	0.895	1.293	0.30	5.85
Antimony	<0.001 ^f	--	<0.001	0.001
Arsenic	0.004	0.003	0.001	0.011
Barium	0.102	0.008	0.10	0.14
Beryllium	<0.02 ^b	--	--	--
Bismuth	<0.001	0.0005	<0.001	0.003
Boron	<0.10 ^b	--	--	--
Bromine	<0.10 ^b	--	--	--
Cadmium	<0.001 ^f	--	<0.001	0.001
Chromium	0.006	0.006	0.001	0.029
Cobalt	<0.05 ^b	--	--	--
Copper	<0.031	0.003	<0.03	0.04

Table 2 (Continued)

Parameter	Mean	Standard deviation	Minimum	Maximum
Germanium	<0.80 ^b	--	--	--
Iron	2.08	2.53	0.04	8.50
Lanthanum	<5.0 ^b	--	--	--
Lead	<0.0014	0.0015	<0.001	0.008
Manganese	0.247	0.180	0.02	0.86
Mercury (µg/L)	0.38	0.18	0.2	1.1
Molybdenum	<0.2 ^b	--	--	--
Nickel	<0.06 ^b	--	--	--
Rubidium	<0.03 ^b	--	--	--
Selenium	<0.001 ^b	--	--	--
Silver	<0.001 ^b	--	--	--
Tin	<0.318 ^f	0.079	0.30	0.67
Titanium	<0.50 ^b	--	--	--
Tungsten	<3.0 ^b	--	--	--
Vanadium	<0.50 ^b	--	--	--
Zinc	<0.030 ^f	0.002	0.03	0.04
Zirconium	<10.0 ^b	--	--	--
Chlorinated pesticides (µg/L)				
Lindane	<1.0 ^b	--	--	--
Methoxychlor	<1.0 ^b	--	--	--
Toxaphene	<3.5 ^b	--	--	--
Endrin	<0.10 ^b	--	--	--

Table 2 (Continued)

Parameter	Mean	Standard deviation	Minimum	Maximum
Chlorinated herbicides ($\mu\text{g/L}$)				
2,4-D	$<4.0^b$	--	--	--
2,4,5-TP (Silvex)	$<1.0^b$	--	--	--
Chloroganics	<0.0134	0.0168	<0.001	0.056
Methylene chloride ^c	<0.0082	0.0097	<0.001	0.034
Chloroform ^d	<0.0056	0.0094	<0.001	0.039
Arylamines	$<0.01^b$	--	--	--
Monocyclic hydrocarbons				
Toluene ^e	0.001; 0.003	--	--	--
Benzene ^f	0.0002	--	--	--
Polycyclic hydrocarbons	$<0.01^b$	--	--	--
Chloroamines				
Monochloroamine	$<0.01^b$	--	--	--
Dichloroamine	$<0.01^b$	--	--	--
Aliphatic hydrocarbons	<0.021	0.050	<0.01	0.246
Total organic halogen. (TOX)	$<0.001^b$	--	--	--
Phenols	<0.055	0.049	0.04	0.25
Radiological				
Gross alpha (pCi/L)	2.36	1.88	1.0	6.9
Gross beta (pCi/L)	7.57	12.91	1.0	56.5
Thorium (pCi/L) ^g	1.05	1.03	0.1	4.7

Table 2 (Continued)

Parameter	Mean	Standard deviation	⁰ Minimum	Maximum
Total radium (pCi/L)	<2.0 ^b	--	--	--
Total uranium	0.0048	0.0031	0.003	0.015

^aUnits in mg/L unless noted otherwise.

^bAll observations less than detection limit.

^cDetected in 12 samples.

^dDetected in 10 samples.

^eDetected in 2 samples.

^fDetected in 1 sample.

^gThorium = thorium-232 for wells 108, 110, 112.

^hmpn, most probable number; N.T.U., Nessler tube unit.

Table 3
EPA National Drinking Water Regulations^a

Interim Primary Drinking Standards	
Inorganics	
Arsenic	0.05
Barium	1
Cadmium	0.010
Chromium	0.05
Lead	0.05
Mercury	0.002
Nitrate, as N	10
Selenium	0.01
Silver	0.05
Chlorinated hydrocarbons	
Endrin	0.0002
Lindane	0.004
Methoxychlor	0.1
Toxaphene	0.005
Chlorophenoxys	
2,4-D	0.1
2,4,5-TP (Silvex)	0.01
Fluoride	1.4 - 2.4 ^b
Trihalomethanes ^c	0.10
Turbidity	1 ^d ; 5 ^e
Coliform (/100 mL)	1
Radium-226 + -228 (pCi/L)	5
Gross alpha particle activity (pCi/L) ^f	15

Table 3 (Continued)

Secondary Drinking Water Standards	
Chloride	250
Color (color units)	15
Copper	1
Corrosivity	Noncorrosive
Foaming agents	0.5
Iron	0.3
Manganese	0.05
Odor (threshold odor number)	3
pH (units)	6.5-8.5
Sulfate	250
Total dissolved solids	500
Zinc	5

^a Units as mg/L unless noted otherwise.

^b Dependent upon temperature.

^c Sum of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform), and trichloromethane (chloroform).

^d Monthly average.

^e Average of two consecutive days.

^f Including radium-226, but excluding radon and uranium.

Table 4
Parameters Exceeding Drinking Water Standards

Parameter	Drinking water standard	No. observations exceeding standards	Percentage of observations exceeding standards
Color	15 (P.C.U.) ^a	12	57
Iron	0.3 (mg/L)	12	57
Manganese	0.05 (mg/L)	18	86
Total dissolved solids	500 (mg/L)	2	10
Coliform	1 (/100 mL)	1	5

^aP.C.U., platinum/cobalt unit.

Table 5

Classification of Dissolved Inorganic
Constituents in Groundwater^a

Major constituents (>5 mg/L)	
Bicarbonate	Silicon
Calcium	Sodium
Chloride	Sulfate
Magnesium	
Minor constituents (0.01-10.0 mg/L)	
Boron	Nitrate
Carbonate	
Fluoride	
Iron	
Trace constituents (less than 0.1 mg/L)	
Aluminum	Molybdenum
Antimony	Nickel
Arsenic	Phosphate
Barium	Radium
Beryllium	Rubidium
Bismuth	Selenium
Bromide	Silver
Cadmium	Thorium
Chromium	Tin
Cobalt	Titanium
Copper	Tungsten
Germanium	Uranium
Lanthanum	Vanadium
Lead	Zinc
Manganese	Zirconium
Organic constituents	
TOC ^b	0.1-10 mg/L
COD ^c	10 mg/L

^aSource: Davis and Dewiest (1966).

^bFreeze and Cherry (1979).

^cMissouri Ground Water Quality Regulations, July 10, 1982. 10CSR 20-7.015.

Table 6

Data Summary of Groundwater Samples Falling within
95% Confidence Intervals of the Mean^a

Parameter	Mean	Standard deviation	Minimum	Maximum	No. of samples
Acidity	-194.2	-39.7	-263	-129	20
Alkalinity, total	256.6	44.7	165	341	20
Alkalinity, phenolphthalein	0	--	--	--	21
Alkalinity, bicarbonate	256.6	44.7	165	341	20
Alkalinity, methyl orange	256.6	44.7	165	341	20
Calcium	99.2	23.1	56.5	139.7	21
Carbon, total organic	34.3	21.5	1.7	69.5	20
Chemical oxygen demand	4.3	2.6	1	11	20
Chloride	12.9	5.2	3	25	20
Coliform, total (mpn)	Confluent	--	--	--	21
Coliform, fecal (mpn)	<1 ^b	--	--	--	21
Color (pcu)	38.6	36.6	3	>100	21
Cyanide	<0.02 ^b	--	--	--	21
Density (g/mL at 25°C)	0.9976	0.0013	0.9971	1.0008	20
Dissolved solids, total	351.9	65.1	218	476	19
Fluoride	0.243	0.067	0.10	0.38	19
Hardness	233.4	34.4	163	306.2	20
Magnesium	28.2	10.2	13.8	57.9	20
Nitrogen, ammonium	1.2	0.4	0.7	1.8	19
Nitrogen, Kjeldahl	4.5	1.3	2.8	7.1	20
Nitrogen, nitrate	0.77	1.11	0.1	3.05	20
Odor (T.O.N.)	1.2	0.4	1	2	21
Phosphate	<0.10	0.01	<0.10	0.15	20

Table 6 (Continued)

Parameter	Mean	Standard deviation	Minimum	Maximum	No. of samples
Silica	72.2	9.2	11.7	45.6	20
Sodium	10.80	6.29	3.71	22.35	20
Sulfate	37.1	19.2	16	90	20
Sulfur, inorganic as S	7.3	3.2	2.67	11.35	19
Suspended solids, total	29.1	42.3	1	174	19
Turbidity (N.T.U.)	23.31	34.60	0.1	100	19
Dissolved oxygen	0.62	0.44	0.2	2.1	19
Specific conductance (μ mhos/cm)	457.2	100.3	265	647	20
pH (standard units)	6.9	--	6.7	7.3	21
Temperature ($^{\circ}$ C)	14.2	0.5	13.2	15.1	21
Aluminum	<0.65	0.68	<0.30	2.42	20
Antimony	<0.001 ^c	--	<0.001	0.001	21
Arsenic	0.004	0.0026	0.001	0.010	20
Barium	<0.1	--	<0.1	0.1	20
Beryllium	<0.02 ^b	--	--	--	21
Bismuth	<0.001	--	<0.001	0.001	19
Boron	<0.10 ^b	--	--	--	21
Bromine	<0.10 ^b	--	--	--	21
Cadmium	<0.001 ^c	--	<0.001	0.001	21
Chromium	0.005	0.004	0.001	0.014	20
Cobalt	<0.05 ^b	--	--	--	21
Copper	<0.03	--	<0.03	0.03	19

Table 6 (Continued)

Parameter	Mean	Standard deviation	Minimum	Maximum	No. of samples
Germanium	<0.80 ^b	--	--	--	21
Iron	1.45	1.62	0.04	6.11	19
Lanthanum	<5.0 ^b	--	--	--	21
Lead	<0.0011	0.0002	<0.001	0.002	20
Manganese	0.216	0.12	0.02	0.50	20
Mercury (µg/L)	0.35	0.09	0.2	0.5	20
Molybdenum	<0.2 ^b	--	--	--	21
Nickel	<0.06 ^b	--	--	--	21
Rubidium	<0.03 ^b	--	--	--	21
Selenium	<0.001 ^b	--	--	--	21
Silver	<0.001 ^b	--	--	--	21
Tin	<0.3	--	<0.30	0.30	20
Titanium	<0.50 ^b	--	--	--	21
Tungsten	<3.0 ^b	--	--	--	21
Vanadium	<0.50 ^b	--	--	--	21
Zinc	<0.03	--	--	--	20
Zirconium	<10.0 ^b	--	--	--	21
Chlorinated pesticides (µg/L)					
Lindane	<1.0 ^b	--	--	--	21
Methoxychlor	<1.0 ^b	--	--	--	21
Toxaphene	<3.5 ^b	--	--	--	21
Endrin	<0.10 ^b	--	--	--	21

Table 6 (Continued)

Parameter	Mean	Standard deviation	Minimum	Maximum	No. of samples
Chlorinated herbicides (µg/L)					
2,4-D	<4.0 ^b	--	--	--	21
2,4,5-TP (Silvex)	<1.0 ^b	--	--	--	21
Chlororganics ^d	<0.009	0.010	<0.001	0.032	19
Arylamines	<0.01 ^b	--	--	--	21
Monocyclic hydrocarbons ^e	<0.01	--	--	--	19
Polycyclic hydrocarbons	<0.01 ^b	--	--	--	21
Chloroamines					
Monochloroamine	<0.01 ^b	--	--	--	21
Dichloroamine	<0.01 ^b	--	--	--	21
Aliphatic hydrocarbons	<0.01	--	--	--	20
Total organic halogen (TOX)	<0.001 ^b	--	--	--	21
Phenols	<0.04	--	<0.04	0.04	19
Radiological					
Gross alpha (pCi/L)	<1.66	0.84	<1.0	4.06	18
Gross beta (pCi/L)	<5.12	7.02	<1.0	19.70	20
Thorium (pCi/L) ^g	<0.87	0.64	<0.1	2.75	20
Total radium (pCi/L)	<2.0 ^b	--	--	--	21
Total uranium	0.0039	0.0015	0.002	0.008	19

^aUnits in mg/L unless noted otherwise.

^bAll observations less than detection limit.

^cThorium = thorium-232 for wells 108, 110, 112.

^dMethylene chloride and chloroform values were identified in statistics.

^eToluene and benzene where detected were outside 95% confidence limits.

Figure 1

Sampling Locations

APPENDIX 1

**CONTRACTING LABORATORY (McCOY & McCOY)
COMPLETE WATER QUALITY DATA, METHODS
USED, AND DETECTION LIMITS**

Office and Laboratories:
Lexington, Kentucky
Madisonville, Kentucky
Paducah, Kentucky
Pikeville, Kentucky

McCOY
& McCOY, INC.

Environmental Consultants

P. O. Box 238 • 85 East Noel Avenue • Madisonville, Kentucky • Phone 502-821-7375

July 13, 1982

Mr. Steve Lamb
Dames & Moore
3399 Tates Creek Road
Lexington, KY 40502

Dear Steve:

Please find enclosed the Report of Radiation Analysis for the ICRC Well Monitoring Program for samples submitted April 26, 1982 through May 8, 1982.

Should you have any questions or if I can be of any additional assistance, please do not hesitate to contact me.

Very truly yours,

Doug Wolfe

DW/scp

Enclosures

Office and Laboratories:
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P. O. Box 238 • 85 East Noel Avenue • Madisonville, Kentucky • Phone 502-821-7375

REPORT DATE: 7/13/82

PAGE NO. 1

Dames & Moore
3399 Tates Creek Road
Lexington, KY 40502

REPORT OF RADIATION ANALYSIS

Sample Identification	Type of Analysis	pCi/liter	mg/liter
B-109	Thorium-228	< 0.6	
	Thorium-230	< 0.6	
	Thorium-232	< 0.6	
	Total Uranium		0.008
	Total Radium	< 2	
B-110	Thorium-228	< 0.6	
	Thorium-230	2.9 ± 1.2	
	Thorium-232	2.5 ± 1.1	
	Total Uranium		0.012
	Total Radium	< 2	
B-112	Thorium-228	< 0.6	
	Thorium-230	2.7 ± 1.2	
	Thorium-232	< 0.6	
	Total Uranium		0.015
	Total Radium	< 2	
DW	Thorium-228	< 0.6	
	Thorium-230	2.2 ± 0.9	
	Thorium-232	0.8 ± 0.6	
	Total Uranium		0.005
	Total Radium	< 2	

Total Thorium Analysis equivalent to Thorium-232 (error in analysis by laboratory corrected in remaining samples).

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REPORT DATE: 7/13/82

PAGE NO. 2

Dames & Moore
3399 Tates Creek Road
Lexington, KY 40502

REPORT OF RADIATION ANALYSIS

Sample Identification	Type of Analysis	pCi/liter	mg/liter
B-111	Total Natural Thorium	0.55 ± 0.10	
	Total Uranium		0.003
	Total Radium	< 2	
Well 66	Total Natural Thorium	< 0.10	
	Total Uranium		0.005
	Total Radium	< 2	
B-101	Total Natural Thorium	0.78 ± 0.30	
	Total Uranium		0.004
	Total Radium	< 2	
B-102	Total Natural Thorium	< 0.5	
	Total Uranium		0.002
	Total Radium	< 2	
B-104	Total Natural Thorium	< 0.5	
	Total Uranium		0.002
	Total Radium	< 2	
B-105	Total Natural Thorium	< 0.5	
	Total Uranium		0.003
	Total Radium	< 2	
B-107	Total Natural Thorium	< 0.5	
	Total Uranium		0.003
	Total Radium	< 2	

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REPORT DATE: 7/13/82

PAGE NO. 3

Dames & Moore
3399 Bates Creek Road
Lexington, KY 40502

REPORT OF RADIATION ANALYSIS

Sample Identification	Type of Analysis	pCi/liter	mg/liter
B-108	Total Natural Thorium	1.07 ± 0.47	0.004
	Total Uranium		
	Total Radium	< 2	
B-113	Total Natural Thorium	< 0.5	0.003
	Total Uranium		
	Total Radium	< 2	
B-114	Total Natural Thorium	0.89 ± 0.39	0.004
	Total Uranium		
	Total Radium	< 2	
Well B	Total Natural Thorium	0.61 ± 0.20	0.005
	Total Uranium		
	Total Radium	< 2	
Well C	Total Natural Thorium	1.18 ± 0.71	0.004
	Total Uranium		
	Total Radium	< 2	
Well 8	Total Natural Thorium	0.95 ± 0.50	0.006
	Total Uranium		
	Total Radium	< 2	
Well A	Total Natural Thorium	4.71 ± 1.98	0.002
	Total Uranium		
	Total Radium	< 2	

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REPORT DATE: 7/13/82

PAGE NO. 4

Dames & Moore
3399 Tates Creek Road
Lexington, KY 40502

REPORT OF RADIATION ANALYSIS

Sample Identification	Type of Analysis	pCi/liter	mg/liter
Well D	Total Natural Thorium	1.08 ± 0.79	0.005
	Total Uranium		
	Total Radium	<2	
PVC-1	Total Natural Thorium	2.75 ± 1.16	0.004
	Total Uranium		
	Total Radium	<2	
PVC-2	Total Natural Thorium	<0.6	0.003
	Total Uranium		
	Total Radium	<2	
B-106	Total Natural Thorium	<0.6	0.004
	Total Uranium		
	Total Radium	<2	

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PIKEVILLE, KENTUCKY

42431
42001
41501

REPORT DATE. 8-4-82

PAGE NO. 1

Mr. Steve Lamb
Dames & Moore
3399 Tates Creek Road
Lexington, KY 40502

LOCATION NO.

SAMPLE DATE

1. Retest
2. _____
3. _____
4. _____
5. _____

International Coal Refining Company - EPA Performance Standards Trace Metals #2

REPORT OF CHEMICAL ANALYSIS

TEST DESCRIPTION		1	2	3	4	5
Iron	ppm	0.05				
Lead	ppm	0.017				

Remarks:

1. All analysis performed as per 14th Edition Standard Methods for Water and Wastewater Analysis unless otherwise noted.
2. Laboratory and personnel certified by Commonwealth of Kentucky - Department for Human Resources - Bureau for Health Services for bacteriological analysis.
3. 1 PPM = 1 mg/l

By *Steve Lamb*
For McCoy & McCoy, Inc.

McCOY & McCOY, Inc.

Environmental Consultants

P.O. BOX 238 MADISONVILLE, KENTUCKY 42431
 P.O. BOX 1411 PADUCAH, KENTUCKY 42301
 P.O. BOX 208 PIKEVILLE, KENTUCKY 41501
 REPORT DATE. 8-2-82

PAGE NO. 1

Dames & Moore
 3399 Tates Creek Road
 Lexington, KY 40502

LOCATION NO.

SAMPLE DATE

1. <u>B101</u>	<u>5/6/82</u>
2. <u>B102</u>	<u>5/6/82</u>
3. <u>B104</u>	<u>5/6/82</u>
4. <u>B105</u>	<u>5/6/82</u>
5. <u>B107</u>	<u>5/5/82</u>

International Coal Refining Company

REPORT OF CHEMICAL ANALYSIS

TEST DESCRIPTION	1	2	3	4	5
Calcium ppm	139.7	103.2	56.5	73.0	93.9

Remarks:

1. All analysis performed as per 14th Edition Standard Methods for Water and Wastewater Analysis unless otherwise noted.
2. Laboratory and personnel certified by Commonwealth of Kentucky - Department for Human Resources - Bureau for Health Services for bacteriological analysis.
3. 1 PPM = 1 mg/l

By [Signature]
For McCoy & McCoy, Inc.

McCOY & McCOY, Inc.
Environmental Consultants

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PADUCAH, KENTUCKY 42001
PIKEVILLE, KENTUCKY 41501

REPORT DATE, 8-2-82

PAGE NO. 2

Dames & Moore
3399 Tate's Creek Road
Lexington, KY 40502

LOCATION NO.

SAMPLE DATE

1.	B108	5/5/82
2.	B113	5/4/82
3.	B114	5/5/82
4.	B	5/5/82
5.	C	5/4/82

International Coal Refining Company

REPORT OF CHEMICAL ANALYSIS

TEST DESCRIPTION	1	2	3	4	5
Calcium ppm	92.2	96.1	124.0	127.3	135.6

Remarks:

1. All analysis performed as per 14th Edition Standard Methods for Water and Wastewater Analysis unless otherwise noted.
2. Laboratory and personnel certified by Commonwealth of Kentucky - Department for Human Resources - Bureau for Health Services for bacteriological analysis.
3. 1 PPM = 1 mg/l

By Doug G. Giff
For McCoy & McCoy, Inc.

McCOY & McCOY, Inc.

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PIKEVILLE, KENTUCKY 41501

REPORT DATE, 8-2-82

PAGE NO. 3

Dames & Moore
3399 Tates Creek Road
Lexington, KY 40502

LOCATION NO.

SAMPLE DATE

1. E
2. B111
3. 66
4. B109
5. B110

5/4/82
5/3/82
4/30/82
4/27/82
4/26/82

International Coal Refining Company

REPORT OF CHEMICAL ANALYSIS

TEST DESCRIPTION	1	2	3	4	5
Calcium ppm	107.8	79.3	128.5	78.3	71.9

Remarks:

- All analysis performed as per 14th Edition Standard Methods for Water and Wastewater Analysis unless otherwise noted.
- Laboratory and personnel certified by Commonwealth of Kentucky - Department for Human Resources - Bureau for Health Services for bacteriological analysis.
- 1 PPM = 1 mg/l

By Dave McCoy
For McCoy & McCoy, Inc.

McCOY & McCOY, Inc.

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42431
42001
41501

REPORT DATE. 8-2-92

PAGE NO. 4

Dames & Moore
3399 Tates Creek Road
Lexington, KY 40502

LOCATION NO.

SAMPLE DATE

1. <u>B112</u>	<u>4/26/82</u>
2. <u>DW</u>	<u>4/26/82</u>
3. <u>A</u>	<u>5/7/82</u>
4. <u>D</u>	<u>5/7/82</u>
5. <u>PVC-1</u>	<u>5/7/82</u>

International Coal Refining Company

REPORT OF CHEMICAL ANALYSIS

TEST DESCRIPTION	1	2	3	4	5
Calcium ppm	66.1	0.79	99.9	100.0	113.2

Remarks:

1. All analysis performed as per 14th Edition Standard Methods for Water and Wastewater Analysis unless otherwise noted.
2. Laboratory and personnel certified by Commonwealth of Kentucky - Department for Human Resources - Bureau for Health Services for bacteriological analysis.
3. 1 PPM = 1 mg/l

By

[Signature]

For McCoy & McCoy, Inc.

McCOY & McCOY, Inc.

Environmental Consultants

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REPORT DATE. 8-2-82

PAGE NO. 5

Dames & Moore
3399 Tates Creek Road
Lexington, KY 40502

LOCATION NO.

SAMPLE DATE

1. <u>PVC-2</u>	<u>5/7/82</u>
2. <u>B106</u>	<u>5/8/82</u>
3. _____	_____
4. _____	_____
5. _____	_____

International Coal Refining Company

REPORT OF CHEMICAL ANALYSIS

TEST DESCRIPTION	1	2	3	4	5
Calcium ppm	113.4	83.6			

Remarks:

1. All analysis performed as per 14th Edition Standard Methods for Water and Wastewater Analysis unless otherwise noted.
2. Laboratory and personnel certified by Commonwealth of Kentucky - Department for Human Resources - Bureau for Health Services for bacteriological analysis.
3. 1 PPM = 1 mg/l

By

[Signature]
For McCoy & McCoy, Inc.

**McCOY
& McCOY, INC.**
Environmental Consultants

P. O. Box 238 • 85 East Noel Avenue
Madisonville, Kentucky 42431
Telephone 502-821-7375

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& McCOY, INC.

Environmental Consultants

P. O. Box 238 • 85 East Noel Avenue • Madisonville, Kentucky • Phone 502-821-7375

June 22, 1982

Mr. Steve Lamb
Dames & Moore
3399 Tates Creek Road
Lexington, KY 40502

Dear Steve:

Please find enclosed the data and pertinent information concerning the monitoring well program conducted for International Coal Refining Company for samples submitted April 26, 1982 through May 8, 1982. This report has been prepared per the instructions in your letter dated May 18, 1982.

Should you have any questions or if I can be of additional assistance, please do not hesitate to contact me.

Very truly yours,

Doug Wolfe

DW/scp

Enclosure

Office and Laboratories:
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Pikeville, Kentucky

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& McCOY, INC.

Environmental Consultants

P. O. Box 238 • 85 East Noel Avenue • Madisonville, Kentucky • Phone 502-821-7375

CHEMICAL ANALYSIS DATA
FOR
ICRC WELL MONITORING

Prepared for Dames & Moore

by
McCoy & McCoy, Inc.
Madisonville, Kentucky

June 22, 1982

Office and Laboratories:
 Lexington, Kentucky
 Madisonville, Kentucky
 Paducah, Kentucky
 Pikeville, Kentucky

McCOY & McCOY, INC.

Environmental Consultants

P. O. Box 238 • 85 East Noel Avenue • Madisonville, Kentucky • Phone 502-821-7375

SAMPLE I.D. - B-112

SAMPLE DATE - 4/26/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9971	
Odor	T.O.N.	1	
Turbidity	N.T.U.	0.88	
Color	P.C.U.	6.0	
Aluminum	ppm	<0.30	<0.30, <0.30
Arsenic	ppm	0.002	
Boron	ppm	<0.10	
Barium	ppm	<0.10	
Beryllium	ppm	<0.02	
Bismuth	ppm	<0.001	
Bromine	ppm	<0.10	
Cadmium	ppm	<0.001	
Cobalt	ppm	<0.05	
Chromium	ppm	0.001	
Copper	ppm	<0.03	
Iron	ppm	0.04	
Germanium	ppm	<0.80	
Mercury	ppb	0.4	
Lanthanum	ppm	<5.0	
Manganese	ppm	<0.02	<0.02, <0.02
Magnesium	ppm	20.7	22.1, 19.3
Molybdenum	ppm	<0.2	
Nickel	ppm	<0.06	<0.06, <0.06
Lead	ppm	<0.001	
Rubidium	ppm	<0.03	
Antimony	ppm	<0.001	<0.001, <0.001
Selenium	ppm	<0.001	<0.001, <0.001
Tin	ppm	<0.30	<0.30, <0.30
Titanium	ppm	<0.50	
Vanadium	ppm	<0.50	
Tungsten	ppm	<3.0	
Zinc	ppm	<0.03	
Zirconium	ppm	<10.0	
Silver	ppm	<0.001	
Sodium	ppm	3.71	

Standard Methods for the Examination of Water and Wastewater, 15th Edition
 1980.

EPA Methods for Chemical Analysis of Water & Waste, #60014-79-020.

Instrumentation Laboratories Atomic Absorption Spectrophotometer Manual.

Office and Laboratories:
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SAMPLE I.D. - B-112

SAMPLE DATE - 4/26/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	5.7	
Nitrate Nitrogen	ppm	0.98	
Ammonium Nitrogen	ppm	1.8	2.1, 1.4
Alkalinity, Total	ppm	224.0	
Alkalinity, Methyl Orange	ppm	224.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	224.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.23	
Phosphate	ppm	<0.10	
Silica	ppm	15.8	
Total Dissolved Solids	ppm	320.0	
Suspended Solids	ppm	1.0	1.0, 1.0
Sulfate	ppm	37.0	
Chloride	ppm	3.0	
Acidity	ppm	-168.0	
Hardness	ppm	246.5	
Total Organic Carbon	ppm	1.7	
Chemical Oxygen Demand	ppm	4.0	3.0, 5.0
Phenols	ppm	<0.04	
Total Coliform	mpn	7	
Fecal Coliform	mpn	< 1	

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SAMPLE I.D. - B-112

SAMPLE DATE - 4/26/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	8.74
Chlororganics	ppm	< 0.001
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic:		
Toluene	ppm	0.001
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	1.23
Gross Beta	PCi/l	< 1.0

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SAMPLE I.D. - B-110

SAMPLE DATE - 4/26/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9974	
Odor	T.O.N.	1	
Turbidity	N.T.U.	0.40	
Color	P.C.U.	3.0	
Aluminum	ppm	0.30	
Arsenic	ppm	0.001	< 0.001, 0.002
Boron	ppm	< 0.10	
Barium	ppm	< 0.10	
Beryllium	ppm	< 0.02	
Bismuth	ppm	< 0.001	< 0.001, < 0.001
Bromine	ppm	< 0.10	
Cadmium	ppm	< 0.001	
Cobalt	ppm	< 0.05	
Chromium	ppm	0.001	
Copper	ppm	< 0.03	
Iron	ppm	< 0.04	
Germanium	ppm	< 0.80	
Mercury	ppb	0.40	
Lanthanum	ppm	< 5.0	
Manganese	ppm	0.10	
Magnesium	ppm	20.5	17.7, 23.2
Molybdenum	ppm	< 0.2	
Nickel	ppm	< 0.06	
Lead	ppm	< 0.001	
Rubidium	ppm	< 0.03	< 0.03, < 0.03
Antimony	ppm	< 0.001	< 0.001, < 0.001
Selenium	ppm	< 0.001	
Tin	ppm	< 0.30	
Titanium	ppm	< 0.50	
Vanadium	ppm	< 0.50	
Tungsten	ppm	< 3.0	
Zinc	ppm	< 0.03	
Zirconium	ppm	< 10.0	
Silver	ppm	< 0.001	
Sodium	ppm	3.76	

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SAMPLE I.D. - B-110

SAMPLE DATE - 4/26/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	4.2	
Nitrate Nitrogen	ppm	<0.10	
Ammonium Nitrogen	ppm	1.4	
Alkalinity, Total	ppm	222.0	
Alkalinity, Methyl Orange	ppm	222.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	222.0	
Cyanide	ppm	< 0.02	
Fluoride	ppm	0.18	
Phosphate	ppm	<0.10	
Silica	ppm	16.6	
Total Dissolved Solids	ppm	318.0	312.0, 324.0
Suspended Solids	ppm	16.0	
Sulfate	ppm	46.0	46.0, 46.0
Chloride	ppm	6.0	
Acidity	ppm	-168.0	
Hardness	ppm	233.6	234.6, 232.6
Total Organic Carbon	ppm	3.3	
Chemical Oxygen Demand	ppm	2.0	3.0, 5.0
Phenols	ppm	<0.04	
Total Coliform	mpn	<1	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - B-110

SAMPLE DATE - 4/26/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	10.61
Chlororganics:		
Methylene Chloride	ppm	0.002
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	1.10
Gross Beta	PCi/l	< 1.0

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SAMPLE I.D. - DW

SAMPLE DATE - 4/26/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9971	
Odor	T.O.N.	1	
Turbidity	N.T.U.	0.27	
Color	P.C.U.	2.0	
Aluminum	ppm	< 0.30	
Arsenic	ppm	0.003	
Boron	ppm	< 0.10	
Barium	ppm	< 0.10	
Beryllium	ppm	< 0.02	
Bismuth	ppm	< 0.001	
Bromine	ppm	< 0.10	
Cadmium	ppm	< 0.001	
Cobalt	ppm	< 0.05	
Chromium	ppm	< 0.001	
Copper	ppm	< 0.03	
Iron	ppm	< 0.04	
Germanium	ppm	< 0.80	
Mercury	ppb	0.3	
Lanthanum	ppm	< 5.0	
Manganese	ppm	< 0.02	
Magnesium	ppm	0.17	0.17, 0.17
Molybdenum	ppm	< 0.2	
Nickel	ppm	< 0.06	
Lead	ppm	< 0.001	
Rubidium	ppm	< 0.03	
Antimony	ppm	< 0.001	< 0.001, < 0.001
Selenium	ppm	< 0.001	
Tin	ppm	< 0.30	
Titanium	ppm	< 0.50	
Vanadium	ppm	< 0.50	
Tungsten	ppm	< 3.0	
Zinc	ppm	< 0.03	
Zirconium	ppm	< 10.0	
Silver	ppm	< 0.001	
Sodium	ppm	0.07	

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SAMPLE DATE - 4/26/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	<1.4	
Nitrate Nitrogen	ppm	<0.10	
Ammonium Nitrogen	ppm	<0.7	
Alkalinity, Total	ppm	20.0	
Alkalinity, Methyl Orange	ppm	20.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	20.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	<0.10	
Phosphate	ppm	<0.10	
Silica	ppm	2.9	
Total Dissolved Solids	ppm	0.0	
Suspended Solids	ppm	0.0	
Sulfate	ppm	1.0	
Chloride	ppm	7.0	
Acidity	ppm	-12.0	
Hardness	ppm	2.0	
Total Organic Carbon	ppm	0.7	
Chemical Oxygen Demand	ppm	4.0	3.0, 5.0
Phenols	ppm	0.04	
Total Coliform	mpn	<1	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - DW

SAMPLE DATE - 4/26/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	0.33
Chloroganics:		
Methylene Chloride	ppm	0.002
1, 1 Dichloroethylene	ppm	0.002
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	< 1.00
Gross Beta	PCi/l	< 1.00

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SAMPLE I.D. - B-109

SAMPLE DATE - 4/27/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9972	
Odor	T.O.N.	2	
Turbidity	N.T.U.	49.0	
Color	P.C.U.	94.0	
Aluminum	ppm	0.33	
Arsenic	ppm	0.011	
Boron	ppm	<0.10	
Barium	ppm	0.10	
Beryllium	ppm	<0.02	
Bismuth	ppm	<0.001	
Bromine	ppm	<0.10	
Cadmium	ppm	<0.001	
Cobalt	ppm	<0.05	
Chromium	ppm	0.003	
Copper	ppm	0.04	
Iron	ppm	7.95	
Germanium	ppm	<0.80	
Mercury	ppb	0.3	
Lanthanum	ppm	<5.0	
Manganese	ppm	0.28	
Magnesium	ppm	13.8	15.6, 12.0
Molybdenum	ppm	<0.2	
Nickel	ppm	<0.06	
Lead	ppm	0.001	
Rubidium	ppm	<0.03	
Antimony	ppm	<0.001	<0.001, <0.001
Selenium	ppm	<0.001	
Tin	ppm	0.67	
Titanium	ppm	<0.50	
Vanadium	ppm	<0.50	
Tungsten	ppm	<3.0	<3.0, <3.0
Zinc	ppm	<0.03	
Zirconium	ppm	<10.0	
Silver	ppm	<0.001	
Sodium	ppm	20.8	

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SAMPLE I.D. - B-109

SAMPLE DATE - 4/27/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	2.8	
Nitrate Nitrogen	ppm	<0.10	
Ammonium Nitrogen	ppm	1.4	
Alkalinity, Total	ppm	213.0	
Alkalinity, Methyl Orange	ppm	213.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	213.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.22	
Phosphate	ppm	0.10	
Silica	ppm	17.0	
Total Dissolved Solids	ppm	304.0	
Suspended Solids	ppm	21.8	21.0, 22.5
Sulfate	ppm	39.0	
Chloride	ppm	15.0	
Acidity	ppm	-129.0	
Hardness	ppm	202.8	
Total Organic Carbon	ppm	9.3	
Chemical Oxygen Demand	ppm	4.0	3.0, 5.0
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - B-109

SAMPLE DATE - 4/27/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	9.51
Chloroganics	ppm	0.0002
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	0.246
Total Organic Halogen (TOX)	ppm	0.001
Radiological Testing:		
Gross Alpha	PCi/l	1.25
Gross Beta	PCi/l	< 1.0

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SAMPLE I.D. - 66

SAMPLE DATE - 4/30/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	1.0111	
Odor	T.O.N.	1	
Turbidity	N.T.U.	220.0	
Color	P.C.U.	6.5	
Aluminum	ppm	5.85	
Arsenic	ppm	0.008	
Boron	ppm	< 0.10	
Barium	ppm	0.10	
Beryllium	ppm	< 0.02	
Bismuth	ppm	0.003	
Bromine	ppm	< 0.10	
Cadmium	ppm	0.001	
Cobalt	ppm	< 0.05	
Chromium	ppm	0.029	
Copper	ppm	< 0.03	
Iron	ppm	8.50	
Germanium	ppm	< 0.80	
Mercury	ppb	0.4	
Lanthanum	ppm	< 5.0	
Manganese	ppm	0.25	
Magnesium	ppm	30.3	
Molybdenum	ppm	< 0.2	< 0.2, < 0.2
Nickel	ppm	< 0.06	
Lead	ppm	0.017	
Rubidium	ppm	< 0.03	
Antimony	ppm	< 0.001	< 0.001, < 0.001
Selenium	ppm	< 0.001	
Tin	ppm	< 0.30	
Titanium	ppm	< 0.50	
Vanadium	ppm	< 0.50	
Tungsten	ppm	< 3.0	
Zinc	ppm	0.04	
Zirconium	ppm	< 10.0	
Silver	ppm	< 0.001	
Sodium	ppm	5.05	5.07, 5.02

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SAMPLE DATE - 4/30/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	2.8	
Nitrate Nitrogen	ppm	0.95	
Ammonium Nitrogen	ppm	1.8	
Alkalinity, Total	ppm	219.0	
Alkalinity, Methyl Orange	ppm	219.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	219.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.18	
Phosphate	ppm	0.30	
Silica	ppm	63.0	
Total Dissolved Solids	ppm	368.0	
Suspended Solids	ppm	455.0	458.0, 452.0
Sulfate	ppm	28.0	
Chloride	ppm	12.5	14.0, 11.0
Acidity	ppm	-199.0	
Hardness	ppm	216.7	
Total Organic Carbon	ppm	48.0	
Chemical Oxygen Demand	ppm	9.0	
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - 66

SAMPLE DATE - 4/30/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	4.41
Chloroganics:		
Methylene Chloride	ppm	0.005
Chloroform	ppm	0.012
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	< 1.00
Gross Beta	PCi/l	< 1.00

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SAMPLE I.D. - B-111

SAMPLE DATE - 5/3/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9972	
Odor	T.O.N.	1	
Turbidity	N.T.U.	1.3	
Color	P.C.U.	>100.0	
Aluminum	ppm	<0.30	
Arsenic	ppm	0.004	
Boron	ppm	<0.10	
Barium	ppm	<0.10	
Beryllium	ppm	<0.02	
Bismuth	ppm	<0.001	
Bromine	ppm	<0.10	
Cadmium	ppm	<0.001	
Cobalt	ppm	<0.05	
Chromium	ppm	0.002	
Copper	ppm	<0.03	
Iron	ppm	0.18	
Germanium	ppm	<0.80	
Mercury	ppb	0.3	
Lanthanum	ppm	<5.0	
Manganese	ppm	0.13	
Magnesium	ppm	21.0	
Molybdenum	ppm	<0.2	
Nickel	ppm	<0.06	
Lead	ppm	0.001	
Rubidium	ppm	<0.03	
Antimony	ppm	<0.001	<0.001, <0.001
Selenium	ppm	<0.001	
Tin	ppm	<0.30	
Titanium	ppm	<0.50	
Vanadium	ppm	<0.50	
Tungsten	ppm	<3.0	
Zinc	ppm	<0.03	
Zirconium	ppm	<10.0	
Silver	ppm	<0.001	
Sodium	ppm	4.58	4.58, 4.61

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EPA Methods for Chemical Analysis of Water & Waste, #60014-79-020.

Instrumentation Laboratories Atomic Absorption Spectrophotometer Manual.

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SAMPLE I.D. - B-111

SAMPLE DATE - 5/3/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	2.8	
Nitrate Nitrogen	ppm	0.14	
Ammonium Nitrogen	ppm	2.8	
Alkalinity, Total	ppm	211.0	
Alkalinity, Methyl Orange	ppm	211.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	211.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.26	
Phosphate	ppm	<0.10	
Silica	ppm	16.6	
Total Dissolved Solids	ppm	296.0	304.0, 288.0
Suspended Solids	ppm	1.0	1.0, 1.0
Sulfate	ppm	33.0	33.0, 33.0
Chloride	ppm	8.5	9.0, 8.0
Acidity	ppm	-141.0	
Hardness	ppm	218.7	
Total Organic Carbon	ppm	45.1	
Chemical Oxygen Demand	ppm	3.0	
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - B-111

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<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	7.51
Chlororganics	ppm	< 0.001
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	1.22
Gross Beta	PCi/l	< 1.00

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SAMPLE I.D. - C

SAMPLE DATE - 5/4/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	1.0008	
Odor	T.O.N.	1	
Turbidity	N.T.U.	100.0	
Color	P.C.U.	13.0	
Aluminum	ppm	2.42	
Arsenic	ppm	0.002	
Boron	ppm	< 0.10	
Barium	ppm	< 0.10	
Beryllium	ppm	< 0.02	
Bismuth	ppm	0.002	
Bromine	ppm	< 0.10	
Cadmium	ppm	< 0.001	
Cobalt	ppm	< 0.05	
Chromium	ppm	0.014	
Copper	ppm	0.03	
Iron	ppm	2.50	
Germanium	ppm	< 0.80	
Mercury	ppb	0.35	0.3, 0.4
Lanthanum	ppm	< 5.0	
Manganese	ppm	0.03	0.03, 0.03
Magnesium	ppm	33.5	
Molybdenum	ppm	< 0.2	
Nickel	ppm	< 0.06	
Lead	ppm	0.006	
Rubidium	ppm	< 0.03	
Antimony	ppm	< 0.001	0.001, 0.001
Selenium	ppm	< 0.001	
Tin	ppm	< 0.30	
Titanium	ppm	< 0.50	
Vanadium	ppm	< 0.50	
Tungsten	ppm	< 3.0	
Zinc	ppm	< 0.03	
Zirconium	ppm	< 10.0	
Silver	ppm	< 0.001	
Sodium	ppm	9.65	9.77, 9.60

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SAMPLE I.D. - C

SAMPLE DATE - 5/4/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	24.0	
Nitrate Nitrogen	ppm	3.45	
Ammonium Nitrogen	ppm	0.7	
Alkalinity, Total	ppm	257.0	
Alkalinity, Methyl Orange	ppm	257.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	257.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.36	
Phosphate	ppm	0.10	
Silica	ppm	45.6	
Total Dissolved Solids	ppm	364.0	
Suspended Solids	ppm	396.0	
Sulfate	ppm	35.5	35.0, 36.0
Chloride	ppm	12.5	9.0, 16.0
Acidity	ppm	-248.0	
Hardness	ppm	191.8	190.8, 192.8
Total Organic Carbon	ppm	32.8	
Chemical Oxygen Demand	ppm	9.0	
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - C

SAMPLE DATE - 5/4/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	7.68
Chloroganics	ppm	< 0.001
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	6.92
Gross Beta	PCi/l	< 1.00

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SAMPLE I.D. - B-113

SAMPLE DATE - 5/4/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9971	
Odor	T.O.N.	1	
Turbidity	N.T.U.	1.8	
Color	P.C.U.	7.5	
Aluminum	ppm	< 0.30	
Arsenic	ppm	0.003	
Boron	ppm	< 0.10	
Barium	ppm	< 0.10	
Beryllium	ppm	< 0.02	
Bismuth	ppm	< 0.001	
Bromine	ppm	< 0.10	
Cadmium	ppm	< 0.001	
Cobalt	ppm	< 0.05	
Chromium	ppm	0.003	
Copper	ppm	< 0.03	
Iron	ppm	0.18	
Germanium	ppm	< 0.80	
Mercury	ppb	0.4	
Lanthanum	ppm	< 5.0	
Manganese	ppm	0.32	
Magnesium	ppm	24.6	
Molybdenum	ppm	< 0.2	
Nickel	ppm	< 0.06	
Lead	ppm	< 0.001	
Rubidium	ppm	< 0.03	
Antimony	ppm	< 0.001	
Selenium	ppm	< 0.001	
Tin	ppm	< 0.30	
Titanium	ppm	< 0.50	
Vanadium	ppm	< 0.50	
Tungsten	ppm	< 3.0	
Zinc	ppm	< 0.03	
Zirconium	ppm	< 10.0	
Silver	ppm	< 0.001	
Sodium	ppm	8.27	8.22, 8.30

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<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	5.7	
Nitrate Nitrogen	ppm	0.13	
Ammonium Nitrogen	ppm	1.4	
Alkalinity, Total	ppm	298.0	
Alkalinity, Methyl Orange	ppm	298.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	298.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.24	
Phosphate	ppm	<0.10	
Silica	ppm	22.5	
Total Dissolved Solids	ppm	348.0	
Suspended Solids	ppm	1.0	
Sulfate	ppm	18.0	
Chloride	ppm	11.5	11.0, 12.0
Acidity	ppm	-182.0	
Hardness	ppm	232.6	232.6, 232.6
Total Organic Carbon	ppm	32.9	
Chemical Oxygen Demand	ppm	3.0	3.0, 5.0
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - B-113

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<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	3.0
Chloroganics:		
Methylene Chloride	ppm	0.0043
Chloroform	ppm	0.007
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	1.74
Gross Beta	PCi/l	< 1.00

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SAMPLE I.D. - 8

SAMPLE DATE - 5/4/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9972	
Odor	T.O.N.	1	
Turbidity	N.T.U.	6.2	
Color	P.C.U.	>100.0	
Aluminum	ppm	0.30	
Arsenic	ppm	0.002	
Boron	ppm	< 0.10	
Barium	ppm	< 0.10	
Beryllium	ppm	< 0.02	
Bismuth	ppm	< 0.001	
Bromine	ppm	< 0.10	
Cadmium	ppm	< 0.001	
Cobalt	ppm	< 0.05	
Chromium	ppm	0.004	
Copper	ppm	< 0.03	
Iron	ppm	0.17	
Germanium	ppm	< 0.80	
Mercury	ppb	0.3	
Lanthanum	ppm	< 5.0	
Manganese	ppm	0.02	
Magnesium	ppm	26.1	
Molybdenum	ppm	< 0.2	
Nickel	ppm	< 0.06	
Lead	ppm	< 0.001	
Rubidium	ppm	< 0.03	< 0.03, < 0.03
Antimony	ppm	< 0.001	< 0.001, < 0.001
Selenium	ppm	< 0.001	
Tin	ppm	< 0.30	
Titanium	ppm	< 0.50	< 0.50, < 0.50
Vanadium	ppm	< 0.50	
Tungsten	ppm	< 3.0	
Zinc	ppm	< 0.03	
Zirconium	ppm	< 10.0	
Silver	ppm	< 0.001	
Sodium	ppm	9.51	9.51, 9.51, 9.60

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<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	5.7	
Nitrate Nitrogen	ppm	3.40	
Ammonium Nitrogen	ppm	1.4	
Alkalinity, Total	ppm	300.0	
Alkalinity, Methyl Orange	ppm	300.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	300.0	
Cyanide	ppm	< 0.02	
Fluoride	ppm	0.31	
Phosphate	ppm	< 0.10	
Silica	ppm	23.5	
Total Dissolved Solids	ppm	394.0	
Suspended Solids	ppm	8.0	
Sulfate	ppm	19.0	
Chloride	ppm	13.0	12.0, 14.0
Acidity	ppm	-212.0	
Hardness	ppm	252.5	
Total Organic Carbon	ppm	36.5	
Chemical Oxygen Demand	ppm	2.0	
Phenols	ppm	< 0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	< 1	

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SAMPLE I.D. - 8

SAMPLE DATE - 5/4/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	4.51
Chlororganics:		
Methylene Chloride	ppm	0.034
Chloroform	ppm	0.018
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	4.06
Gross Beta	PCi/l	< 1.00

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SAMPLE I.D. - B-114

SAMPLE DATE - 5/5/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9974	
Odor	T.O.N.	1	
Turbidity	N.T.U.	4.0	
Color	P.C.U.	23.0	
Aluminum	ppm	0.58	
Arsenic	ppm	0.002	
Boron	ppm	<0.10	
Barium	ppm	<0.10	
Beryllium	ppm	<0.02	
Bismuth	ppm	<0.001	
Bromine	ppm	<0.10	
Cadmium	ppm	<0.001	
Cobalt	ppm	<0.05	
Chromium	ppm	0.005	
Copper	ppm	<0.03	
Iron	ppm	0.92	
Germanium	ppm	<0.80	
Mercury	ppb	0.3	0.3, 0.3
Lanthanum	ppm	<5.0	
Manganese	ppm	0.10	
Magnesium	ppm	30.3	
Molybdenum	ppm	<0.2	
Nickel	ppm	<0.06	
Lead	ppm	0.002	
Rubidium	ppm	<0.03	<0.03, <0.03
Antimony	ppm	<0.001	
Selenium	ppm	<0.001	
Tin	ppm	<0.30	
Titanium	ppm	<0.50	
Vanadium	ppm	<0.50	
Tungsten	ppm	<3.0	
Zinc	ppm	<0.03	
Zirconium	ppm	<10.0	
Silver	ppm	<0.001	
Sodium	ppm	5.42	5.41, 5.46

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<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	5.7	
Nitrate Nitrogen	ppm	1.05	
Ammonium Nitrogen	ppm	3.2	3.5, 2.8
Alkalinity, Total	ppm	279.0	
Alkalinity, Methyl Orange	ppm	279.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	279.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	<0.10	
Phosphate	ppm	<0.10	
Silica	ppm	18.5	
Total Dissolved Solids	ppm	400.0	
Suspended Solids	ppm	50.0	
Sulfate	ppm	47.0	
Chloride	ppm	20.0	
Acidity	ppm	-241.0	
Hardness	ppm	264.4	
Total Organic Carbon	ppm	33.4	
Chemical Oxygen Demand	ppm	3.0	
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - B-114

SAMPLE DATE - 5/5/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	11.08
Chloroganics:		
Methylene Chloride	ppm	0.013
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	< 1.00
Gross Beta	PCi/l	11.54

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SAMPLE I.D. - B

SAMPLE DATE - 5/5/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9975	
Odor	T.O.N.	1	
Turbidity	N.T.U.	22.0	
Color	P.C.U.	34.0	
Aluminum	ppm	0.75	
Arsenic	ppm	0.002	
Boron	ppm	<0.10	
Barium	ppm	0.10	
Beryllium	ppm	<0.02	
Bismuth	ppm	<0.001	
Bromine	ppm	<0.10	
Cadmium	ppm	<0.001	
Cobalt	ppm	<0.05	
Chromium	ppm	0.006	
Copper	ppm	0.04	
Iron	ppm	1.55	
Germanium	ppm	<0.80	
Mercury	ppb	0.3	
Lanthanum	ppm	<5.0	
Manganese	ppm	0.22	
Magnesium	ppm	127.3	
Molybdenum	ppm	<0.2	
Nickel	ppm	<0.06	
Lead	ppm	0.002	
Rubidium	ppm	<0.03	
Antimony	ppm	<0.001	
Selenium	ppm	<0.001	
Tin	ppm	<0.30	
Titanium	ppm	<0.50	
Vanadium	ppm	<0.50	
Tungsten	ppm	<3.0	<3.0, <3.0
Zinc	ppm	<0.03	
Zirconium	ppm	<10.0	
Silver	ppm	<0.001	
Sodium	ppm	17.47	17.54, 17.46

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SAMPLE I.D. - B

SAMPLE DATE - 5/5/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	22.02
Chloroganics	ppm	< 0.001
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	2.47
Gross Beta	PCi/l	19.70

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SAMPLE I.D. -- B

SAMPLE DATE - 5/5/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	5.7	
Nitrate Nitrogen	ppm	3.05	
Ammonium Nitrogen	ppm	0.7	0.7, 0.7
Alkalinity, Total	ppm	297.0	
Alkalinity, Methyl Orange	ppm	297.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	297.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.31	
Phosphate	ppm	<0.10	
Silica	ppm	25.0	
Total Dissolved Solids	ppm	526.0	
Suspended Solids	ppm	58.0	
Sulfate	ppm	90.0	
Chloride	ppm	21.0	
Acidity	ppm	-191.0	
Hardness	ppm	306.2	
Total Organic Carbon	ppm	8.7	
Chemical Oxygen Demand	ppm	11.0	
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - B-107

SAMPLE DATE - 5/5/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9971	
Odor	T.O.N.	1	
Turbidity	N.T.U.	0.10	
Color	P.C.U.	3.5	
Aluminum	ppm	<0.30	
Arsenic	ppm	0.002	
Boron	ppm	<0.10	
Barium	ppm	<0.10	
Beryllium	ppm	<0.02	
Bismuth	ppm	<0.001	
Bromine	ppm	<0.10	
Cadmium	ppm	<0.001	
Cobalt	ppm	<0.05	
Chromium	ppm	0.003	
Copper	ppm	<0.03	
Iron	ppm	0.04	
Germanium	ppm	<0.80	
Mercury	ppb	0.3	
Lanthanum	ppm	<5.0	
Manganese	ppm	0.22	
Magnesium	ppm	22.0	
Molybdenum	ppm	<0.2	
Nickel	ppm	<0.06	
Lead	ppm	<0.001	
Rubidium	ppm	<0.03	
Antimony	ppm	<0.001	
Selenium	ppm	<0.001	
Tin	ppm	<0.30	
Titanium	ppm	<0.50	
Vanadium	ppm	<0.50	
Tungsten	ppm	<3.0	
Zinc	ppm	<0.03	
Zirconium	ppm	<10.0	
Silver	ppm	<0.001	
Sodium	ppm	11.31	11.28, 11.34

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<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	4.2	
Nitrate Nitrogen	ppm	0.11	
Ammonium Nitrogen	ppm	<0.7	
Alkalinity, Total	ppm	307.0	
Alkalinity, Methyl Orange	ppm	307.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	307.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.29	
Phosphate	ppm	<0.10	
Silica	ppm	19.7	
Total Dissolved Solids	ppm	354.0	
Suspended Solids	ppm	1.0	
Sulfate	ppm	19.0	
Chloride	ppm	12.0	
Acidity	ppm	-239.0	
Hardness	ppm	242.5	
Total Organic Carbon	ppm	46.9	
Chemical Oxygen Demand	ppm	2.0	
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - B-107

SAMPLE DATE - 5/5/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	4.84
Chloroganics:		
Methylene Chloride	ppm	0.029
Chloroform	ppm	0.0026
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	2.37
Gross Beta	PCi/l	6.48

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SAMPLE DATE - 5/5/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9971	
Odor	T.O.N.	1	
Turbidity	N.T.U.	0.10	
Color	P.C.U.	6.0	
Aluminum	ppm	< 0.30	
Arsenic	ppm	0.003	
Boron	ppm	< 0.10	
Barium	ppm	0.10	
Beryllium	ppm	< 0.02	
Bismuth	ppm	< 0.001	< 0.001, < 0.001
Bromine	ppm	< 0.10	
Cadmium	ppm	< 0.001	
Cobalt	ppm	< 0.05	< 0.05, 0.05
Chromium	ppm	0.002	
Copper	ppm	< 0.03	
Iron	ppm	0.22	
Germanium	ppm	< 0.80	
Mercury	ppb	0.3	
Lanthanum	ppm	< 5.0	
Manganese	ppm	0.34	
Magnesium	ppm	21.4	
Molybdenum	ppm	< 0.2	
Nickel	ppm	< 0.06	
Lead	ppm	< 0.001	
Rubidium	ppm	< 0.03	
Antimony	ppm	< 0.001	< 0.001, < 0.001
Selenium	ppm	< 0.001	
Tin	ppm	< 0.30	
Titanium	ppm	< 0.50	
Vanadium	ppm	< 0.50	
Tungsten	ppm	< 3.0	
Zinc	ppm	< 0.03	
Zirconium	ppm	< 10.0	
Silver	ppm	< 0.001	
Sodium	ppm	7.35	7.38, 7.32

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<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	5.7	
Nitrate Nitrogen	ppm	0.14	
Ammonium Nitrogen	ppm	<0.7	
Alkalinity, Total	ppm	244.0	
Alkalinity, Methyl Orange	ppm	244.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	244.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.16	
Phosphate	ppm	<0.10	
Silica	ppm	11.7	
Total Dissolved Solids	ppm	318.0	
Suspended Solids	ppm	1.0	
Sulfate	ppm	25.0	
Chloride	ppm	12.0	
Acidity	ppm	-150.0	
Hardness	ppm	212.7	
Total Organic Carbon	ppm	41.5	
Chemical Oxygen Demand	ppm	6.0	
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - B-108

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<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	6.84
Chloroganics:		
Methylene Chloride	ppm	0.013
Chloroform	ppm	0.006
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	1.34
Gross Beta	PCi/l	12.71

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SAMPLE I.D. - B-101

SAMPLE DATE - 5/6/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9977	
Odor	T.O.N.	1	
Turbidity	N.T.U.	125.0	
Color	P.C.U.	>100.0	
Aluminum	ppm	2.42	
Arsenic	ppm	0.010	
Boron	ppm	<0.10	
Barium	ppm	0.14	
Beryllium	ppm	<0.02	
Bismuth	ppm	0.001	
Bromine	ppm	<0.10	
Cadmium	ppm	<0.001	
Cobalt	ppm	<0.05	
Chromium	ppm	0.013	
Copper	ppm	0.03	
Iron	ppm	6.11	
Germanium	ppm	<0.80	
Mercury	ppb	1.1	
Lanthanum	ppm	<5.0	
Manganese	ppm	0.86	
Magnesium	ppm	37.8	
Molybdenum	ppm	<0.2	
Nickel	ppm	<0.06	<0.06, <0.06
Lead	ppm	0.007	
Rubidium	ppm	<0.03	
Antimony	ppm	<0.001	<0.001, <0.001
Selenium	ppm	<0.001	
Tin	ppm	<0.30	<0.30, <0.30
Titanium	ppm	<0.50	
Vanadium	ppm	<0.50	
Tungsten	ppm	<3.0	
Zinc	ppm	<0.03	
Zirconium	ppm	<10.0	
Silver	ppm	<0.001	
Sodium	ppm	20.61	20.85, 20.55

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<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	4.2	
Nitrate Nitrogen	ppm	0.20	
Ammonium Nitrogen	ppm	1.4	1.4, 1.4
Alkalinity, Total	ppm	385.2	
Alkalinity, Methyl Orange	ppm	385.2	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	385.2	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.24	
Phosphate	ppm	0.10	
Silica	ppm	28.6	
Total Dissolved Solids	ppm	476.0	
Suspended Solids	ppm	174.0	
Sulfate	ppm	64.0	
Chloride	ppm	17.0	
Acidity	ppm	-299.2	
Hardness	ppm	270.4	
Total Organic Carbon	ppm	109.8	
Chemical Oxygen Demand	ppm	1.0	
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - B101

SAMPLE DATE - 5/6/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	<1.0
Methoxychlor	ppb	<1.00
Toxaphene	ppb	<3.5
Endrin	ppb	<0.10
Chlorinated Herbicides:		
2,4 - D	ppb	<4.0
2,4,5 - TP(Silvex)	ppb	<1.0
Inorganic Forms of Sulfur	mg/l as S	16.36
Chlororganics	ppm	< 0.001
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	6.27
Gross Beta	PCi/l	56.50

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SAMPLE I.D. - B-102

SAMPLE DATE - 5/6/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9972	
Odor	T.O.N.	1	
Turbidity	N.T.U.	0.79	
Color	P.C.U.	37.0	
Aluminum	ppm	0.30	
Arsenic	ppm	0.010	
Boron	ppm	0.10	
Barium	ppm	0.10	
Beryllium	ppm	<0.02	
Bismuth	ppm	<0.001	
Bromine	ppm	<0.10	
Cadmium	ppm	<0.001	
Cobalt	ppm	<0.05	
Chromium	ppm	0.004	
Copper	ppm	<0.03	
Iron	ppm	1.61	1.56, 1.66
Germanium	ppm	<0.80	
Mercury	ppb	0.4	
Lanthanum	ppm	<5.0	
Manganese	ppm	0.22	0.21, 0.23
Magnesium	ppm	31.6	
Molybdenum	ppm	<0.2	
Nickel	ppm	<0.06	
Lead	ppm	<0.001	
Rubidium	ppm	<0.03	
Antimony	ppm	0.001	
Selenium	ppm	<0.001	
Tin	ppm	<0.30	
Titanium	ppm	<0.50	
Vanadium	ppm	<0.50	
Tungsten	ppm	<3.0	
Zinc	ppm	<0.03	
Zirconium	ppm	<10.0	
Silver	ppm	<0.001	
Sodium	ppm	17.91	17.8, 18.0

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SAMPLE I.D. - B-102

SAMPLE DATE - 5/6/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	2.8	
Nitrate Nitrogen	ppm	0.11	
Ammonium Nitrogen	ppm	1.1	0.7, 1.4
Alkalinity, Total	ppm	269.8	
Alkalinity, Methyl Orange	ppm	269.8	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	269.8	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.21	
Phosphate	ppm	<0.10	
Silica	ppm	18.5	
Total Dissolved Solids	ppm	440.0	
Suspended Solids	ppm	4.0	
Sulfate	ppm	36.0	
Chloride	ppm	51.0	
Acidity	ppm	-210.0	
Hardness	ppm	232.6	
Total Organic Carbon	ppm	48.9	
Chemical Oxygen Demand	ppm	2.0	
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - B-102

SAMPLE DATE - 5/6/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	< 6.67
Chlororganics:		
Methylene Chloride	ppm	0.0144
Chloroform	ppm	0.0004
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCI/l	2.01
Gross Beta	PCI/l	26.16

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SAMPLE I.D. - B-104

SAMPLE DATE - 5/6/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9971	
Odor	T.O.N.	1	
Turbidity	N.T.U.	0.15	
Color	P.C.U.	4.5	
Aluminum	ppm	0.30	
Arsenic	ppm	0.003	
Boron	ppm	<0.10	
Barium	ppm	0.10	
Beryllium	ppm	<0.02	
Bismuth	ppm	<0.001	
Bromine	ppm	<0.10	
Cadmium	ppm	<0.001	
Cobalt	ppm	<0.05	
Chromium	ppm	0.002	
Copper	ppm	<0.03	
Iron	ppm	0.07	0.05, 0.08
Germanium	ppm	<0.80	
Mercury	ppb	<0.2	
Lanthanum	ppm	<5.0	
Manganese	ppm	0.20	0.19, 0.20
Magnesium	ppm	17.3	
Molybdenum	ppm	<0.2	
Nickel	ppm	<0.06	
Lead	ppm	<0.001	
Rubidium	ppm	<0.03	
Antimony	ppm	<0.001	0.001, <0.001
Selenium	ppm	<0.001	
Tin	ppm	<0.30	
Titanium	ppm	<0.50	
Vanadium	ppm	<0.50	
Tungsten	ppm	<3.0	
Zinc	ppm	<0.03	
Zirconium	ppm	<10.0	
Silver	ppm	<0.001	
Sodium	ppm	6.69	6.75, 6.68

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SAMPLE I.D. - B-104

SAMPLE DATE - 5/6/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	2.8	
Nitrate Nitrogen	ppm	0.20	
Ammonium Nitrogen	ppm	1.1	0.7, 1.4
Alkalinity, Total	ppm	164.6	
Alkalinity, Methyl Orange	ppm	164.6	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	164.6	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.26	
Phosphate	ppm	<0.10	
Silica	ppm	18.1	
Total Dissolved Solids	ppm	218.0	
Suspended Solids	ppm	1.0	
Sulfate	ppm	16.0	
Chloride	ppm	8.0	
Acidity	ppm	-136.0	
Hardness	ppm	163.0	
Total Organic Carbon	ppm	2.8	
Chemical Oxygen Demand	ppm	5.0	
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - B-104

SAMPLE DATE - 5/6/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	2.67
Chloroganics	ppm	< 0.001
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	< 1.00
Gross Beta	PCi/l	< 1.00

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SAMPLE I.D. - B-105

SAMPLE DATE - 5/6/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9971	
Odor	T.O.N.	1	
Turbidity	N.T.U.	0.13	
Color	P.C.U.	6.2	
Aluminum	ppm	<0.30	
Arsenic	ppm	0.004	
Boron	ppm	<0.10	
Barium	ppm	0.10	
Beryllium	ppm	<0.02	
Bismuth	ppm	<0.001	<0.001, <0.001
Bromine	ppm	<0.10	
Cadmium	ppm	<0.001	
Cobalt	ppm	<0.05	<0.05, <0.05
Chromium	ppm	0.002	
Copper	ppm	<0.03	
Iron	ppm	0.14	
Germanium	ppm	<0.80	
Mercury	ppb	<0.2	
Lanthanum	ppm	<5.0	
Manganese	ppm	0.32	
Magnesium	ppm	17.0	
Molybdenum	ppm	<0.2	<0.2, <0.2
Nickel	ppm	<0.06	
Lead	ppm	<0.001	
Rubidium	ppm	<0.03	
Antimony	ppm	<0.001	<0.001, <0.001
Selenium	ppm	<0.001	
Tin	ppm	<0.30	
Titanium	ppm	<0.50	
Vanadium	ppm	<0.50	
Tungsten	ppm	<3.0	
Zinc	ppm	<0.03	
Zirconium	ppm	<10.0	
Silver	ppm	<0.001	
Sodium	ppm	5.05	5.05, 5.02

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SAMPLE I.D. - B-105

SAMPLE DATE - 5/6/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	4.2	
Nitrate Nitrogen	ppm	<0.10	
Ammonium Nitrogen	ppm	1.8	2.1, 1.4
Alkalinity, Total	ppm	204.0	
Alkalinity, Methyl Orange	ppm	204.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	204.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.18	
Phosphate	ppm	<0.10	
Silica	ppm	14.9	
Total Dissolved Solids	ppm	250.0	
Suspended Solids	ppm	1.0	
Sulfate	ppm	18.0	
Chloride	ppm	8.0	
Acidity	ppm	-166.0	
Hardness	ppm	192.8	
Total Organic Carbon	ppm	3.4	
Chemical Oxygen Demand	ppm	3.0	
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - B-105

SAMPLE DATE - 5/6/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	3.67
Chloroganics	ppm	< 0.001
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCI/l	< 1.00
Gross Beta	PCI/l	< 1.00

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SAMPLE I.D. - PVC-1

SAMPLE DATE - 5/7/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	1.0008	
Odor	T.O.N.	2	
Turbidity	N.T.U.	190.0	
Color	P.C.U.	>100.0	
Aluminum	ppm	1.86	
Arsenic	ppm	0.003	
Boron	ppm	< 0.10	
Barium	ppm	< 0.10	
Beryllium	ppm	< 0.02	
Bismuth	ppm	0.001	
Bromine	ppm	< 0.10	
Cadmium	ppm	< 0.001	
Cobalt	ppm	< 0.05	
Chromium	ppm	0.015	
Copper	ppm	< 0.03	
Iron	ppm	4.35	
Germanium	ppm	< 0.80	
Mercury	ppb	0.5	
Lanthanum	ppm	< 5.0	
Manganese	ppm	0.35	
Magnesium	ppm	30.1	
Molybdenum	ppm	< 0.2	< 0.2, < 0.2
Nickel	ppm	< 0.06	
Lead	ppm	0.011	
Rubidium	ppm	0.03	
Antimony	ppm	< 0.001	< 0.001, < 0.001
Selenium	ppm	< 0.001	
Tin	ppm	< 0.30	
Titanium	ppm	< 0.50	
Vanadium	ppm	< 0.50	
Tungsten	ppm	< 3.0	
Zinc	ppm	< 0.03	
Zirconium	ppm	< 10.0	
Silver	ppm	< 0.001	
Sodium	ppm	5.69	5.71, 5.68

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SAMPLE I.D. - PVC-1

SAMPLE DATE - 5/7/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	5.7	
Nitrate Nitrogen	ppm	4.90	
Ammonium Nitrogen	ppm	1.4	
Alkalinity, Total	ppm	226.0	
Alkalinity, Methyl Orange	ppm	226.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	226.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.23	
Phosphate	ppm	0.15	
Silica	ppm	48.9	
Total Dissolved Solids	ppm	336.0	
Suspended Solids	ppm	474.0	
Sulfate	ppm	36.0	
Chloride	ppm	14.0	
Acidity	ppm	-169.0	
Hardness	ppm	254.5	
Total Organic Carbon	ppm	46.0	
Chemical Oxygen Demand	ppm	5.0	
Phenols	ppm	0.15	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - PVC-1

SAMPLE DATE - 5/7/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	7.34
Chloroganics:		
Methylene Chloride	ppm	0.009
Chloroform	ppm	0.003
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	3.03
Gross Beta	PCi/l	< 1.00

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SAMPLE I.D. - PVC-2

SAMPLE DATE - 5/7/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9974	
Odor	T.O.N.	2	
Turbidity	N.T.U.	34.0	
Color	P.C.U.	37.0	
Aluminum	ppm	0.43	
Arsenic	ppm	0.005	
Boron	ppm	<0.10	
Barium	ppm	0.10	
Beryllium	ppm	<0.02	
Bismuth	ppm	<0.001	
Bromine	ppm	<0.10	
Cadmium	ppm	<0.001	
Cobalt	ppm	<0.05	
Chromium	ppm	0.006	
Copper	ppm	<0.03	
Iron	ppm	2.57	2.58
Germanium	ppm	<0.80	
Mercury	ppb	<0.2	
Lanthanum	ppm	<5.0	
Manganese	ppm	0.50	0.49
Magnesium	ppm	36.2	
Molybdenum	ppm	<0.2	
Nickel	ppm	<0.06	
Lead	ppm	0.003	
Rubidium	ppm	<0.03	
Antimony	ppm	<0.001	<0.001, <0.001
Selenium	ppm	<0.001	
Tin	ppm	<0.30	
Titanium	ppm	<0.50	
Vanadium	ppm	<0.50	
Tungsten	ppm	<3.0	
Zinc	ppm	<0.03	
Zirconium	ppm	<10.0	
Silver	ppm	<0.001	
Sodium	ppm	19.07	18.98, 19.15

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SAMPLE I.D. - PVC-2

SAMPLE DATE - 5/7/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	4.2	
Nitrate Nitrogen	ppm	0.28	
Ammonium Nitrogen	ppm	0.7	
Alkalinity, Total	ppm	313.0	
Alkalinity, Methyl Orange	ppm	313.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	313.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.38	
Phosphate	ppm	<0.10	
Silica	ppm	21.0	
Total Dissolved Solids	ppm	388.0	
Suspended Solids	ppm	65.0	
Sulfate	ppm	36.0	
Chloride	ppm	18.0	18.0, 18.0
Acidity	ppm	-245.0	
Hardness	ppm	212.7	
Total Organic Carbon	ppm	53.5	
Chemical Oxygen Demand	ppm	2.0	
Phenols	ppm	< 0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	< 1	

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SAMPLE I.D. - PVC-2

SAMPLE DATE - 5/7/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	8.61
Chlororganics:		
Methylene Chloride	ppm	0.008
Chloroform	ppm	0.002
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic:		
Benzene	ppm	0.0002
Toluene	ppm	0.003
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	6.46
Gross Beta	PCi/l	< 1.00

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SAMPLE I.D. - A

SAMPLE DATE - 5/7/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9974	
Odor	T.O.N.	2	
Turbidity	N.T.U.	44.0	
Color	P.C.U.	44.0	
Aluminum	ppm	0.43	
Arsenic	ppm	0.007	
Boron	ppm	< 0.10	
Barium	ppm	< 0.10	
Beryllium	ppm	< 0.02	
Bismuth	ppm	< 0.001	
Bromine	ppm	< 0.10	
Cadmium	ppm	< 0.001	
Cobalt	ppm	< 0.05	
Chromium	ppm	0.008	
Copper	ppm	0.03	
Iron	ppm	2.23	
Germanium	ppm	< 0.80	
Mercury	ppb	0.4	
Lanthanum	ppm	< 5.0	
Manganese	ppm	0.24	
Magnesium	ppm	27.7	
Molybdenum	ppm	< 0.2	
Nickel	ppm	< 0.06	
Lead	ppm	0.002	
Rubidium	ppm	< 0.03	
Antimony	ppm	< 0.001	< 0.001, < 0.001
Selenium	ppm	< 0.001	
Tin	ppm	< 0.30	
Titanium	ppm	< 0.50	
Vanadium	ppm	< 0.50	
Tungsten	ppm	< 3.0	
Zinc	ppm	< 0.03	
Zirconium	ppm	< 10.0	
Silver	ppm	< 0.001	
Sodium	ppm	11.78	11.78, 11.81

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SAMPLE I.D. - A

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<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	2.8	
Nitrate Nitrogen	ppm	0.18	
Ammonium Nitrogen	ppm	0.7	
Alkalinity, Total	ppm	252.0	
Alkalinity, Methyl Orange	ppm	252.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	252.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.27	
Phosphate	ppm	<0.10	
Silica	ppm	23.7	
Total Dissolved Solids	ppm	326.0	
Suspended Solids	ppm	67.0	
Sulfate	ppm	24.0	
Chloride	ppm	25.0	
Acidity	ppm	-200.0	
Hardness	ppm	222.6	
Total Organic Carbon	ppm	55.1	
Chemical Oxygen Demand	ppm	5.0	
Phenols	ppm	0.25	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - A

SAMPLE DATE - 5/7/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	6.34
Chloroganics:		
Methylene Chloride	ppm	0.016
Chloroform	ppm	0.018
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	< 1.00
Gross Beta	PCi/l	8.58

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SAMPLE I.D. - D

SAMPLE DATE - 5/7/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9972	
Odor	T.O.N.	2	
Turbidity	N.T.U.	28.0	
Color	P.C.U.	34.0	
Aluminum	ppm	0.42	
Arsenic	ppm	0.004	
Boron	ppm	<0.10	
Barium	ppm	0.10	
Beryllium	ppm	<0.02	
Bismuth	ppm	<0.001	
Bromine	ppm	<0.10	
Cadmium	ppm	<0.001	
Cobalt	ppm	<0.05	
Chromium	ppm	0.005	
Copper	ppm	0.03	
Iron	ppm	1.68	
Germanium	ppm	<0.80	
Mercury	ppb	0.5	
Lanthanum	ppm	<5.0	
Manganese	ppm	0.24	
Magnesium	ppm	44.9	
Molybdenum	ppm	<0.2	
Nickel	ppm	<0.06	
Lead	ppm	0.001	
Rubidium	ppm	<0.03	
Antimony	ppm	<0.001	
Selenium	ppm	<0.001	
Tin	ppm	<0.30	
Titanium	ppm	<0.50	
Vanadium	ppm	<0.50	
Tungsten	ppm	<3.0	
Zinc	ppm	<0.03	
Zirconium	ppm	<10.0	
Silver	ppm	<0.001	
Sodium	ppm	22.35	22.37, 22.24

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SAMPLE I.D. - D

SAMPLE DATE - 5/7/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	7.1	
Nitrate Nitrogen	ppm	0.52	
Ammonium Nitrogen	ppm	1.4	
Alkalinity, Total	ppm	341.0	
Alkalinity, Methyl Orange	ppm	341.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	341.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.80	
Phosphate	ppm	<0.10	
Silica	ppm	21.0	
Total Dissolved Solids	ppm	468.0	
Suspended Solids	ppm	41.0	
Sulfate	ppm	75.0	
Chloride	ppm	10.0	
Acidity	ppm	-263.0	
Hardness	ppm	298.2	302.2
Total Organic Carbon	ppm	69.5	
Chemical Oxygen Demand	ppm	31.0	
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - D

SAMPLE DATE - 5/7/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	19.36
Chlororganics	ppm	< 0.001
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	2.01
Gross Beta	PCi/l	2.18

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SAMPLE I.D. - B-106

SAMPLE DATE - 5/8/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Density	g/ml at 25°C	0.9971	
Odor	T.O.N.	1	
Turbidity	N.T.U.	25.0	
Color	P.C.U.	51.0	
Aluminum	ppm	< 0.30	< 0.30, < 0.30
Arsenic	ppm	0.003	
Boron	ppm	< 0.10	
Barium	ppm	< 0.10	< 0.10, < 0.10
Beryllium	ppm	< 0.02	
Bismuth	ppm	< 0.001	
Bromine	ppm	< 0.10	
Cadmium	ppm	< 0.001	
Cobalt	ppm	< 0.05	< 0.05, < 0.05
Chromium	ppm	0.004	
Copper	ppm	< 0.03	
Iron	ppm	2.56	
Germanium	ppm	< 0.80	
Mercury	ppb	0.5	
Lanthanum	ppm	< 5.0	
Manganese	ppm	0.22	
Magnesium	ppm	57.9	
Molybdenum	ppm	< 0.2	
Nickel	ppm	< 0.06	< 0.06, < 0.06
Lead	ppm	< 0.001	
Rubidium	ppm	< 0.03	
Antimony	ppm	< 0.001	0.001, 0.001
Selenium	ppm	< 0.001	
Tin	ppm	< 0.30	
Titanium	ppm	< 0.50	< 0.50, < 0.50
Vanadium	ppm	< 0.50	
Tungsten	ppm	< 3.0	< 3.0, < 3.0
Zinc	ppm	< 0.03	
Zirconium	ppm	< 10.0	
Silver	ppm	< 0.001	
Sodium	ppm	43.46	43.44, 43.66

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SAMPLE I.D. - B-106

SAMPLE DATE - 5/8/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>	<u>REPLICATE RESULTS</u>
Kjeldahl Nitrogen	ppm	5.7	
Nitrate Nitrogen	ppm	0.18	
Ammonium Nitrogen	ppm	1.4	
Alkalinity, Total	ppm	290.0	
Alkalinity, Methyl Orange	ppm	290.0	
Alkalinity, Phenolphthalein	ppm	0.0	
Alkalinity, Bicarbonate	ppm	290.0	
Cyanide	ppm	<0.02	
Fluoride	ppm	0.83	0.80, 0.85
Phosphate	ppm	<0.10	
Silica	ppm	15.8	
Total Dissolved Solids	ppm	566.0	
Suspended Solids	ppm	12.0	
Sulfate	ppm	200.0	
Chloride	ppm	10.0	
Acidity	ppm	-227.0	
Hardness	ppm	330.0	
Total Organic Carbon	ppm	67.1	
Chemical Oxygen Demand	ppm	4.0	3.0, 5.0
Phenols	ppm	<0.04	
Total Coliform	mpn	Confluent	
Fecal Coliform	mpn	<1	

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SAMPLE I.D. - B-106

SAMPLE DATE - 5/8/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
Chlorinated Pesticides:		
Lindane	ppb	< 1.0
Methoxychlor	ppb	< 1.00
Toxaphene	ppb	< 3.5
Endrin	ppb	< 0.10
Chlorinated Herbicides:		
2,4 - D	ppb	< 4.0
2,4,5 - TP(Silvex)	ppb	< 1.0
Inorganic Forms of Sulfur	mg/l as S	8.39
Chloroganics:		
Methylene Chloride	ppm	0.017
Chloroform	ppm	0.039
Arylamines	ppm	< 0.01
Hydrocarbons:		
Monocyclic	ppm	< 0.01
Polycyclic	ppm	< 0.01
Chloroamines:		
Monochloroamine	ppm	< 0.01
Dichloroamine	ppm	< 0.01
Aliphatic Hydrocarbons	ppm	< 0.01
Total Organic Halogen (TOX)	ppm	< 0.001
Radiological Testing:		
Gross Alpha	PCi/l	< 1.00
Gross Beta	PCi/l	3.10

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TRIP BLANK

SAMPLE ID - 1A
1B
1C
1D

SAMPLE DATE - 5/3/82

TEST DESCRIPTION

UNIT

RESULTS

1,2 Dichloroethane	ppb	None Detected	< 0.01
Chloroform	ppb	None Detected	< 0.01
1,1,1 Trichloroethane	ppb	None Detected	< 0.01
1,1,2 Trichloroethylene	ppb	None Detected	< 0.01
Carbon Tetrachloride	ppb	None Detected	< 0.01
1,1,2,2 Tetrachloroethylene	ppb	None Detected	< 0.01
Bromodichloromethane	ppb	None Detected	< 0.01
Dibromochloromethane	ppb	None Detected	< 0.01
Bromoform	ppb	None Detected	< 0.01

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SAMPLE ID - 2W
2X
2Y
2Z

SAMPLE DATE - 5/5/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
1,2 Dichloroethane	ppb	None Detected <0.01
Chloroform	ppb	None Detected <0.01
1,1,1 Trichloroethane	ppb	None Detected <0.01
1,1,2 Trichloroethylene	ppb	None Detected <0.01
Carbon Tetrachloride	ppb	None Detected <0.01
1,1,2,2 Tetrachloroethylene	ppb	None Detected <0.01
Bromodichloromethane	ppb	None Detected <0.01
Dibromochloromethane	ppb	None Detected <0.01
Bromoform	ppb	None Detected <0.01

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SAMPLE ID - 3Q
 3R
 3S
 3T

SAMPLE DATE - 5/7/82

<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>RESULTS</u>
1,2 Dichloroethane	ppb	None Detected <0.01
Chloroform	ppb	None Detected <0.01
1,1,1 Trichloroethane	ppb	None Detected <0.01
1,1,2 Trichloroethylene	ppb	None Detected <0.01
Carbon Tetrachloride	ppb	None Detected <0.01
1,1,2,2 Tetrachloroethylene	ppb	None Detected <0.01
Bromodichloromethane	ppb	None Detected <0.01
Dibromochloromethane	ppb	None Detected <0.01
Bromoform	ppb	None Detected <0.01

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EPA PERFORMANCE STANDARDS

Mineral #3

Magnesium	ppm	2.5
Sodium	ppm	7.2
Alkalinity	ppm	17.0
Sulfate	ppm	12.0
Chloride	ppm	22.0
Fluoride	ppm	0.66
TDS	ppm	65.0
Hardness	ppm	27.1

Mineral #4

Magnesium	ppm	7.4
Sodium	ppm	40.7
Alkalinity	ppm	75.0
Sulfate	ppm	76.0
Chloride	ppm	72.0
TDS	ppm	262.0
Hardness	ppm	109.3

Cyanide #2

Cyanide	ppm	0.178
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Demand #1

Total Organic Carbon	ppm	4.3
Chemical Oxygen Demand	ppm	10.0

Demand #6

Total Organic Carbon	ppm	79.6
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Residue Series #1

Total Suspended Solids	ppm	31.2
------------------------	-----	------

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EPA PERFORMANCE STANDARDS (cont'd)

RESIDUE SERIES #2

Total Suspended Solids ppm 157.0

TRACE METAL #2

Aluminum	ppm	<0.30
Arsenic	ppm	0.017
Beryllium	ppm	<0.02
Cadmium	ppm	0.002
Cobalt	ppm	<0.05
Chromium	ppm	0.006
Copper	ppm	<0.03
Iron	ppm	0.06
Mercury	ppb	0.74
Manganese	ppm	0.02
Nickel	ppm	<0.06
Lead	ppm	0.027
Selenium	ppm	0.003
Vanadium	ppm	0.13
Zinc	ppm	<0.03

Phenols #1 ppm <0.04

Phenols #2 ppm 0.05

Phenols #3 ppm 0.07

Chlorinated Hydrocarbon Pesticide

Lindane	ppb	0.43
Endrin	ppb	1.70
Methoxychlor	ppb	88.5
Toxaphene	ppb	7.64

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EPA PERFORMANCE STANDARDS (cont'd)

Nutrient Series #2

Ammonia Nitrogen	ppm	1.4
Nitrate Nitrogen	ppm	1.62
Phosphate	ppm	0.26

Nutrient Series #6

Kjeldahl Nitrogen	ppm	5.0
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<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>LOWER DETECTION LIMITS</u>
Turbidity	N.T.U.	1.0
Color	P.C.U.	1.0
Aluminum	ppm	0.30
Arsenic	ppm	0.001
Boron	ppm	0.10
Barium	ppm	0.10
Beryllium	ppm	0.02
Bismuth	ppm	0.001
Bromine	ppm	0.10
Cadmium	ppm	0.001
Cobalt	ppm	0.05
Chromium	ppm	0.001
Copper	ppm	0.03
Iron	ppm	0.04
Germanium	ppm	0.80
Mercury	ppb	0.20
Lanthanum	ppm	5.0
Manganese	ppm	0.02
Magnesium	ppm	0.01
Molybdenum	ppm	0.2
Nickel	ppm	0.06
Lead	ppm	0.001
Rubidium	ppm	0.03
Antimony	ppm	0.001
Selenium	ppm	0.001
Tin	ppm	0.30
Titanium	ppm	0.50
Vanadium	ppm	0.50
Tungsten	ppm	3.0
Zinc	ppm	0.03
Zirconium	ppm	10.0
Silver	ppm	0.001
Sodium	ppm	0.10

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<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>LOWER DETECTION LIMITS</u>
Kjeldahl Nitrogen	ppm	1.4
Nitrate Nitrogen	ppm	0.10
Ammonium Nitrogen	ppm	0.70
Alkalinity, Total	ppm	1.0
Alkalinity, Methyl Orange	ppm	1.0
Alkalinity, Phenolphthalein	ppm	1.0
Alkalinity, Bicarbonate	ppm	1.0
Cyanide	ppm	0.02
Fluoride	ppm	0.10
Phosphate	ppm	0.10
Silica	ppm	0.5
Total Dissolved Solids	ppm	1.0
Suspended Solids	ppm	1.0
Sulfate	ppm	1.0
Chloride	ppm	1.0
Acidity	ppm	1.0
Hardness	ppm	1.0
Total Organic Carbon	ppm	0.5
Chemical Oxygen Demand	ppm	1.0
Phenols	ppm	0.04
Total Coliform	mpn	1
Fecal Coliform	mpn	1

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<u>TEST DESCRIPTION</u>	<u>UNIT</u>	<u>LOWER DETECTION LIMITS</u>
Chlorinated Pesticides:		
Lindane	ppb	1.0
Methoxychlor	ppb	1.00
Toxaphene	ppb	3.5
Endrin	ppb	0.10
Chlorinated Herbicides:		
2,4 - D	ppb	4.0
2,4,5 - TP(Silvex)	ppb	1.0
Radiological Testing:		
Gross Alpha	PCi/l	1.00
Gross Beta	PCi/l	1.00
Total Radium	PCi/l	2
Thorium	PCi/l	0.6
Uranium	mg/l	0.001
Inorganic Forms of Sulfur	mg/l	0.01
Chlororganics	ppm	0.001
Arylamines	ppm	0.01
Hydrocarbons:		
Monocyclic	ppm	0.01
Polycyclic	ppm	0.01
Chloroamines:		
Monochloroamine	ppm	0.01
Dichloroamine	ppm	0.01
Aliphatic Hydrocarbons	ppm	0.01
Total Organic Halogen (TOX)	ppm	0.001

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TEST DESCRIPTION

METHOD USED

Density	Volumetric-Gravimetric
Odor	EPA 140.1
Turbidity	EPA 180.1
Color	EPA 110.2
Aluminum	EPA 202.1
Arsenic	EPA 206.3
Boron	EPA 212.3
Barium	EPA 208.1
Beryllium	EPA 210.1
Bismuth	SM 303A
Bromine	DPD Method
Cadmium	EPA 213.2
Cobalt	EPA 219.1
Chromium	EPA 218.2
Copper	EPA 220.1
Iron	EPA 236.1
Germanium	IL 42208-1
Mercury	EPA 245.1
Lanthanum	IL 42208-1
Manganese	EPA 243.1
Magnesium	EPA 242.1
Molybdenum	EPA 246.1
Nickel	EPA 249.1
Lead	EPA 239.2
Rubidium	IL 42208-1
Antimony	EPA 204.2
Selenium	EPA 270.3
Tin	EPA 282.1
Titanium	EPA 283.1
Vanadium	EPA 286.1
Tungsten	IL 42208-1
Zinc	EPA 289.1
Zirconium	IL 42208-1
Silver	EPA 272.2
Sodium	EPA 273.1

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TEST DESCRIPTION

METHOD USED

Kjeldahl Nitrogen	EPA 351.3
Nitrate Nitrogen	EPA 353.3
Ammonium Nitrogen	EPA 350.2
Alkalinity, Total	EPA 310.1
Alkalinity, Methyl Orange	EPA 310.1
Alkalinity, Phenolphthalein	EPA 310.1
Alkalinity, Bicarbonate	EPA 310.1
Cyanide	EPA 335.2
Fluoride	EPA 340.2
Phosphate	EPA 365.3
Silica	EPA 370.1
Total Dissolved Solids	EPA 160.3
Suspended Solids	EPA 160.2
Sulfate	EPA 375.4
Chloride	EPA 325.3
Acidity	EPA 305.1
Hardness	EPA 130.2
Total Organic Carbon	EPA 415.1
Chemical Oxygen Demand	EPA 410.2
Phenols	EPA 420.1
Total Coliform	SM 908A
Fecal Coliform	SM 908C

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TEST DESCRIPTION

METHOD USED

Chlorinated Pesticides:

Lindane

SM 509A

Methoxychlor

SM 509A

Toxaphene

SM 509A

Endrin

SM 509A

Chlorinated Herbicides:

2,4 - D

SM 509B

2,4,5 - TP(Silvex)

SM 509B

Radiological Testing:

Gross Alpha

EPA 900.0

Gross Beta

EPA 900.0

Total Radium

EPA 903.1 & 904.0

Thorium

EPA 980.1

Uranium

SM 509B

Inorganic Forms of Sulfur

GC/MS

Chlororganics

GC/MS

Arylamines

GC/MS

Hydrocarbons: Monocyclic & Polycyclic

GC/MS

Chloroamines

GC/MS

Aliphatic Hydrocarbons

GC/MS

Total Organic Halogen (TOX)

GC/MS

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