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FOURTH QUARTER COMPLIANCE MONITORING SAMPLING REPORT FOR APRIL, MAY, AND JUNE 1989, AT THE INDUSTRIAL WASTEWATER TREATMENT PLANT NAVAL AIR STATION-JACKSONVILLE JACKSONVILLE, FLORIDA

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A. Operation Permit No. H016-119108 (Modified - October 10, 1988)

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INTRODUCTION

On June 15, 1987, the State of Florida Department of Environmental Regulation (FDER) issued a Resource Conservation and Recovery Act (RCRA) Operation Permit No. H016-119108 (revised on October 10, 1988 and included in Appendix A) to the U.S. Naval Air Station-Jacksonville, Jacksonville, Florida (Figure 1) to operate a hazardous waste surface impoundment. This permit was issued under provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule 17-30 for a Hazardous Waste Surface Impoundment. The impoundment consists of four industrial sludge-drying (ISD) beds located at the Industrial Wastewater Treatment Plant. In November 1988, the operation of the ISD beds was discontinued as required by Specific Condition 33 of the permit.

As part of the permit conditions and in accordance with the Compliance Monitoring Program, 40 Code of Federal Regulations (CFR) 264(3)(f), ground-water sampling and analyses have been conducted from those wells designated as point-of-compliance (POC) wells in the permit and from additional wells installed for the purpose of plume delineation. Presented in this report is a description of the quarterly sampling event conducted May 9, 1989, a summary of the analytical data and a discussion of the results.

GROUND-WATER SAMPLE COLLECTION

Ground-water samples were collected from POC wells JAX4-4, -5, -9, -10, and -11. Monitor well JAX4-9 is designated the upgradient well (Figure 2). Additional, samples were collected from non-POC monitor wells JAX4-12D, JAX4-13, JAX4-13D, JAX4-14, JAX4-15, AND JAX4-16, located downgradient from the ISD beds. Samples were analyzed for

the permit's list of parameters having Ground-Water Protection Standards (Table 1) and constituents previously detected in ground-water samples.

Water-level measurements were obtained from each well prior to sampling. Approximately four well volumes of water were removed from the wells using a peristaltic pump fitted with Teflon™ tubing prior to sample collection. The sampling and analytical methods used were performed in accordance with Specific Conditions 49 and 50 of the permit. Ground-water samples for analysis of organic compounds were collected with a Teflon™ bailer and samples for inorganic constituents were collected using a peristaltic pump fitted with Teflon™ tubing.

All samples were collected unfiltered. Aliquots of the complexed cyanide samples were screened in the field for the presence of sulfide, residual chlorine, and other oxidizing agents that might interfere with laboratory detection of cyanide. The pH, specific conductance and temperature were determined in the field at the time of sampling (Table 2).

All samples were preserved by cooling to 4°C with ice. In addition, nitric acid was used as a preservative for metals; phosphoric acid for total organic carbon (TOC); and sodium hydroxide for complexed cyanide. Quality Assurance/Quality Control samples consisted of sampler rinsates, field blanks, and trip blanks for all parameters.

Before sampling each well, the sampling equipment was thoroughly decontaminated with isopropyl alcohol, MICRO™ laboratory cleaning soap solution, and a deionized water rinse. The sampling data was carefully documented on water-sampling logs. Upon completion of the sampling, the samples were immediately shipped to Pioneer Laboratory, Inc., in Pensacola, Florida for analysis.

SUMMARY OF WATER-QUALITY DATA

Analytical results, water-sampling logs and chain-of-custody forms for the fourth quarter sampling event (March, April, and May 1989) are contained in Appendix B.

Condition 56 of the permit establishes the Ground Water Protection Standards (GWPS) in accordance with 40 CFR 264.94 for constituents detected in the ground water sampled from the POC monitor wells. The GWPS list in Table 1 includes additional constituents detected in the previous Appendix IX analyses.

Analytical results of samples from upgradient POC monitor well JAX4-9 are used to establish the GWPS background levels for the parameters of F006, FAC 17-4.245(b), 17-4.246 and Appendix IX constituents (Table 1). The background levels are defined by specific condition 54 of the permit to be the mean concentration of each GWPS constituent determined in the four most recent sampling events of monitor well JAX4-9. The ground-water quality criteria for the Drinking Water Supply parameters and zinc are established by the permit (Table 1).

To determine if the GWPS has been exceeded, the value of each GWPS constituent detected in the downgradient POC wells is compared to that specific constituent's GWPS concentration limit. The GWPS constituents analyzed during the last four quarters in samples from JAX4-9 (with the exception of sulfide and zinc) have been below analytical method detection limits (Table 3). Therefore, the GWPS for many constituents is the method detection limit.

Indicator Parameters (40 CFR 264.98[a][1])

Table 4 summarizes values for the indicator parameters: pH, specific conductance, TOC, and total organic halogens (TOX). A historical summary of the analytical results for the indicator parameters are contained in Appendix C.

F006 Parameters (40 CFR, Appendix VII)

The F006 constituents detected above background concentrations are cadmium in JAX4-4, -5, -13, 14, -15, and -16, and nickel in JAX4-4, -5, -10, -11, and -15 (Table 5 and Figure 3).

Concentrations for cadmium and nickel ranged from .002 to .035 milligrams per liter (mg/l) and .12 to 1.7 mg/l, respectively.

Drinking-Water Supply Parameters (40 CFR 264.94)

None of the samples contained concentrations which exceeded the GWPS for Drinking-Water Supply parameters, (Table 5 and Figure 4).

FAC Ch. 17-4.425(b) and 17-4.246 Parameters

Samples from six monitor wells contained constituents that exceeded the GWPS: trichloroethylene was detected in samples from JAX4-11 (2 parts per billion [ppb]); 1,1-dichloroethane was detected in samples from JAX4-4 (50 ppb), JAX4-5 (76 ppb), JAX4-10 (121 ppb), JAX4-11 (187 ppb), JAX4-13 (5 ppb), JAX4-13D (6 ppb), JAX4-14 (8 ppb), and JAX4-15 (20 ppb); 1,1,1-trichloroethane was detected in samples from JAX4-10 (14 ppb), JAX4-11 (11 ppb), JAX4-13 (2 ppb), and

JAX4-14 (15 ppb); and vinyl chloride was detected in samples from JAX4-5 (5 ppb). These data are summarized in Table 5 and Figure 5.

Appendix IX Constituents

A total of eight Appendix IX constituents were detected above the analytical detection limits in samples from monitor wells JAX4-4, -5, -9, -10, -11, -13, -13D, -14, -15, and -16. The compounds are sulfide (JAX4-4, -5, -10, -11, -13, 13D, -15, -16), zinc (JAX4-13, -14, and -16), vanadium (JAX4-4, -5, -9, -10, -11, -15, -16), toluene (JAX4-4, -5, -10, -11) methylene chloride (JAX4-4, JAX4-10, JAX4-11), o-cresol (JAX4-4, -5, -10, -11), p-cresol (JAX4-4, -5, -10, -11), and phenol (JAX4-4, -5, -10, -11, -15). The concentrations of sulfide and toluene reported in samples collected from wells JAX-13, -13D, and -16 and wells JAX-9 and -13, respectively, should be considered qualitative because of the presence of these constituents in the field blank and/or rinse blank. These data are summarized in Table 5 and Figure 6.

All eight of these constituents were detected previously in the initial round of Appendix IX sampling at the site (G&M, 1987) and were subsequently added to the GWPS (FDER, 1988; Geraghty and Miller, Inc., 1987). Two Appendix IX constituents, 1,2-dichloropropane and 1,2,3-trichloropropane, have not been detected in either the third quarter (December 1988, January, and February 1989) or fourth quarter (March, April, and May 1989) sampling events.

GROUND-WATER FLOW

Water-levels (Figure 2 and Table 6) measured in the monitor wells indicate the direction of ground-water flow in the uppermost aquifer is to the northeast. The deeper permeable zone in which monitor wells JAX4-12D and -13D are

screened is separated from the other uppermost aquifer monitor wells by a low permeability layer (Geraghty and Miller, 1988). Therefore, these wells are not used when determining ground-water flow in the uppermost aquifer. Table 7 lists the construction details of all monitor wells at the site.

The rate of ground-water flow is estimated to range from approximately 0.5 to 4.1 feet per year. These rates are calculated by applying a range of hydraulic conductivity values (1.5×10^{-5} to 1.3×10^{-4} cm/sec, [Geraghty and Miller, Inc., 1988]), an estimated hydraulic gradient of 0.003 (based on water-level measurements collected on May 9, 1989 [Appendix D]), and an assumed effective porosity of 0.1.

CONCLUSIONS

- In the wells sampled, thirteen constituents were detected above the GWPS. These constituents are: cadmium, nickel, trichloroethylene, 1,1-dichloroethane, 1,1,1-trichloroethane, vinyl chloride, sulfide, zinc, vanadium, methylene chloride, o-cresol, p-cresol, and phenol.

- The ground-water flow is to the northeast. The calculated ground-water flow velocities range from 0.5 to 4.1 ft/yr.

REFERENCES

Florida Department of Environmental Regulation, 1988. Letter to Commanding Officer, Naval Air Station-Jacksonville, Jacksonville, Florida, dated February 25, 1988.

Geraghty & Miller, Inc., 1987. Results of Hydrogeologic Evaluation and Appendix IX Sampling, Industrial Wastewater Treatment Plant, Naval Air Station-Jacksonville: Consultant's Report Prepared for Department of the Navy, Southern Division, Naval Facilities Engineering Command.

Geraghty and Miller, Inc., 1988. Draft Plume Delineation Report, Industrial Wastewater Treatment Plant, Naval-Air Station-Jacksonville, Jacksonville, Florida. Consultants Report prepared for Department of the Navy, Southern Division, Naval Facilities Engineering Command.

TABLES

Table 1. Ground Water Protection Standard
(40 CFR 264.94)

Parameters	Concentration Limit
a. F006 Parameters (40 CFR Part 261 Appendix VII)	
Complexed Cyanide	Background 1/
Cadmium	Background
Hexavalent Chromium	Background
Nickel	Background
b. Drinking-Water Supply Parameters (40 CFR 264.94 Table 1):	
Arsenic	0.05 mg/L 2/
Barium	1.0 mg/L
Chromium	0.05 mg/L
Lead	0.05 mg/L
Mercury	0.002 mg/L
Selenium	0.01 mg/L
Silver	0.05 mg/L
c. FAC Chapters 17-4.245(b) and 17-14.246 Parameters:	
Trichloroethylene	Background
Tetrachloroethylene	Background
Carbon Tetrachloride	Background
Vinyl Chloride	Background
1,1,1-trichloroethane	Background
1,2-dichloroethane	Background
Benzene	Background
d. Appendix IX Constituents	
Sulfide	Background
Vanadium	Background
Zinc	0.05 mg/L 3/
Chloroform	Background
Methylene Chloride	Background
Toluene	Background
1,1-dichloroethane	Background
O-cresol	Background
P-cresol	Background
Phenol	Background
1,2-dichloropropane	Background
1,2,3-trichloropropane	Background

1/ As defined by Specific Condition 43 of the permit.
2/ Milligram per Liter
3/ Florida Secondary Drinking Water Standard equals 5.0 mg/L

GWPS.DOC

Table 2. pH, Specific Conductance, and Temperature Values Determined in the Field for Monitor Wells, May 9, 1989

	Monitor-Well Designation										
INDICATOR PARAMETER	JAX4-4	JAX4-5	JAX4-9	JAX4-10	JAX4-11	JAX4-12D	JAX4-13	JAX4-13D	JAX4-14	JAX4-15	JAX4-16
pH (Standard Units)	5.3	6.2	6.7	5.9	5.0	7.2	6.8	6.5	7.0	6.0	7.4
Specific Conductance (micromohs/cm)	980	1200	340	700	850	270	193	240	460	700	1380
Temperature (degrees Celsius)	23.0	23.0	23.0	23.0	23.0	24.0	23.0	23.0	23.0	23.0	23.0

Table 3. Concentrations of
Ground-Water Protection Standard Constituents
Detected in Monitor Well JAX4-9
(Results in parts per million)

CONSTITUENTS	1-15-88	8/10-12/88	9/27-28-29/88	2-27-89	5-9-89
Complexed Cyanide	<.005	<.005	<.005	<.01	<.005
Cadmium	<.0001	<.0001	<.0001	<.0001	<.0001
Hexavalent Chromium	<.01	<.01	<.01	<.01	<.05
Nickel	<.05	<.01	<.05	<.05	<.02
Trichloroethylene	<.001	<.001	<.001	<.001	<.001
Tetrachloroethylene	<.003	<.003	<.003	<.003	<.003
Carbon Tetrachloride	<.001	<.001	<.001	<.003	<.003
Vinyl Chloride	<.001	<.001	<.001	<.001	<.001
1,1,1-trichloroethane	<.005	<.005	<.005	<.005	<.005
1,2-dichloroethane	<.003	<.003	<.005	<.003	<.003
Benzene	<.001	<.001	<.001	<.001	<.001
Sulfide	NA	1.1	<.05	<.05	<.05
Vanadium	NA	<.02	<.02	<.01	<.05
Zinc	NA	.03	<.01	<.01	<.01
Chloroform	NA	<.005	<.05	<.005	<.005
Methylene Chloride	NA	<.005	<.005	<.05	<.005
Toluene	<.005	<.005	<.005	<.001	.002
1,1-dichloroethene	<.003	<.003	<.005	<.005	<.005
O-Cresol	NA	<.005	<.005	<.01	<.01
Phenol	NA	<.01	<.004	<.005	<.005
1,2,3-trichloropropane	NA	NA	<.05	<.005	<.005
1,2-dichloropropane	NA	NA	<.05	<.005	<.005

NA = Not analyzed for

Table 4. Summary of Indicator Parameter Values
May 9, 1989

	Monitor-Well Designation										
PARAMETER	JAX4-4	JAX4-5	JAX4-9	JAX4-10	JAX4-11	JAX4-12D	JAX4-13	JAX4-13D	JAX4-14	JAX4-15	JAX4-16
pH (Standard Units)	5.14	6.96	6.47	5.05	4.34	6.31	5.87	5.93	6.79	5.90	7.46
Specific Conductance (micromohs/cm)	997	1333	344	719	1206	196	178	175	406	499	1396
Total Organic Carbon (mg/L)	28	54	19	17	30	3	14	3	6	28	81
Total Organic Halogens (mg/L)	140	230	30	90	190	BDL	20	BDL	BDL	70	50

Table 5. Concentrations of Ground-Water Protection Standard Constituents
and Appendix IX Constituents Detected in the Monitor Wells
May 9, 1989
(All results as milligrams per Liter (mg/L) unless noted)
Appendix VII Constituents

Paramters	Ground-Water Protection Standard b/	Analytical Method	Detection Limits	JAX4-9	JAX4-4	JAX4-5	JAX4-10	JAX4-11	JAX4-12D	JAX4-13	JAX4-13D	JAX4-14	JAX4-15	JAX4-16
Cadmium	Background a/	7031	0.0001	<0.0001	0.0030	0.0035	BDL	BDL	BDL	0.0002	BDL	0.0002	0.0004	0.0020
Nickel	Background	6010	0.02	<0.02	0.16	0.41	0.12	1.7	BDL	BDL	BDL	BDL	1.1	BDL
Drinking-Water Supply Parameters (40 CFR 264.94)														
Silver	0.05	7761	0.0001	BDL	0.0002	0.0001	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.0002
Barium	1	6010	0.01	0.03	0.14	0.03	0.30	0.09	0.05	0.28	0.06	0.08	0.12	0.20
Chromium	0.05	6010	0.01	<0.01	0.02	0.04	0.01	0.03	BDL	0.02	BDL	0.01	0.01	0.05
Lead	0.05	7421	C/	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01
Mercury	0.002	7470	0.0001	<000.1	0.0001	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.0012
Arsenic	0.05	7060	0.001	<0.001	BDL	BDL	BDL	BDL	0.011	0.004	0.016	BDL	BDL	0.001
FAC Ch. 17-4.245(b) and 17-246 Parameters														
1,1-dichloroethane (ug/l)	Background	8240	5	BDL	50	76	121	187	BDL	5	6	8	20	BDL
1,1,1-trichloroethane (ug/l)	Background	8240	5	BDL	BDL	BDL	14	11	BDL	2	BDL	15	BDL	BDL
Vinyl Chloride (ug/l)	Background	8240	1	BDL	BDL	5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Trichloroethylene (ug/l)	Background	8240	1	BDL	BDL	BDL	BDL	2	BDL	BDL	BDL	BDL	BDL	BDL
Appendix IX Constituents														
Paramters	Ground-Water Protection Standard b/	Analytical Method	Detection Limits	JAX4-9	JAX4-4	JAX4-5	JAX4-10	JAX4-11	JAX4-12D	JAX4-13	JAX4-13D	JAX4-14	JAX4-15	JAX4-16
Sulfide	Background	9030	0.05	<0.05	13	24	13	17	BDL	.21	.22	BDL	2.8	1.7
Zinc	0.05	6010	0.01	<0.01	BDL	BDL	BDL	BDL	BDL	0.01	BDL	0.01	BDL	0.06
Vanadium	Background	6010	0.05	0.05	0.12	0.06	0.16	0.44	BDL	BDL	BDL	BDL	0.07	0.06
Methylene Chloride (ug/l)	Background	8240	5	<5	6	BDL	102	72	BDL	BDL	BDL	BDL	BDL	BDL
O-cresol (ug/l)	Background	8250	10	<10	28	18	17	20	BDL	BDL	BDL	BDL	BDL	BDL
P-cresol	Background	8250	10	<10	64	427	10	15	BDL	BDL	BDL	BDL	BDL	BDL
Phenol (ug/l)	Background	8250	5	<5	933	728	1270	936	BDL	BDL	BDL	BDL	58	BDL
Toluene	Background	8250	1	2	11	54	7	12	BDL	2	4	BDL	BDL	BDL

a/ Defined as the mean of the values obtained in the 4 most recent sampling events. With the exception of sulfide, all constituents have been below the method detection limits (MDL). Therefore, the background value is equal to the MDL. Four quarters of sulfide data have not been collected for JAX4-9; however, the average for the last three sampling events is 0.49 mg/L (average of BDL [September 29 and 30, 1987], 1.1 mg/L [August 10-12, 1988], and 0.38 mg/L [September 22, 1988]).

b/ SW-846, U.S. EPA 3rd Edition.

C/ Detection limits varied due to matrix interference.

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Table 6. Water Levels in the Monitor Wells

Monitor Well Designation	Elevation of Measuring Point (ft msl) a/	August 10, 1988		September 28, 1988		February 27, 1989		May 9, 1989	
		Depth to Water (ft) b/	Water-Level Elevation (ft msl)	Depth to Water (ft)	Water-Level Elevation (ft msl)	Depth to Water (ft)	Water-Level Elevation (ft msl)	Depth to Water (ft)	Water-Level Elevation (ft msl)
JAX4-4	21.28	7.22	14.06	6.26	15.02	7.13	14.15	7.05	14.23
JAX4-5	20.62	6.92	13.70	5.81	14.81	6.51	14.11	6.42	14.20
JAX4-9	23.52	8.97	14.55	7.51	16.01	9.23	14.29	9.16	14.37
JAX4-10	20.75	7.06	13.69	5.96	14.79	6.58	14.17	6.52	14.23
JAX4-11	20.63	6.86	13.77	5.80	14.83	6.69	13.94	6.47	14.16
JAX4-12D	20.94	7.12	13.82	5.95	14.99	6.91	14.03	6.83	14.11
JAX4-13	20.59	7.19	13.40	6.07	14.52	6.44	14.15	6.32	14.27
JAX4-13D	20.70	7.40	13.30	8.06	12.64	6.67	14.03	6.53	14.17
JAX4-14	20.57	6.92	13.65	5.67	14.90	6.33	14.24	6.24	14.33
JAX4-15	20.46	6.99	13.47	5.84	14.62	6.49	13.97	6.40	14.06
JAX4-16	20.69	7.30	13.39	6.12	14.57	6.39	14.30	6.28	14.41

Monitor Well Designation	Elevation of Measuring Point (ft msl)	November 24, 1987		January 15, 1988		January 27, 1988	
		Depth to Water (ft)	Water-Level Elevation (ft msl)	Depth to Water (ft)	Water-Level Elevation (ft msl)	Depth to Water (ft)	Water-Level Elevation (ft msl)
JAX4-4	21.28	6.58	14.70	7.48	13.80	6.38	14.90
JAX4-5	20.62	6.18	14.44	6.95	13.67	5.95	14.67
JAX4-9	23.52	7.66	15.86	9.21	14.31	7.99	15.53
JAX4-10	20.75	6.33	14.42	7.20	13.55	6.05	14.70
JAX4-11	20.63	6.15	14.48	6.95	13.68	6.00	14.63
JAX4-12D	20.94	NI	--	NI	--	NI	--
JAX4-13	20.59	NI	--	NI	--	NI	--
JAX4-13D	20.70	NI	--	NI	--	NI	--
JAX4-14	20.57	NI	--	NI	--	NI	--
JAX4-15	20.46	NI	--	NI	--	NI	--
JAX4-16	20.69	NI	--	NI	--	NI	--

Table 6. Continued

Monitor Well Designation	Elevation of Measuring Point (ft msl)	July 10, 1985		March 4, 1986		September 29, 1987		October 22, 1987	
		Depth to Water (ft)	Water-Level Elevation (ft msl)	Depth to Water (ft)	Water-Level Elevation (ft msl)	Depth to Water (ft)	Water-Level Elevation (ft msl)	Depth to Water (ft)	Water-Level Elevation (ft msl)
JAX4-4	21.28	6.75	14.53	5.66	15.62	7.53	13.75	8.00	13.28
JAX4-5	20.62	6.39	14.23	4.62	16.00	7.12	13.50	7.61	13.01
JAX4-9	23.52	6.18	15.35	6.42	17.11	8.90	14.62	9.45	14.07
JAX4-10	20.75	6.52	14.23	4.91	15.84	7.27	13.48	7.80	12.95
JAX4-11	20.63	NI	--	NI	--	7.11	13.52	7.64	12.99
JAX4-12D	20.94	NI	--	NI	--	NI	--	NI	--
JAX4-13	20.59	NI	--	NI	--	NI	--	NI	--
JAX4-13D	20.70	NI	--	NI	--	NI	--	NI	--
JAX4-14	20.57	NI	--	NI	--	NI	--	NI	--
JAX4-15	20.46	NI	--	NI	--	NI	--	NI	--
JAX4-16	20.69	NI	--	NI	--	NI	--	NI	--

Monitor Well Designation	Elevation of Measuring Point (ft msl)	March 7, 1984		July 25, 1984		October 18, 1984		February 19, 1985	
		Depth to Water (ft)	Water-Level Elevation (ft msl)	Depth to Water (ft)	Water-Level Elevation (ft msl)	Depth to Water (ft)	Water-Level Elevation (ft msl)	Depth to Water (ft)	Water-Level Elevation (ft msl)
JAX4-4	21.28	5.11	16.17	6.06	15.22	5.76	15.52	6.37	14.91
JAX4-5	20.62	4.21	16.41	5.59	15.03	5.24	15.38	5.86	14.76
JAX4-9	23.52	5.86	17.67	7.37	16.16	6.43	17.10	7.81	15.72
JAX4-10	20.75	NI	--	NI	--	NI	--	5.70 c/	15.05
JAX4-11	20.63	NI	--	NI	--	NI	--	NI	--
JAX4-12D	20.94	NI	--	NI	--	NI	--	NI	--
JAX4-13	20.59	NI	--	NI	--	NI	--	NI	--
JAX4-13D	20.70	NI	--	NI	--	NI	--	NI	--
JAX4-14	20.57	NI	--	NI	--	NI	--	NI	--
JAX4-15	20.46	NI	--	NI	--	NI	--	NI	--
JAX4-16	20.69	NI	--	NI	--	NI	--	NI	--

a/ ft msl = Feet above mean sea level. All elevations based on the National Geodetic Survey Vertical Traverse from Benchmark No. 4 (brass disc labeled "Naval Reservation 1939") as shown on the benchmark listing for the U.S. Naval Air Station - Jacksonville.
b/ ft = feet
c/ Water Level Measured February 7, 1985
NI = Not installed

Table 7. Monitor Well Construction Details

Monitor Well Designation	Installation Date	Top of Casing Elevation (ft msl) 1/	Diameter (inches)	Total Depth (ft bls)	Screened Interval (ft bls)
JAX4-4	2/20/84	21.28	2	12.5	7.5 - 12.5
JAX4-5	2/20/84	20.62	2	13.5	8.5 - 13.5
JAX4-9	2/20/84	23.52	2	12.5	7.5 - 12.5
JAX4-10	1/25/85	20.75	2	13.0	8.0 - 13.0
JAX4-11	9/28/88	20.63	2	13.0	8.0 - 13.0
JAX4-12D	8/1-2/88	20.94	4	35.5	30.5 - 35.5
JAX-13	8/2/88	20.59	2	10.5	5.5 - 10.5
JAX-13D	8/2-3/88	20.70	2	34.25	28.67 - 33.67
JAX-14	8/3/88	20.57	2	10.5	5.5 - 10.5
JAX-15	8/3/88	20.46	2	10.0	4.5 - 9.5
JAX-16	8/3/88	20.69	2	10.0	4.5 - 9.5

1/ ft msl = feet above mean sea level

FIGURES

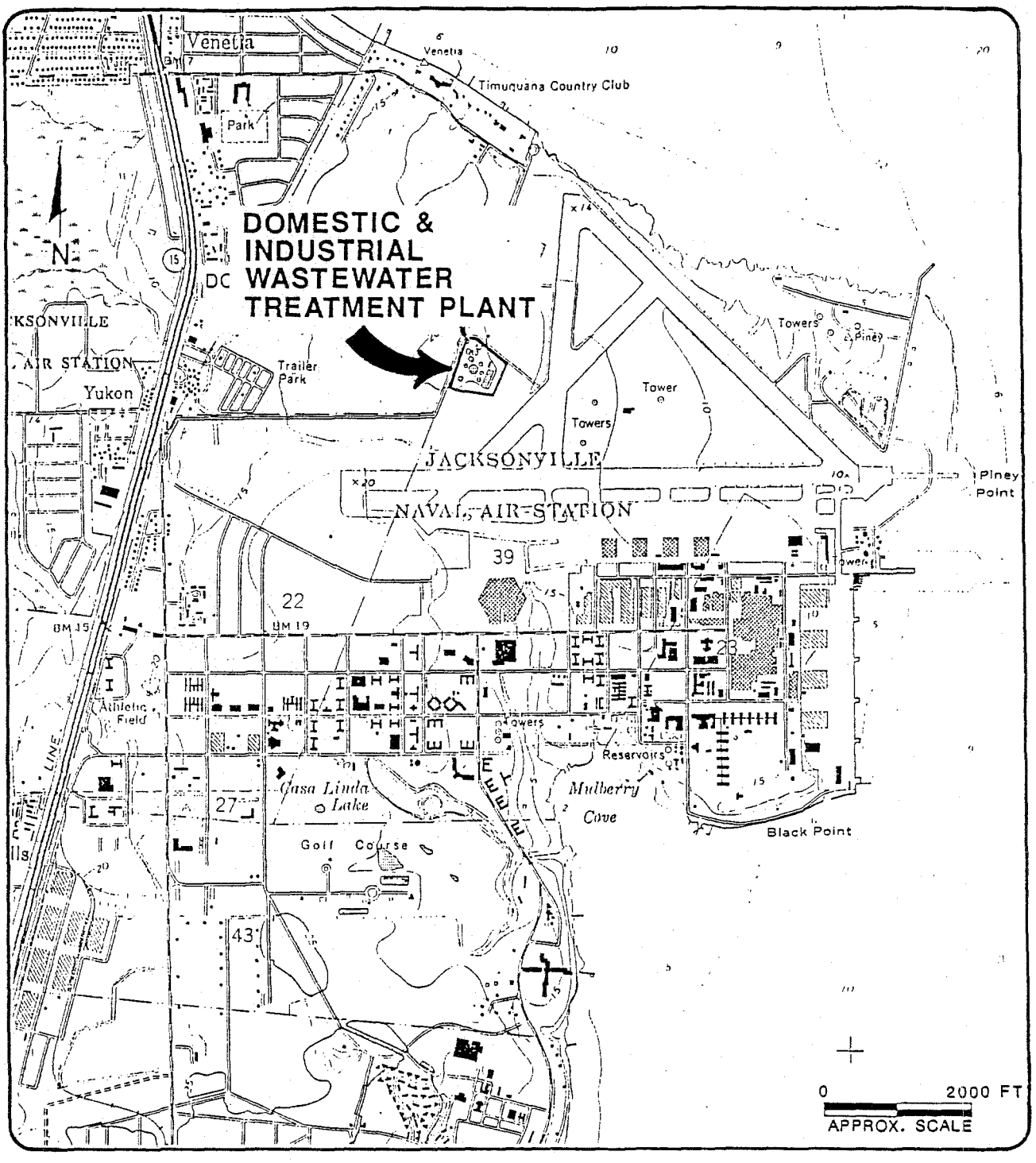

Figure 1.

Location Map.

CLIENT NAME:

Naval Facilities Engineering Command, Southern Division

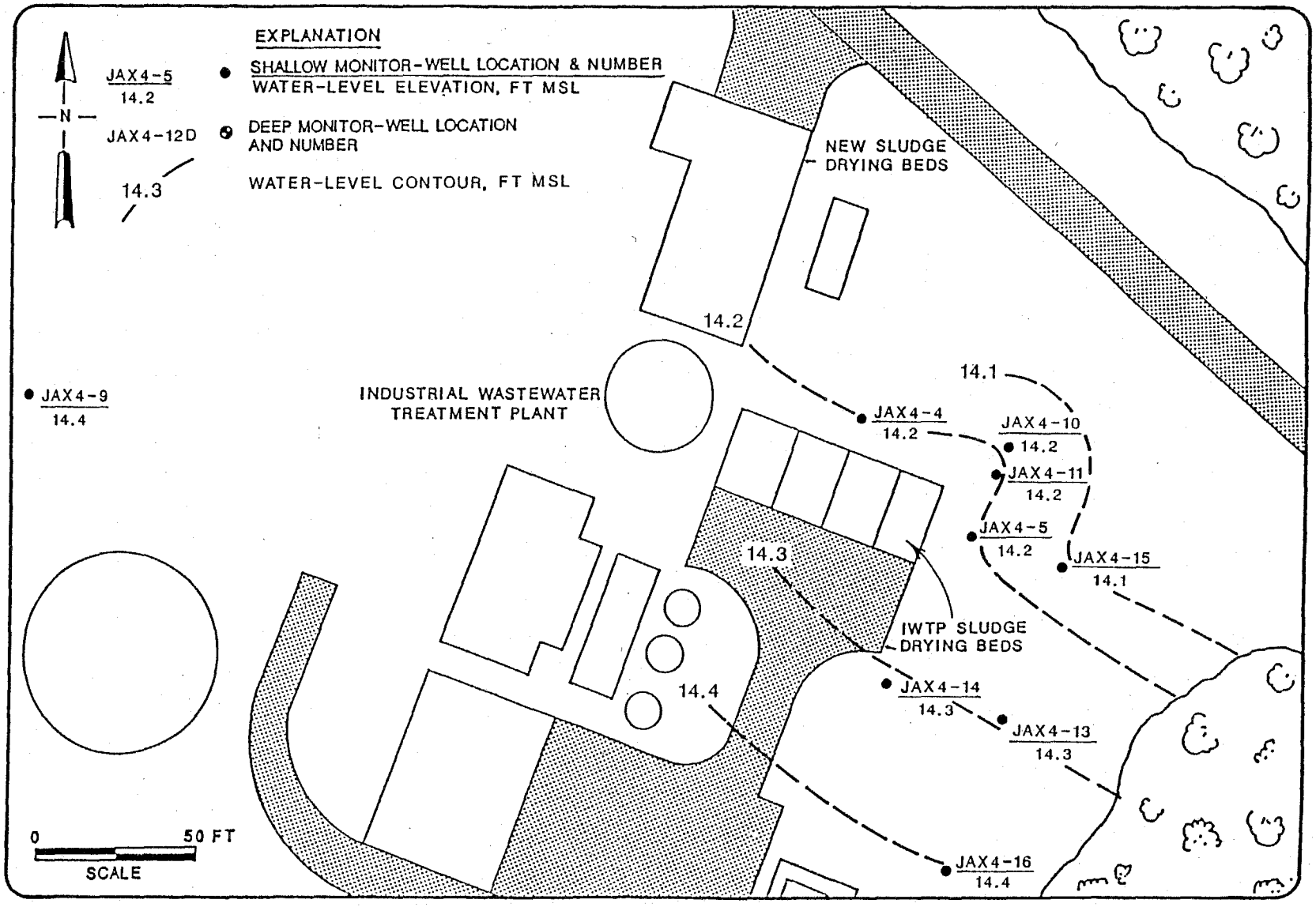

Figure 2.

Water-Table Contour Map of the Uppermost Aquifer, February 27, 1989.

CLIENT NAME:

Naval Facilities Engineering Command, Southern Division

GERAGHTY & MILLER, INC.

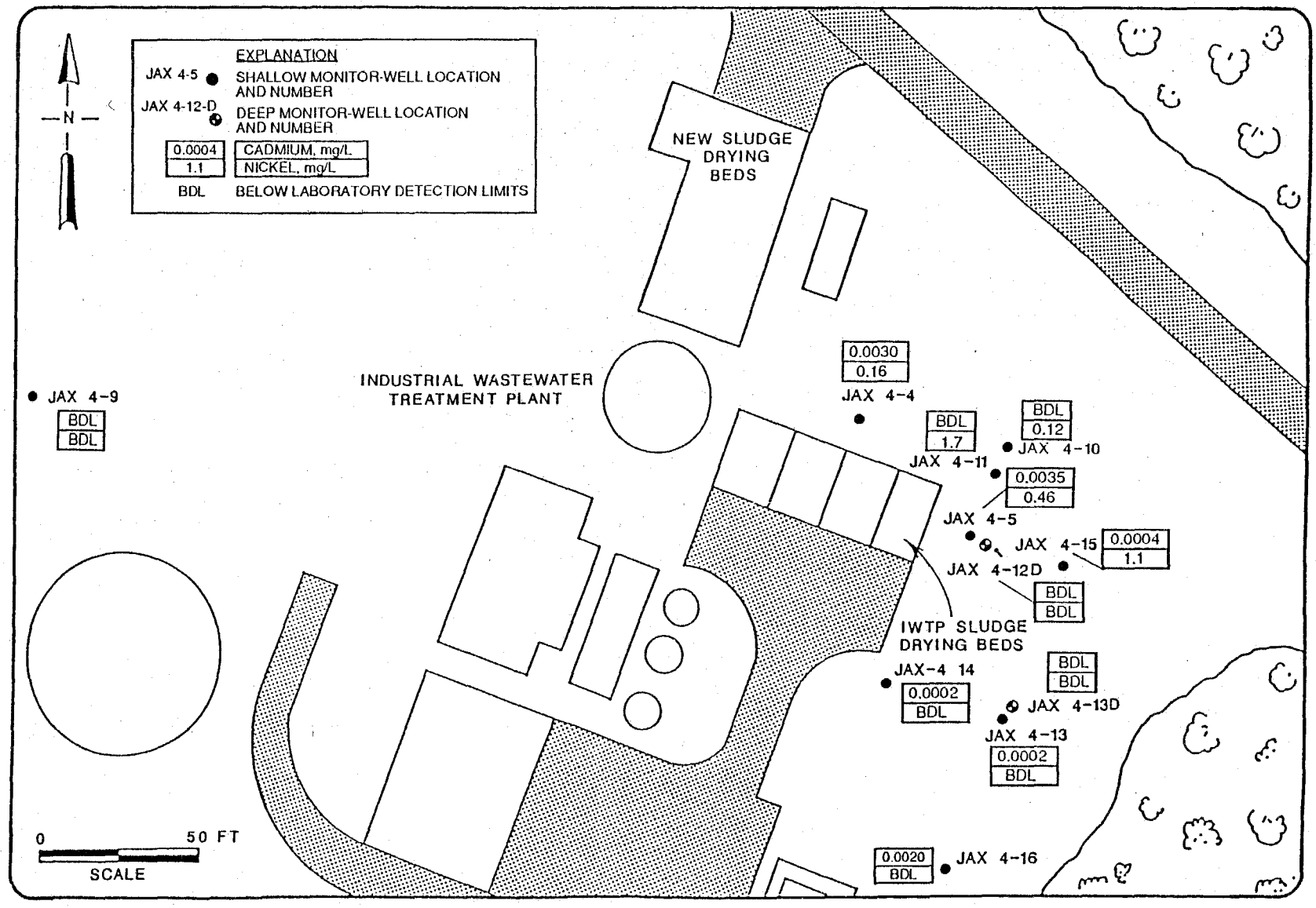

Figure 3.

F006 Parameters Detected in Ground-Water Samples from the Monitor Wells Sampled on May 9, 1989.

CLIENT NAME:

Naval Facilities Engineering Command, Southern Division

GERAGHTY & MILLER, INC.

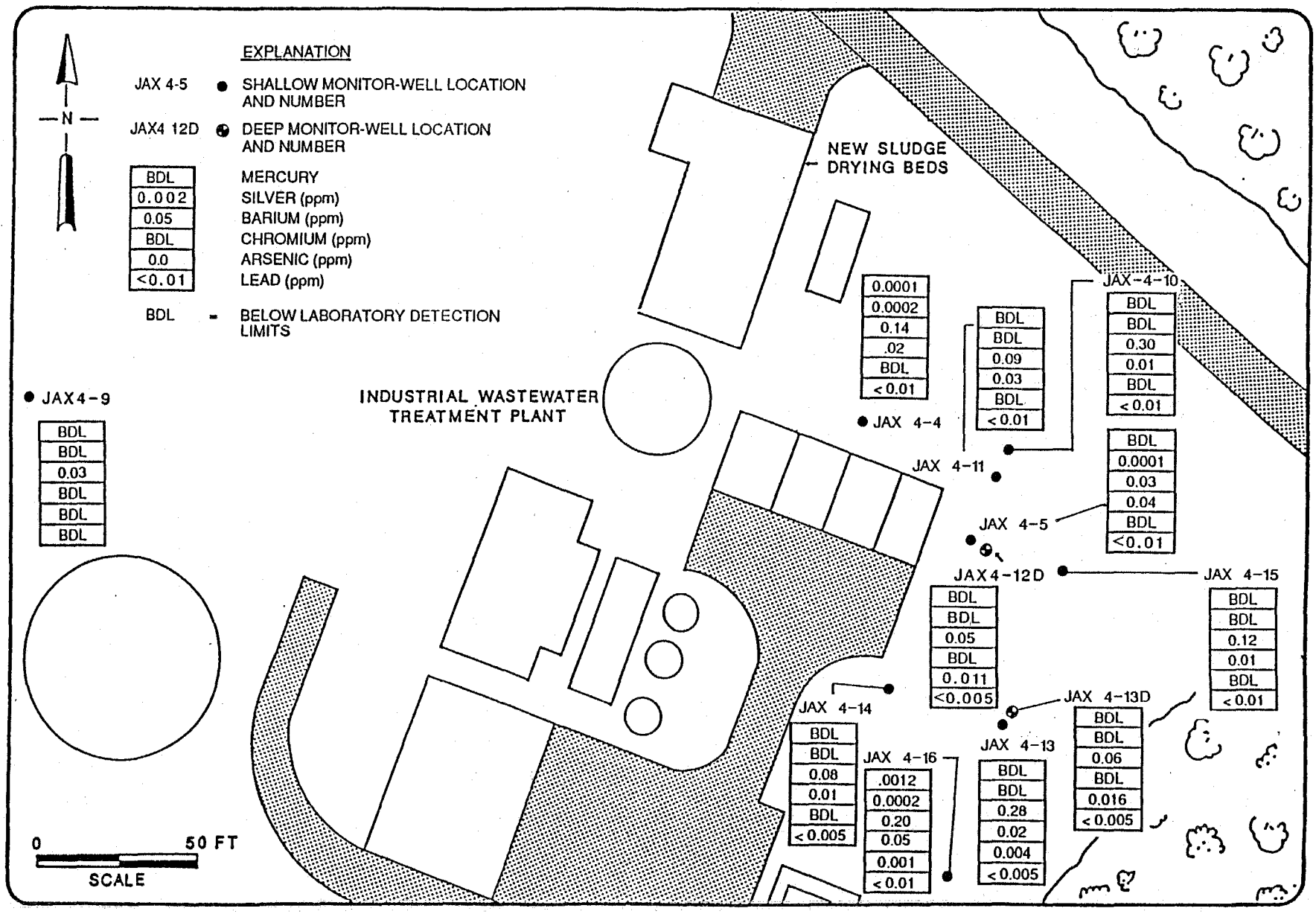

Figure 4.

Drinking-Water Supply Parameters (40 CFR 264.94) Detected in Ground-Water Samples from the Monitor Wells Sampled on May 9, 1989.

CLIENT NAME:

Naval Facilities Engineering Command, Southern Division

GERAGHTY & MILLER, INC.

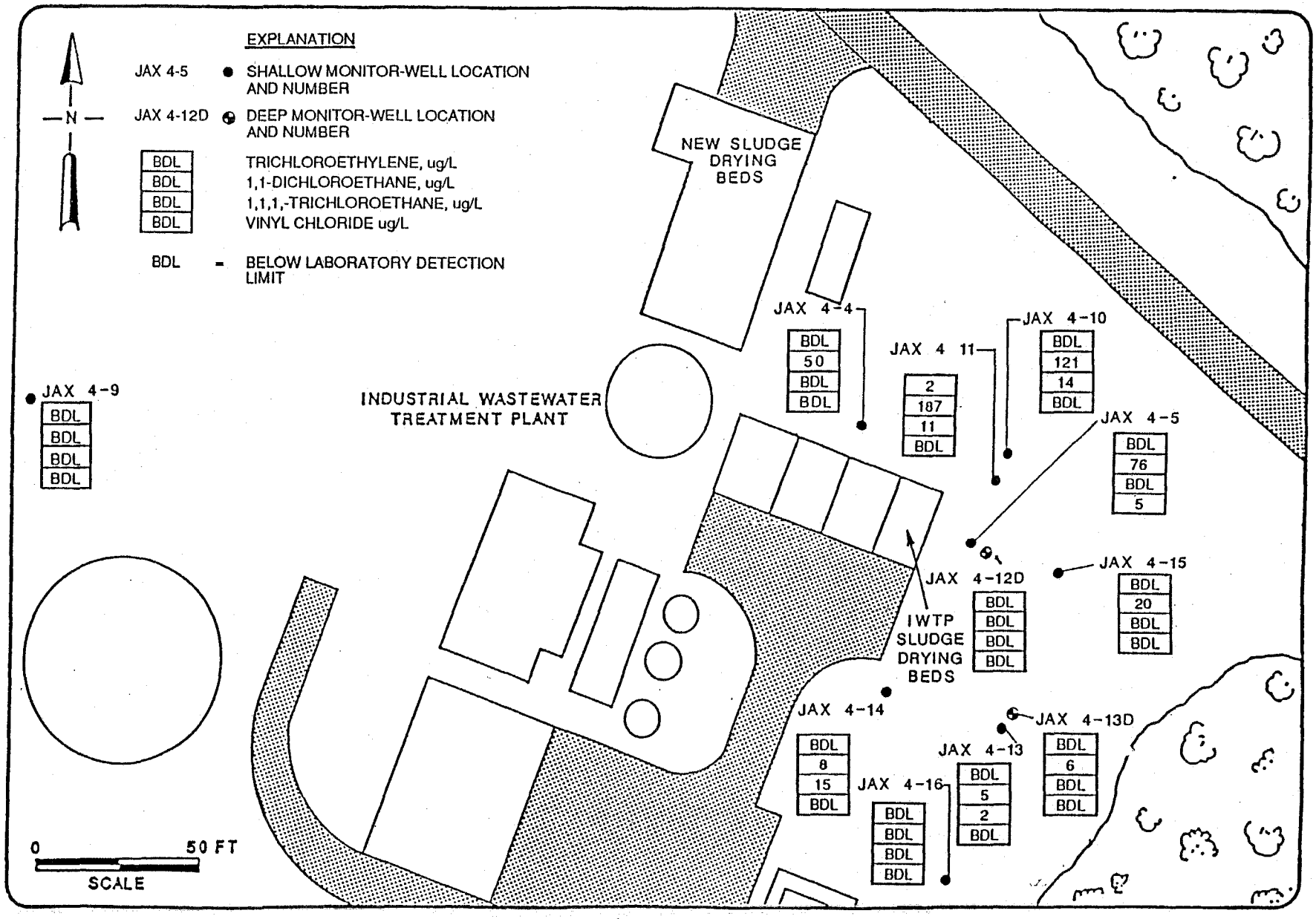

Figure 5.

Florida Administrative Code (FAC) Chapter 17-4.425(b) and 17-246 Parameters Detected in Ground-Water Samples from the Monitor Wells Sampled on May 9, 1989.

CLIENT NAME:

Naval Facilities Engineering Command, Southern Division

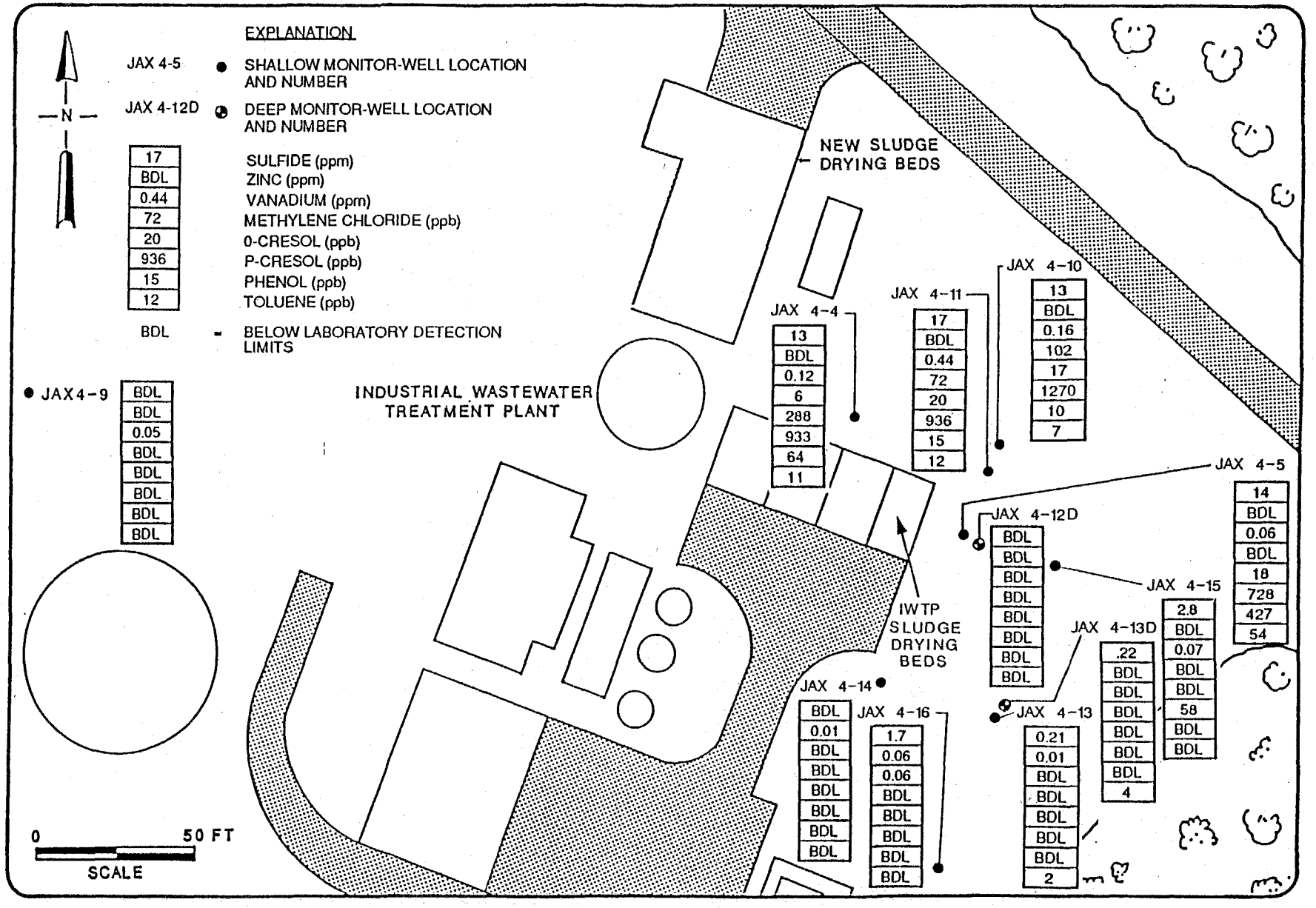

Figure 6.

Appendix IX Constituents Detected in Ground-Water Samples from the Monitor Wells Sampled on May 9, 1989.

CLIENT NAME:

Naval Facilities Engineering Command, Southern Division

APPENDIX A

APPENDIX A

Operation Permit No. H016-119108
(Modified - October 10, 1988)

Florida Department of Environmental Regulation

Northeast District • 3426 Bills Road • Jacksonville, Florida 32207 • 904-798-4200

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary
Ernest Frey, Deputy Assistant Secretary

3 1

October 10, 1988

CERTIFIED - RETURN RECEIPT

Captain Norman W. Ray
Commanding Officer
U.S. Naval Air Station - Jacksonville
Box 5
Jacksonville, Florida 32212

Dear Captain Ray:

U.S. Naval Air Station - Jacksonville
FL6 170 024 412
Duval County - Hazardous Waste
Operation Permit #HO 16-119108

Enclosed is the modified Operation Permit #HO 16-119108, dated October 10, 1988, issued pursuant to Section 403, Florida Statutes, and Florida Administrative Code. The modified permit allows the operation of a hazardous waste storage unit - Building 144 and a hazardous waste surface impoundment - industrial waste sludge drying beds.

Acceptance of the permit constitutes notice and agreement that the Department may periodically review this permit for compliance, including site inspections where applicable, and may initiate enforcement actions for violation of the conditions and requirements thereof.

Any party to this permit has the right to seek judicial review of the permit pursuant to Section 120.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate

District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in Jacksonville, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Ernest E. Frey
Deputy Assistant Secretary

Northeast District
3426 Bills Road
Jacksonville, Florida 32207

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Margaret Lockamy 10/10/88
Clerk Date

EEF:jf
Enclosures

cc: Mayor Thomas Hazouri
Duval County Commissioners
Mayor Dennis D. Frick
Clay County Commissioners
James Manning
James Scarbrough
Rick Wilkins
Satish Kastury
Joseph G. Wallmeyer

CERTIFICATE OF SERVICE

This is to certify that this permit and all copies were mailed before the close of business on October 10, 1988.

Florida Department of Environmental Regulation

Northeast District • 3426 Bills Road • Jacksonville, Florida 32207 • 904-798-4200

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary
Ernest Frey, Deputy Assistant Secretary

PERMITTEE:
Attention: Captain Norman W. Ray
U.S. Naval Air Station - Jacksonville
U.S. Highway 17 and Yorktown Avenue
Jacksonville, Florida 32212

I.D. Number: FL6 170 024 412
Permit/Certification No. H016-119108
Date of Issue: October 10, 1988
Expiration Date: October 10, 1993
County: Duval
Latitude/Longitude: 30°13'30"N/81°41'00"W
Section/Township/Range: 23/3S/27E
Project: Operation of a Hazardous Waste Surface Impoundment and a Hazardous Waste Storage Unit (Building 144).

This permit is issued under the provisions of Chapter(s) 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-30. The above named permittee is hereby authorized to perform the work (or operate the facility) shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

To operate the hazardous waste surface impoundment comprised of four sludge drying beds used to dewater wastewater treatment sludges from electroplating operations (F006 hazardous waste). Constructed in 1980, each drying bed is approximately 15 feet by 18 feet. The drying beds are enclosed with retaining walls constructed of 8 inch thick concrete reinforced with Number 5 reinforcing steel on 12 inch spacings. The bottom of the beds is unlined and consists of a 12 inch sand layer, with an underlying 10 inch gravel layer. The beds are underdrained, and the liquids are returned to the industrial wastewater treatment plant. Approximately 8,250 gallons of dried sludges are excavated from the surface impoundment annually.

Operation of the surface impoundment will be in accordance with the application submitted on April 21, 1986 and with the supplemental information received November 7, 1986, November 13, 1986, December 1, 1986, and January 16, 1987.

To operate the hazardous waste storage unit - Building 144, to store hazardous waste in containers of up to 55 gallons. The floor of the building has a poured concrete overlay with a minimum thickness of 2" over the existing 9" thick reinforced concrete slab. This building is divided into 8 bays as shown in sketch 7 dated September 23, 1985, and sketches in Table B.1-1, revised on May 18, 1988. Each bay is segregated by a curb which is topped with a 6' chain-link fence. The floor of each bay is sloped toward the outer curb of the bay with a 4" slope to provide secondary containment in each bay. This building is designed to store a maximum volume of 15,290 gallons or 278 drums of up to fifty-five gallons. The hazardous wastes which are allowed to be stored at this building and their designated hazardous waste codes are listed in Attachment E.2-1, Section E, Volume 1 of the permit application.

Operation of the storage unit - Building 144 will be in accordance with the application submitted on July 28, 1987 and additional information received on October 30, 1987, November 20, 1987, February 4, 1988, May 9, 1988, and June 8, 1988.

This permit does not authorize the facility to operate other regulated units at this facility.

PERMITTEE:
U.S. Naval Air Station - Jacksonville
U.S. Highway 17 and Yorktown Avenue
Jacksonville, Florida 32212

I.D. Number: FL6 170 024 412
Permit/Certification Number: H016-119108
Date of Issue: October 10, 1988
Expiration Date: October 10, 1993

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

   a. Having access to and copying any records that must be kept under the conditions of the permit;

   b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

   c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

   Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the Department with the following information:

   a. a description of and cause of noncompliance; and

   b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

   The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the Department, may be used by the Department as evidence in any enforcement case arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-30.300, as applicable. The permittee shall be liable for any noncompliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

    () Determination of Best Available Control Technology (BACT)
    () Determination of Prevention of Significant Deterioration (PSD)
    () Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)
    () Compliance with New Source Performance Standards

14. The permittee shall comply with the following monitoring and record-keeping requirements:

    a. Upon request, the permittee shall furnish all records and plans required under Department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the Department, during the course of any unresolved enforcement action.

    b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

    c. Records of monitoring information shall include:

        - the date, exact place, and time of sampling or measurements;
        - the person responsible for performing the sampling or measurements;
        - the date(s) analyses were performed;
        - the person responsible for performing the analyses;
        - the analytical techniques or methods used; and
        - the results of such analyses.

15. When requested by the Department, the permittee shall, within a reasonable period of time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be submitted or corrected promptly.

16. In the case of a hazardous waste facility permit, the following permit conditions shal also apply:

a. The permittee will submit the following reports to the Department:

(1) Manifest discrepancy report: If a significant discrepancy in a manifest is discovered, the permittee must attempt to reconcile the discrepancy. If not resolved within 15 days after receiving the waste, the permittee shall immediately submit a letter report including a copy of the manifest to the Department.

(2) Unmanifested waste report: Permittee shall submit an unmanifested waste report to the Department within 15 days of receipt of unmanifested waste.

(3) Annual report: An annual report covering facility activities during the previous calendar year must be submitted in accordance with Florida Administrative Code Rule 17-30.

b. Notification of any noncompliance which may endanger health or the environment, including the release of any hazardous waste that may endanger public drinking water supplies, or the occurrence of a fire or explosion from the facility which could threaten the environment or human health outside the facility, shall be verbally submitted to the Department within 24 hours and a written submission provided within 5 days. The verbal submission within 24 hours shall contain the name, address, I.D. number and telephone number of the facility and owner or operator, the name and quantity of materials involved, the extent of injuries (if any), an assessment of actual or potential hazards, and the estimated quantity and disposition of recovered material. The written submission shall contain the following:

(1) a description of and cause of noncompliance; and

(2) If not corrected, the anticipated time the noncompliance is expected to continue and steps being taken to reduce, eliminate, and prevent recurrence o the noncompliance.

c. Reports of compliance or noncompliance with, or any progress reports on, requirements contained in any compliance schedule of this permit shall be submitte no later than 14 days following each schedule date.

d. All reports or information required to be submitted to the Department by a hazardous waste permittee shall be signed by a person authorized to sign a permit application.

SPECIFIC CONDITIONS:

Part I - Operating Standards

17. The permittee shall maintain and operate the facility to minimize the possibility of fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or constituents to air, soil, or surface water which could threaten human health or the environment. (40 CFR 264.31)

18. The permittee shall follow the procedures described in the waste analysis plan, Section D.4, Part I of the permit application. (40 CFR 264.13)

19. The permittee shall not accept/store hazardous waste generated off-site without prior written approval from the Department.

20. The permittee shall comply with the security provisions of 40 CFR 264.14(b) and (c), as described in Section E.1, Part I of the permit application.

21. The permitttee shall inspect the facility operating, emergency and safety equipment in accordance with the schedule approved in Section E.3, Part I of the permit application. The permittee shall remedy any deterioration or malfunction discovered by an inspection in accordance with the requirements of 40 CFR 264.15(c). Changes, additions, or deletions to the schedule must be approved in writing by the Department. The schedule must be maintained as part of the operating record of the facility. (40 CFR 264.15)

22. Facility personnel must successfully complete the approved training program indicated in Section E.5, Part I of the permit application within 6 months of employment or assignment to a facility or to a new position at the facility. Verification of this training must be kept with the personnel training records and maintained on-site. Personnel shall not work unsupervised until training has been completed. The training must be reviewed by facility personnel at least annually. (40 CFR 264.16)

23. The permittee shall comply with the following conditions concerning preparedness and prevention:

    a. At a minimum, the permittee shall equip the facility with the equipment described in the contingency plan, Section E.2, Part I of the permit application, as required by 40 CFR 264.32.

    b. The permittee shall test and maintain the equipment specified in Condition 23.a as necessary to assure its proper operation in time of emergency as required by 40 CFR 264.33.

    c. The permittee shall maintain access to the communications or alarm system as required by 40 CFR 264.34.

    d. The permittee shall maintain arrangements with state and local authorities as required by 40 CFR 264.37. If state or local officials refuse to enter into preparedness and prevention arrangements with the permittee, the permittee must document this refusal in the operating record.

24. The permittee shall comply with the following conditions concerning the contingency plan:

    a. The permittee shall immediately carry out the provisions of the contingency plan, Section E.2, Part I of the permit application and follow the emergency procedures described by 40 CFR 264.56, whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which threatens or could threaten human health or the environment. The permittee shall give proper notification if an emergency situation arises and within 15 days must submit to the Department a written report which includes all information required in 40 CFR 264.56(j).

    b. The permittee shall comply with the requirements of 40 CFR 264.53.

    c. The permittee shall immediately amend the contingency plan and distribute the amended plan to the appropriate agencies if any criteria in 264.54 are met. Amendments to the plan must be approved in writing by the Department.

    d. The permittee shall comply with the requirements of 40 CFR 264.55, concerning the emergency coordinator.

25. The permittee shall comply with the manifest requirements of 40 CFR 264.71(c).

26. The permittee shall maintain a written operating record at the facility which includes the following:

    - the description and quantity of each hazardous waste received
    - the location of each hazardous waste within the facility, and the quantity at each location
    - the results of the waste analyses
    - a summary report and details of incidents that require implementation of the contingency plan
    - manifest numbers
    - the results of inspections (for 3 years)
    - annual certification of waste minimization
    - the closure plan

    These records must be maintained at the facility until completion and certification of closure. (40 CFR 264.73)

27. The permittee shall certify no less than annually that the permittee has a program in place to reduce the volume and toxicity of hazardous waste that he generates to the degree determined by the permittee to be economically practicable; and that the proposed method of treatment, storage or disposal is that practicable method currently available to the permittee which minimizes the present and future threat to human health and the environment. [40 CFR 264.73(b)(9)]

Part II - Container Storage (Building 144)

28. The permittee is allowed to store only the hazardous wastes approved in Attachment E.2-1, Part I of the permit application in the approved storage area only. Prior to storage of new hazardous wastes, the permittee shall submit to the Department for approval, a waste analysis of the proposed new waste stream(s). This analysis must be incorporated into the general waste analysis plan, Section D.4, Part I of the permit application and retained on site. (40 CFR 264.13)

28. (continued)

If the Department approves the additional waste stream(s) to be stored in the storage area, the permittee shall also submit an application for a major permit modification.

29. Containers must conform to DOT specifications and be managed in accordance with the Section B.4-1, Part II of the permit application. Containers shall be kept closed except when adding or removing waste and shall be handled in a manner that will not allow the containers to rupture or leak, pursuant to 40 CFR 264.173. If a container holding hazardous waste is not in good condition or begins to leak, the waste shall be transferred to another container in good condition, pursuant to 40 CFR 264.171.

30. At a minimum, the permittee shall maintain adequate aisle space as required by 40 CFR 264.35.

31. The permittee shall comply with the compatability requirements of 40 CFR 264.172, as indicated in Section B-3, Part II of the permit application.

32. The permittee shall conduct weekly visual inspections in accordance with Table E.3-1, Part I of the permit application, to detect leakage in the hazardous waste storage area of the associated loading/unloading zone, pursuant to 40 CFR 264.174. If, in spite of the weekly inspections, a significant deterioration of the concrete pad or joint sealant material (due to occasional spills) is noted, the need for a protective coating/more resistant seal material will be reevaluated.

33. The permittee shall store a maximum of 15,290 gallons of waste in 278 fifty-five gallon or smaller containers, in the container storage area - Building 144, as described in Sketch 7, dated September 23, 1985 and Table B.1-1, revised on May 18, 1988.

34. The permittee shall notify the Department when the capacity of the container storage area reaches 90 percent of the total capacity (13,761 gallons or 250 fifty-five gallon drums, whichever occurs first).

35. The permittee shall not stack fifty-five gallon drums more than two high. The stacked drums shall be on pallets, with no more than four drums per pallet.

36. The permittee shall comply with waste compatability requirements of 40 CFR 264.177, as indicated in Section B-2.1, Part II of the permit application.

37. The permittee must comply with the general requirements of 40 CFR 264.17(a), and the location requirements of 40 CFR 264.176.

Part III - Surface Impoundment

38. This permit allows the permittee to treat only the F006 hazardous waste specified in Section B.1, Part IV of the permit application, in the surface impoundment. Prior to treatment of any new hazardous wastes, the permittee shall submit to the Department, for approval, a waste analysis of the proposed new waste stream. This analysis must be incorporated in the general waste analysis plan and be retained on site. (40 CFR 264.13)

If the Department approves the additional waste streams to be treated in the surface impoundment, the permittee shall also submit an application for a major permit modification to make the appropriate changes.

39. The permittee shall operate the surface impoundment in accordance with the procedures described in Section B, Part IV of the permit application.

40. The permittee shall operate and maintain the surface impoundment to prevent overtopping resulting from normal or abnormal operating conditions, in accordance with 40 CFR 264.221(f).

41. The permittee shall inspect the surface impoundment, concrete dikes, and other associated structural and monitoring equipment in accordance with Section B.4, Part IV of the application and the requirements of 40 CFR 264.226(b).

42. If a sludge drying bed must be removed from service to comply with the requirements of 40 CFR 264.227(a), the permittee shall notify the Department in writing within 7 days after detection of the problem. The permittee shall not restore a sludge drying bed to service without the Department's written approval. If the sludge drying bed is not repaired to the Department's satisfaction, the permittee shall apply for a closure permit.

Part IV - Closure Requirements

43. The permittee shall comply with the following conditions concerning closure of the surface impoundment:

    a. The permittee shall cease adding waste to the surface impoundment on or before November 8, 1988.

    b. The permittee shall close the facility as required by 40 CFR 264.111, and in accordance with the closure plan in Section B.6, Part IV of the permit application.

    c. The permittee shall amend the closure plan in accordance with 40 CFR 264.112(b) whenever necessary.

    d. Pursuant to 17-30.260 FAC, the permittee shall notify the Department at least 180 days prior to the date he expects to begin closure and submit a complete closure permit application.

    e. Within 90 days after receiving the final volume of hazardous waste, the permittee shall remove all hazardous waste from the site in accordance with the schedule specified in Section B.6.8, Part IV of the permit application.

    f. The permittee shall decontaminate and/or dispose of all facility equipment as required by 40 CFR 264.114, and Section B.6.5, Part IV of the permit application.

    g. The permittee shall certify that the facility has been closed in accordance with the specifications in the closure plan, as required by 40 CFR 264.115.

44. The permittee shall comply with the following conditions concerning closure of the storage unit - Building 144:

    a. The permittee shall close this unit as required by 40 CFR 264.111 and in accordance with the closure plan in Section B.6, Part II of the permit application.

    b. The permittee shall amend the closure plan in accordance with 40 CFR 265.112(b) whenever necessary.

44. c. In accordance with 40 CFR 264.112(d)(1), the permittee shall notify the Department and submit a complete closure permit application at least 45 days prior to the date he expects to begin closure. [17-30.260(1) FAC]

d. Within 90 days after receiving the final volume of hazardous waste, the permittee shall treat or remove all hazardous waste from the site in accordance with the schedule specified in the closure plan, Section B-6, Part II of the permit application and in accordance with 40 CFR 264.113(a).

e. The permittee shall decontaminate and/or dispose of all facility equipment as required by 40 CFR 264.114, 264.178, and the closure plan, Section B-6, Part II of the permit application.

f. The permittee shall certify that the facility has been closed in accordance with the specifications in the closure plan, and in accordance with 17-30.220(5), FAC.

Part V - Groundwater Monitoring/Corrective Action

45. In accordance with 40 CFR 264.95, the waste management area and point of compliance shall be as designated on Figure B.3-3.1 of the January 16, 1987 submittal. The point of compliance wells shall be designated as NAS4-4, NAS4-5, NAS4-10, NAS4-10A, and NAS4-9.

46. Within 30 days of the effective date of this permit, the permittee shall install an additional groundwater monitoring well, NAS4-10A, as specified below:

a. The location shall be as close as possible to NAS4-10.

b. The screened interval shall be from the base of the screen identified in well NAS4-10 to the top of the underlying clay unit identified in the lithologic logs of wells NAS4-4 and NAS4-5.

c. The well shall conform with 40 CFR 264.97(c).

47. Within 15 days after the groundwater monitoring well specified in Condition 46 has been installed, the permittee shall submit to the Department the following information:

a. Procedures and equipment, including a description of all drilling muds and/or fluids, used to install the well.

b. Detailed as-built well construction diagrams for the well, including at a minimum: length of screened interval, screen size, size and material of sand pack, and type of material used to fill the annular space.

c. Borehole log of the well.

d. Well development procedures.

48. In accordance with 40 CFR 264.96 and 40 CFR 264.98, the permittee shall conduct semi-annual sampling for the duration of the compliance period for the following parameters from wells NAS4-4, NAS4-5, NAS4-10, NAS4-10A, and NAS4-9:

a. Indicator parameters of pH, specific conductance, total organic carbon, total organic halogen. [40 CFR 264.98(a)(1)]

48. b. Complexed cyanide, cadmium, hexavalent chromium, nickel. (40 CFR Part 261 Appendix VII)

    c. Arsenic, barium, chromium, lead, mercury, selenium, silver, Endrin, Lindane, Methoxychlor, Toxaphene, 2,4-D, 2,4,5-TP Silvex. (40 CFR 264.94 Table 1)

    d. Trichloroethylene, tetrachloroethylene, carbon tetrachloride, vinyl chloride, 1,1,1-trichloroethane, 1,2-dichloroethane, benzene. [FAC 17-4.245(b) and FAC 17.4.246]

49. Sampling methods shall conform to those specified in EPA Manuals EPA-600/4-83-040 and/or EPA-600/2-80-018, or Department approved equivalent sampling methods.

50. Analytical methods shall conform to those specified in EPA Manual SW-846, Test Methods for Evaluating Solid Waste, or Department approved equivalent analytical methods.

51. The groundwater surface elevation must be determined each time groundwater is sampled [40 CFR 264.97(f)]. This information shall be submitted to the Department within 30 days of the date of sampling, as required by FAC 17-30.180(4)(a).

52. The groundwater flow rate and direction shall be determined for the uppermost aquifer at least annually. [40 CFR 264.98(e)]

53. Analytical results and statistical analyses required by 40 CFR 264.97(h) shall be submitted to the Department within 30 days after receipt of the sampling data. The Cochran's Approximation to the Behrens-Fisher Student's T-Test shall be used for statistical analyses.

54. The concentrations of the constituents listed in condition 48 shall not exceed the background levels established in monitoring well NAS4-9. Background groundwater quality shall be the mean of the values obtained in the 4 most recent sampling events.

55. If the analytical results and statistical analyses conducted under Conditions 48, 53, and 54 indicate a statistically significant difference in parameter or constituent values between the background well and any point of compliance well, the permittee shall:

    a. Within 7 days notify the Department in accordance with 40 CFR 264.98(h)(1).

    b. Within 15 days of notification of the Department, sample the groundwater in all monitoring wells and determine the concentration of each 40 CFR Part 261 Appendix VIII constituent (or Department approved equivalent parameters) throughout the plume, or identify the maximum concentration of each Appendix VIII constituent in the plume. (DER Form 17-1.207(3) Part XIII A.4.b)

56. The groundwater protection standard (40 CFR 264.94) shall be as follows:

Parameters	Concentration Limit
a. 40 CFR Part 261 Appendix VII Parameters:	
Complexed Cyanide	Background*
Cadmium	Background*
Hexavalent Chromium	Background*
Nickel	Background*

56. (continued)

Groundwater Protection Standard (continued)

Parameters	Concentration Limit
b. Drinking Water Supply Parameters (40 CFR 264.94 Table 1):	
Arsenic	0.05 mg/l
Barium	1.0 mg/l
Chromium	0.05 mg/l
Lead	0.05 mg/l
Mercury	0.002 mg/l
Selenium	0.01 mg/l
Silver	0.05 mg/l
Endrin	0.002 mg/l
Lindane	0.004 mg/l
Methoxychlor	0.1 mg/l
Toxaphene	0.005 mg/l
2,4-D	0.1 mg/l
2,4,5-TP Silvex	0.01 mg/l
c. FAC Chapters 17-4.245(b) and 17-4.246 Parameters:	
Trichloroethylene	Background*
Tetrachloroethylene	Background*
Carbon Tetrachloride	Background*
Vinyl Chloride	Background*
1,1,1-trichloroethane	Background*
1,2-dichloroethane	Background*
Benzene	Background*

57. Should hazardous constituents be measured in the groundwater at the point of compliance in excess of those concentration limits established under Condition 56, "Groundwater Protection Standard," the permittee shall, within 45 days of receipt of data, submit sufficient information, data, and analyses to establish a corrective action plan which meets the requirements of 40 CFR 264.100 and DER Form 17-1.207(3) Part XIII A.8. This plan shall include:

a. A characterization of the contaminated groundwater, including the concentrations of all hazardous constituents identified. Their vertical and horizontal extent shall be depicted on a topographic map and cross sections, as required in DER Form 17-1.207(3) Part I.B.3.

b. The concentration limits for each hazardous constituent found in the groundwater, as set forth in 40 CFR 264.94, including a justification for establishing any alternate concentration limits under 40 CFR 264.94(b).

c. Detailed plans and an engineering report describing the corrective action to be taken.

d. A description of how the groundwater monitoring program will demonstrate the adequacy of the corrective action. [40 CFR 264.100(d)]

* As established under Condition 54.

Part VI - Permit Modification/Renewal

58. Upon submission of the corrective action plan required under Condition 57, the permittee shall also submit an application for permit modification to make any appropriate changes to the program which will satisfy the requirements of 40 CFR 264.100. The Department may then modify this permit to address the corrective action requirements under 40 CFR 264.100 and FAC 17-1.207(3) Part XIII.

59. The Department may modify, revoke and reissue, or terminate for cause, this permit in accordance with the provisions of 17-30.290, FAC. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the permittee does not stay the applicability or enforceability of any permit condition. The permittee may submit any subsequent revisions to the Department for departmental approval. Should these revisions constitute a major modification to the permit, the permittee shall meet the requirements of 17-30.290, FAC.

60. Prior to 135 days before the expiration of this permit, the permittee shall submit a complete application for renewal of the permit on forms and in a manner prescribed by the Department, unless the facility is to be closed prior to the expiration date of this permit per the requirements of FAC 17-30.300(1).

Executed in Jacksonville, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

Ernest E. Frey
Deputy Assistant Secretary

Northeast District
3426 Bills Road
Jacksonville, Florida 32207

APPENDIX B

APPENDIX B

Water-Quality Data, May 9, 1989

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Client: GERAGHTY & MILLER
07001 3820 NORTHDALE BLVD.
SUITE 200
TAMPA FL 33624-0000

Lab I.D.#: 89-1617
Order Number: P20030
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.
Sample Date: 05/09/89
Sample Time: N/S

Project Number: TF0290GW12
Project Name: COMPLIANCE MONITORING SAMPLING REPORT
Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

N/S = Not Submitte

Lab ID	Sample ID	Parameter	Units	Results	Detectic Limit
89-1617-1	JAX 4-4	SILVER	PPM	0.0002	0.0001
89-1617-2	JAX 4-5	SILVER	PPM	0.0001	0.0001
89-1617-3	JAX 4-9	SILVER	PPM	BDL	0.0001
89-1617-4	JAX 4-10	SILVER	PPM	BDL	0.0001
89-1617-5	JAX 4-11	SILVER	PPM	BDL	0.0001
89-1617-6	JAX 4-12D	SILVER	PPM	BDL	0.0001
89-1617-7	JAX 4-13	SILVER	PPM	BDL	0.0001
89-1617-8	JAX 4-13D	SILVER	PPM	BDL	0.0001
89-1617-9	JAX 4-14	SILVER	PPM	BDL	0.0001
89-1617-10	JAX 4-15	SILVER	PPM	BDL	0.0001
89-1617-11	JAX 4-16	SILVER	PPM	0.0002	0.0001
89-1617-12	JAX 4-REP	SILVER	PPM	BDL	0.0001
89-1617-13	JAX 4-RB	SILVER	PPM	BDL	0.0001
89-1617-14	JAX 4-FB	SILVER	PPM	BDL	0.0001
89-1617-15	PLI TRIP BLANK	SILVER	PPM	BDL	0.0001
89-1617-1	JAX 4-4	ARSENIC	PPM	BDL	0.001
89-1617-2	JAX 4-5	ARSENIC	PPM	BDL	0.001
89-1617-3	JAX 4-9	ARSENIC	PPM	BDL	0.001
89-1617-4	JAX 4-10	ARSENIC	PPM	BDL	0.001
89-1617-5	JAX 4-11	ARSENIC	PPM	BDL	0.001
89-1617-6	JAX 4-12D	ARSENIC	PPM	0.011	0.001
89-1617-7	JAX 4-13	ARSENIC	PPM	0.004	0.001
89-1617-8	JAX 4-13D	ARSENIC	PPM	0.016	0.001
89-1617-9	JAX 4-14	ARSENIC	PPM	BDL	0.001
89-1617-10	JAX 4-15	ARSENIC	PPM	BDL	0.001
89-1617-11	JAX 4-16	ARSENIC	PPM	0.001	0.001
89-1617-12	JAX 4-REP	ARSENIC	PPM	0.016	0.001
89-1617-13	JAX 4-RB	ARSENIC	PPM	BDL	0.001
89-1617-14	JAX 4-FB	ARSENIC	PPM	BDL	0.001
89-1617-15	PLI TRIP BLANK	ARSENIC	PPM	BDL	0.001
89-1617-1	JAX 4-4	BARIUM	PPM	0.14	0.01

Comments: PPM= Parts Per Million, mg/l. PPB= Parts Per Billion, ug/l.
Method Reference: SW-846, 3rd Edition, November 1986. BDL = Below Detectic Limits. * Elevated Detection Limits Are Due To Matrix Interference.

Approved By : John V Hawkins

Pioneer LABORATORY, INC.
11 EAST OLIVE ROAD PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Client: GERAGHTY & MILLER
07001

Lab I.D.#: 89-1617
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.

Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

Single Tests continued Sample Date: 05/09/89 Time: N/S

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
89-1617-2	JAX 4-5	BARIUM	PPM	0.03	0.1
89-1617-3	JAX 4-9	BARIUM	PPM	0.03	0.1
89-1617-4	JAX 4-10	BARIUM	PPM	0.30	0.1
89-1617-5	JAX 4-11	BARIUM	PPM	0.09	0.1
89-1617-6	JAX 4-12D	BARIUM	PPM	0.05	0.1
89-1617-7	JAX 4-13	BARIUM	PPM	0.28	0.1
89-1617-8	JAX 4-13D	BARIUM	PPM	0.06	0.1
89-1617-9	JAX 4-14	BARIUM	PPM	0.08	0.1
89-1617-10	JAX 4-15	BARIUM	PPM	0.12	0.1
89-1617-11	JAX 4-16	BARIUM	PPM	0.20	0.1
89-1617-12	JAX 4-REP	BARIUM	PPM	0.06	0.1
89-1617-13	JAX 4-RB	BARIUM	PPM	0.06	0.1
89-1617-14	JAX 4-FB	BARIUM	PPM	BDL	0.1
89-1617-15	PLI TRIP BLANK	BARIUM	PPM	BDL	0.1
89-1617-1	JAX 4-4	CADMIUM	PPM	0.0030	0.0001
89-1617-2	JAX 4-5	CADMIUM	PPM	0.0035	0.0001
89-1617-3	JAX 4-9	CADMIUM	PPM	BDL	0.0001
89-1617-4	JAX 4-10	CADMIUM	PPM	BDL	0.0001
89-1617-5	JAX 4-11	CADMIUM	PPM	BDL	0.0001
89-1617-6	JAX 4-12D	CADMIUM	PPM	BDL	0.0001
89-1617-7	JAX 4-13	CADMIUM	PPM	0.0002	0.0001
89-1617-8	JAX 4-13D	CADMIUM	PPM	BDL	0.0001
89-1617-9	JAX 4-14	CADMIUM	PPM	0.0002	0.0001
89-1617-10	JAX 4-15	CADMIUM	PPM	0.0004	0.0001
89-1617-11	JAX 4-16	CADMIUM	PPM	0.0020	0.0001
89-1617-12	JAX 4-REP	CADMIUM	PPM	BDL	0.0001
89-1617-13	JAX 4-RB	CADMIUM	PPM	BDL	0.0001
89-1617-14	JAX 4-FB	CADMIUM	PPM	BDL	0.0001
89-1617-15	PLI TRIP BLANK	CADMIUM	PPM	BDL	0.0001
89-1617-1	JAX 4-4	CONDUCTIVITY	UMH/CM	997	0.1
89-1617-2	JAX 4-5	CONDUCTIVITY	UMH/CM	1333	0.1
89-1617-3	JAX 4-9	CONDUCTIVITY	UMH/CM	344	0.1
89-1617-4	JAX 4-10	CONDUCTIVITY	UMH/CM	719	0.1
89-1617-5	JAX 4-11	CONDUCTIVITY	UMH/CM	1206	0.1
89-1617-6	JAX 4-12D	CONDUCTIVITY	UMH/CM	196	0.1
89-1617-7	JAX 4-13	CONDUCTIVITY	UMH/CM	178	0.1
89-1617-8	JAX 4-13D	CONDUCTIVITY	UMH/CM	175	0.1
89-1617-9	JAX 4-14	CONDUCTIVITY	UMH/CM	406	0.1

CERTIFICATION NUMBERS: FL LAB ID # 81142 • EPA # FL094 • FDER # EL020 • AL LAB ID # 40150 • NIOSH # 32514-001 • FL ENV # EB1010

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Client: GERAGHTY & MILLER
07001

Lab I.D.#: 89-1617
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.

Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

Single Tests continued Sample Date: 05/09/89 Time: N/S

Lab ID	Sample ID	Parameter	Units	Results	Detectio Limit
89-1617-10	JAX 4-15	CONDUCTIVITY	UMH/CM	499	0.1
89-1617-11	JAX 4-16	CONDUCTIVITY	UMH/CM	1396	0.1
89-1617-12	JAX 4-REP	CONDUCTIVITY	UMH/CM	179	0.1
89-1617-13	JAX 4-RB	CONDUCTIVITY	UMH/CM	5.2	0.1
89-1617-14	JAX 4-FB	CONDUCTIVITY	UMH/CM	2.8	0.1
89-1617-15	PLI TRIP BLANK	CONDUCTIVITY	UMH/CM	1.4	0.1
89-1617-1	JAX 4-4	CHROMIUM	PPM	0.02	0.01
89-1617-2	JAX 4-5	CHROMIUM	PPM	0.04	0.01
89-1617-3	JAX 4-9	CHROMIUM	PPM	BDL	0.01
89-1617-4	JAX 4-10	CHROMIUM	PPM	0.01	0.01
89-1617-5	JAX 4-11	CHROMIUM	PPM	0.03	0.01
89-1617-6	JAX 4-12D	CHROMIUM	PPM	BDL	0.01
89-1617-7	JAX 4-13	CHROMIUM	PPM	0.02	0.01
89-1617-8	JAX 4-13D	CHROMIUM	PPM	BDL	0.01
89-1617-9	JAX 4-14	CHROMIUM	PPM	0.01	0.01
89-1617-10	JAX 4-15	CHROMIUM	PPM	0.01	0.01
89-1617-11	JAX 4-16	CHROMIUM	PPM	0.05	0.01
89-1617-12	JAX 4-REP	CHROMIUM	PPM	BDL	0.01
89-1617-13	JAX 4-RB	CHROMIUM	PPM	BDL	0.01
89-1617-14	JAX 4-FB	CHROMIUM	PPM	0.01	0.01
89-1617-15	PLI TRIP BLANK	CHROMIUM	PPM	BDL	0.01
89-1617-1	JAX 4-4	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-2	JAX 4-5	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-3	JAX 4-9	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-4	JAX 4-10	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-5	JAX 4-11	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-6	JAX 4-12D	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-7	JAX 4-13	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-8	JAX 4-13D	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-9	JAX 4-14	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-10	JAX 4-15	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-11	JAX 4-16	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-12	JAX 4-REP	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-13	JAX 4-RB	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-14	JAX 4-FB	CHROMIUM,HEXAVALENT	PPM	BDL	0.05*
89-1617-15	PLI TRIP BLANK	CHROMIUM,HEXAVALENT	PPM	BDL	0.01
89-1617-1	JAX 4-4	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-2	JAX 4-5	CYANIDE,COMPLEX	PPM	BDL	0.005

CERTIFICATION NUMBERS: FL LAB ID # 81142 • EPA # FL094 • FDER # EL020 • AL LAB ID # 40150 • NIOSH # 32514-001 • FL ENV # E81010

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Client: GERAGHTY & MILLER
07001

Lab I.D.#: 89-1617
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.

Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

Single Tests continued Sample Date: 05/09/89 Time: N/S

Lab ID	Sample ID	Parameter	Units	Results	Detectio Limit
89-1617-3	JAX 4-9	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-4	JAX 4-10	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-5	JAX 4-11	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-6	JAX 4-12D	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-7	JAX 4-13	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-8	JAX 4-13D	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-9	JAX 4-14	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-10	JAX 4-15	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-11	JAX 4-16	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-12	JAX 4-REP	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-13	JAX 4-RB	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-14	JAX 4-FB	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-15	PLI TRIP BLANK	CYANIDE,COMPLEX	PPM	BDL	0.005
89-1617-1	JAX 4-4	MERCURY	PPM	0.0001	0.0001
89-1617-2	JAX 4-5	MERCURY	PPM	BDL	0.0001
89-1617-3	JAX 4-9	MERCURY	PPM	BDL	0.0001
89-1617-4	JAX 4-10	MERCURY	PPM	BDL	0.0001
89-1617-5	JAX 4-11	MERCURY	PPM	BDL	0.0001
89-1617-6	JAX 4-12D	MERCURY	PPM	BDL	0.0001
89-1617-7	JAX 4-13	MERCURY	PPM	BDL	0.0001
89-1617-8	JAX 4-13D	MERCURY	PPM	BDL	0.0001
89-1617-9	JAX 4-14	MERCURY	PPM	BDL	0.0001
89-1617-10	JAX 4-15	MERCURY	PPM	BDL	0.0001
89-1617-11	JAX 4-16	MERCURY	PPM	0.0012	0.0001
89-1617-12	JAX 4-REP	MERCURY	PPM	BDL	0.0001
89-1617-13	JAX 4-RB	MERCURY	PPM	BDL	0.0001
89-1617-14	JAX 4-FB	MERCURY	PPM	BDL	0.0001
89-1617-15	PLI TRIP BLANK	MERCURY	PPM	BDL	0.0001
89-1617-1	JAX 4-4	NICKEL	PPM	0.16	0.02
89-1617-2	JAX 4-5	NICKEL	PPM	0.41	0.02
89-1617-3	JAX 4-9	NICKEL	PPM	BDL	0.02
89-1617-4	JAX 4-10	NICKEL	PPM	0.12	0.02
89-1617-5	JAX 4-11	NICKEL	PPM	1.7	0.02
89-1617-6	JAX 4-12D	NICKEL	PPM	BDL	0.02
89-1617-7	JAX 4-13	NICKEL	PPM	BDL	0.02
89-1617-8	JAX 4-13D	NICKEL	PPM	BDL	0.02
89-1617-9	JAX 4-14	NICKEL	PPM	BDL	0.02
89-1617-10	JAX 4-15	NICKEL	PPM	1.1	0.02

CERTIFICATION NUMBERS: FL LAB ID # 81142 • EPA # FL094 • FDER # EL020 • AL LAB ID # 40150 • NIOSH # 32514-001 • FL ENV # E81010

Pioneer LABORATORY, INC.
11 EAST OLIVE ROAD PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Client: GERAGHTY & MILLER
07001

Lab I.D.#: 89-1617
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.

Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

Single Tests continued Sample Date: 05/09/89 Time: N/S

Lab ID	Sample ID	Parameter	Units	Results	Detectio Limit
89-1617-11	JAX 4-16	NICKEL	PPM	BDL	0.02
89-1617-12	JAX 4-REP	NICKEL	PPM	BDL	0.02
89-1617-13	JAX 4-RB	NICKEL	PPM	BDL	0.02
89-1617-14	JAX 4-FB	NICKEL	PPM	BDL	0.02
89-1617-15	PLI TRIP BLANK	NICKEL	PPM	BDL	0.02
89-1617-1	JAX 4-4	LEAD	PPM	BDL	0.01*
89-1617-2	JAX 4-5	LEAD	PPM	BDL	0.01*
89-1617-3	JAX 4-9	LEAD	PPM	BDL	0.005*
89-1617-4	JAX 4-10	LEAD	PPM	BDL	0.01*
89-1617-5	JAX 4-11	LEAD	PPM	BDL	0.01*
89-1617-6	JAX 4-12D	LEAD	PPM	BDL	0.005*
89-1617-7	JAX 4-13	LEAD	PPM	BDL	0.005*
89-1617-8	JAX 4-13D	LEAD	PPM	BDL	0.005*
89-1617-9	JAX 4-14	LEAD	PPM	BDL	0.005*
89-1617-10	JAX 4-15	LEAD	PPM	BDL	0.01*
89-1617-11	JAX 4-16	LEAD	PPM	BDL	0.01*
89-1617-12	JAX 4-REP	LEAD	PPM	BDL	0.005*
89-1617-13	JAX 4-RB	LEAD	PPM	BDL	0.001
89-1617-14	JAX 4-FB	LEAD	PPM	BDL	0.001
89-1617-15	PLI TRIP BLANK	LEAD	PPM	BDL	0.001
89-1617-1	JAX 4-4	PH	UNIT	5.14	
89-1617-2	JAX 4-5	PH	UNIT	6.96	
89-1617-3	JAX 4-9	PH	UNIT	6.47	
89-1617-4	JAX 4-10	PH	UNIT	5.05	
89-1617-5	JAX 4-11	PH	UNIT	4.34	
89-1617-6	JAX 4-12D	PH	UNIT	6.31	
89-1617-7	JAX 4-13	PH	UNIT	5.87	
89-1617-8	JAX 4-13D	PH	UNIT	5.93	
89-1617-9	JAX 4-14	PH	UNIT	6.79	
89-1617-10	JAX 4-15	PH	UNIT	5.90	
89-1617-11	JAX 4-16	PH	UNIT	7.46	
89-1617-12	JAX 4-REP	PH	UNIT	5.92	
89-1617-13	JAX 4-RB	PH	UNIT	4.89	
89-1617-14	JAX 4-FB	PH	UNIT	5.26	
89-1617-15	PLI TRIP BLANK	PH	UNIT	5.38	
89-1617-1	JAX 4-4	SELENIUM	PPM	BDL	0.003
89-1617-2	JAX 4-5	SELENIUM	PPM	BDL	0.003
89-1617-3	JAX 4-9	SELENIUM	PPM	BDL	0.003

CERTIFICATION NUMBERS: FL LAB ID # 81142 • EPA # FL094 • FDER # FL020 • AL LAB ID # 40150 • NIOSH # 32514-001 • FL ENV # E81010

Pioneer
LABORATORY, INC.
11 EAST OLIVE ROAD PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Client: GERAGHTY & MILLER
07001

Lab I.D.#: 89-1617
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.

Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

Single Tests continued Sample Date: 05/09/89 Time: N/S

Lab ID	Sample ID	Parameter	Units	Results	Detectio Limit
89-1617-4	JAX 4-10	SELENIUM	PPM	BDL	0.003
89-1617-5	JAX 4-11	SELENIUM	PPM	BDL	0.003
89-1617-6	JAX 4-12D	SELENIUM	PPM	BDL	0.003
89-1617-7	JAX 4-13	SELENIUM	PPM	BDL	0.003
89-1617-8	JAX 4-13D	SELENIUM	PPM	BDL	0.003
89-1617-9	JAX 4-14	SELENIUM	PPM	BDL	0.003
89-1617-10	JAX 4-15	SELENIUM	PPM	BDL	0.003
89-1617-11	JAX 4-16	SELENIUM	PPM	BDL	0.003
89-1617-12	JAX 4-REP	SELENIUM	PPM	BDL	0.003
89-1617-13	JAX 4-RB	SELENIUM	PPM	BDL	0.003
89-1617-14	JAX 4-FB	SELENIUM	PPM	BDL	0.003
89-1617-15	PLI TRIP BLANK	SELENIUM	PPM	BDL	0.003
89-1617-1	JAX 4-4	SULFIDE	PPM	13	0.05
89-1617-2	JAX 4-5	SULFIDE	PPM	24	0.05
89-1617-3	JAX 4-9	SULFIDE	PPM	BDL	0.05
89-1617-4	JAX 4-10	SULFIDE	PPM	13	0.05
89-1617-5	JAX 4-11	SULFIDE	PPM	17	0.05
89-1617-6	JAX 4-12D	SULFIDE	PPM	BDL	0.05
89-1617-7	JAX 4-13	SULFIDE	PPM	0.21	0.05
89-1617-8	JAX 4-13D	SULFIDE	PPM	0.22	0.05
89-1617-9	JAX 4-14	SULFIDE	PPM	BDL	0.05
89-1617-10	JAX 4-15	SULFIDE	PPM	2.8	0.05
89-1617-11	JAX 4-16	SULFIDE	PPM	1.7	0.05
89-1617-12	JAX 4-REP	SULFIDE	PPM	BDL	0.05
89-1617-13	JAX 4-RB	SULFIDE	PPM	BDL	0.05
89-1617-14	JAX 4-FB	SULFIDE	PPM	0.22	0.05
89-1617-15	PLI TRIP BLANK	SULFIDE	PPM	BDL	0.05
89-1617-1	JAX 4-4	VANADIUM	PPM	0.12	0.05
89-1617-2	JAX 4-5	VANADIUM	PPM	0.06	0.05
89-1617-3	JAX 4-9	VANADIUM	PPM	0.05	0.05
89-1617-4	JAX 4-10	VANADIUM	PPM	0.16	0.05
89-1617-5	JAX 4-11	VANADIUM	PPM	0.44	0.05
89-1617-6	JAX 4-12D	VANADIUM	PPM	BDL	0.05
89-1617-7	JAX 4-13	VANADIUM	PPM	BDL	0.05
89-1617-8	JAX 4-13D	VANADIUM	PPM	BDL	0.05
89-1617-9	JAX 4-14	VANADIUM	PPM	BDL	0.05
89-1617-10	JAX 4-15	VANADIUM	PPM	0.07	0.05
89-1617-11	JAX 4-16	VANADIUM	PPM	0.06	0.05

CERTIFICATION NUMBERS: FL LAB ID # 81142 • EPA # FL094 • FDER # EL020 • AL LAB ID # 40150 • NIOSH # 32514-001 • FL ENV # E81010

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Client: GERAGHTY & MILLER
07001

Lab I.D.#: 89-1617
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.

Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

Single Tests continued Sample Date: 05/09/89 Time: N/S

Lab ID	Sample ID	Parameter	Units	Results	Detectio Limit
89-1617-12	JAX 4-REP	VANADIUM	PPM	BDL	0.05
89-1617-13	JAX 4-RB	VANADIUM	PPM	BDL	0.05
89-1617-14	JAX 4-FB	VANADIUM	PPM	BDL	0.05
89-1617-15	PLI TRIP BLANK	VANADIUM	PPM	BDL	0.05
89-1617-1	JAX 4-4	ZINC	PPM	BDL	0.01
89-1617-2	JAX 4-5	ZINC	PPM	BDL	0.01
89-1617-3	JAX 4-9	ZINC	PPM	BDL	0.01
89-1617-4	JAX 4-10	ZINC	PPM	BDL	0.01
89-1617-5	JAX 4-11	ZINC	PPM	BDL	0.01
89-1617-6	JAX 4-12D	ZINC	PPM	BDL	0.01
89-1617-7	JAX 4-13	ZINC	PPM	0.01	0.01
89-1617-8	JAX 4-13D	ZINC	PPM	BDL	0.01
89-1617-9	JAX 4-14	ZINC	PPM	0.01	0.01
89-1617-10	JAX 4-15	ZINC	PPM	BDL	0.01
89-1617-11	JAX 4-16	ZINC	PPM	0.06	0.01
89-1617-12	JAX 4-REP	ZINC	PPM	BDL	0.01
89-1617-13	JAX 4-RB	ZINC	PPM	BDL	0.01
89-1617-14	JAX 4-FB	ZINC	PPM	BDL	0.01
89-1617-15	PLI TRIP BLANK	ZINC	PPM	BDL	0.01
89-1617-1	JAX 4-4	BENZENE	PPB	BDL	1
89-1617-2	JAX 4-5	BENZENE	PPB	BDL	1
89-1617-3	JAX 4-9	BENZENE	PPB	BDL	1
89-1617-4	JAX 4-10	BENZENE	PPB	BDL	1
89-1617-5	JAX 4-11	BENZENE	PPB	BDL	1
89-1617-6	JAX 4-12D	BENZENE	PPB	BDL	1
89-1617-7	JAX 4-13	BENZENE	PPB	BDL	1
89-1617-8	JAX 4-13D	BENZENE	PPB	BDL	1
89-1617-9	JAX 4-14	BENZENE	PPB	BDL	1
89-1617-10	JAX 4-15	BENZENE	PPB	BDL	1
89-1617-11	JAX 4-16	BENZENE	PPB	BDL	1
89-1617-12	JAX 4-REP	BENZENE	PPB	BDL	1
89-1617-13	JAX 4-RB	BENZENE	PPB	BDL	1
89-1617-14	JAX 4-FB	BENZENE	PPB	BDL	1
89-1617-15	PLI TRIP BLANK	BENZENE	PPB	BDL	1
89-1617-1	JAX 4-4	CARBON TETRACHLORIDE	PPB	BDL	3
89-1617-2	JAX 4-5	CARBON TETRACHLORIDE	PPB	BDL	3
89-1617-3	JAX 4-9	CARBON TETRACHLORIDE	PPB	BDL	3
89-1617-4	JAX 4-10	CARBON TETRACHLORIDE	PPB	BDL	3

CERTIFICATION NUMBERS: FL LAB ID # 81142 • EPA # FL094 • FDER # EL020 • AL LAB ID # 40150 • NIOSH # 32514-001 • FL ENV # E81010

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PHONE (904) 474-1001

Client: GERAGHTY & MILLER
07001

Lab I.D.#: 89-1617
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.

Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

Single Tests continued Sample Date: 05/09/89 Time: N/S

Lab ID	Sample ID	Parameter	Units	Results	Detectio Limit
89-1617-5	JAX 4-11	CARBON TETRACHLORIDE	PPB	BDL	3
89-1617-6	JAX 4-12D	CARBON TETRACHLORIDE	PPB	BDL	3
89-1617-7	JAX 4-13	CARBON TETRACHLORIDE	PPB	BDL	3
89-1617-8	JAX 4-13D	CARBON TETRACHLORIDE	PPB	BDL	3
89-1617-9	JAX 4-14	CARBON TETRACHLORIDE	PPB	BDL	3
89-1617-10	JAX 4-15	CARBON TETRACHLORIDE	PPB	BDL	3
89-1617-11	JAX 4-16	CARBON TETRACHLORIDE	PPB	BDL	3
89-1617-12	JAX 4-REP	CARBON TETRACHLORIDE	PPB	BDL	3
89-1617-13	JAX 4-RB	CARBON TETRACHLORIDE	PPB	BDL	3
89-1617-14	JAX 4-FB	CARBON TETRACHLORIDE	PPB	BDL	3
89-1617-15	PLI TRIP BLANK	CARBON TETRACHLORIDE	PPB	BDL	3
9-1617-1	JAX 4-4	CHLOROFORM	PPB	BDL	5
89-1617-2	JAX 4-5	CHLOROFORM	PPB	BDL	5
89-1617-3	JAX 4-9	CHLOROFORM	PPB	BDL	5
89-1617-4	JAX 4-10	CHLOROFORM	PPB	BDL	5
89-1617-5	JAX 4-11	CHLOROFORM	PPB	BDL	5
89-1617-6	JAX 4-12D	CHLOROFORM	PPB	BDL	5
89-1617-7	JAX 4-13	CHLOROFORM	PPB	BDL	5
89-1617-8	JAX 4-13D	CHLOROFORM	PPB	BDL	5
89-1617-9	JAX 4-14	CHLOROFORM	PPB	BDL	5
89-1617-10	JAX 4-15	CHLOROFORM	PPB	BDL	5
89-1617-11	JAX 4-16	CHLOROFORM	PPB	BDL	5
89-1617-12	JAX 4-REP	CHLOROFORM	PPB	BDL	5
89-1617-13	JAX 4-RB	CHLOROFORM	PPB	BDL	5
89-1617-14	JAX 4-FB	CHLOROFORM	PPB	BDL	5
89-1617-15	PLI TRIP BLANK	CHLOROFORM	PPB	BDL	5
89-1617-1	JAX 4-4	METHYLENE CHLORIDE	PPB	6	5
89-1617-2	JAX 4-5	METHYLENE CHLORIDE	PPB	BDL	5
89-1617-3	JAX 4-9	METHYLENE CHLORIDE	PPB	BDL	5
89-1617-4	JAX 4-10	METHYLENE CHLORIDE	PPB	102	5
89-1617-5	JAX 4-11	METHYLENE CHLORIDE	PPB	72	5
89-1617-6	JAX 4-12D	METHYLENE CHLORIDE	PPB	BDL	5
89-1617-7	JAX 4-13	METHYLENE CHLORIDE	PPB	BDL	5
89-1617-8	JAX 4-13D	METHYLENE CHLORIDE	PPB	BDL	5
89-1617-9	JAX 4-14	METHYLENE CHLORIDE	PPB	BDL	5
89-1617-10	JAX 4-15	METHYLENE CHLORIDE	PPB	BDL	5
89-1617-11	JAX 4-16	METHYLENE CHLORIDE	PPB	BDL	5
89-1617-12	JAX 4-REP	METHYLENE CHLORIDE	PPB	BDL	5

CERTIFICATION NUMBERS: FL LAB ID # 81142 • EPA # FL094 • FDER # EL020 • AL LAB ID # 40150 • NIOSH # 32514-001 • FL ENV # E81010

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Client: GERAGHTY & MILLER
07001

Lab I.D.#: 89-1617
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.

Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

Single Tests continued Sample Date: 05/09/89 Time: N/S

Lab ID	Sample ID	Parameter	Units	Results	Detectio Limit
89-1617-13	JAX 4-RB	METHYLENE CHLORIDE	PPB	BDL	5
89-1617-14	JAX 4-FB	METHYLENE CHLORIDE	PPB	BDL	5
89-1617-15	PLI TRIP BLANK	METHYLENE CHLORIDE	PPB	BDL	5
89-1617-1	JAX 4-4	O-CRESOL	PPB	28	10
89-1617-2	JAX 4-5	O-CRESOL	PPB	18	10
89-1617-3	JAX 4-9	O-CRESOL	PPB	BDL	10
89-1617-4	JAX 4-10	O-CRESOL	PPB	17	10
89-1617-5	JAX 4-11	O-CRESOL	PPB	20	10
89-1617-6	JAX 4-12D	O-CRESOL	PPB	BDL	10
89-1617-7	JAX 4-13	O-CRESOL	PPB	BDL	10
89-1617-8	JAX 4-13D	O-CRESOL	PPB	BDL	10
89-1617-9	JAX 4-14	O-CRESOL	PPB	BDL	10
89-1617-10	JAX 4-15	O-CRESOL	PPB	BDL	10
89-1617-11	JAX 4-16	O-CRESOL	PPB	BDL	10
89-1617-12	JAX 4-REP	O-CRESOL	PPB	BDL	10
89-1617-13	JAX 4-RB	O-CRESOL	PPB	BDL	10
89-1617-14	JAX 4-FB	O-CRESOL	PPB	BDL	10
89-1617-15	PLI TRIP BLANK	O-CRESOL	PPB	BDL	10
89-1617-1	JAX 4-4	P-CRESOL	PPB	64	10
89-1617-2	JAX 4-5	P-CRESOL	PPB	427	100
89-1617-3	JAX 4-9	P-CRESOL	PPB	BDL	10
89-1617-4	JAX 4-10	P-CRESOL	PPB	10	10
89-1617-5	JAX 4-11	P-CRESOL	PPB	15	10
89-1617-6	JAX 4-12D	P-CRESOL	PPB	BDL	10
89-1617-7	JAX 4-13	P-CRESOL	PPB	BDL	10
89-1617-8	JAX 4-13D	P-CRESOL	PPB	BDL	10
89-1617-9	JAX 4-14	P-CRESOL	PPB	BDL	10
89-1617-10	JAX 4-15	P-CRESOL	PPB	BDL	10
89-1617-11	JAX 4-16	P-CRESOL	PPB	BDL	10
89-1617-12	JAX 4-REP	P-CRESOL	PPB	BDL	10
89-1617-13	JAX 4-RB	P-CRESOL	PPB	BDL	10
89-1617-14	JAX 4-FB	P-CRESOL	PPB	BDL	10
89-1617-15	PLI TRIP BLANK	P-CRESOL	PPB	BDL	10
89-1617-1	JAX 4-4	PHENOL	PPB	933	50
89-1617-2	JAX 4-5	PHENOL	PPB	728	50
89-1617-3	JAX 4-9	PHENOL	PPB	BDL	5
89-1617-4	JAX 4-10	PHENOL	PPB	1270	100
89-1617-5	JAX 4-11	PHENOL	PPB	936	50

CERTIFICATION NUMBERS: FL LAB ID # 81142 • EPA # FL094 • FDER # EL020 • AL LAB ID # 40150 • NIOSH # 32514-001 • FL ENV # E81010

Pioneer LABORATORY, INC.
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Client: GERAGHTY & MILLER
07001

Lab I.D.#: 89-1617
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.

Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

Single Tests continued Sample Date: 05/09/89 Time: N/S

Lab ID	Sample ID	Parameter	Units	Results	Detectio Limit
89-1617-6	JAX 4-12D	PHENOL	PPB	BDL	5
89-1617-7	JAX 4-13	PHENOL	PPB	BDL	5
89-1617-8	JAX 4-13D	PHENOL	PPB	BDL	5
89-1617-9	JAX 4-14	PHENOL	PPB	BDL	5
89-1617-10	JAX 4-15	PHENOL	PPB	58	5
89-1617-11	JAX 4-16	PHENOL	PPB	BDL	5
89-1617-12	JAX 4-REP	PHENOL	PPB	BDL	5
89-1617-13	JAX 4-RB	PHENOL	PPB	BDL	5
89-1617-14	JAX 4-FB	PHENOL	PPB	BDL	5
89-1617-15	PLI TRIP BLANK	PHENOL	PPB	BDL	5
89-1617-1	JAX 4-4	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-2	JAX 4-5	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-3	JAX 4-9	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-4	JAX 4-10	TETRACHLOROETHYLENE	PPB	BDL	30
89-1617-5	JAX 4-11	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-6	JAX 4-12D	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-7	JAX 4-13	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-8	JAX 4-13D	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-9	JAX 4-14	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-10	JAX 4-15	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-11	JAX 4-16	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-12	JAX 4-REP	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-13	JAX 4-RB	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-14	JAX 4-FB	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-15	PLI TRIP BLANK	TETRACHLOROETHYLENE	PPB	BDL	3
89-1617-1	JAX 4-4	TOTAL ORGANIC CARBON	PPM	28	1
89-1617-2	JAX 4-5	TOTAL ORGANIC CARBON	PPM	54	1
89-1617-3	JAX 4-9	TOTAL ORGANIC CARBON	PPM	19	1
89-1617-4	JAX 4-10	TOTAL ORGANIC CARBON	PPM	17	1
89-1617-5	JAX 4-11	TOTAL ORGANIC CARBON	PPM	30	1
89-1617-6	JAX 4-12D	TOTAL ORGANIC CARBON	PPM	3	1
89-1617-7	JAX 4-13	TOTAL ORGANIC CARBON	PPM	14	1
89-1617-8	JAX 4-13D	TOTAL ORGANIC CARBON	PPM	3	1
89-1617-9	JAX 4-14	TOTAL ORGANIC CARBON	PPM	6	1
89-1617-10	JAX 4-15	TOTAL ORGANIC CARBON	PPM	28	1
89-1617-11	JAX 4-16	TOTAL ORGANIC CARBON	PPM	81	1
89-1617-12	JAX 4-REP	TOTAL ORGANIC CARBON	PPM	2	1
89-1617-13	JAX 4-RB	TOTAL ORGANIC CARBON	PPM	BDL	1

CERTIFICATION NUMBERS: FL LAB ID # 81142 • EPA # FL094 • FDER # EL020 • AL LAB ID # 40150 • NIOSH # 32514-001 • FL ENV # E81010

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11 EAST OLIVE ROAD PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Client: GERAGHTY & MILLER
07001

Lab I.D.#: 89-1617
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.

Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

Single Tests continued Sample Date: 05/09/89 Time: N/S

Lab ID	Sample ID	Parameter	Units	Results	Detectio Limit
89-1617-14	JAX 4-FB	TOTAL ORGANIC CARBON	PPM	BDL	1
89-1617-15	PLI TRIP BLANK	TOTAL ORGANIC CARBON	PPM	BDL	1
89-1617-1	JAX 4-4	TOTAL ORGANIC HALIDES	PPB	140	10
89-1617-2	JAX 4-5	TOTAL ORGANIC HALIDES	PPB	230	10
89-1617-3	JAX 4-9	TOTAL ORGANIC HALIDES	PPB	30	10
89-1617-4	JAX 4-10	TOTAL ORGANIC HALIDES	PPB	90	10
89-1617-5	JAX 4-11	TOTAL ORGANIC HALIDES	PPB	190	10
89-1617-6	JAX 4-12D	TOTAL ORGANIC HALIDES	PPB	BDL	10
89-1617-7	JAX 4-13	TOTAL ORGANIC HALIDES	PPB	20	10
89-1617-8	JAX 4-13D	TOTAL ORGANIC HALIDES	PPB	BDL	10
89-1617-9	JAX 4-14	TOTAL ORGANIC HALIDES	PPB	BDL	10
9-1617-10	JAX 4-15	TOTAL ORGANIC HALIDES	PPB	70	10
89-1617-11	JAX 4-16	TOTAL ORGANIC HALIDES	PPB	50	10
89-1617-12	JAX 4-REP	TOTAL ORGANIC HALIDES	PPB	BDL	10
89-1617-13	JAX 4-RB	TOTAL ORGANIC HALIDES	PPB	BDL	10
89-1617-14	JAX 4-FB	TOTAL ORGANIC HALIDES	PPB	BDL	10
89-1617-15	PLI TRIP BLANK	TOTAL ORGANIC HALIDES	PPB	BDL	10
89-1617-1	JAX 4-4	TOLUENE	PPB	11	1
89-1617-2	JAX 4-5	TOLUENE	PPB	54	1
89-1617-3	JAX 4-9	TOLUENE	PPB	2	1
89-1617-4	JAX 4-10	TOLUENE	PPB	7	1
89-1617-5	JAX 4-11	TOLUENE	PPB	12	1
89-1617-6	JAX 4-12D	TOLUENE	PPB	BDL	1
89-1617-7	JAX 4-13	TOLUENE	PPB	2	1
89-1617-8	JAX 4-13D	TOLUENE	PPB	4	1
89-1617-9	JAX 4-14	TOLUENE	PPB	BDL	1
89-1617-10	JAX 4-15	TOLUENE	PPB	BDL	1
89-1617-11	JAX 4-16	TOLUENE	PPB	BDL	1
89-1617-12	JAX 4-REP	TOLUENE	PPB	2	1
89-1617-13	JAX 4-RB	TOLUENE	PPB	4	1
89-1617-14	JAX 4-FB	TOLUENE	PPB	3	1
89-1617-15	PLI TRIP BLANK	TOLUENE	PPB	BDL	1
89-1617-1	JAX 4-4	TRICHLOROETHYLENE	PPB	BDL	1
89-1617-2	JAX 4-5	TRICHLOROETHYLENE	PPB	BDL	1
89-1617-3	JAX 4-9	TRICHLOROETHYLENE	PPB	BDL	1
89-1617-4	JAX 4-10	TRICHLOROETHYLENE	PPB	BDL	1
89-1617-5	JAX 4-11	TRICHLOROETHYLENE	PPB	2	1
89-1617-6	JAX 4-12D	TRICHLOROETHYLENE	PPB	BDL	1

CERTIFICATION NUMBERS: FL LAB ID # 81142 • EPA # FL094 • FDER # EL020 • AL LAB ID # 40150 • NIOSH # 32514-001 • FL ENV # E81010

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Client: GERAGHTY & MILLER
07001

Lab I.D.#: 89-1617
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.

Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

Single Tests continued Sample Date: 05/09/89 Time: N/S

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
89-1617-7	JAX 4-13	TRICHLOROETHYLENE	PPB	BDL	1
89-1617-8	JAX 4-13D	TRICHLOROETHYLENE	PPB	BDL	1
89-1617-9	JAX 4-14	TRICHLOROETHYLENE	PPB	BDL	1
89-1617-10	JAX 4-15	TRICHLOROETHYLENE	PPB	BDL	1
89-1617-11	JAX 4-16	TRICHLOROETHYLENE	PPB	BDL	1
89-1617-12	JAX 4-REP	TRICHLOROETHYLENE	PPB	BDL	1
89-1617-13	JAX 4-RB	TRICHLOROETHYLENE	PPB	BDL	1
89-1617-14	JAX 4-FB	TRICHLOROETHYLENE	PPB	BDL	1
89-1617-15	PLI TRIP BLANK	TRICHLOROETHYLENE	PPB	BDL	1
89-1617-1	JAX 4-4	VINYL CHLORIDE	PPB	BDL	1
89-1617-2	JAX 4-5	VINYL CHLORIDE	PPB	5	1
9-1617-3	JAX 4-9	VINYL CHLORIDE	PPB	BDL	1
89-1617-4	JAX 4-10	VINYL CHLORIDE	PPB	BDL	1
89-1617-5	JAX 4-11	VINYL CHLORIDE	PPB	BDL	1
89-1617-6	JAX 4-12D	VINYL CHLORIDE	PPB	BDL	1
89-1617-7	JAX 4-13	VINYL CHLORIDE	PPB	BDL	1
89-1617-8	JAX 4-13D	VINYL CHLORIDE	PPB	BDL	1
89-1617-9	JAX 4-14	VINYL CHLORIDE	PPB	BDL	1
89-1617-10	JAX 4-15	VINYL CHLORIDE	PPB	BDL	1
89-1617-11	JAX 4-16	VINYL CHLORIDE	PPB	BDL	1
89-1617-12	JAX 4-REP	VINYL CHLORIDE	PPB	BDL	1
89-1617-13	JAX 4-RB	VINYL CHLORIDE	PPB	BDL	1
89-1617-14	JAX 4-FB	VINYL CHLORIDE	PPB	BDL	1
89-1617-15	PLI TRIP BLANK	VINYL CHLORIDE	PPB	BDL	1
89-1617-1	JAX 4-4	XYLENES	PPB	BDL	5
89-1617-2	JAX 4-5	XYLENES	PPB	BDL	5
89-1617-3	JAX 4-9	XYLENES	PPB	BDL	5
89-1617-4	JAX 4-10	XYLENES	PPB	BDL	5
89-1617-5	JAX 4-11	XYLENES	PPB	BDL	5
89-1617-6	JAX 4-12D	XYLENES	PPB	BDL	5
89-1617-7	JAX 4-13	XYLENES	PPB	BDL	5
89-1617-8	JAX 4-13D	XYLENES	PPB	BDL	5
89-1617-9	JAX 4-14	XYLENES	PPB	BDL	5
89-1617-10	JAX 4-15	XYLENES	PPB	BDL	5
89-1617-11	JAX 4-16	XYLENES	PPB	BDL	5
89-1617-12	JAX 4-REP	XYLENES	PPB	BDL	5
89-1617-13	JAX 4-RB	XYLENES	PPB	BDL	5
89-1617-14	JAX 4-FB	XYLENES	PPB	13	5

CERTIFICATION NUMBERS: FL LAB ID # 81142 • EPA # FL094 • FDER # EL020 • AL LAB ID # 40150 • NIOSH # 32514-001 • FL ENV # E81010

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Client: GERAGHTY & MILLER
07001

Lab I.D.#: 89-1617
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.

Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

Single Tests continued Sample Date: 05/09/89 Time: N/S

Lab ID	Sample ID	Parameter	Units	Results	Detection Limit
89-1617-15	PLI TRIP BLANK	XYLENES	PPB	BDL	5
89-1617-1	JAX 4-4	1,1,1-TRICHLOROETHANE	PPB	BDL	5
89-1617-2	JAX 4-5	1,1,1-TRICHLOROETHANE	PPB	BDL	5
89-1617-3	JAX 4-9	1,1,1-TRICHLOROETHANE	PPB	BDL	5
89-1617-4	JAX 4-10	1,1,1-TRICHLOROETHANE	PPB	14	5
89-1617-5	JAX 4-11	1,1,1-TRICHLOROETHANE	PPB	11	5
89-1617-6	JAX 4-12D	1,1,1-TRICHLOROETHANE	PPB	BDL	5
89-1617-7	JAX 4-13	1,1,1-TRICHLOROETHANE	PPB	2	5
89-1617-8	JAX 4-13D	1,1,1-TRICHLOROETHANE	PPB	BDL	5
89-1617-9	JAX 4-14	1,1,1-TRICHLOROETHANE	PPB	15	5
89-1617-10	JAX 4-15	1,1,1-TRICHLOROETHANE	PPB	BDL	5
89-1617-11	JAX 4-16	1,1,1-TRICHLOROETHANE	PPB	BDL	5
89-1617-12	JAX 4-REP	1,1,1-TRICHLOROETHANE	PPB	BDL	5
89-1617-13	JAX 4-RB	1,1,1-TRICHLOROETHANE	PPB	BDL	5
89-1617-14	JAX 4-FB	1,1,1-TRICHLOROETHANE	PPB	BDL	5
89-1617-15	PLI TRIP BLANK	1,1,1-TRICHLOROETHANE	PPB	BDL	5
89-1617-1	JAX 4-4	1,1-DICHLOROETHANE	PPB	50	5
89-1617-2	JAX 4-5	1,1-DICHLOROETHANE	PPB	76	5
89-1617-3	JAX 4-9	1,1-DICHLOROETHANE	PPB	BDL	5
89-1617-4	JAX 4-10	1,1-DICHLOROETHANE	PPB	121	5
89-1617-5	JAX 4-11	1,1-DICHLOROETHANE	PPB	187	5
89-1617-6	JAX 4-12D	1,1-DICHLOROETHANE	PPB	BDL	5
89-1617-7	JAX 4-13	1,1-DICHLOROETHANE	PPB	5	5
89-1617-8	JAX 4-13D	1,1-DICHLOROETHANE	PPB	6	5
89-1617-9	JAX 4-14	1,1-DICHLOROETHANE	PPB	8	5
89-1617-10	JAX 4-15	1,1-DICHLOROETHANE	PPB	20	5
89-1617-11	JAX 4-16	1,1-DICHLOROETHANE	PPB	BDL	5
89-1617-12	JAX 4-REP	1,1-DICHLOROETHANE	PPB	8	5
89-1617-13	JAX 4-RB	1,1-DICHLOROETHANE	PPB	BDL	5
89-1617-14	JAX 4-FB	1,1-DICHLOROETHANE	PPB	BDL	5
89-1617-15	PLI TRIP BLANK	1,1-DICHLOROETHANE	PPB	BDL	5
89-1617-1	JAX 4-4	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-2	JAX 4-5	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-3	JAX 4-9	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-4	JAX 4-10	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-5	JAX 4-11	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-6	JAX 4-12D	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-7	JAX 4-13	1,2,3-TRICHLOROPROPANE	PPB	BDL	5

CERTIFICATION NUMBERS: FL LAB ID # 81142 • EPA # FL094 • FDER # EL020 • AL LAB ID # 40150 • NIOSH # 32514-001 • FL ENV # E81010

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11 EAST OLIVE ROAD PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

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07001

Lab I.D.#: 89-1617
Order Date: 05/10/89
Sampled By: T.Z./D.G.C.

Sample Site: NAS-JACKSONVILLE, FL
Sample Type: GROUNDWATER

Single Tests continued Sample Date: 05/09/89 Time: N/S

Lab ID	Sample ID	Parameter	Units	Results	Detectio Limit
89-1617-8	JAX 4-13D	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-9	JAX 4-14	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-10	JAX 4-15	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-11	JAX 4-16	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-12	JAX 4-REP	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-13	JAX 4-RB	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-14	JAX 4-FB	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-15	PLI TRIP BLANK	1,2,3-TRICHLOROPROPANE	PPB	BDL	5
89-1617-1	JAX 4-4	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-2	JAX 4-5	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-3	JAX 4-9	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-4	JAX 4-10	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-5	JAX 4-11	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-6	JAX 4-12D	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-7	JAX 4-13	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-8	JAX 4-13D	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-9	JAX 4-14	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-10	JAX 4-15	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-11	JAX 4-16	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-12	JAX 4-REP	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-13	JAX 4-RB	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-14	JAX 4-FB	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-15	PLI TRIP BLANK	1,2-DICHLOROETHANE	PPB	BDL	3
89-1617-1	JAX 4-4	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-2	JAX 4-5	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-3	JAX 4-9	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-4	JAX 4-10	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-5	JAX 4-11	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-6	JAX 4-12D	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-7	JAX 4-13	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-8	JAX 4-13D	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-9	JAX 4-14	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-10	JAX 4-15	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-11	JAX 4-16	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-12	JAX 4-REP	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-13	JAX 4-RB	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-14	JAX 4-FB	1,2-DICHLOROPROPANE	PPB	BDL	5
89-1617-15	PLI TRIP BLANK	1,2-DICHLOROPROPANE	PPB	BDL	5

CERTIFICATION NUMBERS: FL LAB ID # 81142 • EPA # FL094 • FDER # EL020 • AL LAB ID # 40150 • NIOSH # 32514-001 • FL ENV # E81010

Geraghty & Miller, Inc.

SAMPLING SUMMARY FORM

Location NAS JAX

Sampler Signatures T.J. Zebulka

Project Number TF0290GW12

Date Sampled 5/9/89

Number of Sample Sites 11

Project Manager D. Grant

Site Sampled	Sample Media	Container Description/Analysis	Preservative
JAX4-9	GW		
JAX4-4		100 ml with H_2SO_4 - TOC	
JAX4-5		1 l with H_2SO_4 - TOX	
JAX4-10		1 l amber - EPA 8270	
JAX4-11		VOC's by 8240 (3x40 ml)	
JAX4-13		total metals 500 ml w/ HNO_3	
JAX4-13D		Complexed CN^- ½ gal *	
JAX4-12D		Sulfides 500 ml w/ NaOH, Zn acetate	
JAX4-14		pH, spec. cond., Cr^{+6} (500 ml)	
JAX4-15			
JAX4-16		All samples analyzed for	
JAX4-Rep		the complete list above.	
JAX4-RB	DI Water		
JAX4-FB	DI Water		

Remarks: * samples field tested positive for sulfides in wells JAX4-15, ~~JAX~~ JAX4-11, JAX4-5, JAX4-4, JAX4-10 sent to lab unpreserved to treatment and analysis. All others sent with NaOH. All samples and complete trip blank set sent to Pioneer Lab, with instructions to analyze Cr^{+6} samples within 24 hrs. a copy of lab Task Order included. A complete round of water levels was obtained 5/8/89.

GERAGHTY & MILLER, INC.
Ground-Water Consultants

CHAIN-OF-CUSTODY RECORD

#19 Page 1 of 1

Project Number TF0290GW12

Project Location NAS TAX

Laboratory Pioneer

Sampler(s) T. Zelulske, Rue, Miller

SAMPLE IDENTITY	Date Sampled	TOC 100 ml with H_2SO_4	TOX, 2 with H_2SO_4	EPA 8270 1 2 amber	Sulfides with 500 ml NaOH, Zn acetate	Phenols 500 ml with H_3PO_4	Cyanides CN⁻ 1/2 gal w/ NaOH	Cr +6, pH, specific cond 500 ml on ice *				TOTAL
TAX4-9	5/4/89	1	1	1	1	1	1	1				7
TRIP Blank		1	1	1	1	1	1	1				7

Total No. of Bottles/Containers 14

Relinquished by: T.J. Zelulske	Organization: G+M	Date 5/4/89 Time 1930	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	
Relinquished by:	Organization:	Date / / Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	

Special Instructions/Remarks: * 24 hr. holding time for Cr+6.
See pack order. Report to Doug Grant

GERAGHTY & MILLER, INC.
Ground-Water Services

CHAIN-OF-CUSTODY RECORD

#62

Project Number TF0290G1U12

Project Location NAS-JAX

Laboratory Pioneer

Sampler(s) T. Zebelske

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Date Sampled	VOC's by EPA 8240 40 ml vial on ice	Sulfide plastic 500 ml w/ NaOH + Zn acetate	Metals plastic 500 ml w/ HNO3	EPA 8270 1 2 amber glass on ice	TOC 100 ml glass w/ H2SO4	TOX 1 2 glass w/ H2SO4	Completed CN- 1/2 gal plastic w/ NaOH	Cr+6, pH, spec cond. 500 ml plastic on ice *			TOTAL
JAX 4-4	5/9/89	3										3
JAX 4-5		3										3
JAX 4-9		3										3
JAX 4-10		3										3
JAX 4-11		3										3
JAX 4-12 D		3	1	1	1	1	1	1	1			10
JAX 4-13		3										3
JAX 4-13 D		3										3
JAX 4-14		3										3
JAX 4-15		3										3
JAX 4-16		3										3
JAX 4-Rep.		3										3
JAX 4-F.B.		3										3
JAX 4-R.B.		3										3
Trip Blank	—	2										2
											Total No. of Bottles/ Containers	51

Relinquished by: T.J. Zebelske	Organization: Geraghty + Miller	Date 5/9/89 Time 1930	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	
Relinquished by:	Organization:	Date / / Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	

Special Instructions/Remarks: Report to Doug Grant
* 24 hour holding time see bottle label.
See task order

GERAGHTY & MILLER, INC.
Ground-Water Services

CHAIN-OF-CUSTODY RECORD

Cooler 136

Project Number TFO 290GW12

Project Location NAS-JAX

Laboratory Pioneer

Sampler(s) T. Zebulske

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Date Sampled	TOC 100 ml w/ H_2SO_4	TOX 1 L glass w/ H_2SO_4	EPA 8270 1 L amber on ice	Sulfide 500 ml with NaOH, Zn acetate	Metals 500 ml with HNO_3	Completed CN- * 1/2 gal plastic		Cr+6 pH, spec. cond. 500 ml plastic with ice *			TOTAL
JAX 4-4	5/9/89	1	1	1	1	1	1		1			7
JAX 4-5	5/9/89	1	1	1	1	1	1		1			7
							* See note below		* See note below			
											Total No. of Bottles/ Containers	14

Relinquished by: T. Zebulske	Organization: G+M	Date 5/9/89 Time 1930	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	
Relinquished by:	Organization:	Date / / Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	

Special Instructions/Remarks: Report to Day Court

* Cr+6 has 24 hr. holding time. See task order for all methods

* [illegible] - treat at lab within 24 hrs. before analyzing

GERAGHTY & MILLER, INC.
Ground-Water Services

CHAIN-OF-CUSTODY RECORD #87

Project Number TF0290GW12

Project Location NAS TAX

Laboratory Pioneer

Sampler(s) T. Zebulske, B. Martin

SAMPLE IDENTITY	Date Sampled	TOC 1 L amber with H_2SO_4	TOX 1 L amber with H_2SO_4	EPA 8270 1 L amber	Metals 500 mL with HNO_3	Sulfide 500 mL with $NaOH$, Zn acetate	Cyanide 1/2 gal with $NaOH$	Low pH, spec. cond. 500 mL on ice *				TOTAL
TAX4-Rep	5/9/89	1	1	1	1	1	1	1				7
TAX4-13D	5/9/89	1	1	1	1	1	1	1				7
Total No. of Bottles/ Containers												14

TASK ORDER ENCLOSED

Relinquished by: T. Zebulske	Organization: B+M	Date 5/9/89 Time 1430	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	
Relinquished by:	Organization:	Date / / Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	

Special Instructions/Remarks: * 24 hr. holding time for Cr+6
Report to Doug Grant SEE Task order

GERAGHTY & MILLER, INC.
Ground-Water Services

CHAIN-OF-CUSTODY RECORD

#85

Project Number TF0290GW12

Project Location NAS TAX

Laboratory Pioneer

Sampler(s) T. J. Zelinske

SAMPLE IDENTITY	Date Sampled	TOC 100ml with H_2SO_4	TOX 1 L w/ H_2SO_4	EPA 8270 1 liter on ice	Sulfide 500ml with NaOH	Metals 500ml with HNO_3	Cyanide (composited) 1/2 gal with NaOH	Composite Cr+6 1/2 gal on ice *	Cr+6, pH, spec. cond. 500ml on ice *			TOTAL
TAX 4-14	5/9/89	1	1	1	1	1	1		1			7
TAX 4-15	5/9/89	1	1	1	1	1		1	1			7

* See note below
* See note below

Total No. of Bottles/Containers 14

Relinquished by: T. J. Zelinske	Organization: J+M	Date 5/9/89 Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	
Relinquished by:	Organization:	Date / / Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	

Special Instructions/Remarks:

* 24 hr. holding time for Cr+6
[illegible]

GERAGHTY & MILLER, INC.
Ground-Water Services

CHAIN-OF-CUSTODY RECORD

#98

Project Number TE0290GW12

Project Location NAS TAX

Laboratory Pioneer

Sampler(s) T. Zabulske, D. Clarke

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Date Sampled	TOC 1 qt glass H_2SO_4	TOX 1 qt glass H_2SO_4	EPA 8270 1 qt amber	Metals 500 ml HNO3	Sulfide 500 ml NaOH, Zn acetate	Cyanide (composite) 1/2 pint with NaOH		Cr+6, pH, spec. cond. 500 ml amber *			TOTAL
TAX4-13	5/9/89	1	1	1	1	1	1					7
TAX4-16	5/9/89	1	1	1	1	1	1					7
Total No. of Bottles/ Containers												14

* See note below

Relinquished by: T. Zabulske	Organization: B+M	Date 5/9/89	Time 1730	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks:
*24 hr. holding time See label Report to Doug Lyons
See Task order

GERAGHTY & MILLER, INC.
Ground-Water Services

CHAIN-OF-CUSTODY RECORD

Project Number TF0290GW

Project Location NAS TAX

Laboratory Pioneer

Sampler(s) T. Zebulske
[illegible]

SAMPLE BOTTLE / CONTAINER DESCRIPTION

SAMPLE IDENTITY	Date Sampled	TOC 100 ml w/ H_2SO_4	TOX 1L w/ H_2SO_4	EPA 8270 1L amber	Metals 500 ml with HNO_3	Sulfide 500 ml with $NaOH$ Zn acetate	Cyanide 500 ml with NaOH		Cr+6 1 pint, special container			TOTAL
TAX 4-10	5/9/89	1	1	1	1	1	1		1			7
TAX 4-11	5/9/89	1	1	1	1	1	1		1			7
							* See note		* See note			
Total No. of Bottles/ Containers												14

Relinquished by: T.J. Zebulske	Organization: U+M	Date 5/9/89	Time 1430	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks:
* both showed sulfide in field test, remove in lab within 24 hrs.
* 24 hr. holding time for Cr+6.

GERAGHTY & MILLER, INC.
Ground-Water Services

CHAIN-OF-CUSTODY RECORD

#118

Project Number TF0290GW12

Project Location NAS TAX

Laboratory Pinney

Sampler(s) T.J. Fulsher

SAMPLE IDENTITY	Date Sampled	TOC 1 pint with H_2SO_4	TOX 1 pint with H_2SO_4	EPA 8270 1 amber	Metals 1 pint with HNO_3	Sulfide 1 pint with NaOH, Zn acetate	Cyanide 1 N with NaOH	Cr+6, pH, specificity 1 pint				TOTAL
TAX4-RB	5/4/89	1	1	1	1	1	1	1				7
TAX4-FB	5/4/89	1	1	1	1	1	1	1				7
											Total No. of Bottles/ Containers	14

Relinquished by: T.J. Fulsher	Organization: G+M	Date 5/9/89 Time 1930	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	
Relinquished by:	Organization:	Date / / Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / / Time	

Special Instructions/Remarks: report to Doug/Carol SEE TASK ORDER,
*24 hr. holding time for Cr+6.

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WATER SAMPLING LOG

Project/No. TF0290GW12 Page 1 of 11

Site Location NAS Jacksonville

Site/Well No. JAX4-9 Coded/ Replicate No. Date 7/9/89

Weather 70° Sun Time Sampling Began 0916 Time Sampling Completed 1410

EVACUATION DATA

Description of Measuring Point (MP) TOC

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP 13.82 Water-Level Elevation —

Held ~~not~~ Depth to Water Below MP 9.16 Diameter of Casing 2"

~~Wet~~ Water Column in Well 4.66 Gallons Pumped/Bailed Prior to Sampling 3.0

Gallons per Foot .16 3.0 gal × 1 min/gal = 3.0 min ≈ 3.5 min

Gallons in Well 75 × 4 Sampling Pump Intake Setting (feet below land surface) variable

Evacuation Method peristaltic pump

SAMPLING DATA/FIELD PARAMETERS

Color grey-brown Odor none Appearance turbid Temperature 22.8 °F/°C

Other (specific ion; OVA; HNU; etc.) none

Specific Conductance, umhos/cm 340 pH 6.65

Sampling Method and Material Teflon bailer

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
TOC /9060	1 x 100 mL glass	H_2SO_4
TOX /9020	1 x 1 L glass	H_2SO_4
VOCs /8240	3 x 40 mL vial	ice
Metals total	1 x 500 mL plastic	HNO_3
Acid Extrs. EPA 8270	1 x 1 L amber glass	ice
Cyanide CN	1 x 1/2 gal plastic	NaOH
Sulfides	[1 x 500 mL plastic	Zn $(C_2H_3O_2)_2$, NaOH, ice
pH, specond, Cl^-		ice

Remarks prescreened negative for S^{2-} and [O] *

Sampling Personnel DC/TZ

* S^{2-} → sulfides

[O] → oxidizer

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.10	2-½" = 0.24	3-½" = 0.50	6" = 1.46

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WATER SAMPLING LOG

Project/No. TF0290 GW12 Page 2 of 11

Site Location N.A.S. Jacksonville

Site/Well No. JAX4-16 Coded/ Replicate No. _____ Date 5/9/89

Weather 75°F, clear Time Sampling Began 0945 Time Sampling Completed 1435

EVACUATION DATA

Description of Measuring Point (MP) TOC

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP 12.22 Water-Level Elevation —

Held hand pump Depth to Water Below MP 6.28 Diameter of Casing 2"

Wet _____ Water Column in Well 5.94 Gallons Pumped/Bailed Prior to Sampling 3.8

Gallons per Foot .16 3.8 gal

Gallons in Well .95 x 4 Sampling Pump Intake Setting (feet below land surface) variable

Evacuation Method peristaltic pump

SAMPLING DATA/FIELD PARAMETERS

Color brown Odor — Appearance muddy Temperature 23.1 °F/°C

Other (specific ion; OVA; HNU; etc.) none

Specific Conductance, umhos/cm 1380 pH 7.39

Sampling Method and Material Teflon

Constituents Sampled	Container Description From Lab ✓ or G&M ____	Preservative
EPA 8240	3 x 40 mL vial	ice
TOC / 9060	1 x 100 mL glass	H_2SO_4
TOX / 9020	1 x 1 L glass	H_2SO_4
Sulfides	1 x 500 mL plastic	$Zn(C_2H_3O_2)_2$, NaOH, ice
EPA 8270	1 x 1 L amber glass	ice
total metals	1 x 500 mL plastic	HNO_3
cmplx. CN	1 x 1/2 gal plastic	NaOH
pH, spec cond, Cr [ ]	1 x 500 mL plastic	ice

Remarks negative for S^{2-} and [ ]

Sampling Personnel DC/TE JAX4-RB collected here

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.10	2-½" = 0.24	3-½" = 0.50	6" = 1.46

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WATER SAMPLING LOG

Project/No. TE0270GW12 Page 3 of 11

Site Location NAS Jax

Site/Well No. JAX4-13 Coded/ Replicate No. _____ Date 5/9/89

Weather 75° clear Time Sampling Began 1007 Time Sampling Completed 1515

EVACUATION DATA

Description of Measuring Point (MP) TOC

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP 12.20 Water-Level Elevation —

Held ~~Wet~~ hydrobol Depth to Water Below MP 6.32 Diameter of Casing 2"

Water Column in Well 5.88 Gallons Pumped/Bailed Prior to Sampling 3.8

Gallons per Foot .16 3.8 gal

Gallons in Well .94 x 4 Sampling Pump Intake Setting (feet below land surface) variable

Evacuation Method peristaltic pump

SAMPLING DATA/FIELD PARAMETERS

Color lt. tan Odor — Appearance turbid Temperature 23.0 °F/°C

Other (specific ion; OVA; HNU; etc.) none

Specific Conductance, umhos/cm 193 pH 6.79

Sampling Method and Material teflon bailer

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
EPA 8240	3 x 40 mL vial	ice
TOC / 9060	1 x 100 mL glass	H_2SO_4
TOX / 9020	1 x 1 L glass	H_2SO_4
sulfides	1 x 500 mL plastic	$Zn(C_2H_3O_2)_2$, NaOH, ice
EPA 8270	1 x 1 L amber glass	ice
total metals	1 x 500 mL plastic	HNO_3
cmplx. CN	1 x ½ gal plastic	NaOH
pH, spec cond, Cr [6]	1 x 500 mL plastic	ice

Remarks screened negative for S^{2-} and CO3

Sampling Personnel DC/TE JAX4FB collected here

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.10	2-½" = 0.24	3-½" = 0.50	6" = 1.46

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WATER SAMPLING LOG

Project/No. TE0290 GW12 Page 4 of 11

Site Location NAS JAX

Site/Well No. JAX 4-13D Coded/ Replicate No. JAX4-REP Date 5/9/89

Weather 75° Clear Time Sampling Began 1007 Time Sampling Completed 1540

EVACUATION DATA

Description of Measuring Point (MP) TOC

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP 36.25 Water-Level Elevation —

Held ~~Wet~~ Depth to Water Below MP 6.53 Diameter of ~~Casing~~ 2"

Water Column in Well 29.72 Gallons ~~Pumped~~/Bailed Prior to Sampling 19.2

Gallons per Foot .16 19.2 gal

Gallons in Well 4.8 x 4 Sampling Pump Intake Setting (feet below land surface) variable

Evacuation Method peristaltic pump

SAMPLING DATA/FIELD PARAMETERS

Color none Odor moderate Appearance transparent Temperature 22.9 °F/°C

Other (specific ion; OVA; HNU; etc.) none

Specific Conductance, umhos/cm 240 pH 6.52

Sampling Method and Material Teflon bailer

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
EPA 8240	3x 40 mL vial	ice
TOC/9060	1x 100 mL glass	H_2SO_4
TOX/9020	1x 1 L plastic	H_2SO_4
sulfides	1x 500 mL plastic	$Zn(C_2H_3O_2)_2$, NaOH
EPA 8270	1x 1 L amber glass	ice
total metals	1x 500 mL plastic	HNO_3
cmplx. CN	1x 1/2 gal plastic	NaOH
pH, spec. cond, Cr[VI]	1x 500 mL plastic	ice

Remarks prescreen indicated negative presence of both sulfides and oxidizers

Sampling Personnel TZ/DC JAX4-REP collected here

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.10	2-½" = 0.24	3-½" = 0.50	6" = 1.46

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WATER SAMPLING LOG

Project/No. TF0290GW12 Page 5 of 1

Site Location NAS Jax

Site/Well No. JAX 4-14 Coded/ Replicate No. Date 5/2/89

Weather 75°F, clear Time Sampling Began 1021 Time Sampling Completed 1605

EVACUATION DATA

Description of Measuring Point (MP) TOC

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP 12.72 Water-Level Elevation —

Held ~~Wet~~ hydrostatic Depth to Water Below MP 6.24 Diameter of Casing 2"

Water Column in Well 6.48 Gallons Pumped/Bailed Prior to Sampling 4.2

Gallons per Foot .16 4.2 gal

Gallons in Well 1.05 x 4 Sampling Pump Intake Setting (feet below land surface) variable

Evacuation Method peristaltic pump

SAMPLING DATA/FIELD PARAMETERS

Color gray Odor strong Appearance muddy, turbid Temperature 23.1 °F/°C

Other (specific ion; OVA; HNU; etc.) none

Specific Conductance, umhos/cm 460 pH 7.03

Sampling Method and Material Teflon bailer

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
EPA 8240	3 x 40 mL vial	ice
TOC / 9060	1 x 100-L glass	H_2SO_4
TOX / 9020	1 x 1L glass	H_2SO_4
sulfides	1 x 500 mL plastic	$Zn(C_2H_3O_2)_2$, NaOH
EPA 8270	1 x 1L amber glass	ice
total metals	1 x 500 mL plastic	HNO_3
cmplx CN	1 x 1/2 gal plastic	NaOH
pH, spec cond, Cr[VI]	1 x 500 mL plastic	ice

Remarks prescreening indicates negative presence of both sulfides and oxidizers

Sampling Personnel DC/TE

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.10	2-½" = 0.24	3-½" = 0.50	6" = 1.46

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WATER SAMPLING LOG

Project/No. T5020 GW12 Page 6 of 11

Site Location NAS Jacksonville

Site/Well No. JAX4-15 Coded/ Replicate No. _____ Date 5/2/89

Weather 75° Sun Time Sampling Began 1037 Time Sampling Completed 1620

EVACUATION DATA

Description of Measuring Point (MP) TOC

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP 11.65 Water-Level Elevation —

Held dry Depth to Water Below MP 6.40 Diameter of Casing 2"

Wet _____ Water Column in Well 5.25 Gallons Pumped/Bailed Prior to Sampling 3.6

Gallons per Foot .16 3.6 gal

Gallons in Well .9 x4 Sampling Pump Intake Setting (feet below land surface) unavailable

Evacuation Method peristaltic pump

SAMPLING DATA/FIELD PARAMETERS

Color gray Odor strong Appearance slightly cloudy Temperature 22.9 °F/°C

Other (specific ion; OVA; HNU; etc.) none

Specific Conductance, umhos/cm 70 pH 6.01

Sampling Method and Material teflon bailer

Constituents Sampled	Container Description From Lab ✓ or G&M ____	Preservative
EPA 8240	3 x 40 mL vial	ice
TOC / 9060	1 x 100 mL glass	H_2SO_4
TOX / 9020	1 x 1 L glass	H_2SO_4
sulfides	1 x 500 mL plastic	$Zn(C_2H_3O_2)_2$, NaOH
EPA 8270	1 x 1 L amber glass	ice
total metals	1 x 500 mL plastic	HNO_3
cyp/x CN	1 x 1/2 gal plastic	ice
pH, spec cond, Cr^{6+}	1 x 500 mL plastic	ice

Remarks Tested positive for SULFIDES

Sampling Personnel DC/TE

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.10	2-½" = 0.24	3-½" = 0.50	6" = 1.46

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WATER SAMPLING LOG

Project/No. TEC290 GW12 Page 7 of 1

Site Location NAS Jax

Site/Well No. JAX 4-12D Coded/ Replicate No. Date 5/9/89

Weather 80° clear Time Sampling Began 1100 Time Sampling Completed 1530

EVACUATION DATA

Description of Measuring Point (MP) TOC

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP 36.60 Water-Level Elevation —

Held dry Depth to Water Below MP 6.83 Diameter of Casing 4"

Wet Water Column in Well 29.77 Gallons Pumped/Bailed Prior to Sampling 77.6

Gallons per Foot 0.65

Gallons in Well 19.4 x 4 77.6 gal

Sampling Pump Intake Setting (feet below land surface) variable

Evacuation Method peristaltic pump

SAMPLING DATA/FIELD PARAMETERS

Color none Odor none Appearance clear Temperature 24.1 °F/°C

Other (specific ion; OVA; HNU; etc.) none

Specific Conductance, umhos/cm 270 pH 7.17

Sampling Method and Material teflon bailer

Constituents Sampled	Container Description From Lab ✓ or G&M	Preservative
EPA 8240	3 x 40 mL vial	ice
TOC/9060	1 x 100 mL glass	H_2SO_4
TOX/9020	1 x 1 L glass	H_2SO_4
sulfide	1 x 500 mL plastic	$Zn(C_2H_3O_2)_2$, NaOH
EPA 8270	1 x 1 L amber glass	ice
total metals	1 x 500 mL plastic	HNO_3
cmplx. CN	1 x ½ gal plastic	NaOH
pH, spec. cond, Cr^{6+}	1 x 500 mL plastic	ice

Remarks ~~TN~~ ~~TH~~ field tested negative for sulfides & oxidizers

Sampling Personnel DC/TE

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.10	2-½" = 0.24	3-½" = 0.50	6" = 1.46

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WATER SAMPLING LOG

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Site Location N.A.S. Jacksonville

Site/Well No. JAX4-11 Coded/ Replicate No. _____ Date 5/9/89

Weather 75°F, clear Time Sampling Began 1054 Time Sampling Completed 1600

EVACUATION DATA

Description of Measuring Point (MP) TOC

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP 15.00 Water-Level Elevation —

Hydrocarbon ~~Heloc~~ Depth to Water Below MP 6.47 Diameter of Casing 2"

~~Wet~~ Water Column in Well 8.53 Gallons Pumped/Bailed Prior to Sampling 5.6

Gallons per Foot 0.16 5.6 gal

Gallons in Well 1.4 x 4 Sampling Pump Intake Setting (feet below land surface) variable

Evacuation Method peristaltic pump

SAMPLING DATA/FIELD PARAMETERS

Color grey Odor strong Appearance transparent Temperature 22.8 °F/°C

Other (specific ion; OVA; HNU; etc.) none

Specific Conductance, umhos/cm 850 pH 5.06

Sampling Method and Material Teflon bailer

Constituents Sampled	Container Description From Lab ✓ or G&M ___	Preservative
EPA 8240	3x40 ml vial	ice
TOC/9060	1x 100 mL glass	H_2SO_4
TOX/9020	1x1 L glass	H_2SO_4
sulfide,	1x 500 mL plastic	$Zn(C_2H_3O_2)_2$ NaOH
EPA 8270	1x 1 L amber glass	ice
total metals	1x 500 mL plastic	HNO_3
cmplx. CN	1x 1/2 gal plastic	ice
pH, spec cond, Cr^{6+}	1x 500 mL plastic	ice

Remarks prescreen indicated positive presence of sulfides

Sampling Personnel DC/TE

WELL CASING VOLUMES

GAL./FT.				
	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46

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WATER SAMPLING LOG

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Site Location NAS Jacksonville

Site/Well No. JAX4-5 Coded/ Replicate No. _____ Date 5/9/89

Weather 75°F, sunny Time Sampling Began 1047 Time Sampling Completed 1200

EVACUATION DATA

Description of Measuring Point (MP) TOC

Height of MP Above/Below Land Surface _____ MP Elevation _____

Total Sounded Depth of Well Below MP 13.15 Water-Level Elevation _____

Held _____ Depth to Water Below MP 6.42 Diameter of Casing 2"

Wet _____ Water Column in Well 6.73 Gallons Pumped/Bailed Prior to Sampling 4.4

Gallons per Foot .16 4.4 gal

Gallons in Well 1.1 x 4 Sampling Pump Intake Setting (feet below land surface) variable

Evacuation Method peristaltic pump

SAMPLING DATA/FIELD PARAMETERS

Color lt yellow Odor strong! Appearance transparent Temperature 23.1 °F/°C

Other (specific ion; OVA; HNU; etc.) none

Specific Conductance, umhos/cm 1200 pH 6.19

Sampling Method and Material teflon bailer

Constituents Sampled	Container Description From Lab X or G&M ___	Preservative
EPA 8240	3 x 40 mL vial	ice
TOC/9060	1 x 100 mL glass	H_2SO_4
TOX/9020	1 x 1 L glass	H_2SO_4
sulfides	1 x 500 mL plastic	$Zn(C_2H_3O_2)_2$, NaOH
EPA 8270	1 x 1 L amber glass	ice
total metals	1 x 500 mL plastic	HNO_3
cmplx. CN	1 x 1/2 gal plastic	ice
pH, spec cond, Cr^{6+}	1 x 500 mL plastic	ice

Remarks prescreen indicates positive presence of sulfides

Sampling Personnel DC/TE

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.10	2-½" = 0.24	3-½" = 0.50	6" = 1.46

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WATER SAMPLING LOG

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Site Location NAS Jacksonville

Site/Well No. JAX4-4 Coded/ Replicate No. Date 5/9/89

Weather 75°F, clear Time Sampling Began 1107 Time Sampling Completed 1730

EVACUATION DATA

Description of Measuring Point (MP) TOC

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP 14.05 Water-Level Elevation —

Held Dry Depth to Water Below MP 7.05 Diameter of Casing 2"

Wet Water Column in Well 7.00 Gallons Pumped/Bailed Prior to Sampling 4.4

Gallons per Foot .16 4.4 gal

Gallons in Well 1.1 x 4 Sampling Pump Intake Setting (feet below land surface) variable

Evacuation Method peristaltic pump

SAMPLING DATA/FIELD PARAMETERS

Color none Odor Strong H2S Appearance transparent Temperature 23.0 °F/°C

Other (specific ion; OVA; HNU; etc.) none

Specific Conductance, umhos/cm 980 pH 5.27

Sampling Method and Material Teflon bailer

Constituents Sampled	Container Description From Lab ✓ or G&M ___	Preservative
EPA 8240	3 x 40 ml vial	ice
TOC/9060	1 x 100 ml glass	H_2SO_4
TOX/9020	1 x 1 L glass	H_2SO_4
sulfides	1 x 500 ml plastic	$Zn(C_2H_3O_2)_2$, NaOH
EPA 8270	1 x 1 L amber glass	ice
total metals	1 x 500 ml plastic	HNO_3
cmplx CN	1 x 1/2 gal plastic	ice
pH, specond, or GT	1 x 500 ml plastic	ice

Remarks prescreen indicates positive presence of sulfides

Sampling Personnel DC/TE

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.10	2-½" = 0.24	3-½" = 0.50	6" = 1.46

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WATER SAMPLING LOG

Project/No. TF0590 GW 12 Page 11 of 11

Site Location NAS JAX

Site/Well No. JAX 4-10 Coded/ Replicate No. _____ Date 5/9/89

Weather 75°F, clear Time Sampling Began 1113 Time Sampling Completed 1800

EVACUATION DATA

Description of Measuring Point (MP) TOC

Height of MP Above/Below Land Surface — MP Elevation —

Total Sounded Depth of Well Below MP 14.69 Water-Level Elevation —

Held — Depth to Water Below MP 6.52 Diameter of Casing 2"

Wet _____ Water Column in Well 8.17 Gallons Pumped/Bailed Prior to Sampling 5.2

Gallons per Foot .16 5.2 gal

Gallons in Well 1.3 x 4 Sampling Pump Intake Setting (feet below land surface) variable

Evacuation Method peristaltic pump

SAMPLING DATA/FIELD PARAMETERS

Color none Odor strong Appearance transparent Temperature 23.3 °F/°C

Other (specific ion; OVA; HNU; etc.) none

Specific Conductance, umhos/cm 700 pH 5.90

Sampling Method and Material Teflon bailer

Constituents Sampled	Container Description From Lab X or G&M ____	Preservative
EPA 8240	3x40 mL vial	ice
TOC / 9060	1x 100 mL glass	H_2SO_4
TOX / 9020	1x 1 L glass	H_2SO_4
sulfides	1x 500 mL plastic	$Zn(C_2H_3O_2)_2$, NaOH
EPA 8270	1x 1 L amber glass	ice
total metals	1x 500 mL plastic	HNO_3
cmp'x CN	1x 1/2 gal plastic	ice
pH, spec. cond, Cr^{6+}	1x 500 mL plastic	ice

Remarks preservative indicates positive presence of sulfides

Sampling Personnel _____

WELL CASING VOLUMES

GAL./FT.				
	1-¼" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.10	2-½" = 0.24	3-½" = 0.50	6" = 1.46

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APPENDIX C

APPENDIX C

Summary of Analytical Results for Indicator Parameters

736/48

Summary of Indicator Parameters

	September 29, 1988					
	JAX4-4	JAX4-5	JAX4-9	JAX4-10	JAX4-11	JAX4-15
pH (Std. units)	5.68	6.5	6.51	5.4	4.93	6.46
	5.6	6.49	6.56	5.41	4.85	6.46
	5.64	6.53	6.57	5.44	4.87	6.48
	5.66	6.54	6.61	5.51	4.9	6.49
mean	5.64	6.51	6.56	5.44	4.88	6.47
variance	0.000875	0.000425	0.001268	0.00185	0.000918	0.000168
Specific Conductance (micromhos)	442	2984	357	119	437	422
	442	2959	373	120	394	422
	436	2925	381	121	428	379
	440	2925	395	123	428	410
mean	440	2948	345	120	409	408
variance	6	618.6875	1074.859	2.1875	567.25	309.1875
Total Organic C (mg/L)[1/]	20	53	25	11	16	54
	21	57	26	20	20	40
	23	64	32	15	86	24
	21	72	24	12	34	36
mean	21.2	61.5	26.7	14.5	39	38.5
variance	1.1875	52.25	9.6875	12.25	781	114.75
Total Organic Halogens (ug/L)[2/]	80	400	250	50	220	80
	100	380	220	60	270	80
	100	370	260	50	250	80
	90	420	280	40	250	80
mean	92.5	392	345	50	247	80
variance	68.75	368.75	1074.859	50	318.75	0

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Summary of Indicator Parameters (continued)

	August 11, 1988										
	JAX4-4	JAX4-5	JAX4-9	JAX4-10	JAX4-11	JAX4-12D	JAX4-13	JAX4-13D	JAX4-14	JAX-15	JAX-16
pH (Std. units)	5.7	6.25	6.28	5.78	4.52	6.41	5.74	8.64	6.84	6.45	5.93
	5.73	6.41	6.23	5.8	4.61	6.4	5.69	8.69	6.8	6.41	5.95
	5.68	6.38	6.19	5.74	4.57	6.38	5.71	8.55	6.78	6.35	5.87
	5.75	6.19	6.25	5.77	4.7	6.44	5.78	8.64	6.82	6.5	5.75
mean	5.71	6.30	6.12	5.77	4.6	6.40	5.73	8.63	6.81	6.42	5.87
variance	0.000725	0.008218	0.001068	0.000468	0.00435	0.000468	0.00115	0.00255	0.0005	0.003018	0.006075
Specific Conductance (micromhos)	580	3216	311	82	240	231	212	359	504	788	368
	570	3200	305	85	245	230	210	361	515	780	360
	575	3350	315	88	250	240	218	351	510	771	365
	573	3150	330	85	260	238	220	355	507	775	370
mean	574	3229	315	85	248	234	215	356	509	778	365
variance	13.25	5473	85.1875	4.5	54.6875	18.6875	17	14.75	16.5	40.25	14.1875
Total Organic C (Mg/L)	20	31	33	12	17	7	17	7	26	64	17
	90	30	35	14	20	8	18	10	27	65	17
	85	32	35	14	18	10	17	8	26	65	15
	80	32	34	13	18	7	16	7	30	67	16
mean	68.7	31.2	34.2	13.2	18.2	8	17	8	27.2	65.2	16.2
variance	804.6875	0.6875	0.6875	0.6875	1.1875	1.5	0.5	1.5	2.6875	1.1875	0.6875
Total Organic Halogens (ug/L)	85	1800	70	LT 10	180	LT 10	33	50	25	105	55
	90	1700	65	LT 10	230	LT 10	31	54	20	115	46
	85	1830	70	LT 10	230	LT 10	30	38	20	120	50
	80	1840	70	LT 10	180	LT 10	28	40	23	115	54
mean	85	1792	68.7	NA	205	NA	30.5	45.5	22	113	51.2
variance	12.5	3068.75	4.6875	NA	625	NA	3.25	44.75	4.5	29.6875	12.6875

Summary of Indicator Parameters (continued)

	January 19, 1988					February 11, 1988			
	JAX4-4	JAX4-5	JAX4-9	JAX4-10	JAX4-11	JAX4-4	JAX4-5	JAX4-9	JAX4-10
pH (Std. units)	5.44	6.99	6.14	5.62	4.47	5.2	6.5	6.3	5.8
	5.44	6.99	6.19	5.66	4.46	5.2	6.6	6.4	5.9
	5.41	7.00	6.15	5.65	4.46	5.3	6.6	6.4	5.9
	5.45	7.01	6.19	5.67	4.51	5.3	6.6	6.4	6.0
mean	5.44	7.00	6.16	5.65	4.47	5.25	6.57	6.37	5.9
variance	3.0×10^{-4}	1.0×10^{-4}	6.92×10^{-4}	4.67×10^{-4}	5.7×10^{-4}	3.33×10^{-3}	2.5×10^{-3}	2.5×10^{-3}	6.7×10^{-3}
Specific Conductance (micromhos)	106	3100	220	67	126	75	2510	290	62
	108	3100	220	66	125	75	2510	290	62
	109	3100	221	66	124	75	2510	290	62
	109	3110	219	66	123	75	2510	290	62
mean	108	3102	220	66.2	124	75	2510	290	62
variance	2.0	25	6.6×10^{-1}	2.5×10^{-1}	1.66	0	0	0	0
Total Organic C (mg/L)[1/]	38	342	61	20	41	44	75	22	1.3
	36	351	57	24	38	5.4	73	23	1.6
	34	391	64	24	38	5.6	75	22	4.0
	38	328	60	24	42	5.8	73	22	1.5
mean	36.5	353	60.5	23.0	39.7	5.30	74.0	22.2	2.10
variance	3.66	731	8.33	4.0	2.06	0.62	1.33	0.25	1.62
Total Organic Halogens (ug/L)[2/]	30	700	20	20	50	27	165	88	11
	20	900	30	30	40	23	163	82	10
	20	800	20	40	50	25	163	84	10
	30	900	<10	20	60	24	159	81	10
mean	25	825	23.3	27.5	50	24.7	162	83.7	10.2
variance	33.3	9166	33.3	91.6	66	2.91	6.33	9.58	0.25

Summary of Indicator Parameters (continued)

	April 4, 1986				July 10, 1985			
	JAX4-4	JAX4-5	JAX4-9	JAX4-10	JAX4-4	JAX4-5	JAX4-9	JAX4-10
pH (Std. Units)	5.4	6.2	6.2	6.2	5.55	6.7	6.1	6.5
	5.4	6.2	6.2	6.3	5.50	6.7	6.1	6.5
	5.3	6.2	6.2	6.3	5.50	6.8	6.1	6.55
	5.3	6.3	6.2	6.2	5.45	6.7	6.1	6.55
mean	5.35	6.22	6.2	6.25	5.50	6.72	6.1	6.52
variance	2.4×10^{-1}	2.5×10^{-3}	0.0	3.3×10^{-3}	1.7×10^{-3}	2.5×10^{-3}	0	8.0×10^{-4}
Specific Conductance (micromhos)	57	270	279	80	107	1080	298	165
	52	267	279	80	105	1010	290	165
	52	270	275	80	107	1100	290	165
	52	262	277	81	108	1050	298	168
mean	53.2	267	277	80.2	106	1060	294	165
variance	6.25	14.2	3.66	0.25	1.58	1533	21.3	2.25
Total Organic C (mg/L)	5.8	13.0	26.7	4.0	8.5	29.0	17.5	9.01
	6.5	14.3	27.8	5.7	10.0	31.5	18.0	9.01
	3.9	11.6	29.3	3.8	7.0	310	19.0	10.0
	4.9	13.0	30.8	3.1	10.0	31.0	19.0	10.50
mean	5.27	12.9	28.6	4.15	8.87	30.6	18.3	9.63
variance	1.26	1.21	3.19	1.21	2.06	1.22	0.56	0.55
Total Organic Halogens (ug/L)	<50	<50	110	<50	<50	160	90	<50
	<50	<50	60	<50	<50	140	80	<50
	<50	<50	100	<50	<50	180	80	<50
	<50	<50	100	<50	<50	180	80	<50
mean	NA[3/]	NA	92.5	NA	NA	165	82.5	NA
variance	NA	NA	49.1	NA	NA	366	25.0	NA

Summary of Indicator Parameters (continued)

	April 3, 1985				March 28, 1985			
	JAX4-4	JAX4-5	JAX4-9	JAX4-10	JAX4-4	JAX4-5	JAX4-9	JAX4-10
pH	NS[4/]	NS	NS	6.0	NS	NS	NS	6.4
(Std Units)	NS	NS	NS	ND[5/]	NS	NS	NS	ND
	NS	NS	NS	ND	NS	NS	NS	ND
	NS	NS	NS	ND	NS	NS	NS	ND
mean	NS	NS	NS	6.0	NS	NS	NS	6.4
variance	NS	NS	NS	0	NS	NS	NS	0
Specific	NS	NS	NS	210	NS	NS	NS	181
Conductivity	NS	NS	NS	ND	NS	NS	NS	ND
(micromhos per	NS	NS	NS	ND	NS	NS	NS	ND
centimeter)	NS	NS	NS	ND	NS	NS	NS	ND
mean	NS	NS	NS	210	NS	NS	NS	181
variance	NS	NS	NS	0	NS	NS	NS	0
Total Organic	NS	NS	NS	170	NS	NS	NS	ND
Carbon	NS	NS	NS	ND	NS	NS	NS	ND
(mg/L)	NS	NS	NS	ND	NS	NS	NS	ND
mean	NS	NS	NS	170	NS	NS	NS	ND
variance	NS	NS	NS	0	NS	NS	NS	ND
Total Organic	NS	NS	NS	17	NS	NS	NS	5.0
Halogen	NS	NS	NS	ND	NS	NS	NS	ND
(ug/L)	NS	NS	NS	ND	NS	NS	NS	ND
	NS	NS	NS	ND	NS	NS	NS	ND
mean	NS	NS	NS	17	NS	NS	NS	5.0
variance	NS	NS	NS	0	NS	NS	NS	0

Summary of Indicator Parameters (continued)

	February 19, 1985				February 7, 1985			
	JAX4-4	JAX4-5	JAX4-9	JAX4-10	JAX4-4	JAX4-5	JAX4-9	JAX4-10
pH	5.2	6.2	5.8	NS	NS	NS	NS	6.2
(Std Units)	ND	ND	ND	NS	NS	NS	ND	ND
	ND	ND	ND	NS	NS	NS	NS	ND
	ND	ND	ND	NS	NS	NS	NS	ND
mean	5.2	6.2	5.8	NS	NS	NS	NS	6.2
variance	0	0	0	NS	NS	NS	NS	0
Specific	59	251	216	NS	NS	NS	NS	140
Conductivity	ND	ND	ND	NS	NS	NS	NS	ND
(micromhos per	ND	ND	ND	NS	NS	NS	NS	ND
centimeter	ND	ND	ND	NS	NS	NS	NS	ND
mean	59	251	216	NS	NS	NS	NS	140
variance	0	0	0	NS	NS	NS	NS	0
Total Organic	59.2	21.4	18.1	NS	NS	NS	NS	115
Carbon	ND	ND	ND	NS	NS	NS	NS	ND
(ug/L)	ND	ND	ND	NS	NS	NS	NS	ND
	ND	ND	ND	NS	NS	NS	NS	ND
mean	59.2	21.4	18.1	NS	NS	NS	NS	115
variance	0	0	0	NS	NS	NS	NS	0
Total Organic	23	33	14	NS	NS	NS	NS	0.11
Halogen	ND	ND	ND	NS	NS	NS	NS	ND
(ug/L)	ND	ND	ND	NS	NS	NS	NS	ND
	ND	ND	ND	NS	NS	NS	NS	ND
mean	23	33	14	NS	NS	NS	NS	0.11
variance	0	0	0	NS	NS	NS	NS	0

Summary of Indicator Parameters (continued)

	January 31, 1985				October 18, 1984		
	JAX4-4	JAX4-5	JAXS4-9	JAX4-10	JAX4-4	JAX4-5	JAX4-9
pH	NS	NS	NS	2.0	5.5	6.1	6.6
(Standard Units)	NS	NS	NS	ND	ND	ND	6.5
	NS	NS	NS	ND	ND	ND	6.5
	NS	NS	NS	ND	ND	ND	6.5
mean	NS	NS	NS	2.0	5.5	6.1	6.52
variance	NS	NS	NS	0	0	0	$2.5X10^{-3}$
Specific	NS	NS	NS	10,500	70	320	315
Conductance	NS	NS	NS	ND	ND	ND	315
(micromhos per	NS	NS	NS	ND	ND	ND	315
centimeter)	NS	NS	NS	ND	ND	ND	312
mean	NS	NS	NS	10,500	70	320	314
variance	NS	NS	NS	0	0	0	2.25
Total Organic	NS	NS	NS	7.9	3.5	7.3	24.9
Carbon	NS	NS	NS	ND	ND	ND	25.8
(mg/L)	NS	NS	NS	ND	ND	ND	24.4
	NS	NS	NS	ND	ND	ND	24.4
mean	NS	NS	NS	7.9	3.5	7.3	24.8
variance	NS	NS	NS	0	0	0	0.43
Total Organic	NS	NS	NS	9	62	75	10
Halogens	NS	NS	NS	ND	ND	ND	10
(ug/L)	NS	NS	NS	ND	ND	ND	9.2
	NS	NS	NS	ND	ND	ND	8.8
mean	NS	NS	NS	9	62	75	9.5
variance	NS	NS	NS	0	0	0	0.36

Summary of Indicator Parameters (continued)

	August 28, 1984			March 7, 1984		
	JAX4-4	JAX4-5	JAX4-9	JAX4-4	JAX4-5	JAX4-9
pH (Standard Units)	6.4	6.9	7.0	4.9	5.2	5.7
	ND	ND	7.0	4.9	5.2	5.7
	ND	ND	7.0	4.9	5.2	5.7
	ND	ND	6.9	4.9	5.2	5.7
mean	6.4	6.9	6.97	4.9	5.2	5.7
variance	0	0	2.5×10^{-3}	0	0	0
Specific Conductance (micromhos per centimeter)	56	480	330	67	400	364
	ND	ND	340	67	400	364
	ND	ND	340	67	400	370
	ND	ND	335	67	400	370
mean	56	480	336	67	400	367
variance	0	0	22.9	0	0	12
Total Organic Carbon (mg/L)	9.5	29.0	34.8	3.8	4.0	23.3
	ND	ND	31.4	3.8	4.0	23.9
	ND	ND	31.7	3.8	4.0	23.3
	ND	ND	30.5	3.8	4.0	23.1
mean	9.5	29	32.1	3.8	4.0	23.4
variance	0	0	3.5	0	0	0.12
Total Organic Halogens (ug/L)	<50	80	70	ND	ND	ND
	ND	ND	70	ND	ND	ND
	ND	ND	60	ND	ND	ND
	ND	ND	60	ND	ND	ND
mean	NA	80	65.0	NA	NA	NA
variance	NA	0	33.3	NA	NA	NA

1/ Milligrams per Liter
2/ Micrograms per Liter
3/ Not applicable
4/ Not sampled
5/ Not determined