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SEMI ANNUAL CORRECTIVE ACTION AND COMPLIANCE MONITORING PROGRAMS
REPORT FOR SURGE POND OPERATION WASTEWATER TREATMENT FACILITY NAS
PENSACOLA FL
8/1/1988
GERAGHTY AND MILLER INC

SEMI-ANNUAL REPORT
CORRECTIVE-ACTION AND COMPLIANCE-
MONITORING PROGRAMS, SURGE POND
OPERATION WWTP,
NAS PENSACOLA, FLORIDA

SEMI-ANNUAL REPORT
CORRECTIVE-ACTION AND
COMPLIANCE-MONITORING PROGRAMS
SURGE POND OPERATION PERMIT
WASTEWATER TREATMENT FACILITY
NAVAL AIR STATION, PENSACOLA, FLORIDA

FDER IDENTIFICATION NO. 1017F00625
EPA IDENTIFICATION NO. FL9170024567

Prepared for
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Southern Division
Charleston, South Carolina

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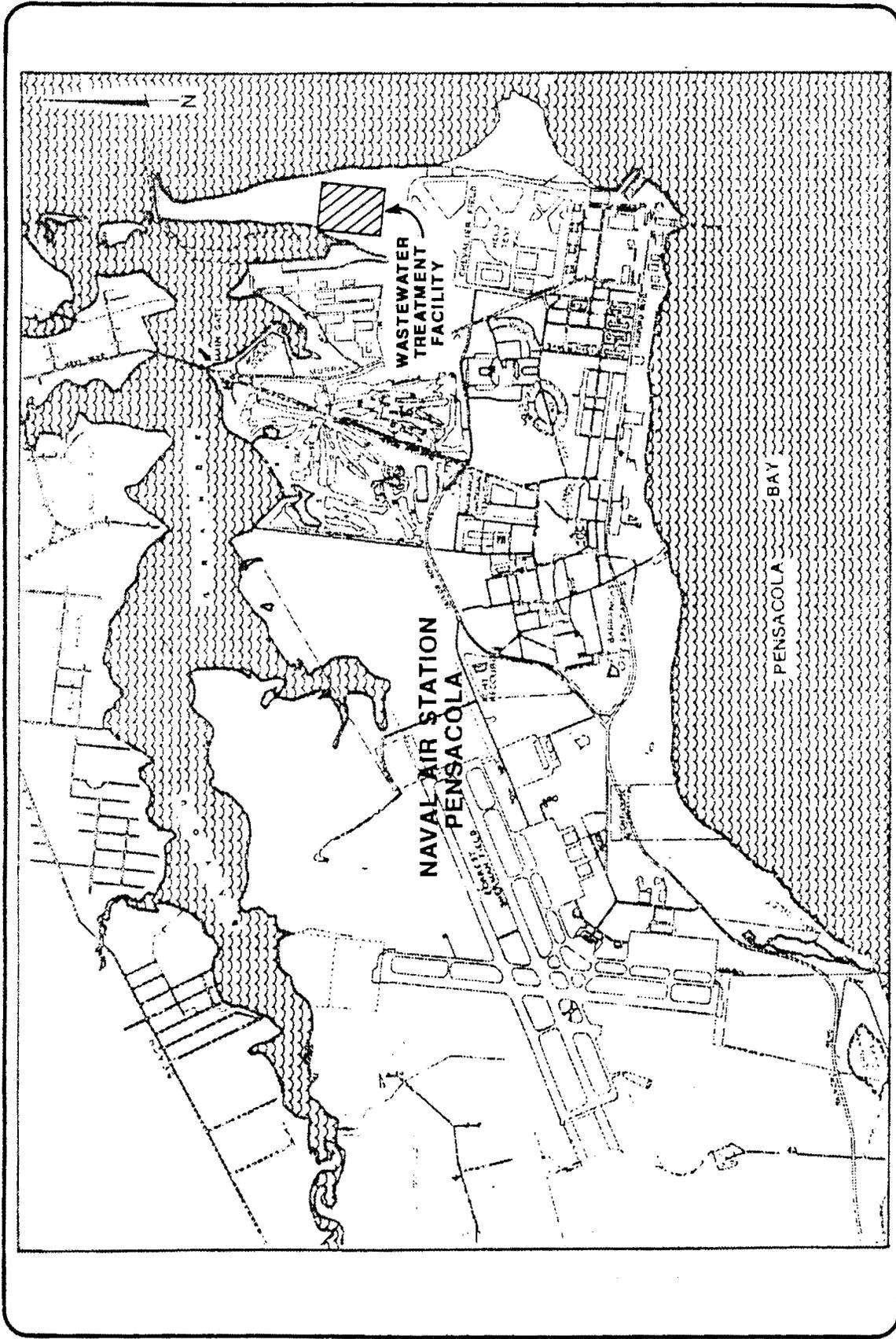
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1.0 INTRODUCTION

On September 29, 1987, the State of Florida Department of Environmental Regulation (FDER) issued RCRA Operation Permit No. H017-127026 to the U.S. Navy Public Works Center at the Naval Air Station (NAS), Pensacola, Florida (Appendix A). The permit was issued under provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule 17-30 for a Hazardous Waste Storage Surface Impoundment (commonly called the surge pond) located at the Wastewater Treatment Plant (WWTP) (Figure 1.1).

As part of the requirements of the Operation Permit, Specific Conditions 32 and 34 state that the permittee shall conduct ground-water monitoring in connection with a Corrective Action Program in accordance with 40 Code of Federal Regulations (CFR) 264.100 and a Compliance Monitoring Program in accordance with 40 CFR 264.99.

In compliance with 40 CFR 264.100(g), this semi-annual report has been prepared to describe the corrective action program in progress at the site and to assess the effectiveness of the program through April 1988. Also contained herein is a summary of the water-quality data from the compliance monitoring program. Laboratory results of water-quality analyses for the first quarter sampling event (November 1987) were submitted to the Northwest District Office, FDER on February 8, 1988; the second quarter's analyses (February 1988) are being submitted in conjunction with this semi-annual report.



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Figure 1.1

Location of Wastewater Treatment Plant,
NAS Pensacola, Florida.

2.0 CORRECTIVE ACTION PROGRAM

2.1 RECOVERY SYSTEM DESCRIPTION

The Corrective Action Program consists of seven recovery wells located primarily downgradient from the surge pond (Figure 2.1) and within the contaminant plume identified in previous studies (Geraghty & Miller, Inc., January 1985; Geraghty & Miller, Inc., December 1985; Geraghty & Miller, Inc., April 1987). The recovery wells and the associated plumbing and centrifugal pumps were installed from October 1986 through February 1987 as a requirement of the preceding Temporary Operation Permit. The recovery-well system is designed to recover contaminated ground water from the shallow aquifer, which is comprised of the uppermost 40 feet (ft) of water-bearing sands underlying the site (Figure 2.2). Since February 1987 the recovered water has been pumped and sprayed into the surge pond for additional treatment.

Table B-1 (Appendix B) lists the depths and screen settings of the recovery wells, and Figures B-1 and B-2 show schematic diagrams of the typical recovery wells. Recovery wells RW-4 through RW-7 were completed below grade, and recovery wells RW-1 through RW-3 were completed above grade due to periodic flooding in that area. The wells are pumped from four pumping stations or pumphouses: pumphouse A services wells RW-1, RW-2, and RW-3; pumphouse B services wells RW-4 and RW-6; pumphouse C services RW-7; and pumphouse D services well RW-5.

2.1.1 Operation and Maintenance

Based on ground-water withdrawals from November 1987 to April 1988 (Table 2.1), the system has averaged a discharge pumping rate of 46 gallons per minute (gpm) or 1,987,000 gallons per month. As shown by the graph of cumulative

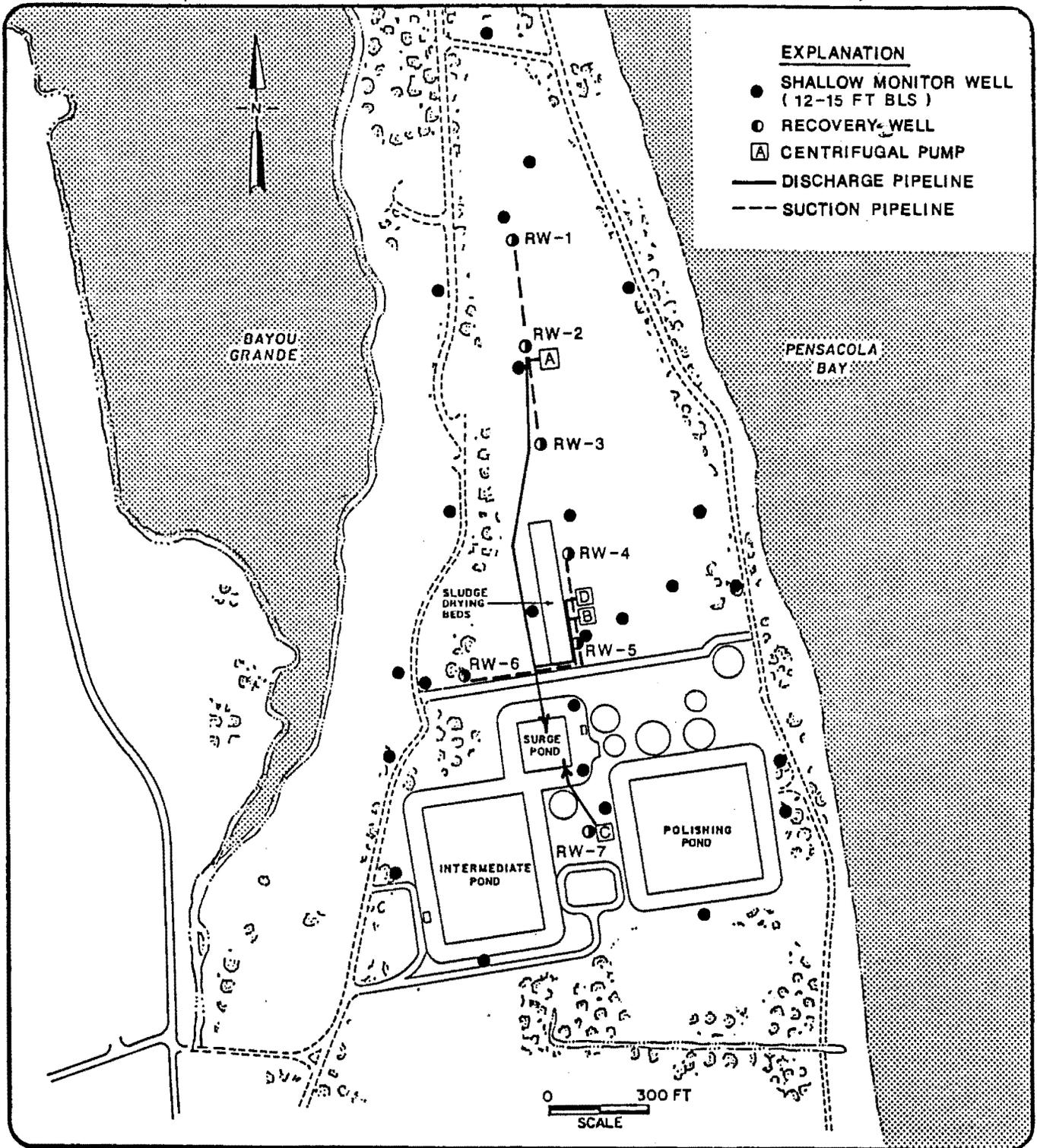


 Figure 2.1
Locations of Recovery Wells
and Surface Impoundments.

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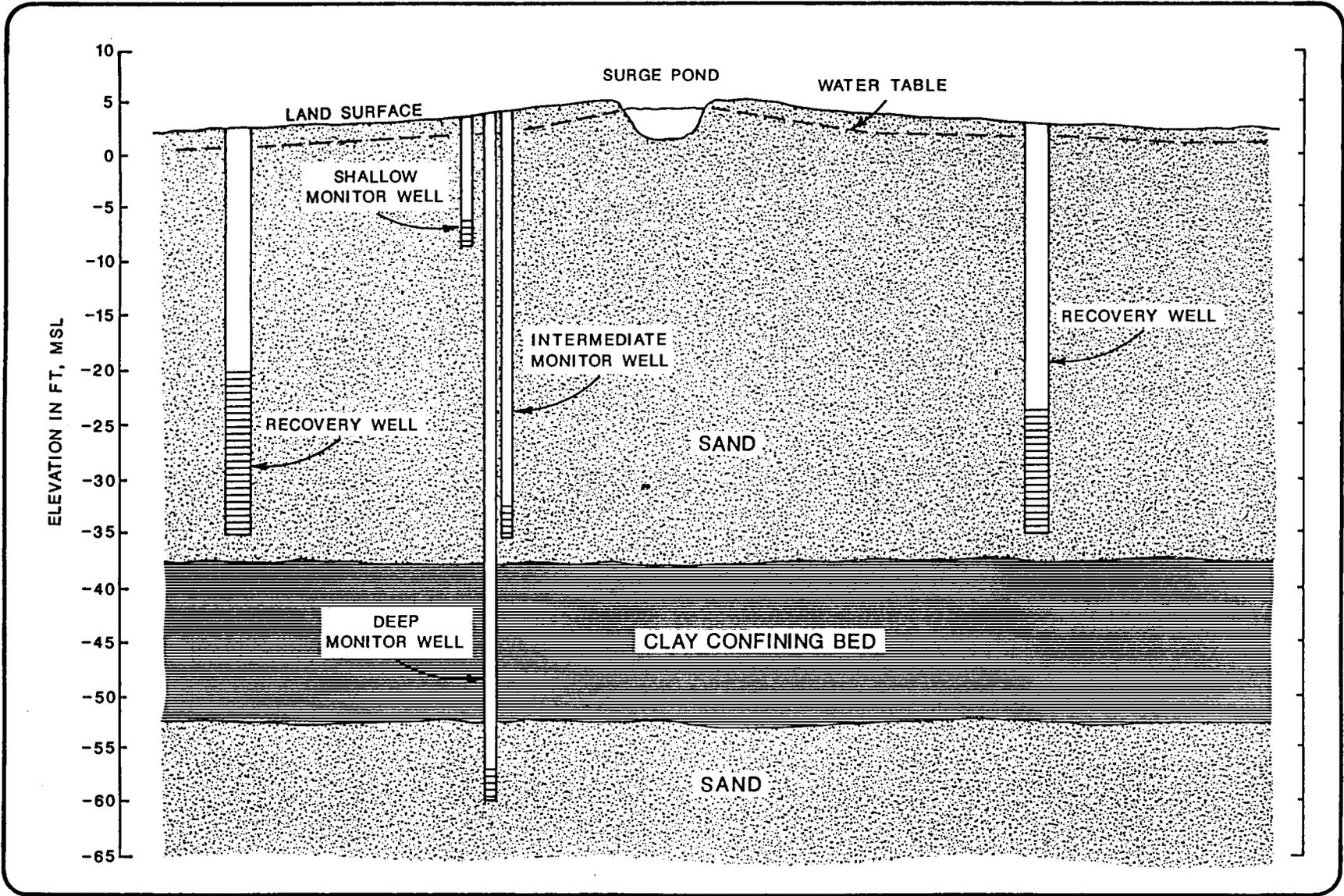


Figure 2.2

Generalized Cross Section Showing Relative Depths of Monitor Wells and Recovery Wells.

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Table 2.1 Summary of Ground-Water Withdrawals
from Recovery Well System

MONTH/YEAR	GALLONS PUMPED FROM PUMPHOUSE				TOTAL GALLONS PUMPED	CUMULATIVE PUMPAGE (GALS)
	A	B	C	D		
FEB 87	1,159,200	861,120	331,200		2,351,520	2,351,520
MAR 87	1,447,900	367,580	309,250		2,124,730	4,476,250
APR 87	984,500	571,000	294,050		1,849,550	6,325,800
MAY 87	1,187,700	509,700	285,090		1,982,490	8,308,290
JUN 87	1,339,500	428,600	305,150		2,073,250	10,381,540
JUL 87	1,005,800	289,000	223,380		1,518,180	11,899,720
AUG 87	1,313,700	635,000	304,750		2,253,450	14,153,170
SEP 87	979,760	495,300	226,922		1,701,982	15,855,152
OCT 87	872,020	501,800	90,118	75,170	1,539,108	17,394,260
NOV 87	965,320	532,800	289,320	26,860	1,814,300	19,208,560
DEC 87	1,092,400	756,660	306,930	10,790	2,166,780	21,375,340
JAN 88	1,162,080	751,860	176,340	111,850	2,202,130	23,577,470
FEB 88	884,700	655,020	194,050	109,350	1,843,120	25,420,590
MAR 88	1,162,920	709,060	72,530	224,830	2,169,340	27,589,930
APR 88	889,500	503,600	130,780	163,950	1,687,830	29,277,760

- A = Combined discharge from Recovery Wells RW-1, RW-2, and RW-3
 B = Combined discharge from Recovery Wells RW-4, RW-5, and RW-6;
 beginning October 1987 combined discharge from RW-4 and RW-6
 C = Discharge from Recovery Well RW-7
 D = Discharge from Recovery Well RW-5

ground-water withdrawals in Figure 2.3, the combined recovery system has withdrawn about 29 million gallons of contaminated water through April 1988.

The recovery system is inspected weekly by a subcontractor to monitor its performance and record operational data including vacuum and discharge pressures, flow rates, and total ground-water withdrawals. Preventive maintenance and repairs are performed on an as-needed basis. A dual-pump system (primary and backup) is employed at each pumphouse. To maximize pump life and to assist in the continuous operation of the recovery system, the operation of the pumps at each house is alternated on a regular basis. If needed, the flow rates of individual wells are regulated by adjustment of the globe valves located at each well head.

2.2 CORRECTIVE-ACTION MONITORING

As stipulated by the permit, the wells shown in Figure 2.4 constitute the "core ground-water monitoring system." At four locations, there were three clustered wells designated as shallow (about 15 ft below land surface [bls] or -10 ft mean sea level [msl]), intermediate (about 40 ft bls or -35 ft msl), and deep (about 65 ft bls or -60 ft msl). The well clusters allow ground-water monitoring at two zones above the uppermost confining layer, which is about 40 to 55 ft bls (-35 to -50 ft msl), and in a zone immediately underlying the confining layer (Figure 2.2). Construction details of the monitor wells installed during the various phases of investigations at the WWTP are listed in Table B-2 (Appendix B).

Upon completion of the second quarterly sampling event, corrective action monitor wells DG-2, GM-74, and GM-75 and compliance monitor wells DG-1, DG-6, and GM-75 (dual purpose) were properly plugged and abandoned to facilitate the construction of a new surge tank. This was accomplished on February 23, 1988, in accordance with the regulations of the

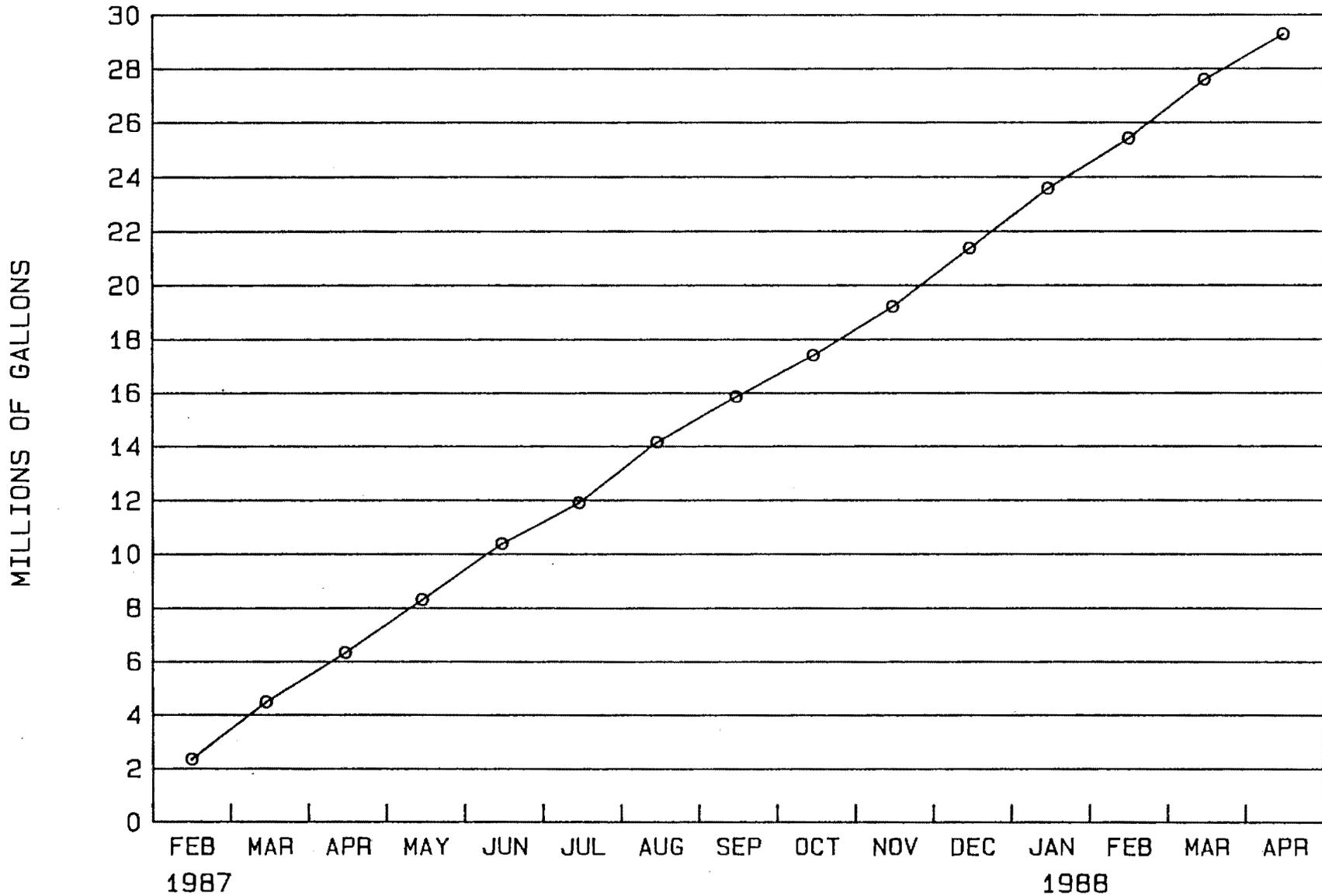


Figure 2.3 Cumulative Monthly Ground-Water Withdrawals from Recovery Well System

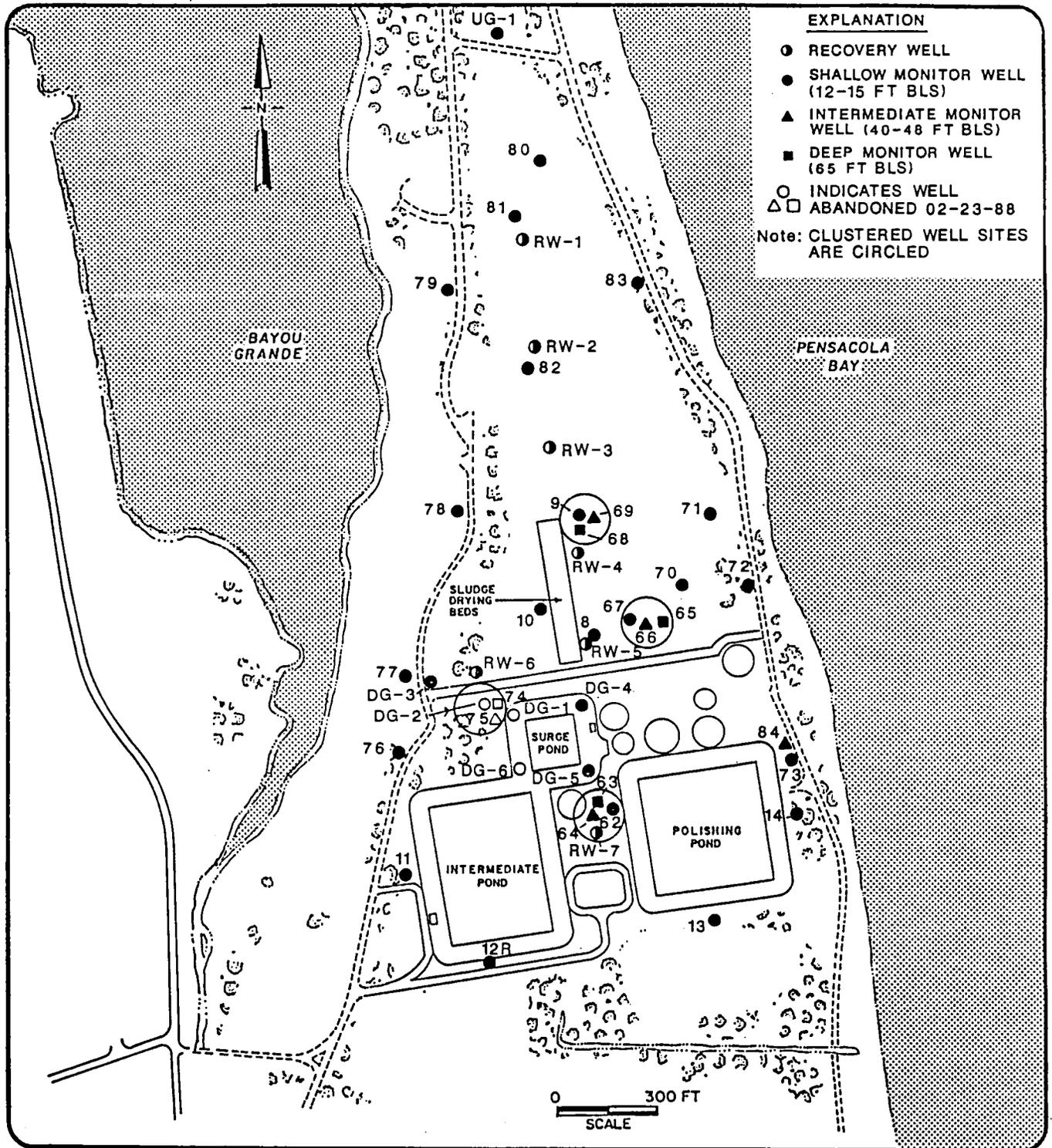


Figure 2.4

Locations of Monitor Wells and Recovery Wells.

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Northwest Florida Water Management District. When construction activities are completed, a new intermediate and deep well can be installed in the vicinity of shallow monitor wells DG-3 and GM-77, if deemed necessary (correspondence dated March 10, 1988, from James Malone, Southern Division Naval Facilities Engineering Command, Charleston, South Carolina to Bill Kellenberger, FDER, Pensacola, Florida).

2.2.1 Water Levels

Monthly water-level elevations measured in all monitor wells and recovery wells are compiled in Appendix C. Based on water levels measured in the shallow monitor wells during February 3 and 4, 1987, Figure 2.5 illustrates the configuration of the water-table surface under static (non-pumping) conditions. As determined in previous investigations, a ground-water divide extends along the longitudinal axis of the peninsula and ground water flows north, east, and west toward Pensacola Bay and Bayou Grande.

Figure 2.6 shows the configuration of the water-table surface on April 25, 1988, as a result of pumping the recovery-well system. The greatest effects (drawdown) on the water table are occurring downgradient from the surface impoundments and in the area surrounding recovery wells RW-1 through RW-3 from which the majority of the water is being pumped. When compared to Figure 2.5, distortion of the original static water-table surface is evident in the upgradient area in the vicinity of the surface impoundments.

2.2.2 Ground-Water Sampling and Analyses

In accordance with the permit, Table 2.2 is the quarterly monitoring schedule for selected monitor wells and recovery wells. The first two quarterly sampling events were conducted at the beginning of December 1987 and at the end of

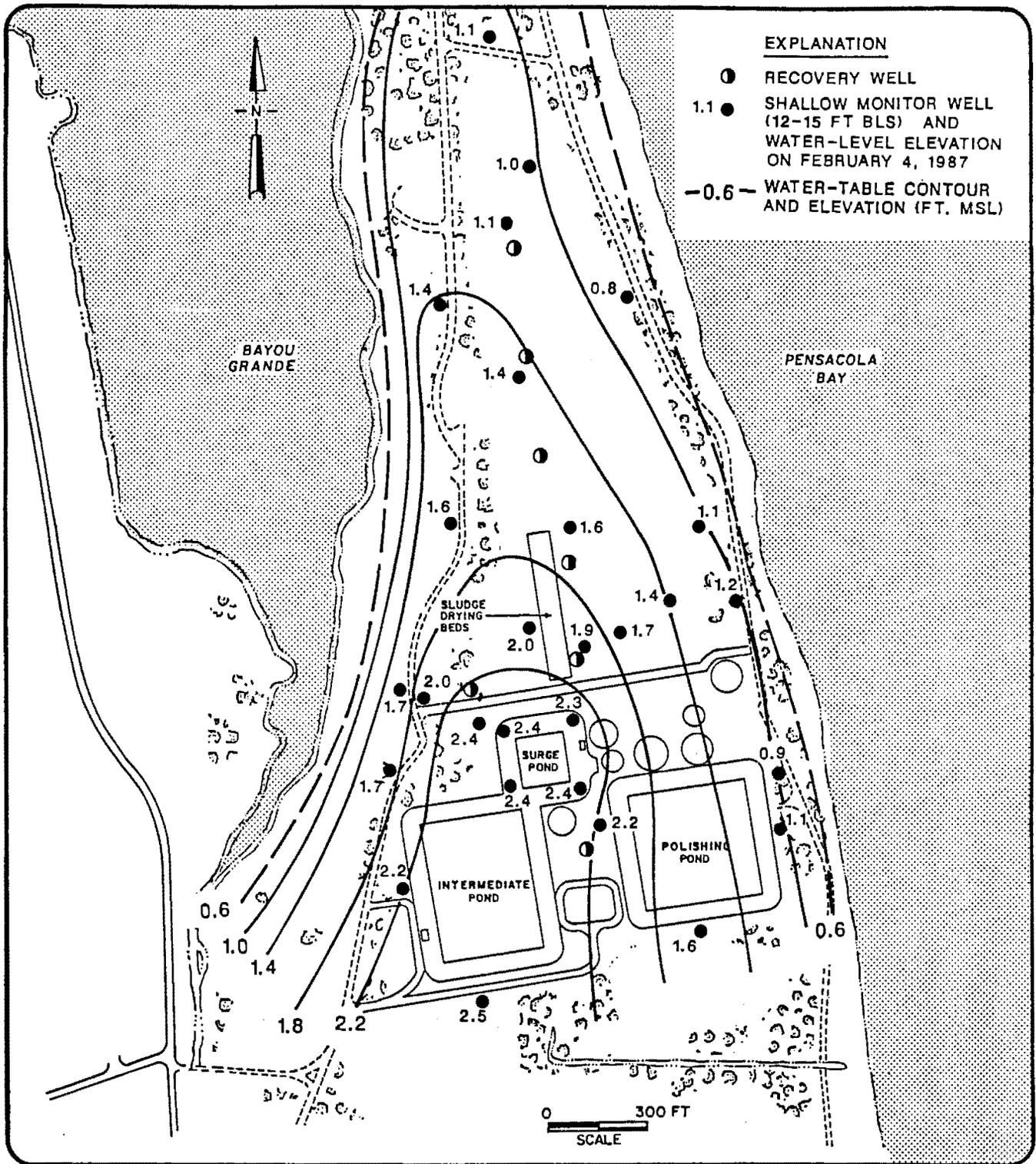
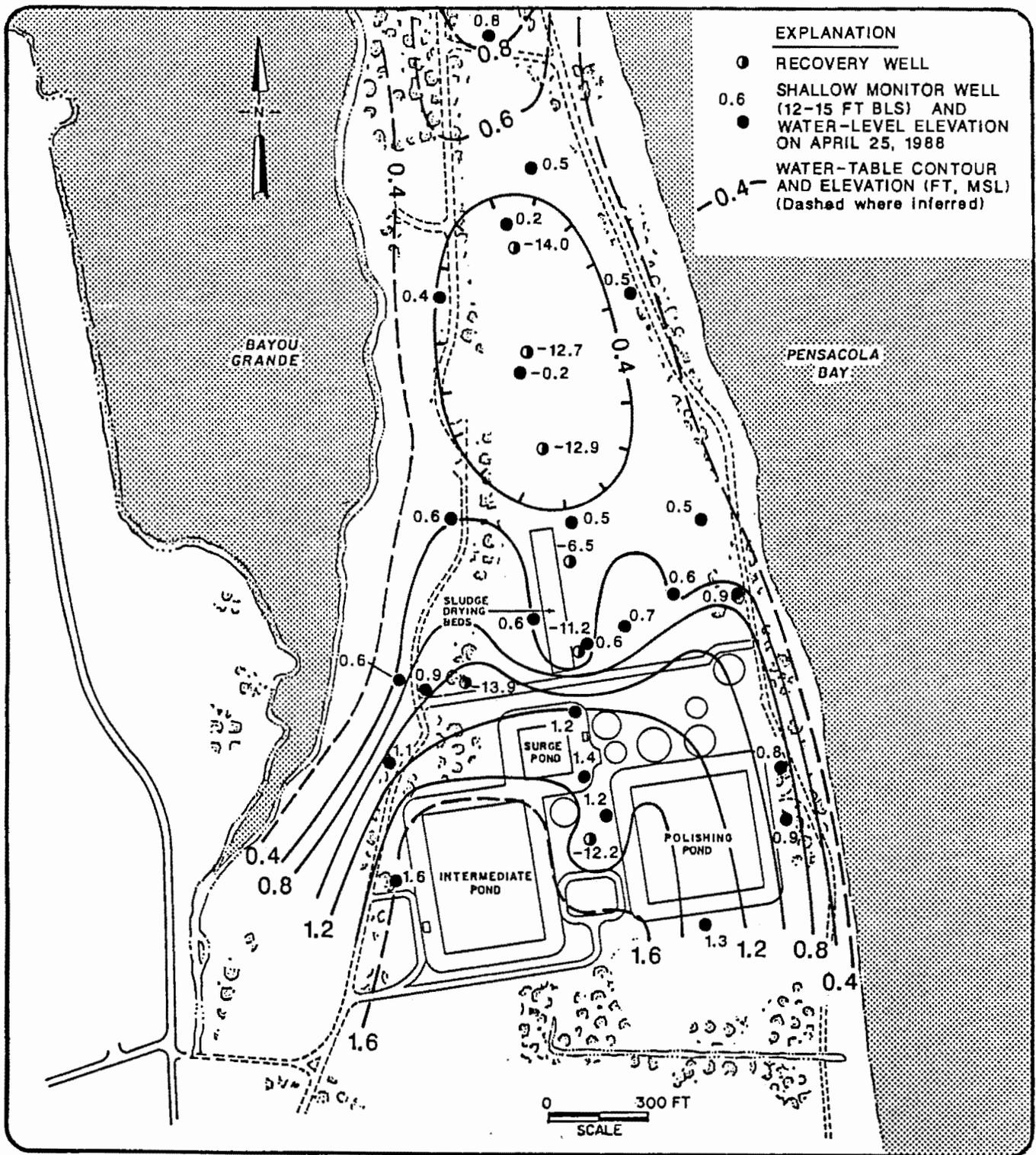


Figure 2.5

Water-Table Contour Map,
February 1987 (Non-Pumping
Condition).

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 **Figure 2.6**
Water-Table Contour Map,
April 1988 (Pumping Condition).

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Table 2.2 NAS Pensacola WWTP Sampling and Analysis Schedule

PARAMETER	WELL I.D.	11/87 a/	12/87	01/88	02/88 b/	03/88	04/88	05/88	06/88	07/88	08/88	09/88	10/88	11/88
CORRECTIVE ACTION MONITORING 40 CFR, 264.100														
pH, SPECIFIC CONDUCTANCE, SODIUM, CHLORIDE	UC-1 (S)	X			X			X			X			
	GM-9 (S)	X			X			X			X			
	GM-63 (D)	X			X			X			X			
	GM-64 (I)	X			X			X			X			
	GM-65 (D)	X			X			X			X			
	GM-66 (I)	X			X			X			X			
	GM-67 (S)	X			X			X			X			
	GM-68 (D)	X			X			X			X			
	GM-69 (I)	X			X			X			X			
	GM-71 (S)	X			X			X			X			
	GM-72 (S)	X			X			X			X			
	GM-74 (D)	X			X			[X]			[X]			
	GM-76 (S)	X			X			X			X			
	GM-77 (S)	X			X			X			X			
	GM-78 (S)	X			X			X			X			
GM-79 (S)	X			X			X			X				
GM-83 (S)	X			X			X			X				
COMBINED DISCHARGE RW-1 THROUGH RW-6		X			X			X			X			
VOCs (EPA 624) & BASE/NEUTRAL EXTRACTABLES (EPA 625)	DG-2 (S)	X			X			[X]			[X]			
	GM-9 (S)	X			X			X			X			
	GM-62 (S)	X			X			X			X			
	GM-63 (D)	X			X			X			X			
	GM-64 (I)	X			X			X			X			
	GM-65 (D)	X			X			X			X			
	GM-66 (I)	X			X			X			X			
	GM-67 (S)	X			X			X			X			
	GM-68 (D)	X			X			X			X			
	GM-69 (I)	X			X			X			X			
	GM-74 (D)	X			X			[X]			[X]			
	GM-75 (I)	X			X			[X]			[X]			
GM-84 (I)	X			X			X			X				
WATER-LEVEL MEASUREMENTS	ALL WELLS	X	X	X	X	X	X	X	X	X	X	X	X	
TOTAL DEPTH	ALL WELLS	X												
COMPLIANCE MONITORING 40 CFR, 264.99														
APPENDIX IX	DG-4 (S)	X					X							
	ONE FDER APPROVED WELL													X
pH, SPECIFIC CONDUCTANCE, AND SPECIFIED CONSTITUENTS IN SECTION 3AC OF RCRA PERMIT	UG-1 (S)				X			X			X			X
	DG-1 (S)				X			[X]			[X]			[X]
	DG-4 (S)				X			X			X			X
	DG-5 (S)				X			X			X			X
	DG-6 (S)				X			[X]			[X]			[X]
	GM-75 (I)				X			[X]			[X]			[X]

(S) = SHALLOW MONITOR WELL, ABOUT 13 FT DEEP
(I) = INTERMEDIATE MONITOR WELL, ABOUT 40 FT DEEP
(D) = DEEP MONITOR WELL, ABOUT 65 FT DEEP
[X] = NOT SAMPLED, WELL ABANDONED 23-FEB-88 DUE TO CONSTRUCTION OF NEW SURGE TANK
a/ = 30-NOV-87 THROUGH 03-DEC-87
b/ = 22-FEB-88 THROUGH 24-FEB-88

February 1988. During each event, 17 ground-water samples from monitor wells and the combined discharge from recovery wells RW-1 through RW-6 were analyzed for pH, specific conductance, sodium, and chloride. Thirteen monitor wells were sampled and analyzed for volatile organic compounds (VOCs) according to EPA method 624 and base/neutral extractable organics (BNEs) according to EPA method 625. In addition to the quarterly samples, Quality Assurance/Quality Control (QA/QC) samples were collected and included field replicates, sampler rinsates, field blanks, and trip blanks. All analyses except pH and specific conductance were performed by Martin Marietta Analytical Chemistry Laboratory, Oak Ridge, Tennessee.

On November 30, 1987, total depths of the wells were measured to allow accurate calculation of the well volumes to be evacuated from each well before sampling. Water levels were measured and approximately four well volumes of water were removed from each monitor well before sample collection. Ground water was evacuated using a peristaltic pump with a Teflon hose except for well GM-84, where it was necessary to use a Teflon bailer to purge the well.

The ground-water samples were collected with a Teflon bailer with a Teflon drop line for analyses of organic compounds and with a peristaltic pump with Teflon suction hose for inorganic compounds. The pH, temperature, and specific conductance were determined in the field at the time of sampling. Sample preservation included storage on ice for VOCs, base/neutral extractables, and chloride; and nitric acid and storage on ice for sodium. Before sampling each well, the sampling equipment was thoroughly decontaminated with isopropyl alcohol, MICRO laboratory cleaning soap, and multiple rinses with deionized water. Samples were shipped daily via overnight express to the laboratory for analyses. Proper chain-of-custody procedures were followed.

2.2.3 Water-Quality Results

Water-quality data collected during the first and second quarterly sampling events are summarized in Appendix D, including pH, specific conductance, and the results of inorganic and organic compound analyses. For comparison, results of organic compound analyses and pH and specific conductance measurements obtained under previous investigations also are presented.

2.2.3.1 Specific Conductance, Sodium, Chloride, and pH

Measurements of specific conductance, sodium, and chloride in the ground water helps monitor any significant movement of sea water into the shallow ground water due to operation of the recovery-well system. This is important because water with a high concentration of dissolved solids would be harmful to the biological treatment processes that are used at the treatment plant. Since the start up of the system in February 1987, specific conductance values have not changed significantly in corrective-action wells, indicating that operation of the recovery system has not induced salt-water intrusion.

During the first two quarters, the following specific conductance values were measured in ground-water samples:

- o shallow monitor wells were generally less than 500 micromhos per centimeter (umhos/cm);
- o intermediate monitor wells ranged from about 1,000 to 8,000 umhos/cm;
- o deep monitor wells were less than 625 umhos/cm, except for well GM-63 (1,430 and 3,100 umhos/cm).

The higher values of specific conductance in the intermediate depth zone are the natural-water chemistry and likely due to minor residual sea water, whereas the lower values measured in the shallow zone are due to recharge from rainfall. Correspondingly, concentrations of chloride and sodium also are higher in the intermediate than the shallow depth zone of the aquifer.

Generally, ground water in the various depth wells is naturally slightly acidic, with pH values of 5 to 6. Exceptions have been observed in recovery well RW-5 and intermediate depth well GM-66 with pH values at about 2.2 and 2.7, respectively. The possible source of these low pH values is currently under investigation.

2.2.3.2 Organic Compounds

With regard to the first two quarterly analyses for VOCs and BNEs, the following observations are noted:

- o Except for the following exceptions and explanations, no VOCs or BNEs were detected in the four deep monitor wells (GM-63, GM-65, GM-68, and GM-74). In December 1987, well GM-65 was reported to contain 50 micrograms per liter (ug/L) of trichloroethene (TCE). However, a field replicate (Replicate A) collected at well GM-65 reportedly did not contain TCE or any other VOC. In February 1988, well GM-65 reportedly did not contain TCE but contained 25 ug/L acetone. However, the laboratory blank associated with the sample from well GM-65 contained 14 ug/L acetone. According to Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses (United States

Environmental Protection Agency, Office of Emergency and Remedial Response), no positive result should have been reported unless the concentration of acetone in the sample from GM-65 exceeded 10 times the amount in the associated blank. Consequently, the 25 ug/L acetone in well GM-65 in February 1988 is, at best, an estimated value and is likely a laboratory contaminant. Well GM-74 also was reported to contain 22 ug/L acetone in February 1988. The laboratory blank designated by the laboratory as associated with GM-74 did not contain acetone but was not analyzed on the same day as GM-74. Because the other three laboratory blanks run and reported all contained acetone above the quantitation limit, the acetone result for well GM-74 also should be considered suspect.

- o Concentrations of VOCs and BNEs in ground water from the shallow monitor wells generally have decreased; furthermore, analyses of water samples from shallow monitor wells GM-9, GM-62, and GM-67 have not shown concentrations of VOCs and/or BNEs above the detection limit or above quantitation levels.
- o The highest concentrations of VOCs occurred in the intermediate monitor wells, particularly GM-66 and GM-69. The predominant compounds included trichlorethene, chlorobenzenes, and 1,1-dichloroethane. Declines in concentrations have been observed since pumping started in February 1987 as illustrated in Figure 2.7.

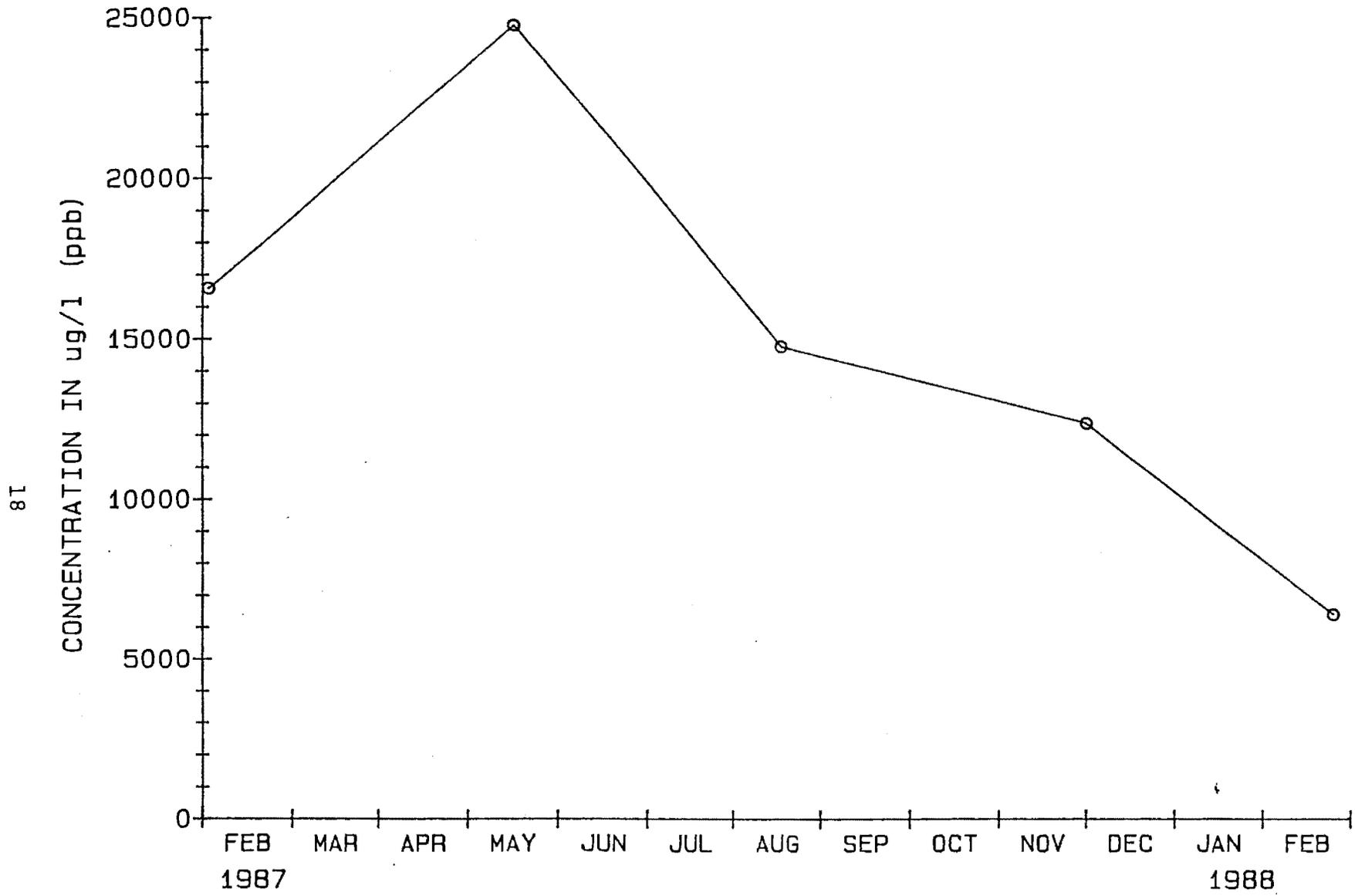
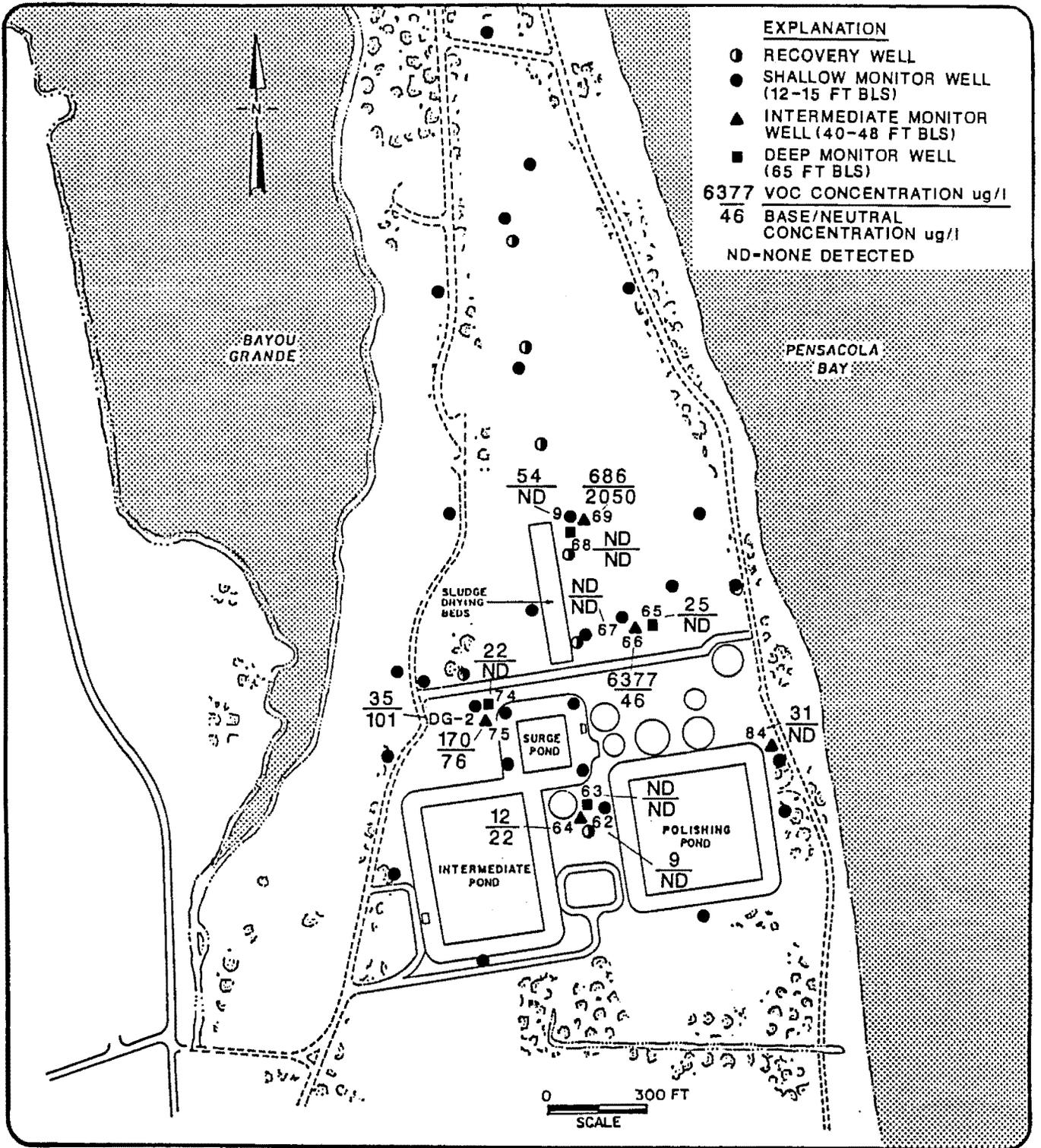


Figure 2.7 Concentrations of Total VOCs in Monitor Well GM-66.

Concentrations of BNEs in the intermediate wells were relatively low, except for well GM-69 which had a total concentration of about 2,000 ug/L dichlorobenzene isomers. Figure 2.8 depicts the total concentrations of VOCs and BNEs from the February sampling event in all corrective-action monitor wells.



 **Figure 2.8**
 Concentrations of Total VOCs and BNEs in Corrective-Action Monitor Wells, February 1988.

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3.0 GROUND-WATER COMPLIANCE MONITORING PROGRAM

3.1 GROUND-WATER SAMPLING AND ANALYSES

According to permit condition 34b, monitor wells UG-1, DG-1, DG-4, DG-5, DG-6 and GM-75 were designated as the point of compliance (POC) wells. Permit condition 34.d mandated sampling POC well DG-4 for Appendix IX constituents (or FDER approved equivalent) to establish those constituents to be analyzed for in the POC wells during future quarterly sampling events. On December 3, 1987, water samples were collected from well DG-4 for analyses of an abbreviated list of Appendix IX constituents utilizing EPA Contract Laboratory Protocol (CLP). Sampling procedures followed are those described in section 2.2.2 of this document.

3.2 WATER-QUALITY RESULTS

Water-quality data pertaining to the compliance monitoring program are summarized in the tables contained in Appendix E and include pH and specific conductance values and concentrations of those inorganic and organic constituents measured above the analytical detection limits. For comparison, analytical results obtained during previous investigations also are included.

The following observations regarding the chemical data are provided:

- o Of the six wells sampled, POC wells DG-1, DG-4, DG-5, and GM-75 contained manganese concentrations greater than the ground-water protection standard of 50 ug/L.

- o Samples from wells DG-1, DG-4, DG-5, and GM-75 contained VOCs at concentrations exceeding the analytical detection limits.
- o Samples from wells UG-1, DG-1, DG-4, DG-5, and GM-75 contained BNEs at concentrations exceeding the analytical detection limits.
- o Only well DG-4 contained acid extractable organic compounds (phenolics) at concentrations above the analytical detection limits.

The results of the abbreviated Appendix IX analyses were submitted to the FDER in the first quarterly report (DER Form 17-1.216[2]) on February 8, 1988. The constituents analyzed for can be grouped into several categories: inorganic, volatile organic, acid extractable organics, base/neutral extractable organics, herbicides, and PCBs/pesticides. The following summarizes the results of these analyses:

- o Of the 26 inorganic parameters analyzed for, only manganese exceeded the ground-water protection standard listed in Specific Condition 34(c) of the permit.
- o No herbicides, pesticides, or PCBs were detected above quantitation limits. In the case of pesticides and PCBs, the data must be considered estimated due to matrix interferences. The results are valid but may be used only for qualitative purposes.
- o Fourteen volatile organic compounds were detected in the analyses; two ethane compounds

were tentatively identified and quantified with estimated concentrations.

- o Eleven semi-volatile organic compounds (acid and base/neutral extractable compounds) were detected in the analyses; another 14 compounds were tentatively identified and quantified with estimated concentrations.

Based on the results of these analyses, the first quarterly samples were collected from the POC wells on February 22 and 23, 1988, and were analyzed for: volatile organic compounds (EPA CLP method 624); base/neutral acid extractable organics (EPA CLP method 625); and manganese (EPA method 6010). QA/QC samples included replicates, field blanks, and trip blanks for all parameters.

4.0 SUMMARY

Hydraulically, the current operation of the recovery-well system appears to be effectively capturing and recovering contaminated ground water from the plume and abating further migration from the upgradient source. Continued operation and ultimate closure of the surge pond under RCRA will enhance the clean-up efforts in the future. Water-quality data obtained from the corrective-action monitor wells thus far have already exhibited declines of organic contaminant concentrations.

During the sampling of the POC monitor wells in February 1988, the FDER notified the Navy of their disapproval of the abbreviated Appendix IX analysis. Consequently, well DG-4 was resampled on April 29, 1988, for a complete list of Appendix IX constituents (letter from James Malone to Bill Kellenberger, Appendix F). The results of these analyses were reported verbally to the FDER and were used to determine the appropriate list of constituents to be analyzed for in the POC samples collected in May 1988. These samples are currently being analyzed by the laboratory and will be incorporated into the next semi-annual report.

5.0 REFERENCES

Geraghty & Miller, Inc., January 1985, Water-Quality Assessment Program at the Wastewater-Treatment Plant, NAS Pensacola, Florida (Phase I).

Geraghty & Miller, Inc., December 1985, Water-Quality Assessment Program at the Wastewater-Treatment Plant, NAS Pensacola, Florida (Phase II).

Geraghty & Miller, Inc., April 1987, Quarterly Report, Corrective Action Program, Wastewater Treatment Plant, NAS Pensacola, Florida.

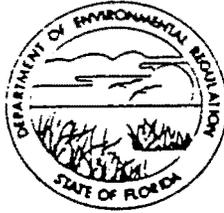
APPENDIX A

Operation Permit No. H017-127026
I.D. No. 1017F00625 (FL9170024567)



STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

NORTHWEST DISTRICT
160 GOVERNMENTAL CENTER
PENSACOLA, FLORIDA 32501-5794



BOB MARTINEZ
GOVERNOR
DALE TWACHTMANN
SECRETARY
ROBERT V. KRIEDEL
DISTRICT MANAGER

PERMITTEE:

U.S. Navy Public Works
Center

I.D. Number: 1017F00625 (FL9170024567)
Permit/Certification Number: H017-127026
Date of Issue: SEP 26 1987
Expiration Date: November 1, 1988
County: Escambia
Latitude/Longitude: 30°21'050"/087°15'52"
Project: Storage Surface Impoundment

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule 17-30. The above named applicant, hereinafter called Permittee, is hereby authorized to perform the work or operate the facility shown of 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 a Hazardous Waste Storage Surface Impoundment hereinafter referred to as the Surge Pond having a capacity of 1,154,725 gallons.

The following facility submittals were used in the preparation of this document and are considered part hereof:

The State of Florida Hazardous Waste Permit application DER FORM 17-1.201(3) for a Temporary Operation Permit dated April 1, 1983.

Temporary Operation Permit HTL7-68087 issued on January 7, 1985.

The State of Florida Hazardous Waste Operation Permit application (DER FORM 17-1.201(3) received November 7, 1986.

The additional information received from the Permittee on March 23, 1987.

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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 therefor 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.



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

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 prescribed by Sections 403.73 and 403.111, Florida Statutes.

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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 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance 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. The permittee shall comply with the following monitoring and record keeping requirements:

- a. Upon request, the permittee shall furnish all records and plans 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 measurement;
 - the person responsible for performing the sampling or measurement;
 - 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.



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14. When requested by the Department, the permittee shall within a reasonable 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.

15. In the case of a hazardous waste facility permit, the following permit conditions shall 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 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 non-compliance 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 provided within 24 hours shall contain the name, address, I.D. number and telephone number of the facility 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:



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- (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 of 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 submitted 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.

16. 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

SPECIFIC CONDITIONS:

17. This permit authorizes the storage of the wastes in the surge pond specified in Section C of the application which are F006, F019, F007, and D002 for the operating conditions specified in Section B of the application.

18. The permittee shall operate and maintain the surface impoundment to prevent overtopping resulting from normal and abnormal operating conditions and the requirements of 40 CFR 264.221(f)

19. The permittee shall inspect the surface impoundment, dikes, liners, and other associated structural and monitoring equipment in accordance with the schedule approved in Section D and Appendix D-1, and Section F of the application. Dikes shall be inspected within 24 hours after a major storm (ten year storm event). Corrective action shall be taken if malfunction or deterioration of the unit is noted. 40 CFR 264.226

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D007*



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20. If the surface impoundment must be removed from service to comply with the requirements of 40 CFR 264.227(a), the permittee must notify the Department in writing within seven days after detection of the problem. The permittee must recertify the structural stability of the impoundment in accordance with 40 CFR 264.226(c). The permittee shall not restore the surface impoundment to service without the Department's written approval. If the surface impoundment is not repaired to the Department's satisfaction, the permittee shall apply for a closure permit. 40 CFR 264.226(b) and 40 CFR 264.227.

21. Prior to acceptance of new hazardous wastes, the permittee shall submit to the Department, for approval, an analysis of the proposed new waste stream and a request for a permit modification. This analysis must also be incorporated in the general waste analysis plan and retained on-site. If any hazardous wastes are to be accepted from off-site, the facility must comply with the manifest requirements of 40 CFR 264.70, as well as the waste analysis requirements of 40 CFR 264.13 prior to treatment or storage of such wastes in the regulated unit. 40 CFR 264.13

22. The permittee shall inspect the facility operating, emergency and safety equipment in accordance with the schedule approved in Section F of the above 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 at the facility. 40 CFR 264.15

23. Facility personnel must successfully complete the approved training program indicated in Section H of the application within six months after the date of their employment. 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 permittee shall ensure that facility personnel take part in an annual review of training. 40 CFR 264.16.

24. The permittee shall follow the emergency procedures specified in 264.56 and approved in Section G of the application. 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). 40 CFR 264.56.

25. 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.

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26. The permittee shall follow the procedures described in the waste analysis plan described in Section C of the permit application. (40 CFR 264.13).

27. The permittee shall comply with the security provisions of 40 CFR 264.14(b) and (c), as described in Section F of the application. The facility shall either maintain a 24-hour surveillance at the unit, or ensure that access to the site is denied during periods when surveillance is not maintained.

28. 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 G, of the permit application, as required by 40 CFR 264.32.
- b. The permittee shall test and maintain the equipment specified in the contingency plan 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.

29. 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 G 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).



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- b. The permittee shall comply with the requirements of 40 CFR 264.53.
 - c. The contingency plan shown in Section G of the application must be amended and distributed to the appropriate agencies if any criteria in 40 CFR 264.54 are met. Amendments to the plan must be approved in writing by the Department. 40 CFR 264.54.
 - d. The permittee shall comply with the requirements of 40 CFR 264.55, concerning the emergency coordinator.
30. The permittee shall maintain a written operating record at the facility which includes:
- the description and quantity of each hazardous waste received
 - 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.

31. The permittee shall continue to operate the corrective action system described in Section E of the Operation Permit Application dated November 4, 1986 as amended, modified, and approved by the Department in accordance with Subpart 264.100 to remove any hazardous constituents under Subpart 264.93 exceeding concentration limits under Subpart 264.94 in groundwater between the compliance point under Subpart 264.95 and the downgradient facility property boundary.

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32. The permittee shall conduct the Corrective Action Program in accordance with the following:

- a. The wells delineated on Figure E-14 in the Part B application shall constitute the core groundwater monitoring system (GWMS) to comply with §264.100(d) for the purpose of assessing the effectiveness of the corrective action at the facility. In addition, intermediate well GM-84, and the wells installed as part of the recovery system for corrective action shall also be considered GWMS wells. Any additional wells installed to assess the extent of the contaminant plume, or as part of the corrective action system shall be included in the GWMS.
- b. The permittee shall continue corrective action per §264.100(f) to remove hazardous constituents identified in Condition 34c exceeding the groundwater protection standard limits between the Point of Compliance (POC) and the downgradient facility property boundary. The compliance period as defined under §264.96 will continue until the groundwater protection standards at all POC wells have not been exceeded for three consecutive years. The owner or operator shall ensure that the corrective action program will function as designed and planned in the corrective action plan, or subsequent plan modification proposed by the permittee and approved by the Department. If the permittee or Department determines that the corrective action plan no longer satisfies the requirements of 40 CFR 264.100, the permittee must, within 90 days, submit an application to the Department for a permit modification to make any appropriate change to the program. [40 CFR 264.100(1)] Any measures taken to meet these conditions will be reported in the semi-annual report.
- c. The following wells, delineated on Figure E-14 in the Part B application as groundwater monitoring system (GWMS) wells, shall be monitored for the indicator parameters of pH, specific conductance, sodium, and chloride on a quarterly basis:

Shallow Wells

GM-9, GM-67, GM-71, GM-72, GM-76, GM-77, GM-78, GM-79, GM-83, UG-1.

Intermediate Wells

GM-66, GM-69, GM-64

Deep Wells

GM-65, GM-68, GM-63, GM-74

Recovery Wells

Combined discharge RW1 through RW6

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- d. In addition to the monitoring required in Condition 32c. above, the following wells shall be monitored quarterly for volatile organic compounds (EPA Method 624) and base neutral extractables (EPA Method 625):

Shallow Wells

GM-9, GM-62, GM-67, DG-2

Intermediate Wells

GM-64, GM-66, GM-69, GM-75, GM-84

Deep Wells

GM-63, GM-65, GM-68, GM-74

- e. Should hazardous constituents be detected in POC deep wells GM-63 and GM-74 above the groundwater protection standards established in Condition 34c below, the permittee shall submit to the Department within 90 days a corrective action plan to address the groundwater contamination in this lower zone. The corrective action plan shall meet the requirements of 40 CFR 264.100 and DER Form 17-1.207(3) Part XIII A.8.
- f. Within 30 days of permit issuance the permittee shall begin conducting monthly water level measurements in all GWMS wells specified in Condition 32c for 1 year to assess the hydraulic effectiveness of corrective action. All water levels must be determined within a 24 hour period. Should it be determined that there is any tidal effect on any monitoring well, the permittee shall document the affected well and extent of tidal influence. Subsequent water level measurements in tidally affected wells shall be made during the same tidal stage, and the stage reported along with the water level data.
33. This permit is not renewable. The permittee shall cease adding hazardous waste to the Surge Pond on or before November 1, 1988.
34. The permittee shall conduct groundwater monitoring in accordance with the following:
- a. The Waste Management Area shall, for the purpose of this permit, encompass the active RCRA Surge Pond as defined under §264.95(b). The Point of Compliance (POC) for the purpose of this permit shall be an imaginary vertical surface at the boundary of the Waste Management Area as defined under §264.95(a), and shall extend down into the uppermost and interconnected aquifers (see attached figure).

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SPECIFIC CONDITIONS:

- b. The following wells, as shown in Figure E-14 in the Part B application, shall constitute the POC wells to which the groundwater protection standards shall apply:

Shallow Wells: DG-5, DG-4, DG-1, DG-6.
Intermediate Well: GM-75.

The background monitoring well shall be well UG-1. The facility may designate or install another well that is more representative of unaffected background to ensure completion of corrective action. The facility may apply for alternate concentration limits (ACL) in accordance with 40 CFR 264.94 for the groundwater protection standard as a permit modification in accordance with FAC Rule 17-30.290.

- c. The groundwater protection standard (40 CFR 264.92) as established under 40 CFR 264.94 shall be:

<u>Parameter</u>	<u>Standard</u>
Arsenic	0.05 mg/l*
Barium	1.0 mg/l*
Cadmium	0.01 mg/l*
Chromium (total)	0.05 mg/l*
Lead	0.05 mg/l*
Mercury	0.002 mg/l*
Selenium	0.01 mg/l*
Silver	0.05 mg/l*
Copper	1.00 mg/l**
Zinc	5.00 mg/l**
Iron	0.3 mg/l**
Manganese	0.05 mg/l**
Antimony	minimum detection limit
Thallium	minimum detection limit
Nickel	minimum detection limit
Chloride	250 mg/l**
Sulfate	250 mg/l**
Sodium	160 mg/l**

*Federal primary drinking water standard (40 CFR 264.94 Table 1)

**Florida secondary drinking water standards (FAC 17-22.104(2))



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ACID EXTRACTABLES

2-Chlorophenol	minimum detection limit
2,4-Dichlorophenol	minimum detection limit
2,4-Dimethylphenol	minimum detection limit
4,6-Dinitro-o-Cresol	minimum detection limit
2,4-Dinitrophenol	minimum detection limit
2-Nitrophenol	minimum detection limit
4-Nitrophenol	minimum detection limit
p-Chloro-m-Cresol	minimum detection limit
Pentachlorophenol	minimum detection limit
Phenol	minimum detection limit
2,4,6-Trichlorophenol	minimum detection limit
2-methyl phenol	minimum detection limit
o-methyl phenol	minimum detection limit
methyl ethyl phenol	minimum detection limit
dimethyl ethyl phenol	minimum detection limit
tetramethyl butyl phenol	minimum detection limit

VOLATILES

Acrolein	minimum detection limit
Acrylonitrile	minimum detection limit
Benzene	minimum detection limit
Bis(chloromethyl) ether	minimum detection limit
Bromoform	minimum detection limit
Carbon Tetrachloride	minimum detection limit
Chlorobenzene	minimum detection limit
Chlorodibromomethane	minimum detection limit
Chloroethane	minimum detection limit
2-Chloroethyl vinyl Ether	minimum detection limit
Chloroform	minimum detection limit
Dichlorobromomethane	minimum detection limit
Dichlorodifluoromethane	minimum detection limit
1,1-Dichloroethane	minimum detection limit
1,2-Dichloroethane	minimum detection limit
1,1-Dichloroethylene	minimum detection limit



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1,2-Dichloropropane	minimum detection limit
1,2-Dichloropropylene	minimum detection limit
Ethylbenzene	minimum detection limit
Methyl Bromide	minimum detection limit
Methyl Chloride	minimum detection limit
Methyl Ethyl Ketone	minimum detection limit
Methylene Chloride	minimum detection limit
1,1,2,2-Tetrachloroethane	minimum detection limit
Tetrachloroethylene	minimum detection limit
Toluene	minimum detection limit
1,2-trans-Dichloroethylene	minimum detection limit
1,1,1-Trichloroethane	minimum detection limit
1,1,2-Trichloroethane	minimum detection limit
Trichloroethylene	minimum detection limit
Trichlorofluoromethane	minimum detection limit
Vinyl Chloride	minimum detection limit

BASE NEUTRAL EXTRACTABLES

Acenaphthene	minimum detection limit
Acenaphthylene	minimum detection limit
Anthracene	minimum detection limit
Benzidine	minimum detection limit
Benzo(a)anthracene	minimum detection limit
Benzo(a)pyrene	minimum detection limit
3,4-Benzofluoranthene	minimum detection limit
Benzo(ghi)perylene	minimum detection limit
Bis(2-chloroethoxy)methane	minimum detection limit
Bis(2-chloroethyl)ether	minimum detection limit
Bis(2-chloroisopropyl)ether	minimum detection limit
Bis(2-ethylhexyl)phthalate	minimum detection limit
4-Bromophenyl Phenyl Ether	minimum detection limit
Butylbenzyl Phthalate	minimum detection limit
2-Chloronaphthalene	minimum detection limit
4-Chlorophenyl Phenyl Ether	minimum detection limit
Chrysene	minimum detection limit
Dibenzo(a,h)anthracene	minimum detection limit
1,2-Dichlorobenzene	minimum detection limit
1,3-Dichlorobenzene	minimum detection limit
1,4-Dichlorobenzene	minimum detection limit
3,3-Dichlorobenzidine	minimum detection limit



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Diethylphthalate	minimum detection limit
Dimethylphthalate	minimum detection limit
Di-n-Butyl Phthalate	minimum detection limit
2,4-Dinitrotoluene	minimum detection limit
Di-n-Octyl-Phthalate	minimum detection limit
1,2-Diphenylhydrazine	minimum detection limit
Fluoranthene	minimum detection limit
Fluorene	minimum detection limit
Hexachlorobenzene	minimum detection limit
Hexachlorobutadiene	minimum detection limit
Hexachlorocyclopentadiene	minimum detection limit
Hexachloroethane	minimum detection limit
Indeno(1,2,3-cd)pyrene	minimum detection limit
Isophorone	minimum detection limit
Methyl naphthalene	minimum detection limit
2-Methyl naphthalene	minimum detection limit
Naphthalene	minimum detection limit
Nitrobenzene	minimum detection limit
N-Nitrosodimethylamine	minimum detection limit
N-Nitrosodi-n-propylamine	minimum detection limit
N-Nitrosodiphenylamide	minimum detection limit
Phenanthrene	minimum detection limit
Pyrene	minimum detection limit
1,2,4-Trichlorobenzene	minimum detection limit

ADDITIONAL CONSTITUENTS

Benzyl Alcohol	minimum detection limit
Methyl Dihydro Indene	minimum detection limit
Tetramethylbenzene	minimum detection limit
"alkylated" benzene	minimum detection limit
2-hexanone	minimum detection limit
Trimethyl Benzene	minimum detection limit
Hydroxymethyl Pentanone	minimum detection limit
Cyanide (complexed)	minimum detection limit

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- d. The permittee shall, within 90 days of permit issuance, submit an Appendix VIII (or Department approved equivalent) analysis on the POC monitoring well DG-4 [40 CFR 264.99(f)]. Any additional hazardous constituents detected in this analysis shall be sampled for in all compliance point monitoring wells in future sampling events. If new hazardous constituents are detected, the Department will establish groundwater protection standards for those constituents in accordance with 40 CFR 264.94 and F.A.C. Rule 17-30.290.
- e. The permittee shall conduct annual sampling and analyses in November for all 40 CFR Part 261 Appendix VIII (or Department approved equivalent) parameters at a Department approved well or wells to meet §§264.100 and 264.99 requirements.
- f. The point of compliance wells specified in Specific Condition 34b above and the background well shall be sampled in May, August, November and February each year. Each well will be sampled for pH, specific conductance, and all hazardous waste constituents and hazardous constituents specified in Specific Condition 34c above.
- g. Water level elevations must be determined each time a well is sampled. [40 CFR 264.97(f)]. In addition, total depth of all wells must be determined by physical measurement on at least an annual basis to determine whether siltation of any well is a problem, and to recalculate the casing volume to be purged prior to sampling. If infilling or siltation interferes with sampling in any well, this fact shall be reported to the Department within 15 days of discovery.
- h. The permittee shall determine groundwater flow rate and direction in the uppermost interconnected aquifers at least annually in accordance with 40 CFR 264.99(e).
- i. Sampling and analytical methods shall conform to those specified in EPA Manual 600/2-80-018, "Samplers and Sampling Procedures for Hazardous Waste Streams"; EPA Manual 600/S4-84-076, "Characterization of Hazardous Waste Sites: A Methods Manual-Volume II"; EPA Manual SW 846, "Test Methods for Evaluating Solid Wastes" (latest edition); EPA Manual 600/4-82-057, "EPA Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater" or Department approved equivalent analytical methods.



PERMITTEE:

U.S. Navy Public Works

I.D. Number: 1017F00625 (FL9170024567)

Permit/Certification Number: H017-127026

Date of Issue: SEP 20 1987

Expiration Date: November 1, 1988

SPECIFIC CONDITIONS:

- j. All analyses for metals must be conducted on unfiltered samples. Analyses done on filtered samples may be conducted and reported, but are not required.
35. The permittee shall apply for a closure and post closure permit as applicable pursuant to F.A.C. Rule 17-30.260 at least 180 days prior to beginning closure at the facility and not later than May 1, 1988. F.A.C. Rule 17-30.160.
36. All analyses and reports on the monitoring of water quality required by this permit shall be submitted to the Northwest District Office, Department of Environmental Regulation, 160 Governmental Center, Pensacola, Florida 32501-5794. Laboratory analyses must be submitted within 30 days of the end of the sampling period; however, if for any reason the permittee is unable to submit analyses within that time, it shall submit a letter stating the cause of the delay. DER will review any such reason for delay and may grant an extension of time for submission of the data. The attached Form 17-1.216(2) shall be reproduced by the permittee and used for future submittals. A separate Page 2 is required for each monitoring well, with a single Page 1 certification.
37. The permittee shall certify no later than March 1 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 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.
38. The Department may modify the conditions of this permit in accordance with the provisions of F.A.C. Rule 17-30.290.
39. The permanent Department identification number (GMS No.) for this facility is 1017F00625. Please cite this number on all reports and correspondence concerning this facility. In addition, the EPA ID# FL9170024567 should also be cited.



PERMITTEE:

U.S. Navy Public Works

I.D. Number: 1017F00625 (FL9170024567)

Permit/Certification Number: H017-127026

Date of Issue: SEP 13 1987

Expiration Date: November 1, 1988

SPECIFIC CONDITIONS:

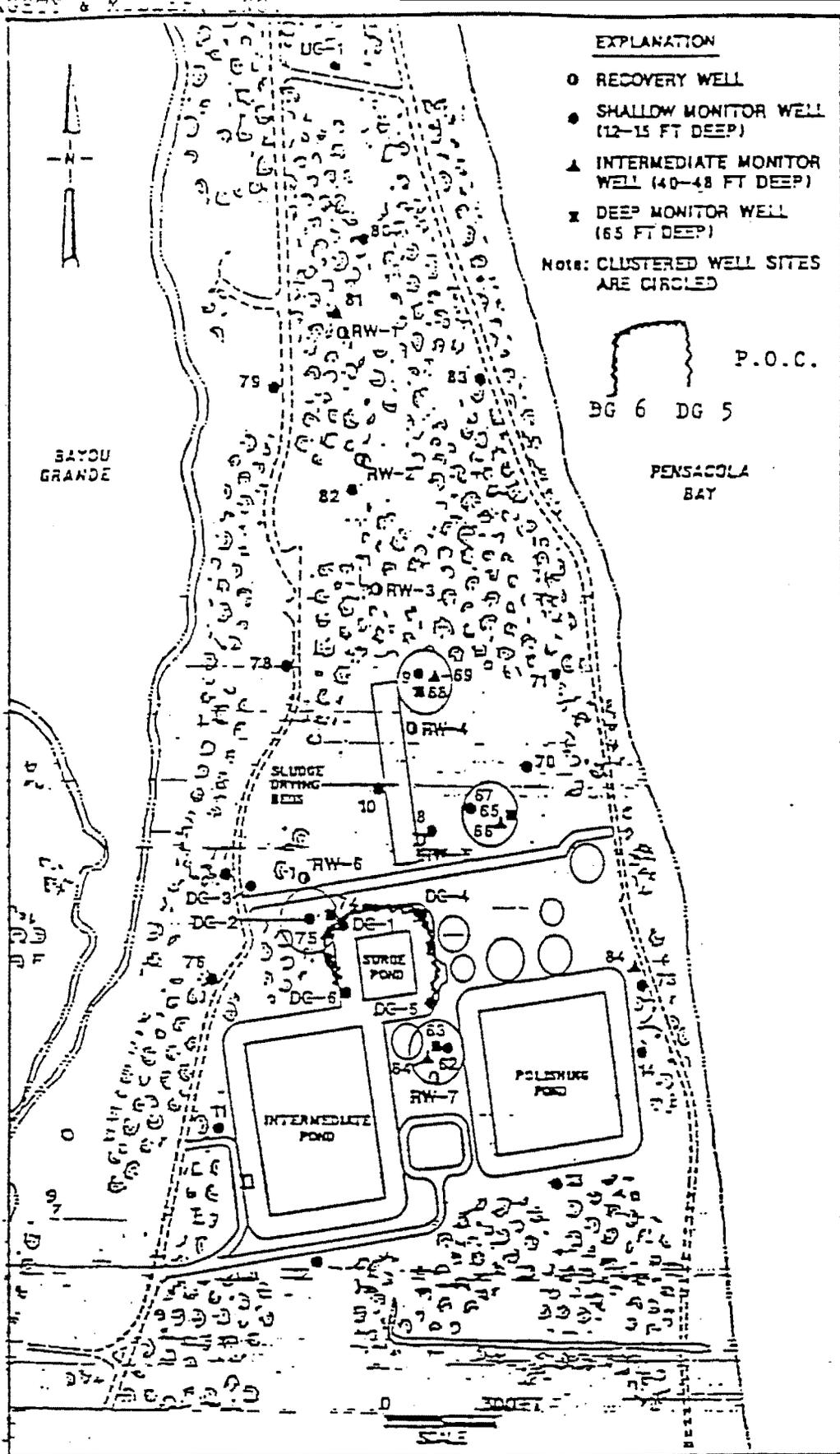
Expiration date:

November 1, 1988

Issued this 28th day of Sept,
1987.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

ROBERT V. KRIEGEL
District Manager



APPENDIX B

**Construction Details and Schematic Diagrams
of Monitor Wells and Recovery Wells**

Table B-1. Depths and Screen Settings of Recovery Wells

Well Designation	Total Depth (ft bls) ^{1/}	Screen Setting (ft msl) ^{3/}	Measuring Point Elevation ^{2/} (ft msl)	Land Surface Elevation (ft msl)
RW-1	30	-12.6 to -27.6	4.91	2.4
RW-2	37	-18.7 to -33.7	5.88	3.3
RW-3	37	-19.2 to -34.2	5.64	2.8
RW-4	39	-19.0 to -34.0	3.44	5.0
RW-5	39	-18.8 to -33.8	4.22	5.2
RW-6	39.5	-20.8 to -35.8	2.66	3.7
RW-7	39	-19.3 to -34.3	3.35	4.7

Notes:

- 1/ feet below land surface
- 2/ measuring point is the edge of well's access hole
- 3/ feet referenced to mean sea level; U.S.C.&G. vertical control

Table B-2. Construction Details of
the Monitor Wells Installed at the WWTP

Well Designation	Total Depth (ft bls) ^{1/}	Screened Interval (ft msl) ^{2/}	Top of Well Casing Elevation (ft msl)
		<u>RCRA</u>	
UG-1	10.4	2.2 to -2.8	8.48
DG-1 ^{3/}	10.0	-0.5 to -5.5	5.71
DG-2 ^{3/}	10.0	-1.4 to -6.4	4.89
DG-3	10.2	-0.9 to -5.9	5.30
DG-4	9.5	1.3 to -3.7	8.03
DG-5	10.3	2.2 to -2.8	8.61
DG-6 ^{3/}	10.0	0.9 to -4.1	7.10
		<u>Phase I</u>	
GM-8	12.0	-4.0 to -6.5	6.12
GM-9	12.0	-4.6 to -7.1	5.65
GM-10	12.0	-4.4 to -6.9	5.83
GM-11	12.0	-4.2 to -6.7	6.00
GM-12	12.0	-4.0 to -6.5	5.73
GM-12R ^{4/}	15.0	-3.3 to -7.3	9.83
GM-13	12.0	-5.3 to -7.8	5.09
GM-14	12.0	-5.7 to -8.2	4.56
		<u>Phase II</u>	
GM-62	15.0	-7.7 to -10.2	7.11
GM-63	63.5	-56.1 to -58.6	6.97
GM-64	40.0	-32.7 to -35.2	6.26
GM-65	66.5	-58.7 to -61.2	6.67
GM-66	40.5	-32.7 to -35.2	7.48
GM-67	16.7	-8.9 to -11.4	6.38
GM-68	65.5	-58.0 to -60.5	7.00
GM-69	40.0	-32.7 to -35.2	7.85
GM-70	15.0	-7.5 to -10.0	7.15
GM-71	11.0	-3.8 to -6.3	6.76
GM-72	11.0	-2.7 to -5.2	7.61
GM-73	15.5	-2.8 to -5.3	12.36
GM-74 ^{3/}	65.0	-58.8 to -61.3	6.68
GM-75 ^{3/}	40.0	-33.9 to -36.4	6.17
GM-76	12.0	-2.4 to -4.9	7.88
GM-77	12.0	-5.3 to -7.8	4.71
GM-78	11.5	-3.0 to -5.5	7.02
GM-79	11.1	-5.5 to -8.0	4.65
GM-80	12.0	-5.6 to -8.1	4.63
GM-81	12.0	-6.4 to -8.9	4.33
GM-82	12.5	-6.9 to -9.4	4.45
GM-83	11.7	-5.3 to -7.8	4.84
GM-84	48.0	-33.0 to -38.0	11.84

1/ feet below land surface

2/ feet referenced to mean sea level; U.S.C.&G. vertical control

3/ well abandoned 23-Feb-88 due to construction of new surge tank

4/ replacement well installed 4/26/88; well GM-12 was destroyed during construction activities

Note: All wells are 2-inch diameter

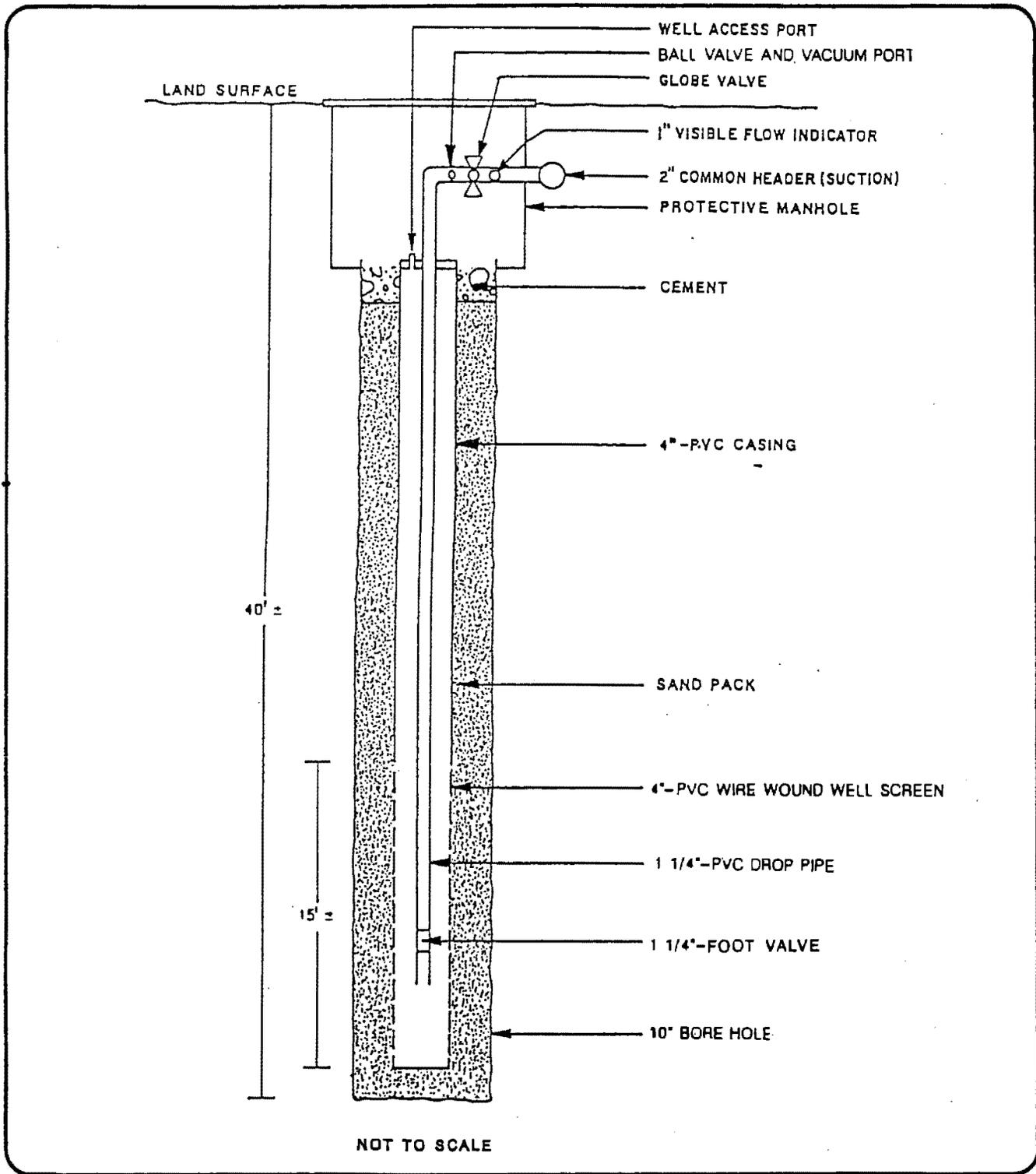


 Figure B-1.
 Schematic Diagram of Typical
 Below-Grade Recovery Well.

CLIENT NAME:
 Naval Facilities
 Engineering Command,
 Southern Division

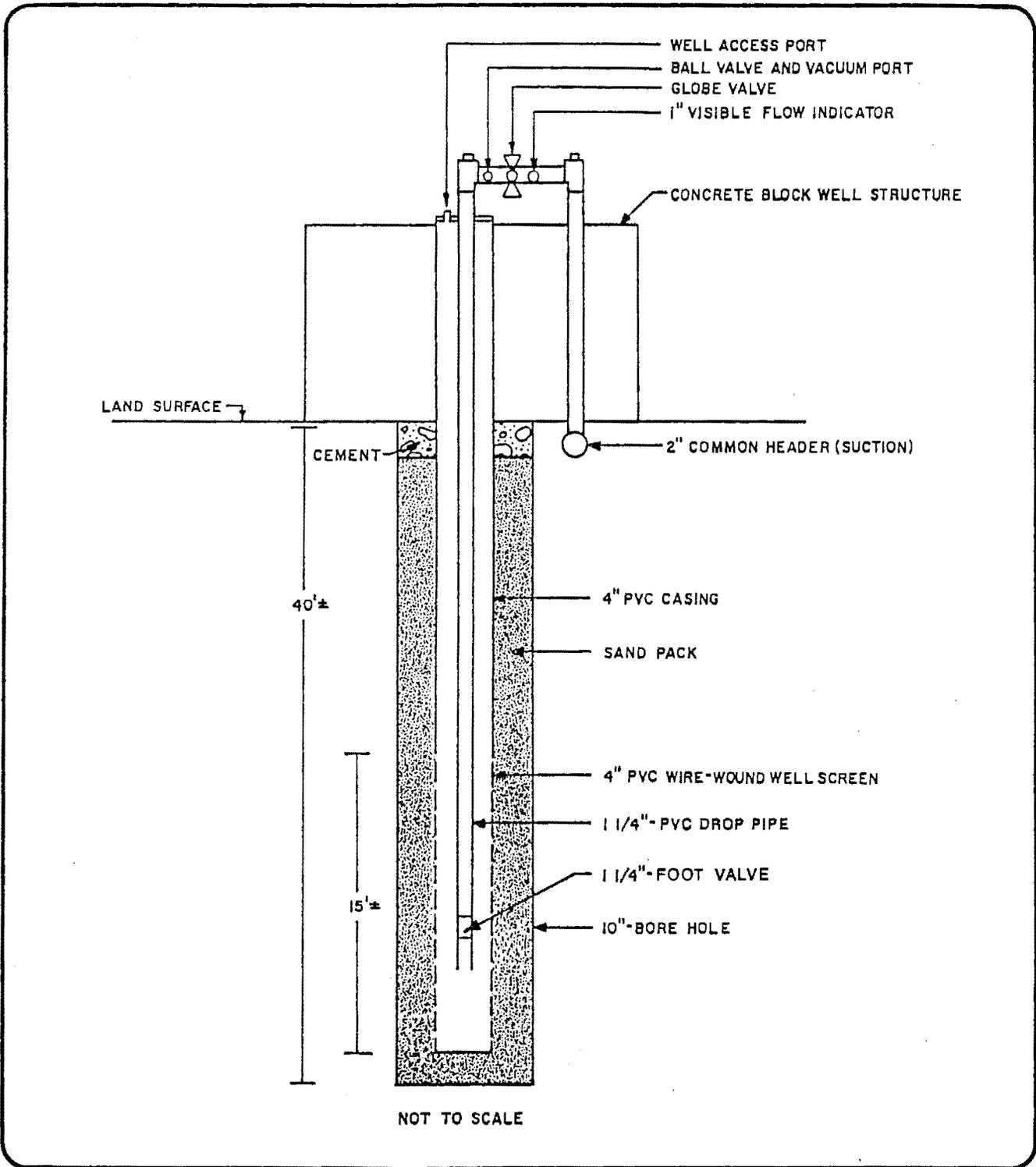


 Figure B-2.
 Schematic Diagram of Typical
 Above-Grade Recovery Well.

CLIENT NAME:
 Naval Facilities
 Engineering Command,
 Southern Division

APPENDIX C

Water-Level Elevations in
Monitor Wells and Recovery Wells

MONITOR WELL WATER ELEVATIONS IN FT. MSL

Monitor Well UG-1 (S)*

Measuring Point: Top of casing
 Elevation of measuring point: 8.48 ft. msl

Date	Time	Water Level Elevation
04-Feb-87	1442	1.12
05-Feb-87	1448	1.09
06-Feb-87	1410	1.16
10-Mar-87	1700	1.31
16-Apr-87	0812	0.81
29-May-87	1200	1.33
26-Jun-87	1002	1.43
21-Jul-87	0650	1.11
17-Aug-87	0715	2.52
21-Sep-87	0642	1.24
21-Oct-87	0702	0.70
30-Nov-87	0710	1.24
21-Dec-87	1045	0.93
05-Jan-88	1125	1.35
22-Feb-88	---	2.42
24-Mar-88	1134	0.52
25-Apr-88	1234	0.81

Monitor Well DG-1 (S)*

Measuring Point: Top of casing
 Elevation of measuring point: 5.71 ft. msl

Date	Time	Water Level Elevation
04-Feb-87	1035	2.39
05-Feb-87	0901	2.37
06-Feb-87	1044	2.27
10-Mar-87	1745	2.32
16-Apr-87	1237	1.40
29-May-87	1230	1.80
26-Jun-87	0845	2.16
21-Jul-87	0742	1.77
17-Aug-87	0824	3.47
21-Sep-87	0727	1.82
21-Oct-87	0750	1.01
30-Nov-87	0815	1.53
21-Dec-87	1130	1.35
05-Jan-88	1157	1.97
22-Feb-88	---	3.16
23-Feb-88	Well abandoned	

Monitor Well DG-2 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 4.89 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1016	2.37
05-Feb-87	0848	2.43
06-Feb-87	1050	2.22
16-Apr-87	1244	1.36
26-Jun-87	0830	2.13
21-Jul-87	0732	1.97
17-Aug-87	0820	3.65
21-Sep-87	0725	1.87
21-Oct-87	0755	1.00
30-Nov-87	1400	1.55
21-Dec-87	1139	1.33
05-Jan-88	1159	1.93
22-Feb-88	---	3.17
23-Feb-88	Well abandoned	

Monitor Well DG-3 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 5.30 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	0945	2.03
05-Feb-87	1409	1.05
06-Feb-87	1335	1.99
10-Mar-87	1435	2.06
16-Apr-87	1400	1.24
29-May-87	1227	1.54
26-Jun-87	0944	1.90
21-Jul-87	0729	1.68
17-Aug-87	0815	2.86
21-Sep-87	0722	1.70
21-Oct-87	0748	0.84
30-Nov-87	1420	1.47
21-Dec-87	1124	1.37
05-Jan-88	1153	1.89
22-Feb-88	---	2.64
24-Mar-88	1202	1.45
25-Apr-88	1315	0.94

Monitor Well DG-4 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 8.03 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1018	2.33
05-Feb-87	0920	3.24
06-Feb-87	1128	2.19
10-Mar-87	1742	2.24
16-Apr-87	1232	1.33
29-May-87	1249	1.83
26-Jun-87	0854	2.11
21-Jul-87	0933	1.54
17-Aug-87	1041	3.33
21-Sep-87	0805	1.85
21-Oct-87	1134	1.01
30-Nov-87	0950	1.49
21-Dec-87	1242	1.28
05-Jan-88	1205	1.91
22-Feb-88	0830	3.03
24-Mar-88	1210	1.35
25-Apr-88	1324	1.17

Monitor Well DG-5 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 8.61 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1127	2.38
05-Feb-87	0928	2.28
06-Feb-87	0917	2.20
10-Mar-87	1731	2.25
16-Apr-87	1131	1.45
26-Jun-87	0857	2.18
21-Jul-87	0830	1.59
17-Aug-87	0955	3.49
21-Sep-87	0800	1.86
21-Oct-87	1244	1.17
30-Nov-87	1450	1.59
21-Dec-87	1306	1.42
05-Jan-88	1356	2.02
22-Feb-88	0832	3.21
24-Mar-88	1340	1.48
25-Apr-88	1511	1.44

Monitor Well DG-6 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 7.10 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1101	2.45
05-Feb-87	0912	2.42
06-Feb-87	1101	2.32
10-Mar-87	1735	2.38
16-Apr-87	1246	1.56
29-May-87	1241	1.98
26-Jun-87	0847	2.26
21-Jul-87	0745	1.74
17-Aug-87	0835	3.52
21-Sep-87	0735	1.94
21-Oct-87	0753	1.20
30-Nov-87	0830	1.65
21-Dec-87	1137	1.48
05-Jan-88	1203	2.08
22-Feb-88	---	3.29
23-Feb-88	Well abandoned	

Monitor Well GM-8 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 6.12 ft. msl

Date	Time	Water Level Elevation
----	----	-----
03-Feb-87	1730	1.91
05-Feb-87	1146	1.67
06-Feb-87	1120	1.63
10-Mar-87	1807	1.79
16-Apr-87	1549	0.82
29-May-87	1355	1.29
26-Jun-87	1156	1.64
21-Jul-87	0925	1.16
17-Aug-87	1017	2.72
21-Sep-87	0852	1.36
21-Oct-87	0956	0.51
30-Nov-87	1005	1.06
21-Dec-87	1230	0.84
05-Jan-88	1212	1.43
22-Feb-88	---	2.43
24-Mar-88	1219	0.70
25-Apr-88	1330	0.64

Monitor Well GM-9 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 5.65 ft. msl

Date	Time	Water Level Elevation
----	----	-----
03-Feb-87	1830	1.62
05-Feb-87	1113	1.58
06-Feb-87	1022	1.40
10-Mar-87	1505	1.56
16-Apr-87	1645	0.45
29-May-87	1254	0.84
26-Jun-87	1202	1.56
21-Jul-87	0914	0.89
17-Aug-87	1030	2.67
21-Sep-87	0841	1.09
21-Oct-87	0949	0.21
30-Nov-87	1021	0.75
21-Dec-87	1212	0.54
05-Jan-88	1329	1.20
22-Feb-88	---	2.41
24-Mar-88	1235	0.50
25-Apr-88	1408	0.47

Monitor Well GM-10 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 5.83 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	0729	1.99
05-Feb-87	1132	1.83
06-Feb-87	1114	1.78
10-Mar-87	1802	1.86
16-Apr-87	1555	0.71
29-May-87	1245	1.20
26-Jun-87	1259	1.67
21-Jul-87	0930	1.05
17-Aug-87	1044	2.81
21-Sep-87	0807	1.31
21-Oct-87	1138	0.39
30-Nov-87	1000	0.93
21-Dec-87	1240	0.73
05-Jan-88	1210	1.44
22-Feb-88	---	2.57
24-Mar-88	1208	0.79
25-Apr-88	1321	0.57

Monitor Well GM-11 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 6.00 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1616	2.20
05-Feb-87	1229	2.15
06-Feb-87	1229	2.15
10-Mar-87	1749	2.25
16-Apr-87	1045	1.63
29-May-87	1314	1.87
26-Jun-87	0813	2.11
21-Jul-87	0802	1.72
17-Aug-87	0925	3.14
21-Sep-87	0743	1.92
21-Oct-87	0805	1.34
30-Nov-87	1445	1.74
21-Dec-87	1253	1.60
05-Jan-88	1340	2.06
22-Feb-88	---	2.90
24-Mar-88	1310	1.74
25-Apr-88	1457	1.61

Monitor Well GM-12 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 5.73 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1609	2.53
05-Feb-87	1223	2.52
06-Feb-87	1217	2.51
10-Mar-87	1753	2.66
16-Apr-87	1048	1.93
29-May-87	1317	2.22
26-Jun-87	0811	2.73
21-Jul-87	0805	2.19
17-Aug-87	0930	3.63

Well Destroyed September 1987

Monitor Well GM-13 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 5.09 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1600	1.59
05-Feb-87	1215	1.57
06-Feb-87	1205	1.64
10-Mar-87	1756	1.83
16-Apr-87	1051	1.26
29-May-87	1330	1.64
26-Jun-87	0809	2.08
21-Jul-87	0810	1.69
17-Aug-87	0936	2.51
21-Sep-87	0750	1.49
21-Oct-87	1701	0.99
30-Nov-87	1247	1.44
21-Dec-87	1314	1.26
05-Jan-88	1345	1.73
22-Feb-88	---	2.42
24-Mar-88	1315	1.11
25-Apr-88	1500	1.27

Monitor Well GM-14 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 4.56 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1543	1.10
05-Feb-87	1207	1.03
06-Feb-87	1154	1.13
10-Mar-87	1812	1.18
16-Apr-87	1206	0.86
29-May-87	1338	1.13
26-Jun-87	0802	1.28
21-Jul-87	0900	1.52
17-Aug-87	1115	1.76
21-Sep-87	0831	1.16
21-Oct-87	1111	0.73
30-Nov-87	1112	1.01
21-Dec-87	1157	0.91
05-Jan-88	1316	0.86
24-Mar-88	1259	0.52
25-Apr-88	1447	0.91

Monitor Well GM-62 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 7.11 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1204	2.16
05-Feb-87	0946	1.93
06-Feb-87	0858	1.84
10-Mar-87	1730	1.96
16-Apr-87	1113	1.17
29-May-87	1320	0.98
26-Jun-87	0904	1.97
21-Jul-87	0817	1.39
17-Aug-87	0942	3.17
21-Sep-87	0752	1.62
21-Oct-87	1300	0.97
30-Nov-87	1455	1.35
21-Dec-87	1303	1.18
05-Jan-88	1349	1.82
22-Feb-88	---	2.93
24-Mar-88	1330	1.31
25-Apr-88	1506	1.23

Monitor Well GM-63 (D)*

 Measuring Point: Top of casing
 Elevation of measuring point: 6.97 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1135	2.16
05-Feb-87	0935	2.19
06-Feb-87	0850	2.25
10-Mar-87	1725	2.64
16-Apr-87	1115	2.32
29-May-87	1321	2.32
26-Jun-87	0906	1.97
21-Jul-87	0817	0.68
17-Aug-87	0944	2.32
21-Sep-87	0754	2.37
21-Oct-87	1258	0.27
30-Nov-87	1500	2.39
21-Dec-87	1302	1.79
05-Jan-88	1350	1.49
22-Feb-88	---	1.92
24-Mar-88	1331	1.55
25-Apr-88	1507	2.03

Monitor Well GM-64 (I)*

 Measuring Point: Top of casing
 Elevation of measuring point: 6.26 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1216	2.59
05-Feb-87	0945	1.24
06-Feb-87	0905	0.99
10-Mar-87	1722	1.10
16-Apr-87	1117	0.09
29-May-87	1322	0.27
26-Jun-87	0900	0.77
21-Jul-87	0821	-0.41
17-Aug-87	0946	2.18
21-Sep-87	0755	0.74
21-Oct-87	1257	-0.08
30-Nov-87	1502	-0.08
21-Dec-87	1301	-0.39
05-Jan-88	1351	0.44
22-Feb-88	---	1.07
24-Mar-88	1332	-0.06
25-Apr-88	1508	-0.27

Monitor Well GM-65 (D)*

 Measuring Point: Top of casing
 Elevation of measuring point: 6.67 ft. msl

Date	Time	Water Level Elevation
----	----	-----
03-Feb-87	1633	2.28
05-Feb-87	1005	2.25
06-Feb-87	0945	2.31
10-Mar-87	1811	2.70
16-Apr-87	1720	2.13
29-May-87	1304	2.21
26-Jun-87	1113	2.13
21-Jul-87	0922	0.88
17-Aug-87	1005	2.31
21-Sep-87	0851	2.43
21-Oct-87	1003	0.35
30-Nov-87	1043	2.23
21-Dec-87	1336	1.78
05-Jan-88	1217	1.35
22-Feb-88	---	2.02
24-Mar-88	1228	1.51
25-Apr-88	1420	1.96

Monitor Well GM-66 (I)*

Measuring Point: Top of casing
Elevation of measuring point: 7.48 ft. msl

Date	Time	Water Level Elevation
----	----	-----
03-Feb-87	1530	1.48
05-Feb-87	1017	1.29
06-Feb-87	0950	1.24
10-Mar-87	1545	1.43
16-Apr-87	1734	0.55
29-May-87	1305	0.83
26-Jun-87	1110	1.29
21-Jul-87	0920	0.91
17-Aug-87	1010	2.38
21-Sep-87	0849	1.02
21-Oct-87	1001	0.28
30-Nov-87	1042	0.77
21-Dec-87	1335	0.54
05-Jan-88	1216	1.06
22-Feb-88	---	2.09
24-Mar-88	1229	0.26
25-Apr-88	1422	0.42

Monitor Well GM-67 (S)*

Measuring Point: Top of casing
Elevation of measuring point: 6.38 ft. msl

Date	Time	Water Level Elevation
----	----	-----
03-Feb-87	1533	1.68
05-Feb-87	1011	2.28
06-Feb-87	0945	1.52
10-Mar-87	1555	1.63
16-Apr-87	1722	0.78
29-May-87	1306	1.09
26-Jun-87	1108	1.53
21-Jul-87	0919	1.12
17-Aug-87	1015	2.64
21-Sep-87	0847	1.30
21-Oct-87	0959	0.53
30-Nov-87	1041	1.01
21-Dec-87	1331	0.82
05-Jan-88	1215	1.30
22-Feb-88	---	2.31
24-Mar-88	1230	0.63
25-Apr-88	1423	0.71

Monitor Well GM-68 (D)*

 Measuring Point: Top of casing
 Elevation of measuring point: 7.00 ft. msl

Date	Time	Water Level Elevation
----	----	-----
03-Feb-87	1845	2.22
05-Feb-87	1107	2.35
06-Feb-87	1012	2.39
10-Mar-87	1818	2.77
16-Apr-87	1622	2.22
29-May-87	1255	2.26
26-Jun-87	1204	2.04
21-Jul-87	0915	0.90
17-Aug-87	1035	2.30
21-Sep-87	0843	2.46
21-Oct-87	0950	0.46
30-Nov-87	1022	2.23
21-Dec-87	1213	1.72
05-Jan-88	1330	1.40
22-Feb-88	---	2.01
24-Mar-88	1236	1.58
25-Apr-88	1409	1.95

Monitor Well GM-69 (I)*

 Measuring Point: Top of casing
 Elevation of measuring point: 7.85 ft. msl

Date	Time	Water Level Elevation
----	----	-----
03-Feb-87	1812	1.73
05-Feb-87	1119	1.53
06-Feb-87	1025	1.28
10-Mar-87	1500	1.50
16-Apr-87	1655	0.37
29-May-87	1253	0.82
26-Jun-87	1206	1.33
21-Jul-87	0911	0.82
17-Aug-87	1040	2.51
21-Sep-87	0845	0.74
21-Oct-87	0951	0.21
30-Nov-87	1025	0.69
21-Dec-87	1214	0.65
05-Jan-88	1331	1.06
22-Feb-88	---	2.25
24-Mar-88	1237	0.37
25-Apr-88	1410	0.41

Monitor Well GM-70 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 7.15 ft. msl

Date	Time	Water Level Elevation
----	----	-----
03-Feb-87	1710	1.41
05-Feb-87	1050	1.34
06-Feb-87	1000	1.31
10-Mar-87	1815	1.40
16-Apr-87	1630	0.66
29-May-87	1259	0.98
26-Jun-87	1058	1.38
21-Jul-87	0906	1.05
17-Aug-87	1055	2.33
21-Sep-87	0835	1.15
21-Oct-87	0945	0.47
30-Nov-87	1036	0.93
21-Dec-87	1205	0.75
05-Jan-88	1324	1.11
22-Feb-88	---	2.07
24-Mar-88	1242	0.46
25-Apr-88	1416	0.63

Monitor Well GM-71 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 6.76 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1729	1.11
05-Feb-87	1058	1.15
06-Feb-87	1005	1.07
10-Mar-87	1825	1.04
16-Apr-87	1626	0.55
29-May-87	1257	1.02
26-Jun-87	1101	1.14
21-Jul-87	0908	1.18
17-Aug-87	1057	2.00
21-Sep-87	0837	0.96
21-Oct-87	0946	0.40
30-Nov-87	1034	0.76
21-Dec-87	1207	0.60
05-Jan-88	1327	0.74
22-Feb-88	---	1.70
24-Mar-88	1239	0.28
25-Apr-88	1414	0.51

Monitor Well GM-72 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 7.61 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1741	1.21
05-Feb-87	1152	1.13
06-Feb-87	1136	1.18
10-Mar-87	1800	1.17
16-Apr-87	1137	0.87
26-Jun-87	0720	1.21
21-Jul-87	0845	1.57
17-Aug-87	1103	1.79
21-Sep-87	0821	1.11
21-Oct-87	1122	0.65
30-Nov-87	1100	0.99
21-Dec-87	1145	0.83
05-Jan-88	1306	0.73
22-Feb-88	---	1.36
24-Mar-88	1248	0.53
25-Apr-88	1426	0.89

Monitor Well GM-73 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 12.36 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1534	0.91
05-Feb-87	1200	0.79
06-Feb-87	1148	0.93
10-Mar-87	1807	0.93
16-Apr-87	1154	0.75
29-May-87	1344	1.10
26-Jun-87	0725	1.00
21-Jul-87	0853	1.42
17-Aug-87	1108	1.48
21-Sep-87	0829	1.04
21-Oct-87	1109	0.52
30-Nov-87	1102	0.80
21-Dec-87	1154	0.64
05-Jan-88	1311	0.46
24-Mar-88	1255	0.48
25-Apr-88	1445	0.82

Monitor Well GM-74 (D)*

 Measuring Point: Top of casing
 Elevation of measuring point: 6.68 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1020	2.18
05-Feb-87	0856	2.21
06-Feb-87	1038	2.54
10-Mar-87	1750	2.85
16-Apr-87	1239	2.54
29-May-87	1234	2.35
26-Jun-87	0841	1.96
21-Jul-87	0736	0.86
17-Aug-87	0826	2.58
21-Sep-87	0730	2.42
21-Oct-87	0751	0.50
30-Nov-87	0817	1.88
21-Dec-87	1132	1.83
05-Jan-88	1200	1.52
22-Feb-88	---	1.98
23-Feb-88	Well abandoned	

Monitor Well GM-75 (I)*

 Measuring Point: Top of casing
 Elevation of measuring point: 6.17 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1039	2.16
05-Feb-87	0829	1.96
06-Feb-87	1032	1.84
10-Mar-87	1752	2.01
16-Apr-87	1241	1.07
29-May-87	1237	1.31
26-Jun-87	0843	1.80
21-Jul-87	0738	1.24
17-Aug-87	0830	3.01
21-Sep-87	0732	1.51
21-Oct-87	0752	0.92
30-Nov-87	0820	1.29
21-Dec-87	1135	1.03
05-Jan-88	1201	1.57
22-Feb-88	---	2.62
23-Feb-88	Well abandoned	

Monitor Well GM-76 (S)*

Measuring Point: Top of casing
 Elevation of measuring point: 7.88 ft. msl

Date	Time	Water Level Elevation
04-Feb-87	1620	1.69
05-Feb-87	1352	1.69
06-Feb-87	1242	1.64
10-Mar-87	1746	1.69
16-Apr-87	1041	1.24
29-May-87	1311	1.32
26-Jun-87	0816	1.61
21-Jul-87	0759	1.54
17-Aug-87	0920	2.22
21-Sep-87	0740	1.50
21-Oct-87	0800	0.92
30-Nov-87	1440	1.38
21-Dec-87	1250	1.31
05-Jan-88	1337	1.61
22-Feb-88	---	2.08
24-Mar-88	1307	1.33
25-Apr-88	1455	1.09

Monitor Well GM-77 (S)*

Measuring Point: Top of casing
 Elevation of measuring point: 4.71 ft. msl

Date	Time	Water Level Elevation
04-Feb-87	1634	1.72
05-Feb-87	1416	1.74
06-Feb-87	1342	1.67
10-Mar-87	1742	1.73
16-Apr-87	1037	0.97
29-May-87	1225	1.17
26-Jun-87	1220	1.89
21-Jul-87	0727	1.51
17-Aug-87	0812	2.15
21-Sep-87	0721	1.43
21-Oct-87	0746	0.67
30-Nov-87	0755	1.29
21-Dec-87	1120	1.16
05-Jan-88	1151	1.71
22-Feb-88	---	2.05
24-Mar-88	1201	1.12
25-Apr-88	1312	0.65

Monitor Well GM-78 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 7.02 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1646	1.60
05-Feb-87	1423	1.58
06-Feb-87	1351	1.50
10-Mar-87	1740	1.46
16-Apr-87	1030	0.54
29-May-87	1223	1.09
26-Jun-87	0950	1.54
21-Jul-87	0724	1.04
17-Aug-87	0810	2.56
21-Sep-87	0718	1.27
21-Oct-87	0746	0.37
30-Nov-87	0750	1.00
21-Dec-87	1116	0.80
05-Jan-88	1149	1.44
22-Feb-88	---	2.34
24-Mar-88	1159	0.74
25-Apr-88	1310	0.62

Monitor Well GM-79 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 4.65 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1514	1.38
05-Feb-87	1430	1.29
06-Feb-87	1350	1.61
10-Mar-87	1713	1.04
16-Apr-87	0850	0.27
29-May-87	1220	0.71
26-Jun-87	0958	1.09
21-Jul-87	0711	0.76
17-Aug-87	0805	2.35
21-Sep-87	0705	0.91
21-Oct-87	0728	0.11
30-Nov-87	0735	0.85
21-Dec-87	1103	0.63
05-Jan-88	1140	1.17
22-Feb-88	---	2.03
24-Mar-88	1150	0.31
25-Apr-88	1252	0.38

Monitor Well GM-80 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 4.63 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1502	1.01
05-Feb-87	1456	0.97
06-Feb-87	1424	0.97
10-Mar-87	1655	1.06
16-Apr-87	0803	0.39
29-May-87	1208	0.75
26-Jun-87	1009	1.08
21-Jul-87	0659	0.79
17-Aug-87	0725	2.29
21-Sep-87	0650	0.94
21-Oct-87	0712	0.35
30-Nov-87	0717	0.93
21-Dec-87	1050	0.68
05-Jan-88	1129	1.10
22-Feb-88	---	2.08
24-Mar-88	1136	0.31
25-Apr-88	1239	0.50

Monitor Well GM-81 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 4.33 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	0753	1.13
05-Feb-87	1517	0.98
06-Feb-87	1442	0.71
10-Mar-87	1325	0.85
16-Apr-87	0715	-0.16
29-May-87	1211	0.30
26-Jun-87	1020	0.72
21-Jul-87	0655	0.34
17-Aug-87	0737	2.57
21-Sep-87	0659	0.74
21-Oct-87	0720	0.00
30-Nov-87	0729	0.75
21-Dec-87	1057	0.44
05-Jan-88	1135	0.99
22-Feb-88	---	2.05
24-Mar-88	1144	0.14
25-Apr-88	1246	0.25

Monitor Well GM-82 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 4.45 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	0821	1.35
05-Feb-87	1527	1.14
06-Feb-87	1452	0.85
10-Mar-87	1200	0.45
16-Apr-87	0902	-0.33
29-May-87	1215	0.21
26-Jun-87	1012	0.51
21-Jul-87	0715	-0.13
17-Aug-87	0753	2.79
21-Sep-87	0710	0.53
21-Oct-87	0732	-0.40
30-Nov-87	0742	0.27
21-Dec-87	1110	-0.10
05-Jan-88	1144	0.57
22-Feb-88	---	2.11
24-Mar-88	1153	-0.20
25-Apr-88	1258	-0.17

Monitor Well GM-83 (S)*

 Measuring Point: Top of casing
 Elevation of measuring point: 4.84 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1705	0.77
05-Feb-87	1505	0.89
06-Feb-87	1433	0.94
10-Mar-87	1702	0.70
16-Apr-87	0807	0.33
29-May-87	1205	0.89
26-Jun-87	1230	0.90
21-Jul-87	0701	1.20
17-Aug-87	0732	1.35
21-Sep-87	0652	0.87
21-Oct-87	0716	0.44
30-Nov-87	0725	0.69
21-Dec-87	1052	0.53
05-Jan-88	1132	0.43
22-Feb-88	---	0.89
24-Mar-88	1139	0.14
25-Apr-88	1242	0.49

Monitor Well GM-84 (I)*

Measuring Point: Top of casing
 Elevation of measuring point: 11.84 ft. msl

Date	Time	Water Level Elevation
10-Mar-87	1814	0.96
16-Apr-87	1144	0.75
29-May-87	1346	1.23
26-Jun-87	0724	0.95
21-Jul-87	0850	1.40
17-Aug-87	1105	1.34
21-Sep-87	0827	0.96
21-Oct-87	1107	0.40
30-Nov-87	1103	0.70
21-Dec-87	1152	0.46
05-Jan-88	1312	0.21
22-Feb-88	---	0.94
24-Mar-88	1251	0.40
25-Apr-88	1444	0.72

- * S = shallow monitor well, about 13 ft deep
- I = intermediate monitor well, about 40 ft deep
- D = deep monitor well, about 65 ft deep

DATE REVISED: JUNE 2, 1988

(NAVYTO290PN5.MWWL)

RECOVERY WELL WATER ELEVATIONS IN FT. MSL

Recovery Well RW-1

Measuring Point: Edge of well's access hole
 Elevation of measuring point: 4.91 ft. msl

Date	Time	Water Level Elevation
04-Feb-87	0905	1.12
06-Feb-87	1552	-3.99
10-Mar-87	1330	-5.74
16-Apr-87	0805	-13.51
26-Jun-87	1559	-13.43
21-Jul-87	0705	-13.38
17-Aug-87	0741	-12.21
21-Sep-87	0700	-10.29
21-Oct-87	0722	-13.29
30-Nov-87	0730	-13.17
21-Dec-87	1100	-14.03
05-Jan-88	1136	-12.89
22-Feb-88	---	-13.54
24-Mar-88	1145	-14.28
25-Apr-88	1247	-13.99

Recovery Well RW-2

Measuring Point: Edge of well's access hole
 Elevation of measuring point: 5.88 ft. msl

Date	Time	Water Level Elevation
06-Feb-87	1530	-7.39
10-Mar-87	1255	-11.79
16-Apr-87	0855	-8.65
26-Jun-87	1530	-11.97
21-Jul-87	0717	-13.04
17-Aug-87	0750	-11.04
21-Sep-87	0708	-6.02
21-Oct-87	0731	-12.42
30-Nov-87	0740	-12.16
21-Dec-87	1107	-13.12
05-Jan-88	1143	-12.68
22-Feb-88	---	-13.49
24-Mar-88	1152	-12.94
25-Apr-88	1255	-12.69

Recovery Well RW-3

 Measuring Point: Edge of well's access hole
 Elevation of measuring point: 5.64 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1359	1.34
06-Feb-87	1513	-5.76
10-Mar-87	1045	-6.86
16-Apr-87	1008	-5.53
26-Jun-87	1550	-6.77
21-Jul-87	0720	-7.26
17-Aug-87	0756	-3.86
21-Sep-87	0714	-6.34
21-Oct-87	0735	-13.56
30-Nov-87	0746	-12.56
21-Dec-87	1112	-13.26
05-Jan-88	1146	-13.16
22-Feb-88	---	-12.06
24-Mar-88	1155	-12.96
25-Apr-88	1300	-12.92

Recovery Well RW-4

 Measuring Point: Edge of well's access hole
 Elevation of measuring point: 3.44 ft. msl

Date	Time	Water Level Elevation
----	----	-----
03-Feb-87	1806	1.73
06-Feb-87	0802	-11.21
10-Mar-87	0920	-2.38
16-Apr-87	1600	-12.78
26-Jun-87	1510	-8.05
21-Jul-87	1030	-8.98
17-Aug-87	1025	-10.12
21-Sep-87	1120	-10.36
21-Oct-87	1055	-5.76
30-Nov-87	1020	-9.26
21-Dec-87	1220	-9.46
05-Jan-88	1333	-13.06
22-Feb-88	---	-9.31
24-Mar-88	1233	-9.20
25-Apr-88	1405	-6.46

Recovery Well RW-5

Measuring Point: Edge of well's access hole
Elevation of measuring point: 4.22 ft. msl

Date	Time	Water Level Elevation
06-Feb-87	0735	-10.38
10-Mar-87	0815	-2.66
16-Apr-87	2045	0.85
26-Jun-87	1445	-4.18
21-Jul-87	1140	1.12
17-Aug-87	1016	2.68
21-Sep-87	1030	-8.82
21-Oct-87	---	0.57
30-Nov-87	1130	-11.78
21-Dec-87	1225	0.84
05-Jan-88	1255	0.12
22-Feb-88	---	2.50
24-Mar-88	1217	-9.74
25-Apr-88	1328	-11.23

Recovery Well RW-6

Measuring Point: Edge of well's access hole
Elevation of measuring point: 2.66 ft. msl

Date	Time	Water Level Elevation
04-Feb-87	1307	1.96
05-Feb-87	-	-4.90
06-Feb-87	0719	-12.85
10-Mar-87	1125	-2.27
16-Apr-87	1420	-14.26
26-Jun-87	1520	-3.33
21-Jul-87	0755	-14.44
17-Aug-87	0842	-4.54
21-Sep-87	1306	-5.64
21-Oct-87	1440	-7.84
30-Nov-87	1135	-5.14
21-Dec-87	1126	-13.64
05-Jan-88	1155	-10.94
22-Feb-88	---	-14.44
24-Mar-88	1204	-11.04
25-Apr-88	1317	-13.94

Recovery Well RW-7

Measuring Point: Edge of well's access hole
Elevation of measuring point: 3.35 ft. msl

Date	Time	Water Level Elevation
----	----	-----
04-Feb-87	1233	2.12
05-Feb-87		-2.31
06-Feb-87	0819	-12.06
10-Mar-87	1005	-6.13
16-Apr-87	1055	-14.68
26-Jun-87	1410	-19.73
21-Jul-87	0825	-16.49
17-Aug-87	0950	-11.55
21-Sep-87	1345	-13.55
21-Oct-87	1252	-10.35
30-Nov-87	1505	-16.55
21-Dec-87	---	-15.15
05-Jan-88	1353	-11.45
22-Feb-88	---	-16.25
24-Mar-88	1320	-16.38
25-Apr-88	1515	-12.25

DATE REVISED: JUNE 2, 1988

(NAVYTO290PN5.RWWL)

Table C-1. Locations of Survey Bench Marks

- o H-161, -U.S.C.&G. disk marked H-161-1955 on east headwall of Sherman inlet at Pensacola Pass inlet. Elev. = 5.436 ft
- o G-161, -U.S.C.&G. disk stamped G-161-1955 75.0 ft S.E. of the S.E. entrance road for Sherman field control tower. Directly under center of airport light. Elev. = 30.938 ft
- o K-161, -U.S.C.&G. disk in column at northwest corner of navy refueling pier. Elev. = 9.780 ft.
- o B.M. "A" - NAS concrete monument on N.W. corner of concrete slab, 36.3 ft south and 51.5 ft east of the S.W. corner of sludge drying beds, 212 ft_± east of sewerage treatment plant main gate.
Elev. = 5.98 ft (N.A.S.)
5.80 ft (U.S.C.&G.)

APPENDIX D

Water-Quality Data for
Corrective-Action Monitor Wells

pH and Specific Conductance
Inorganic Elements
Organic Compounds

pH AND SPECIFIC CONDUCTANCE
MEASUREMENTS FROM CORRECTIVE-ACTION
MONITOR WELLS

Monitor Well UG-1 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)

17-Jul-84		160
31-Oct-84	7.1	190
04-Feb-87	5.4	156
05-Feb-87	5.5	133
06-Feb-87	5.6	141
03-Dec-87	6.2	120
22-Feb-88	5.9	170

Monitor Well DG-2 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)

04-Feb-87	5.5	1053
05-Feb-87	5.8	986
06-Feb-87	5.4	994
01-Dec-87	6.4	535
22-Feb-88	6.1	495
23-Feb-88	Well abandoned	

Monitor Well GM-9 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)

17-Jul-84		950
31-Oct-84	6.3	760
03-Feb-87	6.4	1380
05-Feb-87	6.2	1740
06-Feb-87	6.0	1182
10-Mar-87	6.5	960
16-Apr-87	6.2	905
15-May-87	5.8	585
26-Jun-87	6.5	402
21-Jul-87	6.5	600
18-Aug-87	6.4	210
21-Sep-87	6.3	210
21-Oct-87	6.4	180
01-Dec-87	6.6	164
24-Feb-88	5.8	320

Monitor Well GM-62 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
04-Feb-87	5.8	871
05-Feb-87	6.3	845
06-Feb-87	5.9	875
02-Dec-87	6.5	283
23-Feb-88	6.2	380

Monitor Well GM-63 (D)*

Date	pH (units)	Specific Conductance (umhos/cm)
04-Feb-87	6.3	4430
05-Feb-87	7.4	4220
06-Feb-87	6.7	3960
02-Dec-87	6.7	1430
23-Feb-88	6.5	3100

Monitor Well GM-64 (I)*

Date	pH (units)	Specific Conductance (umhos/cm)
04-Feb-87	5.3	5330
05-Feb-87	8.8	5240
06-Feb-87	6.6	3840
02-Dec-87	7.2	1360
23-Feb-88	7.3	1800

Monitor Well GM-65 (D)*

Date	pH (units)	Specific Conductance (umhos/cm)
03-Feb-87	6.1	1134
05-Feb-87	6.7	1233
06-Feb-87	6.6	1196
01-Dec-87	6.3	467
24-Feb-88	6.1	625

Monitor Well GM-66 (I)*

Date	pH (units)	Specific Conductance (umhos/cm)
----	-----	-----
03-Feb-87	3.3	8880
05-Feb-87	3.3	9600
06-Feb-87	2.9	9330
10-Mar-87	3.1	7820
16-Apr-87	3.6	7320
15-May-87	3.3	7740
26-Jun-87	3.0	6990
21-Jul-87	3.2	7000
18-Aug-87	2.6	7900
21-Sep-87	3.0	7000
21-Oct-87	2.8	3700
01-Dec-87	2.9	4880
24-Feb-88	2.6	8000

Monitor Well GM-67 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
----	-----	-----
03-Feb-87	5.7	920
05-Feb-87	5.8	903
06-Feb-87	5.8	887
10-Mar-87	6.6	680
16-Apr-87	5.7	598
15-May-87	6.0	651
26-Jun-87	5.7	577
21-Jul-87	6.4	1000
18-Aug-87	7.8	550
21-Sep-87	6.5	1700
21-Oct-87	6.1	850
01-Dec-87	6.5	370
24-Feb-88	5.7	1900

Monitor Well GM-68 (D)*

Date	pH (units)	Specific Conductance (umhos/cm)
----	-----	-----
03-Feb-87	6.1	727
05-Feb-87	6.3	748
06-Feb-87	6.3	751
01-Dec-87	6.2	315
24-Feb-88	5.9	500

Monitor Well GM-69 (I)*

Date	pH (units)	Specific Conductance (umhos/cm)
03-Feb-87	6.9	3570
05-Feb-87	7.0	3400
06-Feb-87	6.8	3490
10-Mar-87	7.4	4120
16-Apr-87	7.3	3000
15-May-87	6.7	2840
26-Jun-87	7.0	2720
21-Jul-87	7.1	2900
18-Aug-87	7.3	2500
21-Sep-87	6.7	2890
21-Oct-87	7.1	2050
01-Dec-87	7.2	1068
24-Feb-88	6.9	2400

Monitor Well GM-71 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
04-Feb-87	5.5	420
05-Feb-87	6.1	427
06-Feb-87	5.8	408
03-Dec-88	6.1	202
24-Feb-88	5.8	220

Monitor Well GM-72 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
04-Feb-87	5.8	677
05-Feb-87	6.3	688
06-Feb-87	6.3	676
03-Dec-87	6.7	480
23-Feb-88	6.1	430

Monitor Well GM-74 (D)*

Date	pH (units)	Specific Conductance (umhos/cm)
04-Feb-87	6.8	1680
05-Feb-87	9.5	1283
06-Feb-87	8.0	1180
01-Dec-87	6.0	435
22-Feb-88	6.1	510
23-Feb-88	Well abandoned	

Monitor Well GM-75 (I)*

Date	pH (units)	Specific Conductance (umhos/cm)
04-Feb-87	6.2	3770
05-Feb-87	6.7	3770
06-Feb-87	7.1	3920
01-Dec-87	6.5	1840
22-Feb-88	6.8	2800
23-Feb-88	Well abandoned	

Monitor Well GM-76 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
04-Feb-87	5.0	1119
05-Feb-87	5.4	1060
06-Feb-87	5.5	1144
03-Dec-87	6.2	1063
23-Feb-88	6.1	1420

Monitor Well GM-77 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
04-Feb-87	5.5	790
05-Feb-87	5.9	781
06-Feb-87	5.6	817
03-Dec-87	6.3	410
23-Feb-88	6.1	490

Monitor Well GM-78 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
04-Feb-87	4.7	204
05-Feb-87	5.2	204
06-Feb-87	5.3	199
03-Dec-87	5.7	115
23-Feb-88	5.4	170

Monitor Well GM-79 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
04-Feb-87	4.6	435
05-Feb-87	5.0	496
06-Feb-87	5.4	518
03-Dec-87	5.5	189
23-Feb-88	5.4	150

Monitor Well GM-83 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
04-Feb-87	4.1	170
05-Feb-87	4.7	168
06-Feb-87	4.5	162
03-Dec-87	5.0	147
23-Feb-88	4.7	152

Monitor Well GM-84 (I)*

Date	pH (units)	Specific Conductance (umhos/cm)
25-Apr-86	6.4	10400
16-Apr-87	7.1	15100
18-Aug-87	6.5	11800
02-Dec-87	6.9	4550
24-Feb-88	7.0	8000

COMPOSITE DISCHARGE
RW-1, RW-2, RW-3, RW-4, RW-5, RW-6

Date	pH (units)	Specific Conductance (umhos/cm)

19-Feb-87	6.0	1600
27-Feb-87 /a	5.9	210
20-Mar-87	5.3	1500
30-Mar-87	6.5	1200
20-Apr-87	6.6	1350
08-May-87	6.6	1100
15-May-87 /b	4.1	1390
22-May-87 /b	3.0	1600
29-May-87 /c	4.5	1350
05-Jun-87 /b	3.7	1375
12-Jun-87 /b	5.5	1150
19-Jun-87 /b	3.5	2200
25-Jun-87	3.5	2100
01-Jul-87 /c	5.8	1000
10-Jul-87 /c	6.2	900
20-Jul-87 /c	6.1	850
30-Jul-87 /c	6.4	1100
07-Aug-87 /c	6.6	1050
13-Aug-87 /c	6.2	900
18-Aug-87 /c	6.3	1700
28-Aug-87 /c	6.4	875
04-Sep-87 /c	6.4	1200
10-Sep-87 /c	6.3	1000
18-Sep-87 /c	6.5	1100
21-Sep-87 /c	6.4	1400
02-Oct-87 /c	6.6	900
13-Oct-87 /c	6.4	1000
21-Oct-87 /c	6.7	975
13-Nov-87	6.6	900
02-Dec-87	6.6	722
21-Dec-87 /c	6.6	870
05-Jan-88 /c	6.3	900
23-Feb-88	4.2	1300
24-Mar-88	5.4	1100

- /a = sample collected after heavy rain
 /b = composite sample from RW-1, RW-2, RW-3, RW-5
 /c = composite sample from RW-1, RW-2, RW-3, RW-4, RW-6
 * (S) = shallow monitor well, about 13 ft deep
 (I) = intermediate monitor well, about 40 ft deep
 (D) = deep monitor well, about 65 ft deep

(T0290PN5.PHSCCAM)

CORRECTIVE ACTION MONITOR WELLS
RESULTS OF INORGANIC ANALYSES

Concentrations in mg/l

MONITOR WELL UG-1 (S)*

Date Sampled	Sodium (EPA Method 200.7)	Chloride* (EPA Method 300.0)
03-Dec-87	5.4	5.0
22-Feb-88	4.6	9.0

MONITOR WELL GM-9 (S)*

Date Sampled	Sodium (EPA Method 200.7)	Chloride (EPA Method 300.0)
01-Dec-87	2.1	2.9
24-Feb-88	1.8	1.8

MONITOR WELL GM-63 (D)*

Date Sampled	Sodium (EPA Method 200.7)	Chloride (EPA Method 300.0)
02-Dec-87	470	830
23-Feb-88	420	800

MONITOR WELL GM-64 (I)*

Date Sampled	Sodium (EPA Method 200.7)	Chloride (EPA Method 300.0)
02-Dec-87	330	470
23-Feb-88	200	340

MONITOR WELL GM-65 (D)*

Date Sampled	Sodium (EPA Method 200.7)	Chloride (EPA Method 300.0)
01-Dec-87	120	180
24-Feb-88	110	180

MONITOR WELL GM-66 (I)*

Date Sampled	Sodium (EPA Method 200.7)	Chloride (EPA Method 300.0)
01-Dec-87	640	530
24-Feb-88	670	620

MONITOR WELL GM-67 (S)*

Date Sampled	Sodium (EPA Method 200.7)	Chloride (EPA Method 300.0)
01-Dec-87	55	68
24-Feb-88	130	200

MONITOR WELL GM-68 (D)*

Date Sampled	Sodium (EPA Method 200.7)	Chloride (EPA Method 300.0)
01-Dec-87	61	120
24-Feb-88	67	120

MONITOR WELL GM-69 (I)*

Date Sampled	Sodium (EPA Method 200.7)	Chloride (EPA Method 300.0)
01-Dec-87	510	120
24-Feb-88	500	730

MONITOR WELL GM-71 (S)*

Date Sampled	Sodium (EPA Method 200.7)	Chloride (EPA Method 300.0)
03-Dec-87	9.8	8.9
24-Feb-88	5.7	11.0

MONITOR WELL GM-72 (S)*

<u>Date Sampled</u>	<u>Sodium (EPA Method 200.7)</u>	<u>Chloride (EPA Method 300.0)</u>
03-Dec-87	79	98
23-Feb-88	42	46

MONITOR WELL GM-74 (D)*

<u>Date Sampled</u>	<u>Sodium (EPA Method 200.7)</u>	<u>Chloride (EPA Method 300.0)</u>
01-Dec-87	81	130
22-Feb-88	63	120
23-Feb-88	Well abandoned	

MONITOR WELL GM-76 (S)*

<u>Date Sampled</u>	<u>Sodium (EPA Method 200.7)</u>	<u>Chloride (EPA Method 300.0)</u>
03-Dec-87	210	250
23-Feb-88	190	220

MONITOR WELL GM-77 (S)*

<u>Date Sampled</u>	<u>Sodium (EPA Method 200.7)</u>	<u>Chloride (EPA Method 300.0)</u>
03-Dec-87	53	50
23-Feb-88	43	48

MONITOR WELL GM-78 (S)*

<u>Date Sampled</u>	<u>Sodium (EPA Method 200.7)</u>	<u>Chloride (EPA Method 300.0)</u>
03-Dec-87	11	17
23-Feb-88	14	22

MONITOR WELL GM-79 (S)*

Date Sampled	Sodium (EPA Method 200.7)	Chloride (EPA Method 300.0)
03-Dec-87	34	50
23-Feb-88	17	18

MONITOR WELL GM-83 (S)*

Date Sampled	Sodium (EPA Method 200.7)	Chloride (EPA Method 300.0)
03-Dec-87	24	48
23-Feb-88	23	39

COMBINED DISCHARGE RW-1 THROUGH RW-6

Date Sampled	Sodium (EPA Method 200.7)	Chloride (EPA Method 300.0)
03-Dec-87	170	200
23-Feb-88	150	200

*(S)=shallow monitor well, about 13 ft deep
 (I)=intermediate monitor well, about 40 ft deep
 (D)=deep monitor well, about 65 ft deep

DATE REVISED: MAY 17, 1988

(NAVYT0290PN05.RIA)

RESULTS OF ORGANIC COMPOUND ANALYSES
WASTEWATER TREATMENT PLANT
NAS PENSACOLA, FLORIDA

T Vocs = Total Volatile Organic Compounds
Bene = Benzene
Ctet = Carbon Tetrachloride
Cbene = Chlorobenzene
Cane = Chloroethane
Cform = Chloroform
Dicbene = Dichlorobenzenes
11Diane = 1,1-Dichloroethane
12Diane = 1,2-Dichloroethane
11Diene = 1,1-Dichloroethene
12Diene = trans-1,2-Dichloroethene
Ebene = Ethyl Benzene
Tetene = Tetrachloroethene
Tol = Toluene
111Triane = 1,1,1-Trichloroethane
Tce = Trichloroethene
Vc = Vinyl Chloride
Nd = None Detected or Below Quantitation Levels
T Bnes = Total Base Neutral Extractables
T Aes = Total Acid Extractables
(Date) = Sampled according to operating permit
(S) = Shallow monitor well, about 13 ft deep
(I) = Intermediate monitor well, about 40 ft deep
(D) = Deep monitor well, about 65 ft deep

NOTE: All blank entries designate that the compound was below the detection limit or below quantitation levels.

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MONITOR WELL DG-2 (S)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
12-Sep-85	503/a			6	28		/c	240				9	17	81		6	1
(01-Dec-87)	172			5	150		/c	12						5			
(22-Feb-88)	35/b			3	26		/c										
23-Feb-88	well abandoned																

/a = sample also contained 88 ug/l methylene chloride and 27 ug/l 1,1,2,2-tetrachloroethane

/b = sample also contained 6 ug/l total xylenes

/c = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
12-Sep-85	841/a	330	330	170		
(01-Dec-87)	310	160	36	66	48	
(22-Feb-88)	101	59	14	28		
23-Feb-88	well abandoned					

/a = sample also contained 11 ug/l di-n-butyl phthalate

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethyphenol	Phenol
12-Sep-85	780	760	20
(01-Dec-87)	ND		
23-Feb-88	well abandoned		

MONITOR WELL GM-9 (8)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
17-Jul-84	28,907			47			/c	6,900	9,600	125			675		11,500	60	
31-Oct-84	1,735/a			10	5	<5	1,000	660	<3		<5		4		<5	<1	21
03-Feb-87	1,784			80			885	403		11			42		356	7	
15-May-87	1,961/b			8			1,327	27				3	23	2			1
18-Aug-87	ND																
(01-Dec-87)	ND						/d										
(24-Feb-88)	54/e						/d										

/a = sample also contained <10 ug/l methylene chloride and 6 ug/l 1,1,2,2-tetrachloroethane

/b = sample also contained 243 ug/l dibromochloromethane and 327 ug/l trichlorofluoromethane

/c = not reported

/d = reported in base/neutral extractable analytical results

/e = sample contained 54 ug/l acetone; estimated value; suspected laboratory contamination based on review of QA/QC data

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
12-Sep-85	9,450	3,200	2,250	4,000		
03-Feb-87	515	262	109	127	17	
18-Aug-87	ND					
(01-Dec-87)	28	17	11			
(24-Feb-88)	ND					

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
12-Sep-85	70/a	20	
03-Feb-87	ND		
(01-Dec-87)	ND		

/a = sample also contained 50 ug/l p-chloro-m-cresol

MONITOR WELL GM-62 (S)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctat	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
12-Sep-85	52/a						/b						6	2			
(02-Dec-87)	ND						/b										
(23-Feb-88)	9						/b				9						

/a = sample also contained 21 ug/l methylene chloride and 23 ug/l 1,1,2,2-tetrachloroethane
 /b = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnas	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
12-Sep-85	ND					
(02-Dec-87)	ND					
(23-Feb-88)	ND					

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
12-Sep-85	ND		
(02-Dec-87)	ND		

D-15

MONITOR WELL GM-63 (D)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctat	Cbene	Cane	Cform	Dicbene	11Dlane	12Dlane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tee	Vc
12-Sep-85	16/ ^a						/b						6	2			
(02-Dec-87)	ND						/b										
(23-Feb-88)	ND						/b										

^a = sample also contained 8 ug/l 1,1,2,2-tetrachloroethane
^b = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
12-Sep-85	ND					
(02-Dec-87)	ND					
(23-Feb-88)	ND					

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
12-Sep-85	ND		
(02-Dec-87)	ND		

D-16

MONITOR WELL GM-64 (I)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
12-Sep-85	23/a						/b						9				
(02-Dec-87)	102			19			/b	83									
(23-Feb-88)	12						/b	12									

/a = sample also contained 14 ug/l 1,1,2,2-tetrachloroethane
 /b = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
12-Sep-85	610/a					
(02-Dec-87)	49		49			
(23-Feb-88)	22/b		10			

/a = sample contained 610 ug/l di-n-butyl phthalate
 /b = sample also contained 12 ug/l bis (2-ethylhexyl) phthalate; 10 ug/l 1,2-dichlorobenzene estimated value based on review of QA/QC data

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Pheonl
12-Sep-85	ND		
(02-Dec-87)	ND		

MONITOR WELL GM-65 (D)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
12-Sep-85	4						/a									4	
(01-Dec-87)	50/b						/a									50	
(24-Feb-88)	25/c						/a										

/a = reported in base/neutral extractable analytical results

/b = replicate A (field replicate of GM-65) contained no VOCs

/c = sample contained 25 ug/l acetone; estimated value; suspected laboratory contamination based on review of QA/QC data

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
12-Sep-85	ND					
(01-Dec-87)	ND					
(24-Feb-88)	ND					

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
12-Sep-85	ND		
(01-Dec-87)	ND		

MONITOR WELL GM-66 (I)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
12-Sep-85	3,717/ ^a			16			/c	14		160	882		5	5		2,600	27
03-Feb-87	16,574			34				18		446			8	15		15,907	146
15-May-87	24,750															24,750	
18-Aug-87	14,730			140							990					13,600	
(01-Dec-87)	12,331			49			/c	15		390	1,600			7		10,000	270
(24-Feb-88)	6,377			61			/c	18		320/ ^b	1,600/ ^b			8		4,200/ ^b	170

^a = sample also contained 8 ug/l 1,1,2,2-tetrachloroethane
^b = concentration exceeded calibrated range of instrument
^c = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
12-Sep-85	ND					
03-Feb-87	ND					
18-Aug-87	23/ ^a					
(01-Dec-87)	23		13		10	
(24-Feb-88)	46/ ^b		11		10	

^a = sample contained 23 ug/l diethylphthalate
^b = sample also contained 25 ug/l pyrene; 11 ug/l 1,2-dichlorobenzene and 10 ug/l naphthalene estimated values based on review of QA/QC data

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
12-Sep-85	ND		
03-Feb-87	ND		
(01-Dec-87)	30	30	

MONITOR WELL GM-67 (S)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
12-Sep-85	85			12			/a	7			16					50	
03-Feb-87	753			70			507	85			12					78	1
15-May-87	8															8	
18-Aug-87	258	2		79			170	7									
(01-Dec-87)	ND						/a										
(24-Feb-88)	ND						/a										

/a = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
12-Sep-85	510	160	150	200		
03-Feb-87	328	114	86	128		
18-Aug-87	145	62	38	45		
(01-Dec-87)	ND					
(24-Feb-88)	ND					

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
12-Sep-85	ND		
03-Feb-87	ND		
(01-Dec-87)	ND		

MONITOR WELL GM-68 (D)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Benz	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetane	Tol	111Triane	Tce	Vc	
12-Sep-85	10						/a										10	
(01-Dec-87)	ND						/a											
(24-Feb-88)	ND						/a											

/a = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
12-Sep-85	ND					
(01-Dec-87)	ND					
(24-Feb-88)	ND					

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
12-Sep-85	ND		
(01-Dec-87)	ND		

MONITOR WELL GM-69 (I)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
12-Sep-85	64	3					/c	47						8		3	3
03-Feb-87	1,412	9		387	36		710	238				3		4		8	17
15-May-87	792/a	3		112			543	38				2		3		6	
18-Aug-87	6,050			232			5,700	118									
(01-Dec-87)	450	6		240	93		/c	89									22
(24-Feb-88)	686/b	5		510	69		/c	76						5			13

/a = sample also contained 85 ug/l dibromochloromethane

/b = sample also contained 8 ug/l total xylenes

/c = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
12-Sep-85	3,381	620	1,400	1,350	11	
03-Feb-87	505	148	192	165		
18-Aug-87	1,841	594	774	473		
(01-Dec-87)	2,540	660	1,000	880		
(24-Feb-88)	2,050	540	800	710		

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
12-Sep-85	ND		
03-Feb-87	ND		
(01-Dec-87)	ND		

MONITOR WELL GM-74 (D)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
12-Sep-85	1						/b							1			
(01-Dec-87)	ND						/b										
(22-Feb-88)	22/a						/b										
23-Feb-88	well abandoned																

/a = sample contained 22 ug/l acetone; estimated value; suspected laboratory contamination based on review of QA/QC data
 /b = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
12-Sep-85	ND					
(01-Dec-87)	ND					
(22-Feb-88)	ND					
23-Feb-88	well abandoned					

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
12-Sep-85	10		10
(01-Dec-87)	ND		
23-Feb-88	well abandoned		

D-23

MONITOR WELL GM-75 (I)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
12-Sep-85	58/a			55			/b	1									1
(01-Dec-87)	170			110			/b	44						16			
(22-Feb-88)	160			160			/b										
(22-Feb-88)	170			170			/b										
23-Feb-88	well abandoned																

/a = sample also contained 1 ug/l bis (chloromethyl) ether
 /b = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
12-Sep-85	ND					
(01-Dec-87)	184		100	16	30	38
(22-Feb-88)	24		24			
(22-Feb-88)	76/a		22			
23-Feb-88	well abandoned					

/a = sample also contained 54 ug/l bis (2-ethylhexyl) phthalate

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
12-Sep-85	ND		
(01-Dec-87)	170	170	
(22-Feb-88)	ND		
23-Feb-88	well abandoned		

INORGANICS

Date Sampled	Manganese
(22-Feb-88)	65
23-Feb-88	well abandoned

D-24

MONITOR WELL GM-84 (I)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
25-Apr-86	13/a					6	/b										
18-Aug-87	5			5													
(02-Dec-87)	7			7			/b										
(24-Feb-88)	31/c						/b										

/a = sample also contained 7 ug/l methylene chloride

/b = reported in base/neutral extractable analytical results

/c = sample contained 31 ug/l acetone; estimated value; suspected laboratory contamination based on review of QA/QC data

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
25-Apr-86	71/a					
18-Aug-87	ND					
(02-Dec-87)	ND					
(24-Feb-88)	ND					

/a = sample contained 71 ug/l bis(2-ethylhexyl)phthalate

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
25-Apr-86	ND		
(02-Dec-87)	ND		

APPENDIX E

Water-Quality Data for
Point-of-Compliance Monitor Wells

pH and Specific Conductance
Organic Compounds and Manganese

pH AND SPECIFIC CONDUCTANCE
MEASUREMENTS FROM POINT-OF-COMPLIANCE
MONITOR WELLS

Monitor Well UG-1 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
-----	-----	-----
17-Jul-84		160
31-Oct-84	7.1	190
04-Feb-87	5.4	156
05-Feb-87	5.5	133
06-Feb-87	5.6	141
03-Dec-87	6.2	120
22-Feb-88	5.9	170

Monitor Well DG-1 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
-----	-----	-----
17-Jul-84	6.8	1100
31-Oct-84	7.0	1400
04-Feb-87	5.6	480
05-Feb-87	5.4	117
06-Feb-87	5.4	97
22-Feb-88	6.0	255
23-Feb-88	Well abandoned	

Monitor Well DG-4 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
-----	-----	-----
17-Jul-84	6.8	950
31-Oct-84	7.0	880
04-Feb-87	5.6	546
05-Feb-87	6.0	239
06-Feb-87	6.1	202
03-Dec-87	6.6	522
23-Feb-88	6.6	840

Monitor Well DG-5 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
17-Jul-84		500
31-Oct-84	6.8	1150
04-Feb-87	5.9	880
05-Feb-87	6.3	696
06-Feb-87	6.2	740
23-Feb-88	6.4	660

Monitor Well DG-6 (S)*

Date	pH (units)	Specific Conductance (umhos/cm)
17-Jul-84		1200
31-Oct-84	7.0	1300
04-Feb-87	5.9	1006
05-Feb-87	6.2	1016
06-Feb-87	6.5	776
22-Feb-88	6.2	320
23-Feb-88	Well abandoned	

Monitor Well GM-75 (I)*

Date	pH (units)	Specific Conductance (umhos/cm)
04-Feb-87	6.2	3770
05-Feb-87	6.7	3770
06-Feb-87	7.1	3920
01-Dec-87	6.5	1840
22-Feb-88	6.8	2800
23-Feb-88	Well abandoned	

(S)=shallow monitor well, about 10 ft deep
(I)=intermediate monitor well, about 40 ft deep

(T0290PN5.PHSCPOC)

RESULTS OF ORGANIC COMPOUND ANALYSES
WASTEWATER TREATMENT PLANT
NAS PENSACOLA, FLORIDA

T Vocs = Total Volatile Organic Compounds
Bene = Benzene
Ctet = Carbon Tetrachloride
Cbene = Chlorobenzene
Cane = Chloroethane
Cform = Chloroform
Dicbene = Dichlorobenzenes
11Diane = 1,1-Dichloroethane
12Diane = 1,2-Dichloroethane
11Diene = 1,1-Dichloroethene
12Diene = trans-1,2-Dichloroethene
Ebene = Ethyl Benzene
Tetene = Tetrachloroethene
Tol = Toluene
111Triane = 1,1,1-Trichloroethane
Tce = Trichloroethene
Vc = Vinyl Chloride
Nd = None Detected or Below Quantitation Levels
T Bnes = Total Base Neutral Extractables
T Aes = Total Acid Extractables
(Date) = Sampled according to operating permit
(S) = Shallow monitor well, about 13 ft deep
(I) = Intermediate monitor well, about 40 ft deep
(D) = Deep monitor well, about 65 ft deep

NOTE: All blank entries designate that the compound was below the detection limit or below quantitation levels.

MONITOR WELL UG-1 (S)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
17-Jul-84	ND						/b										
31-Oct-84	28/a	<1	<3				/b						<3	<1			
(22-Feb-88)	ND						/b										

/a = sample also contained <5 ug/l 2-chloroethylvinyl ether, <10 ug/l methylene chloride and <5 ug/l 1,1,2,2-tetrachloroethane
 /b = reported in base/neutral extractable analytical results.

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
17-Jul-84	ND					
31-Oct-84	27/a					
(22-Feb-88)	10/b					

E-4 /a = sample contained 27 ug/l bis (2-ethylhexyl) phthalate
 /b = sample contained 10 ug/l bis (2-ethylhexyl) phthalate

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
17-Jul-84	ND		
31-Oct-84	ND		
(22-Feb-88)	ND		

INORGANICS

Date Sampled	Manganese
(22-Feb-88)	15

MONITOR WELL DG-1 (B)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
17-Jul-84	17,820/a				180		/d	1,500						160	110		10
31-Oct-84	12,324/b	<1	425	160		320	/d	2,750		800		6	500	600	5,900	20	32
(22-Feb-88)	48/c				23		/d	11									
23-Feb-88	well abandoned																

/a = sample also contained 160 ug/l 2-hexanone, 11,000 ug/l methyl ethyl ketone and 4,700 ug/l acetone

/b = sample also contained 800 ug/l 1,1,2,2-tetrachloroethane and <10 ug/l methylene chloride

/c = sample also contained 14 ug/l acetone; estimated value based on review of QA/QC data

/d = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
17-Jul-84	1,155/a	530	110	200	260	3
31-Oct-84	2,389/b	1,163	193	387		
(22-Feb-88)	88/c	43	10	15		
23-Feb-88	well abandoned					

/a = sample also contained 2 ug/l acenaphthene and 50 ug/l 2-methyl naphthalene

/b = sample also contained 8 ug/l di-n-octyl-phthalate and 638 ug/l nitrobenzene

/c = sample also contained 20 ug/l bis (2-ethylhexyl) phthalate

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
17-Jul-84	3,810/a	480	3
31-Oct-84	35/b		
(22-Feb-88)	ND		
23-Feb-88	well abandoned		

/a = sample also contained 24 ug/l 2-chlorophenol, 3 ug/l 2,4-dichlorophenol and 3,300 ug/l 2-methyl phenol

/b = sample contained 35 ug/l 2-chlorophenol

INORGANICS

Date Sampled	Manganese
(22-Feb-88)	119
23-Feb-88	well abandoned

MONITOR WELL DG-4 (S)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Voca	Bens	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
17-Jul-84	1,412/ ^a			13	28		/ ^e	850				2		210	61		20
31-Oct-84	1,218/ ^b	2	<3	3		<5	/ ^e	1025	<3	<5	75	9	11	14	8	13	16
(03-Dec-87)	634/ ^c			13	130		/ ^e	310				5		34			
(23-Feb-88)	825						/ ^e	140			410/ ^d			25/ ^f			250/ ^d

^a = sample also contained 43 ug/l total xylenes, 110 ug/l 2-hexanone and 75 ug/l 1,2-dichloro-1,1,2-trifluoroethane

^b = sample also contained <10 ug/l methylene chloride and 16 ug/l 1,1,2,2-tetrachloroethane

^c = sample also contained 87 ug/l 2-butanone, 21 ug/l 4-methyl-2-pentanone, 34 ug/l total xylenes, and 130 ug/l acetone (estimated value, suspected laboratory contamination based on review of QA/QC data)

^d = concentration exceeded calibrated range of instrument

^e = reported in base/neutral extractable analytical results

^f = estimated value; holding time exceeded

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
17-Jul-84	ND					
31-Oct-84	716/ ^a	194	38	90	383	
(03-Dec-87)	473/ ^b	270	33	63	97	
(23-Feb-88)	342/ ^c	180	24	45	77	

^a = sample also contained 11 ug/l di-n-octyl-phthalate

^b = sample also contained 10 ug/l 2-methylnaphthalene

^c = sample also contained 16 ug/l 2-methylnaphthalene

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
17-Jul-84	ND		
31-Oct-84	137/ ^a		95
(03-Dec-87)	199/ ^b	85	
(23-Feb-88)	44/ ^c		

^a = sample also contained 42 ug/l 2-chlorophenol

^b = sample also contained 12 ug/l 2-chlorophenol, 37 ug/l 2-methylphenol, and 65 ug/l 4-methylphenol

^c = sample contained 12 ug/l 2-methylphenol and 32 ug/l 2,4-dimethylphenol

INORGANICS

Date Sampled	Manganese	Aluminum	Barium	Calcium	Copper	Iron	Magnesium	Mercury	Potassium	Sodium
(03-Dec-87)	<167	244	16	91,400	2.9	262	14,300	0.21	6,900	153,000
(23-Feb-88)	190									

MONITOR WELL DG-5 (S)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctat	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
17-Jul-84	1,716/ ^a						/d	37						6	26		
31-Oct-84	706/ ^b	2		45	72	<5	/d	525	<3		<5	4	<3	18			9
(23-Feb-88)	126/ ^c			9			/d	44				6					

^a = sample also contained 450 ug/l methylene chloride, 7 ug/l 2-hexanone, 540 ug/l methyl ethyl ketone and 110 ug/l acetone

^b = sample also contained <10 ug/l methylene chloride and <5 ug/l 1,1,2,2-tetrachloroethane

^c = sample also contained 60 ug/l acetone (estimated value based on review of QA/QC data) and 7 ug/l total xylenes

/d = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
17-Jul-84	25	16	3	6		
31-Oct-84	1,218/ ^a	708	80	170	250	
(23-Feb-88)	157/ ^b	48	14	24	56	

^a = sample also contained <10 ug/l di-n-octyl-phthalate

^b = sample also contained 15 ug/l 2-methylnaphthalene

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
17-Jul-84	ND		
31-Oct-84	15/ ^a		
(23-Feb-88)	ND		

^a = sample contained 15 ug/l 2-chlorophenol

INORGANICS

Date Sampled	Manganese
(23-Feb-88)	147

MONITOR WELL DG-6 (S)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
17-Jul-84	20,460/a						/c	1,500						170	330	20	
31-Oct-84	1,608/b	2	9	7	37	5	/c	1,225	<3	25	16	15	38	35	103	32	13
(22-Feb-88)	ND						/c										
23-Feb-88	well abandoned																

/a = sample also contained 240 ug/l 2-hexanone, 10,200 ug/l methyl ethyl ketone and 8,000 ug/l acetone

/b = sample also contained <10 ug/l methylene chloride and 33 ug/l 1,1,2,2-tetrachloroethane

/c = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
17-Jul-84	784/a	500	56	120	22	4
31-Oct-84	1,994/b	933	71	182	782	
(22-Feb-88)	ND					
23-Feb-88	well abandoned					

/a = sample also contained 2 ug/l hexachloroethane and 80 ug/l 2-methyl naphthalene

/b = sample also contained 26 ug/l di-n-octyl-phthalate

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
17-Jul-84	3,412/a	80	6
31-Oct-84	569/b	550	5
(22-Feb-88)	ND		
23-Feb-88	well abandoned		

/a = sample also contained 30 ug/l 2-chlorophenol, 2 ug/l 2,4-dichlorophenol and 3,300 ug/l 2-methyl phenol

/b = sample also contained 14 ug/l 2-chlorophenol

INORGANICS

Date Sampled	Manganese
(22-Feb-88)	16
23-Feb-88	well abandoned

MONITOR WELL GM-75 (I)

Concentrations in ug/l (ppb)

VOLATILE ORGANIC COMPOUNDS

Date Sampled	T Vocs	Bene	Ctet	Cbene	Cane	Cform	Dicbene	11Diane	12Diane	11Diene	12Diene	Ebene	Tetene	Tol	111Triane	Tce	Vc
12-Sep-85	58/a			55			/b	1									1
(01-Dec-87)	170			110			/b	44						16			
(22-Feb-88)	160			160			/b										
(22-Feb-88)	170			170			/b										
23-Feb-88	well abandoned																

/a = sample also contained 1 ug/l bis (chloromethyl) ether
 /b = reported in base/neutral extractable analytical results

BASE NEUTRAL EXTRACTABLES

Date Sampled	T Bnes	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Naphthalene	1,2,4-Trichlorobenzene
12-Sep-85	ND					
(01-Dec-87)	184		100	16	30	38
(22-Feb-88)	24		24			
(22-Feb-88)	76/a		22			
23-Feb-88	well abandoned					

/a = sample also contained 54 ug/l bis (2-ethylhexyl) phthalate

ACID EXTRACTABLES

Date Sampled	T Aes	2,4-Dimethylphenol	Phenol
12-Sep-85	ND		
(01-Dec-87)	170	170	
(22-Feb-88)	ND		
23-Feb-88	well abandoned		

INORGANICS

Date Sampled	Manganese
(22-Feb-88)	65
23-Feb-88	well abandoned

APPENDIX F

Correspondence Dated March 10, 1988
from James Malone, Southern Division
Naval Facilities Engineering Command
to Bill Kellenberger, FDER

Mr. Bill Kellenberger
Northwest District
Florida Department of Environmental Regulation
160 Governmental Center
Pensacola, FL 32501-8794

MAR 1988

SUBJ: PERMIT NO. H017-127020

Dear Mr. Kellenberger:

As previously discussed between you and Mr. Mike Green of our office, construction activities (required for regulatory compliance) are forcing modification of the groundwater monitoring system at the wastewater treatment plant (WWTP) at NAS Pensacola. Construction of the new surge tanks has required closure of several of the wells to prevent creation of direct pathways for contamination of the sand and gravel aquifer by surface waters. Monitor wells LC-1, -2, -6, CH-74, and CH-75 were closed in accordance with Florida standards after sampling for this quarter. Tank construction and closure activities are expected to continue for several months and can be expected to endanger any wells in the immediate vicinity of construction. Aside from the replacement of monitor well CH-12, we believe construction of new wells at the site is imprudent at this time. When construction activities are completed, a new deep monitor well on the west side can be constructed if deemed necessary.

Also, we are aware of the incomplete appearance of the Appendix IX analysis of monitor well LC-4. Full explanation has been requested from Martin-Barietta, which was charged with performance of this work for the Navy. Many of the excluded compounds are either water-reactive or are isomers of analyzed compounds. Others are heat sensitive and are not amenable to analysis by GC/MS. A breakdown of the excluded compounds with explanation will be forwarded to you when we receive it from the laboratory. If there are particular compounds of concern to you, please so advise us and we will have a new analysis performed by separate contract for those constituents.

Martin-Barietta is also performing the quarterly compliance monitoring analyses. Because of the extensive quality assurance review being performed jointly by Martin-Barietta and Cereghly and Miller on behalf of the Navy, we request an extension of the time limit for submission of results from thirty to forty-five days after the sampling period. If you have questions concerning these matters, please call Mike Green at (803) 743-0574.

Sincerely,

CSB
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WAK/C 0451L

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11433x
JB
3/8/88