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CONTAMINATION ASSESSMENT REPORT ADDENDUM SITE 14 BUILDING 3644 NAS PENSACOLA FL

11/1/1995

ABB ENVIRONMENTAL SERVICES, INC

CONTAMINATION ASSESSMENT REPORT

SITE 14, BUILDING 3644

NAVAL AVIATION DEPOT
NAVAL AIR STATION
PENSACOLA, FLORIDA

UNIT IDENTIFICATION CODE: N00204
CONTRACT NO. N62467-89-D-0317/008

NOVEMBER 1995

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORTH CHARLESTON, SOUTH CAROLINA
29419-9010

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CONTAMINATION ASSESSMENT REPORT

SITE 14, BUILDING 3644

NAVAL AVIATION DEPOT
NAVAL AIR STATION
PENSACOLA, FLORIDA

Unit Identification Code: N00204

Contract No. N62467-89-D-0317/008

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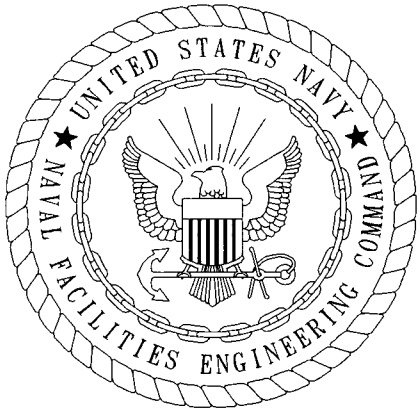
November 1995



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

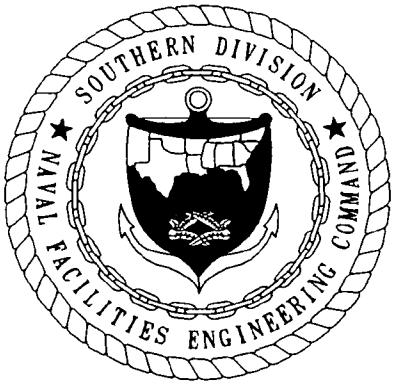
The Contractor, ABB Environmental Services, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/008 are complete and accurate and comply with all requirements of this contract.

DATE: November 6, 1995

NAME AND TITLE OF CERTIFYING OFFICIAL: Mark Diblin, P.G.
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Michael J. Williams, P.G.
Project Technical Lead

(DFAR 252.227-7036)



FOREWORD

To meet its mission objectives, the U.S. Navy performs a variety of operations, some requiring the use, handling, storage, or disposal of hazardous materials. Through accidental spills and leaks and conventional methods of past disposal, hazardous materials may have entered the environment in ways unacceptable by today's standards. With growing knowledge of the long-term effects of hazardous materials on the environment, the Department of Defense initiated various programs to investigate and remediate conditions related to suspected past releases of hazardous materials at their facilities.

One of these programs is the Comprehensive Long-Term Environmental Action, Navy (CLEAN) underground storage tank (UST) program. This program complies with Subtitle I of the Resource Conservation and Recovery Act and the Hazardous and Solid Waste Amendments of 1984. In addition, the UST program complies with all appropriate State and local storage tank regulations as they pertain to each naval facility.

The UST program includes the following activities:

- registration and management of Navy and Marine Corps storage tank systems,
- contamination assessment planning,
- site field investigations,
- preparation of contamination assessment reports,
- remedial (corrective) action planning,
- implementation of the remedial action plans, and
- tank and pipeline closures.

The Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) manages the underground storage tank (UST) program, and the U.S. Environmental Protection Agency (USEPA) and the Florida Department of Environmental Protection (FDEP; formerly Florida Department of Environmental Regulation) oversee the Navy UST program at Naval Aviation Depot (NADEP) Pensacola.

Questions regarding the UST program at NADEP Pensacola should be addressed to Mr. Byas Glover, SOUTHNAVFACENGCOM, Code 18410, at (803) 743-0651.

EXECUTIVE SUMMARY

Site 14 is the former location of two 8,000-gallon underground storage tanks (USTs) located northeast of Building 3644, which is in the northwest perimeter of Chevalier Field. Chevalier Field was predominantly used as a helicopter maintenance and testing facility. The USTs at Building 3644 were installed in 1988 and were removed during a tank removal program conducted in 1994. Building 3644 is used as a helicopter blade manufacturing and testing facility. According to facility personnel, the USTs were used for the storage of diesel fuel.

The USTs were located in a paved area on the northeast side of Building 3644. This area is currently used for the staging and transfer of helicopter blades for inspection and testing. The asphalt-covered area along the north and east side of Building 3644 is a high-traffic area for routine vehicular traffic and machinery associated with site activities.

ABB Environmental Services, Inc. (ABB-ES), conducted a contamination assessment (CA) at Site 14 from June 1995 through September 1995. During the CA, the former underground UST pipelines and the UST vent pipelines were identified as possible sources of diesel fuel contamination at the site.

Nineteen soil borings were drilled and sampled, and 18 permanent monitoring wells were installed at the site during the CA. Soil contamination was assessed by organic vapor analyzer (OVA) headspace analysis of samples collected from soil borings. Groundwater contamination was assessed by laboratory analyses of groundwater samples collected from permanent monitoring wells. Based on data collected during the CA and the groundwater sample laboratory analytical results, the following is a summary of conditions at the site.

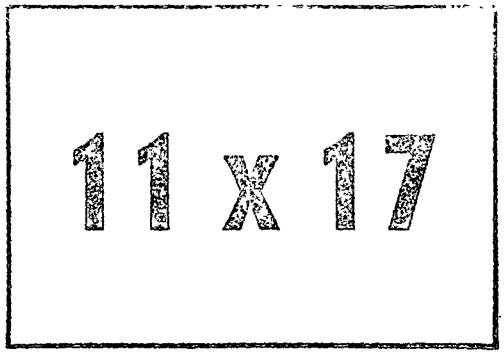
Findings.

- Sediment encountered during drilling operations is typically very fine-grained to medium-grained quartz sand, which is part of the surficial zone of the sand-and-gravel aquifer (Roaza and others, 1991). The water table was encountered approximately 5 to 7 feet below land surface (bls). The direction of groundwater flow in the surficial zone is to the northwest and northeast.

- Two areas of excessively contaminated soil were identified by OVA headspace analyses and are shown in the accompanying Executive Summary figure. The largest area of soil contamination is located west and southwest of the former UST area. One smaller area of excessively contaminated soil was identified east of the former UST area.

- Free-floating petroleum product was observed in two wells during the CA. The maximum measured thickness was 3.80 feet in MW-2 and 1.15 feet in MW-5. Free product was recovered during bail-down recovery in these monitoring wells. Free product has been observed in MW-2 since initial product recovery efforts began. Free product has not been observed in MW-5 again.

Executive Summary Figure



- Benzene, ethylbenzene, toluene, xylenes, methyl tert butyl ether (MTBE), chlorobenzene, naphthalenes, acenaphthene, fluorene, lead, and total recoverable petroleum hydrocarbons (TRPH) were detected in groundwater samples.

- The general area of groundwater contamination exceeding State target levels corresponds to the vicinity of the former USTs and the associated underground pipelines. This area is shown in the Executive Summary figure and is associated with the area of excessively contaminated soil. Petroleum contaminants that exceed Chapter 62-770, Florida Administrative Code (FAC), target levels are benzene, total volatile organic aromatics (VOA; the sum of benzene, ethylbenzene, toluene, and xylenes), total naphthalenes, lead, and TRPH.

- Laboratory analytical results of a groundwater sample collected from the vertical extent well indicate that groundwater contamination does not exceed 30 feet bls in monitoring well MW-11D. A low level of toluene and chlorobenzene contamination was detected in the sample collected from vertical extent well MW-11D.

- No potable water sources were identified within a ¼-mile radius of the site.

Conclusions.

Based on the findings of the CA and site conditions, the following can be concluded.

- Excessive soil contamination in the area of the former UST is associated with the former UST and the underground piping. Soil contamination is limited to a relatively narrow zone (between 5.5 and 6.5 feet bls).

- Free product is a concern at the site. Free product was recovered from monitoring wells MW-02 (in July and September 1995) and MW-05 (in July 1995).

- The areal extent of petroleum-related groundwater contamination exceeding Chapter 62-770, FAC, target levels coincides with two smaller areas of excessively contaminated soil.

- Petroleum-contaminated groundwater was not detected below 30 feet in the surficial zone of the sand-and-gravel aquifer.

- There is no evidence indicating groundwater contaminants have migrated off the facility. The contamination does not appear to be a threat to surface water.

- No potable wells were identified near the site; therefore, there appears to be little chance for contamination of the public water supply system from activities at the site.

Recommendations.

The soil and groundwater contamination at the site is petroleum contamination associated with the former USTs and the UST pipelines. It is recommended that an initial remedial action be conducted to continue the removal of free product from the monitoring wells. It is also recommended that the petroleum contamination in the northeast area of Building 3644 should be addressed in a remedial action plan following Chapter 62-770, FAC, requirements.

ACKNOWLEDGMENTS

In preparing this report, the Underground Storage Tank Section of the Comprehensive Long-Term Environmental Action, Navy (CLEAN) Group at ABB Environmental Services, Inc. (ABB-ES), commends the support, assistance, and cooperation provided by the personnel at Naval Aviation Depot, Naval Air Station, Pensacola, Florida, and Southern Division, Naval Facilities Engineering Command.

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
bls	below land surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CA	contamination assessment
CAR	contamination assessment report
CFR	Code of Federal Regulations
EDB	ethylene dibromide
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDER	Florida Department of Environmental Regulation
FID	flame ionization detector
ft/day	feet per day
ft/ft	feet per foot
GC	gas chromatograph
i_{avg}	average hydraulic gradient
ID	inside diameter
K	hydraulic conductivity
K_{avg}	average hydraulic conductivity
MTBE	methyl tert-butyl ether
msl	mean sea level
NADEP	Naval Aviation Depot
NAS	Naval Air Station
OVA	organic vapor analyzer
PAH	polynuclear aromatic hydrocarbon
ppb	parts per billion
ppm	parts per million
PVC	polyvinyl chloride
RAP	remedial action plan
SOUTHNAV-FACENGCOM	Southern Division, Naval Facilities Engineering Command
SWDA	Solid Waste Disposal Act of 1965
TRPH	total recoverable petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank

V	average pore water velocity
VOA	volatile organic aromatic
VOCs	volatile organic compound

1.0 INTRODUCTION

In 1987, the Naval Air Rework Facility in Pensacola, Florida, was renamed the Naval Aviation Depot (NADEP). NADEP Pensacola, formerly the operations and repair department of the Naval Air Station (NAS) Pensacola, was until recently a tenant command located on NAS facilities within the Pensacola Naval Base Complex. The Pensacola Naval Base Complex is located on the western edge of Pensacola Bay on State Route 295 (Navy Boulevard; Figure 1-1). NADEP Pensacola occupied approximately 130 acres at NAS Pensacola. The mission of NADEP Pensacola was to: (1) maintain and operate facilities for and perform a complete range of depot-level rework operations on designated weapons systems, accessories, and equipment; (2) manufacture parts and assemblies, as required; (3) provide engineering services in hardware design; (4) furnish technical services on aircraft maintenance and logistic problems; and (5) perform other levels of aircraft maintenance. NADEP Pensacola was decommissioned in September 1995.

During a tank removal program implemented by the U.S. Navy in 1989 and 1990, petroleum underground storage tanks (USTs) at various NADEP locations were removed. In many cases, these tanks were replaced with new USTs. Site 14 is the location of two 8,000-gallon USTs at Building 3644 which were installed in 1988 and reported to contain diesel fuel. The USTs were used for approximately four years. Building 3644 was converted to natural gas by early 1993, and the USTs were deactivated.

When the USTs were removed in June 1994, petroleum-stained soil and free product were observed in the excavation. Based on these observations, the site was found to be noncompliant with Florida Department of Environmental Protection (FDEP; formerly Florida Department of Environmental Regulation [FDER]) standards, as defined in Chapter 62-770, Florida Administrative Code (FAC).

ABB Environmental Services, Inc. (ABB-ES), was contracted by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a contamination assessment (CA) and submit a contamination assessment report (CAR) for Site 14, Building 3644.

1.1 **PURPOSE**. The purpose of the CA was to assess the vertical and horizontal extent of the petroleum contamination in the soil and groundwater beneath the site. The purpose of the CAR is to present the findings and conclusions of the CA and recommend appropriate further action for this site. Information developed from the CA will be used to assess the need for site remediation and develop a remedial action plan (RAP), if deemed necessary.

1.2 **SCOPE**. The scope of services for the CA investigations at Site 14 is described in Contract Task Order No. 008, the Plan of Action, and the Contamination Assessment Plan. The objectives of the CA were to assess the petroleum contamination in the vicinity of the former USTs removed from the northeast side of Building 3644 and to assess the presence and nature of the contamination in the area where the tanks were removed. ABB-ES initiated the site investigation in June 1995 and completed the investigation in September 1995. The following tasks were executed in performing the CA:

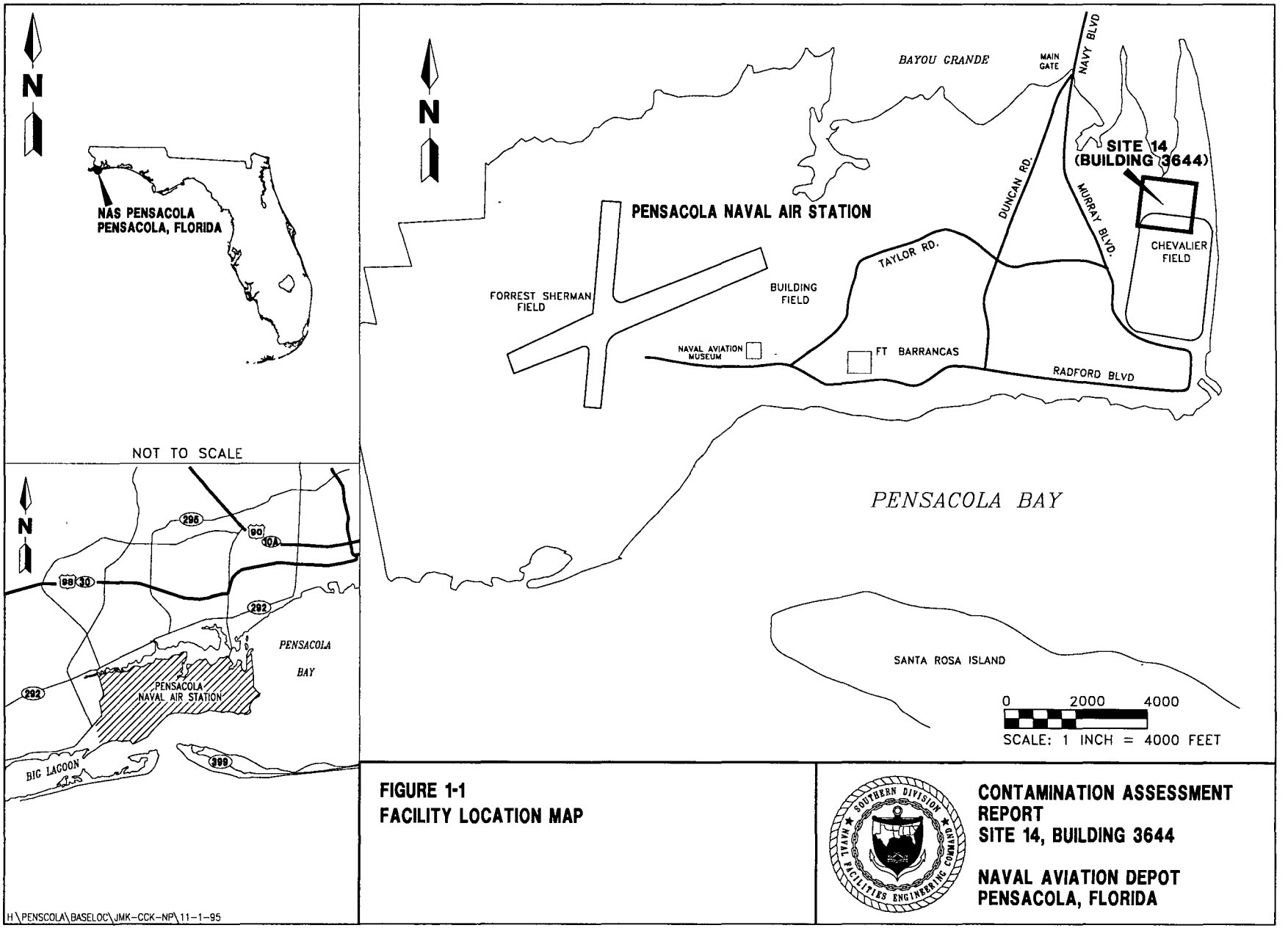

FIGURE 1-1
FACILITY LOCATION MAP

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- conducting 19 soil borings (B001 through B019) to assess the horizontal and vertical extent of petroleum contamination in soil above the water table;

- installing 8 piezometers in selected soil borings to assist in planning the placement of monitoring wells;

- installing 18 monitoring wells (MW-1 through MW-18) to assess the horizontal and vertical extent of groundwater contamination;

- collecting groundwater samples from monitoring wells MW-1 through MW-18 for analysis of the kerosene analytical group parameters defined in Chapter 62-770, FAC;

- conducting a site features survey and topographic survey of monitoring well top-of-casing elevations and measuring liquid levels in each well to assess the direction of groundwater flow and the hydraulic gradient;

- conducting an inventory of potable wells within a 1/4-mile radius of the site; and

- reducing and analyzing all data gathered during the CA to complete a CAR.

The following chapters of the report present the background information, the site conditions, the methodologies and equipment used during the CA, data compilation, and the results, conclusions, and recommendations of the CA.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION. Site 14 is the former location of two 8,000-gallon USTs located near the northeast corner of Building 3644, which is in the northwest perimeter of Chevalier Field (Figure 2-1). Building 3644 is used as a helicopter blade manufacturing and testing facility. According to facility personnel, the USTs were used to store diesel fuel. The former location of the USTs, pertinent surface features, and subsurface UST pipelines in the site vicinity are shown on Figure 2-2. The paved area over the former USTs location is used for helicopter blade staging, maintenance, and transfer operations.

The area south of the former UST area is the location of air scrubbing units, high-capacity air conditioning units, compressors, high-voltage transformers, and water coolant pumps that support the operations within Building 3644. A large unpaved stormwater retention pond with steep sloping sides is also located in the southeast area of the site. It should be noted that attempts to locate soil borings and monitoring wells in the area south of the former UST area were not successful due to soft sand and steep slopes, the presence of overhead obstructions, and the presence of underground natural gas and high-voltage electric lines (particularly in the area between the pumps and the stormwater retention pond, see Figure 2-2).

2.2 SITE HISTORY. The USTs at Building 3644 were installed in 1988 and were removed in June 1994 after the building was converted to natural gas. During the tank excavation, free product was observed on water collecting in the excavation. Stained soil was observed on the west side of the excavation. Further site investigation pursuant to Chapter 62-770, FAC, was therefore warranted. Approximately 300 cubic yards of excavated soil were reportedly removed from the site, and clean fill material was returned to the excavation after UST removal. The excavation was 40 feet by 61 feet by 5 feet and was underlain by a concrete pad, approximately 13 feet deep and 1-foot thick, which was used to anchor the tanks.

Water and product observed in the excavation were pumped out and disposed of at the bilge-water treatment plant at NAS Pensacola. The excavated soil was stockpiled at the Pensacola Naval Complex along with petroleum-contaminated soil from other NADEP UST sites. This soil has been incinerated by HudCo (a waste disposal contractor) at Ellyson Industrial Park in Pensacola, Florida. The Discharge Reporting From was submitted on June 14, 1994, and the Closure Assessment Form was submitted on August 11, 1994, to FDEP in accordance with Chapter 62-761, FAC. These forms are presented in Appendix A.

Figure 2-1 Site Location Map

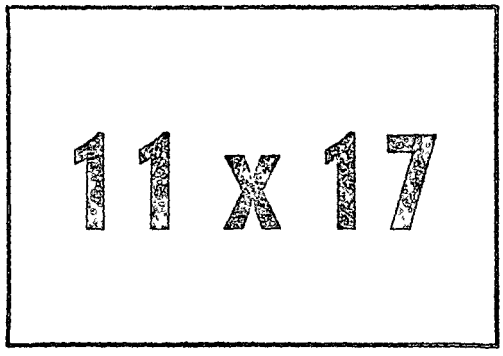
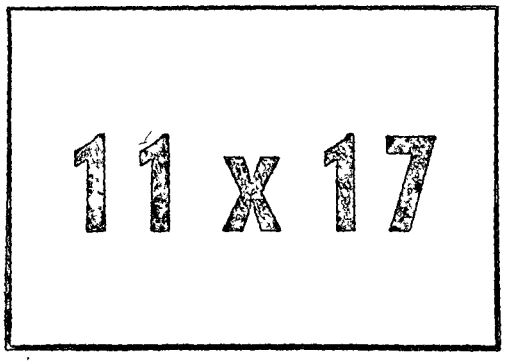


Figure 2-2 Site Plan Map



3.0 SITE CONDITIONS

3.1 PHYSIOGRAPHY. Regional physiography is discussed in Appendix B, Site Conditions. The topography at the site is relatively flat; however, several stormwater retention ponds are located in the immediate vicinity of the site.

3.2 HYDROGEOLOGY.

3.2.1 Regional and Local The Pensacola area is underlain by three water-bearing zones. These zones, in order of increasing depth, are: the sand-and-gravel aquifer, the Upper Floridan aquifer, and the Lower Floridan aquifer. A detailed discussion of these three aquifers is presented in Appendix B, Site Conditions.

3.2.2 Site Specific The principal water-bearing zone of concern at the site is the surficial zone of the sand-and-gravel aquifer. The surficial zone was penetrated to a maximum depth of 35 feet below land surface (bls) during this investigation at monitoring well MW-11D. The surficial zone is unconfined, and the water table was encountered at depths ranging from 5 to 7 feet bls during this investigation. Groundwater flow direction at the site is to the northwest and northeast.

In some areas near NAS Pensacola, the surficial zone of the sand-and-gravel aquifer has been demonstrated to be hydraulically connected with the main producing zone of the sand-and-gravel aquifer, making potable water supplies susceptible to contamination in these areas (Roaza and others, 1991). For this reason, the surficial zone at NAS Pensacola will be treated as a Class G-II water source and Class G-II State regulatory standards will be applied throughout this report.

Surficial and subsurface soil is generally composed of very fine-grained to medium-grained quartz sand. The sand generally varies in color from light gray to gray. Complete lithologic logs for all monitoring wells (MW-1 through MW-18) and soil borings (B001 through B019) are presented in Appendix C, Lithologic Logs.

4.0 METHODOLOGIES AND EQUIPMENT

4.1 SOIL BORING PROGRAM. Nineteen soil borings (designated B001 through B019) were advanced into the water table to assess the horizontal and vertical extent of petroleum contamination in the vadose zone, characterize the type of subsurface material, and aid in placing groundwater monitoring wells. A soil boring location map is provided on Figure 4-1.

Soil borings were advanced using a truck-mounted direct push rig (Terra Probe^{SM}). Soil samples were collected with a sleeved soil-sampling tube at 1 foot bls and continuing at 2-foot intervals thereafter to the water table. The samples were placed in 16-ounce glass jars and sealed with a double layer of aluminum foil. The samples were analyzed with an OVA equipped with a flame ionization detector (FID). Soil petroleum contamination was assessed by OVA headspace analysis following procedures outlined by the FDEP (FDER, 1992). In addition, groundwater grab samples were collected from each boring and screened for benzene, toluene, ethylbenzene, and xylenes (BTEX) using a portable gas chromatograph (GC). Total depth of soil borings was 8 feet bls. The CA soil boring results are discussed in Subsection 5.2.1.

In addition to the permanent monitoring wells, 8 piezometers (PZ001, PZ002, PZ007, PZ008, PZ010, PZ011, PZ016, and PZ017) were installed at the site during the soil boring program. Each piezometer was constructed of 1.25" outside diameter schedule 40 PVC material with a 5-foot factory-slotted screened interval and was installed to a depth of 8 to 9 feet bls. Piezometer locations are shown on Figure 4-1. When installed, the piezometers were identified with the designation "PZ." Groundwater grab samples were collected from each piezometer and screened for BTEX using a portable GC.

4.2 MONITORING WELL INSTALLATION AND CONSTRUCTION. From June 1995 to August 1995, 18 permanent monitoring wells (MW-1 through MW-18) were installed at the site. Each monitoring well is constructed of polyvinyl chloride (PVC) material. Monitoring wells are designated MW-1 through MW-18 on figures and tables in this report. The wells are screened in the upper part of the surficial zone of the sand-and-gravel aquifer. Well screen depths are approximately 4 to 14 feet bls, except for deep monitoring well MW-11D. The deep monitoring well is screened from 30 to 35 feet bls. Monitoring well locations are shown on Figure 4-2.

Figure 4-3 depicts a typical shallow monitoring well installation for the site. Figure 4-4 illustrates the construction details for the double-cased deep monitoring well.

Construction methodologies, materials, and rationale for monitoring well and piezometer installation are discussed in Appendix D, Investigative Methodologies and Procedures.

4.3 WATER TABLE ELEVATION MEASUREMENTS. Water table elevations were calculated on several different occasions during the CA: for piezometers on June 5, 1995, during the soil boring program; and for existing monitoring wells on June 16, 1995; June 21, 1995; July 28, 1995; August 20, 1995; and September 28,1995.

Figure 4-1 Soil Boring and Piezometer Location Map

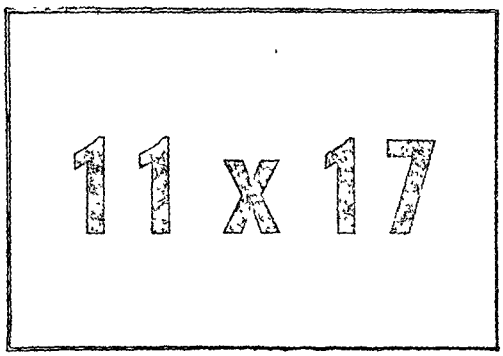
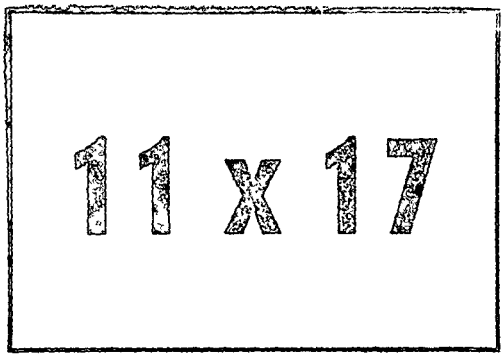


Figure 4-2 Monitoring Well Location Map



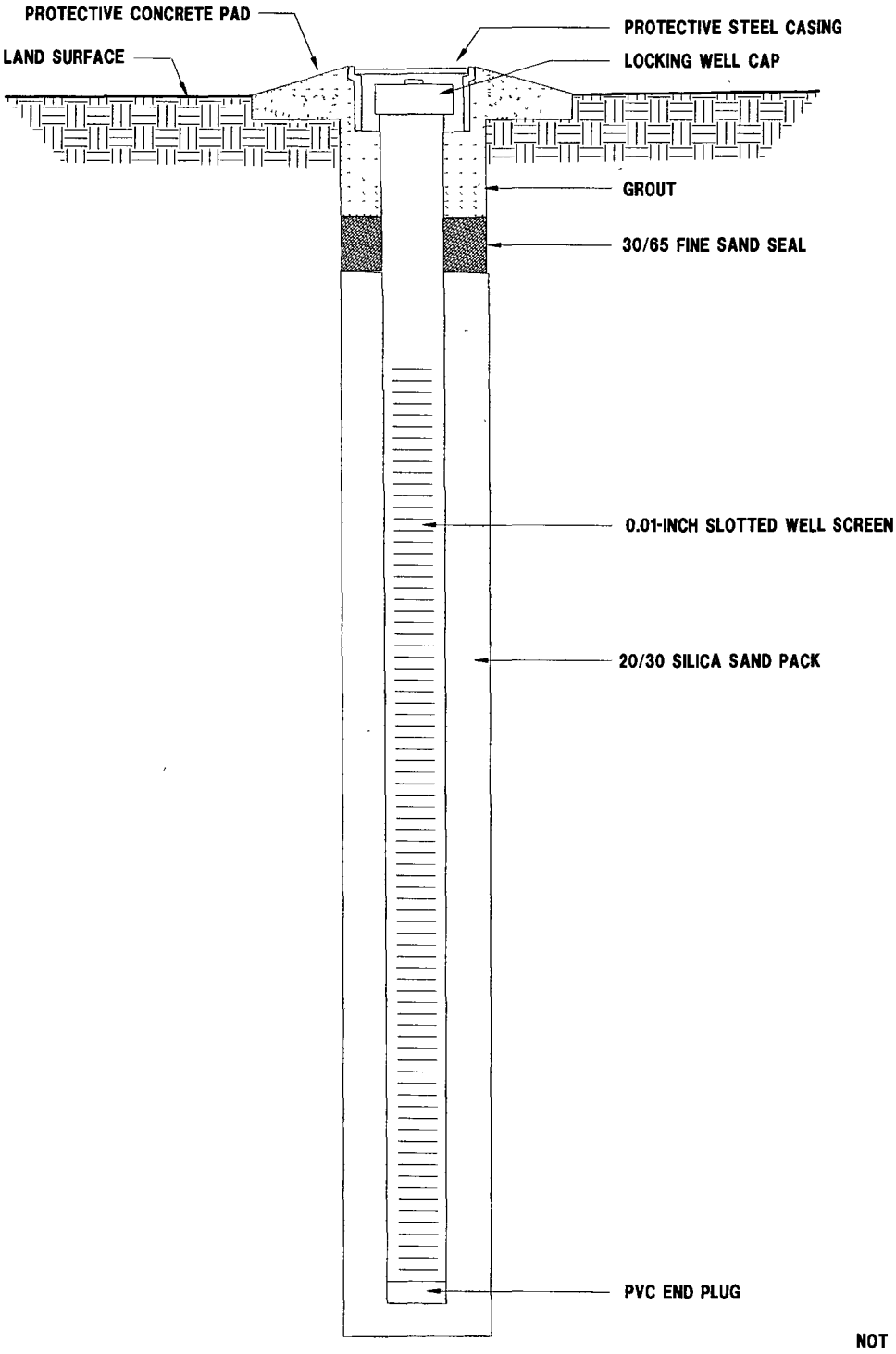


FIGURE 4-3
TYPICAL SHALLOW MONITORING WELL INSTALLATION DETAIL

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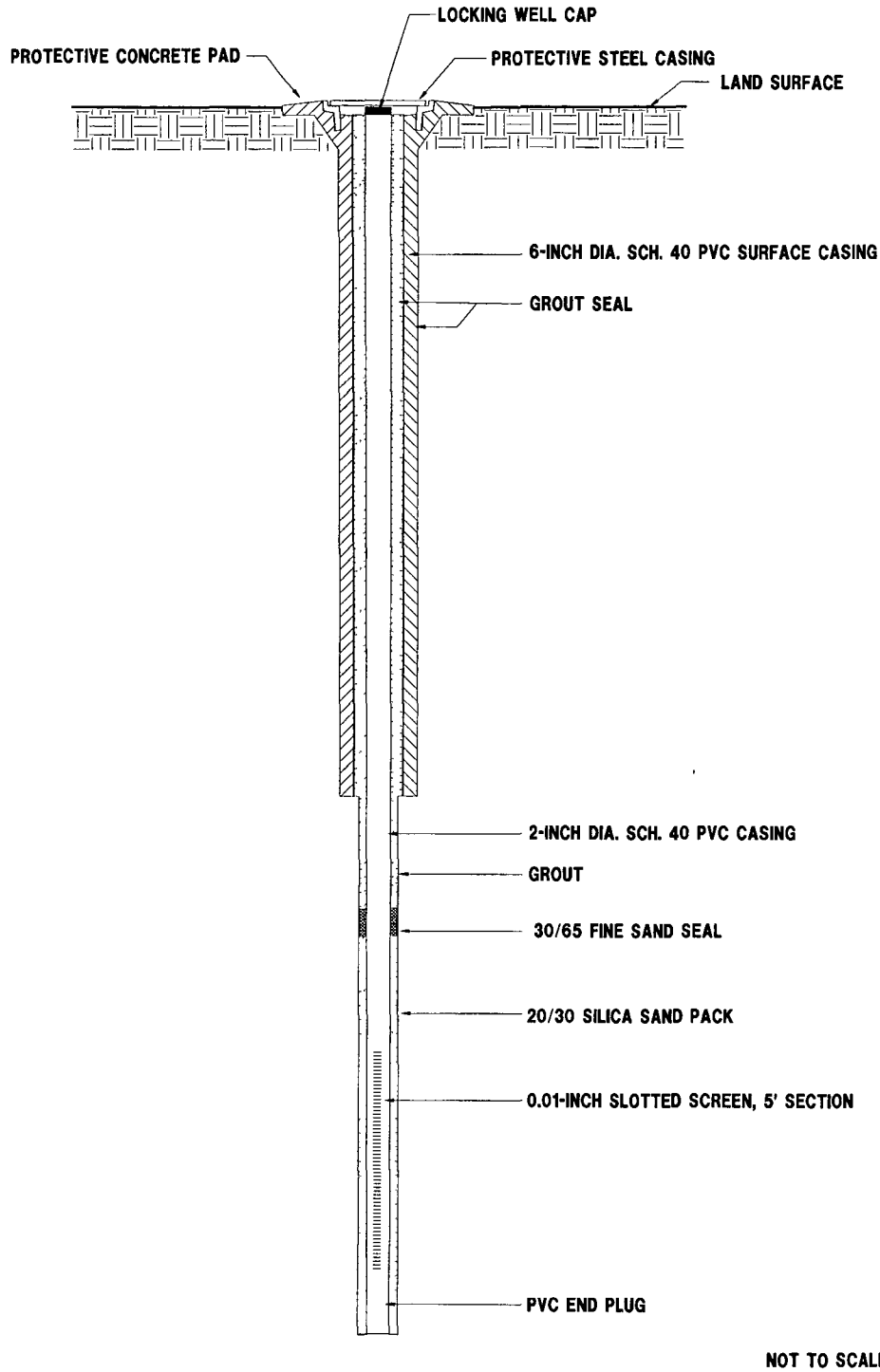

FIGURE 4-4
TYPICAL DEEP MONITORING WELL INSTALLATION DETAIL

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CONTAMINATION ASSESSMENT REPORT
SITE 14, BUILDING 3644

NAVAL AVIATION DEPOT
NAS PENSACOLA, FLORIDA

Depth to groundwater was measured to the nearest 0.01 foot using an electronic water-level indicator on June 5, 1995. Depth to groundwater was measured to the nearest 0.01 foot using an electronic oil-water interface probe from June 16 through September 28, 1995 because free product was detected in monitoring wells MW-2 and MW-5. Water table elevations were calculated for each well by subtracting the depth to groundwater from the top-of-casing elevation. Top-of-casing elevations were referenced to monitoring well MW-1, which was arbitrarily assigned an elevation of 20.00 feet above mean sea level (msl).

Water table elevation contour maps for June 21, 1995; July 28, 1995; and August 20, 1995, were prepared using the water table elevation information and are discussed in Section 5.1 of this report.

4.4 GROUNDWATER SAMPLING PROGRAM. Groundwater samples were collected from all monitoring wells and analyzed for the kerosene analytical group parameters during the CA. Before sample collection, monitoring wells were purged using the low-flow method with Teflon™ tubing and a peristaltic pump until five well volumes had been removed from the well. Groundwater samples were then collected using a disposable bailer, poured into appropriate containers, properly preserved, and placed on ice. Monitoring well MW-2 contained free-floating petroleum product; however, this sample was collected below the level of free product. The existence of free product at the site is discussed in Section 5.3, Free Product Assessment. Groundwater samples were shipped by overnight carrier to Quanterra, Inc.. in Tampa, Florida, for analysis. Appropriate quality assurance and quality control samples were also collected and analyzed. Procedures for collection of groundwater samples are presented in Appendix D, Investigative Methodologies and Procedures.

The USTs were reportedly used to store diesel fuel. Groundwater samples, therefore, were analyzed for the kerosene analytical group parameters. The kerosene analytical group includes volatile organic halocarbons by U.S. Environmental Protection Agency (USEPA) Method 601, volatile organic aromatics (VOA) and methyl tert-butyl ether (MTBE) by USEPA Method 602, polynuclear aromatic hydrocarbon (PAH) by USEPA Method 610, ethylene dibromide (EDB) by USEPA Method 601 modified, TRPHs by USEPA Method 418.1, and lead by USEPA Method 239.1.

4.5 AQUIFER SLUG TESTS. Aquifer slug tests were not conducted at Site 14, Building 3644; however, "rising head" slug tests were conducted in numerous monitoring wells located at other Chevalier Field sites, during previous field investigations, to estimate the hydraulic conductivity (K) of the surficial aquifer. These hydraulic conductivity values are summarized in Table 5-2 (Section 5) and are believed to represent conditions in the surficial aquifer at Building 3644. The rising head slug test developed by Bouwer and Rice (1976) is presented in Appendix D, Investigative Methodologies and Procedures.

5.0 CONTAMINATION ASSESSMENT RESULTS

5.1 SITE-SPECIFIC AQUIFER CHARACTERISTICS AND HYDROGEOLOGIC PARAMETERS. The depth to water beneath the site typically ranges from 5 to 7 feet bls. Depth-to-water measurements were recorded on several occasions during the CA field investigation. Presented in Table 5-1 are top-of-casing elevations, depth-to-water measurements, and water table elevations recorded on June 16, 1995; June 21, 1995; July 28, 1995; August 20, 1995; and September 28, 1995. Water table elevation contour maps for June 21, 1995; July 28, 1995; and August 20, 1995. are provided on Figures 5-1 through 5-3, respectively. Also presented in Table 5-1 are the total depth and screened intervals of each monitoring well.

The data indicate that the groundwater flow direction has been consistently flowing in a northwest and northeast direction. The data have been collected during a 4-month time frame during wet and dry periods of the summer season.

Hydrologic characteristics of the surficial aquifer were developed from aquifer slug test data, groundwater elevation data, lithologic descriptions, and assumptions based on documented porosity ranges of sediments at other sites located at Chevalier Field. Aquifer slug tests were performed during previous site investigations at Chevalier Field and are felt to represent conditions at Site 14, Building 3644. The analytical solution presented by Bouwer and Rice (1976), developed for unconfined aquifers and partially penetrating wells, was used to estimate average hydraulic conductivity (K_{avg}). Presented in Table 5-2 are the K_{avg} values for all wells at other NADEP Pensacola UST sites where slug testing was conducted. Data from shallow monitoring wells (MW-4 and MW-6) at Building 3810 (located east of the site) are believed to represent conditions at Building 3644.

The K_{avg} for the aquifer sediment in the vicinity of shallow monitoring wells (MW-4 and MW-6) is 52.0 feet per day (ft/day). The calculated average hydraulic gradient (i_{avg})across the site is 0.0062 foot per foot (ft/ft). The calculated pore water velocity (V) is 1.28 ft/day. Equations and calculations used to estimate these values are presented in Appendix E, Aquifer Parameter Calculations.

5.2 CONTAMINANT ASSESSMENT AND CHARACTERIZATION.

5.2.1 Soil Contamination Assessment The following sections provide soil contamination data obtained using the OVA field screening techniques described in Chapter 62-770, FAC.

5.2.1.1 Organic Vapor Analyzer (OVA) Headspace Data A summary of the soil sample OVA headspace analyses is presented in Table 5-3. Soil assessment criteria follow Chapter 62-770, FAC, guidelines for the kerosene or mixed products analytical group. Soil with OVA headspace readings greater than 10 parts per million (ppm), therefore, is considered to be petroleum contaminated. Soil with OVA headspace readings greater than 50 ppm is defined as "excessively contaminated." Excessively contaminated soil must be remediated in accordance with Guidelines for Assessment and Remediation of Petroleum Contaminated Soils (FDER, May 1992).

Table 5-1
Top of Casing and Groundwater Elevations,
June 16, 1995, June 20, 1995, July 28, 1995 and August 20, 1995

Contamination Assessment Report
Site 14, Building 3644, Naval Aviation Depot
Pensacola, Florida

Well Number	Total Depth	Screened Interval	Top of Casing Elevation	June 16, 1995		June 21, 1995		July 28, 1995	
				Depth to Water	Water Table Elevation	Depth to Water	Water Table Elevation	Depth to Water	Water Table Elevation
MW-1	14	4 to 14	20.00	6 98	13 02	7 14	12 86	7 39	12.61
MW-2	14	4 to 14	20 12	8 02	12.96	9.01	12 80	10.91	12 52
MW-3	14	4 to 14	19 47	5 78	13.69	5.94	13.53	6.14	13 33
MW-4	13	3 to 13	19.61	6 61	13.00	6.79	12 82	7.03	12 58
MW-5	14	4 to 14	19 84	6.53	13 31	6 69	13.15	7 96	12.88
MW-6	14	4 to 14	19 43	6 44	12 99	6 60	12 83	6 88	12 55
MW-7	14	4 to 14	19 75	6 74	13.01	6 92	12 83	7.22	12 53
MW-8	14	4 to 14	19 87	6 85	13.02	7.01	12 86	7.35	12 52
MW-9	14	4 to 14	18.85	5 87	12.98	6.04	12 81	6 25	12 60
MW-10	14	4 to 14	19 15	6 18	12.97	6.36	12 79	6.57	12 58
MW-11D	35	30 to 35	19 53	6.70	12.83	6.73	12.80	6.96	12 57
MW-12	14	4 to 14	19.53	NI	NI	NI	NI	NI	NI
MW-13	14	4 to 14	19 67	NI	NI	NI	NI	NI	NI
MW-14	14	4 to 14	19.42	NI	NI	NI	NI	NI	NI
MW-15	14	4 to 14	19.34	NI	NI	NI	NI	NI	NI
MW-16	14	4 to 14	19 80	NI	NI	NI	NI	NI	NI
MW-17	9	4 to 9	20.42	NI	NI	NI	NI	NI	NI
MW-18	14	4 to 14	20 53	NI	NI	NI	NI	NI	NI

See notes at end of table.

Table 5-1 (Continued)
Top of Casing and Groundwater Elevations,
June 16, 1995, June 20, 1995, July 28, 1995 and August 20, 1995

Contamination Assessment Report
Site 14, Building 3644, Naval Aviation Depot
Pensacola, Florida

Well Number	Total Depth	Screened Interval	Top of Casing Elevation	August 20, 1995		September 28, 1995	
				Depth to Water	Water Table Elevation	Depth to Water	Water Table Elevation
MW-1	14	4 to 14	20.00	5.77	14 23	6 79	13 21
MW-2	14	4 to 14	20.12	5.96	14.18	8 44	13 14
MW-3	14	4 to 14	19.47	4.54	14.93	5 58	13 89
MW-4	13	3 to 13	19.61	5.41	14.20	6.42	13.19
MW-5	14	4 to 14	19 84	5 34	14 50	6 35	13.49
MW-6	14	4 to 14	19 43	5 26	14 17	6 28	13 15
MW-7	14	4 to 14	19.75	5.60	14 15	6 61	13.14
MW-8	14	4 to 14	19.87	5 75	14 12	6.72	13.15
MW-9	14	4 to 14	18.85	4.68	14.17	5 69	13.16
MW-10	14	4 to 14	19.15	4.99	14 16	6 01	13 14
MW-11D	35	30 to 35	19.53	5.46	14 07	6 41	13.12
MW-12	14	4 to 14	19 53	5 34	14.19	6.34	13.19
MW-13	14	4 to 14	19.67	5.62	14 05	6.54	13.13
MW-14	14	4 to 14	19.42	5.33	14.09	6 31	13.11
MW-15	14	4 to 14	19.34	5.24	14.10	6.24	13.10
MW-16	14	4 to 14	19.80	5.47	14.33	6 52	13 28
MW-17	9	4 to 9	20.42	6.25	14 17	7 16	13.26
MW-18	14	4 to 14	20 53	6 36	14 17	7.31	13.22

Notes All elevations are expressed in feet and referenced to MW-1 which was assigned an arbitrary elevation value of 20.00 feet above mean sea level (msl)
Underlined water table elevations have been corrected for free product
Total depth and screened internal are shown in feet below land surface.
NI = not installed.

Figure 5-1 Water Table Elevation Contour Map, Surficial Zone, Sand-and-Gravel Aquifer, June 21, 1995

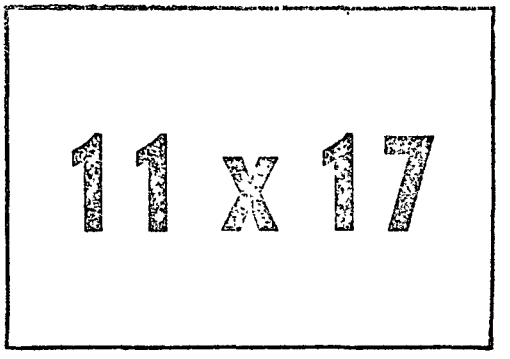


Figure 5-2 Water Table Elevation Contour Map, Surficial Zone, Sand-and Gravel Aquifer, July 28, 1995

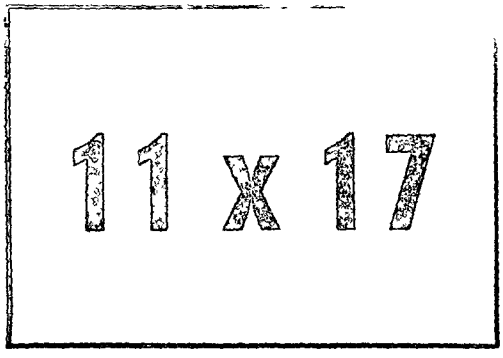


Figure 5-3 Water Table Elevation Contour Map, Surficial Zone, Sand-and-Gravel Aquifer, August 20,1995

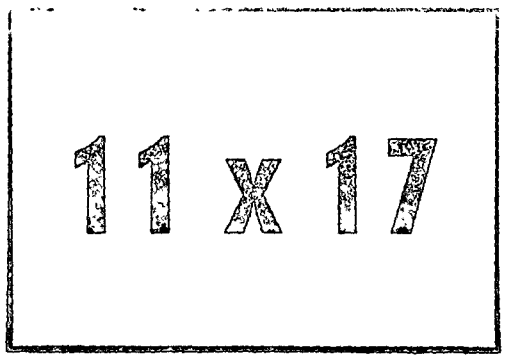


Table 5-2
Average Hydraulic Conductivities Calculated From Slug Test Data, NADEP Pensacola

Contamination Assessment Report
Site 14, Building 3644, Naval Aviation Depot
Pensacola, Florida

Site/Well Number	Total Depth	Screened Interval (feet)	K (ft/day)
PEN-604S-MW-6	13.00	3.00 to 13 00	2 1x10[1]
PEN-604S-MW-11	13 45	3 45 to 13.45	2.9x10[1]
PEN-604S-MW-12D	31 71	26 71 to 31.71	3 2x10[1]
PEN-607NE-MW-5	12.87	2 87 to 12 87	7.2
PEN-647N-MW-2	26 63	16 63 to 26 63	2.5x10[1]
PEN-647N-MW-8D	40.05	35.05 to 40 05	5 7x10[1]
PEN-648N-MW-3	26 95	16.95 to 26.95	2 8x10[1]
PEN-648N-MW-5D	50 48	45 48 to 50.48	9 0x10[1]
PEN-648N-MW-6	27 01	17 01 to 27 01	3 0x10[1]
PEN-648N-MW-9	27.67	17.67 to 27 67	1 8x10[1]
PEN-649N-MW-4D	36.78	31.78 to 36.78	4.0x10[1]
PEN-649N-MW-8	26 78	16 78 to 26.78	0 7x10[1]
PEN-649W-MW-1	25 75	15 75 to 25 75	2 9x10[1]
PEN-649W-MW-6D	40.63	35 63 to 40 63	7 6x10[1]
PEN-709DN-MW-3	25.15	15 15 to 25 15	3.7x10[1]
PEN-709DN-MW-6D	34 50	29 50 to 34.50	6.8x10[1]
PEN-709DN-MW-10	25.08	15.08 to 25 08	2 6x10[1]
PEN-2662W-MW-1	[1]12.00	2.00 to 12 00	5 7x10[1]
PEN-2662W-MW-2	[1]12.00	2 00 to 12 00	4 2x10[1]
PEN-3220S-MW-6	27 55	17.55 to 27.55	3 5x10[1]
PEN-3220S-MW-9D	45 27	40 27 to 45.27	4 6x10[1]
PEN-3221NE-MW-6	14 86	4 86 to 14.86	4 3x10[1]
PEN-3221NE-MW-9	14 98	4 98 to 14.98	3 0x10[1]
PEN-3221NE-MW-10	15 02	5 02 to 15 02	2.6x10[1]
PEN-3221NE-MW-12D	34 69	29 69 to 34 69	1 0x10[1]
PEN-3221NW-MW-1	14 85	4 85 to 14.85	4 1x10[1]
PEN-3221SW-MW-1	14 91	4 91 to 14 91	4 0x10[1]
PEN-3450S-MW-2	24 90	14 90 to 24 90	5 5x10[1]
PEN-3450W-MW-1	25 55	15 55 to 25.55	2.2x10[1]
PEN-3557S-MW-1	13.00	3.00 to 13.00	1.7x10[1]
PEN-3810N-MW-4	**13.00**	**3.00 to 13.00**	**5.5x10[1]**
PEN-3810N-MW-6	**13.00**	**3.00 to 13.00**	**4.9x10[1]**
PEN-3810N-MW-10D	19.65	14.65 to 19 65	8 3x10[1]

[1] Estimated depth.

Note K = hydraulic conductivity, feet per day (ft/day).
ft/day = feet per day.

Table 5-3
Summary of Soil Sample Organic Vapor Analyzer (OVA) Headspace Analyses, May 30 through August 20, 1995

Contamination Assessment Report
Site 14, Building 3644, Naval Aviation Depot
Pensacola, Florida

Boring Designation	Depth (feet bls)	Concentration (ppm)	Comments
B001	1 to 3	16	No odor
	3 to 5	10	No odor
	5 to 7	0	Slight odor, wet
B002	1 to 3	1	No odor
	3 to 5	212	Petroleum odor
	5 to 7	200	Petroleum odor, wet
B003	1 to 3	77	No odor
	3 to 5	1,202	Petroleum odor
	5 to 7	0	Petroleum odor
B004	1 to 3	155	
	3 to 5	987	Petroleum odor
	5 to 7	1,600	Petroleum odor, wet
B005	1 to 3	95	No odor
	3 to 5	995	Slight Petroleum odor
	5 to 7	1,400	Petroleum odor, wet
B006	1 to 3	30	No odor
	3 to 5	61	No odor
	5 to 7	1,200	Slight odor, wet
B007	1 to 3	0	No odor
	3 to 5	0	No odor
	5 to 7	0	Wet
B008	1 to 3	0	No odor
	3 to 5	11	No odor
	5 to 7	0	Wet
B009	1 to 3	10	No odor
	3 to 5	8	Slight odor
	5 to 7	0	Organic odor, wet
B010	1 to 3	0	No odor
	3 to 5	0	No odor
	5 to 7	1,300	Organic odor, wet
B011	1 to 3	0	No odor
	3 to 5	1	No odor
	5 to 7	0	Wet
B012	1 to 3	0	No odor
	3 to 5	0	No odor
	5 to 7	50	Odor, wet
B013	1 to 3	0	No odor
	3 to 5	1	No odor
	5 to 7	500	Organic odor, wet
B014	1 to 3	31	No odor
	3 to 5	785	Slight petroleum odor
	5 to 7	700	Petroleum odor, wet
B015	1 to 3	0	No odor
	3 to 5	2	No odor
	5 to 7	9	No odor, wet

See notes at end of table

Table 5-3 (Continued)
Summary of Soil Sample Organic Vapor Analyzer (OVA) Headspace Analyses, May 30 through August 20, 1995

Contamination Assessment Report
Site 14, Building 3644, Naval Aviation Depot
Pensacola, Florida

Boring Designation	Depth (feet bls)	Concentration (ppm)	Comments
B016	1 to 3	0	No odor
	3 to 5	0	No odor
	5 to 7	0	Wet
B017	1 to 3	0	No odor
	3 to 5	70	No odor
	5 to 7	0	Wet
B018	1 to 3	0	No odor
	3 to 5	0	No odor
	5 to 7	0	Organic odor, wet
B019	1 to 3	0	No odor
	3 to 5	0	No odor
MW001	1 to 3	0	No odor
	5 to 7	0	Odor
	10 to 12	0	No odor, wet
	15 to 17	0	No odor, wet
MW002	5 to 7	186	
	10 to 12	800	No odor, wet
	15 to 17	35	No odor, wet
MW003	5 to 7	0	Wet
	10 to 12	0	No odor, wet
	15 to 17	55	Wet
MW004	5 to 7	0	No odor
	10 to 12	0	Wet
MW005	5 to 7	957	Slight petroleum odor
	10 to 12	1,330	Wet
	15 to 17	450	Slight odor, wet
MW006	5 to 7	0	No odor
	10 to 12	0	No odor, wet
	15 to 17	120	No odor, wet
MW007	5 to 7	0	No odor
	10 to 12	1,350	No odor, wet
	15 to 17	220	No odor, wet
MW008	5 to 7	1	No odor
	10 to 12	0	No odor, wet
	15 to 17	60	No odor, wet
MW009	5 to 7	3	No odor, wet
	10 to 12	36	No odor, wet
	15 to 17	8	No odor, wet
MW010	5 to 7	0	No odor
	10 to 12	120	No odor, wet
	15 to 17	0	No odor, wet
MW011D	15 to 17	20	No odor, wet
	20 to 22	250	No odor, wet
	25 to 27	20	No odor, wet
MW012	1 to 3	120	Petroleum odor
	3 to 5	150	Petroleum odor
	5 to 7	1,300	No odor, wet

See notes at end of table

Table 5-3 (Continued)
Summary of Soil Sample Organic Vapor Analyzer (OVA) Headspace Analyses, May 30 through August 20, 1995

Contamination Assessment Report
Site 14, Building 3644, Naval Aviation Depot
Pensacola, Florida

Boring Designation	Depth (feet bls)	Concentration (ppm)	Comments
MW013	1 to 3	0	No odor
	3 to 5	0	No odor
	5 to 7	7	No odor,wet
MW015	1 to 3	0	No odor
	3 to 5	0	No odor
	5 to 7	5	No odor
MW016	1 to 3	0	No odor
	3 to 5	0	No odor
	5 to 7	0	No odor, wet
MW017	1 to 3	1	No odor
	3 to 5	0	No odor
	5 to 7	0	No odor
MW018	1 to 3	0	No odor
	3 to 5	0	No odor
	5 to 7	0	No odor

Notes: bls = below land surface.
ppm = parts per million.

An activated charcoal filter was used in the OVA headspace screening to measure the effect of methane on the total hydrocarbon concentration in the soil samples. The OVA headspace values listed in Table 5-3 were calculated by subtracting the filtered OVA reading from the unfiltered reading to obtain the concentration of petroleum hydrocarbons in the soil sample.

The area of excessively contaminated soil was assessed by OVA headspace analysis (see Figures 5-4 and 5-5). All soil samples were collected above the water table between 1 and 3 feet bls, between 3 and 5 feet bls, and between 5 and 7 feet bls. Soil samples collected between 5 and 7 feet bls generally intersected the water table. The areal extent of excessively contaminated soil is shown within the 50 ppm isoconcentration lines.

Figure 5-4 presents the area of excessively contaminated soil between 1 and 3 feet bls. The largest zone of contaminated soil is located immediately west of the former UST excavation. This area includes a portion of the former UST location and a portion of the associated underground piping between the former UST area and Building 3644. One smaller area of excessively contaminated soil was also identified at the east edge of the former UST area (see Figure 5-4).

Figure 5-5 presents the area of excessively contaminated soil between 3 and 5 feet bls. The area of contaminated soil increases with depth and includes the periphery of the former excavation area with highly contaminated spots along the east and west edges of the former excavation (see Figure 5-5).

The area of elevated OVA headspace at boring B017 may be associated with tree roots and natural organic material recovered during the soil boring and monitoring well installation program. No petroleum odors were observed in soil samples collected in this area.

It is evident that the central portion of the excavation was back-filled with clean soil because of the low OVA headspace values observed in that area (see Figures 5-4 and 5-5).

5.2.2 Groundwater Contamination Assessment Analytical laboratory results for the groundwater samples collected at Site 14, including equipment rinsate blanks (R001 and R002) and trip blanks (T001 and T002), are summarized in Table 5-4 and attached as Appendix F, Laboratory Analytical Data.

For petroleum compounds regulated under Chapter 62-770, FAC, Class G-II groundwater target levels will be used, where applicable. The following target-level concentrations have been established in Chapter 62-770, FAC: benzene 1 parts per billion (ppb), total VOA (the sum of benzene, ethyl benzene, toluene, and xylenes) 50 ppb, TRPH 5 ppm, lead 50 ppb, total naphthalenes (the sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene) 100 ppb, individual PAH 10 ppb or best achievable detection limit (excluding naphthalenes), ethylene dibromide (EDB) 0.02 ppb, and MTBE 50 ppb.

EDB was detected in only one equipment rinsate sample (R001) at a very low concentration (0.029 ppb). EDB was not detected in any groundwater sample collected at Site 14, Building 3644 (see Table 5-4).

Figure 5-4 Volatile Organic Compounds in the Soil, 1 to 3 Feet Below Land Surface

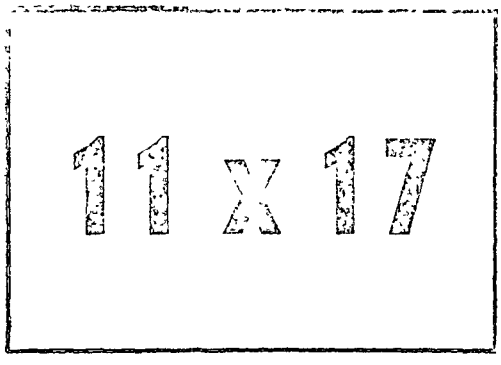


Figure 5-5 Volatile Organic Compounds in the Soil, 3 to 5 Feet Below Land Surface

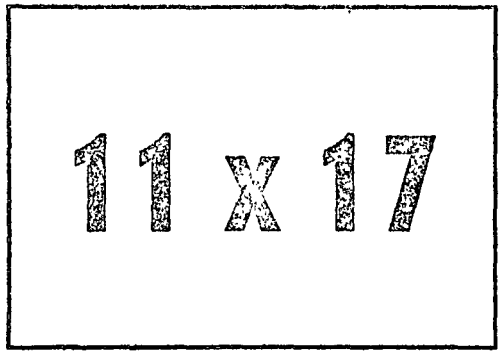


Table 5-4
Summary of Groundwater Analytical Results
June 21, 1995 and August 21, 1995

Contamination Assessment Report
Site 14, Building 3644, Naval Aviation Depot
Pensacola, Florida

Parameter	State Target Level[1]	MW-1	MW-2[2]	MW-3	MW-4	MW-5	MW-5 Dup	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11 D
Benzene	1	2.7	6.3	ND	3 1	17	15	ND	ND	ND	ND	ND	ND
Toluene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1
Ethylbenzene		26	11	ND	28	45	2.9	ND	ND	ND	ND	ND	ND
Xylenes (total)		17	12	ND	8.1	85	86	ND	ND	ND	ND	ND	ND
Total VOA	50	45.7	29.3	ND	39.2	147	103.9	ND	ND	ND	ND	ND	1.1
Methyl tert-butyl ether	50	ND	1.9	ND	ND	ND	ND	ND	3.1	ND	ND	ND	ND
Chlorobenzene	10[3]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.5
Naphthalene		64	98	ND	58	35	32	54	55	ND	2.4	ND	ND
2-Methylnaphthalenes		140	130	ND	100	42	33	42	57	ND	ND	ND	ND
1-Methylnaphthalene		100	92	ND	78	39	37	46	52	ND	ND	ND	ND
Total naphthalene	100	304	320	ND	236	116	102	142	164	ND	2.4	ND	ND
Accnaphthene	10	ND	ND	ND	ND	2	ND	3.8	4	ND	ND	ND	ND
Fluorene	10	ND	13	ND	13	6	5.4	9.4	6 7	ND	ND	ND	ND
TRPHs (ppm)	5	14	4.3	ND	14	5 4	2.7	ND	ND	ND	ND	ND	ND
Lead, total	50	330	ND	3.3	ND	ND	ND	ND	ND	ND	ND	ND	6.3
Lead, dissolved	50	7.2	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND
Ethylene dibromide	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

See notes at end of table.

Table 5-4 (Continued)
Summary of Groundwater Analytical Results
June 21, 1995 and August 21, 1995

Contamination Assessment Report
Site 14, Building 3644, Naval Aviation Depot
Pensacola, Florida

Parameter	State Target Level	MW-12	MW-13	MW-14	MW-14 Dup	MW-15	MW-16	MW-17	MW-18	R001	T001	R002	T002
Benzene	1	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene		ND	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND
Ethylbenzene		47	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)		31	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOA	50	102	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND
Methyl tert-butyl ether	50	3.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	10[3]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene		46	ND	ND	ND	9 9	ND	ND	ND	ND	NA	ND	NA
2-Methylnaphthalene		100	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA
1-Methylnaphthalene		76	ND	ND	ND	4.2	ND	ND	ND	ND	NA	ND	NA
Total naphthalenes	100	222	ND	ND	ND	14.1	ND	ND	ND	ND	NA	ND	NA
Accnaphthene	10	<20	ND	ND	ND	2 3	ND	ND	ND	ND	NA	ND	NA
Fluorene	10	<20	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA
TRPHs (ppm)	5	1.2	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA
Lead, total	50	12	10	7 5	4	ND	4 4	180	ND	ND	NA	ND	NA
Lead, dissolved	50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylene dibromide	0 02	ND	ND	ND	ND	ND	ND	ND	ND	0 029	NA	ND	NA

[1] Chapter 62-770, Florida Administrative Code (FAC), except where otherwise noted
[2] Monitoring well MW-2 contained free petroleum product Groundwater samples were collected from below the free product in MW-2
[3] Chapter 62-550, FAC.

Notes. ND = not detected.
NA = not analyzed
Total VOA - the sum concentration of benzene, ethyl benzene, toluene, and xylenes (total)
Total naphthalenes - the sum concentration of naphthalene, 1-methyl naphthalene, and 2-methylnaphthalene.
Dup = duplicate sample.
R = rinsate (equipment) blank
T = trip blank
All results are expressed in parts per billion except where indicated.

5.2.2.1 **Volatile Organic Compounds (VOCs) in Groundwater** An area of petroleum-contaminated groundwater was assessed in the vicinity of the former UST and associated piping at Building 3644. Presented on Figure 5-6 are total VOA concentrations in groundwater samples from monitoring wells in this area, the areal extent of total VOA contamination, and the location of contaminant plumes in relation to the former UST area. Presented in Table 5-4 is a summary of groundwater analytical data from well samples with detectable levels of BTEX, and their sum, total VOA.

Total VOA concentrations exceed the Chapter 62-770, FAC, target level for total VOA of 50 ppb in two areas at the site. The total VOA concentrations in groundwater samples collected from MW-5 and MW-12 were 147 ppb and 102 ppb, respectively. Total VOA concentrations greater than the State target level of 50 ppb were not detected in groundwater below the screened interval of the deep well at the site. The total VOA concentration in the sample from MW-11D was 1.1 ppb (screened interval 30 to 35 feet bls).

Benzene. Presented in Figure 5-6 are the benzene and total VOA concentrations in groundwater and the 1 ppb and 50 ppb isoconcentration contours for benzene and total VOAs in groundwater at the site. The 1 ppb benzene isoconcentration line overlaps the 50 ppb total VOA isoconcentration line and is generally located in the same area. The highest benzene concentrations were detected in groundwater samples collected from monitoring wells MW-5 (17 ppb) and MW-12 (24 ppb), which coincide with the areas of highest observed soil contamination. Laboratory analytical results for samples with detectable levels of benzene are presented in Table 5-4.

Chlorinated Compounds. Chlorobenzene was detected in the groundwater sample collected from the deep monitoring well MW-11D. The chlorobenzene concentration was 6.5 ppb which is below the State guidance concentration of 10 ppb (FDEP, February 1989). Chlorobenze was not detected in any of the groundwater samples collected from the shallow monitoring wells at the site (see Table 5-4). The source of the chlorobenzene is not known.

5.2.2.2 **Polynuclear Aromatic Hydrocarbons (PAHs) in Groundwater** PAHs were detected in samples collected from monitoring wells MW-1, MW-2, MW-4, MW-5, MW-6, MW-7, MW-12, and MW-15 (see Figure 5-7). PAHs detected in groundwater samples include naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, and fluorene. Table 5-4 summarizes the laboratory data for samples with detectable levels of PAHs.

Naphthalenes. Total naphthalenes concentrations exceeded the Chapter 62-770, FAC, Class G-II groundwater target level of 100 ppb in the samples collected from monitoring wells MW-1, MW-2, MW-4, MW-5, MW-6, MW-7, and MW-12 (Figure 5-7). The areal extent of total naphthalenes in groundwater exceeding 100 ppb is approximated by the 100 ppb isoconcentration line on Figure 5-7.

Laboratory results of the groundwater sample collected from deep monitoring well MW-11D indicate the vertical extent of PAHs (including naphthalenes) in groundwater does not extend below 30 to 35 feet bls.

Nonnaphthalenes. Two nonnaphthalene PAHs, acenapthene and fluorene, were detected in groundwater samples collected from monitoring wells MW-2, MW-4, MW-5, MW-6, MW-7, and MW-15. Acenathene and fluorene concentrations detected are presented in Table 5-4. The Chapter 62-770, FAC, target level for nonnaphthalene

Figure 5-6 Benzene and Total VOA Isoconcentration Map

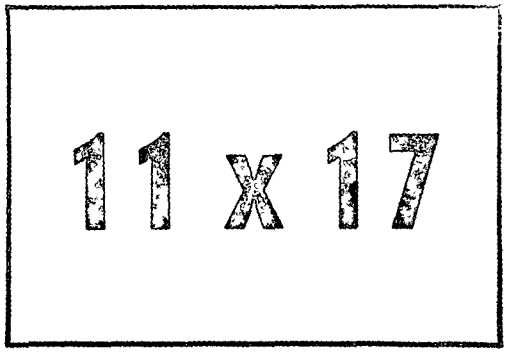
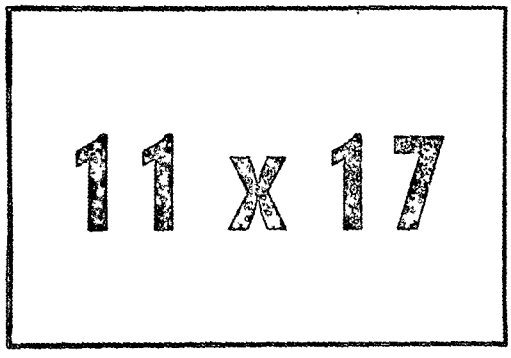


Figure 5-7 Total Naphthalenes Isoconcentration Map



PAHs is 10 ppb or the lowest obtainable detection limit for each compound. Fluorene concentrations detected in the samples from MW-2 (13 ppb) and MW-4 (13 ppb) exceeded the Chapter 62-770, FAC, target level. No detections were reported for either compound in the sample from MW-12; however, the reported method detection limit for this sample was elevated to 20 ppb.

5.2.2.3 **Total Recoverable Petroleum Hydrocarbons (TRPHs) in Groundwater** TRPHs were detected in groundwater samples collected from monitoring wells MW-1, MW-2, MW-4, MW-5, and TW-12 (see Figure 5-8). Presented in Table 5-4 is a summary of all TRPH concentrations detected in groundwater samples collected from all of the monitoring wells at the site. One area of TRPH contamination in groundwater exceeding the Chapter 62-770, FAC, target level of 5 ppm was identified. Concentrations of TRPH in samples collected from monitoring wells MW-1 (14 ppm), TW-4 (14 ppm), and TW-5 (5.4 ppm) exceed the Chapter 62-770, FAC, target level of 5 ppm for TRPH.

Groundwater analytical data indicate that TRPH in groundwater do not extend vertically below 30 feet bls. TRPHs were not detected in the groundwater sample collected from the vertical extent monitoring well MW-11D.

5.2.2.4 **Metals in Groundwater** Groundwater samples collected from all monitoring wells on the site were analyzed for lead only. Lead was detected in groundwater samples collected from monitoring wells MW-3, MW-11D, MW-12, MW-13, MW-14, and MW-16 in concentrations ranging from 3.3 ppb to 12 ppb (see Table 5-4), which do not exceed the Chapter 62-770, FAC, target level of 50 ppb for Class G-II groundwater.

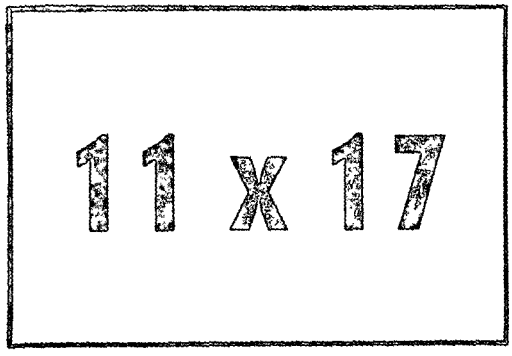
Total lead concentrations for MW-1 (330 ppb) and MW-17 (180 ppb) exceeded the FDEP target level of 50 ppb; however, the groundwater sample collected from MW-1 was also analyzed for dissolved lead. The dissolved lead concentration was 7.2 ppb. The groundwater sample collected from MW-17 was not analyzed for dissolved lead (see Table 5-4).

Even though the monitoring wells were purged using low-flow techniques, the sample turbidity generally exceeded 18 nephelometric turbidity units (NTUs). The groundwater sample collected from MW-17 was very turbid. Lead in groundwater is not considered to be a contaminant of concern at Site 14.

5.3 FREE PRODUCT ASSESSMENT. Free-floating petroleum product was observed in onsite monitoring wells MW-2 and MW-5 during the CA. A petroleum sheen has also been observed in MW-4; however, there has been no measurable accumulation of product in this well. The accumulation of free product in the wells is influenced by the water table elevation at the site. When the water table elevation was higher, only 0.02 foot of free product was observed in MW-2, and free product was not observed in MW-5. During a dry period when the water table was lower, more product was observed in MW-2 and product was also observed in MW-5.

Table 5-5 presents the free product measurements and the record of free product removal from the monitoring wells onsite during the contamination assessment. Free product recovery efforts to date have removed approximately 1.27 gallons from MW-2 and approximately 0.20 gallons from MW-5.

Figure 5-8 Total Recoverable Petroleum Hydrocarbons (TRPH) Isoconcentration Map



5.4 TIDAL INFLUENCE STUDY. A site-specific tidal influence study was not conducted at Site 14, Building 3644. However, water table elevations were recorded from existing monitoring wells at the site on five separate occasions (June through September 1995). The data have consistently indicated a northwest and northeast groundwater flow toward Bayou Grande and Pensacola Bay. Groundwater flow direction maps are presented in Section 5.1. Table 5-1 presents all of the water-level measurements in Site 14 monitoring wells.

Water-level measurements, taken on numerous occasions at other low-elevation sites on NAS Pensacola located near Pensacola Bay, indicate that tidal fluctuations do not appear to alter the groundwater flow direction and do not appear to have a great effect on hydraulic gradients at NAS Pensacola.

5.5 POTABLE WELL SURVEY. A potable well survey was conducted to assess the risk of contamination to potable water sources from activities at Site 14, Building 3644. Two potable supply wells (designated as Well No. 1 and Well No. 2 on Figure 5-9) exist at NAS Pensacola (Wilkins and others, 1985). The NAS Pensacola water supply system is used in conjunction with the Corry Field water supply system, which is located approximately 2 miles north of NAS Pensacola. According to NADEP personnel, these wells are not currently used for potable water supplies at NAS Pensacola, but are available as reserve potable water supplies should the need arise.

Potable well inventory data are presented in Table 5-6. Both wells at NAS Pensacola are screened in the main producing zone of the sand-and-gravel aquifer at depths ranging from 105 to 160 feet bls. Neither of the potable wells is located within a ¼-mile radius of the site. This fact, in addition to the northerly direction of groundwater flow, suggests that the possibility of contamination of potable water sources from activities at Site 14, Building 3644 is not likely.

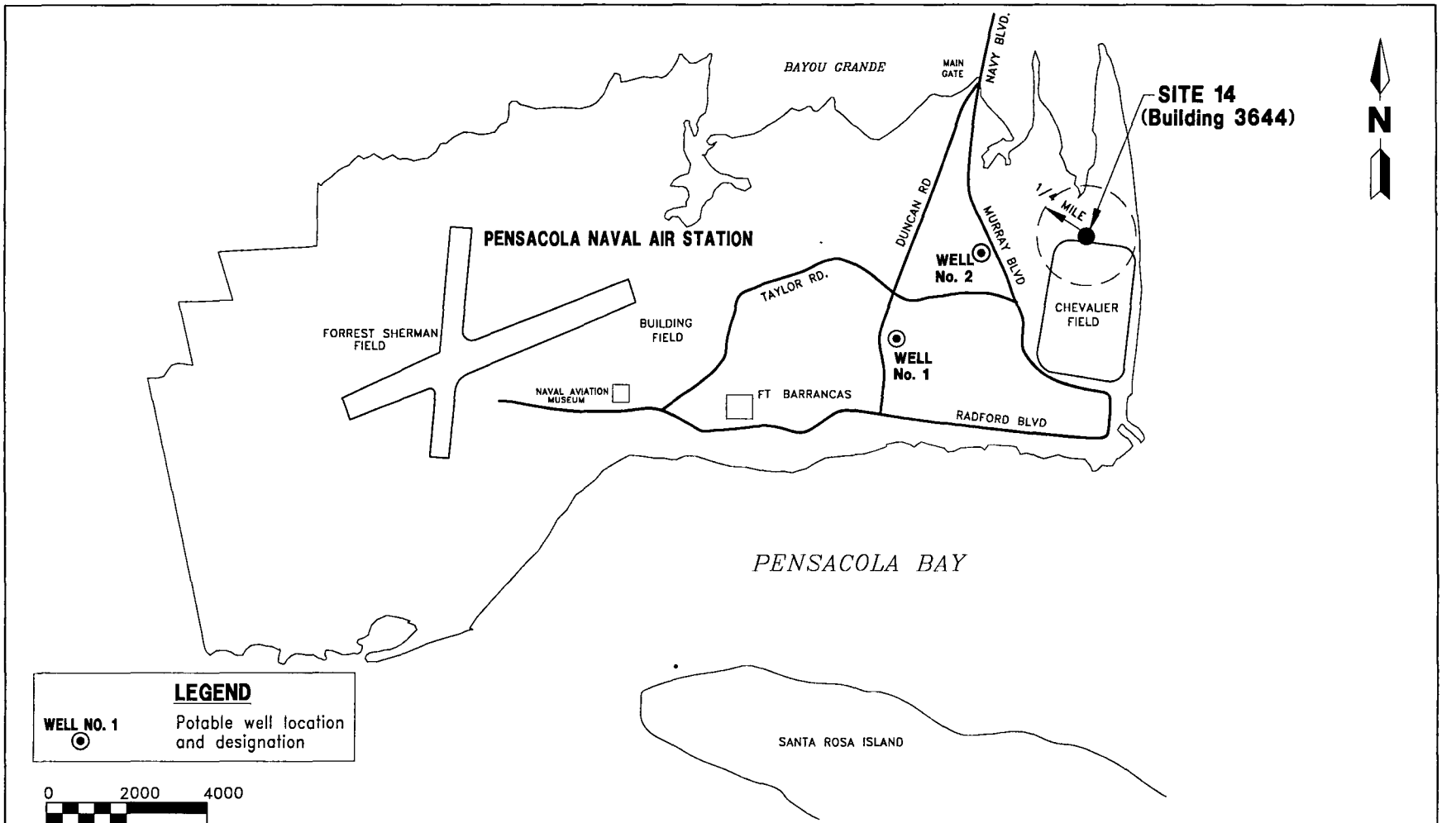


FIGURE 5-9
POTABLE WELL LOCATIONS

CONTAMINATION ASSESSMENT REPORT
SITE 14, BUILDING 3644

NAVAL AVIATION DEPOT
PENSACOLA, FLORIDA

H\9595\191300\JMK-GLC-CCK-NP\11-1-95

Table 5-5
Free Product Measurements and Recovery

Contamination Assessment Report
Site 14; Building 3644, Naval Aviation Depot
Pensacola, Florida

Date	Monitoring Well	Water Table Elevation (feet)	Measured Product Thickness (feet)	Product Removed (gallons)
6-16-95	MW-2	12 96	0.99	0
6-21-95	MW-2	12 80	1 94	0.33
7-28-95	MW-2	12.52	3 80	0.65
7-28-95	MW-5	12 88	1 15	0.20
8-20-95	MW-2	14 18	0 02	0
9-28-95	MW-2	13.14	1.68	0 29

Notes: Equipment to recover product was not available on 6-16-95.
Water table elevations are corrected for free product.

Table 5-6
Potable Well Inventory Data, Naval Air Station, Pensacola, Florida

Contamination Assessment Report
Site 14, Building 3644, Naval Aviation Depot
Pensacola, Florida

Well Identification Number/Local Name	Location	Total Depth (feet bls)	Screened Interval (feet bls)	Diameter Casing/Screen (inches)
302116087170201/No. 1	Sec 1,T3S,R30W Duncan and Taylor Roads	174	105-160	24/12
302124087163601/No 2	Sec. 1,T3S,R30W Murray and Farrar Roads	178	110-160	24/12

Note: bls = below land surface.

6.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

6.1 SUMMARY. Based on the findings of the CA field investigations and laboratory analytical results, the following is a summary of existing conditions at the site.

Aquifer Characteristics and Hydrogeologic Parameters Summary.

- The sediments encountered during drilling operations are generally composed of very fine-grained to medium-grained quartz sand. These sediments are part of the surficial zone of the sand-and-gravel aquifer (Roaza and others, 1991).
- Groundwater beneath the site was encountered at depths ranging from 5 to 7 feet bls and classified as G-II.
- The direction of groundwater flow in the surficial zone has consistently been to the northwest and northeast.
- The average hydraulic gradient across the site is 6.2×10^{-3} ft/ft.
- The average hydraulic conductivity at the site is 52 ft/day.
- V is 1.28 ft/day.

Soil Contamination Assessment Summary.

- Two areas of excessively contaminated soil were assessed by OVA headspace analyses. The largest areal extent of soil contamination is located directly west of the former UST area northeast of Building 3644. One smaller area of excessively contaminated soil was assessed along the eastern edge of the former UST area.

Groundwater Contamination Assessment Summary.

- Two areas of total VOA contamination in groundwater were assessed. One area is east of the former UST location near Building 3644. The second area is southwest of the former UST location and includes the location of the UST fuel lines to Building 3644. The highest total VOA concentrations were observed in MW-5 (147 ppb) and MW-12 (102ppb), which exceeded the 50 ppb State target level (see Figure 5-6).
- The 1 ppb benzene isoconcentration line overlaps both of the 50 ppb total VOA isoconcentration lines and is generally in the same location. The area of benzene contamination includes the former UST area and a portion of the associated pipelines that extend to Building 3644 (see Figure 5-6). The highest benzene concentrations were in groundwater samples collected from MW-5 (17 ppb) and MW-12 (24 ppb). Benzene contamination in this area exceeds the Chapter 62-770, FAC, target level of 1 ppb.

- Total naphthalenes concentrations exceeded the Chapter 62-770, FAC, Class G-II groundwater target level of 100 ppb in the samples collected from monitoring wells MW-1 (304 ppb), MW-2 (320 ppb), MW-4 (236 ppb), MW-5 (116 ppb), MW-6 (142 ppb), MW-7 (164 ppb) and MW-12 (222 ppb) located in the vicinity of the former UST area northeast of Building 3644 (see Figure 5-7).

- An area of TRPH contamination in groundwater exceeding the Chapter 62-770, FAC, target level of 5 ppm was assessed (see Figure 5-8). This area is associated with samples collected from monitoring wells MW-1 (14 ppm), MW-4 (14 ppm), and MW-5 (5.4 ppm).

- Total lead concentrations in most monitoring well samples did not exceed the Chapter 62-770, FAC, target level of 50 ppb for Class G-II groundwater. The high total lead concentrations detected in MW-1 (330 ppb) and MW-17 (180 ppb) are most likely associated with sample turbidity.

- Free-floating petroleum product was observed in monitoring wells MW-2 and MW-5 during the contamination assessment. A petroleum sheen was observed in monitoring well MW-4.

- No potable water sources were identified within a ¼-mile radius of the site, and the groundwater flow direction is to the northwest and northeast; therefore, there appears to be little chance for contamination of the public water supply system from activities at the site.

6.2 CONCLUSIONS. Based on the findings of the CA and site conditions, the following can be concluded.

- Excessive soil contamination in the area of the former USTs and associated piping is apparently related to leaks or releases from the UST system and the fuel or vent lines. Overall soil contamination is limited to a 1- to 2-foot interval directly above the water table in the peripheral areas outside of the former UST excavation area.

- The areal extent of groundwater contamination exceeding Chapter 62-770, FAC, target levels is consistently located beneath and in the vicinity of the areas of excessively contaminated soil.

- Benzene concentrations exceed the Chapter 62-770, FAC, target level of 1 ppb for Class G-II groundwater in the areas beneath the excessively contaminated soils.

- The vertical extent of petroleum-contaminated groundwater appears to be restricted to the upper 30 feet of the surficial sand-and-gravel aquifer. Laboratory results reported contaminant concentrations in the groundwater sample collected from the vertical extent well MW-11D (35 feet bls) as below method detection limits except for 1.1 ppb toluene, 6.5 ppb chlorobenzene, and 6.3 ppb lead.

- The source of soil and groundwater contamination is apparently due to previous releases from the USTs and associated fuel and vent pipelines in the vicinity of the USTs and Building 3644.

- There are no potable water wells within a ¼-mile radius of the site, and the wells that are on the facility are upgradient and screened significantly deeper than the contamination at Site 3644. The risk to human health caused by groundwater contamination of these wells is extremely low.

- There is no evidence to indicate that groundwater contaminants are migrating off the facility. Contamination is moving toward Bayou Grande and Pensacola Bay, but does not appear to be a threat to surface water. For this reason, groundwater contamination at the site appears to be a low risk to area fish and wildlife.

6.3 RECOMMENDATIONS. Based on the findings, conclusions, and interpretations of the CA, ABB-ES recommends the implementation of an initial remedial action and the development of a remedial action plan. The primary contamination in the northeast corner of Building 3644 includes excessively contaminated soil, and benzene, total VOAs, naphthalenes, and TRPH in groundwater. Free product recovery from MW-2 and MW-5 should continue as part of the initial remedial action. Monitoring wells MW-1, MW-4, and MW-12 should also be checked for accumulation of free product. The RAP will be developed to address the requirements of Chapter 62-770, FAC.

7.0 PROFESSIONAL REVIEW CERTIFICATION

This contamination assessment report was prepared using sound hydrogeologic principles and judgment. This assessment is based on the geologic investigation and associated information detailed in the text and appended to this report or referenced in public literature. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of any additional information on the assessment described in this report. This CAR was developed for Site 14, Building 3644, at NADEP, NAS, Pensacola, Florida, and should not be construed to apply to any other site.

Michael J. Williams
Professional Geologist
P.G. No. 344

Date

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APPENDIX A

TANK CLOSURE FORMS

DEPARTMENT OF THE NAVY
COMMANDING OFFICER
NAS PENSACOLA
190 RADFORD BLVD
PENSACOLA, FLORIDA 32508-5217

IN REPLY REFER TO

5090
Ser 00500/206/
11 AUG 1994 1658

Mr. W. E. Grimsley, Jr.
Supervisor
Underground Storage Tank Program
Escambia County Health Department
1190 W. Leonard Street, Suite 2
Pensacola, Florida 32501

RE: STORAGE TANK CLOSURE, FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION 17-761.800

Dear Mr. Grimsley:

The Closure Assessment Form for the Underground Storage Tank system at Building 3644, Naval Air Station Pensacola, is enclosed.

The excavation was contaminated, with the contamination having been caused by a failure of the storage tank system. A contamination assessment will be performed in accordance with the Contamination Cleanup Criteria, Florida Department of Environmental Protection, 17-770.

Should you have any questions, please contact Mr Dean Spencer, P.E., at 452-3900/3905.

Sincerely,

TIMOTHY THOMSON
Captain, U.S. Navy
Commanding Officer

Encl:
(1) Closure Assessment Form

Copy to:
SOUTHNAVFACENGCOM (L. Vazquez)
NAVAVNDEPOT Pensacola (Code 60005)
PWC Pensacola (Code 911.2)

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

DER Form # 17-761.900(6)
Form Title Closure Assessment Form
Effective Date December 10 1990
DER Application No. (Filled in by DER)

Closure Assessment Form

Owners of storage tank systems that are replacing, removing or closing in place storage tanks shall use this form to demonstrate that a storage system closure assesment was performed in accordance with Rule 17-761 or 17-762, Florida Administrative Code Eligible Early Detection Incentive (EDI) and Reimbursement Program sites do not have to perform a closure assessment.

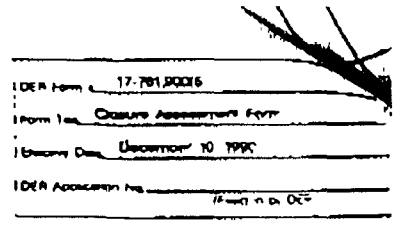
Please Print or Type
Complete All Applicable Blanks

1. Date: 12 July 1994
2. DER Facility ID Number: 17/9202973 3. County: Escambia
4. Facility Name: US Navy, Naval Aviation Depot
5. Facility Owner: Commanding Officer, Naval Air Station
6. Facility Address: Building 3644, Naval Air Station
7. Mailing Address: 190 Radford Boulevard
8. Telephone Number: (904) 452-3900 9. Facility Operator: Mr. Dean Spencer, P.E.
10. Are the Storage Tank(s). **(Circle one or both)** A. Aboveground or (B.) Underground
11. Type of Product(s) Stored: Diesel
12. Were the Tank(s): **(Circle one)** A Replaced (B.) Removed C. Closed in Place D. Upgraded (aboveground tanks only)
13. Number of Tanks Closed: 2 14. Age of Tanks: 6

Facility Assessment Information

Yes	No	Not Applicable	
☐	☒		1. Is the facility participating in the Florida Petroleum Liability Insurance and Restoration Program (FPLIRP)?
☒	☐		2. Was a Discharge Reporting Form submitted to the Department? If yes, When: 6/8/94 Where: ECHD
☒	☐		3 Is the depth to ground water less than 20 feet?
☐	☒	☐	4. Are monitoring wells present around the storage system? If yes, specify type: ☐ Water monitoring ☐ Vapor monitoring
☒	☐	☐	5 Is there free product present in the monitoring wells or within the excavation?
☐	☐	☒	6. Were the petroleum hydrocarbon vapor levels in the soils greater than 500 parts per million for gasoline? Specify sample type: ☐ Vapor Monitoring wells ☐ Soil sample(s)
☒	☐	☐	7. Were the petroleum hydrocarbon vapor levels in the soils greater than 50 parts per million for diesel/kerosene? Specify sample type: ☐ Vapor Monitoring wells ☒ Soil sample(s)
☐	☐	☒	8. Were the analytical laboratory results of the ground water sample(s) greater than the allowable state target levels? (See target levels on reverse side of this form and supply laboratory data sheets)
☐	☐	☒	9. If a used oil storage system, did a visual inspection detect any discolored soil indicating a release?
☐	☒		10 Are any potable wells located within ¼ of a mile radius of the facility?
☒	☐		11. Is there a surface water body within ¼ mile radius of the site? If yes, indicate distance: 500 ft

Northwest District 160 Governmental Center Pensacola, Florida 32501-5794
Northeast District 7825 Baymeadows Way, Suite B 200 Jacksonville, Florida 32207
Central District 3319 Maguire Blvd. Suite 232 Orlando Florida 32803-3767
Southwest District 4520 Oak Fair Blvd
South District 2269 Bay St
Southeast District 1000 S Congress Ave Suite



12. A detailed drawing or sketch of the facility that includes the storage system location, monitoring wells buildings, storm drains, sample locations, and dispenser locations must accompany this form.
13. If a facility has a pollutant storage tank system that has both gasoline and kerosene/diesel stored on site, both EPA Method 602 and EPA Method 610 must be performed on the ground water samples obtained.
14. Amount of soils removed and receipt of proper disposal.
15. If yes is answered to any one of questions 5-9, a Discharge Reporting Form 17-761.900(1) indicating a suspected release shall be submitted to the Department within one working day.
16. A copy of this form and any attachments must be submitted to the Department's district office in your area and to the locally administered program office under contract with the Department within 60 days of completion of tank removal or filling a tank with an inert material

Signature of Owner TIMOTHY THOMSON, CAPT, USN — Date: AUG 94

Paul R. Semmes, P.E. — Date: 18 July 94
Signature of Person Performing Assessment

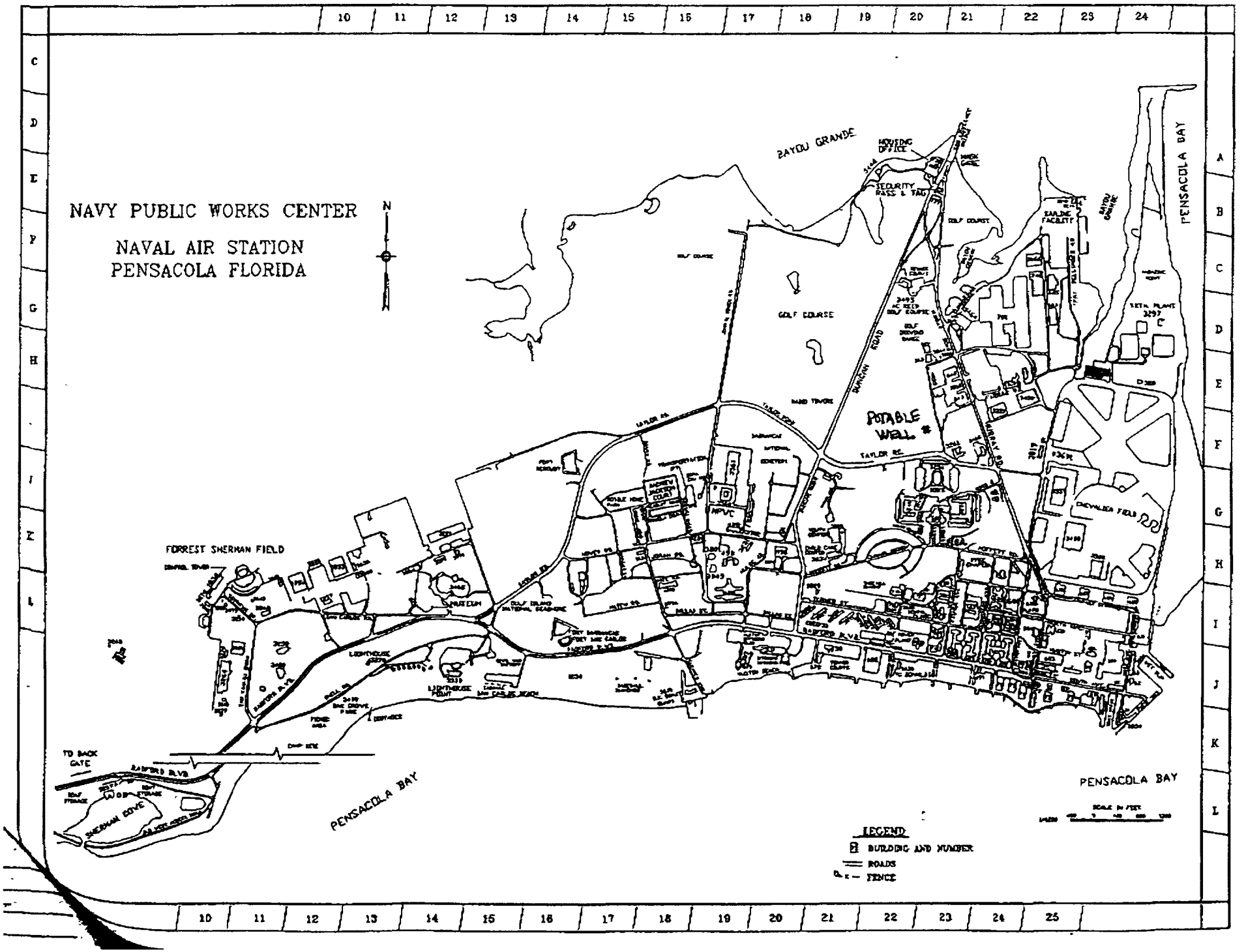
Environmental Engineer
Title of Person Performing Assessment

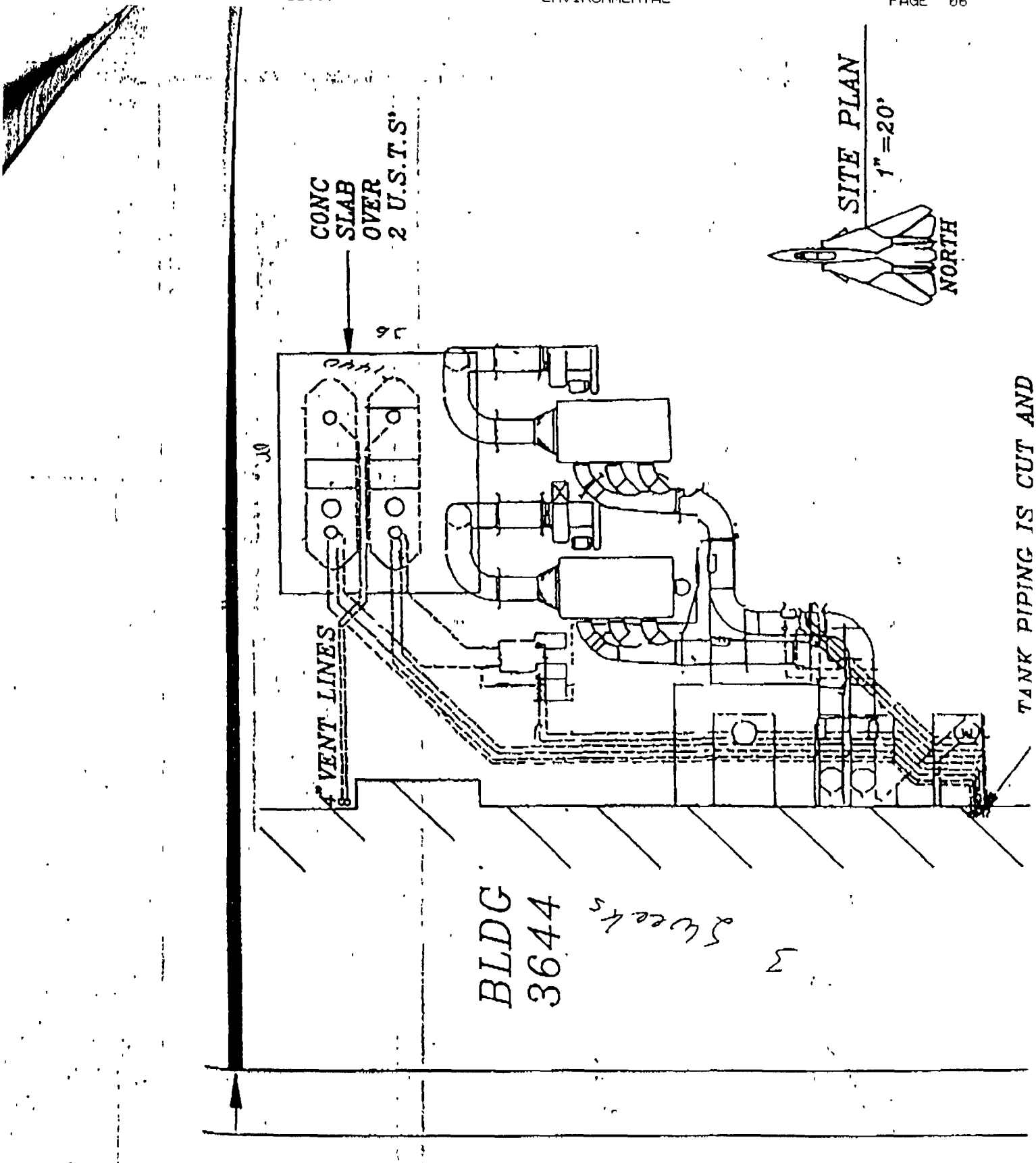
State Ground Water Target Levels That Affect A Pollutant Storage Tank System Closure Assessment

State ground water target levels are as follows:

1. For gasoline (EPA Method 602):
   a. Benzene — 1 ug/l
   b. Total VOA — 50 ug/l
      - Benzene
      - Toluene
      - Total Xylenes
      - Ethylbenzene
   c. Methyl Test-Butyl Ether (MTBE) — 50 ug/l

2. For kerosene/diesel (EPA Method 610):
   a. Polynuclear Aromatic Hydrocarbons (PAHS) (Best achievable detection limit, 10 ug/l maximum)


NAVY PUBLIC WORKS CENTER
NAVAL AIR STATION
PENSACOLA FLORIDA
N
BAYOU GRANDE
HOUSING OFFICE
SECURITY PASS & I.D.
GOLF COURSE
GOLF COURSE
DUNCAN ROAD
POTABLE WELL #
TAYLOR RD.
FORREST SHERMAN FIELD
NAVAL CEMETERY
NAVAL HOSPITAL
NAVAL AIR FACILITY
SEWAGE TREATMENT PLANT
DELUNA FIELD
LIGHTHOUSE POINT
LIGHTHOUSE
SHERMAN COVE
TO BACK GATE
RADFORD BLVD
PENSACOLA BAY
PENSACOLA BAY
LEGEND
BUILDING AND NUMBER
ROADS
FENCE


SITE PLAN
1"=20'
NORTH
CONC SLAB OVER 2 U.S.T.S
4" VENT LINES
TANK PIPING IS CUT AND
BLDG 3644
Streets

Sheet 7 of 11

DEPARTMENT OF THE NAVY
COMMANDING OFFICER
NAS PENSACOLA
190 RADFORD BLVD
PENSACOLA, FLORIDA 32508-5217

IN REPLY REFER TO
5090
Ser 05000/ESA184/1217
14 JUN 1994

Mr. W. E. Grimsley
Environmental Supervisor II
Environmental Health Services
Petroleum Tank Section
1190 West Leonard Street, Suite 2
Pensacola, Florida 32501

RE: UNDERGROUND STORAGE TANK DISCHARGE REPORT FOR BUILDING 3644

Dear Mr. Grimsley:

On June 7, 1994, the Navy Public Works Center Pensacola was engaged in removing two 10,000-gallon diesel underground storage tanks (UST) for the Naval Aviation Depot Pensacola. During the tank removal, an unknown quantity of diesel fuel was discovered in the area around the tanks. As required per Florida Administrative Code (FAC, Section 17-770.460(2), the enclosed form is submitted.

Should there be additional questions, please contact Mr. Dean Spencer, P.E., at (904) 452-3900/3905.

Sincerely,

W. T. R. BOGLE
Captain, U.S. Navy
Commanding Officer

Encl:
(1) FDEP Discharge Reporting Form 17-761.900(1)

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

DER Form # 17-761.900(1)
Form Title Discharge Reporting Form
Effective Date December 10 1990
DER Application No. _____ (Filled in By DER)

Discharge Reporting Form

Use this form to notify the Department of Environmental Regulation of:

1. Results of tank tightness testing that exceed allowable tolerances within ten days of receipt of test result.
2. Petroleum discharges exceeding 25 gallons on pervious surfaces as described in Section 17-761.460 F.A.C. within one working day of discovery.
3. Hazardous substance (CERCLA regulated), discharges exceeding applicable reportable quantities established in 17-761.460(2) F.A.C., within one working day of the discovery.
4. Within one working day of discovery of suspected releases confirmed by: (a) released regulated substances or pollutants discovered in the surrounding area, (b) unusual and unexplained storage system operating conditions, (c) monitoring results from a leak detection method or from a tank closure assessment that indicate a release may have occurred, or (d) manual tank gauging results for tanks of 550 gallons or less, exceeding ten gallons per weekly test or five gallons averaged over four consecutive weekly tests.

Mail to the DER District Office in your area listed on the reverse side of this form

PLEASE PRINT OR TYPE
Complete all applicable blanks

1. DER Facility ID Number: 17/9202973 2. Tank Number: 3644-A,B 3. Date: 8 June 1994
4. Facility Name: US Navy, Naval Aviation Depot
   Facility Owner or Operator: Commanding Officer, Naval Air Station
   Facility Address: Building 3644
   Telephone Number: (904) 452-3094 County: Escambia
   Mailing Address: 190 Radford Boulevard, Pensacola, Florida 32508-5217
5. Date of receipt of test results or discovery: June 7, 1994 month/day/year
6. Method of initial discovery. (circle one **only**)
   A. Liquid detector (automatic or manual)
   B. Vapor detector (automatic or manual)
   C. Tightness test (underground tanks only).
   D. Emptying and Inspection.
   E. Inventory control
   (F) Vapor or visible signs of a discharge in the vicinity.
   G. Closure: _____ (explain)
   H. Other: _____
7. Estimated number of gallons discharged: Unknown
8. What part of storage system has leaked? (circle all that apply) A. Dispenser B. Pipe (C) Filling D. Tank E. Unknown
9. Type of regulated substance discharged. (circle one)
   A. leaded gasoline
   B. unleaded gasoline
   C. gasohol
   D. vehicular diesel
   F. aviation gas
   G. jet fuel
   L. used/waste oil
   (M) diesel
   O. new/lube oil
   V. hazardous substance includes pesticides, ammonia, chlorine and derivatives (write in name or Chemical Abstract Service CAS number) _____
   Z. other (write in name) _____
10. Cause of leak. (circle all that apply)
    A. Unknown
    B. Split
    (C) Loose connection
    D. Corrosion
    (E) Puncture
    F. Installation failure
    G. Spill _____
    H. Overfill
    I. Other (specify) _____
11. Type of financial responsibility. (circle one)
    A. Third party insurance provided by the state insurance contractor
    B. Self-insurance pursuant to Chapter 17-769.500 F.A.C.
    (C) Not applicable
    D. None

To the best of my knowledge and belief all information submitted on this form is true, accurate, and complete.

W. T. R. BOGLE, CAPT, U.S. Navy
Printed Name of Owner, Operator or Authorized Representative

W T R Bogle
Signature of Owner, Operator or Authorized Representative

APPENDIX B

SITE CONDITIONS

SITE CONDITIONS

Regional and Local Physiography. Florida is divided into four physiographic zones: the Coastal Lowlands, the Central Highlands, the Northern Highlands, and the Marianna Lowlands (Puri and Vernon, 1964). The Pensacola area lies entirely within the Coastal Lowlands zone, which closely parallels the Florida coastline. The Coastal Lowlands are further divided into the Atlantic, Distal, and Gulf Coastal Lowlands (Puri and Vernon, 1964). The Naval Aviation Depot (NADEP) Pensacola is located within the Gulf Coastal Lowlands. The lowlands are characterized by poor drainage and elevations less than 100 feet above mean sea level (msl). Landforms include barrier islands, estuaries, coastal ridges, dunes, and valleys (Puri and Vernon, 1964).

Land surface elevations at NADEP Pensacola range from sea level at the coast to greater than 30 feet above (msl). Surface drainage is variable, but is generally toward the nearest body of water.

Regional Hydrogeology. NADEP Pensacola is underlain by three water-bearing zones: the sand-and-gravel aquifer, the Upper Floridan aquifer, and the Lower Floridan aquifer.

The sand-and-gravel aquifer is composed of Pleistocene terrace deposits, the Pliocene Citronelle Formation (Marsh, 1966), and Miocene coarse clastics. These deposits extend from the surface to a depth of approximately 400 feet below land surface (bls) and are predominantly poorly sorted, fine-grained to coarse-grained sand interbedded with numerous layers of clay and gravel (up to 60 feet thick). There is great lithologic variability in these deposits. Clay lenses and the presence of hardpan layers within the sand-and-gravel aquifer result in the occurrence of perched water tables and artesian conditions in some areas (Musgrove and others, 1965). Groundwater flow is generally topographically controlled. Recharge to the aquifer is derived almost entirely from local rainfall. The sand-and-gravel aquifer is the sole source of potable groundwater in the Pensacola area (Roaza and others, 1991).

The sand-and-gravel aquifer is divided into three major zones: the surficial zone, the low permeability zone, and the main producing zone (Roaza and others, 1991). These designations are based on changes in permeability of the sediments comprising each zone. The surficial zone is the uppermost layer of the aquifer. It consists primarily of sand and gravel with occasional silt and clay deposits. This zone ranges in thickness from 0 to 150 feet (Roaza and others, 1991). The low permeability zone, which underlies the surficial zone, consists of various mixtures of clay, silt, sand, and gravel. Locally, this zone contains poorly sorted sand, with gravel and some clay (Roaza and others, 1991). The thickness of the zone varies from 50 to 100 feet. Individual beds of the low permeability zone are highly discontinuous, and in some areas there may be hydraulic connection between the surficial zone and the main producing zone. The main producing zone is composed of moderate to well-sorted sand-and-gravel beds that are typically interbedded with beds of fine-grained sand and clay. Locally, this zone typically contains medium-grained sand and sandy clays (Roaza and others, 1991). The thickness of the main producing zone ranges from 200 to 300 feet.

The Upper Floridan aquifer is composed of deposits correlative to the lower Miocene Tampa Formation and the upper Oligocene Chickasawhay Formation. These

two formations are undifferentiated in the Pensacola area. Locally, these deposits are approximately 380 feet thick (Marsh, 1966) and are typically brown to light gray, hard, fossiliferous dolomitic limestone or dolomite with a distinctive spongy-looking texture. Locally, the overlying Pensacola Clay is approximately 1,000 feet thick and forms an effective confining unit between the sand-and-gravel aquifer and the Upper Floridan aquifer (Marsh, 1966). This confining unit has also been designated as part of the Intermediate System (Roaza and others, 1991). The Upper Floridan aquifer is recharged by local rainfall in Conecuh, Escambia, and Monroe Counties, Alabama (Healy, 1980). General groundwater flow in the Upper Floridan aquifer is to the southeast toward the Gulf of Mexico (Barr, 1987). The groundwater in the Upper Floridan aquifer is mineralized in the Pensacola area and is not used as a water supply.

The Lower Floridan aquifer is composed of upper to middle Eocene limestones. The aquifer is approximately 500 feet thick in the vicinity (Marsh, 1966). The limestones are typically white to grayish cream, soft, and chalky. The Lower Floridan aquifer is confined from above by the Bucatunna Clay Member of the middle Oligocene Byram Formation and from below by gray shales and clays of middle Eocene age. The Bucatunna Clay, also called the Intermediate Zone, is approximately 170 feet thick in the Pensacola area (Musgrove and others, 1965). Groundwater flow in the aquifer is to the southeast toward the Gulf of Mexico (Healy, 1980). The water quality is poor because of high mineralization.

Local Hydrogeology. The structural top of the low permeability zone of the sand-and-gravel aquifer varies from approximately -20 to -40 feet msl at NAS Pensacola (Roaza and others, 1993). The structural top of the main producing zone of the sand-and-gravel aquifer ranges from -60 to -80 feet msl at NAS Pensacola (Roaza and others, 1993). The structural top of the Intermediate System ranges from -260 to -270 feet msl at NAS Pensacola (Roaza and others, 1993).

The surficial zone of the sand-and-gravel aquifer was the only section of the sand-and-gravel aquifer that was penetrated during the site investigation. The surficial zone extends from the surface to a depth of approximately 100 feet bls (Roaza and others, 1991). Soil from 0 to 50 feet bls encountered in investigations performed by ABB-ES at the NADEP facility are generally composed of fine-grained to very fine-grained sand, with very little silt and clay. Occasional coarse-grained sand to fine-grained gravel were encountered, and thin peat layers were found at NAS Pensacola in the Forrest Sherman Field vicinity.

Groundwater in the surficial zone is nonartesian and is encountered at depths ranging from less than 2 feet bls to greater than 20 feet bls at the NADEP facility. The depth to groundwater is mainly controlled by topography. Recharge is predominantly from local rainfall.

The direction of groundwater flow in the site vicinity is predominantly to the northwest and northeast, although variations in topography and the presence of surface water bodies result in localized changes in the groundwater flow direction. Groundwater flow is northerly at the north end of Chevalier Field and appears to be influenced by a tidal creek north of Building 3810 and Bayou Grande northwest of Building 3644.

Locally, hydraulic gradients in the surficial zone vary from approximately $1x10^{-3}$ feet per feet (ft/ft) to $7x10^{-3}$ ft/ft. Gradients are generally less in the lower flat-lying areas than in the topographically higher areas to the northwest of

Chevalier Field. Additional water-level measurements, taken on numerous occasions at low-elevation sites located near Pensacola Bay, indicate tidal fluctuations do not appear to alter the groundwater flow direction and do not appear to have a great effect on hydraulic gradients at NAS Pensacola.

APPENDIX C

LITHOLOGIC LOGS

TITLE: NADEP Pensacola Building 3844, Site 14	**LOG of WELL:** NA		**BORING NO.** 14B001
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 5/31/95	**COMPLTD:** 5/31/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: 20 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** 6.25 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				18	SAND. White, no odor.		SP		
				10	SAND. White, no odor.		SP		
5				0	SAND. White, slight odor, wet.		SP		▽
10									

TITLE: NADEP Pensacola Building 3844, Site 14	**LOG of WELL:** NA		**BORING NO.** 14B002
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 5/31/95	**COMPLTD:** 5/31/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: NA FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 8.5FT.	**DPTH TO ▽** NA FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				1	SAND. Tan, no odor.		SP		
				212	SAND Tan to very light gray, petroleum odor.		SP		
5				200	SAND. Tan, gray to brown staining from 5.5-6 5, wet, petroleum odor.		SP		
10									

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** NA	**BORING NO.** 14B003
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 5/31/95	**COMPLTD:** 5/31/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: NA FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** NA FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				77	SAND. Light brown sand, no odor noted.		SP		
				1020	SAND. Light gray sand, possibly stained, gray sand at 4' to 5', petroleum odor.		SP		
5				<1	SAND. Gray to brown, stained from 5.5'-6 5', wet, petroleum odor, tan sand in saturated zone.		SP		
10									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** NA	**BORING NO.** 14B004
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 5/31/95	**COMPLTD:** 5/31/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: NA FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** NA FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				155	SAND. Tan to light brown.		SP		
				987	SAND. Tan to white, possible petroleum odor		SP		
5				>2600	SAND. Tan to light gray, brown staining at 6'to 6.5' bls., wet, petroleum odor.		SP		
10									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14	**LOG of WELL:** NA	**BORING NO.** 14B005
CLIENT: SOUTHNAVFACENGCOM		**PROJECT NO:** 7527
CONTRACTOR: ABB-ES	**DATE STARTED:** 5/31/95	**COMPLTD:** 5/31/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: NA FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** NA FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				95	SAND. Tan to light brown, no odor, some red clay.		SP		
				995	SAND. Tan to light gray, slight petroleum odor.		SP		
5				1400	SAND. light gray becoming brown at 6.5' bls , some wood frags, wet, petroleum odor noted.		SP		
10									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14	**LOG of WELL:** NA		**BORING NO.** 14B006
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 5/31/95	**COMPLTD:** 5/31/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: NA FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** NA FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				30	SAND. White sand, no odor.		SP		
				81	SAND. White to tan, no petroleum odor.		SP		
5				1200	SAND. Tan to light gray, light brown, wet at 6.5' bls, slight odor, possibly petroleum odor.		SP		
10									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14	**LOG of WELL:** NA		**BORING NO.** 14B004
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 5/31/95	**COMPLTD:** 5/31/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: NA FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** NA FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				155	SAND. Tan to light brown.		SP		
				987	SAND. Tan to white, possible petroleum odor		SP		
5				>2600	SAND. Tan to light gray, brown staining at 6'to 6.5' bls., wet, petroleum odor		SP		
10									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14	**LOG of WELL:** NA		**BORING NO.** 14B008
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 5/31/95	**COMPLTD:** 5/31/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: NA FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** NA FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				0	SAND. Tan to light brown, no odor.		SP		
				11	SAND. Tan to orange becoming dark brown at 4.5' to 5'bls., no odor noted.		SP		
5				0	SAND. Tan to brown, 4" black organic layer at 6.75'bls, no odor, wet at approximately 6.5 bls.		SP		
10									

TITLE: NADEP Pensacola Building 3644, Site 14	**LOG of WELL:** NA		**BORING NO.** 14B009
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 5/31/95	**COMPLTD:** 5/31/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: 20.74 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** 7.07 FT.
LOGGED BY: J. Fuglitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				10	SAND. Tan to light gray, medium-grained, no odor noted.		SP		
				8	SAND. White to light gray, slight non-petroleum odor.		SP		
5				0	SAND. Light gray, wet, possible petroleum odor, organic odor.		SP		▽
10									

TITLE: NADEP Pensacola Building 3844, Site 14	**LOG of WELL:** NA		**BORING NO.** 14B010
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 8/1/95	**COMPLTD:** 8/1/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: 19.46 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** 5.68 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				0	SAND. White, no odor, dry.		SP		
					SAND. White, no odor, dry.		SP		
				0					
5					SAND. Tan to dark brown, organic material, some wood, wet at 6'bls.,		SP		▽
				1300	SAND. White, no petroleum odor, some organic odor.		SP		
10									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3644, Site 14	**LOG of WELL:** NA		**BORING NO.** 14B011
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 6/1/95	**COMPLTD:** 6/1/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: 19.99 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** 8.40 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				0	SAND. White, no odor, dry.		SP		
				1	SAND. White, no odor,dry.		SP		
5				0	SAND. White with some brown organics, wood at 6' bls., wet.		SP		▽
10									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3644, Site 14	**LOG of WELL:** NA		**BORING NO.** 14B012
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 6/1/95	**COMPLTD:** 6/1/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: NA FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** NA FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				0	SAND Light brown, minor orange clay, dry, no odor.		SP		
				0	SAND Tan, dry, no odor		SP		
5				50	SAND Brown to tan, wet at 7' bls., odor, possibly petroleum.		SP		
10									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3644, Site 14	**LOG of WELL:** NA		**BORING NO.** 14B013
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 8/1/95	**COMPLTD:** 8/1/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: NA FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** NA FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				0	SAND. Light orange, dry, no odor.		SP		
				1	SAND. Tan to light orange, some clay, no odor.		SP		
5				500	SAND. Tan to brown, thin peat layer at 6.5' bls. with wood fragments, organic odor with slight petroleum odor.		SP		
10									

TITLE: NADEP Pensacola Building 3844, Site 14	**LOG of WELL:** NA		**BORING NO.** 14B014
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 6/1/95	**COMPLTD:** 6/1/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: NA FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** NA FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				31	SAND. Light brown, dry, no odor.		SP		
				785	SAND Light brown, slight petroleum odor.		SP		
5				700	SAND. Gray with brown staining at 6.5' bls., tan to 7' bls., petroleum odor, wet at 6.5' bls.		SP		
10									

TITLE: NADEP Pensacola Building 3844, Site 14	**LOG of WELL:** NA		**BORING NO.** 14B015
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 6/1/95	**COMPLTD:** 6/1/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: NA FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** NA FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				0	SAND. Tan to light brown, dry, no odor.		SP		
				2	SAND Tan to light brown, dry, no odor.		SP		
5				0	SAND Tan to light brown, wet at 6.5' bls, no odor.		SP		
10									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** NA	**BORING NO.** 14B016
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 6/2/95	**COMPLTD:** 6/2/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: 20.39 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** 6.80 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				0	SAND. Tan to brown, medium grained, no odor.		SP		
				0	SAND. Tan to brown, 4" layer of red clay, moist in clay, no odor, dry		SP		
5				0	SAND. Red, clayey, wet, no odor.		SC		
					SAND. White, course-grained, wet, no odor.		SP		
					SAND. Black to gray, wet, no odor.		SP		▽
10									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** NA	**BORING NO.** 14B017
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 6/2/95	**COMPLTD:** 6/2/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: 19.81 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** 5.78 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					SAND. Tan with orange clayey sand, no odor.		SC		
				0					
					SAND. Orange, clayey, no odor.				
					SAND Tan to dark brown, no petroleum odor noted.		SP		
				70					
5					SAND. Orange, course-grained, wet at 6' bls.		SP		
				0					▽
					SAND. Black to gray, wet, no odor.				
10									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** NA	**BORING NO.** 14B018
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 6/2/95	**COMPLTD:** 6/2/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: NA FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** NA FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				0	SAND. Tan to orange, no odor.		SP		
				0	SAND Orange, clayey, no odor		SC		
				0	SAND. Tan, moist, no odor.		SP		
5				0	SAND. Tan to brown.		SP		
				0	SAND. White, 2" black organic layer at 6.7' bls., composed of plant fragments and peat. saturated, very slight organic odor, not petroleum.		SP		
10									

TITLE: NADEP Pensacola Building 3644, Site 14	**LOG of WELL:** NA		**BORING NO.** 14B019
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: ABB-ES		**DATE STARTED:** 8/2/95	**COMPLTD:** 8/2/95
METHOD: TerraProbe	**CASE SIZE:** NA	**SCREEN INT.:** NA	**PROTECTION LEVEL:** D
TOC ELEV.: NA FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 7FT.	**DPTH TO ▽** NA FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** NA		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				0	SAND. White, fine- to medium-grained, dry, no odor.		SP		
				0	SAND. White to tan, moist at 5', no odor.		SP		
5									
10									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** 14MW001	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc		**DATE STARTED:** 8/13/95	**COMPLTD:** 8/13/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 20.00 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 14 20FT	**DPTH TO ▽** 7 14 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 8/15/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN
					2" layer of asphalt			
					SAND Red, clayey fill		SC	
				0	SAND Tan		ML	
					SAND. Tan		ML	
5				0	SAND White, becoming brown at 8' bls, strange non-petroleum odor		ML	4,4,8,14
10				0	SAND White, light brown, wet		ML	5,12,15,18
15				0	SAND Tan, orange, some gray sand, wet		ML	13,19,22,25
20								

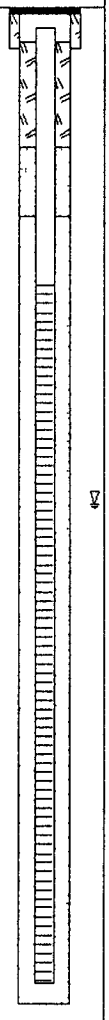


 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14	**LOG of WELL:** 14MW002		**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc.		**DATE STARTED:** 8/13/95	**COMPLTD:** 8/13/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 20.12 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 14.08FT.	**DPTH TO ▽** 7.09 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 8/18/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					2" layer of asphalt.				
					SAND. Tan to light gray, medium-grained, no odor		SP		
				10					
					SAND White to light gray, slight non-petroleum odor		SP		
				8					
5					SAND Light brown to tan to light grey, unable to determine odor		SP		
				188				5,10,10,10	
							SP		
10					SAND. Tan to very light brown, medium-grained, no odor, wet.				
				800				12,10,15,19	
							SP		
15					SAND Tan to light brown, medium-grained, no odor, wet				
				35					
20									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3644, Site 14		**LOG of WELL:** 14MW003	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc.		**DATE STARTED:** 6/13/95	**COMPLTD:** 6/13/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 19.47 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 13.79FT.	**DPTH TO ▽** 5.94 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 6/15/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				0	SAND Tan to brown to orange red, some wood fragments at 6 bls, wet at approximately 6.5'		SP	4,5,7,11	▽
10				0	SAND Brown grading to white , with root fragments at 11' bls, wet, no odor.		SP	10,10,11,12	
15				55	SAND Orange to brown, wet, medium- to coarse-grained		SP	10,14,20,20	
20									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14	**LOG of WELL:** 14MW004		**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc.		**DATE STARTED:** 8/13/95	**COMPLTD:** 8/13/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-13'	**PROTECTION LEVEL:** D
TOC ELEV.: 19.81 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 12.44FT.	**DPTH TO ▽** 8.81 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 8/18/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					2" layer of asphalt		SP		
5				0	SAND White to tan, medium-grained, no odor noted, mostly dry			7,8,8,9	▽
							SW		
10				0	SAND White, wet, coarse-grained with pebble fill, concrete base encountered at 13' bls			1,1,1	
15									
20									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3644, Site 14		**LOG of WELL:** 14MW005	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc.		**DATE STARTED:** 6/13/95	**COMPLTD:** 6/13/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 19.84 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 14.08FT	**DPTH TO ▽** 8.69 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 6/15/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					2" layer of asphalt.				
					SAND Tan to light brown, no odor, some red clay.		ML		
				95					
					SAND Tan to light gray, slight petroleum odor		SP		
				995					
5					SAND Orange red to light brown to white, medium-grained, slight petroleum odor.		SP		
				957				3,5,7,10	
							SP		
					SAND Brown, wet, slight odor?,				
10									
				1330	CLAYEY SAND Red		SC	9,13,15,18	
					SAND White, coarse-grained, wet		SP		
							SP		
15					SAND Light brown, medium-grained, slight odor, wet				
				450				3,3,8,10	
20									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** 14MW006	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc.		**DATE STARTED:** 6/14/95	**COMPLTD:** 6/14/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 19.43 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 14.43FT.	**DPTH TO ▽** 8.80 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 6/15/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					2" layer of asphalt		SP		
5				0	SAND Tan to white , medium-grained, with 1" red clay/sand layer, dry, no odor			2,4,5,7	▽
							SP		
10				0	SAND Tan, wet, no odor			8,10,15,20	
							SP		
15				120	SAND Tan to light brown, medium-grained, wet, no odor			10,10,15,20	
20									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** 14MW007	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc.		**DATE STARTED:** 8/14/95	**COMPLTD:** 8/14/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 19.75 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 14.04FT.	**DPTH TO ▽** 8.92 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 8/15/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					2" layer of asphalt		SP		
5				0	SAND Light tan, medium-grained, with minor 2" red clay sand layer at 5' bls, dry, no odor			9,5,5,8	
							SP		
10				1350	SAND Orange to white at 11' bls, wet, no odor noted			14,25,35,45	
					CLAYEY SAND Orange, slightly clayey		SC		
15				220	SAND Light gray, saturated, no odor.		SP	9,10,13,23	
20									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14	**LOG of WELL:** 14MW008		**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc		**DATE STARTED:** 6/14/95	**COMPLTD:** 6/14/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 19.87 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 13 82FT.	**DPTH TO ▽** 7.01 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 6/15/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					2" layer of asphalt				
					CLAYEY SAND Red clayey sand fill material		ML		
					SAND Tan to white, medium-grained, dry, no odor		SP		
5				1	SAND White, medium-grained, with 1" red clayey sand layer at 8' bls, no odor, dry		SP	5,8,24,50	
							SP		
10				0	SAND Orange to tan and light tan sand, wet, no odor			5,8,14,20	
							SP		
15				80	SAND Tan to light brown, becoming light gray at 16' to 17' bls., wet, no odor			4,5,10,15	
20									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14	**LOG of WELL:** 14MW009		**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc.		**DATE STARTED:** 6/14/95	**COMPLTD:** 6/14/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 18.85 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 14.18FT	**DPTH TO ▽** 8.04 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 6/15/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					CLAYEY SAND Red clayey sand fill material		ML		
					SAND White		SP		
					SAND Tan to light brown, no odor, dry		SP		
5				3	SAND Grading from light brown to white to brown, with a red layer from 5.5'-5.7'bls, wet at 8.9' bls, no odor		SP	3,8,16,20	▽
10				38	SAND Grading from light brown to light orange from 10'-11.25' bls, to white, medium-grained, wet, no odor		SP	8,10,17,28	
15				8	SAND Tan to light brown, medium-grained, wet, no odor		SP	4,8,11,20	
20									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3644, Site 14		**LOG of WELL:** 14MW010	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc.		**DATE STARTED:** 8/18/95	**COMPLTD:** 8/18/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 19.15 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 13.88FT.	**DPTH TO ▽** 8.38 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 8/15/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					CLAYEY SAND Red clayey sand fill material		ML		
					SAND. Tan to white, dry, no odor		SP		
5				0	SAND White to light brown, becoming darker at 7' bls, organic dark brown layer at 7.5' to 8' bls, then brown sand, organic odor, not petroleum		SP	2,4,9,13	
10				120	SAND. Light brown to 10.75' bls, thin black sand layer, organic material to 11' bls, white sand to 12' bls, and mostly white sand to 15' bls		SP	8,13,22,27	
15				0	SAND Light brown, medium-grained, wet, no odor		SP	5,9,15,25	
20									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** 14MW011D	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc.		**DATE STARTED:** 6/14/95	**COMPLTD:** 6/14/95
METHOD: 8.25" HSA/6" mud	**CASE SIZE:** 2-inch	**SCREEN INT.:** 30'-35'	**PROTECTION LEVEL:** D
TOC ELEV.: 19.53 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 35 37FT	**DPTH TO ▽** 8.73 FT
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 6/16/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					2" layer of asphalt				
					CLAYEY SAND Red clayey sand fill material		ML		
					SAND Tan, dry, no odor.		SP		
5					SAND Light brown to gray, some brown at 8' bls and roots, wet at 7' bls, no odor		SP		
10					SAND. Light brown to tan, medium-grain, wet, no odor		SP		
15				20	SAND Tan, medium- to course-grained to 16', 1" red clayey sand, then gray sand, medium-grained to 17', wet, no odor		SP	5,9,10,14	
					SAND Gray to tan, wet, no odor		SP		
20				250	SAND. Tan to 20 25' bls, 3" orange sand then white sand to 22' bls, wet, no odor.		SP	1,2,4,5	
25				20	SAND White, medium-course-grained, wet, no odor		SP	3,5,9,10	
					SAND White, medium-grained, no odor, wet to 35' bls		SP		
30									
35									
40									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** 14MW012	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc.		**DATE STARTED:** 8/18/95	**COMPLTD:** 8/18/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 19.53 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 13.92FT.	**DPTH TO ▽** 5.34 FT
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 8/19/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					4" layer of asphalt.				
					Red clay fill		SC		
							SP		
				120	SAND White, petroleum odor				
							SP		
				150	SAND White, petroleum odor				
5							SP		
				1,300	SAND. Tan, petroleum odor, with concrete fill material and roots				
							SP		
10					SAND Tan, petroleum odor, wet				
15									
20									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** 14MW013	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc.		**DATE STARTED:** 8/19/95	**COMPLTD:** 8/19/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 19.87 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 14FT	**DPTH TO ▽** 5.82 FT
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 8/19/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					4" layer of asphalt				
					Red clayey sand fill		SC		
							SP		
				0	SAND. Tan, medium-grained				
							SP		
				0	SAND Tan to white, medium-grained, no odor				
5							SP		
				7					
					SAND. Tan to light brown, medium-grained, dark brown at 9 ft bls, no odor				
10							SP		
					SAND Brown to gray, medium-grained, no odor.				
15									
20									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** 14MW014	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc.		**DATE STARTED:** 8/18/95	**COMPLTD:** 8/18/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 19.42 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 14FT.	**DPTH TO ▽** 5.33 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 8/19/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					4" layer of asphalt				
					Red clayey sand fill		SC		
					SAND White, medium-grained		SP		
					SAND White, medium-grained		SP		
5							SP		
					SAND Brown, medium-grained, wet at 8 ft bls		SP		
10							SP		
					SAND Light brown, medium-grained, no odor				
15									
20									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** 14MW015	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc		**DATE STARTED:** 8/19/95	**COMPLTD:** 8/19/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 19.34 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 14FT	**DPTH TO ▽** 5.24 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 8/19/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					3" layer of asphalt				
					Red clayey sand fill		SC		
							SP		
				0	SAND Tan to white, fine- to medium-grained, no odor				
							SP		
				0	SAND White, fine- to medium-grained, no odor				
5							SP		▽
				5	SAND Tan to orange, medium-grained, no odor				
					SAND. Tan to dark brown, no odor, moist.				
10							SP		
					SAND Brown, light brown, white, medium-grained				
15									
20									

ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** 14MW016	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc		**DATE STARTED:** 8/19/95	**COMPLTD:** 8/19/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 19.80 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 14FT	**DPTH TO ▽** 5.47 FT
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 8/19/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					SAND Tan, fine- to medium-grained		SP		
				0	SAND Tan, fine- to medium-grained, no odor		SP		
				0	SAND White, medium-grained, no odor		SP		
5				0	SAND White, medium-grained, no odor		SP		
10					SAND White, medium-grained, no odor, wet		SP		
15									
20									

 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** 14MW017	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc		**DATE STARTED:** 8/20/95	**COMPLTD:** 8/20/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-9'	**PROTECTION LEVEL:** D
TOC ELEV.: 20.42 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 9FT	**DPTH TO ▽** 8.25 FT.
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 8/20/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					4" layer of concrete				
					Quartz pebble fill and wire reinforcements		SP		
					SAND White, fine-grained		SP		
				1	SAND White, fine-grained, no odor				
							SP		
				0	SAND White, fine-grained, no odor				
5							SP		
				0	SAND White, medium-grained, moist, no odor				
					SAND White to brown, no odor		SP		
					Concrete and pebble Hit refusal				
10									
15									
20									

 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NADEP Pensacola Building 3844, Site 14		**LOG of WELL:** 14MW018	**BORING NO.** NA
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 7527
CONTRACTOR: Groundwater Protection, Inc.		**DATE STARTED:** 8/20/95	**COMPLTD:** 8/20/95
METHOD: 4.25" ID HSA	**CASE SIZE:** 2-inch	**SCREEN INT.:** 4'-14'	**PROTECTION LEVEL:** D
TOC ELEV.: 20.53 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 14FT	**DPTH TO ▽** 8.38 FT
LOGGED BY: J. Fugitt	**WELL DEVELOPMENT DATE:** 8/20/95		**SITE:** 14

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					Concrete and quartz pebbles				
					Pebbles and rebar		SP		
					SAND White, fine-grained		SP		
				0	SAND White, fine-grained				
							SP		
				0	SAND White, fine-grained, no odor				
5							SP		
				0	SAND White, medium-grained, no odor, moist				
							SP		
					SAND Tan, medium-grained, moist				
10							SP		
					SAND Tan to brown, medium-grained, no odor, moist				
15									
20									

 ABB ENVIRONMENTAL SERVICES, INC.

APPENDIX D

INVESTIGATIVE METHODOLOGIES AND PROCEDURES

INVESTIGATIVE METHODOLOGIES AND PROCEDURES

Soil Boring Methods. Boreholes were advanced using either a Terra Probe℠ with sleeved soil-sampling tubes or a 4.25-inch inside diameter (ID), hollow-stem augers by a rotary drill rig. Soil samples were collected directly above the water table with a post-hole digger and below the water table with a split-spoon sampling device. The soil samples collected above the water table were placed in 16-ounce glass jars, and head space analyses were performed using an OVA with a FID following Florida Department of Environmental Protection (FDEP) Chapter 62-770.200(2), FAC, guidelines. The purpose of the screening procedure was to optimize monitoring well placement during the investigation.

Monitoring Well Construction. Monitoring wells MW-1 through MW-18 (excluding MW-11D) were constructed of 2-inch ID, schedule 40, PVC casing with flush-threaded joints and 10 feet of 0.010-inch machine-slotted screen. PVC well casings extend from the top of the screen to land surface. A 20/30 grade silica sand filter pack was placed in the annular space to approximately 1 foot above the top of the screen. A 1-foot thick fine-sand seal was placed on top of the filter pack. The remaining annular space was grouted to the surface with a neat cement grout.

Deep well MW-11D was constructed of 2-inch ID, schedule 40, PVC with flush-threaded joints and 5 feet of 0.010-inch machine-slotted screen. PVC well casings extend from the top of the screen to land surface. A 20/30 grade silica sand filter pack was placed in the annular space to approximately 2 feet above the top of the screen. A 2-foot thick fine-sand seal was placed on top of the filter pack. The remaining annular space was grouted to the surface with a neat cement grout. Monitoring well MW-11D was double-cased. The outer casing consists of 6-inch diameter, schedule 40, PVC well casing and extends from land surface to a depth of 25 feet below land surface.

A protective traffic-bearing vault with a bolt-down cover was installed to complete each well. In concreted areas, the well pad consisted of 6-inch thick reinforced concrete around the traffic-bearing vault to the depth of the surrounding concrete. Each monitoring well was equipped with a locking well cap and a padlock. Figure 4-3 depicts a typical shallow monitoring well installation for the site. Figure 4-4 illustrates the construction details for the double-cased deep monitoring well (see Section 4.2).

In addition to the permanent monitoring wells, 8 piezometers (designated with a PZ prefix) were installed at the site. All piezometers were constructed of 1.25-inch ID, schedule 40, PVC casing with flush-threaded joints and 5 feet of 0.010-inch machine-slotted screen. Each piezometer was installed by Terra Probe℠ to a depth of approximately 8 to 9 feet below land surface. Depth to water measurements were recorded, and top-of-casing elevation for each piezometer was surveyed to an arbitrary datum (PZ001 was assigned an elevation of 20.00 feet above mean sea level) in order to assess groundwater flow direction at the site and optimize the placement of permanent monitoring wells.

Water Level Measurements. Groundwater levels were measured using an electric water level indicator and an engineering tape divided into increments of 0.01 foot. Water-level elevations were calculated by subtracting the measured depth to groundwater from the elevation at the top of the well casing. The wells were checked for the presence of free product by visual observation of a groundwater

sample taken from each well using an extruded Teflon™ bailer. Some monitoring wells suspected to contain free product were also checked with an oil-water interface probe.

Groundwater Sampling. Groundwater samples were collected in accordance with ABB Environmental Services, Inc. (ABB-ES), FDEP-approved Comprehensive Quality Assurance Plan. The monitoring wells were purged by the low-flow method utilizing Teflon™ tubing in the well and a peristaltic pump. Purging continued until five well volumes had been removed from the well. Groundwater samples were collected using a disposable Teflon™ bailer.

The samples were placed into appropriate containers, properly preserved, and placed on ice. Samples were then shipped to Quanterra, Inc., in Tampa, Florida. For a description of sampling parameters see Subsection 4.4.2, Groundwater Sampling, and Table 5-4.

Slug Test Procedures. Slug tests were not performed at Site 14, Building 3644; however, numerous slug tests have been performed at other nearby sites at Chevalier Field during previous field investigations.

The slug test developed by Bouwer and Rice (1976) measures the saturated hydraulic conductivity (K) using a single well. The test method used is termed a "rising head" test and is performed by quickly withdrawing a volume of water (slug) from the well and measuring the subsequent rate of the rising water level in the well. Bouwer (1989) recommends the rising head slug test for wells with screened intervals that are only partially submerged or that partially penetrate unconfined aquifers.

The slug was constructed of 1-inch outside diameter PVC pipe, 5 feet in length, filled with sand, and capped watertight at both ends. The water level changes in the monitoring wells were recorded using a data logger and pressure transducer. The pressure transducer was suspended less than 1 foot above the bottom of the well and an initial water level was recorded prior to beginning the test. The slug was then lowered into the well to a depth below the original water table. Water levels were then observed until they stabilized at the original level. Following stabilization, the slug was quickly removed and water level measurements were recorded over time until the water level returned to the original level. Three rising head tests were conducted for each well in order to obtain an average recovery response.

APPENDIX E

AQUIFER PARAMETER CALCULATIONS

AQUIFER PARAMETER CALCULATIONS

Hydraulic Gradient. Water table elevations were plotted on a map of the site. A water table contour map was drawn with arrows (depicting groundwater flow direction) perpendicular to the groundwater elevation contours. The average groundwater hydraulic gradient was calculated by subtracting the differences in groundwater elevation (in feet) between two points on the map and dividing the elevation difference by the distance between the two points to obtain a resulting gradient in feet per foot (ft/ft). Water elevation data collected were used to calculate hydraulic gradients at the site. For each date, three traverses were made perpendicular to equipotential contour lines to calculate an average site hydraulic gradient. For each traverse, the hydraulic gradient was calculated as follows:

$$i = \frac{(h_1 - h_2)}{d} \qquad (1)$$

where

i = hydraulic gradient (ft/ft),
h_1 = water table elevation, upgradient (feet),
h_2 = water table elevation, downgradient (feet), and
d = horizontal distance (feet) between h_1 and h_2 along a flow direction.

The average hydraulic gradient at the site was calculated to be 6.20×10^{-3} ft/ft.

Hydraulic Conductivity. Hydraulic conductivity from slug test data was calculated following the methods of Bouwer and Rice (1976) and Bouwer (1989) for partially penetrating wells screened in unconfined aquifers. The following well information is needed to assess the hydraulic conductivity:

- radius of well casing (r_c),
- r_w = radius of borehole (r_c plus radius of the sand pack surrounding the well screen),
- length of screened interval below the water table (L_e),
- effective well radius (r_e),
- depth of well below the water table (L_w),
- depth to confining unit or bottom of aquifer below the static water table (H), and
- plot of time versus the logarithm of y, where y is the difference between the static water level outside the well and the water level inside the well.

Calculations were made assuming that $L_w < H$. Hydraulic conductivity, K, was calculated as follows:

$$K = [R_c^2 \ln(\frac{r_e}{r_w}) - 2L_e] \ [\frac{1}{t} \ln(\frac{y_o}{y_t})] \quad (2)$$

where

y_0 = y at time zero, and
y_t = y at time t.

The effective well radius, r_e, and the term $[(1/t)\ln(y_0/y_t)]$ were derived by using the computer program AQTESOLV™ (Geraghty & Miller, Inc., 1989). This computer program follows procedures and assumptions outlined by Bouwer (1989).

Values of y were calculated for a particular time, t, and plotted on the graph. The computer program selects a "best-fit" line through the data points by linear regression along a "straight-line" portion of the graph. The slope of the best-fit line is used to calculate the hydraulic conductivity, K.

Slug tests performed at monitoring wells PEN-3810N-4 and PEN-3810N-6 (located east of Site 14, Building 3644) are thought to be representative of surficial aquifer conditions at the site. Hydraulic conductivity, K, is reported in feet per minute on the slug test graphs, and was recalculated to feet per day (ft/day). K was found to vary from 49 ft/day to 55 ft/day with an average K of 52 ft/day.

Average Pore Water Velocity (V).

Estimates of V were obtained using the following formula:

$$V = \frac{(K*i)}{n} \quad (3)$$

where

V = seepage velocity in ft/day,
K = hydraulic conductivity in ft/day,
i = hydraulic gradient, and
n = estimated porosity.

Porosities of unconsolidated sands range from 25 to 50 percent (Freeze and Cherry, 1979). Using an estimated porosity (n) of 25 percent, an average hydraulic gradient of 6.2×10^{-3} ft/ft, and an average hydraulic conductivity of 52 ft/day, the V is calculated as follows:

$$V = \frac{(5.20 \times 10^1 \ ft/day) \ (0.0062 \ ft/ft)}{0.25} \quad (4)$$

$$V = 1.28 \ ft/day$$

APPENDIX F

GROUNDWATER LABORATORY ANALYTICAL DATA

10/13/95 NADEP BUILDING 3644 - SITE 14 13:59:31

Lab Sample Number:		B5F2201120				B5F2201120				B5F2201120				B5F2201120				
Site		NADEP-14				NADEP-14				NADEP-14				NADEP-14				
Locator		14G00101				14G00201				14G00301				14G00401				
Collect Date:		21-JUN-95				21-JUN-95				21-JUN-95				21-JUN-95				
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL		
EPA 601/602																		
Chloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Bromomethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Bromodichloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Vinyl chloride	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Chloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Dichloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Trichlorofluoromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1-Dichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1-Dichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
trans-1,2-Dichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Chloroform	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,2-Dichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1,1-Trichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Carbon tetrachloride	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,2-Dichloropropane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
cis-1,3-Dichloropropene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Trichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Dibromochloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1,2-Trichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
trans-1,3-Dichloropropene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Bromoform	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1,2,2-Tetrachloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Tetrachloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Chlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,3-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,2-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,4-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Benzene	2.7		ug/l	1	6.3		ug/l	1	1	U	ug/l	1	3.1		ug/l	1		
Toluene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Chlorobenzene-602	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Ethylbenzene	26		ug/l	1	11		ug/l	1	1	U	ug/l	1	28		ug/l	1		
Xylenes (total)	17		ug/l	1	12		ug/l	1	1	U	ug/l	1	8.1		ug/l	1		
Methyl tert-butyl ether	1	U	ug/l	1	1.9		ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
POLYNUCLEAR AROMATICS																		
Naphthalene	64		ug/l	10	98		ug/l	10	2	U	ug/l	2	58		ug/l	10		
2-Methylnaphthalene	140		ug/l	10	130		ug/l	10	2	U	ug/l	2	100		ug/l	10		
1-Methylnaphthalene	100		ug/l	10	92		ug/l	10	2	U	ug/l	2	78		ug/l	10		
Acenaphthylene	10	U	ug/l	10	10	U	ug/l	10	2	U	ug/l	2	10	U	ug/l	10		
Acenaphthene	10	U	ug/l	10	10	U	ug/l	10	2	U	ug/l	2	10	U	ug/l	10		
Fluorene	10	U	ug/l	10	13		ug/l	10	2	U	ug/l	2	13		ug/l	10		
Phenanthrene	10	U	ug/l	10	10	U	ug/l	10	2	U	ug/l	2	10	U	ug/l	10		
Anthracene	10	U	ug/l	10	10	U	ug/l	10	2	U	ug/l	2	10	U	ug/l	10		
Fluoranthene	1	U	ug/l	1	1	U	ug/l	1	.2	U	ug/l	.2	1	U	ug/l	1		
Pyrene	1	U	ug/l	1	1	U	ug/l	1	.2	U	ug/l	.2	1	U	ug/l	1		
Benzo (a) anthracene	.5	U	ug/l	.5	.5	U	ug/l	.5	.1	U	ug/l	.1	.5	U	ug/l	.5		
Chrysene	.5	U	ug/l	.5	.5	U	ug/l	.5	.1	U	ug/l	.1	.5	U	ug/l	.5		
Benzo (b) fluoranthene	.5	U	ug/l	.5	.5	U	ug/l	.5	.1	U	ug/l	.1	.5	U	ug/l	.5		
Benzo (k) fluoranthene	.75	U	ug/l	.75	.75	U	ug/l	.75	.15	U	ug/l	.15	.75	U	ug/l	.75		
Benzo (a) pyrene	.5	U	ug/l	.5	.5	U	ug/l	.5	.1	U	ug/l	.1	.5	U	ug/l	.5		
Indeno (1,2,3-cd) pyrene	.5	U	ug/l	.5	.5	U	ug/l	.5	.1	U	ug/l	.1	.5	U	ug/l	.5		

10/13/95 NADEP BUILDING 3644 - SITE 14 13:59:31

Lab Sample Number:		B5F2201120				B5F2201120				B5F2201120				B5F2201120					
Site		NADEP-14				NADEP-14				NADEP-14				NADEP-14					
Locator		14G00101				14G00201				14G00301				14G00401					
Collect Date:		21-JUN-95				21-JUN-95				21-JUN-95				21-JUN-95					
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL			
Dibenzo (a,h) anthracene	.5	U	ug/l	.5	.5	U	ug/l	.5	.1	U	ug/l	.1	.5	U	ug/l	.5			
Benzo (g,h,i) perylene	.5	U	ug/l	.5	.5	U	ug/l	.5	.1	U	ug/l	.1	.5	U	ug/l	.5			

U = Not Detected J = Estimated Value

10/13/95 NADEP BUILDING 3644 - SITE 14 13:59:31

Lab Sample Number:	B5F2201120				B5F2201120				B5F2201120				B5F2201120					
Site	NADEP-14				NADEP-14				NADEP-14				NADEP-14					
Locator	14G00501				14G00501D				14G00601				14G00701					
Collect Date:	21-JUN-95				21-JUN-95				21-JUN-95				21-JUN-95					
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL		
EPA 601/602																		
Chloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Bromomethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Bromodichloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Vinyl chloride	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Chloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Dichloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Trichlorofluoromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1-Dichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1-Dichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
trans-1,2-Dichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Chloroform	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,2-Dichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1,1-Trichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Carbon tetrachloride	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,2-Dichloropropane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
cis-1,3-Dichloropropene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Trichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Dibromochloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1,2-Trichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
trans-1,3-Dichloropropene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Bromoform	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1,2,2-Tetrachloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Tetrachloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Chlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,3-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,2-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,4-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Benzene	17		ug/l	1	15		ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Toluene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Chlorobenzene-602	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Ethylbenzene	45		ug/l	1	2.9		ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Xylenes (total)	85		ug/l	1	86		ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Methyl tert-butyl ether	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	3.1		ug/l	1		
POLYNUCLEAR AROMATICS																		
Naphthalene	35		ug/l	2	32		ug/l	2	54		ug/l	2	55		ug/l	2		
2-Methylnaphthalene	42		ug/l	2	33		ug/l	2	42		ug/l	2	57		ug/l	2		
1-Methylnaphthalene	39		ug/l	2	37		ug/l	2	46		ug/l	2	52		ug/l	2		
Acenaphthylene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2		
Acenaphthene	2		ug/l	2	2	U	ug/l	2	3.8		ug/l	2	4		ug/l	2		
Fluorene	6		ug/l	2	5.4		ug/l	2	9.4		ug/l	2	6.7		ug/l	2		

10/13/95 NADEP BUILDING 3644 - SITE 14 13:59:31

Lab Sample Number:	B5F2201120				B5F2201120				B5F2201120				B5F2201120			
Site	NADEP-14				NADEP-14				NADEP-14				NADEP-14			
Locator	14G00501				14G00501D				14G00601				14G00701			
Collect Date:	21-JUN-95				21-JUN-95				21-JUN-95				21-JUN-95			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Phenanthrene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
Anthracene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
Fluoranthene	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2
Pyrene	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2
Benzo (a) anthracene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Chrysene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Benzo (b) fluoranthene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Benzo (k) fluoranthene	.15	U	ug/l	.15	.15	U	ug/l	.15	.15	U	ug/l	.15	.15	U	ug/l	.15
Benzo (a) pyrene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Indeno (1,2,3-cd) pyrene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Dibenzo (a,h) anthracene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Benzo (g,h,i) perylene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1

U = Not Detected J = Estimated Value

10/13/95 NADEP BUILDING 3644 - SITE 14 13:59:31

Lab Sample Number:		B5F2201120			B5F2201120			B5F2201120			B5F2201120		
Site		NADEP-14			NADEP-14			NADEP-14			NADEP-14		
Locator		14G00801			14G00901			14G01001			14G01101		
Collect Date:		21-JUN-95			21-JUN-95			21-JUN-95			21-JUN-95		
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
EPA 601/602																
Chloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Bromomethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Bromodichloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Vinyl chloride	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Chloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Dichloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Trichlorofluoromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1-Dichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1-Dichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
trans-1,2-Dichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Chloroform	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,2-Dichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1,1-Trichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Carbon tetrachloride	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,2-Dichloropropane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
cis-1,3-Dichloropropene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Trichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Dibromochloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1,2-Trichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
trans-1,3-Dichloropropene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Bromoform	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1,2,2-Tetrachloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Tetrachloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Chlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	5.9		ug/l	1
1,3-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,2-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,4-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Benzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Toluene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1.1		ug/l	1
Chlorobenzene-602	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	6.5		ug/l	1
Ethylbenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Xylenes (total)	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Methyl tert-butyl ether	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
POLYNUCLEAR AROMATICS																
Naphthalene	2	U	ug/l	2	2.4		ug/l	2	2	U	ug/l	2	2	U	ug/l	2
2-Methylnaphthalene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
1-Methylnaphthalene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
Acenaphthylene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
Acenaphthene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
Fluorene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2

10/13/95 NADEP BUILDING 3644 - SITE 14 13:59:31

Lab Sample Number:	B5F2201120				B5F2201120				B5F2201120				B5F2201120					
Site	NADEP-14				NADEP-14				NADEP-14				NADEP-14					
Locator	14G00801				14G00901				14G01001				14G01101					
Collect Date:	21-JUN-95				21-JUN-95				21-JUN-95				21-JUN-95					
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL		
Phenanthrene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2		
Anthracene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2		
Fluoranthene	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2		
Pyrene	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2		
Benzo (a) anthracene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		
Chrysene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		
Benzo (b) fluoranthene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		
Benzo (k) fluoranthene	.15	U	ug/l	.15	.15	U	ug/l	.15	.15	U	ug/l	.15	.15	U	ug/l	.15		
Benzo (a) pyrene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		
Indeno (1,2,3-cd) pyrene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		
Dibenzo (a,h) anthracene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		
Benzo (g,h,i) perylene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		

U = Not Detected J = Estimated Value

Lab Sample Number:	B5H2201040				B5H2201040				B5H2201040				B5H2201040					
Site	NADEP-14				NADEP-14				NADEP-14				NADEP-14					
Locator	14G01201				14G01301				14G01401				14G01401D					
Collect Date:	21-AUG-95				21-AUG-95				21-AUG-95				21-AUG-95					
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL		
EPA 601/602																		
Chloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Bromomethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Bromodichloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Vinyl chloride	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Chloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Dichloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Trichlorofluoromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1-Dichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1-Dichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
trans-1,2-Dichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Chloroform	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,2-Dichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1,1-Trichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Carbon tetrachloride	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,2-Dichloropropane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
cis-1,3-Dichloropropene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Trichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Dibromochloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1,2-Trichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
trans-1,3-Dichloropropene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Bromoform	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,1,2,2-Tetrachloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Tetrachloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Chlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,3-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,2-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
1,4-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Benzene	24		ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Toluene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Chlorobenzene-602	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Ethylbenzene	47		ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Xylenes (total)	31		ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
Methyl tert-butyl ether	3.3		ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1		
POLYNUCLEAR AROMATICS																		
Naphthalene	46		ug/l	20	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2		
2-Methylnaphthalene	100		ug/l	20	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2		
1-Methylnaphthalene	76		ug/l	20	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2		
Acenaphthylene	20	U	ug/l	20	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2		
Acenaphthene	20	U	ug/l	20	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2		
Fluorene	20	U	ug/l	20	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2		

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Lab Sample Number:	B5H2201040				B5H2201040				B5H2201040				B5H2201040					
Site	NADEP-14				NADEP-14				NADEP-14				NADEP-14					
Locator	14G01201				14G01301				14G01401				14G01401D					
Collect Date:	21-AUG-95				21-AUG-95				21-AUG-95				21-AUG-95					
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL		
Phenanthrene	20	U	ug/l	20	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2		
Anthracene	20	U	ug/l	20	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2		
Fluoranthene	2	U	ug/l	2	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2		
Pyrene	2	U	ug/l	2	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2		
Benzo (a) anthracene	1	U	ug/l	1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		
Chrysene	1	U	ug/l	1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		
Benzo (b) fluoranthene	1	U	ug/l	1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		
Benzo (k) fluoranthene	1.5	U	ug/l	1.5	.15	U	ug/l	.15	.15	U	ug/l	.15	.15	U	ug/l	.15		
Benzo (a) pyrene	1	U	ug/l	1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		
Indeno (1,2,3-cd) pyrene	1	U	ug/l	1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		
Dibenzo (a,h) anthracene	1	U	ug/l	1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		
Benzo (g,h,i) perylene	1	U	ug/l	1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1		

U = Not Detected J = Estimated Value

10/13/95 NADEP BUILDING 3644 - SITE 14 13:59:31

Lab Sample Number:	B5H2201040				B5H2201040				B5H2201040				B5H2201040			
Site	NADEP-14				NADEP-14				NADEP-14				NADEP-14			
Locator	14G01501				14G01601				14G01701				14G01801			
Collect Date:	21-AUG-95				21-AUG-95				21-AUG-95				21-AUG-95			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
EPA 601/602																
Chloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Bromomethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Bromodichloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Vinyl chloride	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Chloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Dichloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Trichlorofluoromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1-Dichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1-Dichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
trans-1,2-Dichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Chloroform	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,2-Dichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1,1-Trichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Carbon tetrachloride	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,2-Dichloropropane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
cis-1,3-Dichloropropene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Trichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Dibromochloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1,2-Trichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
trans-1,3-Dichloropropene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Bromoform	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1,2,2-Tetrachloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Tetrachloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Chlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,3-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,2-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,4-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Benzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Toluene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1		ug/l	1
Chlorobenzene-602	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Ethylbenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Xylenes (total)	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Methyl tert-butyl ether	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
POLYNUCLEAR AROMATICS																
Naphthalene	9.9		ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
2-Methylnaphthalene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
1-Methylnaphthalene	4.2		ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
Acenaphthylene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
Acenaphthene	2.3		ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
Fluorene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2

10/13/95 NADEP BUILDING 3644 - SITE 14 13:59:31

Lab Sample Number:	B5H2201040				B5H2201040				B5H2201040				B5H2201040			
Site	NADEP-14				NADEP-14				NADEP-14				NADEP-14			
Locator	14G01501				14G01601				14G01701				14G01801			
Collect Date:	21-AUG-95				21-AUG-95				21-AUG-95				21-AUG-95			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Phenanthrene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
Anthracene	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
Fluoranthene	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2
Pyrene	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2	.2	U	ug/l	.2
Benzo (a) anthracene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Chrysene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Benzo (b) fluoranthene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Benzo (k) fluoranthene	.15	U	ug/l	.15	.15	U	ug/l	.15	.15	U	ug/l	.15	.15	U	ug/l	.15
Benzo (a) pyrene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Indeno (1,2,3-cd) pyrene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Dibenzo (a,h) anthracene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Benzo (g,h,i) perylene	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1

U = Not Detected J = Estimated Value

10/13/95 NADEP BUILDING 3644 - SITE 14 13:59:31

Lab Sample Number:	B5F2201120			B5F2201120			B5H2201040			B5H2201040				
Site	NADEP-14			NADEP-14			NADEP-14			NADEP-14				
Locator	14R00101			14T00101			14R00201			14T00201				
Collect Date:	21-JUN-95			21-JUN-95			21-AUG-95			21-AUG-95				
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
EPA 601/602																
Chloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Bromomethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Bromodichloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Vinyl chloride	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Chloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Dichloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Trichlorofluoromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1-Dichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1-Dichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
trans-1,2-Dichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Chloroform	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,2-Dichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1,1-Trichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Carbon tetrachloride	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,2-Dichloropropane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
cis-1,3-Dichloropropene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Trichloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Dibromochloromethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1,2-Trichloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
trans-1,3-Dichloropropene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Bromoform	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,1,2,2-Tetrachloroethane	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Tetrachloroethene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Chlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,3-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,2-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
1,4-Dichlorobenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Benzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Toluene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Chlorobenzene-602	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Ethylbenzene	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Xylenes (total)	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Methyl tert-butyl ether	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
POLYNUCLEAR AROMATICS																
Naphthalene	2	U	ug/l	2	-				2	U	ug/l	2	-			
2-Methylnaphthalene	2	U	ug/l	2	-				2	U	ug/l	2	-			
1-Methylnaphthalene	2	U	ug/l	2	-				2	U	ug/l	2	-			
Acenaphthylene	2	U	ug/l	2	-				2	U	ug/l	2	-			
Acenaphthene	2	U	ug/l	2	-				2	U	ug/l	2	-			
Fluorene	2	U	ug/l	2	-				2	U	ug/l	2	-			

10/13/95 NADEP BUILDING 3644 - SITE 14 13:59:31

Lab Sample Number:	B5F2201120				B5F2201120				B5H2201040				B5H2201040			
Site	NADEP-14				NADEP-14				NADEP-14				NADEP-14			
Locator	14R00101				14T00101				14R00201				14T00201			
Collect Date:	21-JUN-95				21-JUN-95				21-AUG-95				21-AUG-95			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Phenanthrene	2	U	ug/l	2	-				2	U	ug/l	2	-			
Anthracene	2	U	ug/l	2	-				2	U	ug/l	2	-			
Fluoranthene	.2	U	ug/l	.2	-				.2	U	ug/l	.2	-			
Pyrene	.2	U	ug/l	.2	-				.2	U	ug/l	.2	-			
Benzo (a) anthracene	.1	U	ug/l	.1	-				.1	U	ug/l	.1	-			
Chrysene	.1	U	ug/l	.1	-				.1	U	ug/l	.1	-			
Benzo (b) fluoranthene	.1	U	ug/l	.1	-				.1	U	ug/l	.1	-			
Benzo (k) fluoranthene	.15	U	ug/l	.15	-				.15	U	ug/l	.15	-			
Benzo (a) pyrene	.1	U	ug/l	.1	-				.1	U	ug/l	.1	-			
Indeno (1,2,3-cd) pyrene	.1	U	ug/l	.1	-				.1	U	ug/l	.1	-			
Dibenzo (a,h) anthracene	.1	U	ug/l	.1	-				.1	U	ug/l	.1	-			
Benzo (g,h,i) perylene	.1	U	ug/l	.1	-				.1	U	ug/l	.1	-			

U = Not Detected J = Estimated Value

January 24, 1996 Document No. 7527.1??

Lt. Cmdr. Eric Johnson
222 East Avenue
NADEP Pensacola at NAS Pensacola
Building 604
Pensacola, Florida 32508

SUBJECT: Submittal of Copy of the Site 14, Building 3644, Contamination Assessment Report and Related Letters, Naval Aviation Depot (NADEP), Naval Air Station (NAS) Pensacola, Pensacola, Florida. Contract No. N62467-89-D-0317, CTO No. 008.

Dear Lt. Cmdr. Johnson:

My apologies for the confusion surrounding the transmittal of the Site 14, Building 3644, Contamination Assessment Report (CAR) back in November 1995. Copies were sent to Terry Preston and Dean Spencer. You were not on that distribution list. Enclosed please find a copy of the CAR, the original transmittal letter, and a copy of the Florida Department of Environmental Protection (FDEP) approval letter for the CAR.

As I discussed with Terry in a phone conversation on January 24, 1996, we send our reports out as final to all interested parties for review and comment. Typically, if FDEP has no comments and approves the report then it is unlikely that a revised final report will be prepared. However, if you have comments or concerns please let me know and we will make the appropriate changes.

There were no negotiations with the FDEP concerning the recommendations. Typically the existence of free floating petroleum product precludes recommending anything other than preparation of a Remedial Action Plan.

If you have any questions, concerns, or comments please call me at your earliest convenience at (904) 656-1293, extension 124.

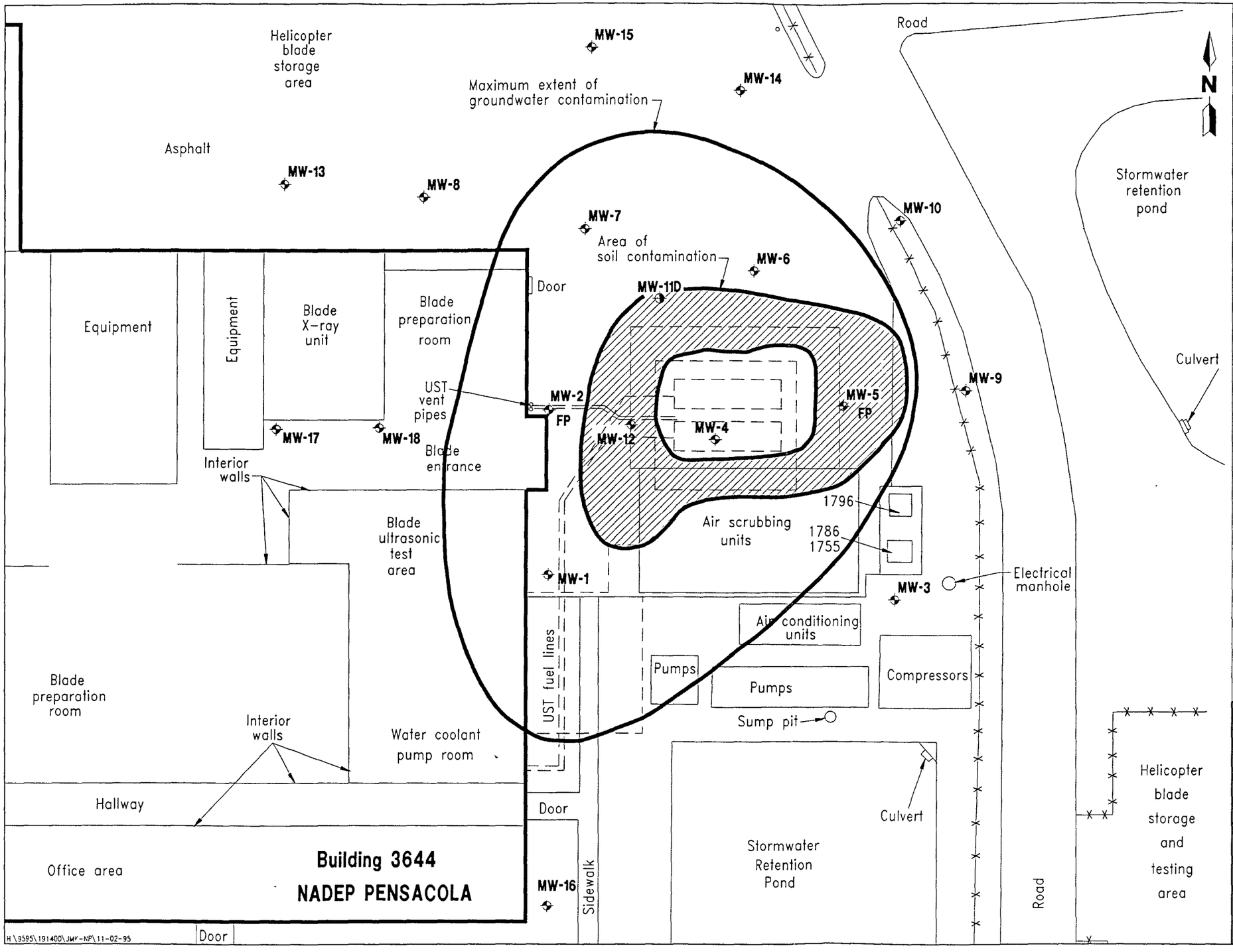
Sincerely,

ABB ENVIRONMENTAL SERVICES, INC.

Mark Diblin, P.G.
Senior Task Order Manager

Joe Fugitt, P.G.
Senior Geologist

cc: Byas Glover, EIC, SouthDiv
File



LEGEND

- Fence
- UST — Underground storage tank
- MW-9 — Shallow monitoring well and designation
- MW-11D — Deep monitoring well and designation

NOTE:
FP = Free product observed in monitoring well

0 15 30
SCALE: 1 INCH = 30' FEET

FIGURE 1
EXECUTIVE SUMMARY

CONTAMINATION ASSESSMENT REPORT
SITE 14 BUILDING 3644

NAVAL AVIATION DEPOT
PENSACOLA, FLORIDA

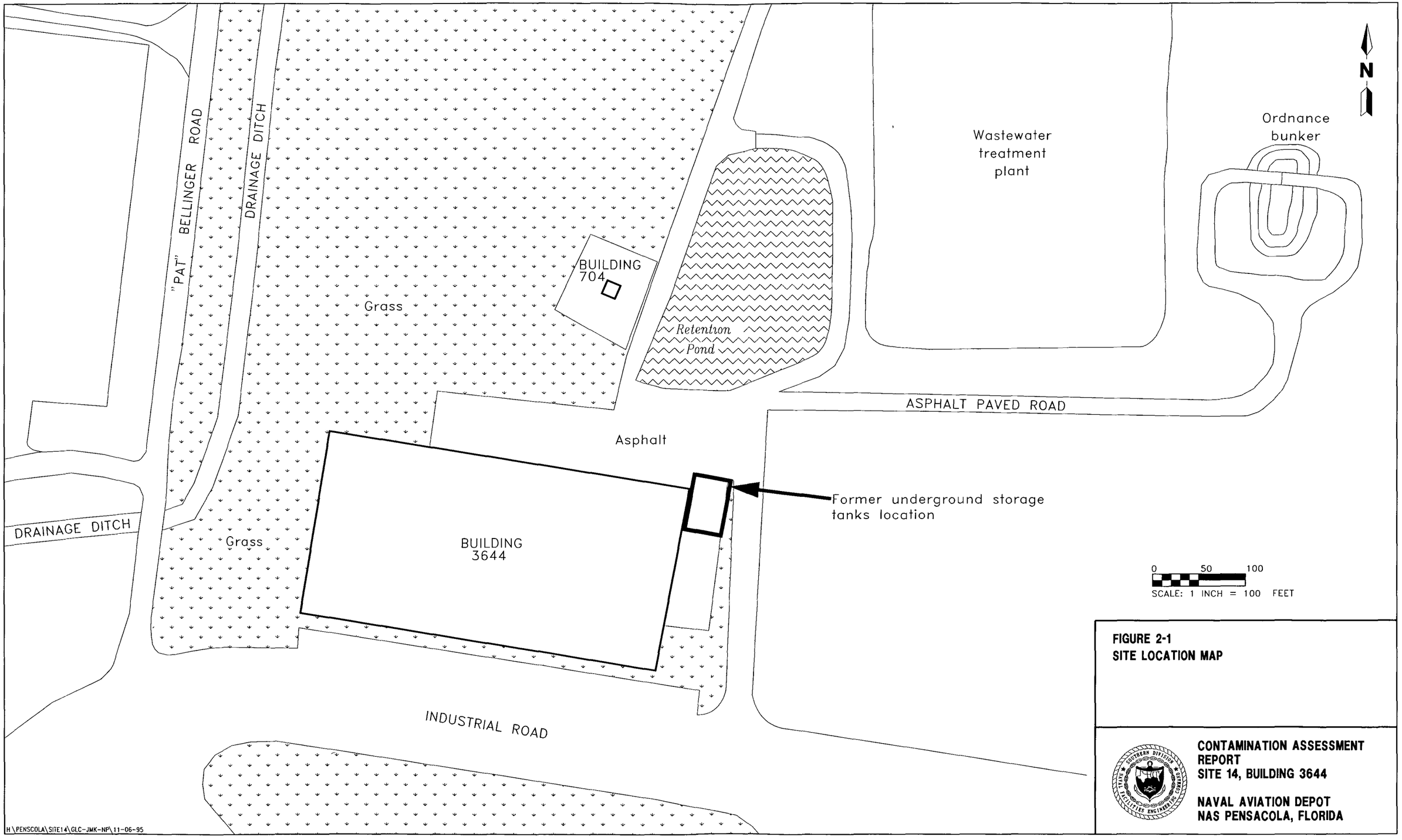
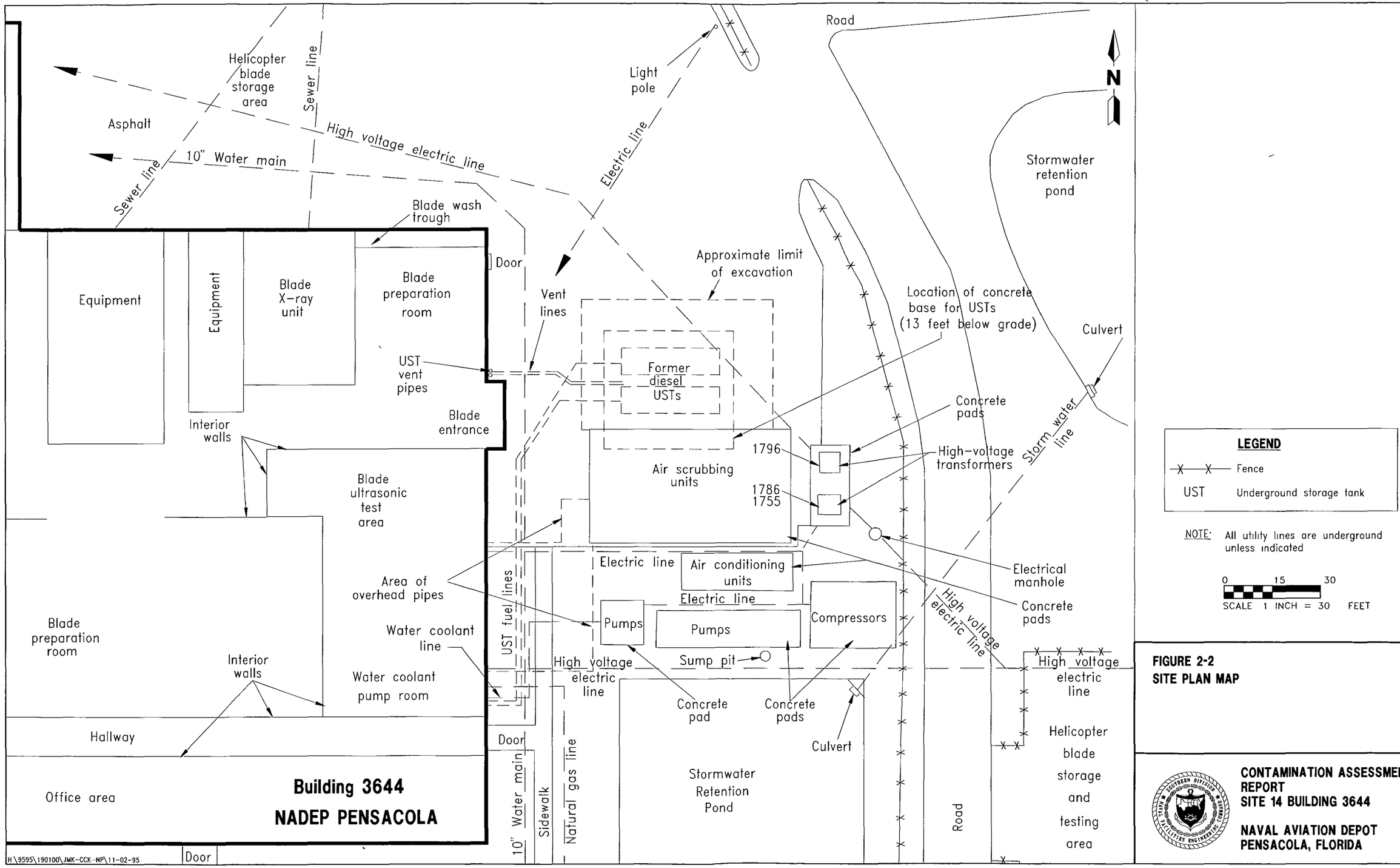


FIGURE 2-1
SITE LOCATION MAP

CONTAMINATION ASSESSMENT REPORT
SITE 14, BUILDING 3644

NAVAL AVIATION DEPOT
NAS PENSACOLA, FLORIDA

H:\PENSCOLA\SITE14\GLC-JMK-NP\11-06-95



LEGEND

X—X	Fence
UST	Underground storage tank

NOTE: All utility lines are underground unless indicated

0 15 30

SCALE 1 INCH = 30 FEET

FIGURE 2-2
SITE PLAN MAP

CONTAMINATION ASSESSMENT REPORT
SITE 14 BUILDING 3644

NAVAL AVIATION DEPOT
PENSACOLA, FLORIDA

Helicopter blade storage area

Asphalt

Road

B019

N

Stormwater retention pond

B015

B011/PZ011

B007/PZ007

B010/PZ010

Door

Equipment

Equipment

Blade X-ray unit

Blade preparation room

B003

B002

Culvert

UST vent pipes

B009/PZ009

B004

B001/PZ001

B005

B008/PZ008

B006

B013

B018

Interior walls

Blade entrance

B014

1796

Air scrubbing units

1786

1755

Blade ultrasonic test area

B012

Electrical manhole

B017/PZ017

Air conditioning units

UST fuel lines

Pumps

Pumps

Compressors

Blade preparation room

Interior walls

Water coolant pump room

Sump pit

B016/PZ016

Hallway

Door

Culvert

Helicopter blade storage and testing area

Office area

Building 3644

NADEP PENSACOLA

Stormwater Retention Pond

Sidewalk

Road

Door

H\9595\191400\JMK-CCK-NP\11-1-95

LEGEND

-X-X- Fence

UST Underground storage tank

Soil boring and piezometer location

Soil boring location

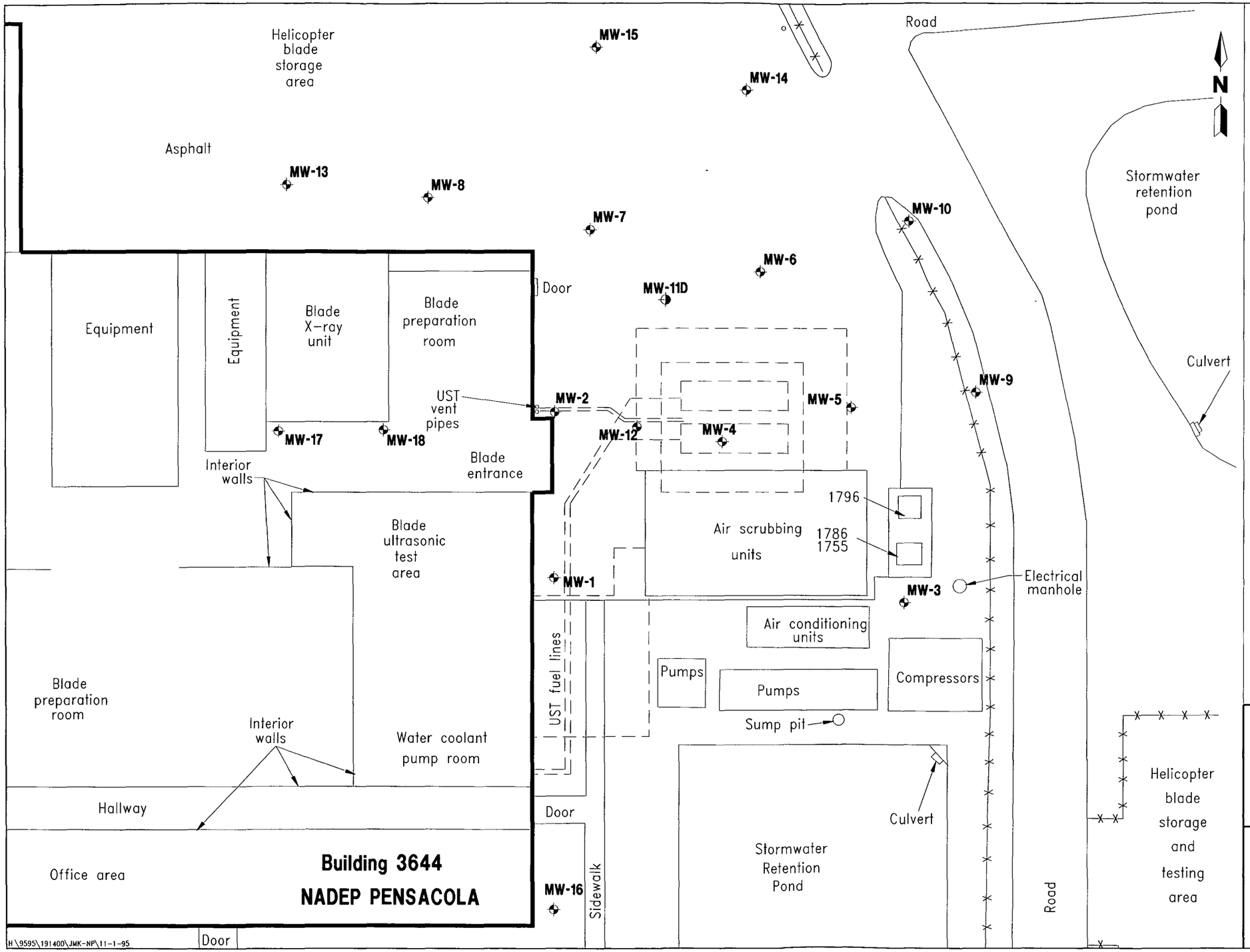
0 15 30

SCALE 1 INCH = 30 FEET

FIGURE 4-1
SOIL BORING AND PIEZOMETER LOCATION MAP

CONTAMINATION ASSESSMENT REPORT
SITE 14 BUILDING 3644

NAVAL AVIATION DEPOT
PENSACOLA, FLORIDA



LEGEND

- Fence
- UST — Underground storage tank
- MW-9 — Shallow monitoring well and designation
- MW-11D — Deep monitoring well and designation

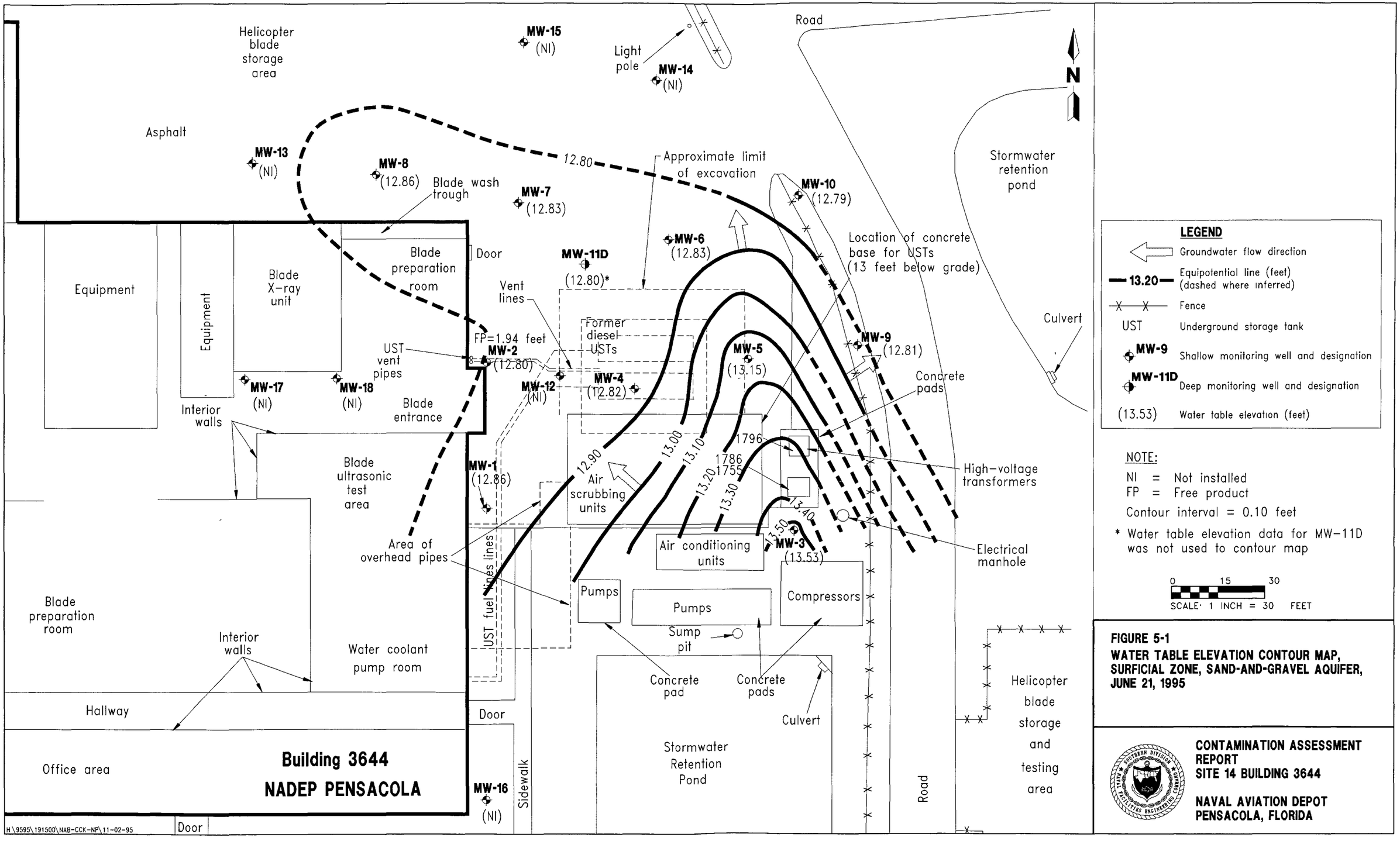
0 15 30

SCALE. 1 INCH = 30' FEET

FIGURE 4-2
MONITORING WELL LOCATION MAP

CONTAMINATION ASSESSMENT REPORT
SITE 14 BUILDING 3644

NAVAL AVIATION DEPOT
PENSACOLA, FLORIDA



LEGEND

- Groundwater flow direction
- 13.20 — Equipotential line (feet) (dashed where inferred)
- Fence
- UST — Underground storage tank
- MW-9 — Shallow monitoring well and designation
- MW-11D — Deep monitoring well and designation
- (13.53) — Water table elevation (feet)

NOTE:

NI = Not installed
FP = Free product
Contour interval = 0.10 feet

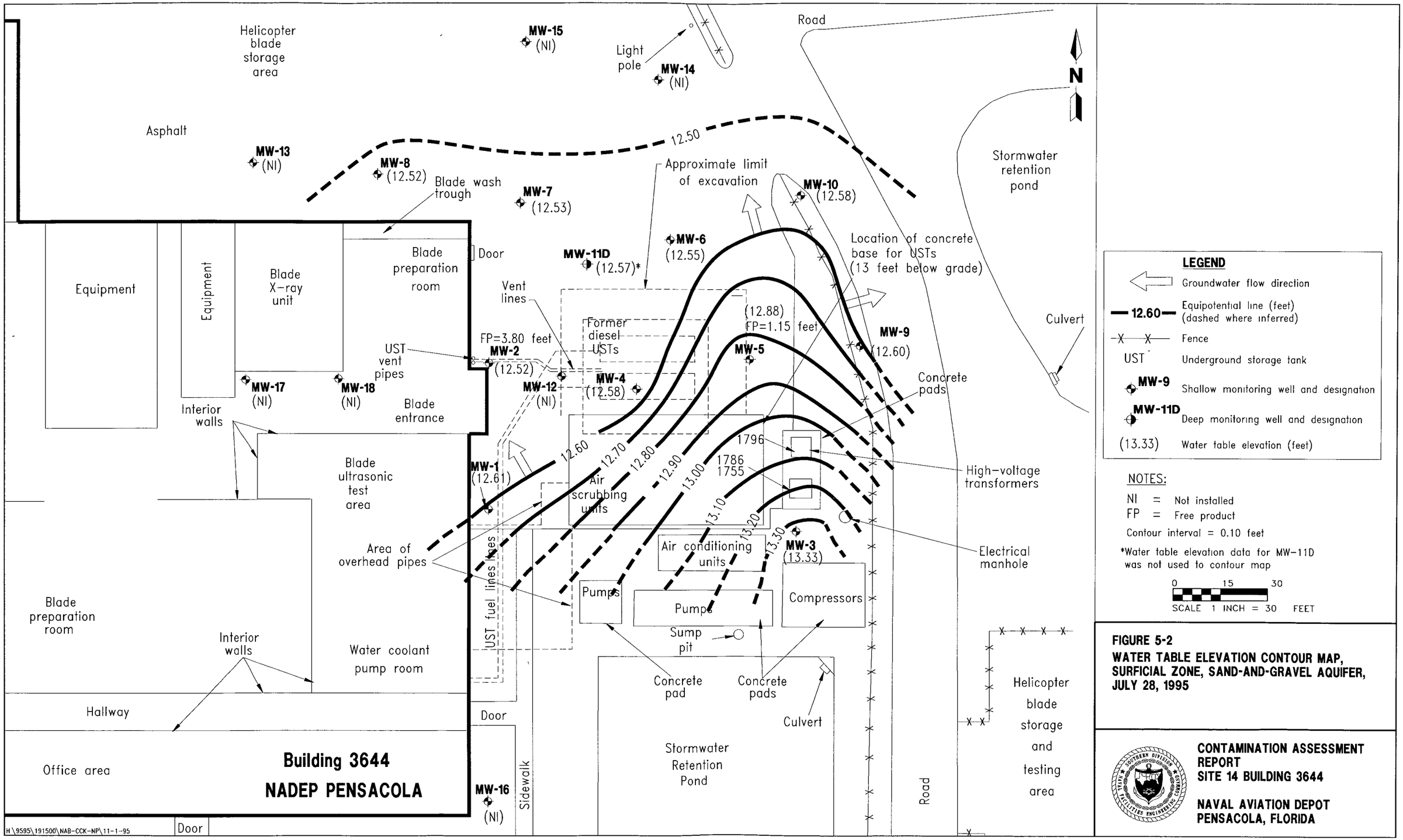
* Water table elevation data for MW-11D was not used to contour map

0 15 30
SCALE: 1 INCH = 30 FEET

FIGURE 5-1
WATER TABLE ELEVATION CONTOUR MAP, SURFICIAL ZONE, SAND-AND-GRAVEL AQUIFER, JUNE 21, 1995

CONTAMINATION ASSESSMENT REPORT
SITE 14 BUILDING 3644

NAVAL AVIATION DEPOT
PENSACOLA, FLORIDA



LEGEND

- Groundwater flow direction
- 12.60 — Equipotential line (feet) (dashed where inferred)
- Fence
- UST — Underground storage tank
- MW-9 — Shallow monitoring well and designation
- MW-11D — Deep monitoring well and designation
- (13.33) — Water table elevation (feet)

NOTES:

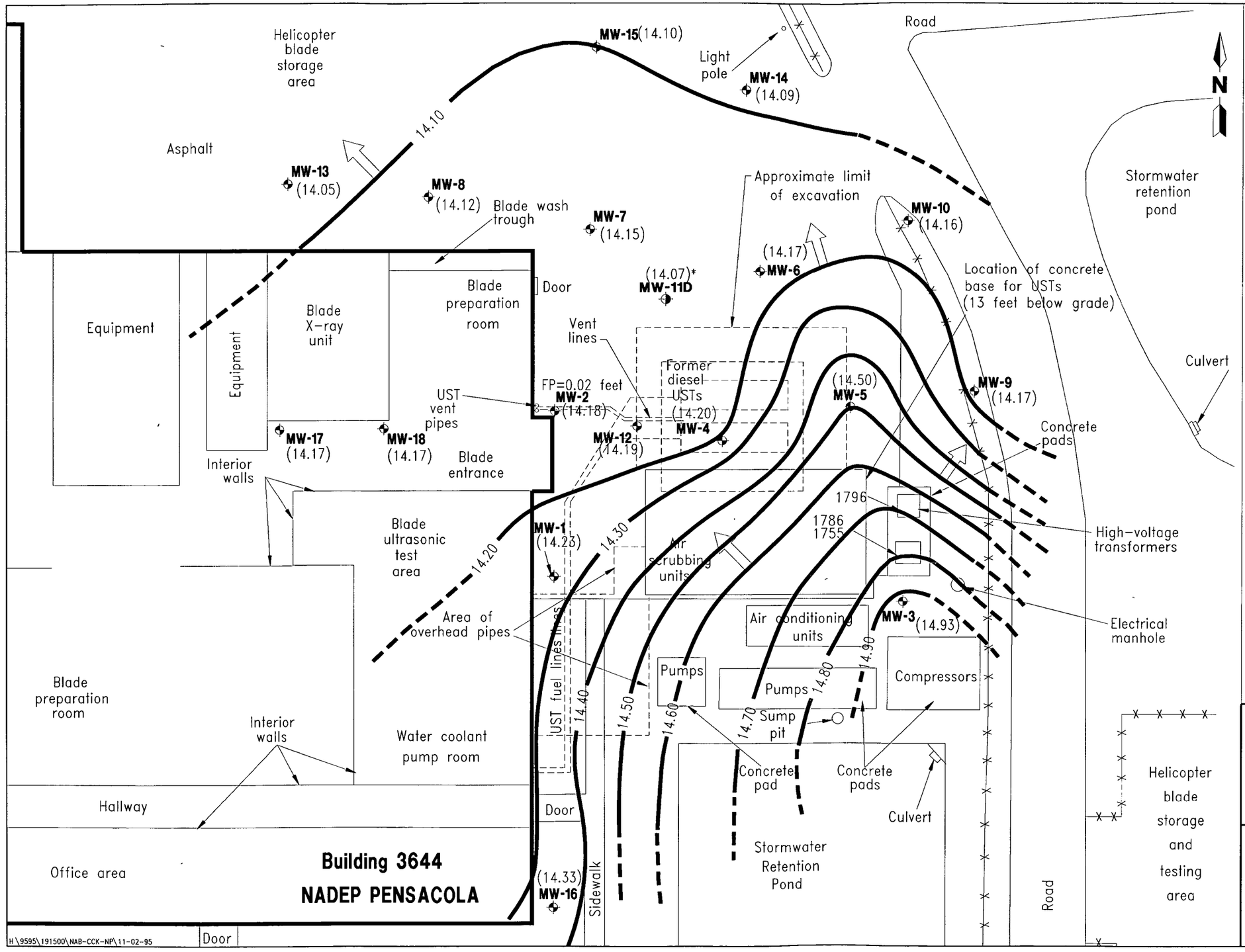
NI = Not installed
FP = Free product
Contour interval = 0.10 feet
*Water table elevation data for MW-11D was not used to contour map

0 15 30
SCALE 1 INCH = 30 FEET

FIGURE 5-2
WATER TABLE ELEVATION CONTOUR MAP, SURFICIAL ZONE, SAND-AND-GRAVEL AQUIFER, JULY 28, 1995

CONTAMINATION ASSESSMENT REPORT
SITE 14 BUILDING 3644

NAVAL AVIATION DEPOT PENSACOLA, FLORIDA



LEGEND

- Groundwater flow direction
- 14.40 — Equipotential line (feet) (dashed where inferred)
- Fence
- UST — Underground storage tank
- MW-9 — Shallow monitoring well and designation
- MW-11D — Deep monitoring well and designation
- (14.07) — Water table elevation (feet)

NOTES:

FP = Free product

Contour interval = 0 10 feet

*Water table elevation data for MW-11D was not used to contour map.

0 15 30

SCALE 1 INCH = 30 FEET

FIGURE 5-3

WATER TABLE ELEVATION CONTOUR MAP, SURFICIAL ZONE, SAND-AND-GRAVEL AQUIFER, AUGUST 20, 1995

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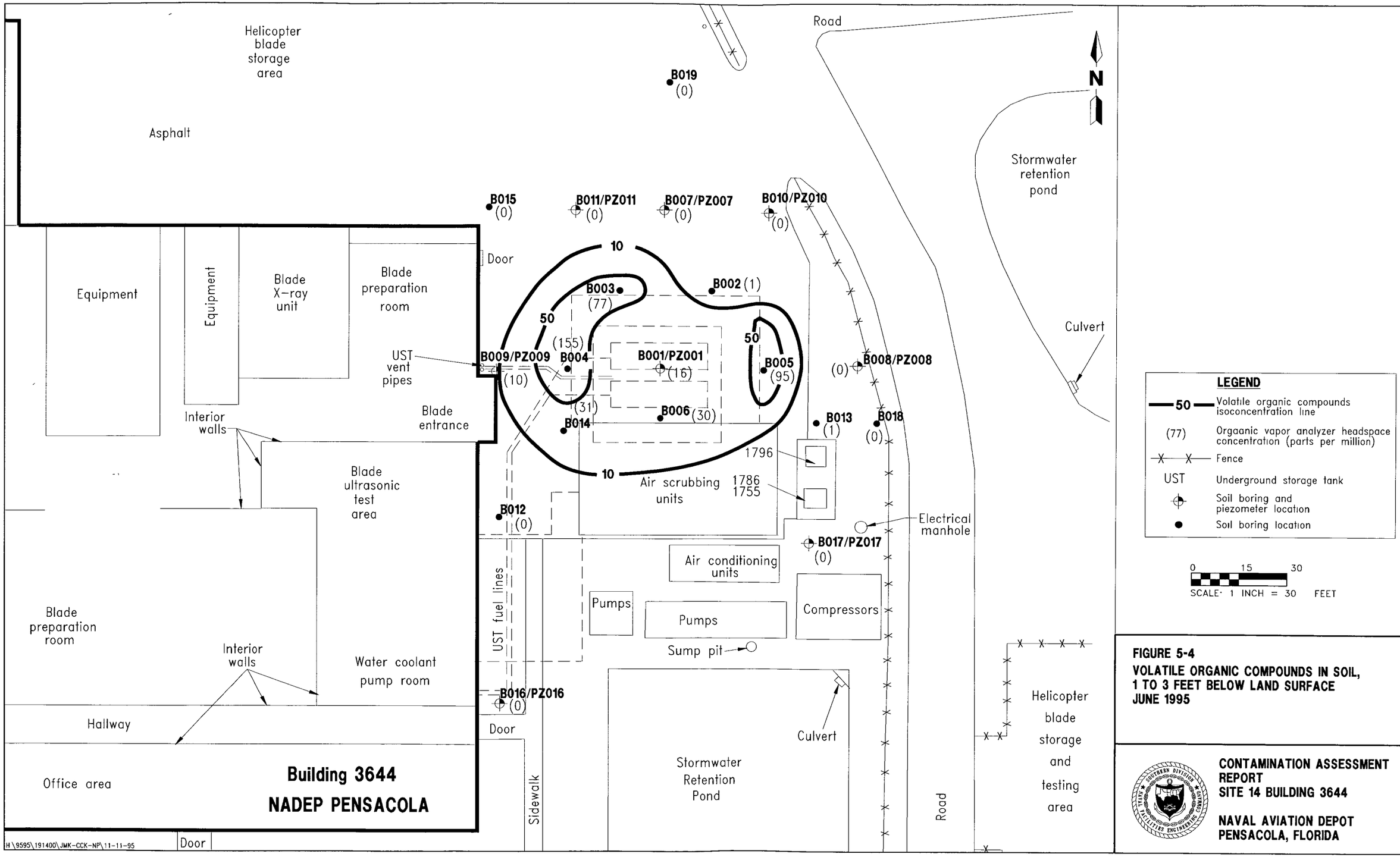


FIGURE 5-4
VOLATILE ORGANIC COMPOUNDS IN SOIL, 1 TO 3 FEET BELOW LAND SURFACE
JUNE 1995

CONTAMINATION ASSESSMENT REPORT
SITE 14 BUILDING 3644

NAVAL AVIATION DEPOT
PENSACOLA, FLORIDA

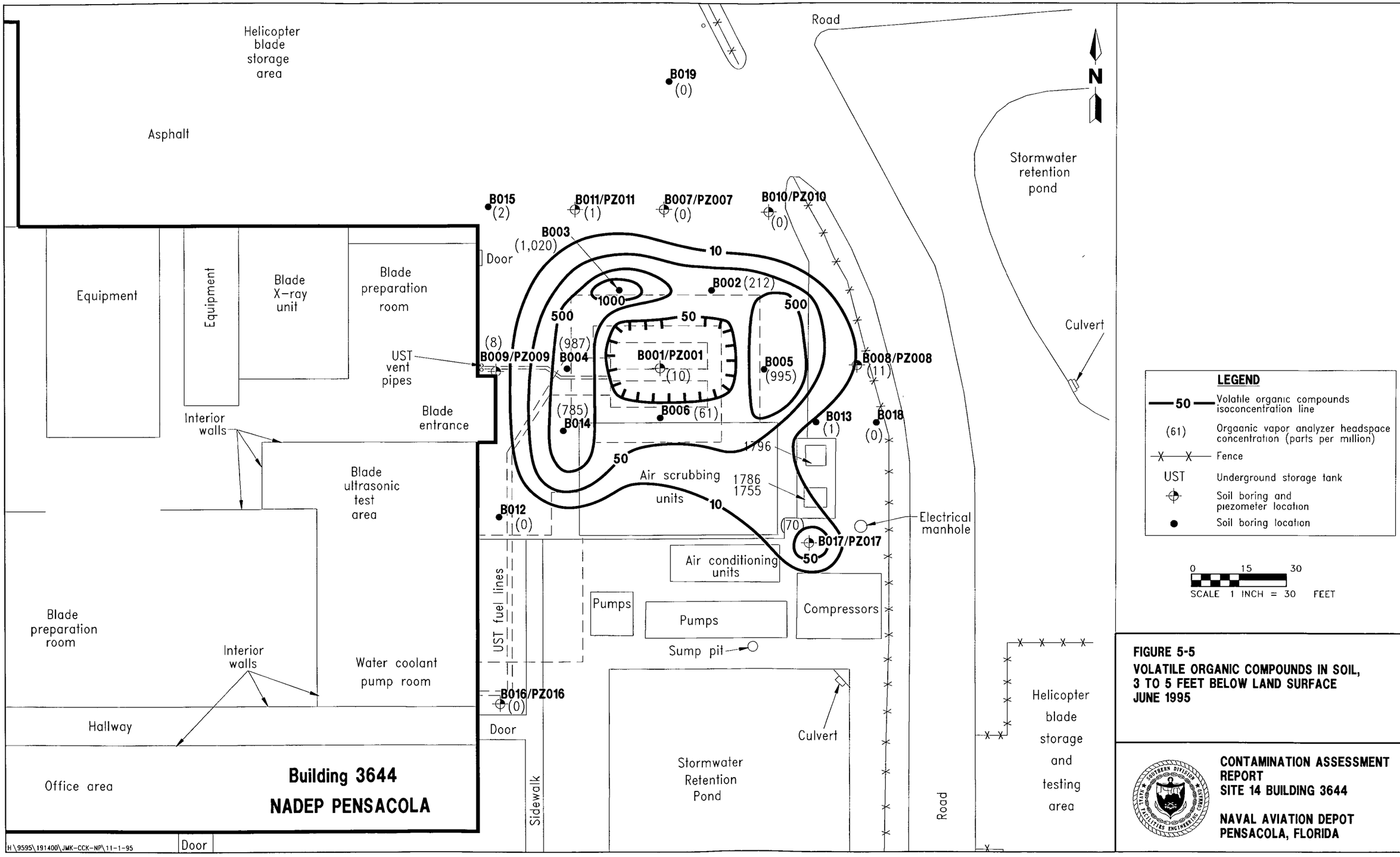
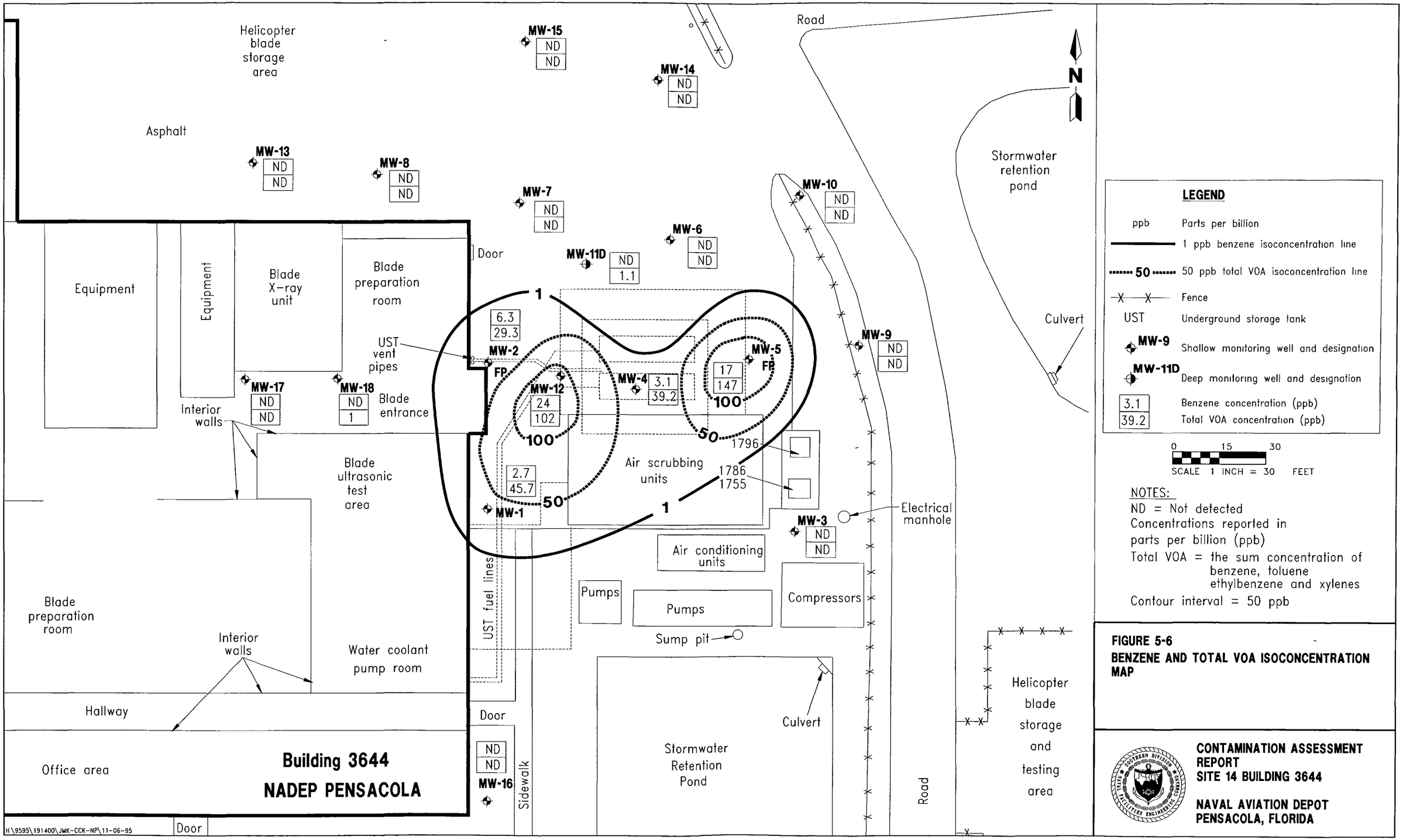


FIGURE 5-5
VOLATILE ORGANIC COMPOUNDS IN SOIL, 3 TO 5 FEET BELOW LAND SURFACE
JUNE 1995

CONTAMINATION ASSESSMENT REPORT
SITE 14 BUILDING 3644

NAVAL AVIATION DEPOT
PENSACOLA, FLORIDA



LEGEND

ppb	Parts per billion
———	1 ppb benzene isoconcentration line
····· 50 ·····	50 ppb total VOA isoconcentration line
-X-X-	Fence
UST	Underground storage tank
MW-9	Shallow monitoring well and designation
MW-11D	Deep monitoring well and designation
3.1 / 39.2	Benzene concentration (ppb) / Total VOA concentration (ppb)

0 15 30

SCALE 1 INCH = 30 FEET

NOTES:

ND = Not detected

Concentrations reported in parts per billion (ppb)

Total VOA = the sum concentration of benzene, toluene ethylbenzene and xylenes

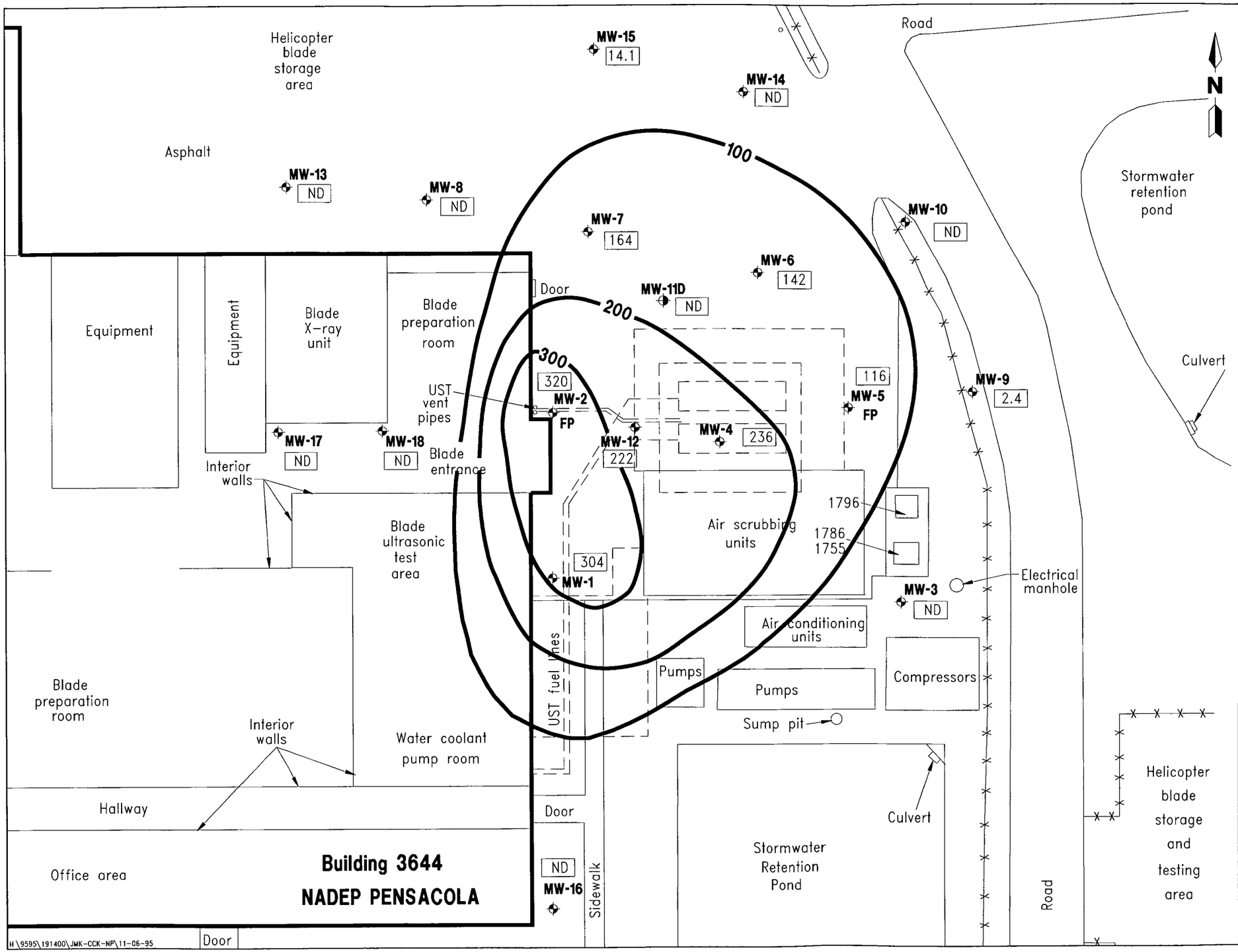
Contour interval = 50 ppb

FIGURE 5-6

BENZENE AND TOTAL VOA ISOCONCENTRATION MAP

CONTAMINATION ASSESSMENT REPORT
SITE 14 BUILDING 3644

NAVAL AVIATION DEPOT
PENSACOLA, FLORIDA



LEGEND

- 100 — Total naphthalene isoconcentration line
- Fence
- UST — Underground storage tank
- MW-9 — Shallow monitoring well and designation
- MW-11D — Deep monitoring well and designation
- 236 — Total naphthalene concentration

0 15 30

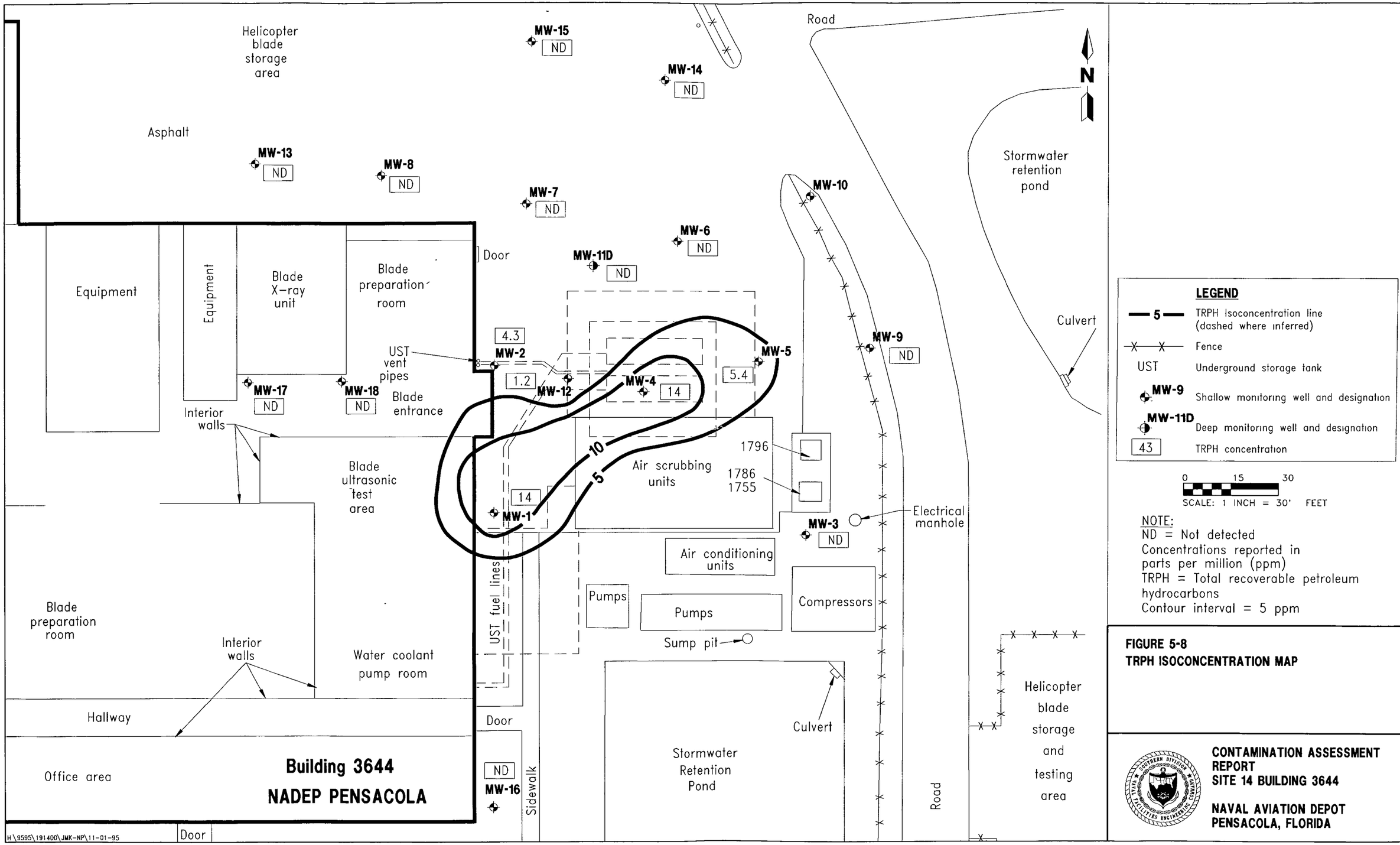
SCALE: 1 INCH = 30 FEET

NOTE:
ND = Not detected
Concentrations reported in parts per billion (ppb)
Total naphthalenes = the sum concentration of naphthalene, 1-methylnaphthalene and 2-methylnaphthalene
Contour interval = 100 ppb

FIGURE 5-7
TOTAL NAPHTHALENE ISOCONCENTRATION MAP

CONTAMINATION ASSESSMENT REPORT
SITE 14 BUILDING 3644

NAVAL AVIATION DEPOT
PENSACOLA, FLORIDA



LEGEND

- 5 — TRPH Isoconcentration line (dashed where inferred)
- Fence
- UST — Underground storage tank
- MW-9 — Shallow monitoring well and designation
- MW-11D — Deep monitoring well and designation
- 43 — TRPH concentration

0 15 30

SCALE: 1 INCH = 30' FEET

NOTE:
ND = Not detected
Concentrations reported in parts per million (ppm)
TRPH = Total recoverable petroleum hydrocarbons
Contour interval = 5 ppm

FIGURE 5-8
TRPH ISOCONCENTRATION MAP

CONTAMINATION ASSESSMENT REPORT
SITE 14 BUILDING 3644

NAVAL AVIATION DEPOT
PENSACOLA, FLORIDA