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MONITORING ONLY PLAN SITE 2662W NAVAL AVIATION DEPOT NAS PENSACOLA FL  
9/1/1995  
ABB ENVIRONMENTAL SERVICES, INC

**MONITORING ONLY PLAN**

**SITE 2662W  
NAVAL AVIATION DEPOT**

**NAVAL AIR STATION PENSACOLA  
PENSACOLA, FLORIDA**

**Unit Identification Code (UIC): N00213**

**Contract No. N62467-89-D-0317**

**Prepared by:**

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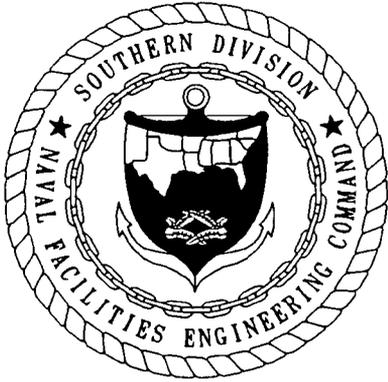
**Department of the Navy, Southern Division  
Naval Facilities Engineering Command  
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**Byas Glover, Code 18410, Engineer-in-Charge**

**September 1995**

**DISTRIBUTION**

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## 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, 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 (RCRA) and the Hazardous and Solid Waste Amendment (HSWA) 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 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.

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## GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
BEI	Bechtel Environmental, Inc.
bls	below land surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CAR	Contamination Assessment Report
CLEAN	Comprehensive Long-Term Environmental Action, Navy
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
HSWA	Hazardous and Solid Waste Act
MOP	Monitoring Only Plan
MTBE	methyl tert-butyl ether
NADEP	Naval Aviation Depot
NAS	Naval Air Station
OVA	organic vapor analyzer
ppb	parts per billion
ppm	parts per million
PVC	polyvinyl chloride
QAP	Quality Assurance Plan
RCRA	Resource Conservation and Recovery Act
SOUTHNAV- FACENCOM	Southern Division, Naval Facilities Engineering Command
TRPH	total recoverable petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank

## 1.0 INTRODUCTION

ABB Environmental Services, Inc. (ABB-ES), was contracted by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to prepare a Monitoring Only Plan (MOP) for conducting quarterly groundwater sampling at Site 2662W. The scope and manner for implementing the MOP are presented herein.

## 2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION AND HISTORY. The Pensacola Naval Base complex is located on the western edge of Pensacola Bay on State Road 295 (Navy Boulevard; Figure 2-1). Naval Aviation Depot (NADEP) Pensacola, Florida, formerly the operations and repair department of the Naval Air Station (NAS) Pensacola, is now a tenant command located on NAS facilities within the Pensacola Naval Base complex. NADEP Pensacola occupies approximately 130 acres at NAS Pensacola.

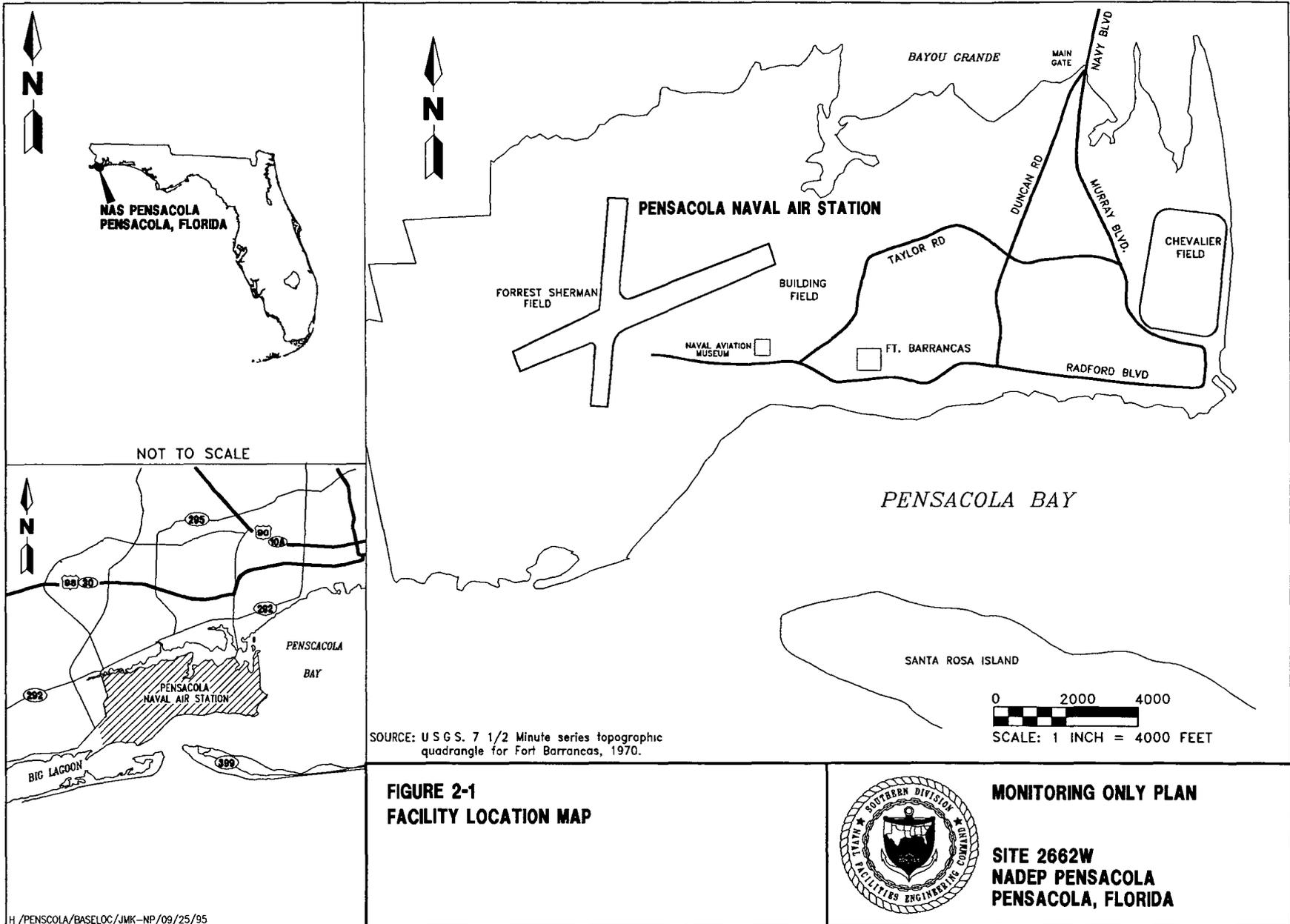
Most of Chevalier Field is currently undergoing a large-scale construction project. Hyman Construction mobilized to Chevalier Field in December 1994 to begin construction of a new naval training school. Construction is scheduled to be completed in 1997. Most of the manmade site features at Site 2662W (buildings, asphalt, concrete, aboveground utilities, etc.) are now gone.

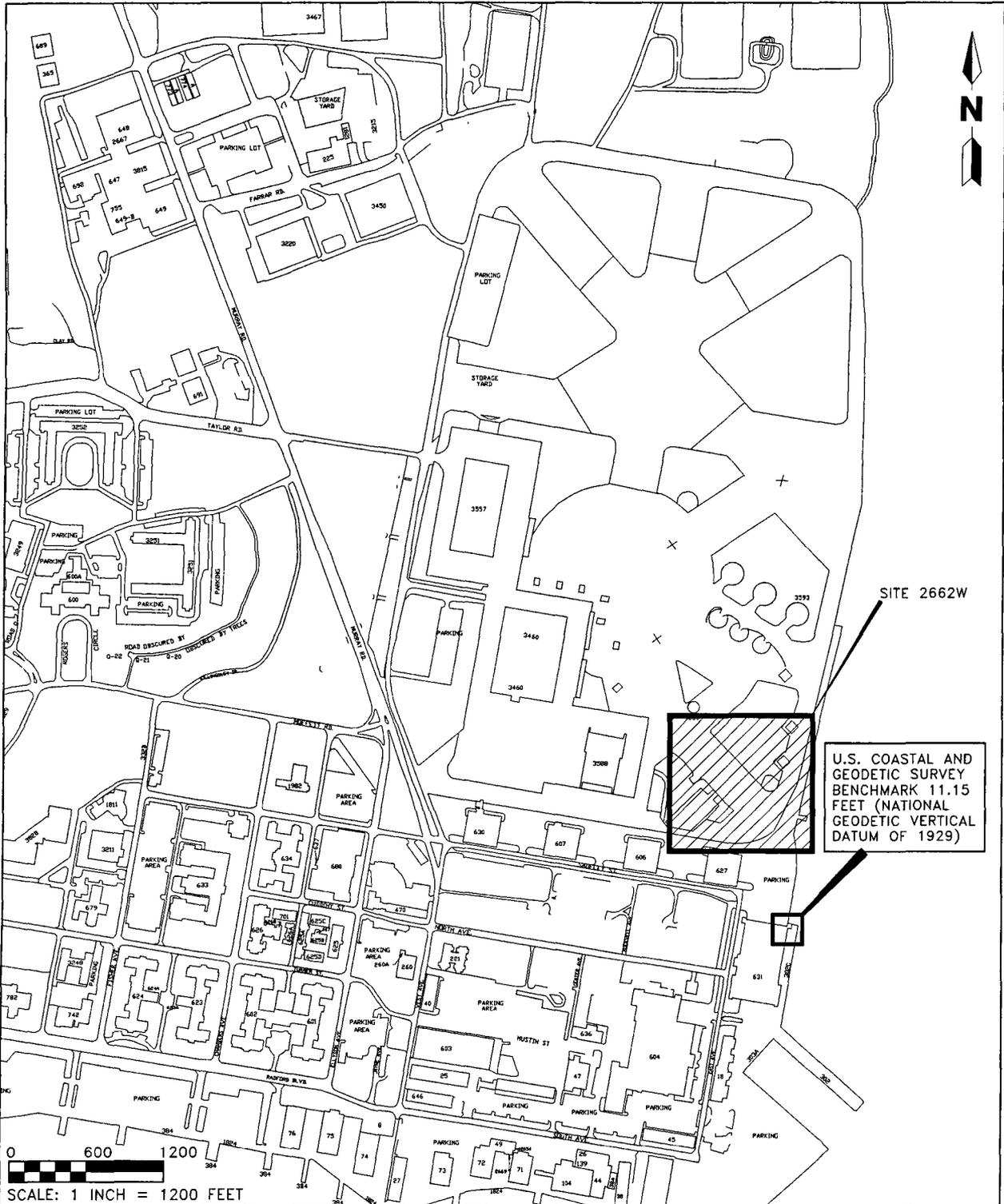
Site 2662W is the former location of a 1,000-gallon underground storage tank (UST) located on the west side of former Building 2662, which was in the southeast part of Chevalier Field (Figure 2-2). Chevalier Field was used predominantly as a helicopter maintenance and testing facility. The site is located several hundred feet southwest of Site 14, which is currently being investigated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). According to facility personnel, the UST west of Building 2662 was used to store water-contaminated JP-5 jet fuel and used oil. Other potential sources of contamination at the site are discussed in the Site 2662W Contamination Assessment Report (CAR) (ABB-ES, 1994).

2.2 PREVIOUS INVESTIGATIONS. The Site 2662W UST was installed in 1983 and removed during the tank removal program conducted in 1989 and 1990. One composite soil sample was collected from the UST excavation and analyzed for total recoverable petroleum hydrocarbons (TRPH). The reported TRPH concentration of 2,100 parts per million (ppm) exceeded the State target level of 10 ppm for uncontaminated soil as defined in Chapter 62-775, Florida Administrative Code (FAC). Further site investigation pursuant to Chapter 62-775, FAC, was therefore warranted. Excavated soil was reportedly returned to the excavation after UST removal. No reports or tank closure forms were completed for the tank removal.

ABB-ES conducted a contamination assessment at Site 2662W from January 1992 through March 1994, and the CAR was submitted to Florida Department of Environmental Protection (FDEP) in April 1994. ABB-ES recommended remediation to clean up excessively contaminated soil and groundwater in the vicinity of Building 2662 (ABB-ES, 1994). FDEP agreed with the recommendations but required additional contamination assessment at the site during soil removal.

Bechtel Environmental, Inc., (BEI) mobilized to Site 2662W in October 1994 to begin soil removal. By November 30, 1994, BEI had finished removing all soil with organic vapor analyzer (OVA) readings greater than 50 ppm, as specified in the CAR, and had backfilled the excavation with clean fill material. In total, approximately 4,700 cubic yards of soil were removed from the excavation. The contaminated soil was incinerated onsite, sampled by BEI to confirm the soil conformed with State clean soil standards, mixed with clayey fill material, and returned to the excavation.





**FIGURE 2-2  
SITE LOCATION MAP**



**MONITORING ONLY PLAN**

**SITE 2662W  
NADEP PENSACOLA  
PENSACOLA, FLORIDA**

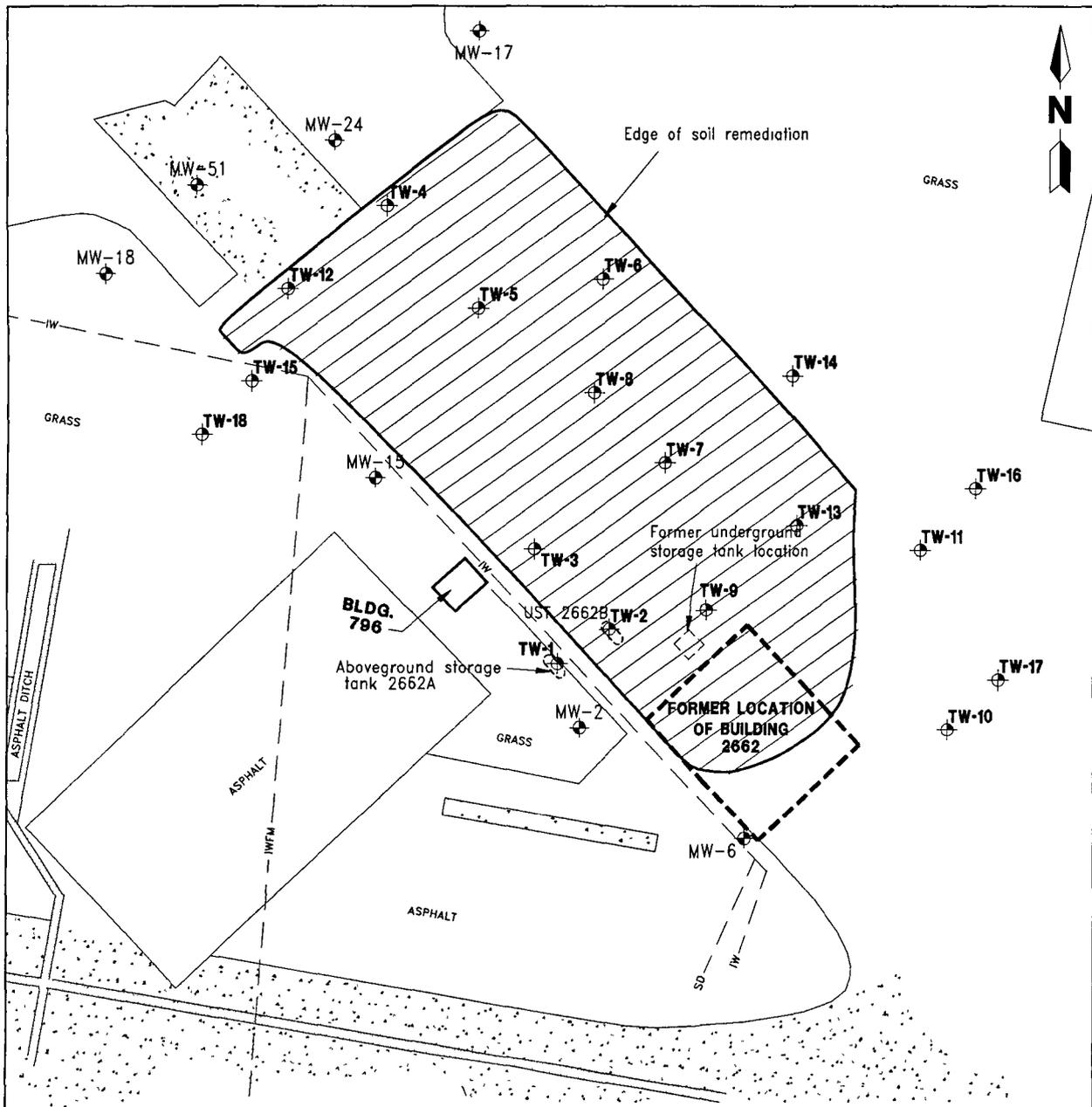
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The scope of services required for the supplemental field investigation included:

- monitoring well abandonment in the area to be excavated,
- soil screening around the perimeter of the excavation,
- installation of temporary monitoring wells inside and outside the perimeter of the excavation (Figure 2-3), and
- groundwater sampling of each newly installed temporary monitoring well and six existing permanent monitoring wells.

A CAR Addendum, summarizing the findings of the additional field investigation and site conditions, was submitted to FDEP in May 1995. After review of the CAR Addendum, FDEP, in a letter dated ~~XXXXX XX, 19XX~~, recommended that monitoring wells ~~XX-X, XX-X, XX-XX, and XX-XX~~, be sampled quarterly for a period of 1 year and analyzed for ~~XXXX~~. A copy of the Monitoring Only approval order is attached in Appendix A, FDEP Correspondence.

Approximately half of the monitoring wells shown on Figure 2-3 were abandoned by filling with grout. At the time of abandonment, the remaining wells were covered with concrete rubble and were inaccessible. With the exception of monitoring well MW-51, each of the remaining wells was installed with 2 feet of casing above ground level. These wells are presumed to be destroyed. An attempt will be made to locate and grout abandoned ~~well~~ <sup>monitoring</sup> MW-51 during the next site visit.



**LEGEND**

	Area of soil remediation		Permanent monitoring well and designation
	Edge of asphalt pavement		Temporary monitoring well and designation
	Concrete		Underground storage tank
	Industrial waste force main		
	Storm drain		
	Industrial waste line		

0 50 100  
  
 SCALE: 1 INCH = 100 FEET

**FIGURE 2-3  
 TEMPORARY AND PERMANENT MONITORING  
 WELL LOCATION MAP**



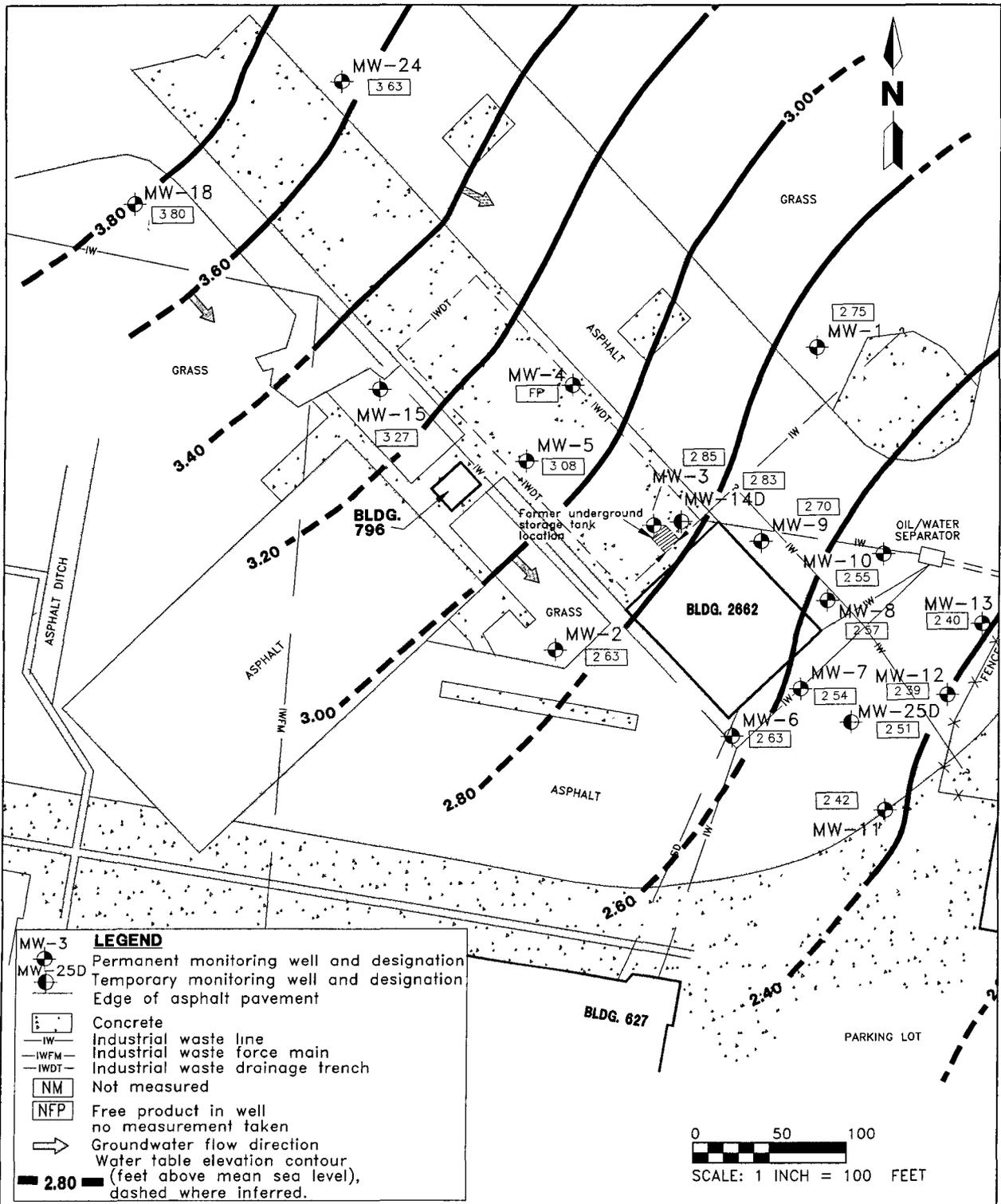
**MONITORING ONLY PLAN**  
**SITE 2662W**  
**NADEP PENSACOLA**  
**PENSACOLA, FLORIDA**

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### 3.0 SITE CONDITIONS

The following is a summary of conditions at Site 2662W, including the findings and conclusions of the supplemental field investigation. Site conditions are described in more detail in the CAR (ABB-ES, 1994) and the CAR Addendum (ABB-ES, 1995).

- All contaminated soil in the vicinity of Site 2662W with OVA readings greater than 50 ppm has been removed. In total, approximately 4,700 cubic yards of soil was removed from the excavation.
- Groundwater beneath the site was encountered at depths of approximately 2 feet to 4 feet below land surface (bls) and is classified as G-II.
- The groundwater flow direction at the site is toward the southeast (see Figures 3-1 and 3-2).
- No groundwater contaminants were detected in the vertical extent well (MW-25D) which is screened from 25 to 30 feet bls.
- There are no potable wells within a 0.25-mile radius of the site. Potable wells at the facility are upgradient of the site and produce from water-bearing zones ranging in depth from 105 to 160 feet bls, which is significantly deeper than the zone at Site 2662W (ABB-ES, 1994).
- No free product was detected in any of the site monitoring wells.
- Groundwater analytical laboratory results for the samples collected in February 1995 are summarized in Table 3-1.
- Benzene concentrations ranging from 26 to 180 parts per billion (ppb) were detected in groundwater samples collected from several source area wells at the site (Figure 3-3). Benzene concentrations in the source area wells, however, did not exceed the State guidance concentration of 500 ppb recommended for a MOP. Benzene concentrations in the groundwater samples collected from site perimeter wells did not exceed the State guidance concentration of 50 ppb.
- Total benzene, toluene, ethylbenzene, and xylene (BTEX) concentrations (the sum of benzene, toluene, ethylbenzene, and xylene) ranged from less than 4 ppb to 610 ppb (Figure 3-4). The highest concentration, 610 ppb, from source area well TW-9, did not exceed the State guidance concentration of 1,000 ppb required for an MOP. Total BTEX concentrations in the groundwater samples collected from site perimeter wells did not exceed the State guidance concentration of 50 ppb.
- TRPH concentrations ranged from less than 1 ppm to 39.1 ppm (Figure 3-5). The highest concentration, 39.1 ppm from source area well TW-9, did not exceed the State guidance concentration of 100 ppm required for an MOP. TRPH concentrations in the groundwater samples collected from site perimeter wells did not exceed the State guidance concentration of 5 ppm.



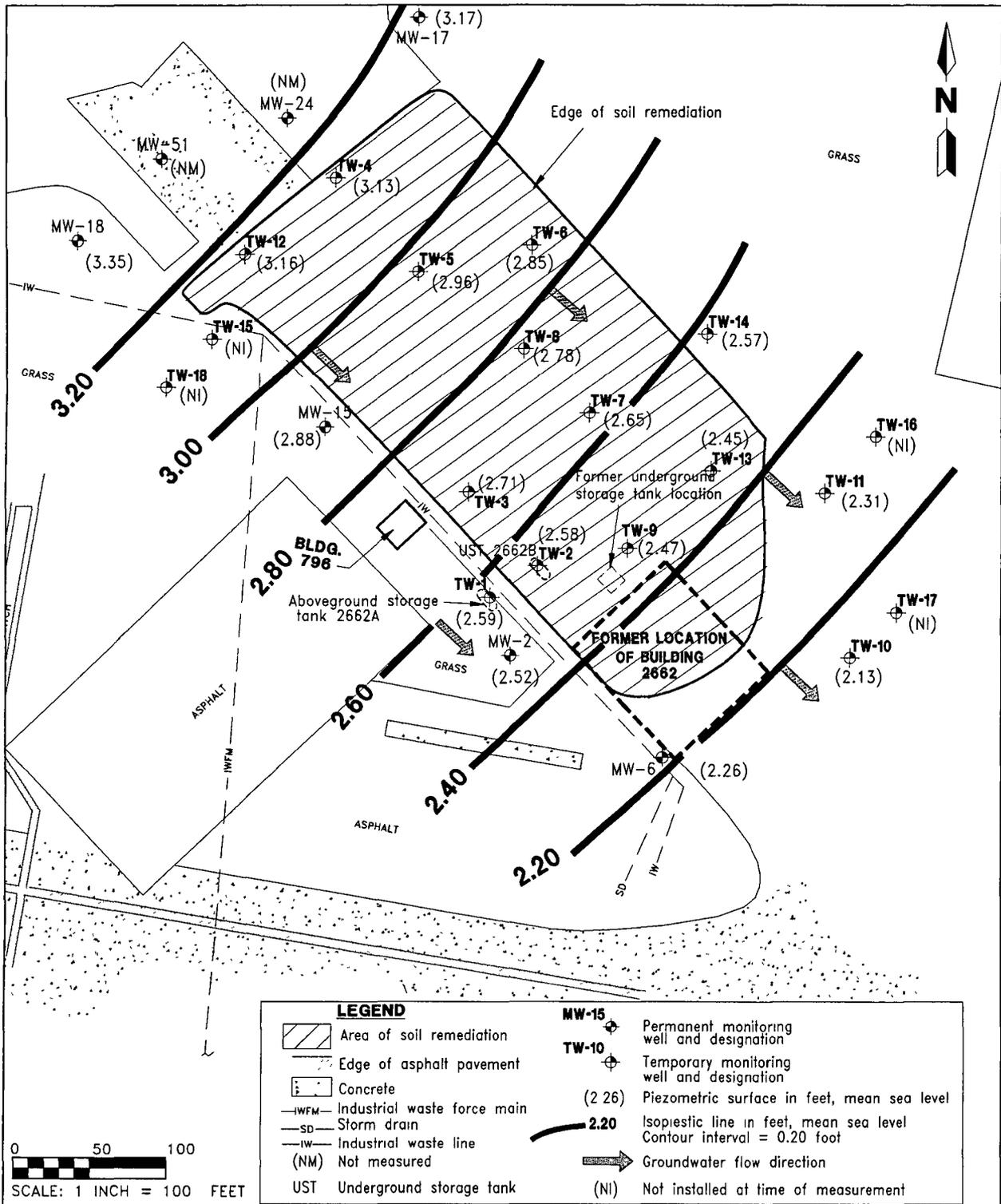
**FIGURE 3-1  
PIEZOMETRIC SURFACE MAP,  
AUGUST 31, 1992**



**MONITORING ONLY PLAN**

**SITE 2662W  
NADEP PENSACOLA  
PENSACOLA, FLORIDA**

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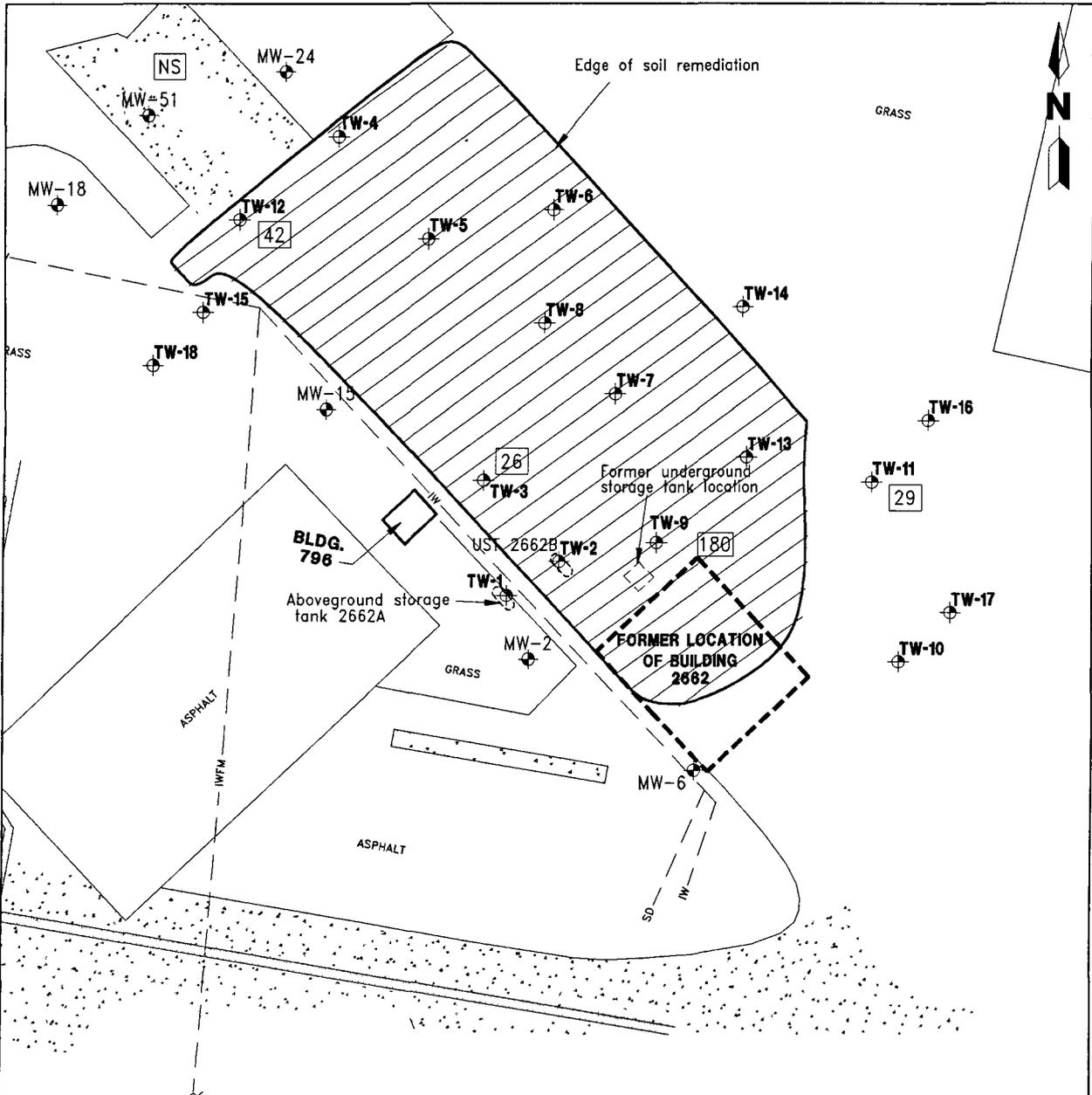
**FIGURE 3-2  
PIEZOMETRIC SURFACE MAP,  
FEBRUARY 1, 1995**



**MONITORING ONLY PLAN**

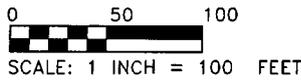
**SITE 2662W  
NADEP PENSACOLA  
PENSACOLA, FLORIDA**

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**NOTE:**

No value for a monitoring well indicates that benzene was not detected in the sample collected from that well



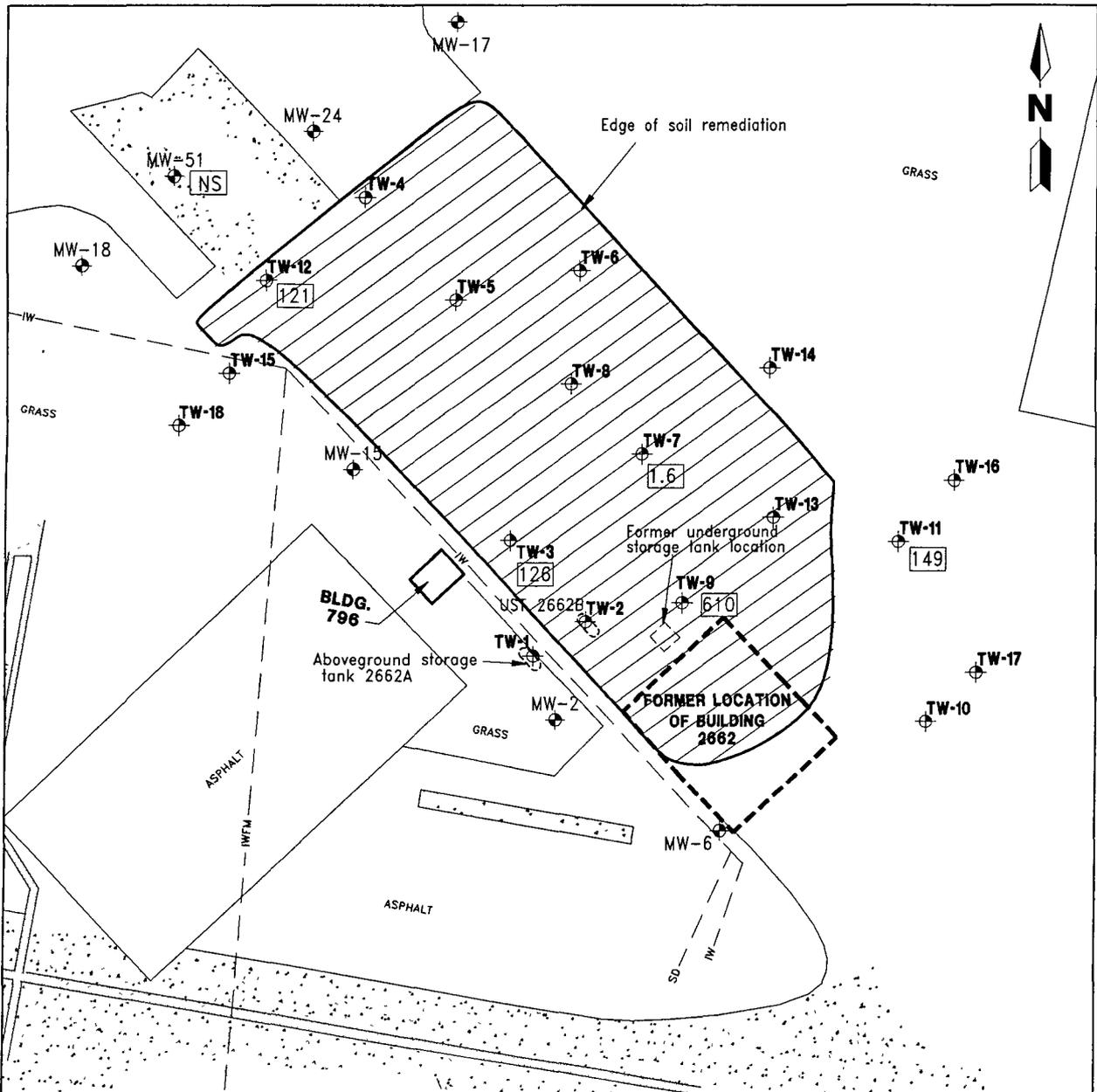
LEGEND	
	Area of soil remediation
	Edge of asphalt pavement
	Concrete
	Monitoring well not sampled
	Benzene concentrations in parts per billion (ppb)
	Industrial waste line
	UST Underground storage tank
	-IWM- Industrial waste force main
	-SD- Storm drain
	<b>MW-15</b> Permanent monitoring well and designation
	<b>TW-10</b> Temporary monitoring well and designation

**FIGURE 3-3  
DISTRIBUTION OF BENZENE CONCENTRATION IN  
GROUNDWATER SAMPLES,  
FEBRUARY 1995**



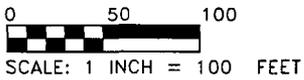
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**SITE 2662W**  
**NADEP PENSACOLA**  
**PENSACOLA, FLORIDA**

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**NOTE:**

Total BTEX is the sum of benzene, toluene, ethylbenzene, and xylenes.  
 No value for a monitoring well indicates that BTEX were not detected in the sample collected from that well



**LEGEND**

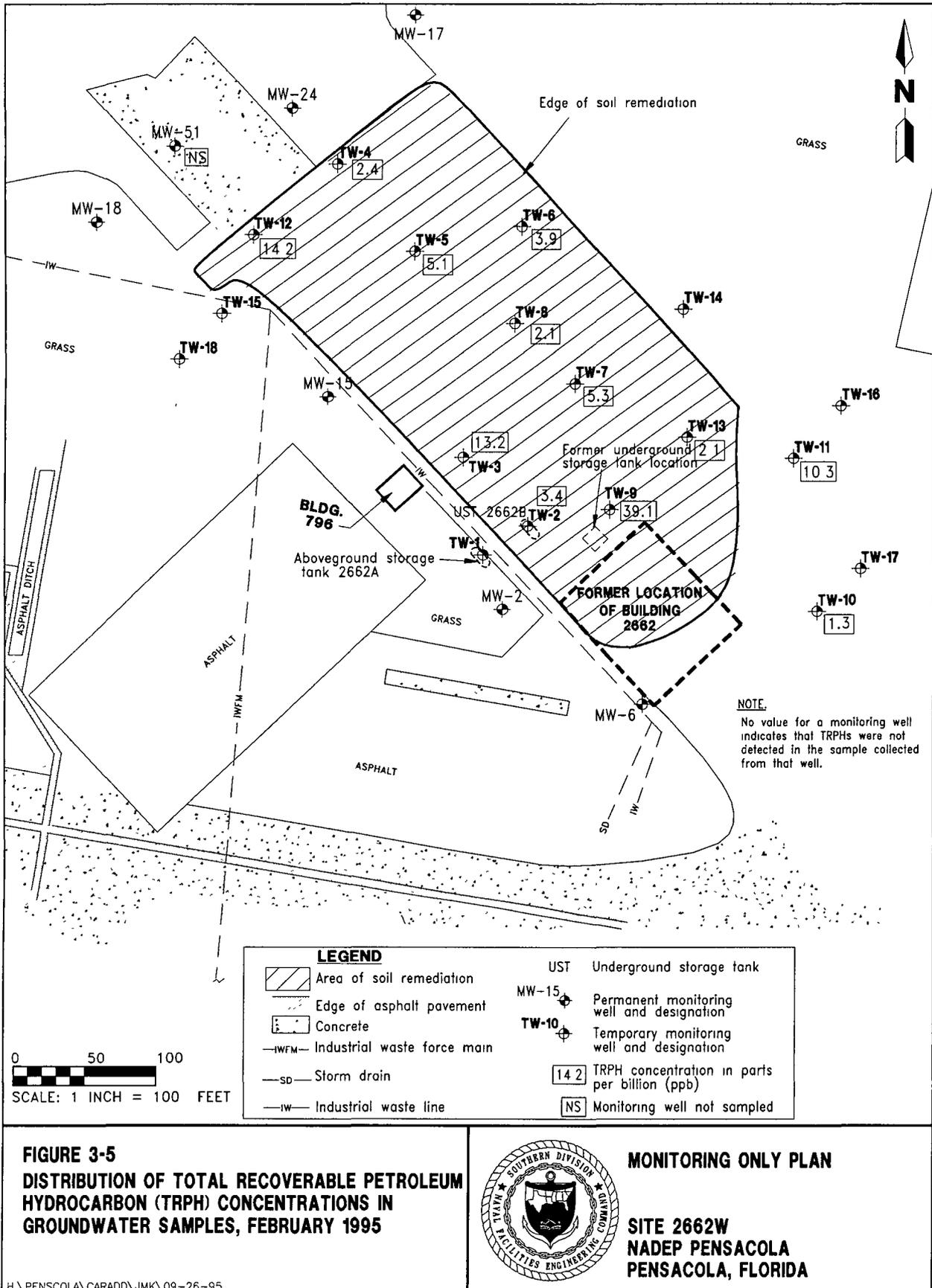
- Area of soil remediation
- Edge of asphalt pavement
- Concrete
- Monitoring well not sampled
- Total BTEX concentrations in parts per billion (ppb)
- Industrial waste line
- Industrial waste force main
- Storm drain
- Permanent monitoring well and designation
- Temporary monitoring well and designation
- Underground storage tank

**FIGURE 3-4**  
**DISTRIBUTION OF TOTAL BENZENE, TOLUENE, ETHYL BENZENE, AND XYLENES (BTEX) CONCENTRATION IN GROUNDWATER SAMPLES, FEBRUARY 1995**



**MONITORING ONLY PLAN**

**SITE 2662W**  
**NADEP PENSACOLA**  
**PENSACOLA, FLORIDA**



**Table 3-1  
Groundwater Analytical Data  
February 1995**

Contamination Assessment Report Addendum  
Naval Aviation Depot, Site 2662W  
Pensacola, Florida

Compound	Regulatory Standard or Guidance Concentration	TW-1	TW-2	TW-3	TW-4	TW-5	TW-6	TW-7	TW-8	TW-8 DUP	TW-9	TW-10	TW-11	TW-12
Benzene	<sup>1</sup> 50	<1.0	<1.0	26	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	180	<1.0	29	42
Ethylbenzene	<sup>2</sup> 700	<1.0	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	100	<1.0	<20	18
Toluene	<sup>2</sup> 1,000	<1.0	15	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	150	<1.0	120	50
Xylene <sup>3</sup>	10,000	<1.0	<1.0	<10	<1.0	<1.0	<1.0	1.6	<1.0	<1.0	180	<1.0	<20	11
Total BTEX	<sup>1</sup> 50	<4.0	15	126	<4.0	<4.0	<4.0	1.6	<4.0	<4.0	610	<4.0	149	121
MTBE	None	<1.0	<1.0	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<1.0	<20	21
Naphthalene	None	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	29	<2.0	<2.0	<2.0
1-Methylnaphthalene	None	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
2-Methylnaphthalene	None	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	3.2
Total Naphthalenes	<sup>1</sup> 100	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	29	<6.0	<6.0	3.2
TRPH (ppm)	<sup>1</sup> 5	<1.0	3.4	13.2	2.4	5.1	3.9	5.3	2.1	1.4	39.1	1.3	10.3	14.2
Arsenic	<sup>1</sup> 50	6.3	14.7	NA	NA	NA	NA	NA						
Cadmium	<sup>1</sup> 10	<5.0	<5.0	NA	NA	NA	NA	NA						
Chromium	<sup>1</sup> 50	<50.0	<52.3	NA	NA	NA	NA	NA						
Lead	<del><sup>3</sup>5</del> <sup>1</sup> 50	12.0	404	NA	NA	NA	NA	NA						
Lead (dissolved)	<del><sup>3</sup>5</del> <sup>1</sup> 50	<5.0	<5.0	NA	NA	NA	NA	NA						

See notes at end of table.

**Table 3-1 (Continued)**  
**Groundwater Analytical Data**  
**February 1995**

Contamination Assessment Report Addendum  
Naval Aviation Depot, Site 2662W  
Pensacola, Florida

Compound	Regulatory Standard or Guidance Concentration	TW-12 Dup	TW-13	TW-14	TW-15	TW-15 Dup	TW-16	TW-17	TW-18	MW-2	MW-6	MW-15	MW-17	MW-18	MW-24
Benzene	<sup>1</sup> 50	41	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<sup>2</sup> 700	16	<1.0	<1.0	<1.0	<1.0	<1.0	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	<sup>2</sup> 1,000	48	<1.0	<1.0	<1.0	<1.0	<1.0	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylene <sup>3</sup>	<sup>2</sup> 10,000	10	<1.0	<1.0	<1.0	<1.0	<1.0	2.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total BTEX	<sup>1</sup> 50	115	<4.0	<4.0	<4.0	<4.0	<4.0	14	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
MTBE	None	21	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	None	<2.0	<2.0	<2.0	<2.0	<2.0	9.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1-Methylnaphthalene	None	3.0	<2.0	<2.0	<2.0	<2.0	9.8	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
2-Methylnaphthalene	None	4.6	<2.0	<2.0	<2.0	<2.0	10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total naphthalenes	<sup>1</sup> 100	7.6	<6.0	<6.0	<6.0	<6.0	29.3	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0
TRPH (ppm)	<sup>1</sup> 5	6.3	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	<sup>1</sup> 50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	<sup>1</sup> 10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	<sup>1</sup> 50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	<sup>1</sup> 50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead (dissolved)	<sup>1</sup> 50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

<sup>1</sup> Florida Department of Environmental Regulation, 1990 guidance concentration for perimeter monitoring wells.

<sup>2</sup> Chapter 62-550, Florida Administrative Code (FAC).

<sup>3</sup> Represents concentrations of total xylene.

Notes All concentrations are in parts per billion (ppb), unless otherwise noted

BTEX = the sum of benzene, toluene, ethylbenzene, and total xylene.

MTBE = methyl tert-butyl ether.

TRPH = total recoverable petroleum hydrocarbons.

ppm = parts per million.

NA = not analyzed.

- A chromium concentration of 52 ppb in the unfiltered groundwater sample collected from monitoring well TW-2 slightly exceeded the State guidance concentration of 50 ppb.
- With the exception of the unfiltered groundwater sample collected from monitoring well TW-2, lead concentrations in groundwater samples were less than the Chapter 62-770, FAC, standard of 50 ppb. The lead concentration in the unfiltered groundwater sample collected from TW-2 was 404 ppb; however, the lead concentration in the more representative filtered groundwater sample collected from TW-2 was less than 5 ppb.

#### 4.0 IMPLEMENTATION OF MONITORING ONLY PLAN (MOP)

The MOP will require the following actions.

- Twelve new monitoring wells in the vicinity of former permanent and temporary monitoring wells MW-2, MW-51, TW-3, TW-4, TW-9, TW-10, TW-11, TW-12, TW-13, TW-16, TW-17, and TW-18 will be installed to replace those wells destroyed during site construction activities or abandoned (see Figure 4-1). The wells will be constructed of 2-inch inside diameter schedule 40 polyvinyl chloride (PVC) casing with flush-threaded joints and 10 feet of 0.010-inch machine-slotted screen.
- Quarterly groundwater sampling of the new monitoring wells will occur for a period of 1 year. Groundwater samples will be collected in accordance with an FDEP-approved Quality Assurance Plan (QAP). Samples will be shipped to an FDEP-approved analytical laboratory. All groundwater samples collected will be analyzed by U. S. Environmental Protection Agency (USEPA) methods: 602 for BTEX, 418.1 for TRPH, 239.2 for lead, and 200.7 for chromium. If chromium and lead concentrations are shown to be near or below method detection limits in the first quarter sample analytical results, then subsequent samples will not be analyzed for chromium and lead.
- Depth to groundwater from the top of the casing will be measured in each new monitoring well. Depth to groundwater will be measured using an electronic water-level indicator and an engineering tape with divisions in increments of 0.01 foot. Groundwater level elevations will be calculated by subtracting the measured depth to groundwater from the elevation at the top of the well casing. Top of casing measurements will be referenced to those presented in the CAR Addendum (ABB-ES, 1995). A groundwater flow direction map will be prepared using groundwater elevation data.
- Quarterly analytical results will be submitted in a written report to FDEP within 60 days of sample collection. In addition, three written reports will be submitted to SOUTHNAVFACENGCOCM and two written reports will be submitted to the Public Works Department at NADEP Pensacola. Each quarterly report will include:
  - 1) a brief review of site background information and site conditions;
  - 2) a site location map showing the locations of the new monitoring wells;
  - 3) a groundwater contamination map illustrating laboratory analytical results;
  - 4) a table showing top-of-casing elevations, depth to groundwater, and groundwater elevations for the new monitoring wells; and
  - 5) a groundwater flow direction map using groundwater elevations from the new monitoring wells.

- The quarterly reports will include a summary of all previous groundwater analytical data for the site.

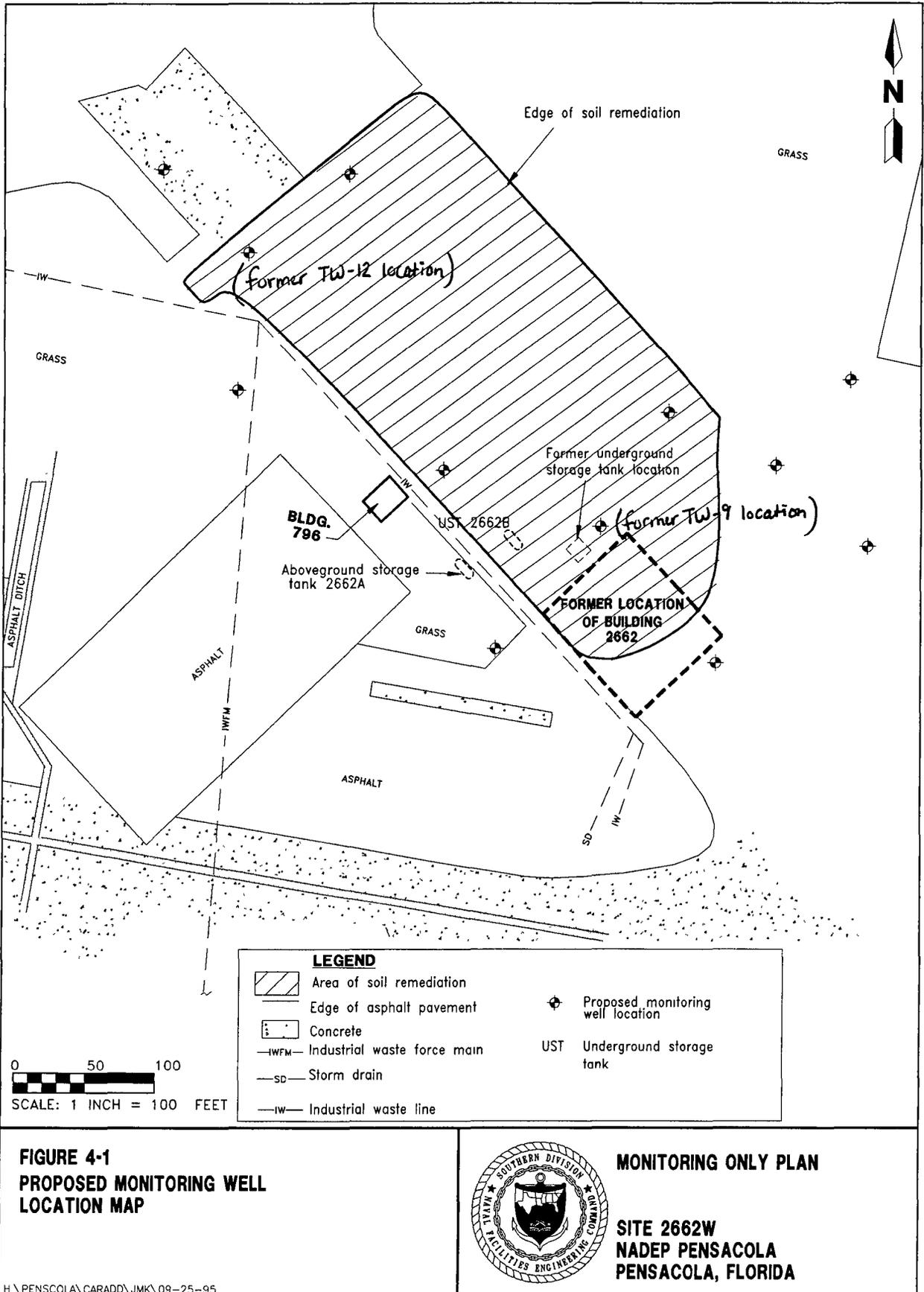
If, at the end of the monitoring period, total BTEX and TRPH concentrations are not less than the State target levels of 50 ppb and 5 ppm, respectively, then additional monitoring, supplemental assessment, and/or remediation may be required.

## REFERENCES

ABB Environmental Services, Inc. (ABB-ES), 1994, Contamination Assessment Report, Site 2662W, Naval Aviation Depot, Naval Air Station, Pensacola, Florida: prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), North Charleston, South Carolina.

ABB-ES, 1995, Contamination Assessment Report Addendum, Site 2662W, Naval Aviation Depot, Naval Air Station, Pensacola, Florida: prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina.

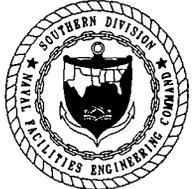
**APPENDIX A**  
**FDEP CORRESPONDENCE**



**LEGEND**

Area of soil remediation	Proposed monitoring well location
Edge of asphalt pavement	UST Underground storage tank
Concrete	
Industrial waste force main	
Storm drain	
Industrial waste line	

**FIGURE 4-1  
PROPOSED MONITORING WELL  
LOCATION MAP**



**MONITORING ONLY PLAN**  
**SITE 2662W**  
**NADEP PENSACOLA**  
**PENSACOLA, FLORIDA**

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