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NCBC GULFPORT
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HEALTH AND SAFETY PLAN TO SUPPORT THE CONTAMINATION ASSESSMENT PLAN AT NAVY EXCHANGE SERVICE CENTER BUILDING 340 NCBC GULFPORT MS

8/1/1991

ABB ENVIRONMENTAL

FINAL

AUGUST 1991
CONTAMINATION ASSESSMENT PLAN
HEALTH AND SAFETY PLAN

NAVY EXCHANGE SERVICE STATION
BUILDING 340
NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SOUTH CAROLINA
29411-0068

RELEASE OF THIS DOCUMENT REQUIRES PRIOR NOTIFICATION
OF THE COMMANDING OFFICER OF
NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI

CONTAMINATION ASSESSMENT PLAN

NAVY EXCHANGE SERVICE STATION
NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI

CTO NO.: 00012

Contract Number N62467-89-D-0317

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AUGUST 1991

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1.0 INTRODUCTION

ABB Environmental Services Inc. (ABB-ES) has been contracted by the Naval Facilities Engineering Command, Southern Division (SDiv) to prepare a Contamination Assessment Plan (CAP) for the Navy Exchange Service Station, Building 340, at Naval Construction Battalion Center (NCBC), Gulfport, Mississippi. The CAP outlines a field investigation and sampling program that will attempt to define the source of contamination and delineate its extent. The following report presents the site location, summarizes previous investigations, and develops the rationale for the proposed field investigation to be implemented under the Contamination Assessment (CA).

2.0 BACKGROUND

2.1 SITE DESCRIPTION. NCBC is located in the western part of Gulfport, Harrison County, Mississippi. Situated approximately 2 miles southwest of the Gulfport-Biloxi Regional Airport, the activity occupies 1,100 acres that lie immediately south of 28th Street (Figure 1). Approximately 4,000 military and 1,600 civilian personnel are assigned to or employed by the activity.

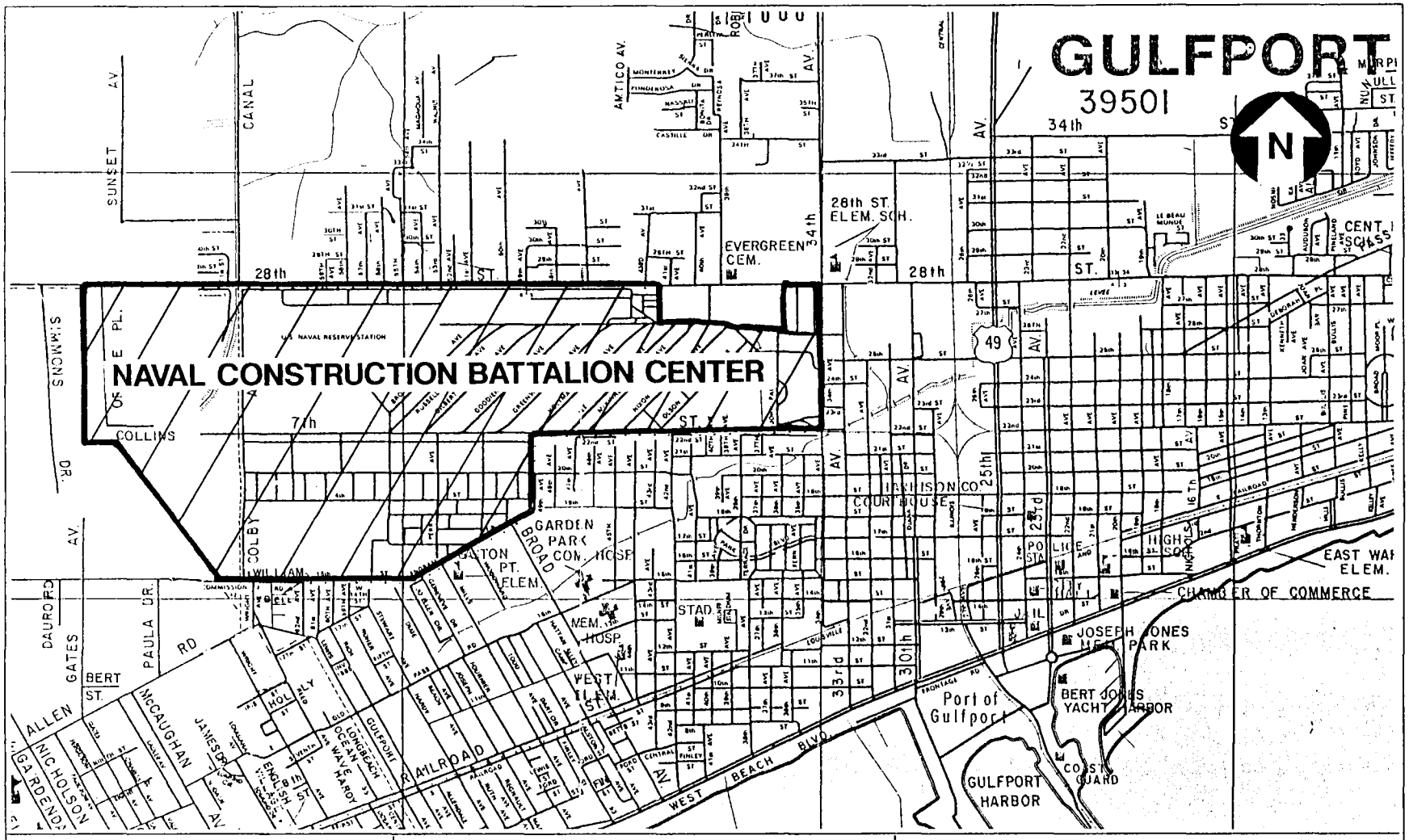
2.2 SITE HISTORY. The area of investigation is the Navy Exchange Service Station (Building 340) located at the southwest corner of the Second Street and Perry Avenue intersection. The site covers approximately a 200-foot by 200-foot area located 1/4 mile from the activity's main gate, Gate No. 3 (Figure 2). Four steel, underground storage tanks (USTs) were installed at the site in 1973. Three of the tanks, 340-1, 340-2, and 340-3, each have a 10,000-gallon holding capacity. Leaded and unleaded gasoline have been stored in these tanks. The fourth tank, 340-4, also of steel construction, has a 280-gallon holding capacity and is used for the storage of waste oil (Figure 3).

In 1989, as part of a Release Detection Program, six shallow compliance monitoring wells (GPT-T340-1 through GPT-T340-6) were installed at the site. Four wells (GPT-T340-1 through GPT-T340-4) were installed in the area of the USTs. The other two wells were installed in the vicinity of the pump islands (Figure 3). During the installation of the monitoring wells at the UST area, free product was noticed in some of the boreholes. Subsequent excavation of the UST area indicated that soils around 340-1 were stained. Stains were noted in the soils and about midway down the tank itself. A sheen was also noted in a swale at the corner of First Street and Perry Avenue.

Precision tank tests were performed on the three 10,000-gallon tanks. 340-2 passed the test. The test results for 340-1 indicated a rate of leakage of 1.4 gallons per hour (gal/hr). Test results for 340-3 indicated a rate of leakage of 3.75 gal/hr. Both tanks contained unleaded gasoline. As a result of the failed testing, tanks 340-1 and 340-3 have been triple rinsed and filled with water. Tank 340-2 is currently active (Personal communique, Mr. Tom Sarros, Environmental Coordinator, NCBC Gulfport).

Groundwater quality samples were taken from each of the six compliance monitoring wells (CMWs) in 1989. At that time, well GPT-T340-4 had 1/8-inch of free product, well GPT-T340-3 had a some product sheen, and GPT-T340-1 had 3/8-inch of free product. No petroleum contaminants were detected in the other three CMWs. At that time it was recommended by Harding Lawson Associates that the site should be investigated further since very little was known about the extent of the contamination.

Currently only three of the original six CMWs exist. The existing wells are GPT-T340-4, T340-5, and T340-6. During ABB-ES's site visit on February 27, 1991, well GPT-T340-4 was bailed and more than 18 inches of free product was discovered in the well. Recently, the Mississippi Department of Environmental Quality (MDEQ) has required NCBC Gulfport to bail well GPT-T340-4 on a daily basis in an attempt to remove the free product from the subsurface. The other two CMWs were clear of product.



SOURCE: CHAMPION MAP CORPORATION, 1989.

SCALE

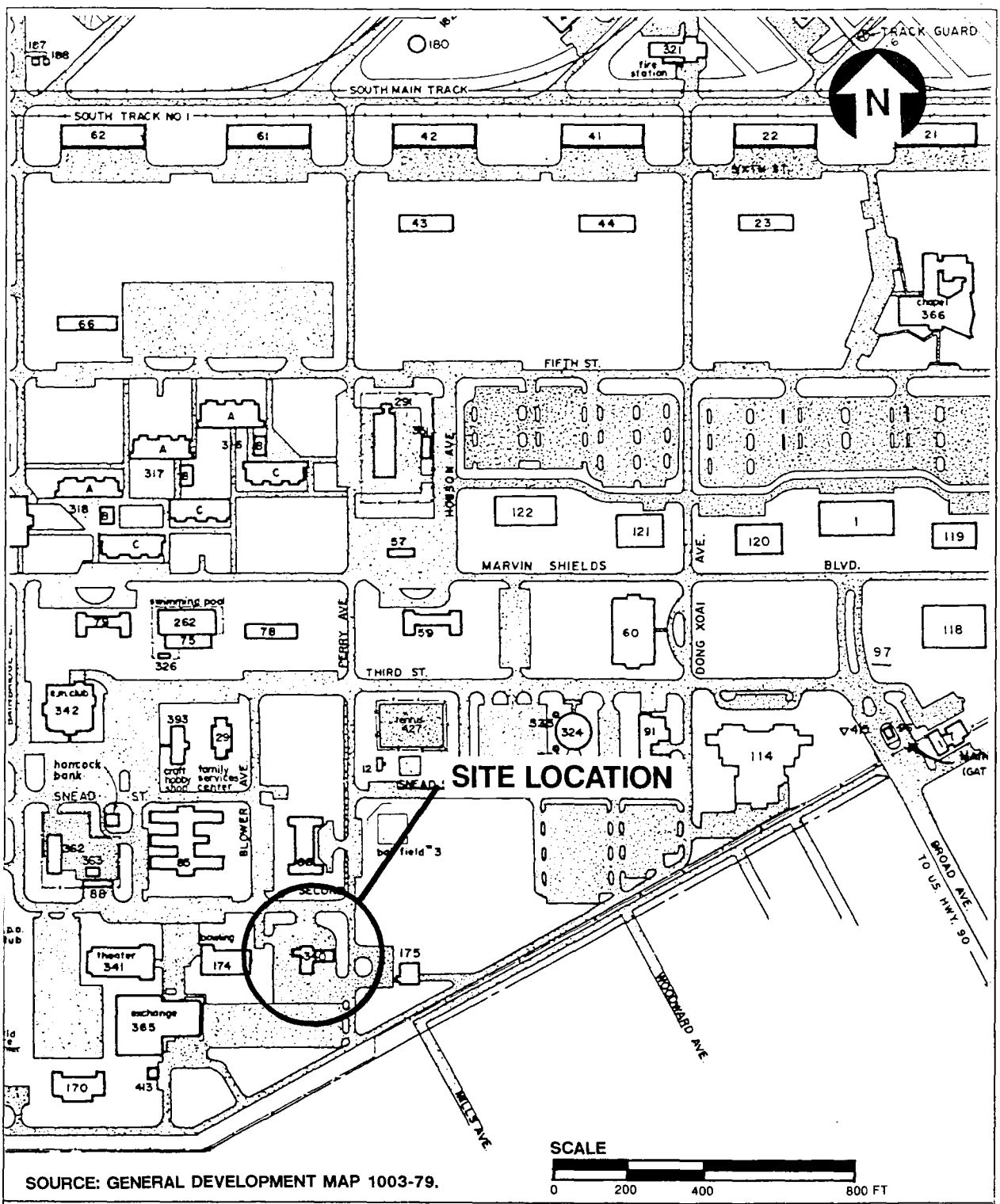
0 1/2 1 MILE

FIGURE 1

FACILITY LOCATION MAP

CONTAMINATION ASSESSMENT PLAN

NAVAL CONSTRUCTION BATTALION CENTER GULFPORT, MISSISSIPPI



SOURCE: GENERAL DEVELOPMENT MAP 1003-79.

FIGURE 2

SITE LOCATION MAP

CONTAMINATION ASSESSMENT PLAN

NAVAL CONSTRUCTION BATTALION CENTER GULFPORT, MISSISSIPPI

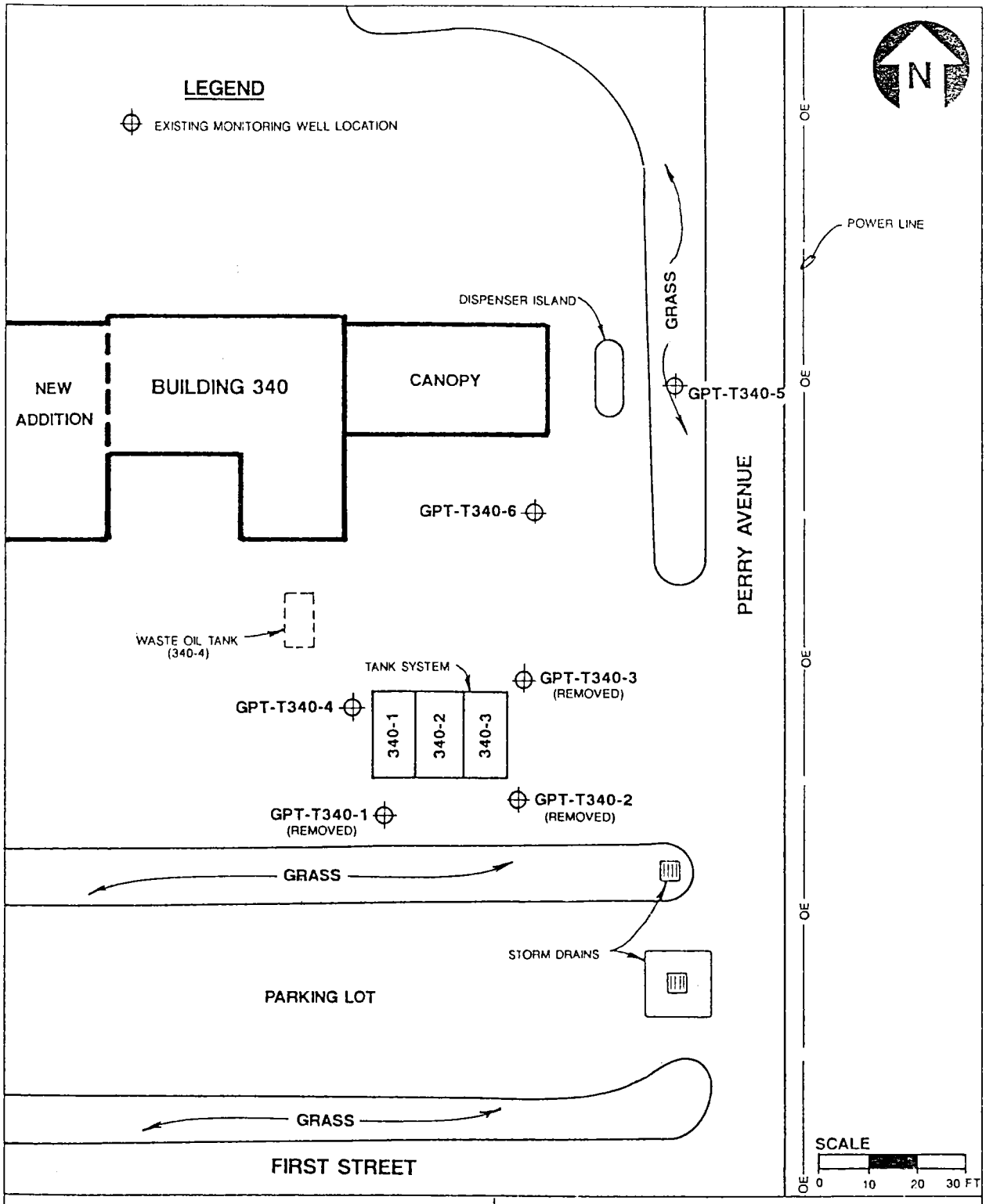


FIGURE 3

SITE MAP

CONTAMINATION ASSESSMENT PLAN

NAVAL CONSTRUCTION BATTALION CENTER
GULFPORT, MISSISSIPPI

The three wells still in existence are constructed of 2-inch schedule 40 polyvinyl chloride (PVC) and are 15 feet deep. The screen length is 12 feet with 0.01-inch slotting. A filter pack of Pear River quartz sand (grade 16/20) surrounds the well screen to a height of 1 foot above the top of the screen. A 6-inch bentonite seal was placed immediately above the top of the filter pack.

2.3 TOPOGRAPHY AND DRAINAGE

2.3.1 Regional. The land forms of the Gulf coastal plains are classified in three broad divisions (Brown and others):

1) Long Leaf Pine Meadows
2) Coastal Pine Meadows
3) Alluvial Plains

Harrison County and Gulfport are located in the Coastal Pine Meadow division. Typically, the land forms are broad, nearly flat to gently undulating plains.

These plains are drained by moderate- to well-defined, dendritic stream systems, which tend to be swampy. Elevations range from zero at the coast to greater than 230 feet (National Geodetic Vertical Datum of 1929) (NGVD) in the northern parts of the county.

Near the coast these gentle plains give way to a series of coastal ridges and swales, the long axis of which parallel the coastline. Drainage is poorly defined and typically toward the swales. Elevations in this region rarely exceed 25 feet NGVD.

2.3.2 Site Specific. NCBC is situated on a broad, gently sloping ridge, the long axis of which trends southwest to northeast across the activity. Elevations vary roughly from 20 to 30 feet NGVD. In the western portion of the activity drainage is north and northwest to Canal No. 1 and Turkey Creek. In the eastern part drainage is toward the south and southeast to Brickyard Bayou (Harding Lawson Associates, 1987). The site of investigation is located in the eastern part of the activity and drainage is predicted to be to the southeast.

2.4 HYDROGEOLOGY.

2.4.1 Regional. The Gulfport area is underlain by three water-bearing zones of concern. These are described below in descending order:

Recent and Pleistocene Deposits: These unconsolidated sediments include alluvium deposits, the Pamlico Terrace deposits and the Low and High Terrace deposits. These sediments contain the water table aquifer. The thickness of the these deposits is variable, but seldom greater than 100 feet (Brown and others, 1944). The aquifer in these sediments generally is not used as a source of potable water and is highly susceptible to contamination. The deposits are predominantly quartz sands with varying amounts of gravel, silt, and clay. The percentage of fine-grained materials generally increases with depth. It is predicted that

groundwater flow in the water table aquifer is topographically influenced, with groundwater discharging to nearby streams, surface water impoundments, and canals.

Citronelle Aquifers: The Citronelle aquifers comprise many discontinuous, hydrologically independent aquifers. Throughout much of Harrison County the top of the Citronelle aquifers corresponds to land surface. However, in the Gulfport area the Citronelle aquifers are overlain by terrace deposits. The aquifers dip at approximately 6 feet per mile (ft/mile) with the dip steepening near the coast. The aquifers are thickest near the coast, but rarely exceed 100 feet (Gandl, 1982). In the Gulfport area the Citronelle aquifers are confined (Harding Lawson Associates, 1987).

The Citronelle Formation, of Pliocene age, is predominantly quartz sand with chert gravel and clay layers and lenses throughout. Generally, the Citronelle is only partially saturated. Often the depth of the water table varies from place to place due to the discontinuous nature of the aquifers. Recharge is from direct precipitation or from rapid percolation of rainfall through the overlying terrace sediments. Water moves quickly, both vertically and downgradient charging the underlying Miocene aquifers and discharging to local streams.

Aquifer tests indicate tranmissivities ranging from 4,000 to 13,000 feet squared per day (ft^2/day) and hydraulic conductivities of 82 to 200 feet per day (ft/day). Specific capacities have been reported to range from 6.2 to 46 gallons per minute per foot [(gal/min)/ft] of drawdown (Boswell, 1979). Because of their discontinuous nature the Citronelle aquifers are often restricted to domestic use. These aquifers are susceptible to pollution.

Miocene Aquifers: Underlying the Citronelle aquifers is the Miocene aquifer system. This system, comprised of lower parts of the Graham Ferry Formation (Pliocene), the Pascagoula and Hattisburg Formations (Miocene), and the Catahoula Sandstone (Miocene), consists of interbedded layers of sand and clay. The strata dip southwestward at 30 to 100 ft/mile, with the dip steepening near the coast. In the coastal region, the aquifer system is greater than 3,000 feet in thickness (Gandl, 1982). In the Gulfport area the base of the freshwater is approximately 2,500 feet below land surface (bls) (Harding Lawson Associates, 1987).

In the coastal region the Miocene aquifer system is confined. Recharge is from seepage of the Citronelle aquifers. Water movement is downgradient, towards centers of pumpage and between the aquifers within the system. Clay units of the underlying Oligocene formations retard movement between the Miocene and Oligocene aquifer systems.

The Miocene aquifer system is a significant potable water source for much of southern Mississippi. Aquifer tests indicate an average transmissivity value of 13,000 ft^2/day, a hydraulic conductivity average of 95 ft/day and a specific capacity value as high as 30 (gal/min)/ft of drawdown (Newcome, 1975).

The shallow aquifers of the Miocene aquifer system are susceptible to direct contamination by leakage from the Citronelle aquifers. The deepest Miocene

aquifer, the Catahoula Sandstone, is used for brine disposal in some of the southernmost counties.

2.6 SITE HYDROGEOLOGY. In 1987, a preliminary contamination assessment investigation was conducted at several locations in the western part of NCBC Gulfport. As part of this investigation soil and sediment samples were collected and described. Soil borings were conducted to a maximum depth of 33 feet (bls). Topsoil was reported to be no more than a few inches thick. Below the soils, to depths of 13 to 30 feet (bls), the sediments are quartz sands, tan to brown in color, with varying amounts of silt and clay. Beneath the sands is a soft, plastic, moist clay. The clay varies in color from gray to blue gray. The total thickness of the clay is unknown, but is reported to be at least 13.6 feet thick at one location (Harding Lawson Associates, 1987).

Groundwater elevations were reported to vary from 18 to 25 feet NGVD or approximately 3 to 4 feet bls. Groundwater flow is closely related to surface water flow. In the western part of NCBC Gulfport groundwater flow is to the north (Harding Lawson Associates, 1987). At the site of investigation flow is predicted to be southeast.

3.0 INVENTORY OF NEARBY POTABLE WELLS

A potable water well survey will be conducted within the area surrounding the Navy Exchange Service Station. The survey will attempt to locate all potable water wells within 1/4 mile radius of the site. The survey will be conducted in association with the Environmental Coordinator.

4.0 PROPOSED ASSESSMENT PLAN

4.1 FIELD INVESTIGATION. The field investigation for the Navy Exchange Service Station will consist of three tasks: (1) a start-up meeting, (2) the soil boring and soil sampling program, and (3) monitoring well installation and subsequent groundwater quality sampling program.

Task 1: The start-up meeting will be conducted at the site. All personnel associated with the investigation will review the scope of work and Health and Safety Plan (HASP).

Task 2: The soil sampling program will consist of advancing 20 soil borings to the water table at various locations on and adjacent to the site. Proposed boring sites are indicated in Figure 4. All soil borings will be advanced with a bucket hand auger. Sediment samples will be collected from each boring location. Samples will be screened using an organic vapor analyzer (OVA) with a flame ionization detector (FID) to assess the degree of contamination. Soil samples will be collected from ground surface to immediately above the water table and placed in 16-ounce glass jars. The jars will be half-filled with soil. The headspace in each jar will be measured by the OVA in parts per million (ppm) above background levels. Excessively contaminated soils will be considered to be those soils with a total hydrocarbon reading of greater than 500 ppm for gasoline contamination and greater than 50 ppm for diesel fuel contamination. The screening of the soil samples from the borings will provide cursory information regarding the extent of contamination and assist in properly locating monitoring well installation sites.

Task 3: Monitoring well installation and sediment sampling will follow the initial soil screening phase. Boreholes will be advanced with a hollow stem auger drill rig. At each boring, sediment samples will be collected from immediately above the water table. These samples will be retrieved using a split-spoon sampler. Samples will be screened by a field gas chromatograph (GC) measuring for concentrations of benzene, toluene, ethyl benzene, and xylenes (BTEX). Based upon the results of the initial split-spoon samples, additional samples may be collected with depth at 5-foot intervals until several clean samples are obtained.

Ten shallow monitoring wells (15 feet or less in depth) will be installed at locations determined, in part, by the soil sample analysis. One well will be upgradient of the contamination area. The remaining wells will be located to characterize the vertical and horizontal extent of the plume or to monitor those downgradient areas at or just beyond the extent of the contamination. Proposed locations are illustrated in Figure 5. Any change in the location of the proposed monitoring wells will be made by the Senior Hydrogeologist or Senior Engineer with the rationale for such change discussed in the Contamination Assessment Report (CAR). One deep monitoring well (up to 60 feet in depth) will also be installed. An outer casing may be required for the deep well to prevent the downward migration of contamination.

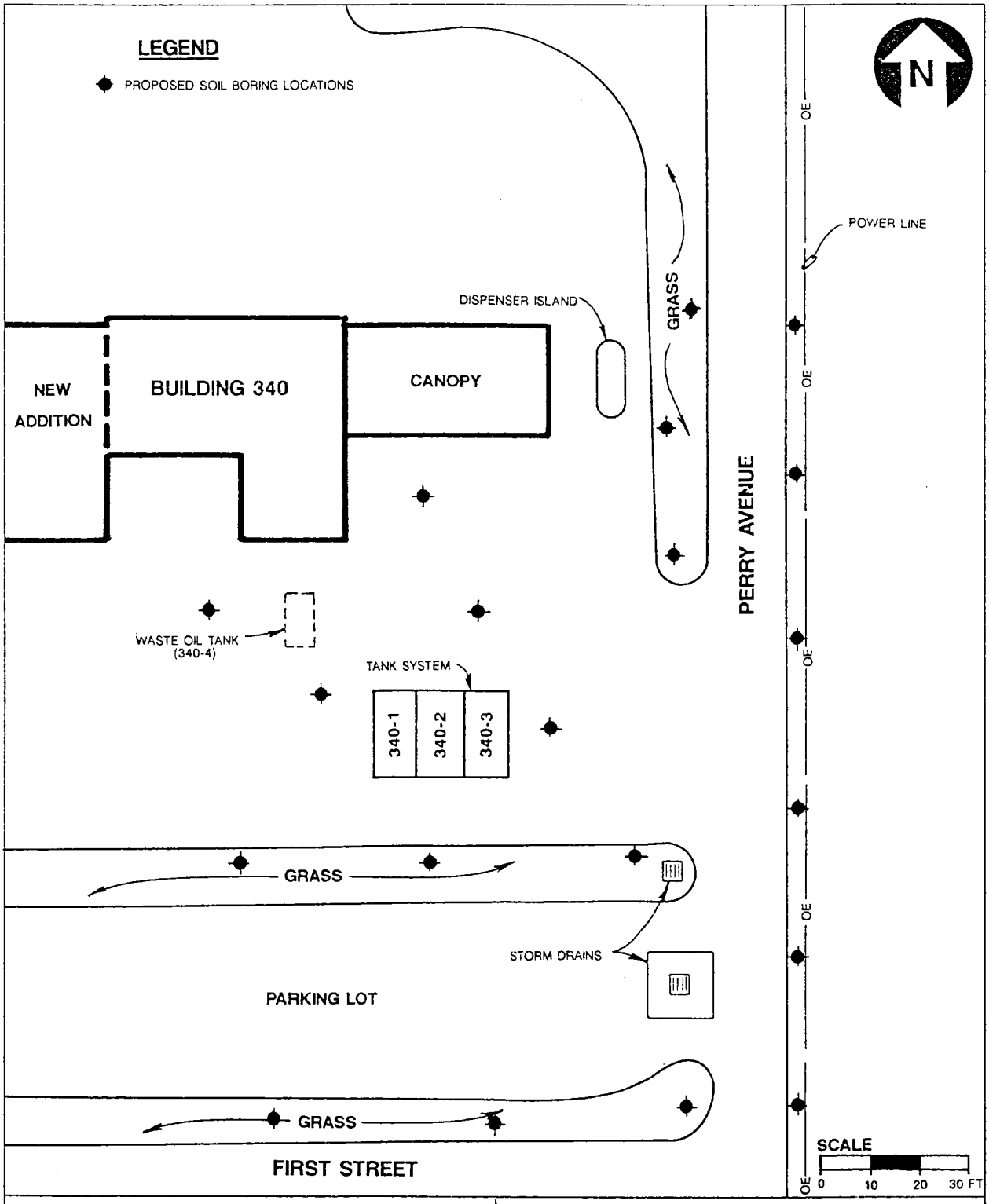


FIGURE 4

PROPOSED SOIL BORING LOCATIONS

CONTAMINATION ASSESSMENT PLAN

NAVAL CONSTRUCTION BATTALION CENTER GULFPORT, MISSISSIPPI

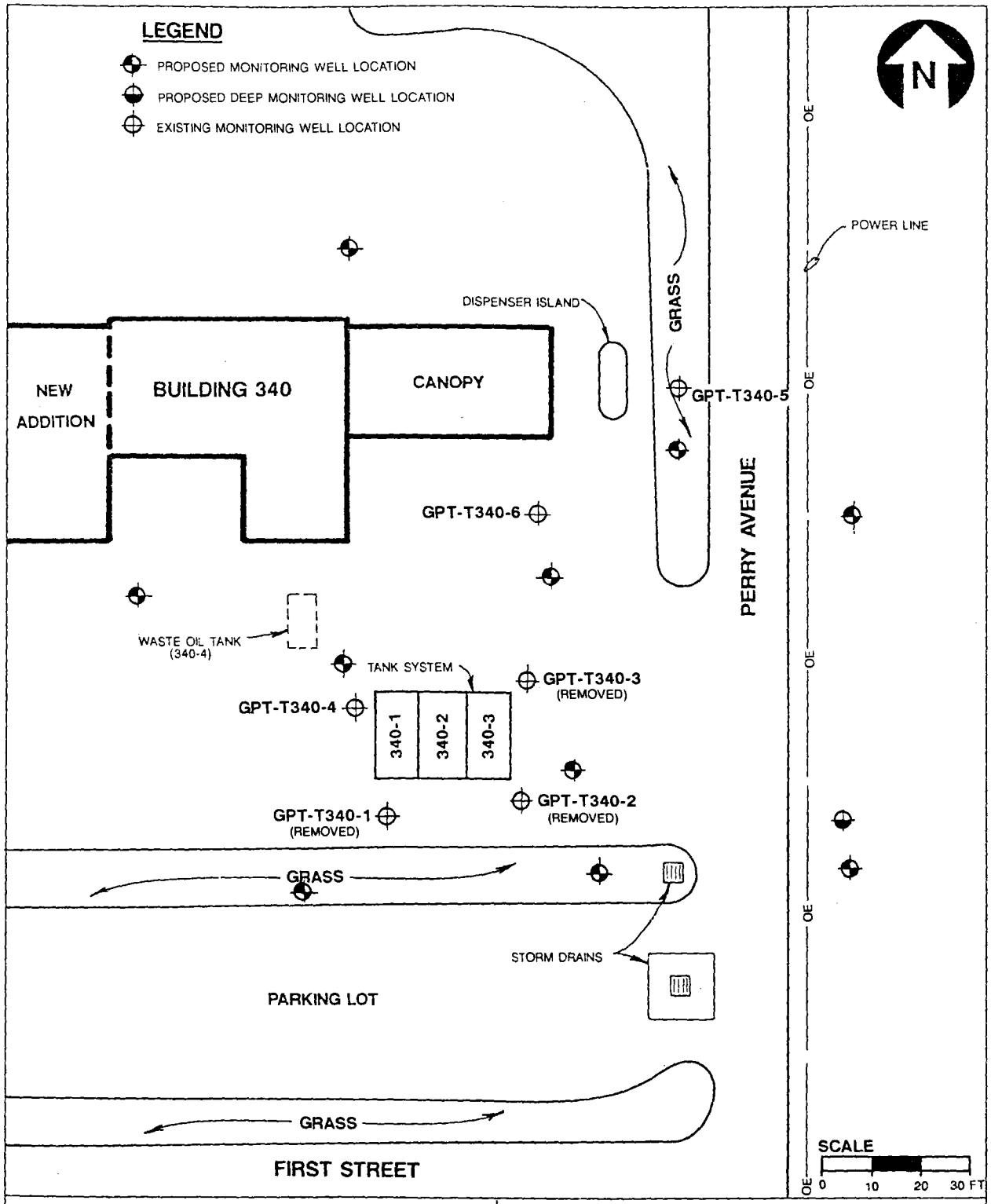


FIGURE 5

PROPOSED MONITORING WELL LOCATIONS

CONTAMINATION ASSESSMENT PLAN

NAVAL CONSTRUCTION BATTALION CENTER GULFPORT, MISSISSIPPI

The monitoring wells will be constructed of 2-inch (inside diameter), schedule 40, flush-threaded, PVC screen and casing. Screen length will be 10 feet with a slotted screen opening of 0.010-inch. At least 2 feet of screen will be placed above the water table to accommodate seasonal fluctuations of the water table. The screen will be surrounded with a quartz sand filter pack of 6/20 size or of an acceptable equivalent. A 1-foot bentonite seal will be placed approximately 1 foot above the screen. The remaining annulus will be grouted with neat cement. A locking, watertight cap will be installed on each well. All the wells will be finished below grade in a subsurface vault and protected with a metal manhole assembly. A diagram of a typical monitoring well is illustrated in Figure 6.

Detailed information of monitoring well construction, lithologic descriptions, split-spoon samples, and other pertinent data will be graphically displayed in boring logs. These data will be included in the CAR. Soils will be classified in accordance with the Unified Soil Classification System.

Upon completion, all newly installed monitoring wells will be developed by pumping or bailing until the purged water is clear and relatively free of sediment to assure a good hydraulic connection with the surrounding aquifer. Aquifer tests will be conducted to assess the hydraulic properties of the water table aquifer at the site. Rising head slug tests will be performed on a minimum of two wells to collect data for calculating the hydraulic conductivities. Hydraulic conductivities will be calculated by using ABB-ES's in-house program AQTESOLV (Geraghty & Miller, Inc., 1989). A measuring point for groundwater elevation will be established at the top-of-casing of each well. A Mississippi-licensed professional surveyor will survey the horizontal and vertical coordinates for each of the monitoring wells into either the USGS NAD '27 or base coordinate grid system.

Groundwater quality samples will be collected from the existing monitoring wells and the 11 newly installed monitoring wells (providing that they do not contain free-floating petroleum product). Additionally, two duplicate samples, one field blank, one equipment blank, and three trip blanks (three coolers) will be collected and analyzed. Samples will be shipped via overnight carrier to an approved analytical laboratory. Sampling procedures and the subsequent analytical program will comply with the ABB-ES, Comprehensive Quality Assurance Plan (CompQAPP). Analysis of all samples will be for the following parameters using U.S. Environmental Protection Agency (USEPA) analytical methods.

Parameter	Analytical Method
1,2-Dichloroethane	USEPA Method 601.
Polynuclear Aromatic Hydrocarbons (PAHs)	USEPA Method 610 including the 15 listed priority pollutant PAHs plus 2-methylnaphthalene and 1-methylnaphthalene.
Benzene	USEPA Method 602.
Toluene	USEPA Method 602.

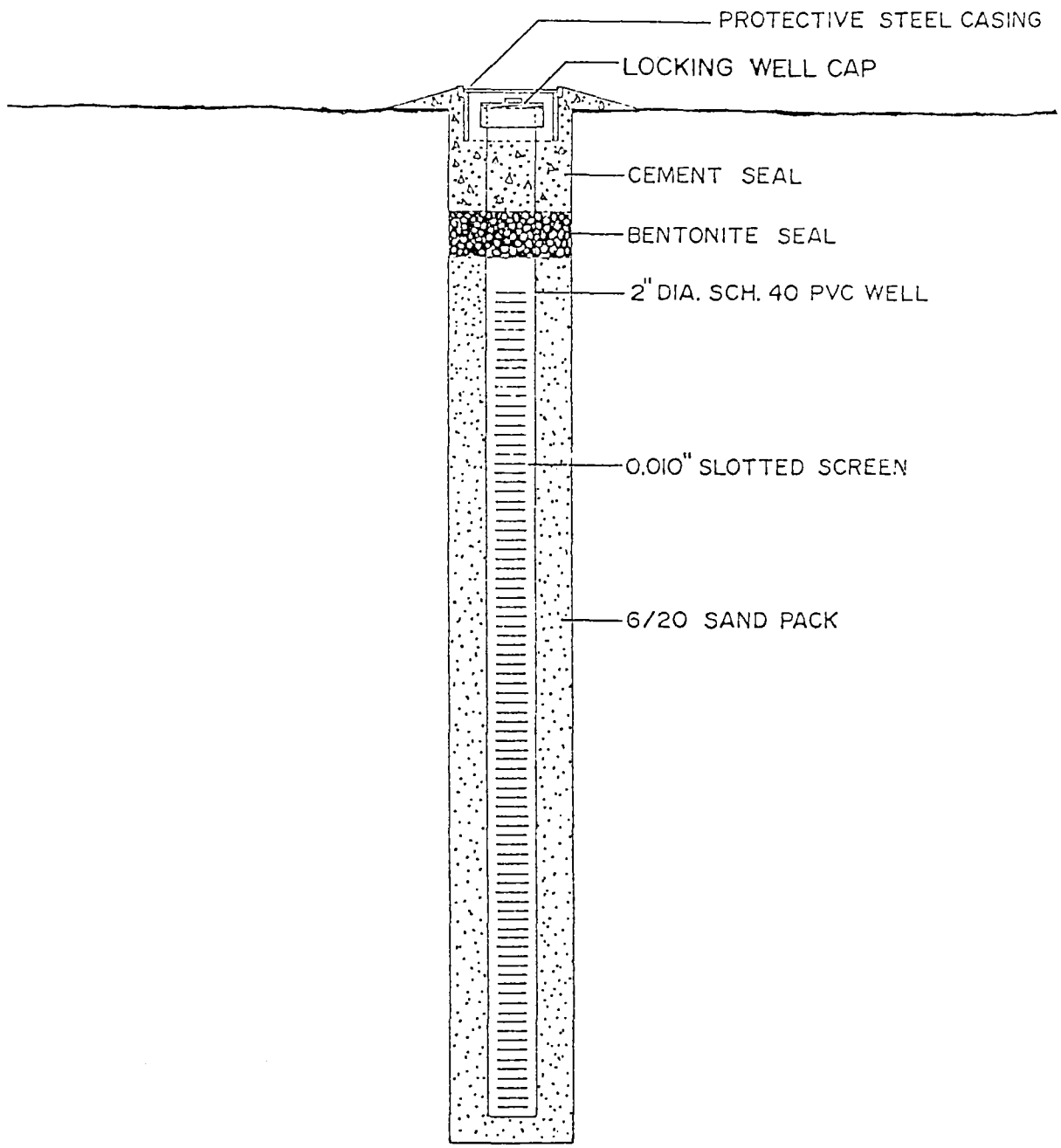


FIGURE 6

TYPICAL MONITORING WELL INSTALLATION DETAIL

CONTAMINATION ASSESSMENT PLAN

NAVAL CONSTRUCTION BATTALION CENTER GULFPORT, MISSISSIPPI

Parameter	Analytical Method
Total xylenes	USEPA Method 602.
Ethyl benzene	USEPA Method 602.
1,2-Dibromoethane (EDB)	USEPA Method 601.
Methyl tert-butyl ether (MTBE)	USEPA Method 602.
Total volatile organic aromatics	USEPA Method 602.
Volatile organic halocarbons	Listed priority pollutant compounds by USEPA Method 601.
Lead	USEPA Method 239.2.
Total recoverable petroleum hydrocarbons	USEPA Method 418.1.

During this field investigation, ABB-ES personnel and their subcontractors will coordinate efforts with site personnel to dispose of contaminated fluids and soils on site. No drums will be supplied by ABB-ES or the subcontractors. It will be the Navy's responsibility to dispose of any hazardous waste.

It should be noted that this investigation is limited solely to the Navy Exchange Service Station area and to the adjacent on-base areas. If it is shown that contamination exists in areas outside of the base, a new scope of work and subsequent plans and documents must be developed before any additional investigation can be conducted.

4.2 PREPARATION OF REPORTS. Upon completion of the field investigation and receipt of the analytical laboratory results of the groundwater quality samples; draft, 100 percent complete, and final CARs will be prepared and submitted to SDIV and NCBC Gulfport for review and approval. The reports will discuss site background information, site conditions, findings, and recommendations for the Navy Exchange Service Station site at NCBC Gulfport. Recommendations shall be made as to the need for any follow-up reports. Site location maps, locations of monitoring wells, groundwater contour maps, and contamination delineation maps will be included with the reports.

Based on the findings, conclusions, and recommendations of the final CARs; draft (90 percent), draft-final (100 percent), and final follow-up reports will be prepared for the Navy Exchange Service Station, Building 340, site. The reports shall be either No Further Action Proposals (NOFAPs), Monitoring Only Proposals (MOPs), or Preliminary Remedial Action Plans (PRAPs).

For the purpose of costing, it will be assumed that a PRAP will be developed for the Navy Exchange Service Station at NCBC Gulfport. The PRAP will include the following items:

- summary sheet of the Contamination Assessment Report;
- general discussion of the technical and economic feasibility of remediation alternatives and more detailed information on the most feasible remedial system;
- general discussion of the rationale for the selected system;
- comparison of contaminant levels found with existing State and USEPA cleanup criteria in tabular format;
- disposition and expected contamination concentrations in any effluent from the proposed cleanup method;
- cost estimates and schedules for the design, construction startup, and operation phases;
- designation of monitoring wells and proposed methodology for verifying accomplishment of PRAP goals (cleanup levels);
- general discussion of the treatment of contaminated soils; and
- recommendations for conducting pilot studies and obtaining additional information.

The PRAP, as described herein, is not intended to fulfill the requirements of a Remedial Action Plan (RAP). The PRAP will compare up to four remedial technologies for cleanup of both groundwater and soil, and the selected technology will be justified based on technical and economic feasibility. A conceptual design and rationale for the design will be provided for the most feasible remedial technology.

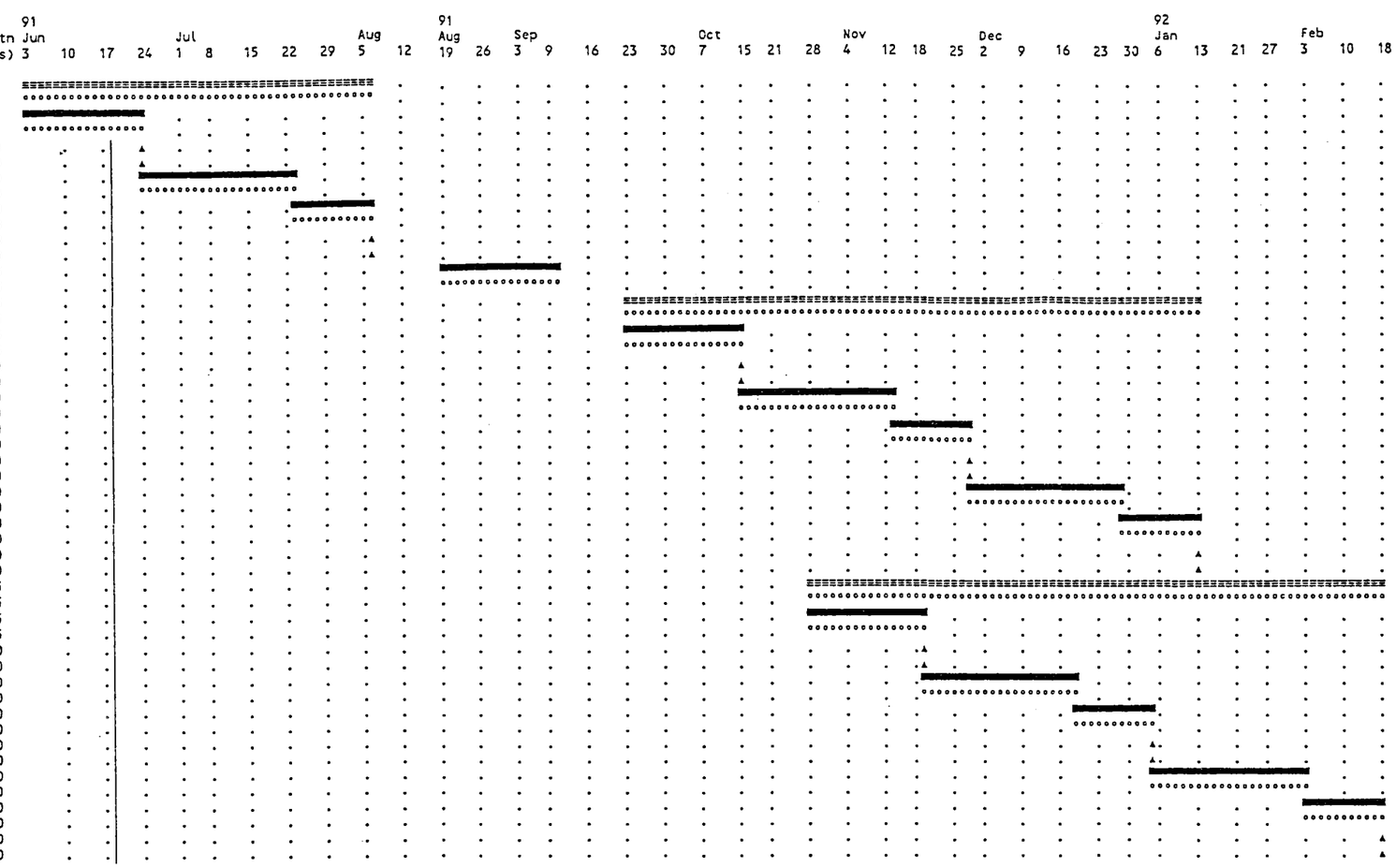
It is ABB-ES' understanding that Southern Division will develop performance specifications for site remediation measures that are based on the PRAP and CAR for the NCBC Gulfport site. While these documents will provide some of the information necessary to develop performance specifications, neither document will be biddable. Additional site information that may be needed to develop the performance specifications but not included in this scope is as follows:

- existing conditions site survey plans;
- locations of existing utilities; and
- location and availability of electric power.

5.0 SCHEDULE

A projected schedule to complete the Contamination Assessment field investigation at NCBC Gulfport is approximately 3 weeks. This includes mobilization, drilling, sampling, surveying, aquifer testing, and demobilization. The field investigation work is scheduled to begin the week of August 19, 1991. Upon completion of the field investigation, approximately 3 weeks will be required before receipt of the laboratory analyses of the groundwater samples that were collected during the investigation. A draft Contamination Assessment Report for the site will be prepared and submitted to SDiv by October 15, 1991. If proper time schedules for report review are followed, a draft follow-up report has been scheduled to be delivered to SDIV by November 19, 1991. A Gantt Chart outlining the project schedule is presented as Figure 7.

Task Name	Start Date	End Date	Effort (Hrs)	Duratn (Days)
GULFPORT HASP & CAP	3-Jun-9	6-Aug-9	230	45
	3-Jun-9	6-Aug-9	230	45
PREPARE DRAFT HASP AND CAP	3-Jun-9	24-Jun-9	0	15
	3-Jun-9	24-Jun-9	0	15
SUBMIT DRFT HASP & CAP TO NAVY	24-Jun-9	24-Jun-9	0	0
	24-Jun-9	24-Jun-9	0	0
NAVY REVIEW OF DRFT HASP & CAP	24-Jun-9	23-Jul-9	0	20
	24-Jun-9	23-Jul-9	0	20
PREPARE FINAL HASP & CAP	23-Jul-9	6-Aug-9	0	10
	23-Jul-9	6-Aug-9	0	10
SUBMIT FINAL HASP & CAP	6-Aug-9	6-Aug-9	0	0
	6-Aug-9	6-Aug-9	0	0
GULFPORT FIELD INVESTIGATION	19-Aug-9	10-Sep-9	472	15
	19-Aug-9	10-Sep-9	472	15
GULFPORT CAR	23-Sep-9	13-Jan-9	297	75
	23-Sep-9	13-Jan-9	297	75
PREPARE DRAFT CAR	23-Sep-9	15-Oct-9	0	15
	23-Sep-9	15-Oct-9	0	15
SUBMIT DRAFT CAR TO NAVY	15-Oct-9	15-Oct-9	0	0
	15-Oct-9	15-Oct-9	0	0
NAVY REVIEW OF DRAFT CAR	15-Oct-9	13-Nov-9	0	20
	15-Oct-9	13-Nov-9	0	20
PREPARE DRAFT FINAL CAR	13-Nov-9	27-Nov-9	0	10
	13-Nov-9	27-Nov-9	0	10
SUBMIT DRAFT FINAL CAR TO NAVY	27-Nov-9	27-Nov-9	0	0
	27-Nov-9	27-Nov-9	0	0
NAVY REVIEW OF DRAFT FINAL CAR	27-Nov-9	27-Dec-9	0	20
	27-Nov-9	27-Dec-9	0	20
PREPARE FINAL CAR	27-Dec-9	13-Jan-9	0	10
	27-Dec-9	13-Jan-9	0	10
SUBMIT FINAL CAR TO NAVY	13-Jan-9	13-Jan-9	0	0
	13-Jan-9	13-Jan-9	0	0
GULFPORT PRAP	28-Oct-9	18-Feb-9	256	75
	28-Oct-9	18-Feb-9	256	75
PREPARE DRAFT PRAP	28-Oct-9	19-Nov-9	0	15
	28-Oct-9	19-Nov-9	0	15
SUBMIT DRAFT PRAP TO NAVY	19-Nov-9	19-Nov-9	0	0
	19-Nov-9	19-Nov-9	0	0
NAVY REVIEW DRAFT PRAP	19-Nov-9	18-Dec-9	0	20
	19-Nov-9	18-Dec-9	0	20
PREPARE DRAFT FINAL PRAP	18-Dec-9	3-Jan-9	0	10
	18-Dec-9	3-Jan-9	0	10
SUBMIT DRAFT FINAL TO NAVY	3-Jan-9	3-Jan-9	0	0
	3-Jan-9	3-Jan-9	0	0
NAVY REVIEW DRAFT FINAL PRAP	3-Jan-9	3-Feb-9	0	20
	3-Jan-9	3-Feb-9	0	20
PREPARE FINAL PRAP	3-Feb-9	18-Feb-9	0	10
	3-Feb-9	18-Feb-9	0	10
SUBMIT FINAL PRAP TO NAVY	18-Feb-9	18-Feb-9	0	0
	18-Feb-9	18-Feb-9	0	0



LEGEND

Detail Task
(Progress)
(Slack)
Summary Task
(Progress)
(Slack)
Baseline
Conflict
Resource delay
Milestone

Progress shows Percent Achieved on Actual
Scale: 8 hours per character

FIGURE 7

NCBC GULFPORT PROJECT
GANTT CHART

CONTAMINATION
ASSESSMENT PLAN

NAVAL CONSTRUCTION
BATTALION CENTER
GULFPORT, MISSISSIPPI

REFERENCES

Boswell, E.H., 1979, The Citronelle Aquifers in Mississippi: U.S. Geological Survey Water-Resources Investigations Report 78-131.

Brown, G.F., Foster, V.M., Adams, R.W., Reed, E.W., and Padgett, D.H., Jr., 1944, Geology and Ground-Water Resources of the Coastal Area in Mississippi: Mississippi State Geological Survey Bulletin. 60, 229 p.

Gandl, L.A., 1982, Characterization of Aquifers Designated as Potential Drinking-Water Sources in Mississippi: U.S. Geological Survey Water-Resources Investigations, Open-File Report 81-550, 90 p.

Geraghty & Miller, Inc., 1989, Aquifer Test Solver (AQTESOLV): Computer Software, Version 1.00.

Harding Lawson Associates, 1987, Landfills Final Verification Report, Naval Construction Battalion Center Gulfport, Mississippi: HLA Job No. 2176, 093.12, 72 p.

Newcome, Roy, Jr., 1975, The Miocene Aquifer System in Mississippi: U.S. Geological Survey Water-Resources Investigation Report 46-75.