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NAS WHITING FIELD
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CONTAMINATION ASSESSMENT PLAN AND SITE-SPECIFIC HEALTH AND SAFETY PLAN SITE 7 TANKS 1438 AND 1439 NAS WHITING FIELD FL

3/1/1997

ABB ENVIRONMENTAL SERVICES, INC

(12)

CONTAMINATION ASSESSMENT PLAN AND SITE-SPECIFIC HEALTH AND SAFETY PLAN

SITE 7, TANKS 1438 AND 1439

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

UNIT IDENTIFICATION CODE: N60508
CONTRACT NO.: N62467-89-D-0317/110

MARCH 1997

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

CONTAMINATION ASSESSMENT PLAN

SITE 7, TANKS 1438 AND 1439

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

Unit Identification Code: N60508

Contract No.: N62467-89-D-0317/110

Prepared by:

ABB Environmental Services, Inc.
2590 Executive Center Circle East
Tallahassee, Florida 32301

Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418

Nick Ugolini, Code 1843, Engineer-In-Charge

March 1997

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-0317/110 are complete and accurate and comply with all requirements of this contract.

DATE: March 10, 1997

NAME AND TITLE OF CERTIFYING OFFICIAL: Terry Hansen, P.G.
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Michael J. Williams, P.G.
Principal Scientist

(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 as well as conventional methods of past disposal, hazardous materials may have entered the environment in ways unacceptable to 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 while the U.S. Environmental Protection Agency and the Florida Department of Environmental Protection oversee the Navy UST program at Naval Air Station (NAS) Whiting Field, Milton, Florida.

Questions regarding the UST program at NAS Whiting Field should be addressed to Mr. Nick Ugolini, SOUTHNAVFACENGCOM, Code 1843, at (803) 820-5596.

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
bls	below land surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Contamination Assessment Plan
CAR	Contamination Assessment Report
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
GC	gas chromatograph
gpm	gallon per minute
$\mu g/\ell$	micrograms per liter
NAS	Naval Air Station
OVA	organic vapor analyzer
PCAR	preliminary contamination assessment report
UST	underground storage tank
RAP	remedial action plan
SOUTHNAV-FACENGCOM	Southern Division, Naval Facilities Engineering Command
™	Trademark

1.0 INTRODUCTION

ABB Environmental Services, Inc. (ABB-ES), has been contracted by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to prepare a Contamination Assessment Plan (CAP) for Site 7, Tanks 1438 and 1439, at Naval Air Station (NAS) Whiting Field, Milton, Florida. The CAP outlines the field investigation and sampling program that will assess the horizontal and vertical extent of petroleum-contaminated soil and groundwater at the site. The following document presents the basic site background and develops a rationale for the proposed field investigation to be implemented at the site.

2.0 BACKGROUND

2.1 SITE DESCRIPTION. NAS Whiting Field is located in north-central Santa Rosa County, approximately 7 miles north of Milton, Florida, and 20 miles northeast of Pensacola (see Figure 2-1). NAS Whiting Field presently occupies a 3,490-acre tract of land, with easement rights to an additional 457 acres. The station is currently the home base of Training Air Wing Five whose mission is to administer, coordinate, and supervise flight and academic training. The station is divided into a North Field, where fixed-wing training takes place, and a South Field, which is used for helicopter training. Support facilities are located between the two fields. Underground storage tank (UST) Site 7, the former location of two storage tanks (1438 and 1439), is located in the support facilities area on the east side of the aircraft tow road (Figure 2-2).

The two storage tanks were installed partially below ground surface, then covered with fill dirt to form two large mounds. They were constructed of type "B" concrete and were 61.5 feet in diameter and 23 feet tall. It is not known how far below the original land surface the tanks were installed.

2.2 SITE HISTORY. Tanks 1438 and 1439 were each constructed to store 218,000 gallons of aviation gasoline. They were installed in 1943 and remained in use until 1980. The storage tanks were then decommissioned and filled with water. In 1985, the tanks were demolished. One of the two tanks was reportedly removed and the other was reportedly collapsed and abandoned in place. During demolition, free product was discovered in the excavation pit. The piping associated with the tanks (running to both the north and south airfields) was reportedly abandoned in place and filled with concrete. The tank site has never been officially closed in accordance with State regulations.

In November 1994, ABB-ES conducted a preliminary investigation of the former tanks at UST Site 7. The result of this investigation are summarized in the Preliminary Contamination Assessment Report (PCAR), January 1995. The conclusion of the preliminary investigation was that further investigation of the soil and groundwater at UST Site 7 would be required.

2.3 PHYSIOGRAPHY. NAS Whiting Field lies within the Western Highland physiographic region of Florida. Site elevations range from 150 to 190 feet above mean sea level. Surface water runoff is conveyed to Clear Creek (west and south) and Big Cold Creek (east) by a system of ditches and storm drains. The drainage system was installed when the base was constructed in the early 1940s.

2.4 HYDROGEOLOGY.

2.4.1 Regional There are three major aquifers in the NAS Whiting Field area. The uppermost aquifer, the sand-and-gravel aquifer, exists under both artesian and non-artesian conditions depending on the presence or absence of semiconfining clay lenses. The two other aquifers, the Upper Floridan and the Lower

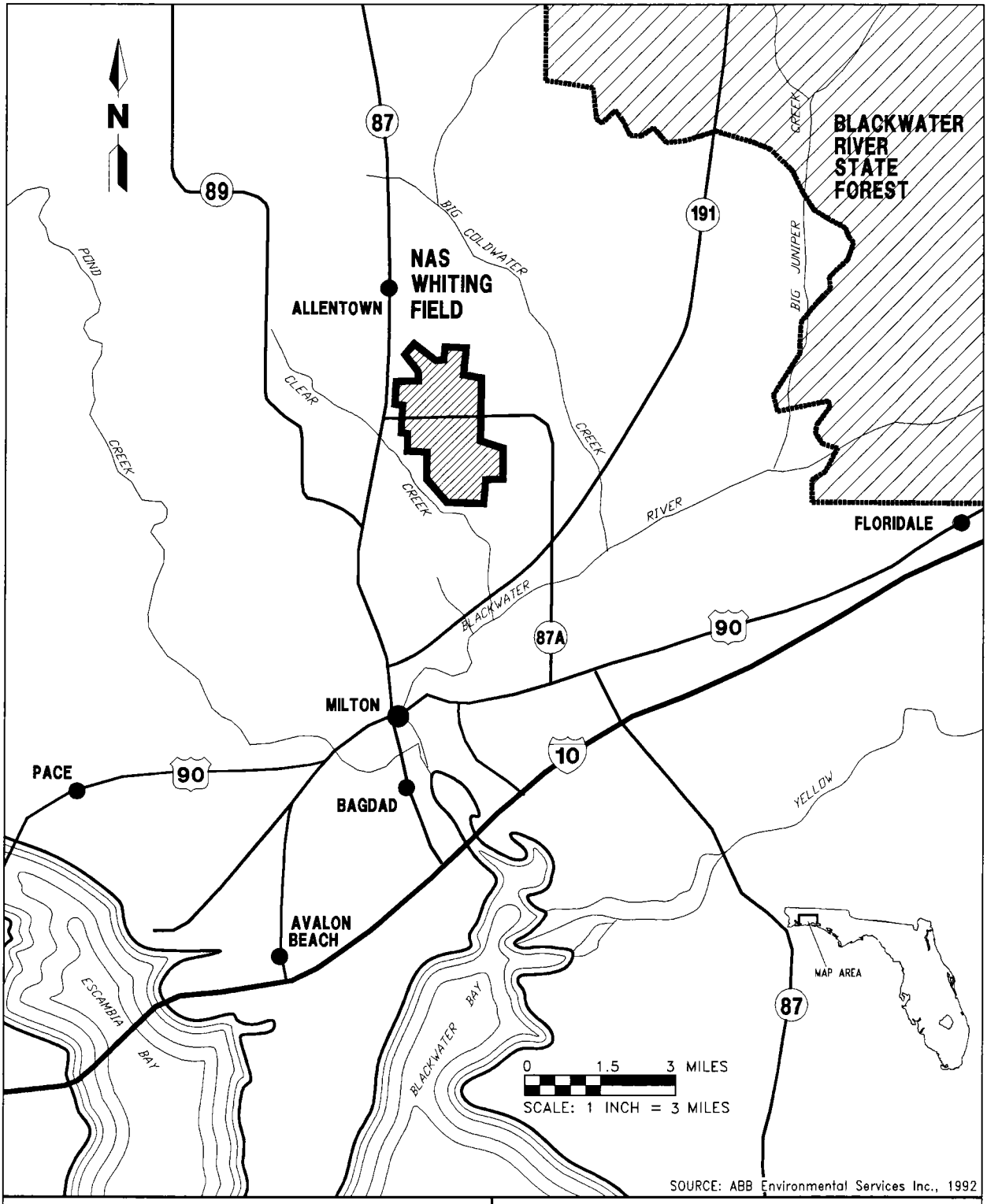
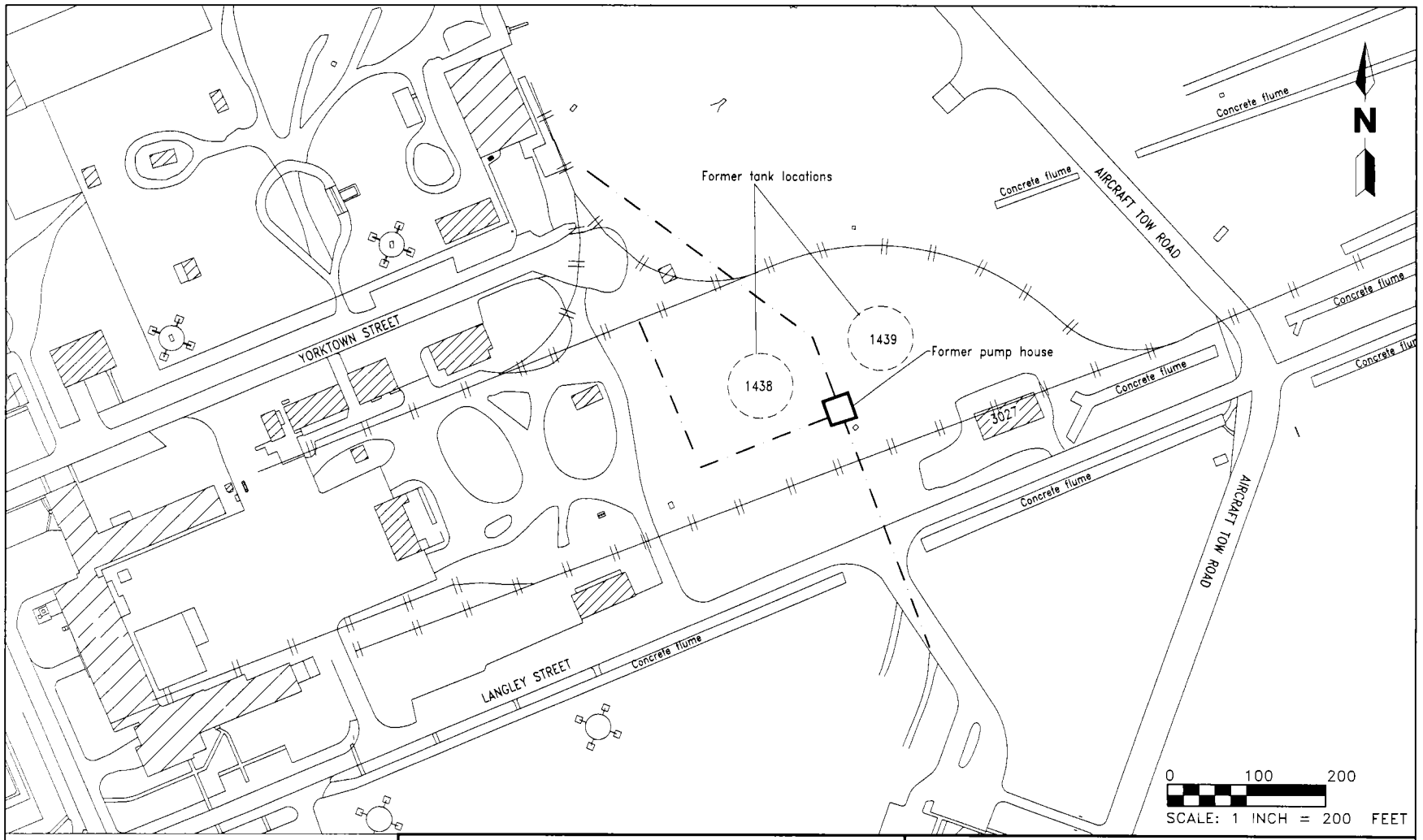


FIGURE 2-1
FACILITY LOCATION MAP

H:\WHF\FIG1-1\NP-NAB\03-10-97

CONTAMINATION ASSESSMENT PLAN, SITE 7

NAS WHITING FIELD
MILTON, FLORIDA



LEGEND

— · — Former 6-inch fuel line location

⊢⊢ Former railroad location

F:\WHF\TANKLOC\WOW-NP\03-04-97

FIGURE 2-2
SITE PLAN

CONTAMINATION ASSESSMENT PLAN, SITE 7

NAS WHITING FIELD
MILTON, FLORIDA

Floridan, are deep artesian aquifers of the Floridan aquifer system. Virtually all groundwater withdrawn in Escambia and Santa Rosa Counties comes from the lower part of the sand-and-gravel aquifer (Geraghty & Miller, 1986).

2.4.2 **Site Specific** Site 7 is capped by low-permeability sediments consisting of clayey sand. The sand ranges in thickness from approximately 20 to 40 feet.

Beneath these sediments the lithology consists of very fine- to very coarse-grained sands with randomly interbedded lenses and layers of gravel and clay (Geraghty & Miller, 1986).

The sand-and-gravel aquifer is recharged by infiltration of rainwater at the surface. Due to a clay layer of variable thickness and lateral extent at NAS Whiting Field, there are locally perched water tables present. This appears to be the case at Site 7 where the clay layer is located approximately 16 feet below land surface (bls). This clay layer forms an aquitard and subsequently creates a locally perched water table.

3.0 INVENTORY OF PROXIMATE POTABLE WATER WELLS

An inventory of potable water wells near NAS Whiting Field was conducted as part of the Hazard Ranking System scoring performed by ABB-ES in May 1991.

All potable and industrial water supplies in the NAS Whiting Field vicinity are obtained from the sand-and-gravel aquifer. This aquifer extends from the surface to an approximate depth of 300 feet bls. Screened intervals of most production wells are at a depth of approximately 150 to 350 feet bls, depending on the surface elevation and the presence of clay lenses. Figure 3-1 presents the location of wells within a 5-mile radius of NAS Whiting Field.

Water for the city of Milton is supplied by five separate production wells. All of these wells are within 5 miles of NAS Whiting Field. The Point Baker-Allentown area municipal water system consists of seven production wells, four of which are within a 5-mile radius of NAS Whiting Field. In addition to these production wells, three private farm wells also draw water from the sand-and-gravel aquifer in the vicinity of NAS Whiting Field.

At NAS Whiting Field, potable water is currently supplied by three production wells: the north (W-N4), south (W-S2), and west (W-W3) production wells. All three of these productions wells are within a 0.25-mile radius of Site 7 (Figure 3-2).

Current average pumping capacities from the facility production wells include (1) north well (W-N4), 600 gallons per minute (gpm); (2) west well (W-W3), 700 gpm; and (3) south well (W-S2), 500 gpm (ABB-ES, 1993). At the request of the Florida Department of Environmental Protection (FDEP), supply well W-S2 was shut down on August 28, 1986, due to concentrations of benzene exceeding the Florida primary drinking water standard of 1 microgram per liter ($\mu g/\ell$) in the groundwater. Production well W-W3 was also shut down on September 25, 1986, due to concentrations of trichloroethene greater than 3 $\mu g/\ell$. The wells were reactivated after installation of groundwater treatment systems. The treatment systems consist of granular activated carbon treatment at the wellhead followed by chlorination, pH adjustment, and addition of a sequestering agent to reduce iron precipitation. Production well W-W3 has a granular activated carbon filter unit installed to reduce the concentration of trichloroethene detected in the groundwater (ABB-ES, 1993).

NAS Whiting Field operated with service from only the north production well throughout most of 1987. Testing of an activated carbon adsorption filtration system to treat water from the west well (W-W3) began on November 3, 1987. Upon completion of the operational tests on December 1, 1987, the west well was returned to service. At the south production well (W-S2), an activated carbon filtration system was installed in early 1990. Pumping rates, well depths, and screen intervals for the three base production wells are shown in Table 3-1 (Locklear, 1983).

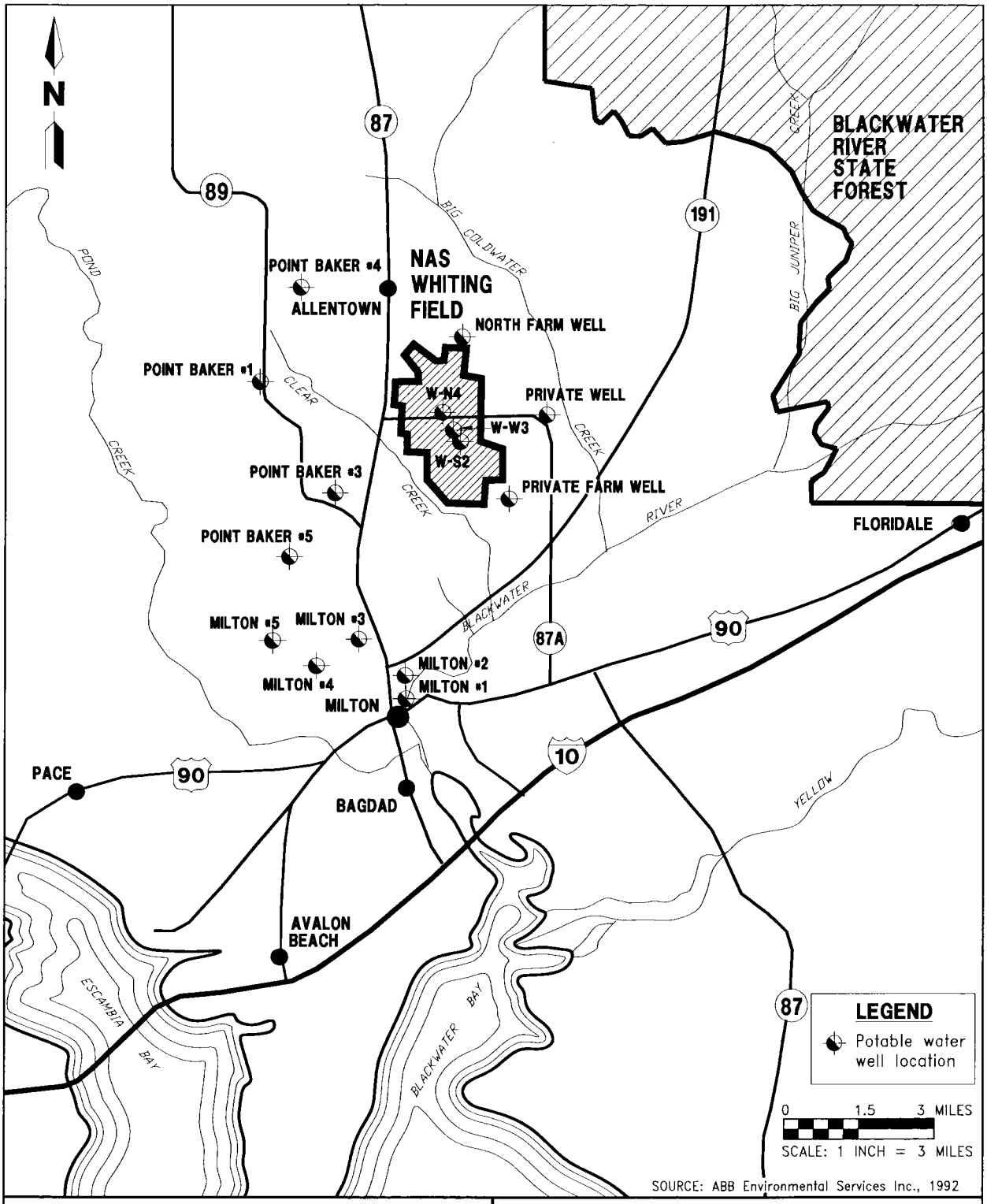


FIGURE 3-1
POTABLE WATER WELL LOCATIONS IN THE VICINITY OF NAS WHITING FIELD, MILTON, FLORIDA

H:\WHF\FIG1-1\NP\03-05-97

CONTAMINATION ASSESSMENT PLAN, SITE 7

NAS WHITING FIELD
MILTON, FLORIDA

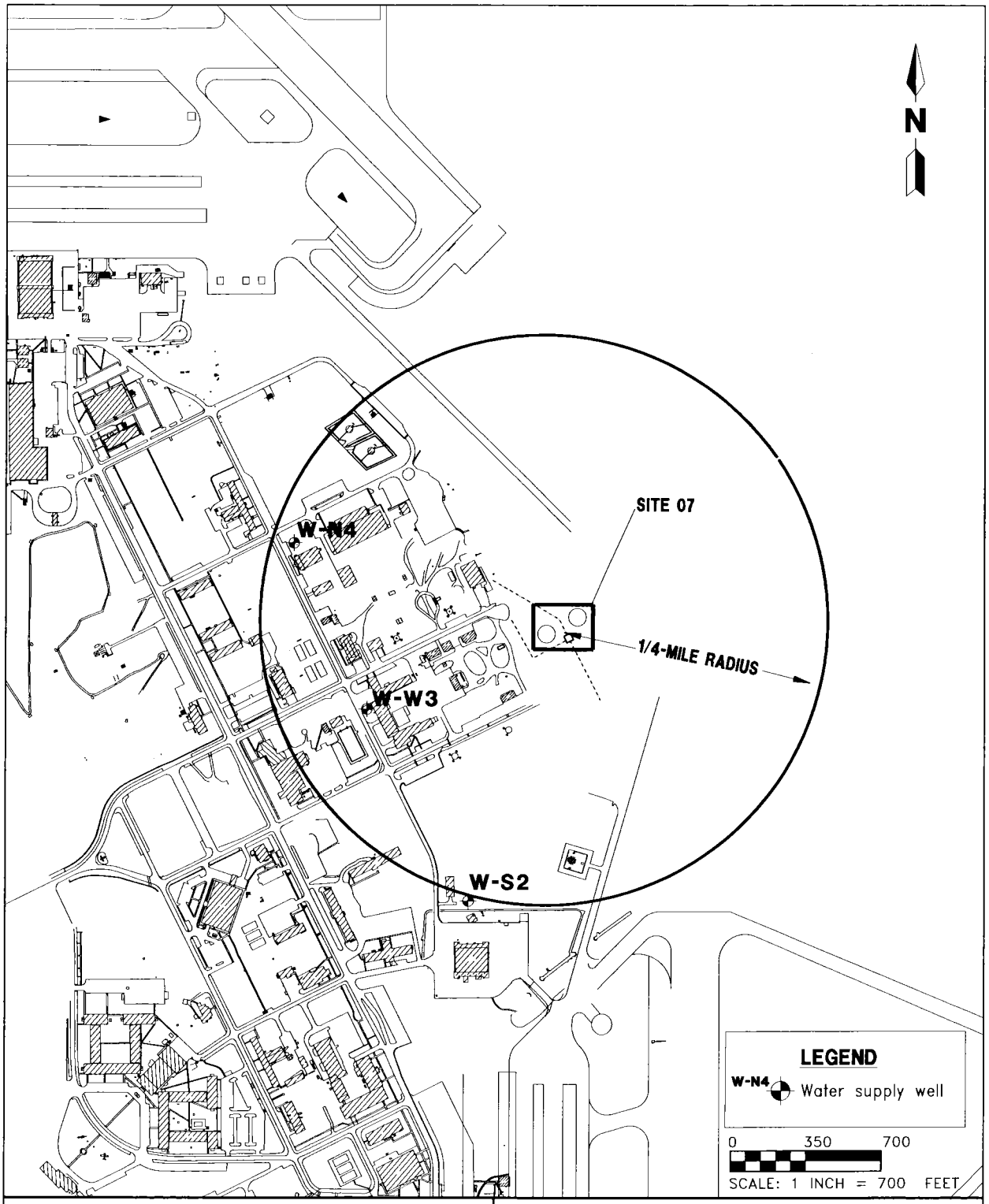


FIGURE 3-2
ACTIVE NAVY PRODUCTION WELLS AT NAS WHITING FIELD

H:\WHF\SEC2FIGS\NP\03-05-97

CONTAMINATION ASSESSMENT PLAN, SITE 7

NAS WHITING FIELD
MILTON, FLORIDA

Table 3-1
Production Rates for NAS Whiting Field Supply Wells

Contamination Assessment Plan
Site 7, Tanks 1438 and 1439
Naval Air Station Whiting Field
Milton, Florida

Well Designation	Pumping Rate (gpm)	Total Depth (feet bls)	Screen Interval (feet bls)
W-N4	600	230	156 to 230
W-W3	700	263	179 to 263
W-S2	500	234	160 to 234

Notes: NAS = Naval Air Station
gpm = gallons per minute.
bls = below land surface.

4.0 CONTAMINATION ASSESSMENT FIELD INVESTIGATION

The objective of this investigation is to determine the horizontal and vertical extent of soil and groundwater contamination at UST Site 7.

The field investigation will involve the following phases:

- mobilization preparations,
- startup meeting at the site to initiate the field investigative program,
- utility clearance from the Navy,
- organic vapor analyzer (OVA) screening of subsurface soil samples to assess vertical and lateral extent of contaminated soil,
- gas chromatograph (GC) screening and laboratory analyses of groundwater samples,
- assessment of groundwater elevation and flow direction, and
- surveying of all monitoring well locations.

Mobilization Preparations. Before the field investigation begins, the following actions must be completed.

- Compile and submit equipment requisition list.
- Fill out and submit laboratory analysis order form.
- Make all appropriate vehicular and lodging reservations.
- Communicate field schedule to the NAS Whiting Field point-of-contact.
- Set up an appointment with the NAS Whiting Field utility surveyors for utility clearance at all boring locations, and fax a map of the proposed boring locations.
- Decontaminate all equipment.
- Ensure that all equipment and expendable supplies requested and needed have been staged.
- Load equipment, expendables, sample bottles, and field personnel into field vehicle.

Utility Clearance. It will be the responsibility of the Navy to provide utility clearance at all proposed soil boring locations before field activities can be initiated at the site. Additionally, utility clearance must be provided for all monitoring well locations during the investigation. ABB-ES will visit UST Site 7 with activity representatives, discuss the area of interest to the investigation, and clarify appropriate clearance procedures to facilitate utility

clearance. ABB-ES will also provide site maps showing proposed soil boring and monitoring well locations.

Startup Meeting. Before the field investigation begins, all field personnel will attend a kickoff meeting. The purpose of the kickoff meeting is to discuss the workplan and the health and safety plan, and to coordinate the efforts of all field personnel to ensure that the field investigation can be conducted in a prudent and efficient manner.

Soil Investigation. Approximately 25 soil borings will be advanced to the non-perched water table (approximately 110 feet bls) around the former tank locations. Fifteen of these borings will correspond to boreholes advanced during the preliminary investigation. Soil samples from these borings will be collected at 5-foot intervals starting at 35 to 40 feet bls. The remaining 10 borings will be located on the perimeter of the contaminant plume identified during the preliminary investigation. Proposed soil boring locations are shown on Figure 4-1. Soil samples from these borings will be collected continuously to 20 feet bls and every 5 feet thereafter. All soil samples will be screened using an OVA equipped with a flame ionization detector in accordance with Chapter 62-770, Florida Administrative Code (FAC), requirements.

Groundwater and soil samples will be collected from each soil boring. These samples will be screened for benzene, toluene, ethylbenzene, and xylenes (BTEX) using a portable GC. In addition, 10 soil samples will be analyzed for the gasoline analytical group parameters in accordance with new requirements of Chapter 62-770, FAC. Groundwater samples will be collected at each soil boring utilizing a hydropunch tool. In addition to the BTEX screening by GC, groundwater samples will be sent to a laboratory and analyzed for the gasoline analytical group parameters. These data will be used to complement the groundwater investigation and to determine the placement of monitoring wells.

Groundwater Investigation. Groundwater samples will be collected from each proposed well location. These groundwater samples will be screened for BTEX using a portable GC. These groundwater data will be used to verify that the proposed location of the monitoring wells will effectively serve to assess the extent of groundwater contamination.

Approximately five permanent monitoring wells (120 feet in depth) will be installed to the first occurrence of water at the site. If the first occurrence of water is determined to be perched, five additional vertical extent wells (140 feet in depth) will be installed within a larger diameter outer casing. This casing will isolate the two zones. Proposed monitoring well locations are shown on Figure 4-2. After each monitoring well has been installed and developed, a groundwater sample will be collected and screened for BTEX with a portable GC. After the monitoring well installation for the site is complete, groundwater samples will be collected from all site monitoring wells installed during the Phase II investigation and submitted to an approved contract laboratory for analyses. All groundwater samples collected for laboratory analysis will be analyzed for the gasoline analytical group parameters. Quality assurance and quality control samples will be collected and analyzed as prescribed in ABB-ES's FDEP-approved Comprehensive Quality Assurance Plan.

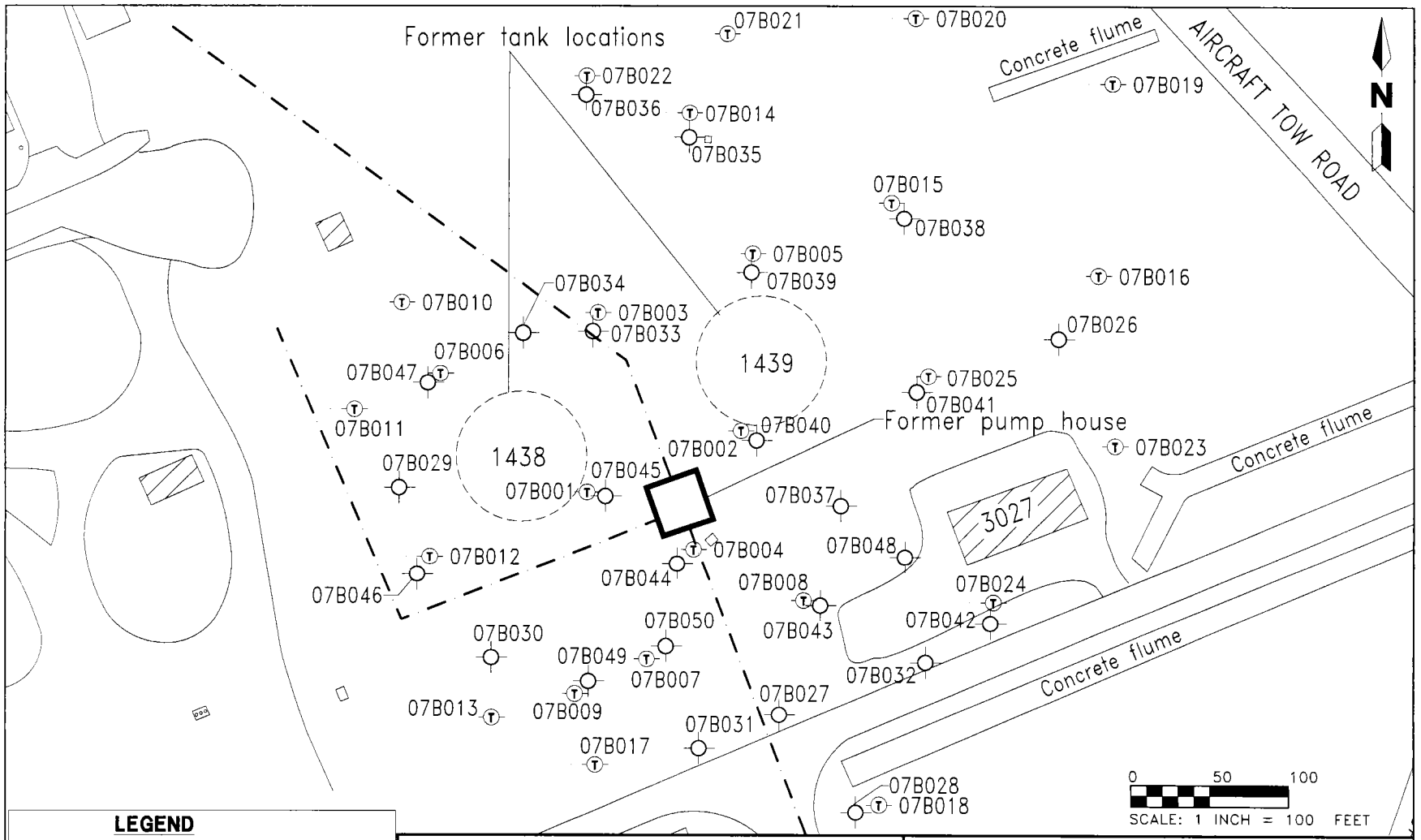


FIGURE 4-1
PROPOSED SOIL BORING LOCATION MAP

CONTAMINATION ASSESSMENT PLAN, SITE 7

NAS WHITING FIELD
MILTON, FLORIDA

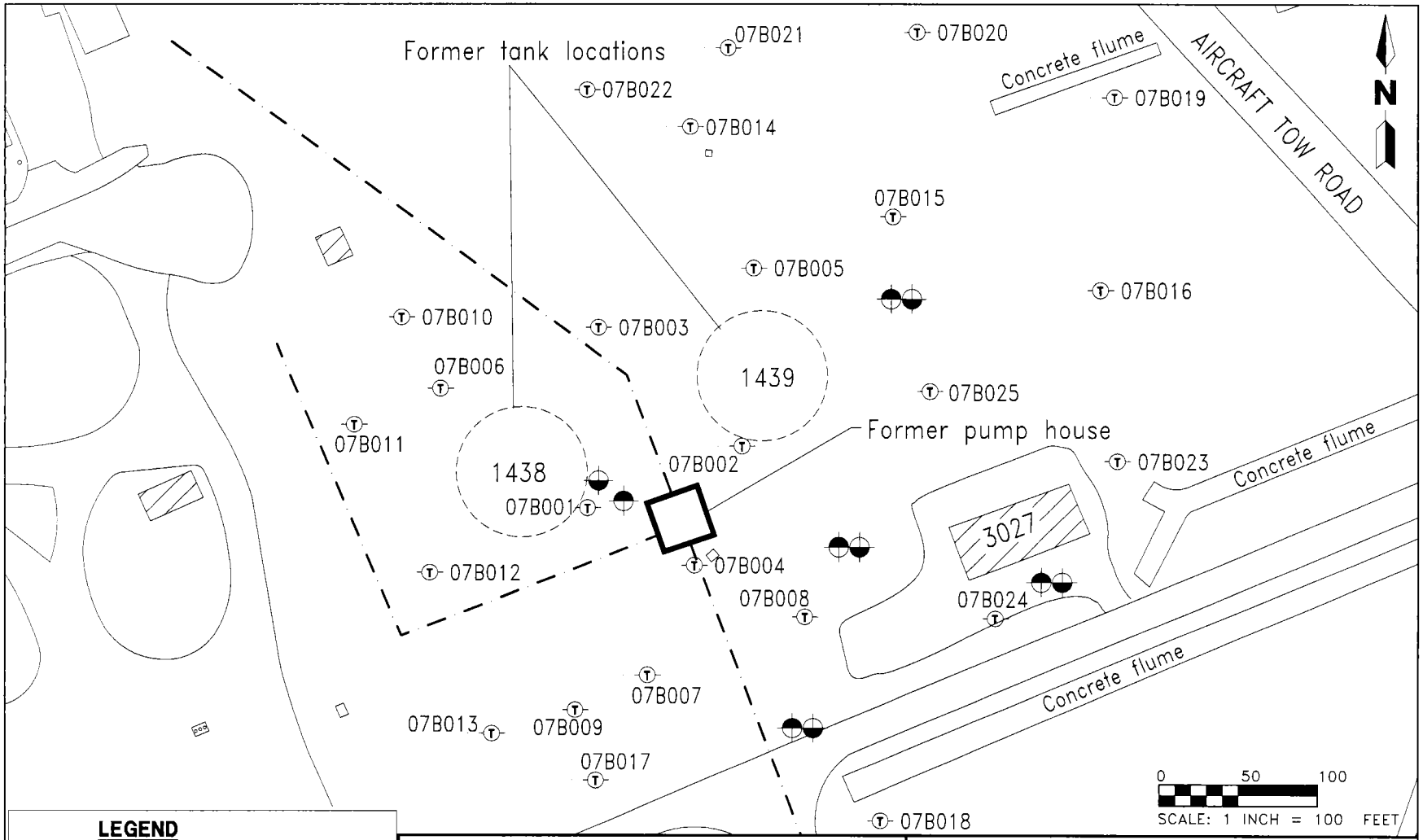


FIGURE 4-2
PROPOSED MONITORING WELL LOCATION MAP

CONTAMINATION ASSESSMENT PLAN, SITE 7

NAS WHITING FIELD
MILTON, FLORIDA

Groundwater Elevation and Flow Direction. Depth to water in each monitoring well will be measured using an electronic water-level indicator to determine the groundwater elevation and flow direction at the site. In the unlikely event that free product is encountered at the site, the free-product thickness will be measured using an oil-water interface probe.

Slug tests will be performed in one perched water table well and one vertical extent well to assess the hydraulic conductivity of the aquifer. The test will be repeated a minimum of three times in each monitoring well.

Monitoring Well Location Survey. A Florida-licensed professional surveyor will survey the horizontal and vertical coordinates for each of the monitoring wells for incorporation into either the U.S. Geological Survey '27 or base coordinate grid system.

5.0 PREPARATION OF CONTAMINATION ASSESSMENT REPORT (CAR)

Following the field investigation, a CAR will be prepared for the site and submitted to SOUTHNAVFACENGCOM and NAS Whiting Field in final form for review.

The CAR will include both a report of the findings of the field investigations and recommendation for preparation of a No Further Action Proposal, a Monitoring Only Proposal, or a Remedial Action Plan for the site meet the requirements of Chapter 62-770, FAC.

The CAR will incorporate the following:

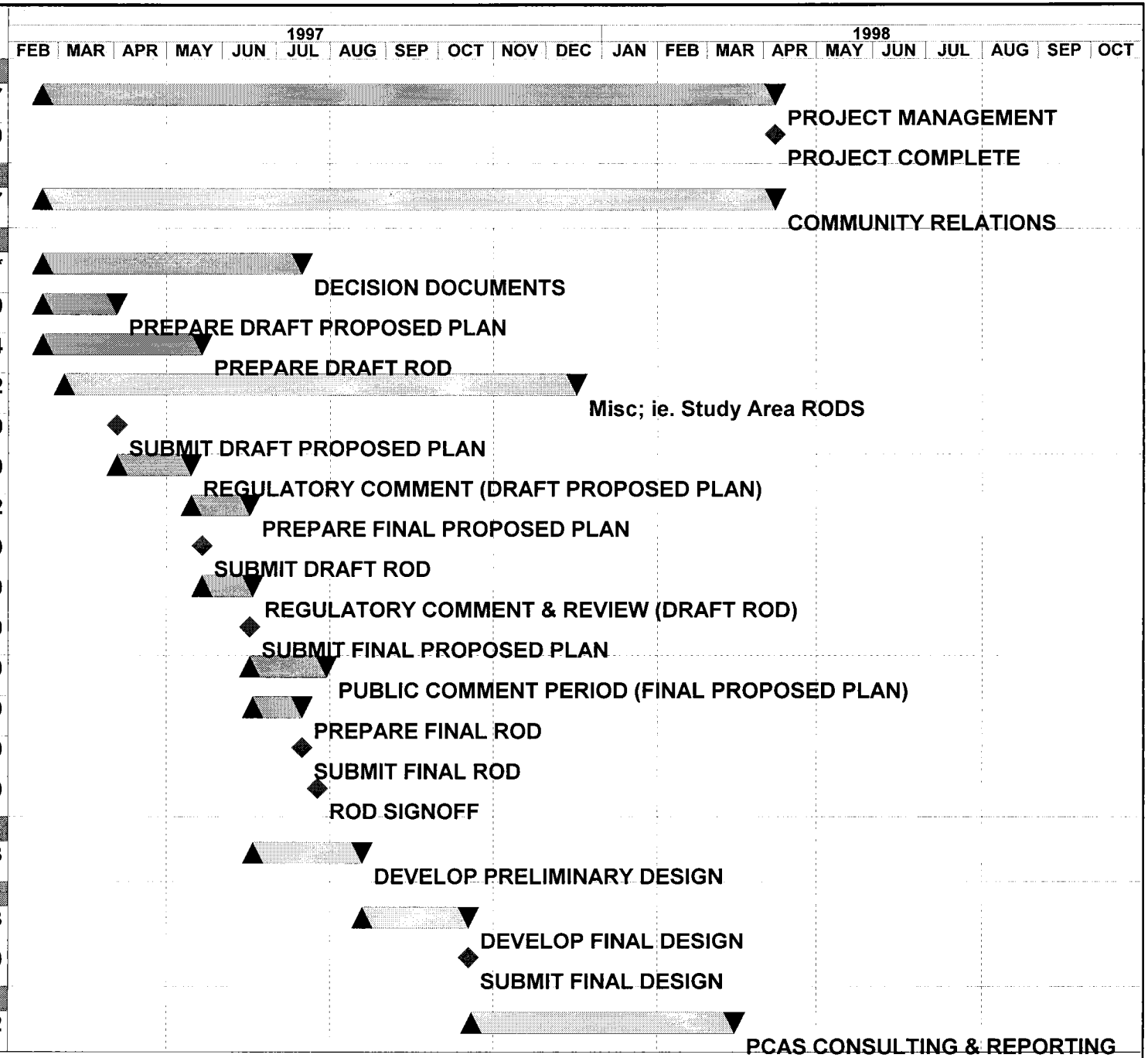
- regional and site background and history;
- a discussion of the findings of the investigation, including the approximate extent of soil and groundwater contamination, and the regional and site hydrogeology;
- a piezometric surface map;
- base maps depicting the site layout and TerraProbe℠, hydropunch, and monitoring well locations; and
- maps showing the vertical and horizontal extent of soil and groundwater contamination at the site.

ABB-ES will evaluate data collected during each major phase of the project and prepare draft tables and figures for review by SOUTHNAVFACENGCOM and FDEP in accordance with the Program Partnering Agreement. A Screening Phase and PCAR Phase meeting will be conducted prior to completion of the field investigation. A CAR Phase meeting will be conducted prior to submittal of a Final CAR. A Remedial Technology Phase meeting will be conducted before a remedial action plan (RAP) is developed. An RAP Phase meeting will be conducted prior to submittal of the Final RAP.

6.0 SCHEDULE

Figure 6-1 presents a Gantt Schedule, indicating the estimated duration and initiation and completion dates of individual tasks for the preliminary contamination assessment at NAS Whiting Field Site 7, Tanks 1438 and 1439.

Activity ID	Early start	Early finish	Orig dur
01 PROJECT MANAGEMENT			
Y3010001	20FEB97*	07APR98	287
Y3010010		07APR98	0
02 COMMUNITY RELATIONS			
Y302001	20FEB97	07APR98	287
12 DECISION DOCUMENTS			
Y3512000	20FEB97	15JUL97	102*
Y3512001	20FEB97	02APR97	30
Y3512005	20FEB97	20MAY97	64
Y3512030	04MAR97	17DEC97	202
Y3512002		02APR97	0
Y3512050	03APR97	14MAY97	30
Y3512003	15MAY97	16JUN97	22
Y3512006		20MAY97	0
Y3512055	21MAY97	17JUN97	19
Y3512004		16JUN97	0
Y3512040	17JUN97	29JUL97	30
Y3512007	18JUN97	15JUL97	19
Y3512008		15JUL97	0
Y3512009		24JUL97	0
13 PRELIMIMARY DESIGN			
Y3513001	18JUN97	18AUG97	43
14 FINAL DESIGN			
Y3514001	19AUG97	17OCT97	43
Y3514002		17OCT97	0
17 PCAS CONSULTATION/REPORTING			
Y3517001	20OCT97	16MAR98	102



Project Start	06SEP90
Project Finish	07APR98
Data Date	29JAN97
Plot Date	10MAR97

Progress Bar
Progress Bar
Critical Activity

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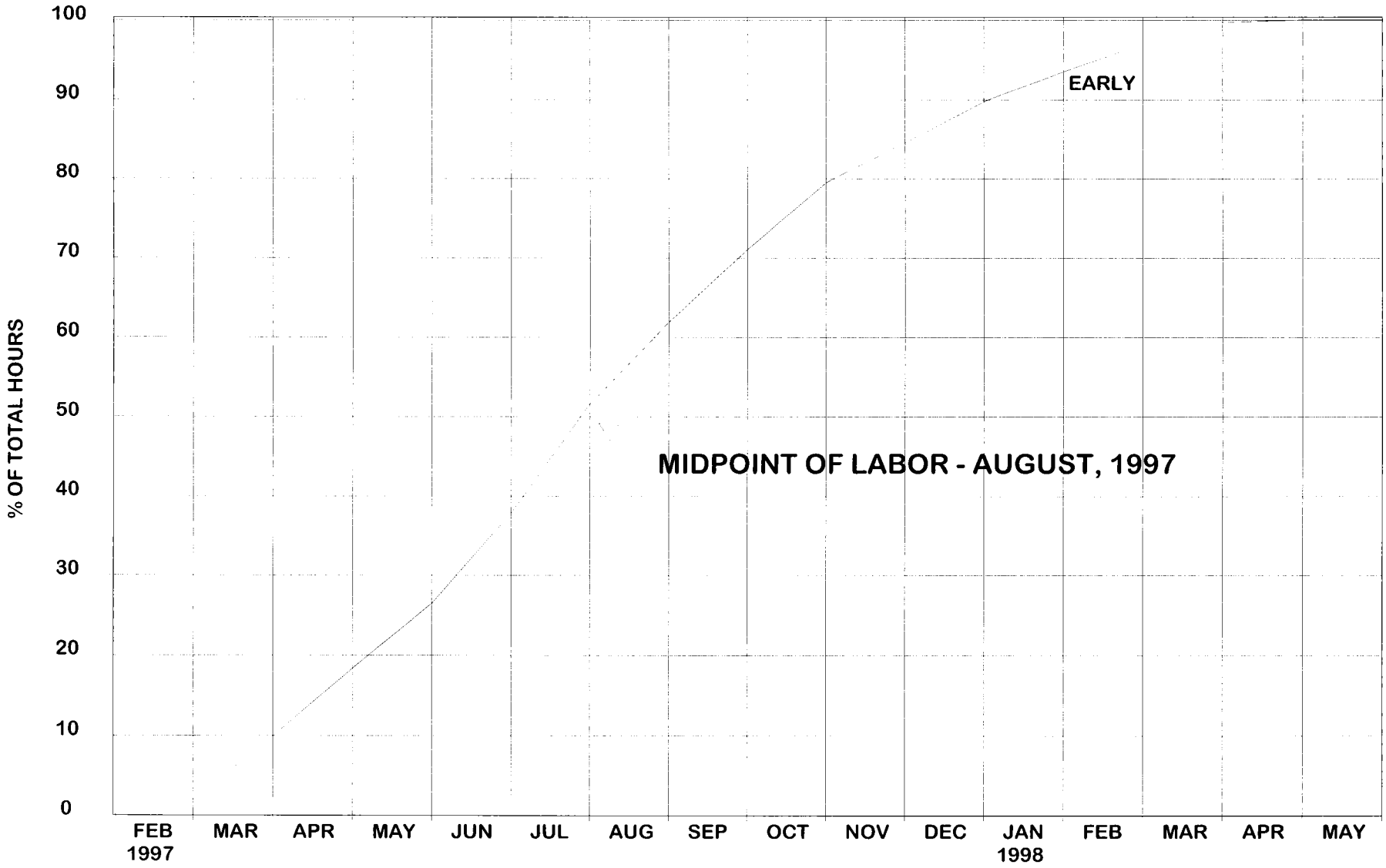
CTO 107 (POA 855110) NTC ORLANDO
OU1 ROD AND FINAL DESIGN
PROPOSED BASELINE SCHEDULE



Project Start	6SEP90
Project Finish	7APR98
Data Date	29JAN97
Plot Date	10MAR97

Schedule dates

R0YY S110

Sheet 1 of 1

POA 855110 NTC ORLANDO OU1 ROD AND FINAL DESIGN
RESOURCE SUMMARY (MID-POINT)

MIDPOINT/RESOURCE SUMMARY

Date	Revision	Checked	Approved

REFERENCES

ABB Environmental Services, Inc. (ABB-ES), 1993, Contamination Assessment Report for Site 2894, NAS Whiting Field, Milton, Florida: prepared for Southern Division, Naval Facilities Engineering Command, Contract No. N62467-89-D-0317.

Geraghty & Miller, Inc., 1986, Verification Study, Assessment of Potential Groundwater Pollution at Naval Air Station Whiting Field, Milton, Florida.

Locklear, D., June 28, 1983, Memorandum of Verbal Communication between Locklear of Naval Air Station Whiting Field Public Works Department and Pat Scott of Layne Central.

SITE-SPECIFIC HEALTH AND SAFETY PLAN

SITE 7, TANKS 1438 AND 1439

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

Unit Identification Code: N60508

Contract No.: N62467-89-D-0317/110

Prepared by:

ABB Environmental Services, Inc.
2590 Executive Center Circle, East
Tallahassee, Florida 32301

Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418

Nick Ugolini, Code 1843, Engineer-In-Charge

March 1997

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Milton, Florida

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REFERENCES

The following chapters of the Comprehensive Long-term Environmental Action Navy (CLEAN) Program District I Generic Health and Safety Plan (HASP) are applicable for the work anticipated at the site:

- ✓ 2.0 AUTHORITY AND RESPONSIBILITY OF HEALTH AND SAFETY PERSONNEL
- ✓ 3.0 TRAINING PROGRAM
- ✓ 4.0 MEDICAL SURVEILLANCE PROGRAM
- ✓ 5.0 ENGINEERING CONTROLS
- ✓ 6.0 PERSONAL PROTECTIVE LEVEL DETERMINATION
- ✓ 7.0 MONITORING EQUIPMENT
- ___ 8.0 ZONATION
- ✓ 9.0 WORK PRACTICES
- ___ 10.0 CONFINED SPACE ENTRY PROCEDURES
- ___ 11.0 EXCAVATION AND TRENCHING
- ✓ 12.0 TEMPERATURE EXTREMES
  - ✓ HEAT STRESS
  - ___ COLD STRESS
- ✓ 13.0 DECONTAMINATION
- ✓ 14.0 EMERGENCY PLANNING
- ✓ 15.0 HEALTH AND SAFETY FORMS AND DATA SHEETS
  - ___ HEALTH AND SAFETY AUDIT FORM
  - ✓ ACCIDENT REPORT FORM
  - ✓ HEALTH AND SAFETY OFFICER (HSO) CHECKLIST FOR FIELD OPERATIONS
  - ✓ MATERIAL SAFETY DATA SHEETS
  - ___ LIQUI-NOX
  - ___ ETHYL ALCOHOL (denatured)
  - ___ TRISODIUM PHOSPHATE
  - ✓ OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) POSTER
  - ✓ DAILY HEALTH AND SAFETY AUDIT FORM
- ___ 16.0 RESPIRATORY PROTECTION PROGRAM
- ___ 17.0 OTHER
  - ___ ILLUMINATION
  - ___ SANITATION
  - ___ HEALTH AND SAFETY AUDIT PROCEDURES

GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
AVGAS	aviation gasoline
CLEAN	Comprehensive Long-Term Environmental Action, Navy
CFR	Code of Federal Regulations
HASP	health and safety plan
HSM	health and safety manager
HSO	health and safety officer
HSS	health and safety supervisor
LEL	lower explosive limit
$\mu g/\ell$	micrograms per liter
NAS	Naval Air Station
OSHA	Occupational Safety and Health Administration
OVA	organic vapor analyzer
PAH	polynuclear aromatic hydrocarbons
PCAR	Preliminary Contamination Assessment Report
PM	program manager
PortaFID™	portable flame ionization detector
ppm	parts per million
TRAWING FIVE	Training Air Wing Five
™	Trademark
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank

1.0 INTRODUCTION

1.1 SCOPE AND PURPOSE. This Health and Safety Plan (HASP) has been prepared in conformance with the Comprehensive Long-Term Environmental Action, Navy (CLEAN) Program District I HASP and is intended to meet the requirements of 29 Code of Federal Regulations (CFR) 1910.120. As such, the HASP addresses those activities associated with field operations for this project. Compliance with this HASP is required of all ABB Environmental Services (ABB-ES) personnel, contractor personnel, or third parties entering the site.

1.2 PROJECT PERSONNEL.

1.2.1 Project Manager The project manager (PM) is the individual with overall project management responsibilities. Those responsibilities as they relate to health and safety include provision for the development of this site-specific HASP, the necessary resources to meet requirements of this HASP, the coordination of staff assignments to ensure that personnel assigned to the project meet medical and training requirements, and the means and materials necessary to resolve any health and safety issues that are identified or that develop on the project.

1.2.2 General Site Supervisor The General Site Supervisor is either the PM or the PM's designee who is onsite and vested with the authority by the PM to carry out day-to-day site operations, including interfacing with the site Health and Safety Officer (HSO).

1.2.3 Health and Safety Officer The HSO for this project has been designated by the PM with concurrence of the Health and Safety Supervisor (HSS), or Health and Safety Manager (HSM). The HSO will have at least an indirect line of reporting to the HSM through the HSS for the duration of his/her assignment as project HSO. The HSO is responsible for developing and implementing this site-specific HASP in accordance with the CLEAN HASP. The HSO will investigate all accidents, illnesses, and incidents occurring onsite. The HSO will also conduct safety briefings and site-specific training for onsite personnel. As necessary, the HSO will accompany all U.S. Environmental Protection Agency (USEPA), Occupational Safety and Health Administration (OSHA), or other governmental agency personnel visiting an ABB-ES site in response to health and safety issues. The HSO, in consultation with the HSS or HSM, is responsible for updating and modifying this HASP as site or environmental conditions change.

1.3 TRAINING. Training is defined under the CLEAN HASP. All personnel entering potentially contaminated areas of this site must complete a 40-hour training program and meet the requirements set by OSHA in standard 29 CFR 1910.120. Personnel without the required training will not be permitted in any area with potential for exposure to toxic substances or harmful physical agents (i.e., downrange). Refer to Chapter 3.0 of the CLEAN HASP for further information.

All personnel assigned to an ABB-ES site must participate in the site-specific training presentation, which will cover major elements of the site HASP, as well as health and safety procedures regarding an individual's specific job responsibilities and tasks. The site HSO or health and safety designee will

provide this training before an individual is permitted to work in a downrange position.

1.4 **MEDICAL SURVEILLANCE**. All personnel entering potentially contaminated areas of this site will be medically qualified for site assignment through a medical surveillance program outlined in the CLEAN HASP. Personnel who have not received medical clearance will not be permitted in any area with potential for exposure to toxic substances or harmful physical agents (i.e., downrange). Refer to Chapter 4.0 of the CLEAN HASP for further information.

2.0 FACILITY SITE CHARACTERIZATION AND ANALYSIS

2.1 SITE NAME, LOCATION, AND SIZE. The U.S. Naval Air Station (NAS) at Whiting Field is located just north of Milton, Florida. Milton is 10 miles northeast of Pensacola. NAS Whiting Field presently occupies a 3,490-acre tract of land, with easement rights to an additional 457 acres. The station is currently the home base of Training Air Wing Five (TRAWING FIVE), whose mission is to administer, coordinate, and supervise flight and academic training. The station is divided into a North Field, where fixed-wing training takes place, and a South Field used for helicopter training. Support facilities are located between the two fields.

2.2 SITE LOCATION AND HISTORY. The site is located in the eastern part of the base, between the North and South Fields approximately 200 feet east of Langley Street next to the aircraft tow road.

Tanks 1438 and 1439 were each constructed to store 218,000 gallons of aviation gasoline. They were installed in 1943 and remained in use until 1980. The storage tanks were then decommissioned and filled with water. In 1985, the tanks were demolished. One of the two tanks was reportedly removed, and the other was reportedly collapsed and abandoned in place. During demolition, free product was discovered in the excavation pit. The piping associated with the tanks (running to both the north and south airfields) was reportedly abandoned in place and filled with concrete. The tank site has never been officially closed in accordance with State regulations.

In November 1994, ABB-ES conducted a preliminary investigation of the former tanks at underground storage tank (UST) Site 7. The results of this investigation are summarized in the Preliminary Contamination Assessment Report (PCAR), January 1995. The conclusion of the preliminary investigation was that a further investigation of the soil and groundwater at UST Site 7 would be required.

2.3 SCOPE OF WORK (WORKPLAN). ABB-ES will conduct a contamination assessment investigation at the site. The assessment will include the advancement of soil borings, installation of monitoring wells, and collection of soil and groundwater samples. The work will be conducted in Level D protective wear. Soil samples collected during the course of the investigation will be screened with an organic vapor analyzer (OVA). A portable gas chromatograph will be used to screen groundwater samples for petroleum constituents.

3.0 TASK ANALYSIS

3.1 TASK ONE.

3.1.1 Hazardous Substances The contaminants of concern known or suspected to be present onsite, along with established exposure limits for those substances, are listed in Table 3-1.

3.1.2 Site Risks The following are the health hazards and safety hazards that are expected to be encountered at the site.

3.1.2.1 **Health Hazards** Contaminants to which personnel may be exposed are aviation gasoline (AVGAS) and its constituents. The primary constituents of AVGAS that represent potential health hazards are described below and summarized in Table 3-1.

BENZENE is a colorless liquid with a pleasant aromatic odor. It is a moderate irritant in small amounts, both as a gas and as a liquid. If inhaled in large amounts, it attacks the central nervous system, possibly resulting in coma and/or respiratory arrest. Chronic poisoning causes leukemia.

ETHYLBENZENE is a colorless aromatic liquid. It is a moderate skin irritant in gaseous form. Inhalation of high concentrations of the gas may cause temporary irritation of the nose, dizziness, and depression. The liquid form can blister the skin if not washed off immediately.

TOLUENE is a colorless liquid with a pleasant aromatic odor. It is a mild skin irritant. Inhalation of high concentrations of the gas can cause temporary smarting of the eyes or irritation of the respiratory system. If the liquid form is allowed to remain on the skin for a long period of time, smarting and reddening of the skin may occur. Ingestion or aspiration of the liquid causes depressed respiration and pulmonary edema and can result in kidney or liver damage.

XYLENE is a colorless liquid with a sweet odor. It is a moderate skin irritant. When present as a gas in high concentrations, it can cause temporary slight smarting of the eyes or irritation of the respiratory system, headache, and dizziness. The liquid form may cause smarting or reddening of the skin if not washed off immediately. If the liquid is aspirated into the lungs, it can result in severe coughing, distress, and rapidly developing pulmonary edema. If ingested, nausea, vomiting, cramps, headache, and coma can occur and may be fatal. Ingestion may also result in kidney and liver damage.

POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs), for the purposes of this plan and study, include those listed as parameters for USEPA Method 610. One of the more notable PAHs from this method is naphthalene. Details of this compound are listed in Chapter 4.0.

All activities at this site will be conducted in unconfined areas. This will minimize the chances of exposure of onsite personnel to either high vapor concentrations or strong liquid concentrations of any of the substances described above.

Table 3-1
Contaminants of Concern

Site-Specific Health and Safety Plan
Site 7, Tanks 1438 and 1439
Naval Air Station Whiting Field
Milton, Florida

Chemical	Approximate Odor Threshold (ppm)	Permissible Exposure Limits (ppm)	Threshold Limit Value (ppm)	Physical Characteristics	Dermal Toxicity	Remarks
Benzene	4.7	1	1	Colorless liquid, pleasant aromatic odor.	Moderate skin irritant.	Inhalation of large amounts attacks central nervous system (CNS); chronic poisoning causes leukemia.
Ethylbenzene	140	100	100	Colorless liquid, aromatic odor.	Moderate skin irritant.	Liquid blisters skin, inhalation results in dizziness, depression.
Toluene	0.17	100	50	Colorless liquid, pleasant aromatic odor.	Mild skin irritant.	Ingestion or aspiration can cause pulmonary edema, depressed respiration, kidney and liver damage.
Xylene	0.05	100	100	Colorless liquid, aromatic odor.	Moderate skin irritant.	Inhalation causes headache and dizziness; vapors irritate eyes; can be fatal if ingested.
Naphthalene (PAH)	0.003	10	10	Colorless to brown solid with an odor of mothballs.	Moderate skin irritant	Inhalation causes headache and confusion; vapors irritate eyes.
Tetraethyl Lead	--	[1]0.1	--	Soft, ductile, gray, metal, soluble in water containing a weak acid.	--	Lead poisoning may cause fatigue, anemia, abdominal pains, and neurological damage.

[1] milligrams per cubic meter.

Note: ppm = parts per million.
PAH = polynuclear aromatic hydrocarbon.
-- = not applicable.

3.1.2.2 **Safety Hazards** Safety hazards include those hazards to which personnel may be exposed that are unrelated to hazardous wastes. These include hazards such as heat stress, snake and insect bites, lifting of objects, and vehicle and air traffic. Extreme caution should be practiced by all personnel while conducting work around heavy equipment. During hot days, personnel should take time to drink fluids and cool off to avoid overheating and symptoms related to heat stress.

Lifting of heavy objects should be done with caution. Personnel should assist one another with moving heavy objects or use the appropriate equipment to accomplish these tasks.

3.1.2.3 **Conclusions and Risk Assessment** Based on all of the available information (nature of the work, potential onsite chemicals and their properties, exposure limits, etc.), hazards associated with conducting the described field work are expected to be low, assuming appropriate health and safety practices are maintained.

3.1.3 **Protective Measures** The following are the protective measures that will be used at the site.

3.1.3.1 **Engineering Controls** Whenever needed, engineering controls (i.e., fans to blow volatilized chemicals away from the work area) will be used.

3.1.3.2 **Levels of Protection** A Level D work uniform will be used at the site when organic vapor concentrations of petroleum and gasoline constituents in the exclusion zone are at background levels. Organic vapor concentrations will be monitored in the breathing zone using an OVA. Level D protection should only be used when the atmosphere contains no known hazard; all potential airborne contaminants can be monitored; and work functions preclude splash, immersion, or the potential for unexpected inhalation or contact with hazardous levels of any chemical.

If there is any detection of organic vapors at the top of the borehole or in soil cuttings, workers will upgrade to modified Level D. Modified Level D will consist of a Tyvek™ suit.

Level C personal protective equipment will be used by all personnel working in the contaminated zone if OVA monitoring of the breathing zone reveals concentrations greater than or equal to 25 parts per million (ppm) but less than 50 ppm, or the benzene 0.5/c Draeger tube reveals benzene concentrations greater than or equal to 0.5 ppm.

If benzene is detected on the Draeger tube, and concentrations of volatile organics on the flame ionization detector (FID) are detected in the breathing zone equal to or exceeding 50 ppm, all personnel will withdraw from the site until health and safety conditions at the site are reevaluated.

If a lower explosive level (LEL) meter reads greater than or equal to 10 percent, nonsparking tools will be used at the site. If the LEL meter reads less than or equal to 20 percent, all personnel will evacuate the site. Work will not resume until conditions at the site have been reevaluated.

3.1.4 **Monitoring** It is intended that real-time monitoring instrumentation will be used to monitor the work environment in order to ensure the appropriate level of protection for the site team.

3.1.4.1 **Air Sampling** To the extent feasible, the presence of airborne contaminants will be evaluated through the use of direct reading instrumentation. Information gathered will be used to ensure the adequacy of the levels of protection being used at the site, and may be used as the basis for upgrading or downgrading the levels of protection in conformance with action levels provided in this HASP and at the direction of the site HSO.

A PortaFID II (OVA) will be used at the site. Refer to Chapter 7.0 of the CLEAN HASP for information on the calibration and maintenance of this equipment.

3.1.4.2 **Personal Monitoring** Personal monitoring will be undertaken to characterize the personal exposure of high risk employees to the hazardous substances they may encounter onsite. Personal monitoring will be conducted on a representative basis. Personnel who are represented by the sampling will be noted in field logs.

A Thermoluminescent Dosimetry Body Badge is the personal monitoring equipment that will be used at the site. Refer to Chapter 7.0 of the CLEAN HASP for information on the maintenance and calibration of the equipment.

4.0 MATERIAL SAFETY DATA SHEETS

This section contains the Material Safety Data Sheets for the contaminants of concern listed in Table 3-1.

BENZENE

BNZ

Common Symptoms	Watery liquid Colorless Gasoline-like odor
Benzol Benzole	Floats on water. Flammable, irritating vapor is produced. Freezing point is 42°F.

Avoid contact with liquid and vapor. Keep people away.
Wear goggles and self-contained breathing apparatus.
Shut off ignition sources and call fire department.
Stop discharge if possible.
Stay upwind and use water spray to "knock down" vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear goggles and self-contained breathing apparatus.
Extinguish with dry chemical, foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose, and throat.
If inhaled, will cause headache, difficult breathing, or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes.
Flush affected area with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)
Issue warning-high flammability
Restrict access

2. LABEL

2.1 Category: Flammable liquid
2.2 Class: 3

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Aromatic Hydrocarbon
3.2 Formula: C_6H_6
3.3 IMO/UN Designation: 3.2/1114
3.4 DOT ID No.: 1114
3.5 CAS Registry No.: 71-43-2

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Colorless
4.3 Odor: Aromatic; rather pleasant aromatic odor; characteristic odor

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Hydrocarbon vapor canister, supplied air or a hose mask; hydrocarbon-insoluble rubber or plastic gloves; chemical goggles or face splash shield; hydrocarbon-insoluble apron such as neoprene.
5.2 Symptoms Following Exposure: Dizziness, excitation, pallor, followed by flushing, weakness, headache, breathlessness, chest constriction. Coma and possible death.
5.3 Treatment of Exposure: SKIN: flush with water followed by soap and water; remove contaminated clothing and wash skin. EYES: flush with plenty of water until irritation subsides. INHALATION: remove from exposure immediately. Call a physician. IF breathing is irregular or stopped, start resuscitation, administer oxygen.
5.4 Threshold Limit Value: 10 ppm
5.5 Short Term Inhalation Limits: 75 ppm for 30 min.
5.6 Toxicity by Ingestion: Grade 3; LD_{50} = 50 to 500 mg/kg
5.7 Late Toxicity: Leukemia
5.8 Vapor (Gas) Irritant Characteristics: If present in high concentrations, vapors may cause irritation of eyes or respiratory system. The effect is temporary.
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 Odor Threshold: 4.68 ppm
5.11 IDLH Value: 2,000 ppm

6. FIRE HAZARDS

6.1 Flash Point: 12°F C.C.
6.2 Flammable Limits in Air: 1.3%-7.9%
6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back
6.7 Ignition Temperature: 1097°F
6.8 Electrical Hazard: Class I,Group D
6.9 Burning Rate: 6.0 mm/min
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity with Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 32

8. WATER POLLUTION

8.1 Aquatic Toxicity:
5 ppm/6 hr/minnow/lethal/distilled water
20 ppm/24 hr/sunfish/TL_m/tap water
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): 1.2 lb/lb, 10 days
8.4 Food Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity:
Industrial pure . . . . . 99+%
Thiophene-free . . . . . 99+%
Nitration . . . . . 99+%
Industrial 90% . . . . . 85+%
Reagent . . . . . 99+%
9.2 Storage Temperature: Open
9.3 Inert Atmosphere: No requirement
9.4 Venting: Pressure-vacuum

10. HAZARD ASSESSMENT CODE
(See Hazard Assessment Handbook)

A-T-U-V-W

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Flammable liquid
11.2 NAS Hazard Rating for Bulk Water Transportation:

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	3
Water Pollution	
Human Toxicity	3
Aquatic Toxicity	1
Aesthetic Affect	3
Reactivity	
Other Chemicals	2
Water	1
Self Reaction	0

11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: 78.11
12.3 Boiling Point at 1 atm: 176°F = 80.1°C = 353.3°K
12.4 Freezing Point: 42.0°F = 5.5°C = 278.7°K
12.5 Critical Temperature: 552.0°F = 288.9°C = 562.1°K
12.6 Critical Pressure: 710 psia = 48.3 atm = 4.89 MN/m^2
12.7 Specific Gravity: 0.879 at 20°C (liquid)
12.8 Liquid Surface Tension: 28.9 dynes/cm = 0.289 N/m at 20°C
12.9 Liquid Water Interfacial Tension: 35 dynes/cm = 0.035 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity: 2.7
12.11 Ratio of Specific Heats of Vapor (Gas): 1.061
12.12 Latent Heat of Vaporization: 169 Btu/lb = 94.1 cal/g = 3.94×10^5 J/kg
12.13 Heat of Combustion: --17,460 Btu/lb = --9698 cal/g = -406.0×10^5 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: 30.45 cal/g
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: 3.22 psia

NOTES

BNZ	BENZENE

12.17 SATURATED LIQUID DENSITY

Temperature (degrees F)	Pounds per cubic foot
55	55.330
60	55.140
65	54.960
70	54.770
75	54.580
80	54.400
85	54.210
90	54.030
95	53.840
100	53.660
105	53.470
110	53.290
115	53.100
120	52.920
125	52.730
130	52.540
135	52.360
140	52.170
145	51.990
150	51.800
155	51.620
160	51.430
165	51.250
170	51.060
175	50.870

12.18 LIQUID HEAT CAPAICTY

Temperature (degrees F)	British thermal unit per pound-F
45	.394
50	.396
55	.398
60	.400
65	.403
70	.405
75	.407
80	.409
85	.411
90	.414
95	.416
100	.418

12.19 LIQUID THERMAL CONDUCTIVITY

Temperature (degrees F)	British thermal unit-inch per hour-square foot-F
75	.988
80	.981
85	.975
90	.969
95	.962
100	.956
105	.950
110	.944
115	.937
120	.931
125	.925
130	.919
135	.912
140	.906
145	.900
150	.893
155	.887
160	.881
165	.875
170	.868

12.20 LIQUID VISCOSITY

Temperature (degrees F)	Centipoise
55	.724
60	.693
65	.665
70	.638
75	.612
80	.588
85	.566
90	.544
95	.524
100	.505
105	.487
110	.470
115	.453
120	.438

12.21 SOLUBILITY IN WATER

Temperature (degrees F)	Pounds per 100 pounds of water
77.02	.180

12.22 SATURATED VAPOR PRESSURE

Temperature (degrees F)	Pounds per square inch
50	.881
60	1.171
70	1.535
80	1.989
90	2.547
100	3.227
110	4.049
120	5.033
130	6.201
140	7.577
150	9.187
160	11.060
170	13.220
180	15.700
190	18.520
200	21.740
210	25.360

12.23 SATURATED VAPOR DENSITY

Temprature (degrees F)	Pounds per cubic foot
50	.01258
60	.01639
70	.02109
80	.02681
90	.03371
100	.04196
110	.05172
120	.06317
130	.07652
140	.09194
150	.10960
160	.12980
170	.15270
180	.17850
190	.20750
200	.23970
210	.27560

12.24 IDEAL GAS HEAT CAPACITY

Temperature (degrees F)	British thermal unit per pound-F
0	.204
25	.219
50	.234
75	.248
100	.261
125	.275
150	.288
175	.301
200	.313
225	.325
250	.337
275	.349
300	.360
325	.371
350	.381
375	.392
400	.402
425	.412
450	.421
475	.431
500	.440
525	.449
550	.457
575	.465
600	.474

ETHYLBENZENE

ETB

Common Symptoms	Liquid	Colorless	Sweet, gasoline-like odor
Phenylethane EB	Floats on water. Flammable, irritating vapor is produced.		

Avoid contact with liquid and vapor.
Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves).
Shut off ignition sources and call fire department.
Stop discharge if possible. Keep people away.
Stay upwind and use water spray to "knock down" vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear goggles, self-contained breathing apparatus and rubber overclothing (including gloves).
Extinguish with dry chemical, foam, or carbon dioxide.
Water may be ineffective on fire.
Cook exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose, and throat.
If inhaled, will cause dizziness and/or difficult breathing.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Will burn skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)
Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 **Category:** Flammable liquid
2.2 **Class:** 3

3. CHEMICAL DESIGNATIONS

3.1 **CG Compatibility Class:** Aromatic Hydrocarbon
3.2 **Formula:** $C_6H_5CH_2CH_3$
3.3 **IMO/UN Designation:** 3.3/1175
3.4 **DOT ID No.:** 1175
3.5 **CAS Registry No.:** 100-41-4

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid
4.2 **Color:** Colorless
4.3 **Odor:** Aromatic

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Self-contained breathing apparatus; safety goggles.
5.2 **Symptoms Following Exposure:** Inhalation may cause irritation of nose, dizziness, depression. Moderate irritation of eye with corneal injury possible. Irritates skin and may cause blisters.
5.3 **Treatment of Exposure:** INHALATION: If ill effects occur, remove to fresh air, keep him warm and quiet, and get medical help promptly; if breathing stops, give artificial respiration. INGESTION: induce vomiting only upon physician's approval; material in lung may cause chemical pneumonia. SKIN AND EYES: promptly flush with plenty of water (15 min. for eyes) and get medical attention; remove and wash contaminated clothing before reuse.
5.4 **Threshold Limit Value:** 100 ppm
5.5 **Short Term Inhalation Limits:** 200 ppm for 30 min.
5.6 **Toxicity by Ingestion:** Grade 2; LD_{50} = 0.5 to 5 g/kg (rat)
5.7 **Late Toxicity:** Data not available
5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary.
5.9 **Liquid or Solid Irritant Characteristics:** Causes smarting of the skin and first-degree burns on short exposure; may cause secondary burns on long exposure.
5.10 **Odor Threshold:** 140 ppm
5.11 **IDLH Value:** 2,000 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 80°F O.C.; 59°F. C.C.
6.2 **Flammable Limits in Air:** 1.0%-6.7%
6.3 **Fire Extinguishing Agents:** Foam (most effective), water fog, carbon dioxide or dry chemical.
6.4 **Fire Extinguishing Agents Not to be Used:** Not pertinent
6.5 **Special Hazards of Combustion Products:** Irritating vapors are generated when heated.
6.6 **Behavior in Fire:** Vapor is heavier than air and may travel considerable distance to the source of ignition and flash back.
6.7 **Ignition Temperature:** 860°F
6.8 **Electrical Hazard:** Not pertinent
6.9 **Burning Rate:** 6.8 mm/min.
6.10 **Adiabatic Flame Temperature:** Data not available
6.11 **Stoichiometric Air to Fuel Ratio:** Data not available
6.12 **Flame Temperature:** Data not available

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction
7.2 **Reactivity with Common Materials:** No reaction
7.3 **Stability During Transport:** Stable
7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
7.5 **Polymerization:** Not pertinent
7.6 **Inhibitor of Polymerization:** Not pertinent
7.7 **Molar Ratio (Reactant to Product):** Data not available
7.8 **Reactivity Group:** 32

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 29 ppm/96 hr/bluegill/TL_m/fresh water
8.2 **Waterfowl Toxicity:** Data not available
8.3 **Biological Oxygen Demand (BOD):** 2.8% (theor.), 5 days
8.4 **Food Concentration Potential:** None

9. SHIPPING INFORMATION

9.1 **Grades of Purity:** Research grade:99.98%; pure grade: 99.5%; technical grade: 99.0%
9.2 **Storage Temperature:** Ambient
9.3 **Inert Atmosphere:** No requirement
9.4 **Venting:** Open (flame arrester) or pressure-vacuum.

10. HAZARD ASSESSMENT CODE
(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 **Code of Federal Regulations:** Flammable liquid.
11.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	2
Liquid or Solid Irritant	2
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	3
Aesthetic Affect	2
Reactivity	
Other Chemicals	1
Water	0
Self Reaction	0

11.3 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 **Physical State at 15°C and 1 atm:** Liquid
12.2 **Molecular Weight:** 106.17
12.3 **Boiling Point at 1 atm:** 277.2°F = 136.2°C = 409.4°K
12.4 **Freezing Point:** --139°F = --95.0°C = 178°K
12.5 **Critical Temperature:** 651.0°F = 343.9°C = 617.1°K
12.6 **Critical Pressure:** 523 psia = 35.6 atm = 3.61 MN/m^2
12.7 **Specific Gravity:** 0.867 at 20°C (liquid)
12.8 **Liquid Surface Tension:** 29.2 dynes/cm = 0.0292 N/m at 20°C
12.9 **Liquid Water Interfacial Tension:** 35.48 dynes/cm = 0.03548 N/m at 20°C
12.10 **Vapor (Gas) Specific Gravity:** Not pertinent
12.11 **Ratio of Specific Heats of Vapor (Gas):** 1.071
12.12 **Latent Heat of Vaporization:** 144 Btu/lb = 80.1 cal/g = 3.35 X 10^5 J/kg
12.13 **Heat of Combustion:** --17,780 Btu/lb = --9877 cal/g = --413.6 X 10^5 J/kg
12.14 **Heat of Decomposition:** Not pertinent
12.15 **Heat of Solution:** Not pertinent
12.16 **Heat of Polymerization:** Not pertinent
12.25 **Heat of Fusion:** Data not available
12.26 **Limiting Value:** Data not available
12.27 **Reid Vapor Pressure:** 0.4 psia

NOTES

ETB — ETHYLBENZENE

12.17 SATURATED LIQUID DENSITY

Temperature (degrees F)	Pounds per cubic foot
40	54.990
50	54.680
60	54.370
70	54.060
80	53.750
90	53.430
100	53.120
110	52.610
120	52.500
130	52.190
140	51.870
150	51.560
160	51.250
170	50.940
180	50.620
190	50.310
200	50.000
210	49.690

12.18 LIQUID HEAT CAPAICTY

Temperature (degrees F)	British thermal unit per pound-F
40	.402
50	.404
60	.407
70	.409
80	.412
90	.414
100	.417
110	.419
120	.421
130	.424
140	.426
150	.429
160	.431
170	.434
180	.436
190	.439
200	.441
210	.443

12.19 LIQUID THERMAL CONDUCTIVITY

Temperature (degrees F)	British thermal unit-inch per hour-square foot-F
−90	1.065
−80	1.056
−70	1.047
−60	1.037
−50	1.028
−40	1.018
−30	1.009
−20	1.000
−10	.990
0	.981
10	.971
20	.962
30	.953
40	.943
50	.934
60	.924
70	.915
80	.906
90	.896
100	.887
110	.877
120	.868
130	.859
140	.849
150	.840
160	.830

12.20 LIQUID VISCOSITY

Temperature (degrees F)	Centipoise
40	.835
50	.774
60	.719
70	.670
80	.626
90	.586
100	.550
110	.518
120	.488
130	.461
140	.436
150	.414
160	.393
170	.374
180	.356
190	.340
200	.325
210	.311

12.21 SOLUBILITY IN WATER

Temperature (degrees F)	Pounds per 100 pounds of water
68.02	.020

12.22 SATURATED VAPOR PRESSURE

Temperature (degrees F)	Pounds per square inch
80	.202
100	.370
120	.644
140	1.071
160	1.713
180	2.643
200	3.953
220	5.747
240	8.147
260	11.290
280	15.320
300	20.410
320	26.730
340	34.460
360	43.800
380	54.950

12.23 SATURATED VAPOR DENSITY

Temprature (degrees F)	Pounds per cubic foot
80	.00370
100	.00654
120	.01099
140	.01767
160	.02734
180	.04087
200	.05926
220	.08363
240	.11520
260	.15510
280	.20490
300	.26570
320	.33910
340	.42620
360	.52850
380	.64720

12.24 IDEAL GAS HEAT CAPACITY

Temperature (degrees F)	British thermal unit per pound-F
−400	−.007
−350	.026
−300	.060
−250	.093
−200	.125
−150	.157
−100	.187
−50	.217
0	.246
50	.274
100	.301
150	.327
200	.353
250	.377
300	.401
350	.424
400	.446
450	.467
500	.487
550	.507
600	.525

TOLUENE

TOL

Common Symptoms	Watery liquid	Colorless	Pleasant odor
Toluol Methylbenzene Methylbenzol	Floats on water. Flammable, irritating vapor is produced.		

Stop discharge if possible. Keep people away.
Shut off ignition sources and call fire department.
Stay upwind and use water spray to "knock down" vapor.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear goggles and self-contained breathing apparatus.
Extinguish with dry chemical, foam, or carbon dioxide.
Water may be ineffective on fire.
Cook exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose, and throat.
If inhaled, will cause nausea, vomiting, headache, dizziness, difficult breathing, or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
If swallowed, will cause nausea, vomiting, or loss of consciousness.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

Dangerous to aquatic life in high concentrations.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)
Issue warning-high flammability
Evacuate area

2. LABEL

2.1 **Category:** Flammable liquid
2.2 **Class:** 3

3. CHEMICAL DESIGNATIONS

3.1 **CG Compatibility Class:** Aromatic Hydrocarbon
3.2 **Formula:** $C_6H_5CH_3$
3.3 **IMO/UN Designation:** 3.2/1294
3.4 **DOT ID No.:** 1294
3.5 **CAS Registry No.:** 108-88-3

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid
4.2 **Color:** Colorless
4.3 **Odor:** Pungent, aromatic, benzene-like; distinct, pleasant

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Air-supplied mask; goggles or face shield; plastic gloves.
5.2 **Symptoms Following Exposure:** Vapors irritate eyes and upper respiratory tract; cause dizziness, headache, anesthesia, respiratory arrest. Liquid irritates eyes and causes drying of skin. If aspirated, causes coughing, gagging, distress, and rapidly developing pulmonary edema. If ingested, causes vomiting, griping, diarrhea, depressed respiration.
5.3 **Treatment of Exposure:** INHALATION: remove to fresh air, give artificial respiration and oxygen if needed; call a doctor. INGESTION: do NOT induce vomiting; call a doctor. EYES: flush with water for at least 15 min. SKIN: wipe off, wash with soap and water.
5.4 **Threshold Limit Value:** 100 ppm
5.5 **Short Term Inhalation Limits:** 600 ppm for 30 min.
5.6 **Toxicity by Ingestion:** Grade 2; LD_{50} = 0.5 to 5 g/kg
5.7 **Late Toxicity:** Kidney and liver damage may follow ingestion.
5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 **Odor Threshold:** 0.17 ppm
5.11 **IDLH Value:** 2,000 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 40°F C.C.; 55° F. O.C.
6.2 **Flammable Limits in Air:** 1.27%-7%
6.3 **Fire Extinguishing Agents:** Carbon dioxide or dry chemical for small fires, ordinary foam for large fires.
6.4 **Fire Extinguishing Agents Not to be Used:** Water may be ineffective.
6.5 **Special Hazards of Combustion Products:** Not pertinent
6.6 **Behavior in Fire:** Vapor is heavier than air and may travel a considerable distance to a source of ignition and flash back.
6.7 **Ignition Temperature:** 997°F
6.8 **Electrical Hazard:** Class I, Group D
6.9 **Burning Rate:** 6.7 mm/min.
6.10 **Adiabatic Flame Temperature:** Data not available.
6.11 **Stoichiometric Air to Fuel Ratio:** Data not available.
6.12 **Flame Temperature:** Data not available.

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction
7.2 **Reactivity with Common Materials:** No reaction
7.3 **Stability During Transport:** Stable
7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
7.5 **Polymerization:** Not pertinent
7.6 **Inhibitor of Polymerization:** Not pertinent
7.7 **Molar Ratio (Reactant to Product):** Data not available
7.8 **Reactivity Group:** 32

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 1180 mg/l/96 hr/sunfish/TL_m/fresh water
8.2 **Waterfowl Toxicity:** Data not available
8.3 **Biological Oxygen Demand (BOD):** 0%, 5 days; 38% (theor.), 8 days
8.4 **Food Concentration Potential:** None

9. SHIPPING INFORMATION

9.1 **Grades of Purity:** Research, reagent, nitration-all 99.8 + %; industrial: contains 94 + %, with 5% xylene and small amounts of benzene and nonaromatic hydrocarbons; 90/120: less pure than industrial.
9.2 **Storage Temperature:** Ambient
9.3 **Inert Atmosphere:** No requirement
9.4 **Venting:** Open (flame arrester) or pressure-vacuum.

10. HAZARD ASSESSMENT CODE
(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 **Code of Federal Regulations:** Flammable liquid.
11.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	3
Aesthetic Affect	2
Reactivity	
Other Chemicals	1
Water	0
Self Reaction	0

11.3 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 **Physical State at 15°C and 1 atm:** Liquid
12.2 **Molecular Weight:** 92.14
12.3 **Boiling Point at 1 atm:** 231.1°F = 110.6°C = 383.8°K
12.4 **Freezing Point:** --139°F = --95.0°C = 178.2°K
12.5 **Critical Temperature:** 605.4°F = 318.6°C = 591.8°K
12.6 **Critical Pressure:** 596.1 psia = 40.55 atm = 4.108 MN/m^2
12.7 **Specific Gravity:** 0.867 at 20°C (liquid)
12.8 **Liquid Surface Tension:** 29.0 dynes/cm = 0.0290 N/m at 20°C
12.9 **Liquid Water Interfacial Tension:** 36.1 dynes/cm = 0.0361 N/m at 25°C
12.10 **Vapor (Gas) Specific Gravity:** Not pertinent
12.11 **Ratio of Specific Heats of Vapor (Gas):** 1.089
12.12 **Latent Heat of Vaporization:** 155 Btu/lb = 86.1 cal/g = 3.61 X 10^5 J/kg
12.13 **Heat of Combustion:** -17,430 Btu/lb = 9686 cal/g = -4.05.6 X 10^5 J/kg
12.14 **Heat of Decomposition:** Not pertinent
12.15 **Heat of Solution:** Not pertinent
12.16 **Heat of Polymerization:** Not pertinent
12.25 **Heat of Fusion:** 17.17 cal/g
12.26 **Limiting Value:** Data not available
12.27 **Reid Vapor Pressure:** 1.1 psia

NOTES

TOL	TOLUENE

12.17 SATURATED LIQUID DENSITY

Temperature (degrees F)	Pounds per cubic foot
-30	57.180
-20	56.870
-10	56.550
0	56.240
10	55.930
20	55.620
30	55.310
40	54.990
50	54.680
60	54.370
70	54.060
80	53.750
90	53.430
100	53.120
110	52.810
120	52.500

12.18 LIQUID HEAT CAPAICTY

Temperature (degrees F)	British thermal unit per pound-F
0	.396
5	.397
10	.399
15	.400
20	.402
25	.403
30	.404
35	.406
40	.407
45	.409
50	.410
55	.411
60	.413
65	.414
70	.415
75	.417
80	.418
85	.420
90	.421
95	.422
100	.424
105	.425
110	.427
115	.428
120	.429
125	.431

12.19 LIQUID THERMAL CONDUCTIVITY

Temperature (degrees F)	British thermal unit-inch per hour-square foot-F
0	1.026
10	1.015
20	1.005
30	.994
40	.983
50	.972
60	.962
70	.951
80	.940
90	.929
100	.919
110	.908
120	.897
130	.886
140	.876
150	.865
160	.854
170	.843
180	.833
190	.822
200	.811
210	.800

12.20 LIQUID VISCOSITY

Temperature (degrees F)	Centipoise
0	1.024
5	.978
10	.935
15	.894
20	.857
25	.821
30	.788
35	.757
40	.727
45	.700
50	.673
55	.649
60	.625
65	.603
70	.582
75	.562
80	.544
85	.526
90	.509
95	.493
100	.477

12.21 SOLUBILITY IN WATER

Temperature (degrees F)	Pounds per 100 pounds of water
68.02	.050

12.22 SATURATED VAPOR PRESSURE

Temperature (degrees F)	Pounds per square inch
0	.038
10	.057
20	.084
30	.121
40	.172
50	.241
60	.331
70	.449
80	.600
90	.792
100	1.033
110	1.332
120	1.700
130	2.148
140	2.690
150	3.338
160	4.109
170	5.018
180	6.083
190	7.323
200	8.758
210	10.410

12.23 SATURATED VAPOR DENSITY

Temprature (degrees F)	Pounds per cubic foot
0	.00070
10	.00103
20	.00150
30	.00212
40	.00296
50	.00405
60	.00547
70	.00727
80	.00954
90	.01237
100	.01584
110	.02007
120	.02518
130	.03127
140	.03850
150	.04700
160	.05691
170	.06840
180	.08162
190	.09675
200	.11400
210	.13340

12.24 IDEAL GAS HEAT CAPACITY

Temperature (degrees F)	British thermal unit per pound-F
0	.228
25	.241
50	.255
75	.268
100	.281
125	.294
150	.306
175	.319
200	.331
225	.343
250	.355
275	.367
300	.378
325	.389
350	.400
375	.411
400	.422
425	.432
450	.443
475	.453
500	.462
525	.472
550	.482
575	.491
600	.500

m-XYLENE

XLM

Common Symptoms	Watery liquid	Colorless	Sweet odor
1,3-Dimethylbenzene Xylol	Floats on water. Flammable, irritating vapor is produced.		

Stop discharge if possible. Keep people away.
Call fire department.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear self-contained breathing apparatus.
Extinguish with foam, dry chemical, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose, and throat.
If inhaled, will cause headache, difficult breathing, or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
If swallowed, will cause nausea, vomiting, or loss of consciousness.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)
Issue warning-high flammability
Evacuate area
Should be removed
Chemical and physical treatment

2. LABEL

2.1 **Category:** Flammable liquid
2.2 **Class:** 3

3. CHEMICAL DESIGNATIONS

3.1 **CG Compatibility Class:** Aromatic Hydrocarbon
3.2 **Formula:** m-$C_6H_4(CH_3)_2$
3.3 **IMO/UN Designation:** 3.2/1307
3.4 **DOT ID No.:** 1307
3.5 **CAS Registry No.:** 108-38-3

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid
4.2 **Color:** Colorless
4.3 **Odor:** Like benzene; characteristic aromatic

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Approved canister or air-supplied mask; goggles or face shield; plastic gloves and boots.
5.2 **Symptoms Following Exposure:** Vapors cause headache and dizziness. Liquid irritates eyes and skin. If taken into lungs, causes severe coughing, distress, and rapidly developing pulmonary edema. If ingested, causes nausea, vomiting, cramps, headache, and coma; can be fatal. Kidney and liver damage can occur.
5.3 **Treatment of Exposure:** INHALATION: remove to fresh air; administer artificial respiration and oxygen if required; call a doctor. INGESTION: do NOT induce vomiting; call a doctor. EYES: flush with water for at least 15 min. SKIN: wipe off, wash with soap and water.
5.4 **Threshold Limit Value:** 100 ppm
5.5 **Short Term Inhalation Limits:** 300 ppm for 30 min.
5.6 **Toxicity by Ingestion:** Grade 3; LD_{50} = 50 to 500 g/kg
5.7 **Late Toxicity:** Kidney and liver damage
5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled or clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 **Odor Threshold:** 0.05 ppm
5.11 **IDLH Value:** 10,000 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 84°F C.C.
6.2 **Flammable Limits in Air:** 1.1%-6.4%
6.3 **Fire Extinguishing Agents:** Foam, dry chemical, or carbon dioxide
6.4 **Fire Extinguishing Agents Not to be Used:** Water be ineffective.
6.5 **Special Hazards of Combustion Products:** Not pertinent
6.6 **Behavior in Fire:** Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back.
6.7 **Ignition Temperature:** 986°F
6.8 **Electrical Hazard:** Class I, Group D
6.9 **Burning Rate:** 5.8 mm/min.
6.10 **Adiabatic Flame Temperature:** Data not available
6.11 **Stoichiometric Air to Fuel Ratio:** Data not available
6.12 **Flame Temperature:** Data not available

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction
7.2 **Reactivity with Common Materials:** No reaction
7.3 **Stability During Transport:** Stable
7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
7.5 **Polymerization:** Not pertinent
7.6 **Inhibitor of Polymerization:** Not pertinent
7.7 **Molar Ratio (Reactant to Product):** Data not available
7.8 **Reactivity Group:** 32

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 22 ppm/96 hr/bluegill/TL_m/fresh water
8.2 **Waterfowl Toxicity:** Data not available
8.3 **Biological Oxygen Demand (BOD):** 0 lb/lb, 5 days; 0% (theor.), 8 days
8.4 **Food Concentration Potential:** Data not available

9. SHIPPING INFORMATION

9.1 **Grades of Purity:** Research: 99.99%; Pure: 99.9%; Technical: 99.2%
9.2 **Storage Temperature:** Ambient
9.3 **Inert Atmosphere:** No requirement
9.4 **Venting:** Open (flame arrester) or pressure-vacuum

10. HAZARD ASSESSMENT CODE (See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 **Code of Federal Regulations:** Flammable liquid
11.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	3
Aesthetic Affect	2
Reactivity	
Other Chemicals	1
Water	0
Self Reaction	0

11.3 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 **Physical State at 15°C and 1 atm:** Liquid
12.2 **Molecular Weight:** 106.16
12.3 **Boiling Point at 1 atm:** 269.4°F = 131.9° = 405.1°K
12.4 **Freezing Point:** --54.2°F = --47.9°C = 225.3°K
12.5 **Critical Temperature:** 650.8°F = 343.8°C = 617.0°K
12.6 **Critical Pressure:** 513.8 atm = 34.96 psia = 3,640 MN/m^2
12.7 **Specific Gravity:** 0.864 at 20°C (liquid)
12.8 **Liquid Surface Tension:** 28.6 dynes/cm = 0.0286 N/m at 20°C
12.9 **Liquid Water Interfacial Tension:** 36.4 dynes/cm = 0.0364 N/m at 30°C
12.10 **Vapor (Gas) Specific Gravity:** Not pertinent
12.11 **Ratio of Specific Heats of Vapor (Gas):** 1.071
12.12 **Latent Heat of Vaporization:** 147 Btu/lb = 81.9 cal/g = 3.43×10^5 J/kg
12.13 **Heat of Combustion:** --17.554 Btu/lb = --9752.4 cal/g = -406.31×10^5 J/kg
12.14 **Heat of Decomposition:** Not pertinent
12.15 **Heat of Solution:** Not pertinent
12.16 **Heat of Polymerization:** Not pertinent
12.25 **Heat of Fusion:** 26.01 cal/g
12.26 **Limiting Value:** Data not available
12.27 **Reid Vapor Pressure:** 0.34 psia

NOTES

XLM	m-XYLENE

12.17 SATURATED LIQUID DENSITY

Temperature (degrees F)	Pounds per cubic foot
15	55.400
20	55.260
25	55.130
30	54.990
35	54.850
40	54.710
45	54.570
50	54.430
55	54.290
60	54.160
65	54.020
70	53.880
75	53.740
80	53.600
85	53.460
90	53.320
95	53.180
100	53.050

12.18 LIQUID HEAT CAPAICTY

Temperature (degrees F)	British thermal unit per pound-F
40	.387
50	.393
60	.398
70	.404
80	.410
90	.415
100	.421
110	.426
120	.432
130	.437
140	.443
150	.448
160	.454
170	.460
180	.465
190	.471
200	.476
210	.482

12.19 LIQUID THERMAL CONDUCTIVITY

Temperature (degrees F)	British thermal unit-inch per hour-square foot-F
35	.962
40	.953
45	.944
50	.935
55	.926
60	.917
65	.908
70	.899
75	.890
80	.881
85	.873
90	.864
95	.855
100	.846

12.20 LIQUID VISCOSITY

Temperature (degrees F)	Centipoise
15	.938
20	.898
25	.862
30	.827
35	.794
40	.764
45	.735
50	.708
55	.682
60	.658
65	.635
70	.613
75	.592
80	.572
85	.554

12.21 SOLUBILITY IN WATER

Temperature (degrees F)	Pounds per 100 pounds of water
	K
	N
	S
	O
	L
	U
	B
	L
	E

12.22 SATURATED VAPOR PRESSURE

Temperature (degrees F)	Pounds per square inch
60	.090
70	.127
80	.177
90	.242
100	.326
110	.434
120	.571
130	.743
140	.956
150	1.219
160	1.538
170	1.924
180	2.388
190	2.939
200	3.590
210	4.355
220	5.247
230	6.282
240	7.476
250	8.846
260	10.410

12.23 SATURATED VAPOR DENSITY

Temprature (degrees F)	Pounds per cubic foot
60	.00172
70	.00238
80	.00324
90	.00435
100	.00577
110	.00754
120	.00975
130	.01247
140	.01577
150	.01977
160	.02455
170	.03023
180	.03691
190	.04473
200	.05382
210	.06431
220	.07635
230	.09009
240	.10570
250	.12330
260	.14310

12.24 IDEAL GAS HEAT CAPACITY

Temperature (degrees F)	British thermal unit per pound-F
0	.247
25	.260
50	.273
75	.286
100	.299
125	.311
150	.324
175	.336
200	.348
225	.360
250	.371
275	.383
300	.394
325	.406
350	.417
375	.427
400	.438
425	.449
450	.459
475	.469
500	.479
525	.489
550	.499
575	.508
600	.517

TETRAETHYL LEAD

TEL

Common Symptoms	Oily liquid	Colorless, but generally dyed red	Fruity odor
TEL Lead tetraethyl	Sinks in water. Poisonous, flammable vapor is produced.		

AVOID CONTACT WITH LIQUID AND VAPOR. Keep people away.
Wear goggles, self-contained breathing apparatus, and rubber overclothing.
Stop discharge if possible.
Call fire department.
Stay upwind and use water spray to "knock down" vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Combustible.
POISONOUS GASSES ARE PRODUCED IN FIRE.
Containers may explode in fire.
Vapor may explode if ignited in an enclosed area.
Wear goggles, self-contained breathing apparatus, and rubber overclothing, including gloves.
Combat fires from behind barrier or protected location.
Flood discharge area with water.
Extinguish with water, dry chemicals, foam, or carbon dioxide.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
POISONOUS IF INHALED OR IF SKIN IS EXPOSED.
Irritating to eyes.
Move to fresh air.
If breathing has stopped, give artificial respiration.

LIQUID
POISONOUS IF SWALLOWED OR IF SKIN IS EXPOSED.
Will burn eyes.
Remove contaminated clothing and shoes.
Flush affected area with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)
Issue warning-poison, water contaminant
Restrict access
Should be removed
Chemical and physical treatment

2. LABEL

2.1 **Category:** Poison
2.2 **Class:** 6

3. CHEMICAL DESIGNATIONS

3.1 **CG Compatibility Class:** Not listed
3.2 **Formula:** $Pb(C_2H_5)_4$
3.3 **IMO/UN Designation:** 6.1/1649
3.4 **DOT ID No.:** 1649
3.5 **CAS Registry No.:** 78-00-2

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid
4.2 **Color:** Dyed red or other distinctive color.
4.3 **Odor:** Sweet

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Organic vapor type canister face mask for short periods; air line type for longer periods; neoprene-coated, liquid-proof gloves; protective goggles or face shield; white or light-colored clothing; rubber shoes or boots.
5.2 **Symptoms Following Exposure:** Increased urinary output of lead. If a large degree of absorption from inhalation or skin contact, may cause insomnia, excitability, delirium, coma, and death. Do not confuse with inorganic lead.
5.3 **Treatment of Exposure:** Remove victim from contaminated area and consult physician immediately. INGESTION: induce vomiting. SKIN: wash immediately with kerosene or similar petroleum distillate followed by soap and water.
5.4 **Threshold Limit Value:** 0.1 mg/m^3
5.5 **Short Term Inhalation Limits:** 0.15 mg PB/m^3 for 30 min.
5.6 **Toxicity by Ingestion:** Oral rate LD_{LO} = 17 mg/kg
5.7 **Late Toxicity:** Lead poisoning
5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 **Liquid or Solid Irritant Characteristics:** Causes smarting of the skin and first-degree burns on short exposure; may cause secondary burns on long exposure.
5.10 **Odor Threshold:** Data not available
5.11 **IDLH Value:** 40 mg/m^3

6. FIRE HAZARDS

6.1 **Flash Point:** 200°F C.C.; 285°F O.C.
6.2 **Flammable Limits in Air:** Data not available
6.3 **Fire Extinguishing Agents:** Water, foam, dry chemical, or carbon dioxide.
6.4 **Fire Extinguishing Agents Not to be Used:** Not pertinent
6.5 **Special Hazards of Combustion Products:** Toxic gases are generated in fires.
6.6 **Behavior in Fire:** May explode in fire.
6.7 **Ignition Temperature:** Decomposes above 230°F
6.8 **Electrical Hazard:** Not pertinent
6.9 **Burning Rate:** Data not available
6.10 **Adiabatic Flame Temperature:** Data not available.
6.11 **Stoichiometric Air to Fuel Ratio:** Data not available
6.12 **Flame Temperature:** Data not available

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction
7.2 **Reactivity with Common Materials:** Rust and some metals cause decomposition.
7.3 **Stability During Transport:** Stable below 230°F. At higher temperatures, may detonate or explode when confined.
7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
7.5 **Polymerization:** Not pertinent
7.6 **Inhibitor of Polymerization:** Not pertinent
7.7 **Molar Ratio (Reactant to Product):** Data not available
7.8 **Reactivity Group:** Data not available

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 0.20 mg/l/96 hr/bluegill/TL_m/fresh water
8.2 **Waterfowl Toxicity:** Data not available
8.3 **Biological Oxygen Demand (BOD):** Data not available
8.4 **Food Concentration Potential:** Data not available

9. SHIPPING INFORMATION

9.1 **Grades of Purity:** Technical
9.2 **Storage Temperature:** Ambient
9.3 **Inert Atmosphere:** No requirement
9.4 **Venting:** Pressure-vacuum

10. HAZARD ASSESSMENT CODE
(See Hazard Assessment Handbook)

A-X-Y

11. HAZARD CLASSIFICATIONS

11.1 **Code of Federal Regulations:** Poison B
11.2 **NAS Hazard Rating for Bulk Water Transportation:** Not listed
11.3 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue)	3
Flammability (Red)	2
Reactivity (Yellow)	3

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 **Physical State at 15°C and 1 atm:** Liquid
12.2 **Molecular Weight:** 323.44
12.3 **Boiling Point at 1 atm:** Decomposes
12.4 **Freezing Point:** −216°F = −137°C = 136°K
12.5 **Critical Temperature:** Not pertinent
12.6 **Critical Pressure:** Not pertinent
12.7 **Specific Gravity:** 1,633 at 20°C (liquid)
12.8 **Liquid Surface Tension:** 28.5 dynes/cm = 0.286 N/m at (est. 25°C
12.9 **Liquid Water Interfacial Tension:** (est.) 40 dynes/cm = 0.04 N/m at 20°C
12.10 **Vapor (Gas) Specific Gravity:** Not pertinent
12.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent
12.12 **Latent Heat of Vaporization:** Not pertinent
12.13 **Heat of Combustion:** (est.) −7,870 Btu/lb = −4,380 cal/g = -183×10^5 J/kg
12.14 **Heat of Decomposition:** Not pertinent
12.15 **Heat of Solution:** Not pertinent
12.16 **Heat of Polymerization:** Not pertinent
12.25 **Heat of Fusion:** Data not available
12.26 **Limiting Value:** Data not available
12.27 **Reid Vapor Pressure:** Data not available

NOTES

TEL — TETRAETHYL LEAD

12.17 SATURATED LIQUID DENSITY	
Temperature (degrees F)	Pounds per cubic foot
46	103.400
48	103.200
50	103.099
52	102.900
54	102.799
56	102.599
58	102.500
60	102.299
62	102.200
64	102.000
66	101.900
68	101.700
70	101.599
72	101.400
74	101.299
76	101.099
78	101.000
80	100.799
82	100.700
84	100.500
86	100.400
88	100.200
90	100.099
92	99.929
94	99.780
96	99.629

12.18 LIQUID HEAT CAPAICTY	
Temperature (degrees F)	British thermal unit per pound-F
50	.597
52	.597
54	.597
56	.597
58	.597
60	.597
62	.597
64	.597
66	.597
68	.597
70	.597
72	.597
74	.597
76	.597
78	.597
80	.597
82	.597
84	.597
86	.597
88	.597
90	.597
92	.597
94	.597
96	.597
98	.597
100	.597

12.19 LIQUID THERMAL CONDUCTIVITY	
Temperature (degrees F)	British thermal unit-inch per hour-square foot-F
	N
	O
	T
	P
	E
	R
	T
	I
	N
	E
	N
	T

12.20 LIQUID VISCOSITY	
Temperature (degrees F)	Centipoise
28	1.247
30	1.222
32	1.199
34	1.175
36	1.153
38	1.131
40	1.109
42	1.088
44	1.068
46	1.048
48	1.029
50	1.010
52	.992
54	.974
56	.957
58	.940
60	.924
62	.908
64	.892
66	.877
68	.862
70	.847
72	.833
74	.819
76	.806
78	.793

12.21 SOLUBILITY IN WATER	
Temperature (degrees F)	Pounds per 100 pounds of water
	I
	N
	S
	O
	L
	U
	B
	L
	E

12.22 SATURATED VAPOR PRESSURE	
Temperature (degrees F)	Pounds per square inch
35	.001
40	.001
45	.002
50	.002
55	.003
60	.003
65	.004
70	.005
75	.007
80	.008
85	.010
90	.012
95	.015
100	.018
105	.022
110	.027
115	.032
120	.039
125	.047
130	.056
135	.066
140	.079
145	.093
150	.110
155	.129

12.23 SATURATED VAPOR DENSITY	
Temprature (degrees F)	Pounds per cubic foot
35	.00000
40	.00001
45	.00001
50	.00001
55	.00001
60	.00001
65	.00002
70	.00002
75	.00003
80	.00003
85	.00004
90	.00005
95	.00006
100	.00007
105	.00009
110	.00010
115	.00012
120	.00015
125	.00017
130	.00021
135	.00024
140	.00029
145	.00034
150	.00039
155	.00046

12.24 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	British thermal unit per pound-F
	N
	O
	T
	P
	E
	R
	T
	I
	N
	E
	N
	T

Naphthalene ($C_{10}H_8$)

Physical and Chemical Description: Naphthalene is a white crystalline solid with a characteristic "mothball" odor. Naphthalene is more dense than water, with a specific gravity of 1.145, and has a solubility of 30,000 to 40,000 micrograms per liter ($\mu g/\ell$) at 25 degrees centigrade. It melts at 80 degrees centigrade, but will sublime (volatilize from a solid) at room temperature. Naphthalene is considered a PAH.

Uses: Naphthalene is an intermediate in dye production and the formation of solvents, lubricants, and motor fuels. It is used directly as a moth repellant.

Toxicity: Naphthalene may be absorbed by inhalation, ingestion, or skin or eye contact. Chronic exposure can cause cataracts, kidney disease, and red blood cell breakdown, especially in infants and individuals deficient in the enzyme G6PD. Naphthalene has been shown to be nonmutagenic and noncarcinogenic.

Classification: Hazardous Substance (USEPA)
Hazardous Waste (USEPA)
Priority Toxic Pollution (USEPA)

Persistence: Naphthalene can oxidize in the presence of light and air, 50 percent after 14 days in one study. Microbial degradation has also been demonstrated in the laboratory in solutions as concentrated as 3.3 $\mu g/\ell$. Little breakdown is expected, however, under the dark, anaerobic conditions characteristic of *in situ* groundwater.

5.0 SITE CONTROL

5.1 ZONATION. Due to the nature of the work and the properties of the potential chemicals found onsite, typical exclusion, contamination reduction, and support zones are not necessary or practical. Therefore, where appropriate, a "floating" exclusion zone in the perimeter of the sampling site will be established to eliminate access to the area by individuals not working on the project or involved in the assessment work. The perimeter will be at least 20 feet in radius and moved accordingly as the assessment points are moved.

5.2 COMMUNICATIONS. When radio communication is not used, the following air horn signals will be employed:

HELP	three short blasts	(. . .)
EVACUATION	three long blasts	(_ _ _)
ALL CLEAR	alternating long and short blasts	(_ . _ .)

5.3 WORK PRACTICES. General work practices to be used during ABB-ES projects are described in Chapter 9.0 of the CLEAN HASP. Work at the site will be conducted according to these established protocol and guidelines for the safety and health of all involved. All work and sampling will be conducted with a minimum of Level D clothing and equipment.

- Work and sampling will be conducted in Level D clothing and equipment.

6.0 DECONTAMINATION AND DISPOSAL

All personnel and/or equipment leaving contaminated areas of the site will be subject to decontamination, which will take place in the contamination reduction zone. General decontamination practices used during ABB-ES projects are described in Chapter 13.0 of the CLEAN HASP.

6.1 PERSONNEL DECONTAMINATION. All personnel leaving the study area are subject to decontamination (as necessary). The decontamination procedure required will be determined by the nature and level of contamination found at the site. At a minimum, site personnel will remove loose soils from boots and clothing before leaving the site. More thorough decontamination procedures will be observed as dictated by site conditions. These procedures are described in Chapter 13.0 of the CLEAN HASP.

6.1.1 Small Equipment Decontamination Small equipment will be protected from contamination as much as possible by keeping the equipment covered when at the site and placing the equipment on plastic sheeting, not on the ground. Sampling equipment used at the site will be used only once or will be field cleaned between samples with soapy water (Alconox™), rinsed with clean water, rinsed with an approved quality assurance and quality control solvent, and final rinsed with organic-free water.

6.1.2 Heavy Equipment Decontamination Drilling equipment will be protected from contamination as much as possible by placing the equipment on plastic sheeting, not on the ground. The drill rig and associated drilling equipment will be cleaned with high pressure water or high pressure steam followed by a soap and water wash and rinse. Loose material will be removed by brush. The person performing this activity will be at the level of protection used during the field investigation.

6.2 COLLECTION AND DISPOSAL OF DECONTAMINATION PRODUCTS. All disposable protective gear, decontamination fluids (for both personnel and equipment), and other disposable materials will be disposed of at the site. Decontamination fluids (e.g., isopropanol from split spoons and groundwater sampling pumps) will be stored in amber glass bottles. Disposable materials (e.g., gloves and Tyvek™ suits) will be bagged and disposed of properly.

7.0 EMERGENCY AND CONTINGENCY PLANNING

This section identifies emergency and contingency planning that has been undertaken for operations at this site. Most sections of the CLEAN HASP provide information that would be used under emergency conditions. General emergency planning information is addressed in Chapter 14.0 of the CLEAN HASP. The following subsections present site-specific emergency and contingency planning information.

7.1 PERSONNEL ROLES, LINES OF AUTHORITY, AND COMMUNICATIONS. Either the site HSO or the Health and Safety designee is the primary authority for directing operations at the site under emergency conditions. All communications both onsite and offsite will be directed through the HSO or designee.

7.2 EVACUATION. Evacuation procedures at the site will follow those procedures discussed in Chapter 14.0 of the CLEAN HASP for upwind withdrawal, site evacuation, and evacuation of the surrounding area. Evacuation from the base will be conducted by travelling west on Langley Street.

7.3 EMERGENCY MEDICAL TREATMENT AND FIRST AID. Any personnel injured onsite will be rendered first aid as appropriate and transported to competent medical facilities for further examination and/or treatment. The preferred method of transport would be through professional emergency transportation means; however, when this is not readily available or would result in excessive delay, other transport will be authorized. Under no circumstances will injured persons transport themselves to a medical facility for emergency treatment.

8.0 ADMINISTRATION

8.1 PERSONNEL AUTHORIZED DOWNRANGE. Personnel authorized to participate in downrange activities at this site have been reviewed and certified for site operations by the PM and the HSS. Certification involves the completion of appropriate training, a medical examination, and a review of this site-specific HASP. All persons entering the site must use the buddy system, and check in with the Site Manager and/or HSO before going downrange.

CERTIFIED ABB ENVIRONMENTAL TEAM PERSONNEL:

*+ Terry Hansen	*+ Michael Jaynes
*+ Frank Lesesne	*+ Joseph Fugitt
*+ Gerald Walker	*+ Richard Stephens
*+ Lawrence Smith	*+ Felix Rizk
	*+ Jim Williams

OTHER CERTIFIED PERSONNEL:

* FIRST-AID-TRAINED
\+ CPR-TRAINED

8.2 HASP APPROVALS. By their signatures, the undersigned certify that this HASP will be used for the protection of the health and safety of all persons entering this site.

Health and Safety Officer	Date
Project Manager	Date
Health and Safety Manager/Supervisor	Date

8.3 FIELD TEAM REVIEW. I have read and reviewed the health and safety information in the HASP. I understand the information and will comply with the requirements of the HASP.

NAME: _____

DATE: _____

SITE/PROJECT: _____

8.4 MEDICAL DATA SHEET. This Medical Data Sheet will be completed by all onsite personnel and kept in the Support Zone during site operations. It is not a substitute for the Medical Surveillance Program requirements consistent with the CLEAN HASP. This data sheet will accompany any personnel when medical assistance or transport to hospital facilities is required. If more space is required, use the back of this sheet.

Project: Tanks 1438 & 1439, NAS Whiting Field, Milton, Florida

Name: _____

Address: _____

Home Telephone: Area Code (___) _____

Age: _____ Height: _____ Weight: _____

In case of emergency, contact: _____

Address: _____

Telephone: Area Code (___) _____

Do you wear contact lenses? Yes ( ) No ( )

Allergies: _____

List medication(s) taken regularly: _____

Particular sensitivities: _____

Previous/current medical conditions or exposures to hazardous chemicals:

_____

Name of Personal Physician: _____

Telephone: Area Code (___) _____

8.5 EMERGENCY TELEPHONE NUMBERS.

Local Police Department	911
Local Rescue Service	911
Primary Hospital (Santa Rosa Medical Center)	(904) 623-9741
Alternate Hospital (Milton Family Medical Center)	(904) 623-3412
Local Fire Department	911
Poison Control Center	(800) 282-3171
National Response Center	(800) 424-8802
Regional USEPA Emergency Response	(800) 424-8802
Site HSO: Michael Jaynes	(904) 269-7012
General Site Supervisor: Lawrence Smith	(904) 656-1293
Project Manager: Terry Hansen	(904) 656-1293
ABB Environmental HSM: Cindy Sundquist	(800) 341-0460 x3309

8.6 ROUTES TO EMERGENCY MEDICAL FACILITIES. The primary source of medical assistance for the site is

Santa Rosa Medical Center
1450 Berry Hill Road
Milton, Florida 32570
(904) 623-9741

DIRECTIONS TO PRIMARY HOSPITAL: Leave the base via Langley Street (Highway 87A). Drive 1 mile west on Highway 87A and turn left onto Highway 89. Continue south on Highway 89 for 5.5 miles, then turn right onto Berry Hill Road. Travel 1.7 miles down Berry Hill Road, and the hospital will be on the right (see Figure 8-1).

The alternate source of medical assistance for the site is

Milton Family Medical Center
107 Doctors Park
Milton, Florida 32570
(904) 623-3412

DIRECTIONS TO ALTERNATE HOSPITAL: Leave the base via Langley Street (Highway 87A). Drive 1 mile west on Highway 87A and turn left onto Highway 89. Continue south on Highway 89 for 5.5 miles, then turn right onto Berry Hill Road. Travel 1.8 miles down Berry Hill Road past the hospital on the right. Turn left on Doctors Park Drive (see Figure 8-1).

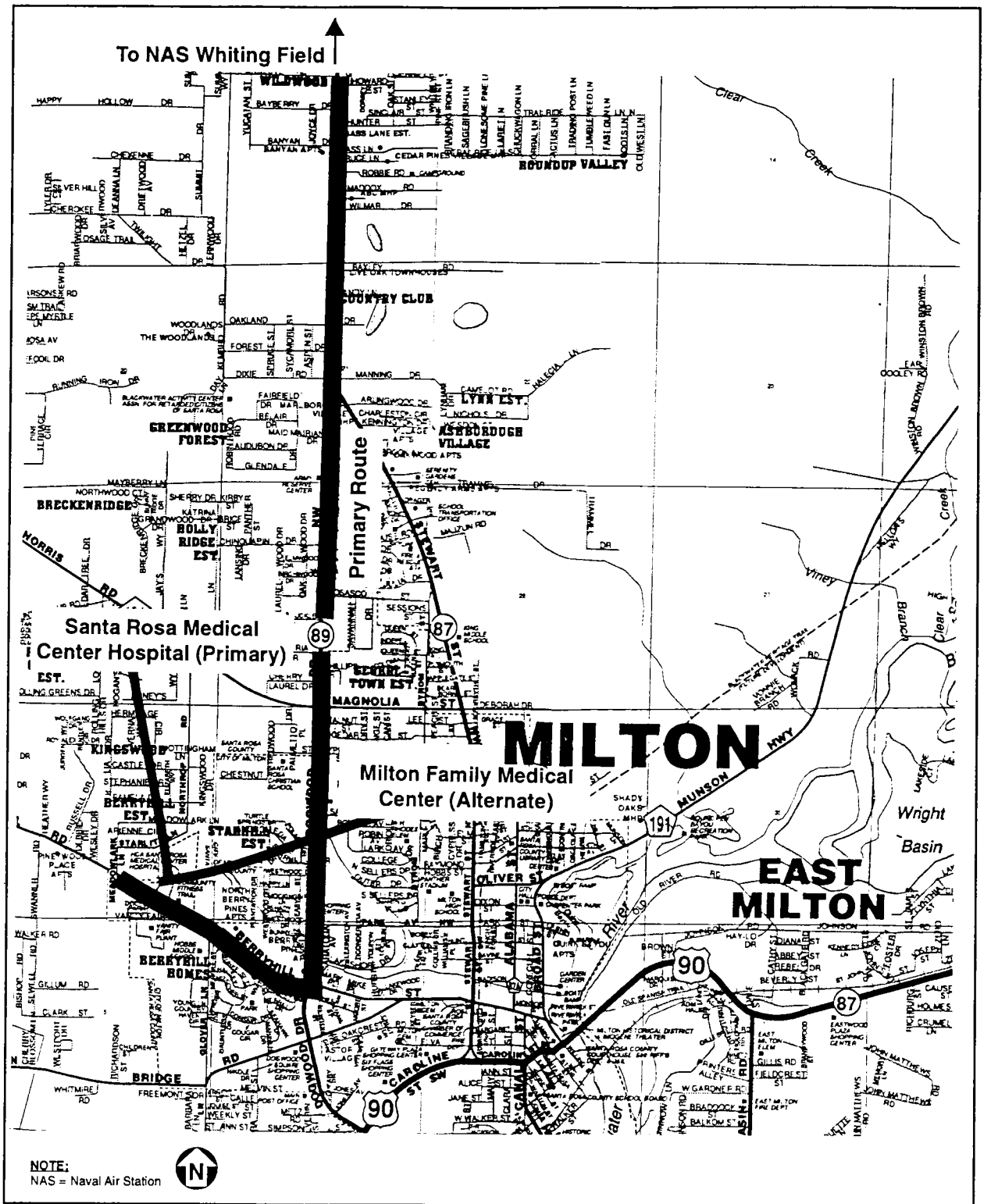

FIGURE 8-1
ROUTES TO SANTA ROSA MEDICAL CENTER AND MILTON FAMILY MEDICAL CENTER

HEALTH AND SAFETY PLAN, SITE 7

NAS WHITING FIELD
MILTON, FLORIDA

8527-21 FIG 8-1 030797MAW

JOB SAFETY & HEALTH PROTECTION

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers by promoting safe and healthful working conditions throughout the Nation. Requirements of the Act include the following:

EMPLOYERS

All employers must furnish to employees employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious harm or employees. Employers must comply with occupational safety and health standards issued under the Act.

EMPLOYEES

Employees must comply with all occupational safety and health standards, rules, regulations and orders issued under the Act that apply to their own actions and conduct on the job.

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards, and its Compliance Safety and Health Officers conduct jobsite inspections to help ensure compliance with the Act.

INSPECTION

The Act requires that a representative of the employer and a representative authorized by the employees be given an opportunity to accompany the OSHA inspector for the purpose of aiding the inspection.

Where there is no authorized employee representative, the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace.

COMPLAINT

Employees or their representatives have the right to file a complaint with the nearest OSHA office requesting an inspection if they believe unsafe or unhealthful conditions exist in their workplace. OSHA will withhold, on request, names of employees complaining.

The Act provides the employees may not be discharged or discriminated against in any way for filing safety and health complaints or for otherwise exercising their rights under the Act.

Employees who believe they have been discriminated against may file a complaint with their nearest OSHA office within 30 days of the alleged discriminatory action.

CITATION

If upon inspection OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer. Each citation will specify a time period within which the alleged violation must be corrected.

The OSHA citation must be prominently displayed at or near the place of alleged violation for three days, or until it is corrected, whichever is later, to warn employees of dangers that may exist there.

PROPOSED PENALTY

The Act provides for mandatory civil penalties against employers of up to $7,000 for each serious violation and for optional penalties of up to $7,000 for each nonserious violation. Penalties of up to $7,000 per day may be proposed for failure to correct violations within the proposed time period and for each day the violation continues beyond the prescribed abatement date. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to $70,000 for each such violation. A violation of posting requirements can bring a penalty of up to $7,000.

There are also provisions for criminal penalties. Any willful violation resulting in the death of any employee, upon conviction, is punishable by a fine of up to $250,000 (or $500,000 if the employer is a corporation), or by imprisonment for up to six months, or both. A second conviction of an employer doubles the possible term of imprisonment. Falsifying records, reports, or applications is punishable by a fine of $10,000 or up to six months in jail or both.

VOLUNTARY ACTIVITY

While providing penalties for violations, the Act also encourages efforts by labor and management, before an OSHA inspection, to reduce workplace hazards voluntarily and to develop and improve safety and health programs in all workplaces and industries. OSHA's Voluntary Protection Programs recognize outstanding efforts of this nature.

OSHA has published Safety and Health Program Management Guidelines to assist employers in establishing or perfecting programs to prevent or control employee exposure to workplace hazards. There are many public and private organizations that can provide information and assistance in this effort, if requested. Also, your local OSHA office can provide considerable help and advice on solving safety and health problems or can refer you to other sources for health such as training.

VOLUNTARY ACTIVITY

Free assistance in identifying and correcting hazards and in improving safety and health management is available to employers, without citation or penalty, through OSHA-supported programs in each State. These programs are usually administered by the State labor or Health department or a State university.

POSTING INSTRUCTIONS

Employees in States operating OSHA approved State Plans should obtain and post the State's equivalent poster.

Under provisions of Title 29, Code of Federal Regulations, Part 1903.2(a)(1) employers must post this notice (or facsimile) in a conspicuous place where notices to employees are customarily posted.

More Information

Additional information and copies of the Act, specific OSHA safety and health standards, and other applicable regulations may be obtained from your employer or from the nearest OSHA Regional Office in the following locations:

Atlanta, Georgia	(404) 347-3573
Boston, Massachusetts	(617) 565-7164
Chicago, Illinois	(312) 353-2220
Dallas, Texas	(214) 767-4731
Denver, Colorado	(303) 844-3061
Kansas City, Missouri	(816) 426-5861
New York, New York	(212) 337-2378
Philadelphia, Pennsylvania	(215) 596-1201
San Francisco, California	(415) 744-6670
Seattle, Washington	(206) 442-5930

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Lynn Martin, Secretary of Labor
U.S. Department of Labor
Occupational Safety and Health Administration

To report suspected fire hazards, imminent danger safety and health hazards in the workplace, or other job safety and health emergencies, such as toxic waste in the workplace, call OSHA's 24-hour hotline: 1-800-321-OSHA.