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REMEDIAL ACTION PLAN ADDENDUM 2 MCCOY ANNEX BASE EXCHANGE SERVICE
STATION BUILDING 7174 NTC ORLANDO FL
3/1/1995
ABB ENVIRONMENTAL SERVICES, INC

REMEDIAL ACTION PLAN ADDENDUM 2

**MCCOY ANNEX BASE EXCHANGE SERVICE STATION
BUILDING 7174
NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

Unit Identification Code (UIC): N65928

Contract No. N62467-89-D-0317/107

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March 1995



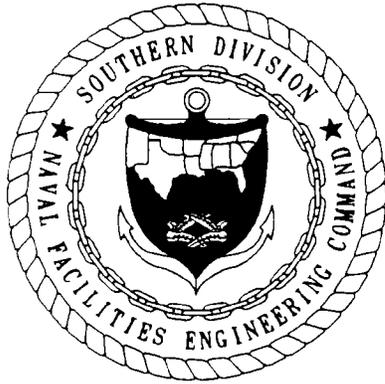
CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, ABB Environmental Services, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/107 are complete and accurate and comply with all requirements of this contract.

DATE: March 1, 1995

NAME AND TITLE OF CERTIFYING OFFICIAL: _____
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: _____
Project Technical Lead



FOREWORD

Subtitle I of the Hazardous and Solid Waste Amendments (HSWA) of 1984 to the Solid Waste Disposal Act (SWDA) of 1965 established a national regulatory program for managing underground storage tanks (USTs) containing hazardous materials, especially petroleum products. Hazardous wastes stored in USTs were already regulated under the Resource Conservation and Recovery Act (RCRA) of 1976, which was also an amendment to SWDA. Subtitle I requires that the U.S. Environmental Protection Agency (USEPA) promulgate UST regulations. The program was designed to be administered by individual States, who were allowed to develop more stringent, but not less stringent standards. Local governments were permitted to establish regulatory programs and standards that are more stringent, but not less stringent than either State or Federal regulations. The USEPA UST regulations are found in the Code of Federal Regulations (CFR), Title 40, Part 280 (40 CFR 280) (*Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks*) and 40 CFR 281 (*Approval of State Underground Storage Tank Programs*). 40 CFR 280 was revised and published on September 23, 1988, and became effective December 22, 1988.

The Navy's UST program policy is to comply with all Federal, State, and local regulations pertaining to USTs. This report was prepared to satisfy the requirements of Chapter 62-770, Florida Administrative Code (FAC) (*State Underground Petroleum Environmental Response*), regulations on petroleum contamination in Florida's environment as a result of spills or leaking tanks or piping.

Questions regarding this report should be addressed to the Commanding Officer, Naval Training Center (NTC), Orlando, Florida, or to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Code 18237, at AUTOVON 563-0528 or 803-743-0528.

EXECUTIVE SUMMARY

Remedial action is necessary for the McCoy Annex Base Exchange Service Station, Building 7174, Naval Training Center, Orlando, Florida. Contamination that exceeds the State of Florida parameters for Class G-II groundwater was identified and reported in a Contamination Assessment Report by ABB Environmental Services, Inc. (ABB-ES), in May 1992. A Remedial Action Plan (RAP) and another RAP Addendum have been developed to describe site cleanup.

The original RAP and the RAP Addenda present a plan for cleanup of the contamination at the site. The groundwater contamination will be reduced by the installation of a "pump and treat" system that includes the installation of four groundwater recovery wells and the construction of an air stripper to remove volatile organic compounds from the contaminated water. The levels of soil contamination will be reduced by the vacuum extraction system that includes four vacuum extraction wells, a vacuum pump, and a carbon adsorption system. These systems will be operated until the petroleum-related contamination in both the groundwater and the soil reaches the required target concentrations or until further remedial activities are no longer effective. It is estimated that the operation period will be 2 years.

In January 1995, ABB-ES further investigated disposal options for effluent generated during remedial action at McCoy Annex. These efforts have since become the impetus for this RAP Addendum.

This RAP Addendum 2 presents a plan for effluent disposal via the storm sewer system using a National Pollutant Discharge Elimination System (NPDES) permit. Other modifications include monitoring plan modifications and a size change for lead filtration.

This RAP Addendum 2 will be coupled with the original RAP prepared by ABB-ES in April 1993 and the RAP Addendum completed by OHM in May 1993 for remediation of petroleum contamination at the McCoy Annex Base Exchange Service Station site.

ACKNOWLEDGMENTS

In preparing this report, the Underground Storage Tank personnel at ABB Environmental Services, Inc., commends the support, assistance, and cooperation provided by the personnel at McCoy Annex, Naval Training Center (NTC), Orlando, Florida, and Southern Division, Naval Facilities Engineering Command (SOUTHNAV-FACENGCOCM).

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Building 7174, McCoy Annex
NTC Orlando, Florida

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GLOSSARY

The following is a list of the acronyms, initialisms, and abbreviations, and units of measure used in this report.

ABB-ES	ABB Environmental Services, Inc.
AASHTO	American Association of State Highway Transportation Officials
ASTM	American Society for Testing and Materials
BDL	below detection limits
BEI	Bechtel Environmental, Inc.
BTEX	benzene, toluene, ethylbenzene, and xylenes
bls	below land surface
CA	Contamination Assessment
CAR	Contamination Assessment Report
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CTO	Contract Task Order
1,2-DCA	1, 2-dichloroethane
DOT	Department of Transportation
EDB	ethylene dibromide
FAC	Florida Administrative Code
FDER	Florida Department of Environmental Regulation
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
ft/day	feet per day
ft/ft	feet per foot
FS	factor of safety
GAC	granular activated carbon
GC	gas chromatograph
gpd	gallons per day
gpm	gallons per minute
HMA	hot mix asphalt
HSWA	Hazardous and Solid Waste Amendments of 1984
mg/l	milligrams per liter
MTBE	methyl tert-butyl ether
μg/l	micrograms per liter
NCP	National Contingency Plan
NPDE	National Pollutant Discharge Elimination System
NTC	Naval Training Center
O&M	operation and maintenance
OVA	organic vapor analyzer

GLOSSARY (Continued)

PCA	Preliminary Contamination Assessment
PCE	tetrachloroethene
ppb	parts per billion
ppm	parts per million
psi	pounds per square inch
PVC	polyvinyl chloride
RAC	Remedial Action Contract
RAM	Responsibility Assignment Matrix
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
RF	radio frequency
SOUTHNAV- FACENCOM	Southern Division Naval Facilities Engineering Command
SVE	soil vapor extraction
SVOCs	semivolatile organic compounds
SWDA	Solid Waste Disposal Act of 1965
TCLP	toxicity characteristic leaching procedure
TDS	total dissolved solids
TRPH	total recoverable petroleum hydrocarbons
TSD	temporary storage and disposal
UIC	uniform identification code
UV	ultraviolet
USEPA	U.S. Environmental Protection Agency
USTs	underground storage tanks
VOA	volatile organic aromatics
VOCs	volatile organic compounds
WWTP	Waste Water Treatment Plant

1.0 INTRODUCTION

ABB Environmental Services, Inc. (ABB-ES), submitted the Contamination Assessment Report (CAR) for McCoy Annex Base Exchange Service Station, Building 7174, Orlando, Florida (ABB-ES, 1991), in September 1991 to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOCM). ABB-ES had performed earlier work at the site as E.C. Jordan Company, a former business name of ABB-ES. After approval of the CAR by the Florida Department of Environmental Protection (FDEP), ABB-ES was authorized by SOUTHNAVFACENGCOCM to develop a Remedial Action Plan (RAP), which was completed in April 1993. OHM Remediation Services Corporation (OHM) was retained by the SOUTHNAVFACENGCOCM to prepare a Remedial Action Plan Addendum (OHM, 1992) based on a later groundwater sampling event, November 1992, and soil vapor extraction (SVE) field pilot tests that were conducted in February 1993.

On July 6 and 7, 1994, ABB-ES, representatives of SOUTHNAVFACENGCOCM, McCoy Annex (the Activity), and the Remedial Action Contracts (RAC) Contractor (Bechtel Environmental, Inc [BEI]) held a meeting at Naval Training Center (NTC,) Orlando. A result of that meeting was the development of the remediation Responsibility Assignment Matrix (RAM), in which specific tasks or assignments were delegated. In support of the RAM, a schedule was developed that included a 5-month period of groundwater resampling, design validation, removal of the existing underground storage tank (UST) system, and a 16-month period of system construction, start-up, operation and maintenance, and reporting.

In fulfillment of the RAM, ABB-ES conducted a groundwater sampling event in September 1994. ABB-ES used these results to re-evaluated the capability of the proposed groundwater treatment system to verify that it would remove contaminants from the groundwater. These results were presented in a Technical Memorandum, Letter Report, which was submitted to SOUTHNAVFACENGCOCM in October 1994.

In January 1995, ABB-ES learned that the proposed effluent discharge method would incur an additional cost on a per gallon basis. It was then requested that ABB-ES investigate disposal options for the remedial system effluent. This RAP Addendum A presents the results of that investigation and other RAP modifications. The correspondence that outlines the thought process leading to this Addendum are included in Appendix A.

1.1 PURPOSE. This RAP Addendum 2 will be coupled with the original RAP prepared by ABB-ES in April 1993 and the previous RAP Addendum completed by OHM in May 1993 for remediation of petroleum contamination at the McCoy Annex Base Exchange Service Station site.

The RAP and RAP Addenda are designed for implementation at the McCoy Annex Base Exchange Service Station. When implemented, the objectives of the remedial activities are to reduce the level of petroleum-related contamination in soil and groundwater to the following target concentrations:

Soil, 10 parts per million (ppm) by organic vapor analyzer (OVA) headspace analysis; and

Groundwater,	Benzene	1,
	Total volatile organic aromatics (VOA)	50,
	Total naphthalene	100,
	Methyl tert-butyl ether (MTBE)	50,
	Ethylene dibromide (EDB)	0.02, and
	Lead (dissolved)	30.

Note: Concentrations are in micrograms per liter ($\mu\text{g}/\ell$) unless specified otherwise.

1.2 SCOPE. This RAP Addendum 2 has been developed for modifications to the original RAP and the first RAP Addendum prepared by OHM. These modifications will include:

- changing of the approved 0.45 micron lead filter to a 10 micron size;
- adjusting the present system to allow for surface water discharge of treated effluent with a National Pollutant Discharge Elimination System (NPDES) permit;
- related changes to the monitoring plan for system samples as necessary with the implementation and use of the NPDES permit; and
- related changes to the monitoring plan due to the destruction of or damage to four compliance wells during tank removal.

2.0 SITE BACKGROUND INFORMATION

2.1 SITE DESCRIPTION AND HISTORY. McCoy Annex is located about 12 miles south of the NTC in Orlando, Orange County, Florida. It occupies 877 acres and is situated adjacent to the west side of Orlando International Airport (Figure 2-1). McCoy Annex serves mainly as a housing and community support center for the NTC complex. The area of investigation is the McCoy Annex Base Exchange Service Station, Building 7174, located at the corner of Binnacle Way and Daetwyler Drive (Figure 2-2). Additional site condition details can be found in the following documents:

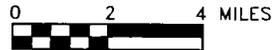
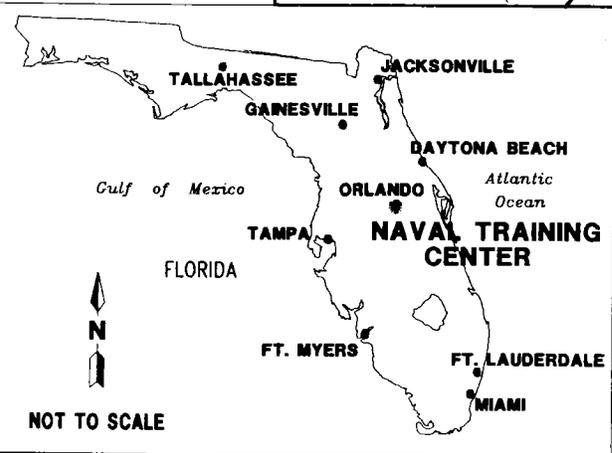
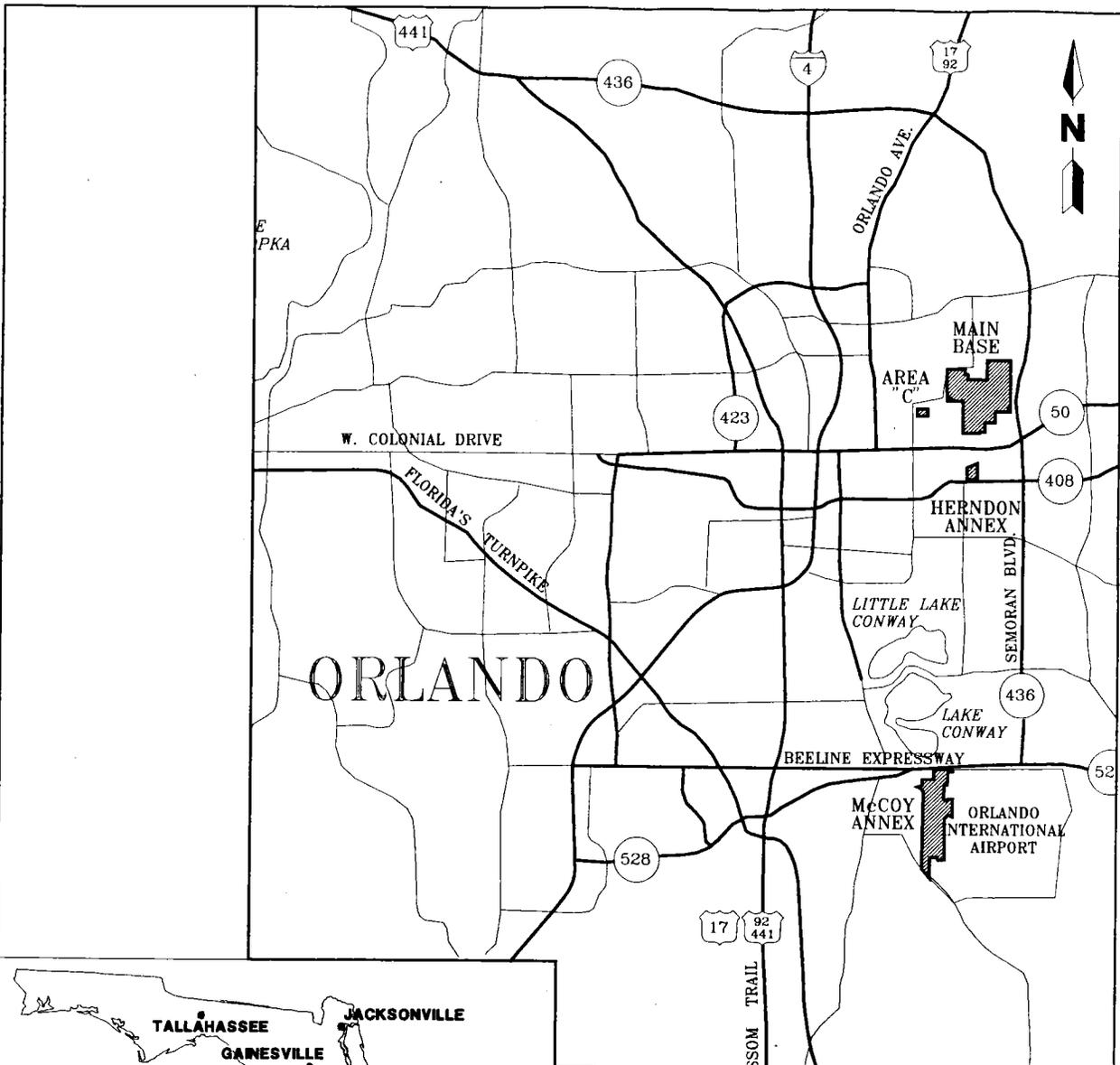
- Contamination Assessment Report, Naval Training Center McCoy Annex Base Exchange Service Station, Building 7174, Orlando, Florida (ABB-ES, May 1992);
- Remedial Action Plan, Naval Training Center McCoy Annex Base Exchange Service Station, Building 7174, Orlando, Florida (ABB-ES, April 1993); and
- Remedial Action Plan Addendum, Naval Training Center McCoy Annex Base Exchange Service Station, Building 7174, Orlando, Florida (OHM, May 1993).

2.2 SITE CONDITIONS. The first activity in support of the RAM schedule was to resample the groundwater monitoring wells. ABB-ES mobilized on September 7, 1994, to Building 7174 to conduct groundwater sampling activities. All existing monitoring wells were sampled except monitoring well OLD-7174-MW-10, which has been destroyed, and OLD-7174-MW-11, which contained free product. The 17 monitoring wells sampled included OLD-7174-MW-1 through OLD-7174-MW-9 and OLD-7174-MW-12 through OLD-7174-MW-19. Each monitoring well was sampled for the kerosene group of analytical parameters, except monitoring well OLD-7174-MW-9, which was sampled for the used oil group of analytical parameters as outlined in Chapter 62-770 Florida Administrative Code (FAC). Groundwater analytical laboratory results for the September 7 and 8, 1994, sampling event are summarized in Table 2-1.

Before sampling, groundwater levels were recorded in all site monitoring wells to estimate well volumes for purging and to calculate the water table elevations. These measurements were used to construct the water-table elevation contour map, which shows the approximate groundwater flow direction at the site. Presented on Figure 2-3 is the water-table elevation contour map, dated September 7, 1994.

The groundwater elevation at OLD-7174-MW-5 is suspected to be inaccurate with respect to groundwater elevations in surrounding wells. Explanations may include field measurement errors while taking readings or during the top of casing elevation survey.

Figure 2-4 shows the distribution of contaminants detected in groundwater samples collected September 7 and 8, 1994. Contaminants identified in groundwater samples were benzene, ethylbenzene, toluene, xylenes, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, total recoverable petroleum hydrocarbon (TRPH), lead, and methyl tert-butyl ether (MTBE).



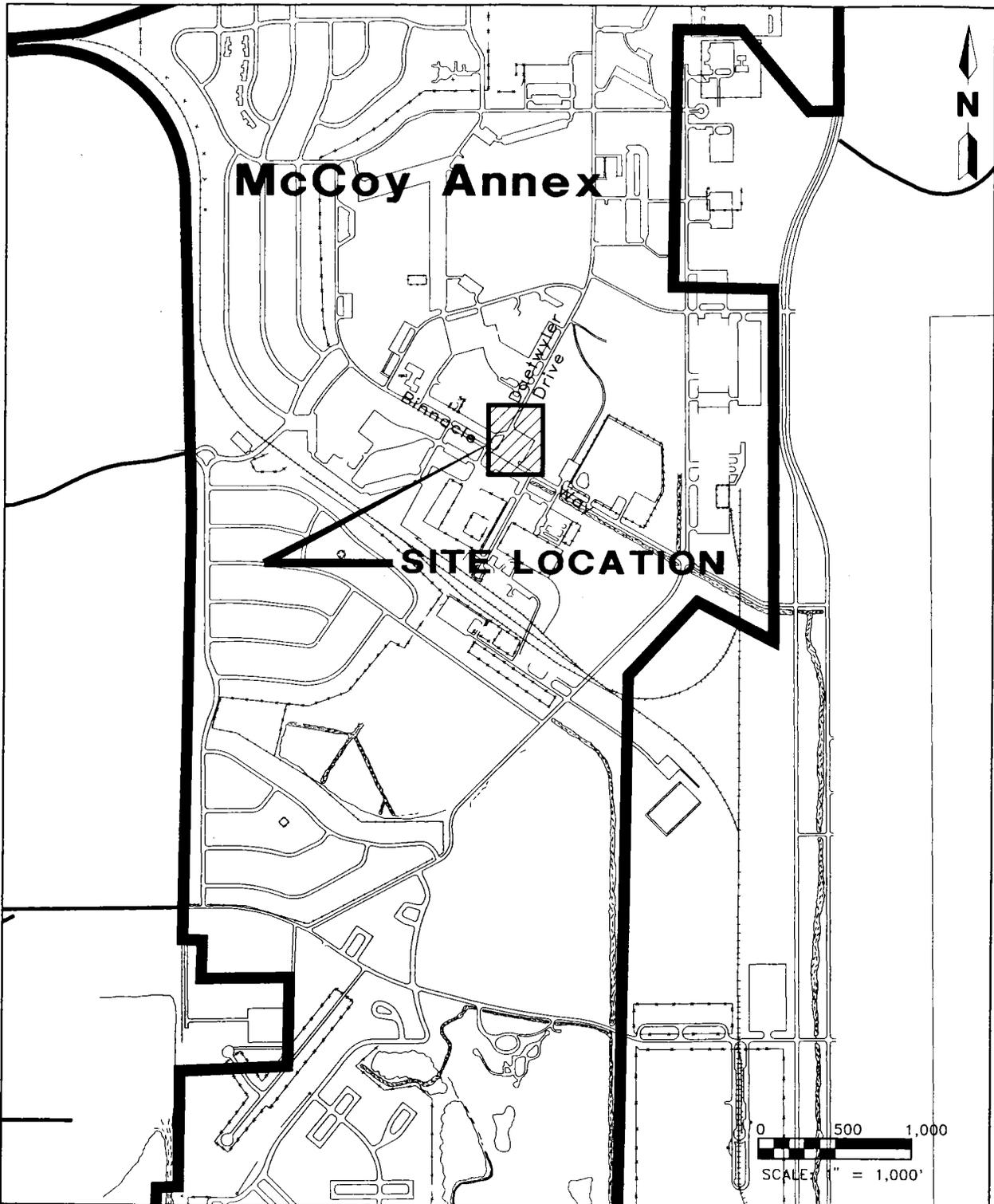
**FIGURE 2-1
FACILITY LOCATION MAP**



**REMEDIAL ACTION PLAN
ADDENDUM
BUILDING 7174**

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**FIGURE 2-2
SITE LOCATION MAP**



**REMEDIAL ACTION PLAN
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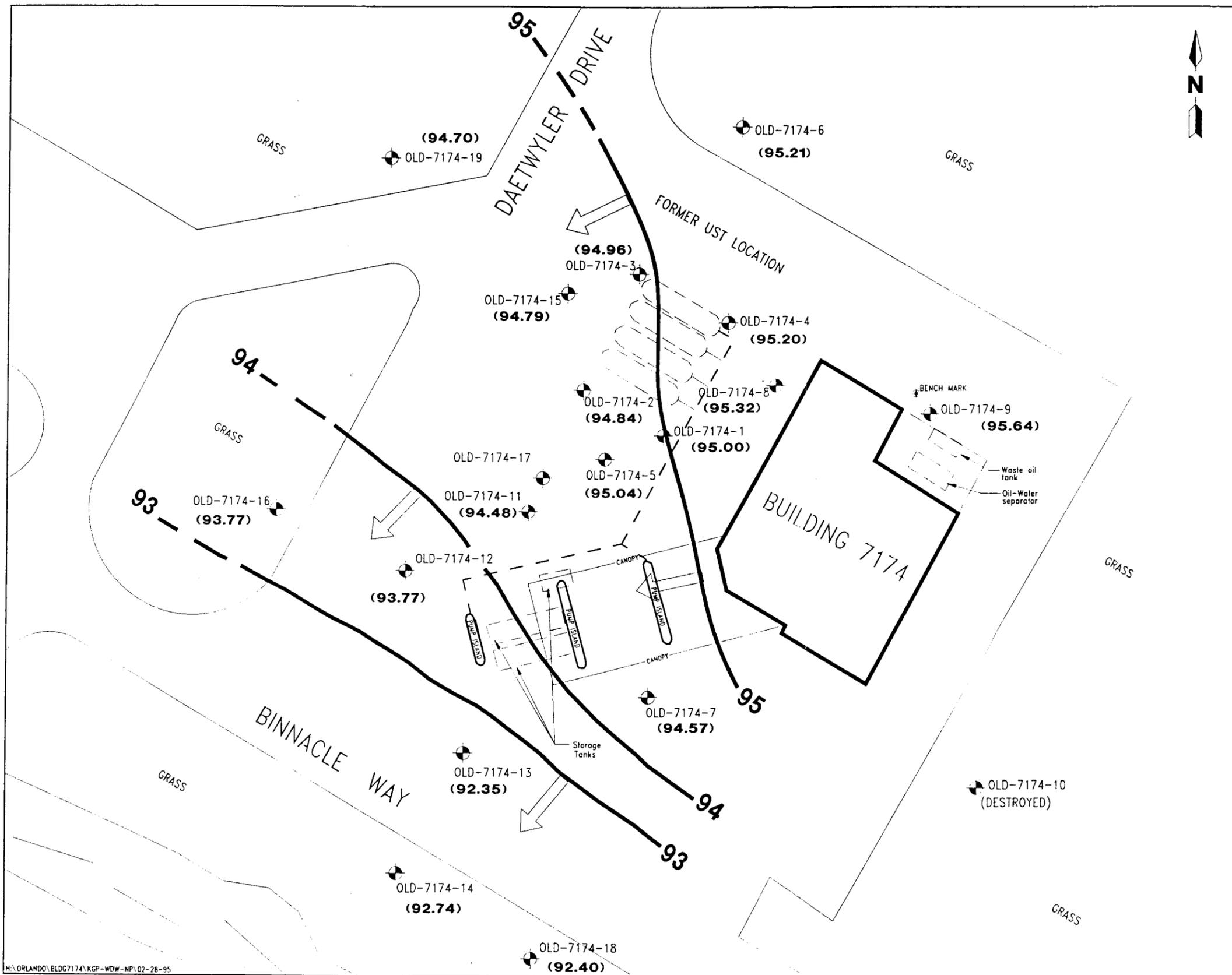
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**Table 2-1
Groundwater Sample Laboratory Analyses,
September 7 and 8, 1994**

Remedial Action Plan Addendum
Building 7174, McCoy Annex
NTC Orlando, Orlando, Florida

Compound																				
	MW-1	DUP-1	MW-2	DUP-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-12	MW-13	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19	
Benzene	320	300	120	590	12	1.6	110	<1.0	6.6	2.1	<1.0	29	430	<1.0	5.8	<1.0	<1.0	<1.0	<1.0	
Toluene	51	48	2.4	11	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	360	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Ethylbenzene	49	46	22	100	6.8	<1.0	<1.0	<1.0	1.6	<1.0	<1.0	27	74	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Xylenes, total	54	49	6.6	31	1.9	<1.0	<1.0	<1.0	5.7	<1.0	<1.0	3.3	810	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Methyl tert-butyl ether	100	94	60	310	3.5	<1.0	220	<1.0	3.8	1.2	<1.0	150	58	<1.0	7.7	<1.0	<1.0	<1.0	<1.0	
Total VOA	474	443	151	732	22.1	1.6	110	<4.0	13.9	2.1	<4.0	59.3	1,674	<4.0	5.8	<4.0	<4.0	<4.0	<4.0	
1-Methylnaphthalene	<5.0	<5.0	44	43	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NS	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
2-Methylnaphthalene	<5.0	<5.0	74	71	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NS	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Naphthalene	<5.0	<5.0	140	150	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	26	13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Total naphthalene	<5.0	<5.0	258	264	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	26	13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Lead	7	6.2	18.2	21.2	7.4	6.3	24	26.1	19	17.4	14	22.2	19.7	22.5	5.4	6.2	11.1	37.1	6.4	
TRPH	1.7	1.5	2.2	2.8	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	

Notes: For ease of reading, the prefix OLD-7174 has been omitted from well numbers in this table.
 Concentrations for all compounds except total recoverable petroleum hydrocarbons (TRPH) are reported in parts per billion. TRPH concentrations are reported in parts per million.
 MW-11 was not sampled due to the presence of free product.
 DUP = duplicate sample taken from the designated monitoring well.
 MW-10 has been destroyed and, therefore, cannot be sampled.
 VOA = volatile organic aromatic.
 Total VOA = the sum concentration of benzene, toluene, ethylbenzene, and xylenes.
 Total naphthalene = the sum concentration of 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene.
 TRPH = total recoverable petroleum hydrocarbons.



LEGEND

- OLD-7174-7 (94.70) Existing monitoring well with designation and water table elevation measurement
 Water elevation based on a relative elevation of 100 feet above mean sea level
- Subsurface features
- Product distribution lines
- Groundwater flow direction
- 94 Water table equipotential line in feet above mean sea level dashed where inferred

NOTES:

Water elevation in deep monitoring well OLD-7174-17 was not included in contouring.

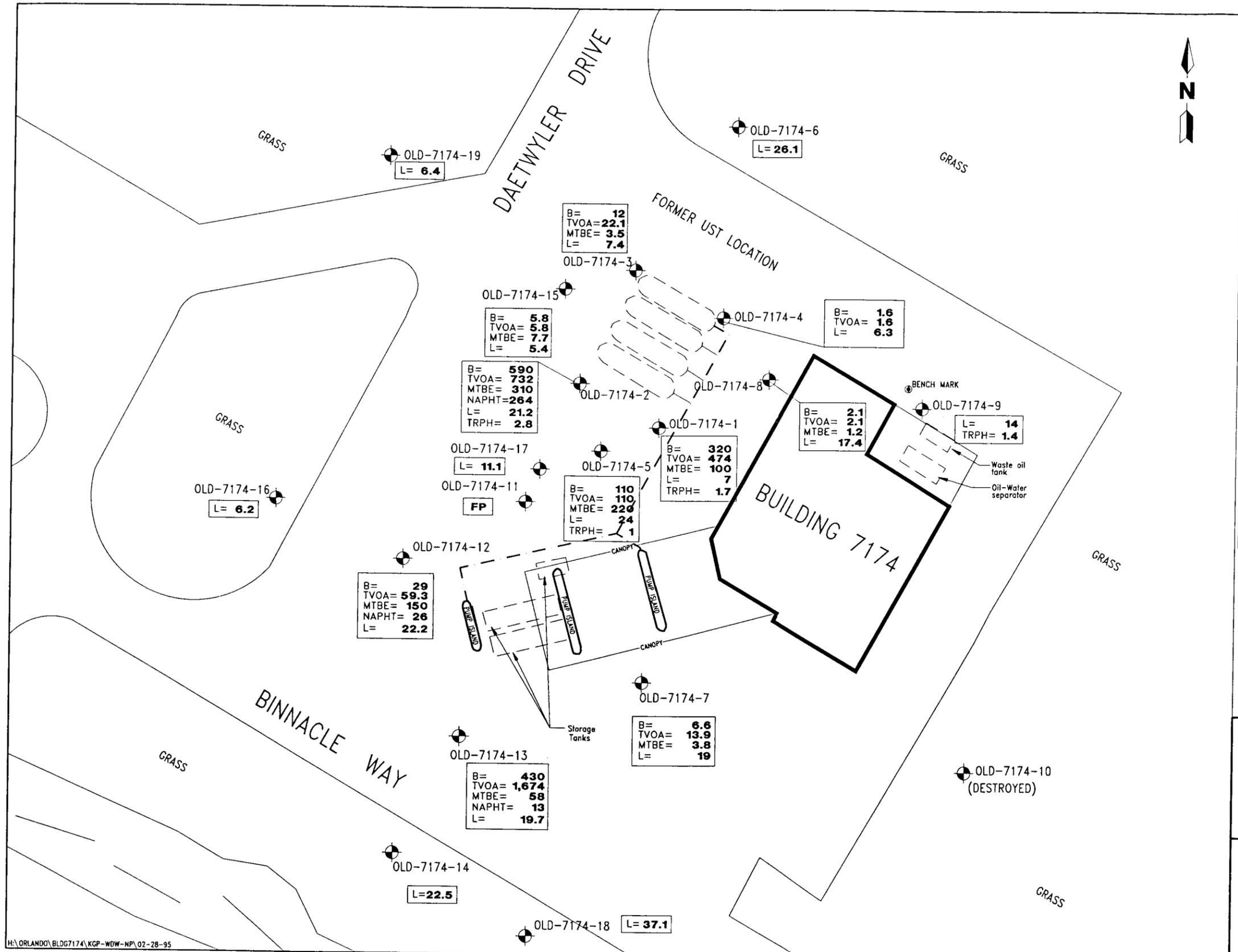
Water elevation in monitoring well OLD-7174-11 corrected for product thickness.

Water elevation in monitoring well OLD-7174-5 is inaccurate; see explanation in text.

0 15 30
 SCALE: 1" = 30'

FIGURE 2-3
WATER TABLE ELEVATION CONTOUR MAP
SEPTEMBER 7, 1994

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ADDENDUM
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LEGEND

- Existing monitoring well with designation
- - - Subsurface features
- - - Product distribution lines
- B Benzene
- TVOA Total volatile organic aromatics
- MTBE Methyl tert-butyl ether
- Napht Total naphthalenes
- L Lead
- TRPH Total recoverable petroleum hydrocarbons
- FP Free product

NOTE:
 TRPH concentrations reported in milligrams per liter (mg/l).
 All other concentrations reported in micrograms per liter (ug/l).

0 15 30
 SCALE: 1" = 30'

FIGURE 2-4
GROUNDWATER CONTAMINATION
DISTRIBUTION MAP,
SEPTEMBER 7 AND 8, 1994

REMEDIAL ACTION PLAN
ADDENDUM
BUILDING 7174
McCOY ANNEX
NTC ORLANDO, FLORIDA

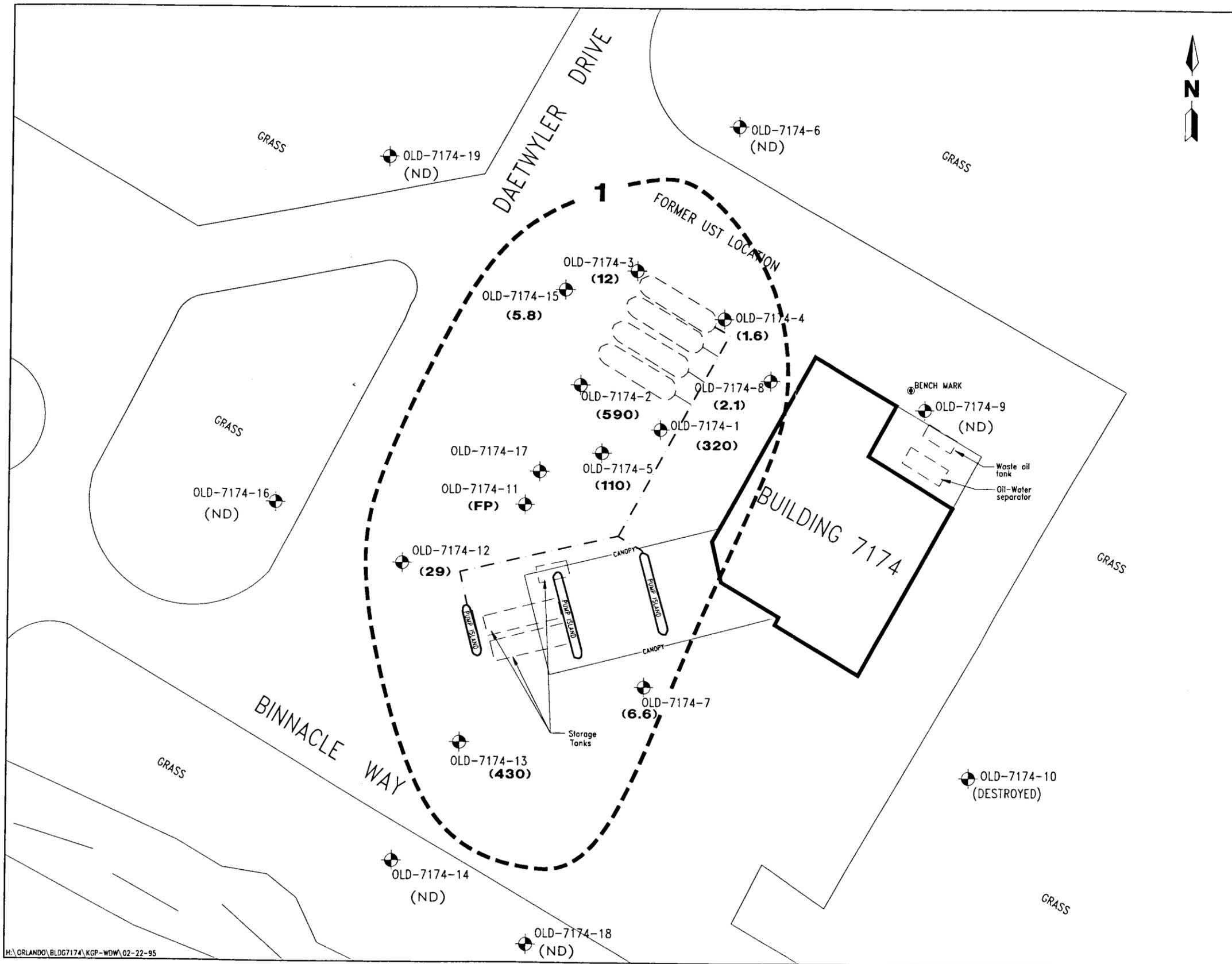
Benzene, total volatile organic aromatics (VOA; the sum of benzene, toluene, ethylbenzene, and xylenes), and MTBE plume maps are shown on Figures 2-5 through 2-7, respectively. The approximate areal extent of benzene that exceeds State target levels is shown within the 1 part per billion (ppb) isoconcentration line (isocon) on Figure 2-5. Benzene concentration in the most contaminated well sample (OLD-7174-MW-2) was 590 ppb.

The approximate areal extent of total VOA contamination exceeding State target levels is shown within the 50 ppb isocon on Figure 2-6. Total VOA concentration in the most contaminated well sample (OLD-7174-MW-13) was 1,674 ppb.

The approximate areal extent of MTBE contamination exceeding State target levels is shown within the 50 ppb isocon on Figure 2-7. MTBE concentration in the most contaminated well sample (OLD-7174-MW-2) was 310 ppb.

Four 10,000-gallon USTs were removed from the site by Florida Petroleum Services under the direction of BEI between December 31, 1994, and January 6, 1995. ABB-ES provided field screening to assure that excessively contaminated soil (> 500 ppm, OVA) removed during the tank removal was stockpiled for offsite thermal treatment. Approximately 230 cubic yards of excessively contaminated soil were removed from the tank area and thermally treated. ABB-ES forwarded a copy of the Closure Assessment Form to the Base Environmental Coordinator (BEC) at NTC Orlando on February 27, 1995.

At this time, Building 7174 has been fenced in, and the station is closed to all business.



LEGEND

- Existing monitoring well with designation
- - - Subsurface features
- - - Product distribution lines
- Extent of Benzene contamination greater than 1 part per billion
- (29) Benzene contamination in parts per billion
- (FP) Free product
- (ND) None detected

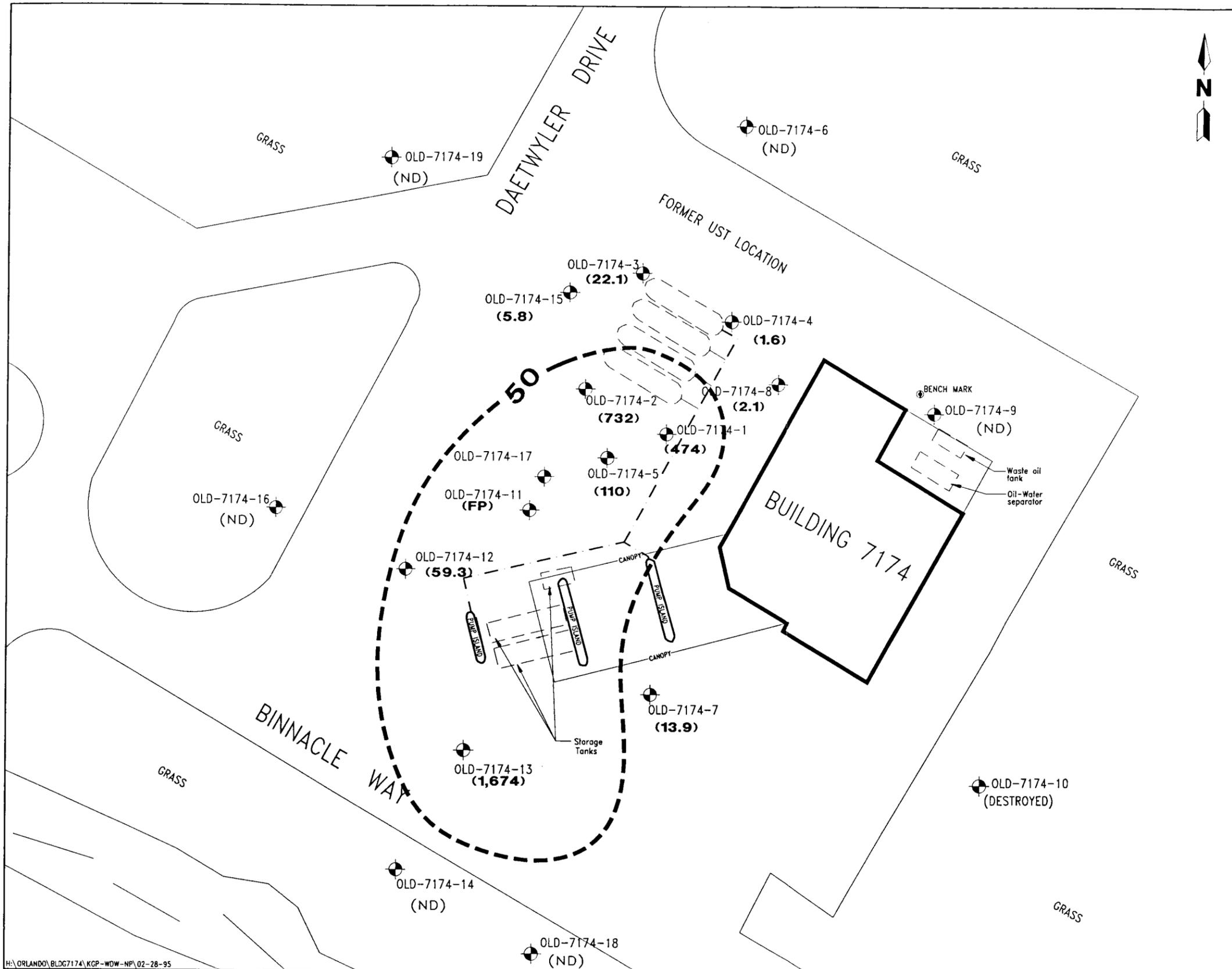
NOTES:
 Deep monitoring well OLD-7174-17 was not included in contouring.
 All concentrations reported in micrograms per liter (ug/l).

0 15 30
 SCALE: 1" = 30'

**FIGURE 2-5
 BENZENE PLUME MAP**

**REMEDIAL ACTION PLAN
 ADDENDUM
 BUILDING 7174**

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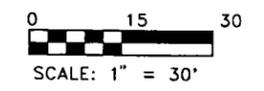


LEGEND

- OLD-7174-7 Existing monitoring well with designation
- Subsurface features
- Product distribution lines
- Extent of Total volatile organic aromatic (VOA) contamination greater than 50 parts per billion
- (59.3)** Total VOA contamination in parts per billion
- (FP)** Free product
- (ND)** None detected

NOTES:

Deep monitoring well OLD-7174-17 was not included in contouring.
 All concentrations reported in micrograms per liter (ug/l).

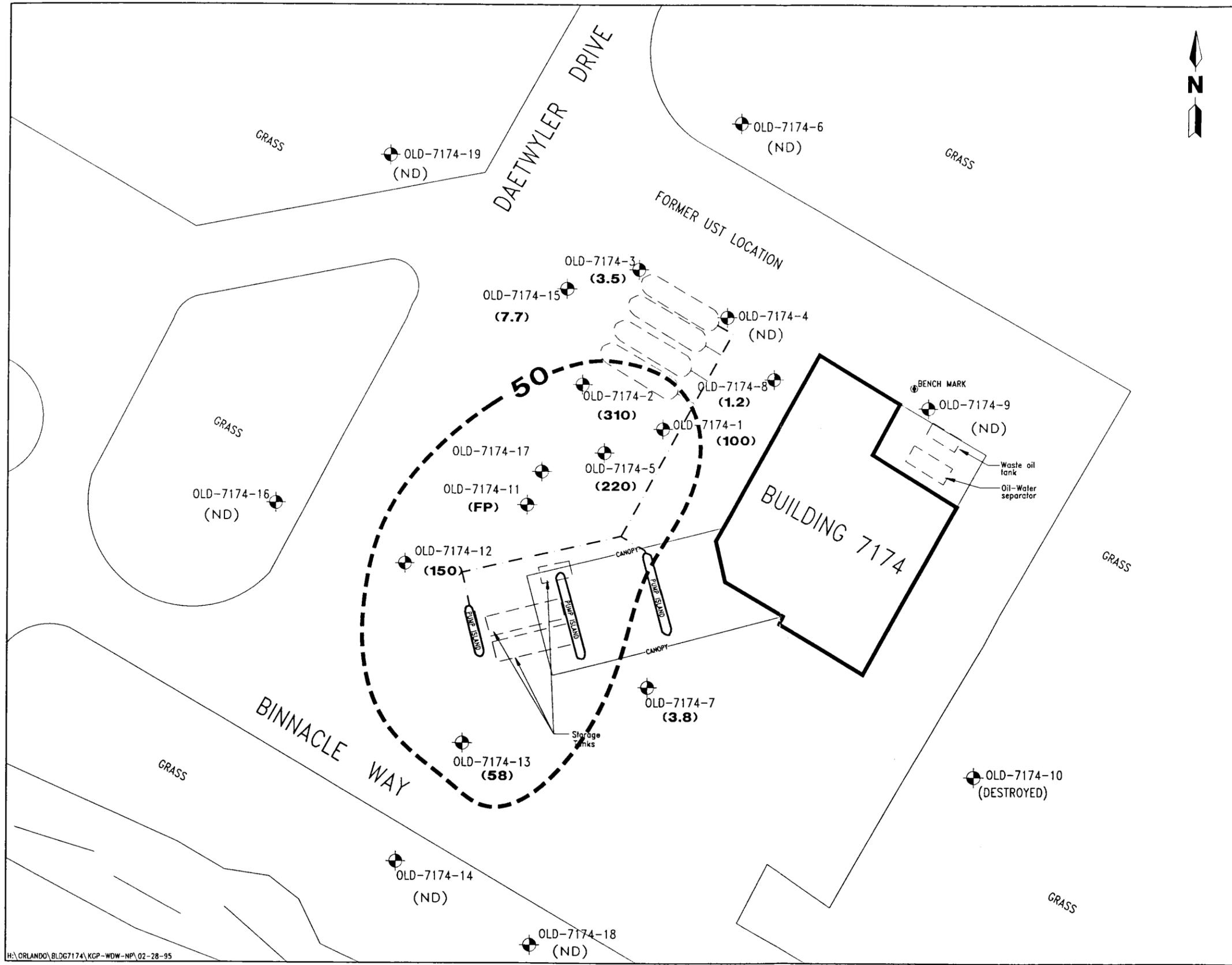


**FIGURE 2-6
 TOTAL VOA PLUME MAP**



**REMEDIAL ACTION PLAN
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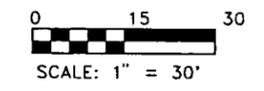


LEGEND

- OLD-7174-7 Existing monitoring well with designation
- Subsurface features
- Product distribution lines
- Extent of Methyl tert-butyl ether (MTBE) contamination greater than 50 parts per billion
- (3.8)** MTBE contamination in parts per billion
- (FP)** Free product
- (ND)** None detected

NOTES:

Deep monitoring well OLD-7174-17 was not included in contouring.
 All concentrations reported in micrograms per liter ($\mu\text{g}/\text{l}$).



**FIGURE 2-7
 MTBE PLUME MAP**



**REMEDIAL ACTION PLAN
 ADDENDUM
 BUILDING 7174**

**McCOY ANNEX
 NTC ORLANDO, FLORIDA**

3.0 EFFLUENT DISPOSAL OPTIONS AND MODIFICATIONS

3.1 EFFLUENT DISPOSAL. The original RAP and the first Addendum (OHM, 1992) proposed to discharge the air stripper effluent to the sanitary sewer regulated by an Industrial User Discharge Permit from the city of Orlando. Since that time it has come to the attention of ABB-ES and BEI that an additional charge would also be incurred on a per gallon basis. The estimated cost based on the predicted flowrates is \$40,000 per year. This cost is considered excessive and a more economical alternative for disposal is explored in this Addendum.

Two alternatives considered were an infiltration gallery or the acquisition of an NPDES permit for direct discharge to the storm sewer onsite. The feasibility of each alternative is discussed in the following sections.

3.1.1 Infiltration Gallery Site models indicate that an infiltration gallery is not a technically feasible alternative for effluent disposal. Different infiltration configurations were modeled. The first option, using the open area east of building 7174, was found to be insufficient. Two other options were considered without regard to site-specific constraints to determine the necessary size of a working recharge gallery in the given hydrogeologic conditions. It was determined that a typical trenched infiltration gallery would require a length of approximately 0.4 mile to prevent excessive mounding of the groundwater table. If a larger rectangular infiltration gallery were used, approximately 15 acres would be required for effective recharge. Based on these initial estimates, not considering the cost, a recharge gallery cannot be considered a feasible effluent disposal option for this site.

3.1.2 National Pollutant Discharge Elimination System (NPDES) Permit An NPDES permit would be an efficient method of effluent disposal. The latest guidelines, effective December 1994, have been extracted from the Federal Register and are provided in Appendix B. The volume of water to be released is negligible compared to normal stormwater design standards. First year costs associated with the use of an NPDES permit are slightly greater than the normal first year monitoring costs. Additional NPDES requirements are 48 hour static bioassays, Ph measurements, and continuous monitoring of the discharge rate. Secondary treatment is also required to assure that effluent standards are consistently met. Options for secondary treatment include the following:

- carbon polishing consisting of two canisters in series with a sampling port between,
- a secondary diffused aerator or air stripper with a minimum of 90 percent removal efficiency, and
- ozonation if it is demonstrated to be appropriate and cost effective.

This secondary step may be bypassed or eliminated after 6 months if documentation can be provided that demonstrates effluent quality requirements are met after the primary treatment process.

If secondary treatment in the form of a separate treatment unit is not desirable, the following design factors may be incorporated into the system design to ensure that the effluent standards are continuously met:

- an increase in the air stripper design safety factor from the current 25 percent to a minimum of 50 percent must be provided, and
- telemetric monitoring of the pressure drop across the air stripper must be provided to notify the person responsible for conducting site cleanup of fouling or other aeration system malfunction, and
- a separate secondary fail-safe circuit must be provided for the primary treatment unit (in addition to the one required on all treatment units) to shut the groundwater recovery system down in the event of blower failure.

Any other proposals will be considered on a case by case basis by the Florida Department of Environmental Protection.

To obtain a general permit, the following information must be submitted to the U.S. Environmental Protection Agency Region IV at least 45 days prior to the beginning of the discharge:

- the name and address of the operation,
- a copy of the FDEP's approval of the Remedial Action Plan,
- a map showing the facility and the discharge location in latitude and longitude, and
- the name of the receiving water. Discharges to Outstanding Florida Waters may be excluded from coverage under the general permit.

3.2 TECHNICAL SELECTION. An infiltration gallery would not be an effective means of effluent disposal at Building 7174. The use of an NPDES permit appears to be the best option for this site.

Secondary treatment would require additional costs and additional operation and maintenance. Based on estimates of effluent concentrations, the air stripper appears to be capable of reducing concentrations well below State standards for total VOA, benzene, and naphthalene. Calculations were performed assuming the NPDES design criteria where a safety factor of 50 percent was incorporated into the latest contaminant concentrations. These calculations are included in Appendix C.

The current air stripper design was checked and effluent concentrations were below specified maximum concentrations for benzene and naphthalene as required for NPDES discharge.

Using an air stripper without secondary treatment prior to discharge will limit operation and maintenance and total cost of the system. Other safety measures such as telemetric monitoring and a second fail-safe circuit will be installed to provide assurance that discharge standards are continuously met.

4.0 RECOMMENDED REMEDIAL ACTION MODIFICATIONS

4.1 AIR STRIPPER DESIGN. To meet requirements for an NPDES permit, the air stripper has been redesigned using an engineering safety factor of 1.5. The air stripping unit recommended is a skid mounted, 1.5-foot-diameter tower, 20 feet in height, with 15 feet of 2.3-inch polypropylene Lanpac™ random packing. The blower will be a AF-8-1000 model American Fan or equivalent, 230-volt, single phase blower capable of producing the design air flow of 300 cubic feet per minute (cfm). This air flow rate and water flow rate give a design air-to-water ratio of 100 to 1. The air stripping unit will also be equipped with influent and effluent sampling ports, a mist eliminator, an observation port, and a telemetric monitor of the pressure drop to indicate the effects of fouling with time or other malfunctions. The unit will be equipped with controls to allow for complete system shutdown in the case of inadequate air delivery due to an unexpected increase in column operating pressure or blower failure. In addition, a separate secondary fail-safe must be provided to meet NPDES requirements. The sump of the column will be equipped with controls that will shut the system down in the event the water in the sump rises above a safe operating level (Section 4.1, Groundwater Recovery, McCoy Annex RAP, ABB-ES, 1993).

A summary of the most recent (September 1994) groundwater analytical results are shown in Table 2-1. The calculated recovery well concentrations and the calculated influent concentrations are contained in Appendix C. A safety factor of 50 percent was applied to the influent concentrations.

Based on the design influent concentrations, which were calculated using a weighted average from the contaminant concentration contour maps, the recommended air stripper will be capable of reducing the concentrations of benzene to less than 1 microgram per liter ($\mu\text{g}/\ell$), total BTEX to less than 50 $\mu\text{g}/\ell$, and total naphthalenes to less than 100 $\mu\text{g}/\ell$. The stripper was designed using the AIRSTRIP™ computer program. These calculations are contained in Appendix C. The calculations for the ambient air impact are also contained in Appendix C. The ambient air impact values are not expected to exceed the acceptable ambient concentration for any contaminant.

4.2 OTHER MODIFICATIONS.

4.2.1 Lead Filtration In the OHM RAP Addendum, a 0.45 micron filter was specified to remove the lead contamination from the influent stream to meet the effluent limitations of 30 ppb. A summary of the required effluent limitations required by the city of Orlando was provided in the first RAP Addendum.

Based on the September 1994 groundwater sampling event, groundwater concentration calculations yield influent lead concentrations of 30 ppb. This influent level would meet discharge standards prior to treatment. Lead concentrations greater than 30 ppb are not expected, therefore, it is recommended that a 10 micron filter be used. This will lessen the possibility of fouling and will decrease necessary maintenance, while providing a reduction in the lead concentrations in the effluent.

4.2.2 Control System The control panel at this site will be equipped with surge protection and will perform the following functions.

- The air stripper will be equipped with controls to cause complete system shutdown in case of inadequate air delivery due to an unexpected increase in column operating pressure or blower failure. The sump of the air stripper will be equipped with controls that will cause the control panel to shut down the groundwater recovery pumps in the event that the water in the sump rises above a safe operating level. In addition, a low level float will be placed in the sump to cause the air stripper influent pumps to be turned back on.
- A pressure switch will be installed to shut the entire vacuum system down if the pressure in the granular activated carbon (GAC) units becomes excessive.
- Previous plans called for service station personnel to be instructed to contact the base environmental coordinator in the event of a system shutdown or malfunction. However, because station will be inactive during remedial system operations, controls with telemetric notification capability will be installed for the level sensors and pressure monitors throughout the system.

Revised diagrams of the groundwater remedial system instrumentation, along with its legend, are presented on Figures 4-1 and 4-2. The control components are also described in Table 4-1.

4.3 MONITORING PROGRAM. The monitoring program is designed to evaluate the performance, progress, and effectiveness of the system installed and to identify possible methods of improving the performance. The air stripper influent and air stripper effluent will be sampled weekly for the first month, monthly for the first year, and quarterly thereafter. The effluent will be sampled in accordance with NPDES permit requirements. In addition, monitoring wells OLD-7174-5, OLD-7174-7, OLD-7174-8, and OLD-7174-11 through OLD-7174-18 will be sampled quarterly to provide data for tracking the progress of the remedial program. Monitoring wells OLD-7174-1 and OLD-7174-2 were destroyed during the tank removal. The condition and the possible sampling of monitoring wells OLD-7174-3 and OLD-7174-4 will be evaluated in the field as these wells may have been damaged during the tank removal or site restoration following tank excavation. An updated site map is presented on Figure 4-3. All samples will be analyzed by USEPA Methods 602 and 610. Quality assurance samples will also be collected during each sampling event.

The influent and effluent of the vacuum extraction system will be sampled weekly the first month of operation, monthly for the first year, and quarterly thereafter. These samples will be analyzed by USEPA Method T03 to provide data on the effectiveness of the system.

The air and water flow rates, total gallons treated, and the pressure in the air stripper will be recorded together with the water levels in all wells during each sampling event. These data will be summarized in a letter report to the Navy and FDEP after each visit. The minimum time of cleanup to the target levels is estimated to be 18 months, based on the time for the contamination to travel to the recovery wells. Maximum time for cleanup could be as long as 10 years depending on actual contaminant recovery and migration to the recovery wells.

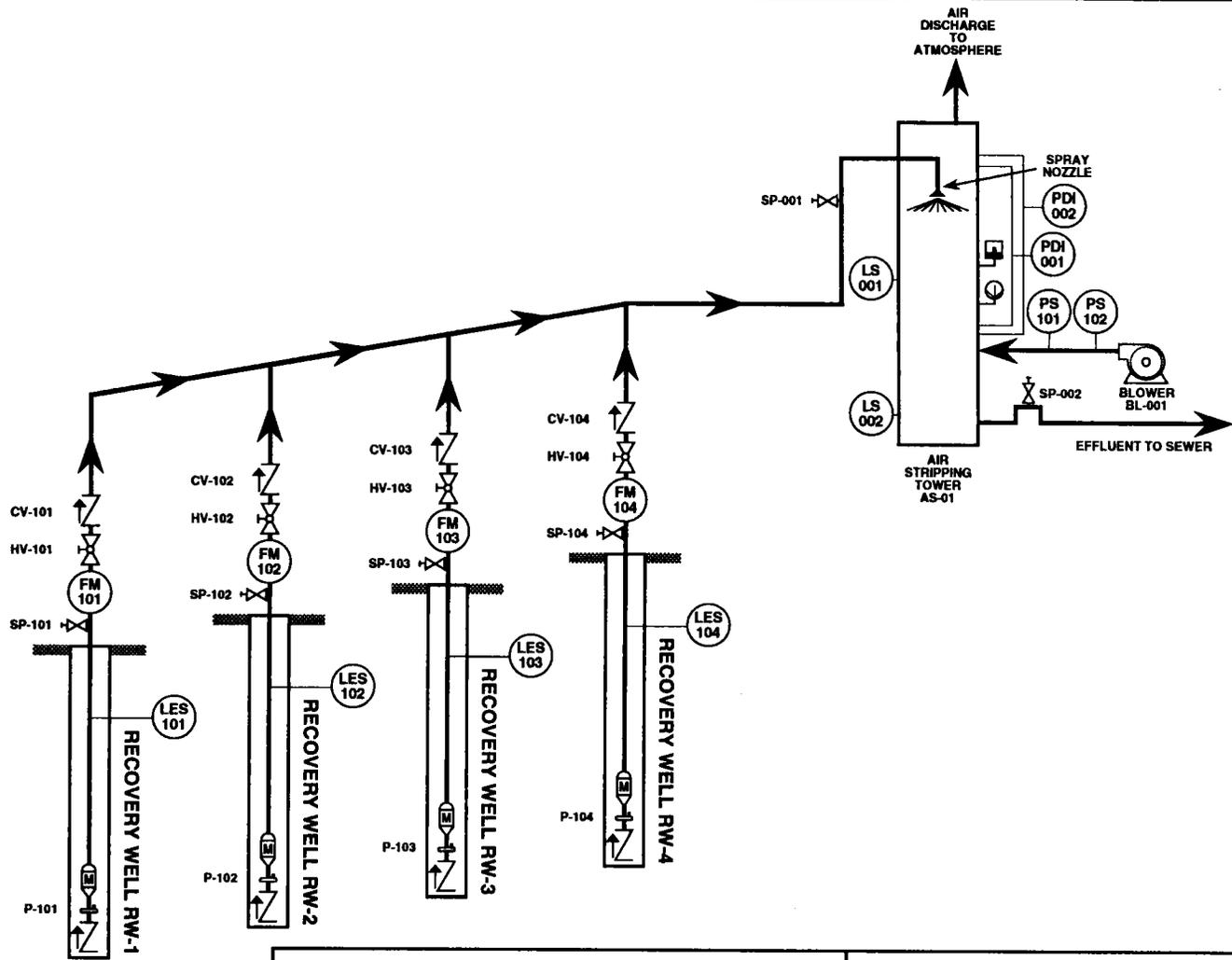


FIGURE 4-1
GROUNDWATER TREATMENT SYSTEM
PIPING AND INSTRUMENTATION DIAGRAM



REMEDIAL ACTION PLAN
(ADDENDUM), BUILDING 7174,
MCCOY ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

INSTRUMENT ID LEGEND

LETTER	FIRST LETTER	SECOND LETTER	THIRD LETTER
	PROCESS VARIABLE OR ACTIVATION	TYPE OR FUNCTION	ADDITIONAL FUNCTION
A	ANALYSIS	ALARM	ALARM
C	CONDUCTIVITY	CONTROL	CONTROL
D	DENSITY (Sq)	DIFFERENTIAL	--
E	VOLTAGE	ELEMENT	--
F	FLOW	RATIO	--
G	GAGING	GLASS	--
H	HAND	--	HIGH
I	CURRENT	INDICATOR	INDICATOR
K	TIME	--	CNTRL STA
L	LEVEL	LIGHT	LOW
M	MOISTURE	METER	MIDDLE
O	--	ORIFICE	--
P	PRESSURE	PRESSURE	POINT
R	RADIATION	REGULATOR	RECORDER
S	SPEED	SWITCH	SENSOR
T	TEMPERATURE	TRANSMITTER	TRANSMITTER
V	VACUUM	VALVE	VALVE
X	--	TEST	--
Y	--	RELAY	--
Z	POSITION	--	DRIVE

VALVES & ACTUATORS

-  GATE VALVE
-  GLOBE VALVE
-  CHECK VALVE
-  BALL VALVE
-  BUTTERFLY VALVE
-  NORMALLY CLOSED VALVE
-  THROTTLING VALVE
-  SAFETY RELIEF VALVE
-  NEEDLE VALVE
-  ANGLE VALVE
-  DIAPHRAGM ACTUATOR
-  ELECTRIC MOTOR ACTUATOR
-  PNEUMATIC ACTUATOR (PISTON)
-  SOLENOID ACTUATOR
-  FLEXIBLE CONNECTOR
-  HOSE
-  SAMPLING PORT
-  THERMOMETER
-  PRESSURE GAUGE

EQUIPMENT

-  CENTRIFUGAL PUMP
-  POSITIVE DISPLACEMENT PUMP
-  SUBMERSIBLE PUMP
-  BLOWER OR FAN
-  FILTER
-  HEAT EXCHANGER
-  EDUCTOR OR EJECTOR
-  Y PATTERN STRAINER
-  BASKET STRAINER
-  DUPLEX BASKET STRAINER

FIGURE 4-2
PIPING AND INSTRUMENTATION LEGEND



REMEDIAL ACTION PLAN
(ADDENDUM), BUILDING 7174,
McCOY ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Table 4-1
Groundwater Treatment Process Controls

Remedial Action Plan Addendum 2
Building 7174, McCoy Annex
NTC Orlando, Orlando, FL

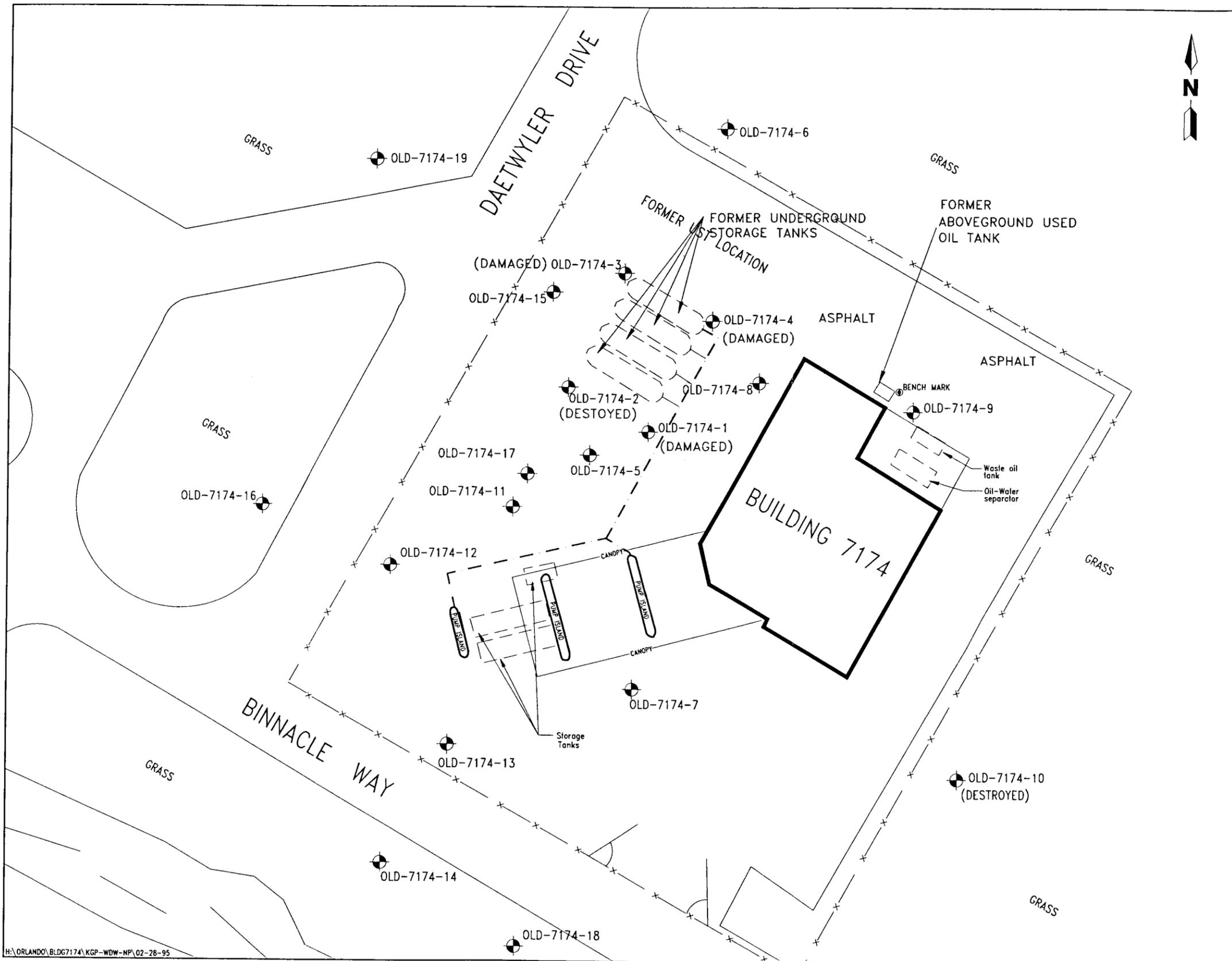
Sensor ID No.	Description	Location	Interlocks	Local Indicators
P-101	Pump	RW-01		
P-102	Pump	RW-02		
P-103	Pump	RW-03		
P-104	Pump	RW-04		
FM-101	Flow meter	Before header		Indicates instantaneous and total flow from RW-01
FM-102	Flow meter	Before header		Indicates instantaneous and total flow from RW-02
FM-103	Flow meter	Before header		Indicates instantaneous and total flow from RW-03
FM-104	Flow meter	Before header		Indicates instantaneous and total flow from RW-04
LES-101	Level element sensor	RW-01	1. Low level shuts down P-101 2. High level starts P-101	
LES-102	Level element sensor	RW-02	1. Low level shuts down P-102 2. High level starts P-102	
LES-103	Level element sensor	RW-03	1. Low level shuts down P-103 2. High level starts P-103	
LES-104	Level element sensor	RW-04	1. Low level shuts down P-104 2. High level starts P-104	
SP-101	Sampling port	RW-01		
SP-102	Sampling port	RW-02		
SP-103	Sampling port	RW-03		
SP-104	Sampling port	RW-04		
SP-001	Sampling port	After Header		Sampling device after flows combined
LS-001	Level switch in the tower	AS-01		High level shuts down BL-001 and notifies BEC
LS-002	Level switch in the tower	AS-01		Low level shuts down BL-001 and notifies BEC
PDI-001	Pressure differential indicator	AS-01		Indicates fouling in packing media and contacts BEC.
PDI-002	Telemetric PDI	AS-01		Indicates fouling in packing media and transmits data to the RAC contractor.

See notes at end of table.

Table 4-1 (Continued)
Groundwater Treatment Process Controls

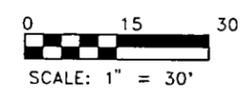
Remedial Action Plan Addendum 2
Building 7174, McCoy Annex
NTC Orlando, Orlando, FL

Sensor ID No.	Description	Location	Interlocks	Local Indicators
SP-002	Sampling port	After AS-01		Sampling device before being discharged to sewer
PS-001	Pressure switch	BL-001	Low pressure shuts down BL-001	Indicates blower malfunction and contacts BEC
PS-002	Pressure switch	BL-001	High or low pressure shuts down BL-001.	Secondary safety control indicating blower malfunction necessary for NPDES permit.
<p>Notes: P = pump. RW = recovery well. FM = flow meter. LES = level element sensor. SP = sampling port. LS = level switch. AS = air stripping tower. BL = blower. BEC = Base Environmental Coordinator. PDI = pressure differential indicator. RAC = Remedial Action Contract PS = pressure switch. NPDES = National Pollutant Discharge Elimination System.</p>				



LEGEND

- OLD-7174-7 Existing monitoring well with designation
- Subsurface features
- Product distribution lines (removed 1/95)
- Fence line



**FIGURE 4-3
SITE LAYOUT**

**REMEDIAL ACTION PLAN
ADDENDUM
BUILDING 7174**

**McCOY ANNEX
NTC ORLANDO, FLORIDA**

Presented in Table 4-2 is a summary of the recommended sampling episodes and associated tests for the first year. In addition to the sampling, the system will also be inspected during each episode and routine preventative maintenance will be performed as necessary.

**Table 4-2
Sampling Schedule, First Year**

Remedial Action Plan Addendum 2
Building 7174, McCoy Annex
NTC Orlando, Florida

Task	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Measure water levels	XXXX	X	X	X	X	X	X	X	X	X	X	X
Sample influent and effluent airstripper and vacuum extraction system.	XXXX	X	X	X	X	X	X	X	X	X	X	X
Sample effluent for NPDES regulatory analyses ¹ .	X	X	X	X	X	X						
Measure air flow rate of air stripping unit.	XXXX	X	X	X	X	X	X	X	X	X	X	X
Measure pressures and air stripping unit temperature.	XXXX	X	X	X	X	X	X	X	X	X	X	X
Measure water flow through system.	XXXX	X	X	X	X	X	X	X	X	X	X	X
Sample monitoring wells ²			X			X			X			X

¹Sampling for National Pollutant Discharge Elimination System (NPDES permit parameters will be conducted for the first 6 months. At this time effluent concentrations will be checked for compliance and possible effluent sampling completion.

²Includes monitoring wells OLD-7174-5, OLD-7174-7, OLD-7174-8, and OLD-7174-11 through OLD-7174-18.

Notes: XXXX indicates weekly sampling for the first month.

X indicates task to be performed.

NPDES = National Pollutant Discharge Elimination System.

5.0 SCHEDULE

Table 5-1 is a schedule for the permit acquisition and construction for the remedial system at the McCoy Annex Base Exchange Service Station, Building 7174. This schedule specifies system completion and operation by June 7, 1995. A great deal of uncertainty is present due to the necessary regulatory process, and schedule changes and adjustments may be needed to facilitate the completion of the remedial system. Every effort should be made to maintain this schedule and complete remedial construction in a timely manner.

**Table 5-1
Remedial Construction Schedule**

Remedial Action Plan Addendum 2
Building 7174, McCoy Annex
NTC Orlando, Florida

Date ¹	Action
March 6	RAP Addendum received by FDEP for review
March 20	RAP approval letter received by ABB-ES and forwarded to BEI ²
March 24	Documentation as specified in Section 3.2.1 of this addendum is sent to USEPA Region IV.
April 10	BEI begins construction of remedial system
June 1	NPDES permit goes into effect ²
June 7	Construction of the system complete, trouble shooting, "tuning", and system startup.
June 12	ABB-ES begins weekly system sampling

¹ All dates 1995.

² Tentative pending regulatory approval.

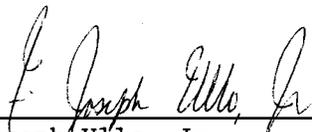
Notes: RAP = Remedial Action Plan.
FDEP = Florida Department of Environmental Protection.
ABB-ES = ABB Environmental Services, Inc.
BEI = Bechtel Environmental, Inc.
USEPA = U.S. Environmental Protection Agency.
NPDES = National Pollutant Discharge Elimination System.

6.0 COST ESTIMATE

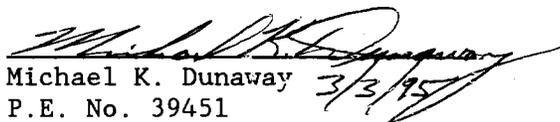
An engineering estimate of the cost differences due to changes described herein is presented the Best Management Practices Plan, which is in Appendix D in those report copies that require it and has been omitted in others. This was done to facilitate Navy procurement requirements

7.0 PROFESSIONAL REVIEW CERTIFICATION

This Remedial Action Plan Addendum for the McCoy Annex Base Exchange Service Station, Naval Training Center, Orlando, Florida, has been prepared under the direction of a Registered Professional Engineer. The plan includes the necessary modifications to the approved RAP to facilitate the use of an NPDES permit. This includes factors of safety in the air stripper design, controls with telemetry, and changes in the monitoring plan. The engineering aspects of this plan were prepared based on the certifying engineer's knowledge, information, and belief, and in accordance with commonly accepted procedures consistent with applicable standards of practice.



F. Joseph Ullo, Jr.
Project Engineer



Michael K. Dunaway 3/3/95
P.E. No. 39451
Senior Engineer

REFERENCES

ABB Environmental Services, Inc. (ABB-ES), 1992, Comprehensive Quality Assurance Plan: Tallahassee, Florida.

ABB-ES, 1992, Contamination Assessment Report, McCoy Annex Base Exchange Service Station, Building 7174, Naval Training Center, Orlando, Florida: prepared for Southern Division, Naval Facilities Engineering Command, May 1992.

ABB-ES, 1992, Remedial Action Plan, McCoy Annex Base Exchange Service Station, Building 7174, Naval Training Center, Orlando, Florida: prepared for Southern Division, Naval Facilities Engineering Command, July 1992.

OHM Corporation (OHM), 1993, Remedial Action Plan Addendum, Naval Training Center McCoy Annex, Service Station Building 7174, Orlando, Florida: prepared for the Department of the Navy, Naval Facilities Engineering Command, Southern Division, May 1993.

APPENDIX A
CORRESPONDENCE



January 10, 1995

Doc. No. 08519-001

Mr. Eric Nuzie, Section-Chief
Bureau of Waste Cleanup
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399

SUBJECT: Summary of the telephone conversation between Mike Dunaway (ABB-ES) and Greg Brown (FDEP) concerning the present remedial action plan submitted by OHM Corporation for Site 7174 at McCoy Annex in Orlando, Florida Contract No. N62467-89-D-0317, CTO No. 107.

Dear Eric,

The Remedial Action Plan for Site 7174 at McCoy Annex in Orlando, Florida, was discussed in a telephone conversation between Mike Dunaway (ABB-ES) and Greg Brown (FDEP) on December 19, 1994. One item of concern was the 0.45 micron filter size which is specified in the approved RAP to filter lead from the influent stream to meet the effluent limitations of 30 ppb.

In November 1992, lead concentrations greater than 100 ppb were detected in four of the nineteen monitoring wells. Four other wells had concentrations in excess of 30 ppb but less than 100 ppb during this sampling event. More recent data collected in September 1994, indicate lead concentrations in excess of 30 ppb were only detected in one monitoring well (MW-18, 37.1 ppb). Based on this latest sampling event, lead concentrations in excess of 30 ppb are not expected in the combined influent from all wells.

Based on the latest information, it was agreed in our December 19 telephone conversation that a 0.45 micron filter size is too conservative and that a 10 micron filter should be sufficient. The effluent will be monitored during operation to assure that all disposal standards are met, and additional measures will be taken if necessary. If you have any questions or comments, please feel free to call me at 656-1293.

Sincerely,
ABB ENVIRONMENTAL SERVICES, INC.

Michael K. Dunaway, P.E., P.G.
Technical Lead

Joseph Ullo
Project Engineer

cc: Greg Brown (FDEP)
Luis Vazquez (Southern Division)
Mark Diblin (ABB-ES)

ABB Environmental Services Inc.



18 January 1995

Mr. Eric Nuzie, Section-Chief
Bureau of Waste Cleanup
Florida Department of Environmental Protection
2600 Blairstone Road
Tallahassee, Florida 32301

**Re: Modification to an Approved Remedial Action Plan (RAP)
McCoy Annex Base Exchange Service Station
Building 7174
Naval Training Center
Orlando, Florida
April, 1993**

Dear Mr. Nuzie:

Site 7174 is the previous location of four 10,000-gallon fiberglass underground storage tanks (USTs) containing gasoline and diesel fuel. These USTs were installed in 1986, at which time the pre-existing six USTs were abandoned. A Contamination Assessment Report (CAR) and a RAP have been prepared for the subject site. ABB-ES completed a RAP in January 1993 for Site 7174 but it was not sent to FDEP. Subsequently, a RAP Addendum was prepared by OH Materials in May 1993 and was submitted and approved by the FDEP.

On July 6 and 7, 1994, a meeting was held at NTC Orlando with Southern Division (SDIV), the Activity, ABB Environmental Services (ABB-ES), and the remedial action contractor (Bechtel Environmental, Inc [BEI]). One result of the meeting was to plan for the removal of the four 10,000-gallon USTs installed in 1986 (Attachment 1). From December 27, 1994 to January 03, 1995 the four underground storage tanks were excavated and removed from the subsurface. Approximately 500 cubic yards of excessively contaminated soil was removed from the excavation for thermal treatment. During the tank removal monitoring wells OLD-7174-1 through OLD-7174-4 were damaged. Clean back fill was placed in the excavation and four inches of concrete were placed over the excavation to assist in future vapor extraction soil remediation.

Compliance wells are required with site closure following a tank removal to determine if a contamination assessment is necessary. Following the removal of the four 10,000-gallon USTs, the four impacted compliance wells were not replaced. The assessment at this site is already complete and the removed tanks were within an area presently targeted for remediation by the approved RAP. However, the monitoring wells which were removed during the tank removal are included in the monitoring program associated with the approved RAP. This change in the RAP is considered significant enough to require review and approval from FDEP.

ABB Environmental Services Inc.

The change from the approved RAP will exclude the destroyed monitoring wells OLD-7174-1 through OLD-7174-4. Monitoring wells OLD-7174-14, and OLD-7174-18 will also be excluded from monthly monitoring. The purpose for quarterly monitoring, as stated in the approved RAP, is to provide data for tracking the progress of the remedial system. Monitoring wells OLD-7174-14, and OLD-7174-18 are not within the area targeted for remediation and would not provide conclusive information for tracking the progress of the remedial system.

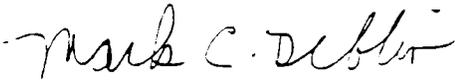
The remaining nine monitoring wells OLD-7174-5, OLD-7174-7, OLD-7174-8, OLD-7174-11, OLD-7174-12, OLD-7174-13, OLD-7174-15, OLD-7174-16, OLD-7174-17 will remain in the monitoring program to provide data to track the remedial system progress.

Attached (Attachment 2) are the updated tables for the samples that will be taken from the site groundwater monitoring wells, system recovery wells, and system monitoring ports.

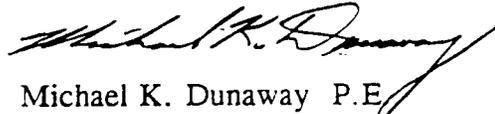
If there are any questions regarding this RAP modification request, please contact me or Mark Diblin at 904-656-1293.

Very truly yours,

ABB Environmental Services, Inc.



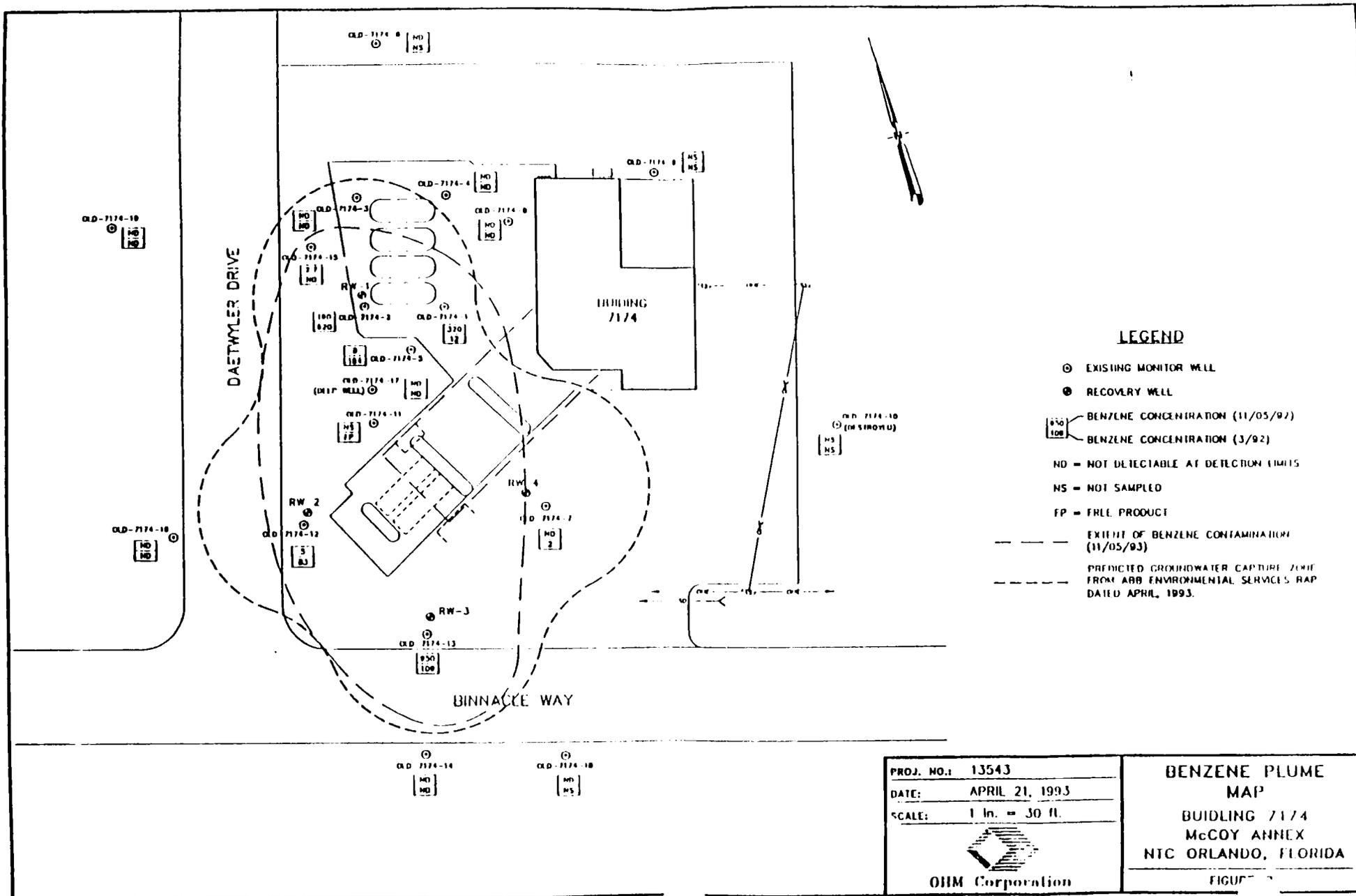
Mark C. Diblin P.G.
Senior Project Manager



Michael K. Dunaway P.E.
Senior Engineer

cc: Project File

ATTACHMENT 1



PROJ. NO.: 13543
 DATE: APRIL 21, 1993
 SCALE: 1 in. = 30 ft.



OHM Corporation

**BENZENE PLUME
 MAP**
 BUILDING 7174
 McCOY ANNEX
 NTC ORLANDO, FLORIDA

FIGURE 2

ATTACHMENT 2

Table 2
Startup Sampling

NTC ORLANDO – SITE 7174
POA FOR CTO 107, MOD 4

SAMPLE ID	USEPA 602	KEROSENE GROUP	AIR 8020
RW-1 ²		1	
RW-2 ²		1	
RW-3 ²		1	
RW-4 ²		1	
INFLUENT ²		1	
EFFLUENT ¹		1	
DUPLICATES ²		1	
TRIP BLANKS ^{1,2}	1		
AIR SAMPLES			
INFLUENT (TOTAL SYSTEM) ²			1
EFFLUENT (AFTER GAC UNIT 1) ²			1
TOTALS	1	7	2

NOTES:

¹ – Startup Verification Sample (24 hour turnaround)

² – Post Startup Sampling

Kerosene Group Consists of 601, 602, 610, 504.1, 418.1, and 239.2

Table 3
Weekly Visit Sampling

NTC ORLANDO – SITE 7174
POA FOR CTO 107, MOD 4

SAMPLE ID GROUNDWATER SAMPLES	USEPA 602	USEPA 610	Lead 239.2	AIR 8020
INFLUENT	1	1	1	
EFFLUENT	1	1	1	
DUPLICATES	1	1	1	
TRIP BLANKS	1			
AIR SAMPLES				
INFLUENT (TOTAL SYSTEM)				1
EFFLUENT (AFTER GAC UNIT 1)				1
TOTALS	4	3	3	2

OTES:
Sample duplicate represents effluent

Table 4
 Monthly Visit Sampling

NTC ORLANDO – SITE 7174
POA FOR CTO 107, MOD 4

SAMPLE ID GROUNDWATERSAMPLES	USEPA 602	USEPA 610	LEAD 239.2	AIR 8020
RW-1	1	1		
RW-2	1	1		
RW-3	1	1		
RW-4	1	1		
INFLUENT	1	1	1	
EFFLUENT	1	1	1	
DUPLICATES	1	1	1	
TRIP BLANKS	1			
AIR SAMPLES				
INFLUENT (TOTAL SYSTEM)				1
EFFLUENT (AFTER GAC UNIT 1)				1
TOTALS	8	7	3	2

S:

Sample duplicate represents effluent

Both groundwater and air samples will be collected dynamically

Table 5
Quarterly and Annual Visit Sampling

NTC ORLANDO – SITE 7174
POA FOR CTO 107, MOD 4

SAMPLE ID GROUNDWATER SAMPLES	USEPA 602	USEPA 610	LEAD 239.2	AIR 8020
MW-5	1	1		
MW-7	1	1		
MW-8	1	1		
MW-11	1	1		
MW-13	1	1		
MW-15	1	1		
MW-16	1	1		
MW-17	1	1		
RW-1	1	1		
RW-2	1	1		
RW-3	1	1		
RW-4	1	1		
INFLUENT	1	1	1	
EFFLUENT	1	1	1	
DUPLICATE	2	2	2	
TRIP BLANKS	2			
AIR SAMPLES				
INFLUENT (TOTAL SYSTEM)				1
EFFLUENT (AFTER GAC UNIT 1)				1
TOTALS	18	16	4	2

NOTES:

- Sample duplicate represents effluent
- All air samples will be collected dynamically
- All monitoring wells (MW) will be sampled using a bailer. The remaining samples will be collected dynamically.



January 23, 1995

Doc. No. 08519-002

Commanding Officer
ATTN: Mr. Luis Vazquez, Code 1843
SOUTHNAVFACENGCOM
P.O. Box 190010
North Charleston, South Carolina 29419-9010

**SUBJECT: Recommendation for effluent disposal at Site 7174, McCoy Annex, Orlando, Florida
Contract No. N62467-89-D-0317, CTO No. 107.**

Dear Luis:

After speaking with you on Thursday, January 5, we have further investigated disposal options for the effluent generated during remedial action at McCoy Annex, Site 7174. Items that differ from the proposed system and should be modified are documented below.

The first item is the 0.45 micron filter size specified in the approved RAP to filter lead from the influent stream to meet effluent limitations of 30 ppb. Based on the most recent groundwater sampling event in September 1994, lead concentrations greater than 30 ppb are not expected. Mike Dunaway (ABB-ES) and Greg Brown (FDEP) agree that the 0.45 micron filter size is too conservative and recommend that a 10 micron filter be used.

Site models indicate that an infiltration gallery is not a technically feasible alternative for effluent disposal. Different infiltration configurations were modeled. The first option, utilizing the open area east of building 7174, was found to be insufficient. Two other options were considered without regard to site specific constraints to determine the necessary size of a working recharge gallery in the given hydrogeologic conditions. It was determined that a typical trenched infiltration gallery would require a length of approximately 0.4 miles in order to prevent excessive mounding of the water table. If a larger rectangular infiltration gallery were used, approximately 15 acres would be required for effective recharge. Based on these initial estimates, it is obvious that no matter the cost, a recharge gallery cannot be considered a feasible effluent disposal option for this area.

We have looked into the possibility of utilizing a National Pollutant Discharge Elimination System, NPDES, permit with direct discharge to the storm sewer on site and have spoken to Bechtel Environmental, BEI, about the need for a Consumptive Use permit. BEI has informed us that the Consumptive Use permit would not be difficult to obtain and is not considered a major concern. A copy of the Remedial Action Plan Guidelines with the RAP Design

ABB Environmental Services Inc.



Requirements for NPDES Discharges is attached.

An NPDES permit would be an efficient method of disposal. The volume of water to be released is negligible compared to normal storm water design standards. First year costs associated with the use of an NPDES permit are only slightly greater than the normal first year monitoring costs with the only additions being 48 hour static bioassays, pH measurements, and continuous monitoring of the discharge rate. Secondary treatment is also required to assure that effluent standards are consistently met. Options for this include the following.

- Carbon polishing consisting of two canisters in series with a sampling port between.
- A secondary diffused aerator or air stripper with a minimum of 90% removal efficiency.
- Ozonation if it is demonstrated to be appropriate and cost effective.

This secondary step may be bypassed or eliminated after six months if documentation is provided demonstrating the effluent quality requirements are met after the primary treatment process.

Another option, one without secondary treatment, includes safety modifications to the air stripper or a secondary fail-safe circuit for the primary treatment unit to shut the groundwater recovery system down in the event of blower failure. Any other proposals will be considered on a case by case basis by the FDEP.

Analysis performed on groundwater from monitoring well MW-9 has indicated that Cadmium, Chromium, and Lead levels are below discharge levels for fresh water. The following analyses have not been performed.

- Total Mercury
- Total Copper
- Total Zinc
- Hexavalent Chromium
- Nitrogen (Ammonia, Nitrite, Nitrate, TKN)
- Phosphorous (Ortho-phosphate and total phosphorous)

These analysis should be performed on the effluent prior to discharge to assure that effluent levels are in accordance with Exhibit B and Attachment II of the RAP Guidelines attached.



To obtain a general permit, the following information must be submitted to the EPA at least 45 days prior to the beginning of the discharge:

1. The name and address of the operation,
2. A copy of the FDEP's approval of the Remedial Action Plan,
3. A map showing the facility and the discharge location in latitude and longitude, and
4. The name of the receiving water. Discharges to Outstanding Florida Waters may be excluded from coverage under the general permit.

If you have any further questions, please feel free to contact either Joe Ullo or Mike Dunaway at (904) 656-1293.

Very truly yours,

ABB ENVIRONMENTAL SERVICES, INC.

A handwritten signature in black ink, appearing to read "Michael K. Dunaway". The signature is written in a cursive, flowing style.

Michael K. Dunaway, P.E., P.G.
Technical Lead

A handwritten signature in black ink, appearing to read "Mark C. Diblin". The signature is written in a cursive, flowing style.

Mark C. Diblin, P.G.
Task Order Manager

Enclosures

cc: Joseph Ullo (ABB-ES)
Tom Conrad (BEI)
File

Petroleum Cleanup Program
REMEDIAL ACTION PLAN GUIDELINES

ENGINEERING SUPPORT SECTION, BUREAU OF WASTE CLEANUP

History: New 5/16/94

Identification No.: ESS-3

Topic of Guideline: RAP Design Requirements for NPDES Discharges

Thomas W. Conard 5/16/94
Signature and Date
SECTION ADMINISTRATOR

[Signature] 5/16/94
Signature and Date
BUREAU CHIEF

A commonly used remediation system disposal option for treated groundwater at petroleum cleanup sites is surface water discharge. These discharges are regulated under the EPA NPDES General Permit No. FLG830000. This General Permit allows a faster process for obtaining coverage under the NPDES discharge program for petroleum cleanup sites than the alternative of applying for an individual permit to EPA for each site. A copy of a Department implementation memorandum which includes applicable sections of the Federal Register is attached as Attachment I. Attachment I includes three exhibits, A, B, and C which contain the federal register, summary of requirements for long term discharges, and summary of requirements for short term discharges, respectively.

The general permit for long term discharges at remediation sites is applicable to petroleum contaminated sites only. Sites with other non-petroleum contamination sources, either separate or commingled with petroleum contamination, may not be eligible for this general permit for long term discharges (greater than 30 days). The requirements for long term discharges are summarized in Exhibit B of Attachment I.

On August 12, 1991, EPA modified the general permit to include coverage of short-term, construction-related dewatering discharges (less than 30 days). These discharges of less than 30 days are not necessarily related to a petroleum contaminated site. Use of the short term discharge permit may be applicable to activities such as performing pump tests, dewatering for tank removal or installation, or other site dewatering activities. The requirements for the short term discharge are summarized in Exhibit C of Attachment I.

The NPDES general permit analysis parameters for the long term discharges (Exhibit B of Attachment I) are based on an assumption that the site is contaminated with petroleum constituents only. If a surface water discharge is anticipated when developing the RAP it will be necessary to initially perform additional groundwater analysis to demonstrate that other non-petroleum surface water quality standards will not be exceeded by the discharge. One background representative groundwater sample should be obtained and analyzed for the parameters listed in Attachment II. Based on the analysis results, the RAP must demonstrate that the surface water standards for the proposed receiving water body will not be exceeded. If any of the surface water standards are exceeded in the groundwater analytical results, an assessment of the appropriate water quality based effluent limitations may be necessary. The Engineering Support Section should be contacted for procedures to make this demonstration.

One of the provisions of the Department's agreement with EPA is a necessity to ensure that discharge standards are continuously met. The manner in which the Department has historically chosen to ensure compliance with this requirement without the need for continuous monitoring is to require activated carbon polishing following a conventional treatment system (e.g. air stripping). This policy was originally instituted to ensure that discharge standards would be continuously met in the event of equipment fouling, variable influent concentrations not anticipated in the system design, or other malfunctions affecting system performance or efficiency. Normally two carbon units in series with a sampling port between have been required so that if breakthrough of the first carbon unit has occurred between maintenance visits, the second carbon unit will provide adequate treatment until corrective action can be taken.

With many remediation systems now operating in Florida, it is becoming apparent that this design requirement may be too narrowly specified and may be counter productive to the overall goal of efficient and effective cleanup of contaminated sites. Some activated carbon polishing systems have reportedly resulted in significant maintenance problems and costs, and have in fact had a negative affect on the overall progress of site cleanup due to frequent shutdowns and maintenance problems. Operational data on many of these sites has demonstrated that the primary treatment process has consistently met effluent standards, making the carbon polishing unnecessary. In light of this information we have determined that our current policy of mandating carbon polishing through the life of the site cleanup is not appropriate.

The Department intends to maintain our current policy of holding sites with surface water discharges to a higher standard than some of the other disposal options, however, it is clear that a more flexible policy to accomplish this goal is in order.

Any one of the following will now be considered adequate for demonstrating the additional assurances that discharge standards will be continuously met.

- (a) The system design may include carbon polishing consisting of two canisters in series, with a sampling port between, following a primary treatment process (e.g. air stripper) that is designed to achieve applicable effluent standards. The carbon polishing system must be used initially, however, the system may be bypassed or eliminated upon authorization from the Department. To justify bypass or removal of the carbon, documentation must be provided after a minimum of six months of operation which demonstrates the primary treatment process has consistently met the required effluent quality requirements and that there have been no significant operational problems with the primary treatment process. The minimum frequency of data must include weekly sampling for the first month of operation followed by monthly sampling for the next five months. The system should be initially designed to allow the bypassing or removal of carbon canisters without significant system modification or downtime.
- (b) The following design factors may be incorporated into the system design to ensure the effluent standards are continuously met:
 - (1) An increase in the air stripper design safety factor from the current 25% to a minimum of 50% must be provided, and
 - (2) Telemetric monitoring of the pressure drop across the air stripper must be provided to notify the person responsible for conducting site cleanup of fouling or other aeration system malfunction, and
 - (3) A separate secondary fail-safe circuit must be provided for the primary treatment unit (in addition to the one required on all treatment units) to shut the groundwater recovery system down in the event of blower failure.
- (c) A secondary diffused aerator or air stripper with a minimum of 90% removal efficiency (determined on basis of influent concentration of untreated groundwater) may be provided to treat hydrocarbons which may pass through the primary treatment unit. The primary treatment unit must be designed to meet the effluent standards alone based on appropriate design assumptions for influent concentrations.
- (d) Ozonation may be proposed as an alternative to activated carbon polishing if it is demonstrated to be appropriate and cost effective for the site design considerations including flow rate and O&M schedule.

- (e) Alternate proposals to the above will be considered by the Department (or contracted local program) on a case by case basis. Such a proposal must demonstrate a basis for ensuring discharge standards will be continuously met and that the proposal is cost-effective considering the cost of equipment as well as O&M.

Modifications of existing systems may be proposed based on historical operating data. A demonstration of decreased influent concentrations may be used to demonstrate compliance with the design factor option of (b)(1) above.

The RAP or RAP modification must include an evaluation of the cost effectiveness of alternate measures and discussion of O&M considerations to support the recommended method of meeting this requirement. Factors which will affect the approval of alternate methods of ensuring consistent effluent quality include the reliability of assumptions used to predict expected influent concentrations and the availability of groundwater chemistry information which may be used to determine potential for system fouling.

TC/tc

Attachment



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing to Other Than The Addressee	
To _____	Location _____
To _____	Location _____
To _____	Location _____
From _____	Date _____

Interoffice Memorandum

ATTACHMENT I

TO: Bureau of Waste Cleanup Staff
District Waste Program Administrators
District Waste Cleanup Supervisors
District Tanks Supervisors
Local Program Tank Supervisors
Interested Parties

FROM: *TC* Tom Conrardy, Administrator
Engineering Support Section
Bureau of Waste Cleanup

DATE: November 22, 1991

SUBJECT: Modification to National Pollutant Discharge
Elimination System (NPDES) General Permit for
Petroleum Fuel Contaminated Ground/Storm Waters
in the State of Florida.

The EPA recently issued the Final Modification to the NPDES General Permit for Petroleum Fuel Contaminated Ground/Storm Waters in the State of Florida. A copy of the current NPDES general permit from the Federal Register dated July 17, 1989 along with the Final Modification from the August 29, 1991 Federal Register are attached as Exhibit A. Also included is a cover sheet which summarizes the requirements and procedure for applying for the general permit.

The General Permit number has been changed from FLG040001 to FLG830000. There have been no substantive changes to the basic requirements for long term surface water discharges from remedial action systems at petroleum cleanup sites. These discharges are allowed under the general permit after approval of a remedial action plan (RAP) by the Department. The existing requirements for such discharges are described in the July 17, 1989 Federal Register and cover sheet in Exhibit A. A summary of the current requirements for these discharges is attached as Exhibit B.

The more substantial aspect of this modification is the allowance of short term discharges of less than 30 days without first obtaining approval of a RAP. The requirements are described under a newly added section 3 to Part IA of

EXHIBIT A



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-21

Lawton Chiles, Governor

Carol M. Browner, Secretary

National Pollutant Discharge Elimination System (NPDES) General Permit No. FLG830000

Attached is the modified NPDES General Permit for surface water discharges from remedial actions at petroleum contaminated sites in the State of Florida. This general permit establishes effluent limitations and reporting requirements for long term and short term groundwater cleanup operations which have been contaminated by automotive gasoline, aviation and/or diesel fuels. Issuance of this final modified general permit enables cleanup actions at contaminated sites to begin without the delays of individual NPDES permit issuance procedures.

To obtain a general permit, the following information must be submitted to EPA at least 45 days prior to the beginning of the discharge (see Part II, Section F):

1. The name and address of the operation.
2. A copy of the DER's approval of the Initial Remedial Action or Remedial Action Plan. (Not needed for discharges lasting less than 30 days).
3. A map showing the facility and the discharge location in latitude and longitude.
4. The name of the receiving water. Discharges to Outstanding Florida Waters may be excluded from coverage under the general permit (Section II.G.5).

This information should be submitted to:

Environmental Protection Agency, Region IV
NPDES Permits Unit - South Areas
Water Management Division
345 Courtland Street, Northeast
Atlanta, Georgia 30365
(404) 347-3012

All monitoring documents and quarterly reports are to be submitted to EPA at the above address and to the local DER District office. Monitoring results for projects lasting less than 30 days must be submitted to EPA within 30 days of termination of the discharge.

DER recommends that the treatment system consist of air stripping followed by activated carbon polishing, or equivalent. Any equivalent treatment system or safeguards must be capable of insuring that all of the discharge requirements are continuously met. In addition to the effluent limitations listed in the general permit, the effluent must also meet the target levels listed in Chapter 17-770.730, F.A.C., to obtain the required Remedial Action Plan (RAP) approval from the Department.

Final NPDES General Permit for
Petroleum Fuel Contaminated Ground/
Storm Waters in the State of Florida

Monday
July 17, 1989

Part IV

Environmental Protection Agency

Final NPDES General Permit for
Petroleum Fuel Contaminated Ground/
Storm Waters in the State of Florida

permit reduces a significant burden on regulated sources.

Lee A. DeHibas III,

Acting Regional Administrator, Region IV.

Summary of Comments

Appendix A—Public Comments

Public notice of the draft permit was published at 53 FR 32442 (August 25, 1988). The comment period was scheduled to close on September 25, 1988. Region IV received a request from the Florida Petroleum Council for an extension of public comment period, since the proposed draft raised issues of potentially significant concern to the petroleum industry. The comment period was noticed at 53 FR 43035 (October 25, 1988) and extended until the close of business on November 15, 1988.

Significant comments presented during the public comment periods were considered in the formulation of a final decision regarding the proposed permit.

The following parties responded with written comments on the general permit: Total Petroleum Inc., Kerr-McGee Corporation, Hopping Boyd Green & Sams, Florida Petroleum Council, Chevron U.S.A. Inc., Shell Oil Company, Professor Richard L. Williamson, Jr., Florida Petroleum Marketers Association, Hunton & Williams, Florida Department of Environmental Regulation (FDER), Kaiser Engineers, Conoco Inc., and the American Petroleum Institute.

(1) *Comment:* Several industry commenters stated that the Region has failed to consider adequately the factors necessary to establish technology-based effluent limitations for benzene, lead, and naphthalene. They mentioned that there are no promulgated effluent guidelines applicable for these point sources, therefore, this permit must necessarily establish technology based effluent limitations on a site-by-site basis (40 CFR 125.3(c)(2)). Consequently, the Region must consider, inter alia, the "engineering aspects of the application of various types of control techniques and the cost of achieving such effluent reductions." They stated that treating benzene contaminated groundwater to 1.0 µg/l on a consistent basis would require optimal conditions to be met, and also mentioned that long term treatment could amount to \$1,000,000 or more per site. In some cases it may be a technical impossibility to treat hydrocarbon contaminated groundwater to trace levels in the aquifer, even if the most advanced technology currently available is used.

Response: The Region agrees that optimal conditions for complying with the proposed benzene limit may not be

available at every site. Each operator must consider which factors may prevent compliance with the proposed limits before applying for coverage under the general permit. Other factors, such as iron and manganese levels above 5.0 mg/l in the influent require polishing steps before using carbon absorption as a cleanup alternative. However, on individual permit requests, previous facilities were designed to meet a benzene limit of 1.0 µg/l by applying engineering techniques to keep the influent to the airstripper at low concentrations before treatment occurred. Some facilities were using infiltration galleries and were in operation before applying for an NPDES permit and were consistently meeting the 1.0 µg/l effluent limitation for benzene from their treatment facilities prior to requesting a discharge permit to surface waters. If enormous costs could be verified after hydrogeologic consideration due to a long term cleanup project, an individual permit might seem more appropriate; however, Chapter 17-70 of the State Underground Petroleum Environmental Response Program does provide flexibility with regard to costs and time frame after a minimum of one year or less if data exist to verify that the cleanup remedial action is complete.

The State of Florida would have the responsibility to make a determination as to whether the remedial action operations would be deemed complete based on concentrations found in the groundwater and consider the technical feasibility of other proven groundwater techniques to further reduce contaminant levels at the site. Therefore, compliance with the proposed limits of the general permit does not infer high cleanup costs, since FDER would verify whether a remediation plan is complete based on individual site data received from the operator. Even though airstripping independently does very little for removal of leaded compounds in gasoline, airstripping plus other treatment processes combined do reduce the lead levels enough to meet the permit limit. Considering the amount of hydrocarbons recovered in the mobile free floating phase and the high adsorption potential of organic leading compounds onto the soils, treatment to comply with the lead limit has not raised concern at other facilities with individual permits. The technology being used, even though not a lead removal technology, is able to reduce the levels of leaded compounds.

(2) *Comment:* Several commenters mentioned that the proposed limitations for benzene, lead and naphthalene are more stringent than necessary to meet

applicable water quality standards. The commenters mentioned that outside of the mixing zone, Florida has established a general water quality criteria for lead of 50.0 µg/l [FAC 17-3.061(2)(i)], yet the Region proposed to establish end-of-pipe effluent limitations at the point of discharge of 30.0 µg/l, apparently assuming that all discharges will be to Class I Waters-Potable Water Supplies [FAC 17-3.091(16)] and that the drinking water intake pipe will be adjacent to the effluent discharge, a specifically prohibited practice [FAC 17-4.24(1)(d)]. It was stated that the Florida Petroleum Council 1988 report entitled "Benzene in Florida Groundwater" demonstrated that drinking water containing less than 25 µg/l of benzene would not contribute to leukemia. Commenters also mentioned that 3.0 µg/l is the U.S. EPA drinking water standard and that the Florida Department of Environmental Regulation is proposing to set the benzene limit equal to EPA's standard.

Response: The effluent limitations are technology-based and applied at the end-of-pipe; therefore, a mixing zone is not granted under this general permit. On previous individual permit requests for cleanups of this type, the limits were applied at the end-of-pipe. Zones of mixing are granted on a case-by-case basis by FDER and will be considered in individual permit issuances. The State of Florida had considered raising their standard to 5.0 µg/l (MCL) for benzene in the drinking water, but these proposed limits have not been finalized. The 1.0 µg/l limit for benzene has been proven to be technologically achievable, and is coincidentally between the 10^{-5} and 10^{-6} risk levels of 6.6 µg/l and 0.66 µg/l for increase in cancer over a lifetime (EPA 440/5-80-016); therefore, a revision upward is not justified. Also, as discussed in response to Comment (1), the level of influent concentrations by petroleum contamination to the treatment system should be controlled by the operator, i.e., segregating the more concentrated contaminated groundwaters for product reclamation or off-site disposal.

(3) *Comment:* Several commenters stated that the Region's proposed toxicity limitations are both procedurally and substantively infirm and should be used for information screening purposes only. They mentioned the proposed toxicity limitation is more stringent than required under applicable Florida water quality standards and that the subject State regulation provides that the maximum concentration of wastes in the mixing zone shall not exceed the amount lethal to 50% of the test

substances, including lead, the value for the protection of aquatic organisms could be more stringent than human health, particularly in streams with very low hardness (7.7 µg/l at a hardness of 200 µg/l). The effluent limit will not be protective of aquatic organisms in streams with low flows and/or high background levels. It was recommended that a one-time priority pollutant scan be used to ensure the treated water did not contain any toxic pollutants. Also, that a more frequent sampling be imposed in the permit if a failure does occur during toxicity testing to determine if the limit is being maintained using a larger data base and this permit violation would trigger applying for an individual NPDES permit.

Response: This general permit was not written to consider existing or proposed drinking water standards by any regulatory agency. The testing requirement for lead is currently being required by the State of Florida for the groundwater at sites which do not satisfy the "no further action" or "monitoring only" alternative. With regard to toxicity testing, the Region has revised the toxicity testing requirement based on significant comments received on the draft general permit. The Regional toxicity testing requirements still supports the use of organisms significant to the indigenous aquatic community as mentioned in the response to Comment (3); however, additional tests will be required to support continuance or revocation of coverage under the general permit. Part II, Section C, does provide exclusion of coverage under the general permit, if a permittee proposes a discharge to receiving waters that are classified as "Special Protection, Outstanding Florida Waters." A priority pollutant scan is included into Part I B, of the general permit.

(10) *Comment:* One commenter recommended a reduction from the three to two species for use in toxicity tests. Also, language should be included in the permit to clarify that these operations

must also meet the approval of Florida prior to receipt of NPDES general permit coverage.

Response: The recommendation for a reduction from the proposed three (3) species for toxicity testing to the two (2) species was incorporated into the conditions of the final permit. Language was included into the notification stages of the final permit to indicate that these facilities must also obtain approval from the State of Florida prior to attaining coverage under the NPDES general permit.

(11) *Comment:* One commenter recommended that the proposed limits for a pH range of 8.0-8.5 should be dropped since the limits are unrealistic for Florida and natural groundwater often measures in the 4.0-8.0 range for pH.

Response: On previous individual permits issued the pH range of 8.0-8.5 was required and actual operating data indicate that some facilities are operating within this range; therefore, deletion of this pH range is not justified.

III. Other Changes to Final Permit

After review of the proposed permit, Region IV incorporated other changes into the final permit that are part of today's final issued permit.

(1) In Part I, Section D, the schedule of compliance was changed to reflect operational level attainment dates for permittees with revoked individual permits and new dischargers.

(2) In Part II, Section A.2, revised language was incorporated into the permit for penalties for violations of permit conditions, in accordance with the Water Quality Act of 1987.

(3) In Part II, Section F, language was included to allow coverage under the general permit for permittees during initial cleanup operations when Initial Remedial Actions (IRA) have been approved by Florida Department of Environmental Regulation, or if a Site Rehabilitation Initiation Order has been approved.

(4) In Part IV of the Best Management Practices (BMP) plan, language was

added to insure that the plan is maintained at the facility and made available upon request from the Permit Issuing Authority.

Appendix B—General Permit To Discharge Under the National Pollutant Discharge Elimination System

In compliance with the provisions of the Clean Water Act, as amended (33 U.S.C. 1251 et seq; the "Act"),

Discharges of treated groundwater and stormwater incidental to groundwater cleanup operations which are contaminated with gasoline or aviation fuel are authorized to discharge to waters of the United States within the State of Florida in accordance with effluent limitations, monitoring requirements and other conditions set forth herein. The permit consists of Part I, Part II, Part III, Part IV, and Part V.

This permit shall become effective at 1:00 p.m. Eastern Daylight Savings Time, on Monday, July 17, 1989.

This permit and the authorization to discharge shall expire at midnight, Eastern Daylight Savings Time, on July 15, 1994.

John T. Madjar,
Chief, Facilities Performance Branch for
Bruce R. Barrett, Director, Water
Management Division, Region IV.

Part I

A. Effluent Limitations and Monitoring Requirements: Existing Sources and New Dischargers

1. During the period beginning on the effective date of the permit and lasting through the term of this permit, the permittee is authorized to discharge treated groundwater and stormwater that has been contaminated by *Automotive Gasoline*. It is anticipated that these contaminated waters will be treated by air stripping, followed by activated carbon adsorption, if necessary, or equivalent treatment to meet the following effluent limitations.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent characteristic	Discharge limitations		Monitoring requirements	
	Daily average	Daily maximum	Measurement frequency	Sample type
Flow, MGD	Report	Report	Continuous	Flowmeter
Benzene, µg/l		1.0	1/month	Grab
Total Lead, µ/l		30.0	1/month	Grab

The effluent (100%) shall not be lethal to more than 50% of appropriate fish and vertebrate test organisms in 48 hour

static toxicity tests (48-hr. LC₅₀). Failure to demonstrate compliance with the acute toxicity requirement may result in

coverage under this permit being revoked. (see Part V-2).

scheduled compliance the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

Part II—Standard Conditions for NPDES Permits

Section A. General Conditions

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action: for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

Any person who violates a permit condition is subject to a civil penalty not to exceed \$25,000 per day of such violation. Any person who willfully violates permit conditions is subject to a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or both. Any person who negligently violates permit conditions is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, terminated or revoked for cause including, but not limited to, the following:

- a. Violation of any terms or conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;
- c. A change in any conditions that requires either temporary interruption or elimination of the permitted discharge; or
- d. Information newly acquired by the Agency indicating the discharge poses a threat to human health or welfare.

If the permittee believes that any past or planned activity would be cause for modification or revocation and reissuance under 40 CFR 122.52, the permittee must report such information to the Permit Issuing Authority. The submittal of a new application may be required of the permittee. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

5. Toxic Pollutants

Notwithstanding Paragraph A-4, above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the permittee so notified.

The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

6. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" Section B, Paragraph B-3, nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

11. Duty to Provide Information

The permittee shall furnish to the Permit Issuing Authority, within a reasonable time, any information which the Permit Issuing Authority may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Permit Issuing Authority upon request, copies of records required to be kept by this permit.

Section B. Operation and Maintenance of Pollution Controls

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the condition of the permit.

3. Bypassing Treatment Facilities

a. Definitions:

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility which is

discharge will exceed the highest of the following "notification levels":

- (1) Five hundred micrograms per liter (500 µg/l); or
- (2) One milligram per liter (1 mg/l) for anionomy.

11. Signatory Requirements

All applications, reports, or information submitted to the Permit Issuing Authority shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means: (1) a president, secretary, treasurer or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (2) the manager of one or more manufacturing production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

b. All reports required by the permit and other information requested by the Permit Issuing Authority shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and

(3) The written authorization is submitted to the Permit Issuing Authority.

c. Certification. Any person signing a document under paragraphs (a) or (b) of this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under the direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

12. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Permit Issuing Authority. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

13. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false statements, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

Section E. Definitions

1. Permit Issuing Authority

The Regional Administrator of EPA Region IV or his designee, unless at some time in the future the State receives the authority to administer the NPDES program and assumes jurisdiction over the permit at which time, the Director of the State program receiving authorization becomes the issuing authority.

2. Act

"Act" means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576 and Pub. L. 100-4, 33 U.S.C. 1251 et seq.

3. Concentration Measurements

a. The "average monthly concentration", is the sum of the concentrations of all daily discharges sampled and/or measured during a

calendar month on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such month (arithmetic mean of the daily concentration values). The daily concentration value is equal to the concentration of a composite sample or in the case of grab samples is the arithmetic mean (weighted by flow value) of all the samples collected during the calendar day.

b. The "maximum daily concentration" is the concentration of a pollutant discharge during a calendar day. It is identified as "Daily Maximum" under "Other Limits" in Part I of the permit and the highest such value recorded during the reporting period is reported under the "Maximum" column under "Quality" on the DMR.

4. Other Measurements

a. The effluent flow expressed as MGD is the 24 hour average flow averaged monthly. It is the arithmetic mean of the total daily flows recorded during the calendar month. Where monitoring requirements for flow are specified in Part I of the permit the flow rate values are reported in the "Average" column under "Quantity" on the DMR.

b. An "instantaneous flow measurement" is a measure of flow taken at the time of sampling, when both the sample and flow will be representative of the total discharge.

c. Where monitoring requirements for pH or dissolved oxygen are specified in Part I of the permit, the values are generally reported in the "Quality or Concentration" column on the DMR.

5. Types of Samples

a. Grab Sample: A "grab sample" is a single influent or effluent portion which is not a composite sample. The sample(s) shall be collected at the period(s) most representative of the total discharge.

6. Calendar Day

A calendar day is defined as the period from midnight of one day until midnight of the next day. However, for purposes of this permit, any consecutive 24-hour period that reasonably represents the calendar day may be used for sampling.

7. Hazardous Substance

A hazardous substance means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the Clean Water Act.

Part IV—Best Management Practices and Conditions

Section A. General Conditions

BMP Plan

Preparation of a Best Management Practices (BMP) Plan shall be prepared in conjunction with development of the Remedial Action Plan required by Florida Department of Environmental Regulation (See Part II.F.c.). The permittee shall maintain the BMP plan at the facility and shall make the plan available to the permit issuing authority upon request. The "NPDES Guidance Document" can be used as a reference which contains technical information on BMPs and the elements of the BMP program. The permittee shall develop and implement a BMP plan which prevents, or minimizes the potential for, the release of pollutants from ancillary activities, including material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas, to the waters of the United States through plant site runoff; spillage or leaks; sludge or waste disposal; or drainage from raw material storage. The term pollutants refers to any substance listed as toxic under Section 307(a)(1) of the Clean Water Act, oil, as defined in

Section 311(a)(1) of the Act, and substance listed as hazardous under Section 311 of the Act. Copies of the "NPDES Guidance Document" may be obtained by submitting written requests to: Director, Waste Management Division, Region IV, Atlanta, GA 30365.

Part V—Biomonitoring Program

In accordance with Part 1 of this permit, the permittee shall initiate the series of tests described below within 30 days of coverage or commencement of discharge from outfall(s) 001.

1. If the effluent is discharged to a *freshwater stream*, the permittee shall conduct 48-hour static toxicity tests on two appropriate test species (EPA/600/4-85/013, Table 1). The test organisms used shall include one fish and one invertebrate test species (Recommend: A Daphniae species and the fathead minnow (*Pimephales promelas*)). If the effluent is discharged to a *saltwater stream*, the permittee shall conduct 48-hour static toxicity tests using the Mysid shrimp (*Mysidopsis bahia*) and the inland silverside (*Menidia beryllina*) or any other species approved by EPA. Tests shall be conducted once every month for a period of three months following the initiation of the tests and once every year thereafter for the duration of the permit using samples of

100% final effluent. Such tests will be conducted on one grab sample of 100% final effluent. Results of all tests conducted with any species shall be reported according to EPA/600/4-85/013, Section 13. Report Preparation and Data Utilization, and shall be submitted to EPA with the quarterly discharge monitoring report.

2. If lethality (less than 50% survival of tests organisms in 100% effluent) is demonstrated in either of the above test(s), another 48-hr static test using the same specie(s) and the same methodology shall be conducted within two weeks. If the additional test(s) indicates toxicity, coverage under the general permit may be revoked by the Permit Issuing Authority upon issuance of an individual permit.

3. All test organisms, procedures and quality assurance criteria used shall be in accordance with *Methods for Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms*, EPA-600/4-85-013. A standard reference toxicant quality assurance test shall be conducted concurrently with each set of toxicity tests and its results submitted with the quarterly discharge monitoring report.

[FR Doc. 89-16685 Filed 7-14-89; 8:45 am]
BILLING CODE 1550-60-M

ACTION: Notice of final rule—Change permit number, correct printing and typographical errors, and modification of the types of discharges covered by the general permit.

SUMMARY: The Regional Administrator, EPA, Region IV is today issuing the final notice that amends the July 17, 1989 (54 FR 29986) notice and modifies the final National Pollutant Discharge Elimination System (NPDES) General Permit for Petroleum Fuel Contaminated Ground/Storm Waters in the State of Florida, and to correct printing and typographical errors.

Due to varying hydrological conditions and the proximity of the ground water table to the surface in various areas of the State of Florida, construction-related excavation and many other activities have the need to discharge ground/storm water to waters of the U.S. for very short periods of time, in most cases, less than 10 days. This general NPDES permit does not cover storm water discharges from other construction industrial activity areas. The Clean Water Act (CWA) requires that point source discharges of pollutants to waters of the United States be covered by NPDES permits. These short-term discharges are necessary to facilitate initiation and completion of subsurface activities or the long-term maintenance of ground water levels for other purposes. This final modification to the general permit allows coverage of certain discharges that meet the criteria set in the modification. The final permit requires analytical tests of the proposed discharge water to determine whether there is contamination from sources other than petroleum fuels. Discharges of waters that have been tested to show no other source of contamination will be covered by the general permit with no exchange of correspondence between the operator and EPA, Region IV.

DATES: This general permit modification shall be effective on Thursday, August 29, 1991 at 1 p.m. Eastern Daylight Savings Time. Notification of coverage for those facilities requiring coverage by the general permit modification will be by certified mail from the Director, Water Management Division, EPA, Region IV. The date for coverage under the general permit modification will be the date of the Director's letter assigning the NPDES number for general permit coverage.

In accordance with 40 CFR 23.2, the Region hereby specifies that this permit modification shall be considered the final agency action, for purposes of judicial review, on the date specified above. The administrative record, including draft permit modification, fact

sheet, state certification, comments received, and additional information are available by writing the EPA, Region IV, or for review and copying at 345 Courtland St., NE., Atlanta, Georgia 30365, between the hours of 8:15 A.M. and 4:30 P.M., Monday through Friday. Copies will be provided at a nominal charge per page. Additional information concerning the permit may be obtained at the address and during the hours noted above: Ms. Alice Crosby, Public Notice Coordinator, 404/347-3004.

ADDRESSES: Notifications required under this permit should be sent to: Director, Water Management Division, U.S. Environmental Protection Agency, Region IV, 345 Courtland Street, NE., Atlanta, Georgia 30365.

Request for Coverage: Written notification of intent to be covered by this general permit modification (if required) shall be provided as described in the permit Part II Section F.c.

FOR FURTHER INFORMATION CONTACT: Larry Cole, Environmental Engineer, Facilities Performance Branch, Water Management Division, U.S. Environmental Protection Agency, 345 Courtland Street, NE., Atlanta, Georgia 30365, (404) 347-3012.

SUPPLEMENTARY INFORMATION:

I. Introduction

On Monday, July 17, 1989 (54 FR 29986), EPA, Region IV issued the Final NPDES General Permit for Petroleum Fuel Contaminated Ground/Storm Waters in the State of Florida. On Friday, February 22, 1991, (56 FR 7379) EPA, Region IV published a notice of the proposed modification to the NPDES General Permit for Petroleum Fuel Contaminated Ground/Storm Waters in the State of Florida (56 FR 7379). On Thursday, March 21, 1991, EPA, Region IV public noticed the draft permit modification in the State of Florida (Public Notice No. 91FL018) in order to receive comments on the permit modification that is being issued in final form today. All the public comments received during this period are included in the administrative record and were considered by Region IV in the formulation of a final determination of the conditions in today's final general permit modification. The Region published a detailed fact sheet with the draft general permit modification (56 FR 7380).

The Region is incorporating by reference that fact sheet and other information as part of the final fact sheet for today's final permit modification. The discussions presented in these sections should be consulted in reviewing the applicability and scope of

the final general permit modification to different sites of concern. A formal hearing is available to challenge any NPDES permit issued under 124.15 except for a general permit. Persons affected by a general permit may not challenge the conditions of a general permit as a right in further agency proceedings. They may instead either challenge the general permit in court, or apply for an individual permit under 122.21 as authorized at 122.28 and then request a formal hearing on the issuance or denial of an individual permit. Additional information regarding these procedures is available by contacting Mr. Kevin Smith, Office of Regional Counsel at the address above or at (404) 347-2335.

II. Other Legal Requirements

A. Executive Order 12291

The Office of Management and Budget has exempted this action from the requirements of Executive Order 12291 pursuant to section 8(b) of that order.

B. Paperwork Reduction Act

EPA has reviewed the requirements imposed on the regulated facilities in this final general permit under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* The information collection requirements of this permit have already been approved by the Office of Management and Budget in submissions made for the NPDES permit program under the provisions of the Clean Water Act (the Act).

C. State Certification Requirements

Section 301(b)(1)(c) of the Act requires that NPDES permits contain conditions which ensure compliance with applicable State water quality standards or limitations. Under section 401(a)(1) of the Act, EPA may not issue or modify an NPDES permit until the State in which the discharge will originate grants or waives certification to ensure compliance with appropriate requirements of the Act and State law. EPA requested certification on the amendments and modification regarding this general permit on January 29, 1991. On August 12, 1991, the Florida Department of Environmental Regulation waived certification of the general permit modification.

D. Effective Date

The final NPDES general permit modification issued today is effective on Thursday, August 29, 1991.

E. Regulatory Flexibility Act

After review of the facts presented in this document, I hereby certify, pursuant

to the provisions of 5 U.S.C. 505(b), that this NPDES general permit modification will not have a significant impact on a substantial number of small entities. Moreover, the permit reduces a significant burden on regulated sources.

Greer C. Tidwell,

Regional Administrator.

Summary of Comments

Appendix A—Public Comments

Public notice of the draft permit modification was published at 56 FR 7279 (February 22, 1991). Additionally, the permit was public noticed in the State Of Florida on March 21, 1991 (Public Notice No. 91FL018) to allow an additional 30-day comment period from interested parties within Florida which would be considered in the formulation of a final decision regarding the proposed permit modification.

The following parties responded with written comments on the general permit modification: Florida Power & Light Company, Florida Power Corporation, BellSouth, Broward County Board of County Commissioners and the U.S. Department of Interior Fish & Wildlife Service.

(1) *Comment:* Two commenters stated that there is a need to dewater for the installation of cables, power lines, foundations and piping which are usually short-term activities associated with uncontaminated water. One commenter stated that the proposed rule would aid in obtaining a simplified approval for these construction related dewatering activities when waters from a point source would be discharged to waters of the U.S. However, the 10 days delineated in the proposed General Permit is not an adequate amount of time for some dewatering activities involving short-term construction related dewatering of uncontaminated water and believed that a more appropriate duration of time would be 90 days. This amount of time would enable companies who have to dewater long sections of narrow trenches to perform the work in segments, would not affect the overall quantity or quality of the water being discharged; however, it would enable companies to perform the work under the General Permit in a segmented manner.

Response: The 10 days delineated by EPA in the summary section were only general (e.g., short term tank replacements) in nature and were not intended to impose a maximum amount of time that construction related activities could discharge. As long as tests verify that the water is uncontaminated, based on the results of the analytical tests required by the

permit, the segmented work could continue for these types of activities; however, water from dewatering activities of this nature that cover long stretches should be tested at scheduled points to ensure that no contamination exists. Any discharge from dewatering of trenches or similar activities to the same surface water body or to a municipal separate storm sewer system serving the same surface water body shall be considered to be one project subject to coverage under this permit. However, the operator of the project shall consider the discharge length of time and whether or not the discharge is contaminated to determine the appropriate monitoring and/or Notice of Intent requirements of this permit. This permit does not give an operator any designated or implied authority to use a municipality's storm sewer system. We recommend that municipalities be notified in advance of any proposed discharges to their systems.

(2) *Comment:* One commenter supported the proposed modification to include the discharge of uncontaminated groundwater from dewatering operations and believed it would reduce the paperwork for both EPA and local project managers.

(3) *Comment:* The Fish & Wildlife Service stated that the discharges allowed under the modified permit should have no adverse impact on species or habitats under Service trusteeship.

(4) *Comment:* One commenter stated that it was unclear whether the phrase "construction related activity" would include excavation work related to the repair or damaged telecommunications cable. Delays in restoring critical telephone service to a hospital or government facility could be hampered by delays associated with laboratory turnaround time and would not be feasible for these types of operations. The commenters stated that the analytical requirements should be modified to include site tests, such as color change to minimize financial impact and eliminate delays caused by laboratory turnaround time. Also, having to apply for an individual permit in such situations is even less feasible.

Response: This permit modification is intended to cover any dewatering activity, regardless of the purpose. The final general permit has language in part II, section B that addresses the concerns of this comment. All dischargers complying with the requirements of this permit are covered by this language, and application for an individual NPDES permit will not be necessary. The only alternative to obtaining coverage under this general permit is to submit an

application for an individual permit which would require at least 60 days. The issue on a fast-track approach after the application is received. Discharging to waters of the U.S. under any circumstances without NPDES coverage is a violation of the Act.

(5) *Comment:* One commenter stated that during installation of underground telecommunications, dewatering could occur in several locations in a stretch of right-of-way which may measure several miles, and sampling should be limited to one set of samples per project rather than one set for every point source which may result from that project.

Response: See response to comment (1).

(6) *Comment:* One commenter stated that the proposed modified general permit would require analysis for TOC, pH, Total Mercury, Total Cadmium, Total Copper, Total Lead, Total Zinc, Total or Hexavalent Chromium, Benzene and Naphthalene before discharge begins. The commenter questioned the rationale for requiring such extensive analytical work for groundwater and storm water which is not expected to be contaminated in the first place. Also, the general permit conditions associated with cleanup of petroleum contamination does not require extensive analysis for metals and since ground water at service stations or other underground storage tank sites are more likely to be contaminated with heavy metals than the ground water beneath a right-of-way, this is not a fair requirement.

Response: The modified general permit addresses extensive analysis for metals in petroleum fuel contaminated groundwater sites which, according to the amended F.A.C. "Section 17-770.600(8)(a-d), of February 20, 1990, modifies the test procedures of Part I.C.(a) that were issued on Monday, July 17, 1989. Therefore, the metals are addressed, particularly at sites where the origin of contamination is not identified, plus additional priority pollutant scans using EPA Method 624 and 625.

Therefore, these tests are not more severe than the sampling required for known petroleum fuel contaminated groundwater. EPA believes the analysis required for these dewatering projects serves to verify whether the groundwater is contaminated from other sources. This general permit will reduce the administrative burden on the discharger and EPA. Any potential discharger that does not agree with the requirements of the general permit can submit an individual NPDES application

Specific Modifications to Parts of the General Permit

II. Correction of Printing and Typographical Errors Plus Revisions in References to State Regulations

Part I A.1: In the effluent limitations chart under "Effluent Characteristic," the unit of measure for Total Lead, which reads "µl," is revised to read "µl."

Part I A.2: In the effluent limitations chart under "Discharge limitations," the Daily Maximum limit for Naphthalene which reads "100.0," is revised to read "100.0."

Part I of the general permit is being modified as specified below:

A. Effluent Limitations and Monitoring Requirements

Existing Sources and New Dischargers

3. During the period beginning on the effective date of the permit and lasting through the term of this permit, the permittee is authorized to discharge produced ground water from any activity by a point source to waters of the United States. The effluent limitations and/or monitoring conditions applying to each allowable discharge is dependant on the duration of the discharge as outlined below:

Analytical tests on samples of the proposed discharge water are required to determine if contamination exists from other sources. The parameters to be measured include TOC, pH, Total Mercury, Total Cadmium, Total Copper, Total Lead, Total Zinc, Total or Hexavalent Chromium, Benzene and Naphthalene.

Analytical test results exceeding the values below shall be considered an indication of contamination from other sources:

Parameter	Indicator if discharge is into	
	Fresh waters	Marine water
TOC	10.0 mg/l	10.0 mg/l
pH, std. units	6.0-8.5	6.5-8.5 mg/l
Total Mercury	0.20 µg/l	0.10 µg/l
Total Cadmium	0.80 µg/l	5.0 µg/l
Total Copper	0.03 mg/l	0.015 mg/l
Total Lead	0.03 mg/l	0.05 mg/l
Total Zinc	0.03 mg/l	1.0 mg/l
Total Chromium	1.0 mg/l	1.0 mg/l or
Hexavalent Chromium	0.50 mg/l	0.50 mg/l
Benzene	1.0 µg/l	1.0 µg/l
Naphthalene	100.0 µg/l	1000.0 µg/l

All discharges must comply with permit requirements:

(a) If contamination exists from petroleum fuels and the discharge will occur for less than thirty (30) days, the permittee shall comply only with the applicable effluent limitations and

monitoring requirements in part I. A.1 or A.2 for Benzene, pH and/or Naphthalene and Total Lead. One (1) grab sample per seven (7) days is required during the discharge period and the total volume discharged recorded. Monitoring results shall be submitted to EPA within thirty (30) days of termination of the discharge. For discharges contaminated by petroleum fuels that last for less than a week, daily monitoring will be required for the applicable parameters.

(b) If contamination exists from petroleum fuels and the discharge will occur for more than thirty (30) days after commencement of discharge, the permittee shall comply with all conditions and requirements in part I. A.1 or A.2 of this general permit.

(c) If contamination from other sources does exist, as indicated by the results of the analytical tests required by this Section, the discharge will not be covered by this general permit, and the operator shall apply for an individual NPDES permit at least 90 days prior to the date a discharge to waters of the U.S. is expected.

(d) All dischargers covered by 3(a) and 3(b) of this section must submit a Notice of Intent (NOI) in accordance with Part II, Section F. However, if contamination from petroleum fuels or other sources is not shown, the discharge is covered by this general permit without having to submit a request for coverage to EPA. Region IV. EPA may at any time request the data resulting from the analytical tests. Additionally, no Discharge Monitoring Reports (DMR) forms are required to be submitted to EPA, Region IV.

Part I.C—Test Procedures: In part I.C which reads "Section 17-70.008(9)(a-e) of the petroleum site cleanup criteria rule," shall be revised to read as "Section 17-770.600(8)(a-d) of the Petroleum Contamination Cleanup Criteria, amended February 20, 1990."

Part I.C.a—Test Procedures: In part I.C.a, which reads "Section 17.70.008(9)(d) of the State Underground Petroleum Environmental Response Program," is revised to read as "Section 17-770.600(8)(c)1. of the Petroleum Contamination Cleanup Criteria, amended February 20, 1990."

Part II Section F.a(4)—Application Requirements: In part II Section F.a(4), which reads "Florida Administrative Codes (FAC) 17-70.006, 17-70.008 and 17-70.010, respectively," is revised to read, "Florida Administrative Code (FAC) 17-770.300, 17-770.600 and 17-770.700, respectively, amended February 20, 1990."

Part II Section F.c.—This Section of the General permit is being modified to

continue the paragraph as noted below: However, dischargers seeking coverage under part I A.3(a) will be required to submit the date the discharge is expected to cease, and the same information in Section F.a. above, except items (2), (3) and (4). Dischargers meeting the conditions set forth in part I.A.3(d) are not required to submit a Notice of Intent (NOI).

Part II Section G.5—Additional General Permit Conditions: In the Part which reads "Special Protection, Outstanding Florida Waters, as set forth by FAC 17-3.643," shall be revised to read, "Special Protection, Outstanding Florida Waters, Outstanding National Resource Waters, as set forth by FAC 17-302.700, amended February 20, 1990."

Part IV—Two references to "NPDES Guidance Document" are corrected to read "NPDES Best Management Practices Guidance Document." Also, the correct address to submit written requests to obtain a copy is: Director, Water Management Division, U.S. EPA, Region IV, 345 Courtland St., NE., Atlanta, Georgia 30365.

(FR Doc. 91-20630 Filed 8-25-91; 8:45 am)
BILLING CODE 6560-50-M

EXHIBIT B

NPDES GENERAL PERMIT No. FLG040001

Federal Register; July 17, 1989; Vol. 54, No. 135

This general NPDES permit is available for remedial actions at sites contaminated with automotive gasoline, aviation gasoline, jet fuel, or diesel fuel. The remedial action is presumed to be air stripping followed by carbon adsorption. The following requirements must be met and the Remedial Action Plan approved by the Department prior to issuance of this permit to a site.

ANALYSIS	METHOD	MAXIMUM	FREQUENCY
Flow, MGD	Flowmeter	-----	Continuous
Benzene	EPA 602	1 ppb	Monthly
Total Lead *	EPA 239.2	30 ppb	Monthly
48 hr static bioassay **	EPA-600/4-85-013	50% mortality	Monthly, 1st 3 months. Then yearly.
pH	----	6.0 - 8.5	Monthly or continuous
Naphthalene+	EPA 610	100 ppb	Monthly
Volatile Organics	EPA 624	Detection	Once, within 60 days of startup.
Extractable Organics (A and B/N)	EPA 625	Detection	Once, within 60 days of startup.

* Leaded fuel only

+ Aviation gasoline, jet fuel, or diesel fuel only

** 100% effluent. Freshwater discharge use a daphnidae species

EXHIBIT C

NPDES General Permit Short Term
Discharge Requirements
 Federal Register; August 29, 1991

This general NPDES permit is available for activities at sites contaminated with automotive gasoline, aviation gasoline, jet fuel, or diesel fuel. The following requirements must be met to qualify for the short term discharge requirements under Appendix B, Part IA.3. of the EPA General Permit Number FLG830000.

1. The discharge must last for a period of less than 30 days.
2. Analytical tests on samples of the proposed discharge water are required to determine if contamination exists from other sources. The parameters to be measured include TOC, pH, Total Mercury, Total Cadmium, Total Copper, Total Lead, Total Zinc, Total or Hexavalent Chromium, Benzene and Naphthalene. If the following levels are exceeded it is an indication of contamination from other sources and the discharge will not be covered by the general permit.

Parameter	Indicator if discharge is into	
	Fresh waters	Marine water
TOC	10.0 mg/l	10.0 mg/l
pH, std. units	6.0-8.5	6.5-8.5
Total Mercury	0.20 ug/l	0.10 ug/l
Total Cadmium	0.80 ug/l	5.0 ug/l
Total Copper	0.03 mg/l	0.015 mg/l
Total Lead	0.03 mg/l	0.05 mg/l
Total Zinc	0.03 mg/l	1.0 mg/l
Total Chromium	1.0 mg/l	1.0 mg/l or
Hexavalent Chromium	0.50 mg/l	0.50 mg/l
Benzene	1.0 ug/l	1.0 ug/l
Naphthalene	100.0 ug/l	1000.0 ug/l

Attachment II

If a surface water discharge is anticipated when developing the RAP it is necessary to initially perform additional groundwater analysis to demonstrate that other non-petroleum surface water quality standards will not be exceeded by the discharge. The following analyses of the groundwater sample are required:

- Total Mercury
- Total Cadmium
- Total Copper
- Total Lead
- Total Zinc
- Total Chromium
- Hexavalent Chromium
- Nitrogen (Ammonia, Nitrite, Nitrate, TKN)
- Phosphorous (Ortho-phosphate and total phosphorous)

APPENDIX B

**NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
PERMIT REQUIREMENTS**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

December 30, 1994

REF: 4WM-WPEB

RECEIVED

JAN 9 1995

BUREAU OF WATER FACILITIES
PLANNING AND REGULATION

RE: Final Issuance of NPDES General
Permit No. FLG830000

Dear Permittee:

Enclosed is the National Pollutant Discharge Elimination System (NPDES) General Permit for Petroleum Fuel Contaminated Ground/Storm Waters in the State of Florida. This action constitutes the Environmental Protection Agency's final permit decision in accordance with Title 40, Code of Federal Regulations (C.F.R.) Section 124.15(a). New facilities that must apply for coverage under this general permit are required to submit an Notice of Intent (NOI) for coverage under the general permit, in accordance with Part II, Section F - Application Requirements, referenced on page 65053 of the enclosed Federal Register. Facilities which are currently discharging under the previous NPDES general permit are required to submit another NOI requesting coverage under the reissued general permit by February 14, 1995, in accordance with Part II, Section F. Supplementary information and legal issues concerning the final issuance of this general permit can be found on page 65042 of the enclosed Federal Register.

If you have any questions concerning this matter, please contact me at the above address or by calling (404) 347-3012, extension 2948.

Sincerely yours,

Larry T. Cole
Environmental Engineer
Permits Section
Water Permits and Enforcement
Branch
Water Management Division

Enclosure

conformity of the proposed action with requirements of Executive Order 12898.

ERP No. D-USN-D11023-MD Rating EC2. Naval Air Warfare Center Aircraft Division, Base Realignment and Construction, Patuxent River, St. Mary's, Calvert and Charles Counties, MD.

Summary: EPA expressed environmental concerns regarding water conservation and requested that wetlands and forest habitat be more clearly defined in the final EIS.

Final EISs

ERP No. F-BLM-E65044-FL Florida Land and Resource Management Plan. Implementation, Split-Estate Federal Mineral Ownership (FMO), several counties, FL.

Summary: EPA expressed environmental concerns over habitat loss from the proposed alternative and suggests the Withlacoochee State Forest prohibit future limestone sales. The final EIS was responsive to other concerns EPA expressed in the draft EIS.

ERP No. F-CGD-D50005-VA Parallel Crossing of the Chesapeake Bay, Construction and Operation, US 13 between the Delmarva Peninsula and southeastern Virginia, Funding, COE Section 10 and 404 Permits and CGD Bridge Permit, Virginia Beach, Northampton County, VA.

Summary: EPA continued to express environmental objection to the preferred alternative and felt the Coast Guard did not adequately consider the 1987 Chesapeake Bay Agreement with respect to induced growth.

ERP No. F-FHW-J40129-WY US 14/16/20 Highway Improvements, Cody to Yellowstone National Park Highway, Funding and COE Section 404 Permit, Shoshone National Forest, Park County, WY.

Summary: EPA had no objections to the project as proposed. Earlier concerns regarding water quality were addressed in the Final EIS.

ERP No. F-TVA-E65041-00 Land Between The Lakes (LBL) Natural Resource Management Plan, Implementation, KY and TN.

Summary: EPA had environmental concerns regarding timbering and encouraged reductions in these impacts. EPA felt that the preferred alternative increased resource preservation.

ERP No. F-UMT-J40119-UT I-15/ State Street Corridor Highway and Transit Improvements, Funding, Salt Lake County, UT.

Summary: EPA had no objections to the project as proposed. Earlier environmental concerns regarding

wetlands and air quality standards were adequately addressed in the Final EIS.

Dated: December 13, 1994.

William D. Dickerson,

Director, Federal Agency Liaison Division,
Office of Federal Activities.

[FR Doc. 94-30993 Filed 12-15-94; 8:45 am]

BILLING CODE 6560-60-U

[ER-FRL-4718-3]

Environmental Impact Statements;
Notice of Availability

Responsible Agency: Office of Federal Activities, General Information (202) 260-5076 OR (202) 260-5075.

Weekly receipt of Environmental Impact Statements Filed December 05, 1994 Through December 09, 1994 Pursuant to 40 CFR 1506.9.

EIS No. 940499, FINAL EIS, BOP, TX, Houston Metropolitan Detention Center, Site Selection, Construction and Operation, City of Houston, Harris County, TX, Due: January 16, 1995, Contact: Patricia (202) 514-6470.

EIS No. 940500, DRAFT SUPPLEMENT, AFS, AK, Shamrock Timber Sales, Timber Harvesting and Road Construction, Updated Information; Stikine Area, Kupreanof Island, Tongass National Forest, Implementation, AK, Due: January 30, 1995, Contact: Jim Thompson (907) 772-3871.

EIS No. 940501, DRAFT EIS, AFS, ID, Stibnite Gold Mine Expansion Project, Construction and Operation, Plan of Operation Approval, NPDES Permit and COE Section 404 Permit, Payette National Forest, Krassel Ranger District, Valley County, ID, Due: February 14, 1995, Contact: Jane Wurster (206) 634-0614.

EIS No. 940502, DRAFT EIS, AFS, UT, Upper Provo River Reservoirs Stabilization Project, Implementation, Wasatch-Cache National Forest, Kamas Ranger District, Summit County, UT, Due: January 31, 1995, Contact: Melissa Blackwell (801) 783-4338.

EIS No. 940503, DRAFT EIS, COE, CA, Humboldt Harbor and Bay (Deepening) Channels, Feasibility Study for Navigation Improvements, Humboldt County, CA, Due: January 30, 1995, Contact: Tamara Terry (415) 744-3341.

EIS No. 940504, FINAL EIS, USN, NC, Camp Lejeune Marine Corps Base, Disposal of Non-Hazardous Solid Waste Project, Implementation, COE Section 404 and NPDES Permits, Onslow County, NC, Due: January 16,

1995, Contact: Jim Omans (703) 696-0866.

EIS No. 940505, DRAFT EIS, GSA, MD, Food and Drug Administration Consolidation, Site Selection, Montgomery County Campus, Montgomery and Prince George's Counties, MD, Due: February 17, 1995, Contact: Jag Bhargava (202) 708-5704.

Amended Notices

EIS No. 940354, DRAFT EIS, COE, MO, ND, SD, NB, IA, KS, Missouri River Master Water Plan Operation, Multipurpose Project, SD, NB, IA, MO, Due: March 01, 1995, Contact: Lawrence Cieslik (402) 221-7360, Published FR-09-30-94-Review period extended.

EIS No. 940414, DRAFT SUPPLEMENT, FAA, NJ, Expanded East Coast Plan, Changes in Aircraft Flight Patterns over the State of New Jersey, Updated Information, Implementation, NJ, Due: February 09, 1995, Contact: William Marx (202) 267-7900, Published FR-10-07-94-Review Period Reopened.

Dated: December 13, 1994.

William D. Dickerson,

Director, Federal Agency Liaison Division,
Office of Federal Activities.

[FR Doc. 94-30992 Filed 12-15-94; 8:45 am]

BILLING CODE 6560-60-U

[FRL-5123-1; NPDES No. FLG830000]

Reissuance of the National Pollutant Discharge Elimination System (NPDES) General Permit For Dewatering and Petroleum Fuel Contaminated Ground/Storm Waters in the State of Florida

AGENCY: Environmental Protection Agency.

ACTION: Notice of Final Rule—
Reissuance of a NPDES General Permit to the State of Florida.

SUMMARY: The Regional Administrator, EPA, Region IV is reissuing the final National Pollutant Discharge Elimination System (NPDES) General Permit No. FLG830000 to facilities within the political boundary of the State of Florida. This final reissued NPDES general permit contains effluent limitations, prohibitions, reporting requirements and other conditions on facilities which discharge uncontaminated groundwater associated with dewatering or treated groundwater and/or storm water incidental to the groundwater cleanup operation which have been contaminated by automotive gasoline, aviation and/or diesel fuels. This permit authorizes discharges from

the Act requires that States certify that Federally issued permits are in compliance with State law. This permit is for operations discharging to waters within the State of Florida. Pursuant to 40 CFR 124.53, EPA requested certification of the permit on September 15, 1994. On October 27, 1994, the Florida Department of Environmental Protection waived certification of the general permit.

D. Effective Date

The final NPDES general permit issued today, December 6th, 1994, is effective on December 7, 1994.

E. Regulatory Flexibility Act

After review of the facts presented in this document, I hereby certify, pursuant to the provisions of 5 U.S.C. § 605(b), that this NPDES general permit will not have a significant impact on a substantial number of small entities. Moreover, the permit reduces a significant administrative burden on regulated sources.

Patrick M. Tobin,

Deputy Regional Administrator

Summary of Comments

Appendix A—Public Comments

Public notice of the draft permit reissuance was published at 59 FR 47862 (September 19, 1994). Additionally, the permit was publicly noticed in five (5) major cities in the State of Florida on September 16, 1994. (Public Notice Number 94FL0167), to allow comments from interested parties which would be considered in the formulation of a final decision regarding reissuance of the proposed draft NPDES General Permit No. FLG830000.

The following parties responded with written comments on reissuance of the proposed NPDES general permit: Florida Department of Environmental Protection (FDEP), Chevron Research & Technology Company, Morgan Lewis & Bockius, Mobil Oil Corporation, Exxon Company, Walt Disney World Company, Florida Chemical Industry Council and the United States Fish and Wildlife Service.

Comment 1: The Florida Department of Environmental Protection (FDEP), Bureau of Waste Cleanup, submitted comments by letter dated October 3, 1994, which commented on Part I.A.3 of the general permit. The FDEP wanted clarification concerning the intent of Part I.A.3. FDEP stated that the statement on Page two (2) of the introduction states that "Except for facilities meeting the conditions of Part 3 written notice of intent to be covered by the reissued NPDES general

permit shall be provided to the Permit Issuing Authority prior to initiation of discharge to waters of the United States," implies that this includes subparts of Part I.3., including I.3.(a), (b), and (c). FDEP stated that this implies that for discharges that are either uncontaminated or are contaminated with petroleum only and are treated, notification to EPA is not required. It was stated that this is not consistent with the phrase under I.3(a) which states "upon receipt of written EPA notification of coverage that the Notice of Intent (NOI) request is complete, these short-term discharges may commence." The State mentioned that this implies that not only must prior notification be given by EPA for the short-term discharges from sites contaminated by petroleum only, but that the person responsible for the discharge must wait for a reply from EPA, and this inconsistency should be reconciled.

Response: EPA agrees that the referenced statement on page 2 of the introduction is incorrect. It has been corrected to read, "except for facilities meeting the conditions of Part I.A.3(c), written NOI to be covered by the reissued permit shall be provided to the Permit Issuing Authority."

Comment 2: FDEP stated that it is not reasonable to wait for a response from EPA in order to initiate a short-term discharge for the following reasons: (1) Chapter 62-770, requires that a Remedial Action Plan (RAP) be submitted to the FDEP within 2 months of approval of a Contamination Assessment Report (CAR), and that it is routine to require pump tests to design information for the RAP, plus identify aquifer characteristics. FDEP stated that it is not reasonable to delay the RAP by requiring prior approval from EPA of these simple 8 hour pump tests. (2) Due to varying hydrogeological conditions in Florida, local departments commonly perform dewatering activities in their right-of-way of previous retail service stations, plus have no information before commencing these activities on the existence of petroleum contamination. FDEP stated that these construction projects should not be delayed for an extended period to wait on response from EPA, since mobile-treatment units can be deployed and designed to meet EPA's discharge limitations in the NPDES general permit. (3) During dewatering for construction and replacement of underground storage tanks, FDEP mentioned that it was not reasonable for the tank installation to be delayed for an extended period of time; especially since discharges from these operations

only last for a few hours at a time and mobile equipment used is very reliable in achieving EPA's discharge standards.

Response: EPA concurs with FDEP reason No. 1 above which allows short-term 8 hour pump tests at sites which have identified petroleum contamination, to be covered upon receipt of the NOI by the Permit Issuing Authority. Only short-term pump tests, 8 hours in duration or less, designed to obtain information on aquifer characteristics, will be automatically covered upon receipt of the permittee's NOI, and the permittee will be responsible for meeting the discharge limitations of Part A.1 or A.2. General Permit numbers will be assigned to these sites and DMR's sent with a copy of the general permit and a letter acknowledging receipt of the Notice of Intent.

EPA responds to reasons # 2 and # 3 as proposed by the FDEP, which would allow coverage by simply submitting an NOI for local departments dewatering projects or scheduled dewatering during gasoline tank replacements. It is EPA's understanding that the construction activities described in No. 2 and No. 3 are planned well in advance of the initiation of the dewatering process. For this reason, EPA sees no reason to exempt these sites from NOI requirements. Unless preliminary groundwater assessments have been performed along the right-of-way project prior to startup, even the local departments may be unaware of an contaminated plume that may be encountered during the road widening, or excavation projects. The potential problem EPA expects in waiving NOI requirements for these activities, is the lack of sufficient data to cover these operations. The better approach would be for the permittee to survey potential problem areas well in advance of the dewatering startup, identify the type of contamination and seek discharge coverage under the NPDES general permit using the NOI process, for those potentially contaminated groundwater discharge areas.

Comment 3: FDEP also questioned whether the indicator criteria values listed under Part I.A.3, should be analyzed using untreated groundwater or treated groundwater. FDEP also stated that if the intent of Part I.A.3 is to allow short term discharges from sites contaminated with petroleum only, then the indicators should be applied to treated recovered groundwater, because if these indicators were applied to untreated groundwater, this would preclude discharges from sites contaminated with petroleum only. However, FDEP stated that applying

pay for these studies, when they receive no benefit is inappropriate.

Response Regarding Mobil's comment on the required concurrent standard reference toxicant (SRT) testing with each WET test, the September 19, 1994 Federal Register notice does allow for monthly SRT results to be submitted in lieu of such concurrent tests. Regarding Mobil's comment on requiring contract laboratories to conduct such SRT testing, EPA does not currently have a national laboratory certification program for WET. EPA does acknowledge that some states do have such a certification program. Until a national certification program is established, EPA must have some means to assess the quality of a given laboratory's performance. The use of SRTs is one way of making that assessment. EPA notes that permittees have the option of using in-house capabilities to conduct such WET tests. However, when permittees rely on outside laboratories to conduct WET tests for NPDES compliance purposes, the use of SRTs is required. EPA disagrees with Mobil's comment that such SRT tests have no benefit for the permittee. On the contrary, such SRT testing serves to validate the quality and precision of the WET tests conducted by the contract laboratory on behalf of the permittee that are submitted to the permitting authority.

Comment 11: MOC mentioned that facilities covered by the existing, but expired general permit may be required to perform another testing requirement, such as EPA 624 and 625 although this sampling was performed for the existing general permit.

Response: EPA does not agree that facilities already discharging under the general permit be excluded from performing an additional test analysis on the effluent using EPA methods 624 or 625 priority pollutant scan. This requirement conforms with the reapplication data necessary for individual permits in which a permittee is required to retest the effluent to obtain accurate information which determine possible changes in effluent characteristics. This priority pollutant scan shall be performed within 60 days of startup of the produced water discharge, or within 60 days after receipt of notification of coverage from EPA for facilities currently discharging under the previous general permit.

Comment 12: Exxon Company (EC), by letter dated October 20, 1994, stated that some risk-based analysis is an important element in establishing water quality criteria for certain processes, and that the proposed 1.0 ug/l benzene effluent limit appears to be absent of

any risk-based approach. EC stated that scientific data does not warrant the restrictive 1.0 ug/l benzene effluent limit for release into surface water and is even more stringent than that required under Florida Administrative Code (FAC) 17-302.530 for Class I potable water supplies and recommended that the national limit of 5.0 ug/l be substituted as the benzene effluent limit.

Response: EPA concurs that the 1.0 ug/l limit for benzene is more stringent than Florida's water quality standards. The limitation for benzene is based on the best treatment technology available and happens to be more stringent than FAC 17-302.530(9)[4/25/94], Class I potable water supplies which is 1.18 ug/l. The 1.0 ug/l limitation is also more stringent than Florida Class III water quality standard, which requires an annual average limitation of 71.28 ug/l for benzene. Therefore, since technology has proven capable of consistently maintaining the 1.0 ug/l limitation for benzene and numerous permittees have consistently designed treatment systems that meet the requirements of the NPDES general permit, EPA will retain the benzene limit. In addition, maintaining the 1.0 ug/l benzene limit complies with Section 402(o)(1) of the Water Quality Act of 1987, which states that a permit may not be renewed, reissued, or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit except in compliance with Section 303 (d)(4).

Comment 13: Exxon Company (EC) mentioned that the acceptable pH for treated effluent under the previous and proposed NPDES general permit is 6.0-8.5 standard units (SUs), and mentioned that many lakes and streams in Central and North Florida have a pH range of 5.0-6.0 SUs. EC stated that many influent pH samples for remedial pump and treat systems are also in this range and recommended reducing the allowed lower limit from 6.0 to 5.5 SUs.

Response: In response to EC comments, the pH language in the current proposed draft permit does allow some variation for pH depending on natural background of the receiving water. However, this natural background data must be furnished to EPA by the permittee in the initial NOI request; in order to be considered in determining the pH range for the facility during the notification of coverage request. It should be noted that the pH of the receiving stream, not the influent or effluent, influences the pH permit limits.

Comment 14: Exxon Company (EC) commented on Part I.A.3 concerning the

screen for metals that would indicate contamination from sources other than petroleum fuels. EC mentioned that it is unwarranted to require screening for additional metals that are not ordinarily considered constituents of petroleum fuels as a basis for securing a NPDES general permit for petroleum fuel contamination. EC mentioned that if there is a cause for this additional screening at a particular site, the regulatory processes in place will generate the additional site investigation and testing needed, instead of testing every site whether justified or not and recommended that the screening for other metals be removed as a requirement from the NPDES general permit. EC mentioned that if additional metal testing is required, annual testing is much more appropriate than semi-annual, especially for groundwater remedial systems at underground storage tank cleanup sites.

Response: In response to Exxon Company (EC) comments, EPA clarifies the misconception that contaminated petroleum fuel sites must perform the Part I.A.3 testing requirements for metals; these discharges must comply only with the requirements of Part I.A.1 or I.A.2. EPA refers to the general applicability of Part I.A.3, that allows produced water discharges from any noncontaminated site, which could include dewatering for tank removals, construction activity, or aquifer pump tests from water wells. Any point source discharge of pollutants to waters of the U.S. requires an NPDES permit, regardless of whether the site is contaminated or uncontaminated. EPA, in its approach to covering dewatering of produced groundwater associated with any activity, placed the burden for verification on the permittee for determining that the site groundwater has not been contaminated with sources other than petroleum fuels. Requiring all permittees to perform this screening allows facilities performing dewatering activities to be placed under the general permit, assuming that the screening reveals no contamination from sources other than petroleum fuels.

Comment 15: Exxon Company (EC) mentioned that the Discharge Monitoring Report forms should be revised and the reporting procedure should be simplified. Also, mentioned that the quality of forms initially received from EPA tend to become illegible when photocopied. EC also requested that EPA retain the current level of bioassay testing instead of increasing the frequency as proposed.

Response: EPA will send original Discharge Monitoring Reports to the permittee so that more legible

through the term of this permit, the permittee is authorized to discharge treated groundwater and storm water that has been contaminated by

Automotive Gasoline. It is anticipated that these contaminated waters will be treated by air stripping, followed by activated carbon adsorption, if

necessary, or equivalent treatment to meet the following effluent limitations. Such discharges shall be limited and monitored by the permittee as specified below:

Effluent characteristic	Discharge limitations		Monitoring requirements	
	Daily avg	Daily max	Measurement frequency	Sample type
Flow, MGD	Report	Report	Continuous	Flowmeter.
Benzene, µg/l .....	.....	1.0	1/month	Grab.
* Total Lead, µg/l .....	.....	30.0	1/month	Grab.
pH, standard units	See Below			
Acute Whole Effluent Toxicity	See Part V			Grab.

* Monitoring for this parameter is required only when contamination results from leaded fuel.

An LC₅₀ of 100% or less in a test of 96 hours duration or less will constitute a violation of Florida Administrative Code (FAC) (July 11, 1993) § 62-4.244(3)(a) and the terms of this permit. The testing for this requirement must conform with Part V of this permit.

For fresh waters and coastal waters, the pH of the effluent shall not be lowered to less than 6.0 units for fresh waters, or less than 6.5 units for marine waters, or raised above 8.5 units, unless the permittee submits natural background data in the NOI request confirming a natural background pH outside of this range. If natural background of the receiving water, as revealed by sampling data from the permittee in the NOI request, is determined to be less than 6.0 units for fresh waters, or less than 6.5 units in marine waters, the pH shall not vary below natural background or vary more than one (1) unit above natural

background for fresh and coastal waters. If natural background of the receiving water, as revealed by sampling data from the permittee in the NOI request, is determined to be higher than 8.5 units, the pH shall not vary above natural background or vary more than one (1) unit below natural background of fresh and coastal waters. The acceptable pH range will be included in the letter granting permit coverage and on the DMR. The pH shall be monitored once every month by grab sample, or continuously with a recorder (See item I.B.4).

In accordance with FAC § 62-302.500(1)(a-c)(4-25-93), the discharge shall at all times be free from floating solids, visible foam, turbidity, or visible oil in such amounts as to form nuisances on surface waters.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following

location(s): Nearest accessible point after final treatment but prior to actual discharge or mixing with the receiving waters.

A. Effluent Limitations and Monitoring Requirements: Existing Sources and New Dischargers

2. During the period beginning on the effective date of the permit and lasting through the term of this permit, the permittee is authorized to discharge treated groundwater and storm water that has been contaminated by Aviation Gasoline, Jet Fuel or Diesel.

It is anticipated that these contaminated waters will be treated by air stripping, followed by activated carbon adsorption, if necessary, or equivalent treatment to meet the following effluent limitations. Such discharges shall be limited and monitored by the permittee as specified below:

Effluent characteristic	Discharge limitations		Monitoring requirements	
	Daily avg	Daily max	Measurement frequency	Sample type
Flow, MGD	Report	Report	Continuous	Flowmeter.
Benzene, µg/l .....	.....	1.0	1/month	Grab.
Naphthalene, µg/l .....	.....	100.0	1/month	Grab.
* Total Lead, µg/l .....	.....	30.0	1/month	Grab.
pH, standard units (SUs)	See Part I.A.1			
Acute Whole Effluent Toxicity	See Part V			Grab.

* Monitoring for this parameter is required only when contamination results from leaded fuel.

An LC₅₀ of 100% or less in a test of 96 hours duration or less will constitute a violation of FAC (July 11, 1993) § 62-4.244(3)(a) and the terms of this permit. The testing for this requirement must conform with Part V of this permit.

The permittee shall comply with the same pH requirements for this Part I.A.2 in Part I.A.1.

The pH shall be monitored once every month by grab sample, or continuously with a recorder. (See item I.B.4). In

accordance with FAC § 62-302.500(1)(a-c), the discharge shall at all times be free from floating solids, visible foam, turbidity, or visible oil in such amounts as to form nuisances on surface waters.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): nearest accessible point after final treatment but prior to actual discharge or mixing with the receiving waters.

A. Effluent Limitations and Monitoring Requirements

3. During the period beginning on the effective date of the permit and lasting through the term of this permit, the permittee is authorized to discharge produced groundwater from any noncontaminated site activity which discharges by a point source to waters of the United States, only if the reported values for the parameters listed below do not exceed any of the screening

4. If the pH is monitored continuously, the pH values shall not deviate outside the required range more than 1% of the time in any calendar month; and no individual excursion shall exceed 60 minutes. An "excursion" is an unintentional and temporary incident in which the pH value of discharge wastewater exceeds the range set forth in this permit.

C. Test Procedures

1. In performing the analysis for the dissolved constituents in the surface water and groundwater, the permittee shall use the guidelines recommended and described in FAC Sections 62-770.600(8)(a-d) of the Petroleum Contamination Cleanup Criteria (PCCC), amended February 20, 1990, or the most current edition.

2. If the petroleum contamination is from a petroleum fuel in which the source of contamination has not been identified, the groundwater shall be analyzed (using the recommended methods) for the following parameters as described in FAC Section 62.770.600(8)(c)1, of the PCCC, amended February 20, 1990, or the most current edition:

a. Lead	(EPA Method 239.2 or Standard Method 304)
b. Priority Pollutant Volatile Organics	(EPA Method 624)
c. Priority Pollutant Extractable Organics	(EPA Method 625)
d. Non-Priority Pollutant Organics (with GC/MS Peaks greater than 10 ppb).	(EPA Methods 624 and 625)

D. Schedule of Compliance

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

Permittees with Revoked Individual Permits:

Operational level attained—Upon Receipt of Notification of Coverage New Dischargers:

Operational level attained—Upon Commencement of Discharge

2. No later than fourteen (14) calendar days after any date identified in the above schedule of compliance the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

Part II

Standard Conditions for NPDES Permits

Section A. General Conditions

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

Any person who violates a permit condition is subject to a civil penalty not to exceed \$25,000 per day of such violation. Any person who willfully or negligently violates permit conditions is subject to a fine of up to \$50,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates permit conditions is subject to criminal penalties of \$5,000 to 50,000 per day of violation, or imprisonment for not more than 3 years, or both. Also, any person who violates a permit condition may be assessed an administrative penalty not to exceed \$10,000 per violation with the maximum not to exceed \$125,000. [Ref: CFR 122.41(a)].

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Duty to Reapply

Where EPA is the Permit Issuing Authority (PIA), the terms and conditions of this permit are automatically continued in accordance with 40 CFR 122.6, only where the permittee has submitted a timely and complete Notice of Intent 180 days prior to expiration of this permit, and the PIA is unable through no fault of the permittee to issue a new permit before the expiration date.

5. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, terminated, or revoked for cause (as described in 40 CFR 122.62 et seq) including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in any conditions that requires either temporary interruption or elimination of the permitted discharge; or

d. Information newly acquired by the Agency indicating the discharge poses a threat to human health or welfare.

If the permittee believes that any past or planned activity would be cause for modification or revocation and reissuance under 40 CFR 122.62, the permittee must report such information to the Permit Issuing Authority. The submittal of a new application may be required of the permittee. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

6. Toxic Pollutants

Notwithstanding Paragraph A-4, above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the permittee so notified.

7. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" Section B, Paragraph B-3, nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

8. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

9. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

(1) "A Guide of Methods and Standards for the Measurement of Water Flow", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 97 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD catalog No. C13.10:421.)

(2) "Water Measurement Manual", U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by catalog No. 127.19/2:W29/2, Stock No. S/N 24003-0027.)

(3) "Flow Measurement in Open Channels and Closed Conduits", U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Service (NTIS), Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST.)

(4) "NPDES Compliance Flow Measurement Manual", U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-77, September 1981, 135 pp. (Available from the General Services Administration (8BRC), Centralized Mailing Lists Services, Building 41, Denver Federal Center, Denver, CO 80225.)

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

5. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be

extended by the Permit Issuing Authority at any time.

6. Record Contents

Records of monitoring information shall include:

- The date, exact place, and time of sampling or measurements;
- The individual(s) who performed the sampling or measurements;
- The date(s) analyses were performed;
- The individual(s) who performed the analyses;
- The analytical techniques or methods used; and
- The results of such analyses.

7. Inspection and Entry

The permittee shall allow the Permit Issuing Authority, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

- Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- Inspect at reasonable time any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

Section D. Reporting Requirements

1. Change in Discharge

The permittee shall give notice to the Permit Issuing Authority as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

- The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source; or
- The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Section D, Paragraph D-10(a).

2. Anticipated Noncompliance

The permittee shall give advance notice to the Permit Issuing Authority of any planned change in the permitted

facility or activity which may result in noncompliance with permit requirements. Any maintenance or facilities, which might necessitate unavoidable interruption of operation and degradation of effluent quality, shall be scheduled during noncritical water quality periods and carried out in a manner approved by the Permit Issuing Authority.

3. Transfer of Ownership or Control

A permit may be automatically transferred to another party if:

- The permittee notifies the Permit Issuing Authority of the proposed transfer at least 30 days in advance of the proposed transfer date;

b. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

c. The Permit Issuing Authority does not notify the existing permittee of his or her intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph b.

4. Monitoring Reports

See Part III of this permit.

5. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR). Such increased frequency shall also be indicated.

6. Averaging of Measurements

Calculations for limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Permit Issuing Authority in the permit.

7. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

concentrations of all daily discharges sampled and/or measured during a calendar month on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such month (arithmetic mean of the daily concentration values). The daily concentration value is equal to the concentration of a composite sample or in the case of grab samples is the arithmetic mean (weighted by flow value) of all the samples collected during the calendar day.

b. The "maximum daily concentration", is the concentration of a pollutant discharge during a calendar day. It is identified as "Daily Maximum" under "Other Limits" in Part I of the permit and the highest such value recorded during the reporting period is reported under the "Maximum" column under "Quality" on the DMR.

4. Other Measurements

a. The effluent flow expressed as MGD is the 24 hour average flow averaged monthly. It is the arithmetic mean of the total daily flows recorded during the calendar month. Where monitoring requirements for flow are specified in Part I of the permit the flow rate values are reported in the "Average" column under "Quantity" on the DMR.

b. An "instantaneous flow measurement" is a measure of flow taken at the time of sampling, when both the sample and flow will be representative of the total discharge.

c. Where monitoring requirements for pH or dissolved oxygen are specified in Part I of the permit, the values are generally reported in the "Quality or Concentration" column on the DMR.

5. Types of Samples

a. Grab Sample: A "grab sample" is a single influent or effluent portion which is not a composite sample. The sample(s) shall be collected at the period(s) most representative of the total discharge.

6. Calendar Day

A calendar day is defined as the period from midnight of one day until midnight of the next day. However, for purposes of this permit, any consecutive 24-hour period that reasonably represents the calendar day may be used for sampling.

7. Hazardous Substance

A hazardous substance means any substance designated under 40 CFR Part 16 pursuant to Section 311 of the Clean Water Act.

8. Toxic Pollutant

A toxic pollutant is any pollutant listed as toxic under Section 307(a)(1) of the Clean Water Act.

Section F. Application Requirements

a. For expired individual NPDES permits, dischargers desiring coverage under this general permit are required to submit a notice of intent (NOI) to the Permit Issuing Authority. The NOI shall include (1) the name and address of the person that the permit will be issued to (2) the name, and address of the operation, including county location, (3) the applicable individual NPDES number(s), (4) the identification of any new discharge location not contained in the expired permit, (5) evidence that the operation has obtained approval of a Remedial Action Plan (RAP) Order from the FDEP, (6) a map showing the facility and discharge location (including latitude and longitude), (7) the name of the receiving water, and (8) for discharges lasting over one (1) year a pollution prevention plan. (See Part IV.2) Operators having several individual permits are encouraged to consolidate requests for coverage into one NOI for all individual permits. The previous submission of the proper forms in the renewal application does not relieve the permittee desiring coverage under the general permit of the requirement to file a NOL.

b. All facilities continued by the previous general permit, will be required to submit a NOI requesting *continued* coverage under the reissued general permit by [insert date 60 calendar days after the date of publication in the Federal Register]. The NOI shall contain the same information specified in paragraph a above.

c. Dischargers with current individual NPDES permits that desire coverage under this general permit are required to file an NOI to the Permit Issuing Authority at least thirty (30) days prior to expiration of their current permit(s). The NOI shall contain the same information specified in paragraph a above. Permittees desiring to renew their individual permit are required to submit the appropriate application forms at least 180 days before expiration of their individual permit.

d. Dischargers who have not previously obtained an individual NPDES permit are required to submit to EPA the FDEP approval order letter approving the site RAP. The RAP approval order shall be attached to an NOI to be covered by the general permit and shall contain the same information specified in paragraph (a) above. The

application for coverage under the general permit must be made at least fourteen (14) days before the discharge is to commence.

e. Dischargers seeking coverage under Part I A.3.a. will be required to submit to EPA the date the discharge is expected to cease, results of analytical data and the same information in paragraph a above, except items (3), (4), (5) and (8). Notification of coverage to discharge will be upon receipt of EPA's short-term coverage letter.

f. Notification of coverage will be given by the Permit Issuing Authority by certified mail to the permittee (except for short-term pump tests, 8-hours in duration or less), for dischargers seeking coverage under Part I Sections A.1 and A.2, with the issuance date for each facility being the effective date of coverage by the Permit Issuing Authority.

Short-term pump tests, shall be covered automatically once the permittee receives acceptable groundwater screening values, and the permittee will be responsible meeting the requirements of Parts I.A.1 or A.2. The DMR's for these pump tests shall be submitted to within thirty (30) days after discharge ceases.

g. Dischargers meeting the conditions set forth in Part I A.3.c. are not required to submit an detailed NOI as outlined above, but must submit a copy of the analytical tests and a summary of the proposed activity one (1) week after discharge begins. These dischargers are covered upon receipt of the data, unless notified otherwise by EPA.

h. The coverage of the permit shall expire on *December 6, 1999*.

i. In accordance with 40 CFR 122.28(a)(2) permittees who are covered by this general permit who seek to be continued under this general permit, shall submit an complete NOI in accordance with paragraph a. to EPA 180 days before the expiration of this permit.

Section G. Additional General Permit Conditions

1. The Permit Issuing Authority may require any person authorized by this permit to apply for and obtain an individual NPDES permit when:

a. The discharge(s) is a significant contributor of pollution;

b. The discharger is not in compliance with the conditions of this permit;

c. A change has occurred in the availability of the demonstrated technology of practices for the control or abatement of pollutants applicable to the point sources;

three (3) months or less, with the objective of reaching a *monitor-only* status.

(2) *Reduction-Monitor Phase II*—Using a combination of techniques to significantly reduce groundwater contamination that could be achieved in six (6) months or less, with the objective of reaching a *monitor-only* status.

In an effort to promote pollution prevention, the Permit Issuing Authority may issue permits which include or require pollution prevention activities.

Part V

Whole Effluent Toxicity Testing Program, Acute Freshwater Language

As required by Part I of the permit, within 30-days after commencement of discharge, permittees discharging to fresh waters, which are surface waters in which the chloride concentration at the surface is less than 1500 milligrams per liter, shall initiate the series of tests described below to evaluate whole effluent toxicity of the discharge from the outfall. If more than one (1) outfall exists, separate tests will be performed on each outfall. All test species, procedures and quality assurance criteria used shall be in accordance with *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*, EPA/600/4-90/027F, or the most current edition. The dilution/control water used will be

generally hard water as described in EPA/600/4-90/027F, Section 7, or the most current edition. A standard reference toxicant quality assurance test shall be conducted concurrently with each species used in the toxicity tests and the results submitted with the discharge monitoring report (DMR). Alternatively, if monthly QA/QC reference toxicant tests are conducted, these results must be submitted with the DMR.

1. a. The permittee shall conduct 96-hour acute static-renewal multi-concentration toxicity tests using the daphnid (*Ceriodaphnia dubia*) and the fathead minnow (*Pimephales promelas*). All tests shall be conducted on one grab sample of 100% final effluent. All tests shall be conducted on a control (0%) and the following dilution concentrations at a minimum: 100.0%, 50.0%, 25.0%, 12.5%, and 6.25%.

b. If control mortality exceeds 10% for either species in any test, the test(s) for that species (including the control) shall be repeated. A test will be considered valid only if control mortality does not exceed 10% for either species.

2. The toxicity tests specified above shall be conducted once every month until three (3) valid monthly tests have

been completed, and once every year thereafter for the duration of the permit, unless notified otherwise by the permit issuing authority. These tests are referred to as "routine" tests.

3. a. If unacceptable acute toxicity (an LC₅₀ of 100% or less occurs in either test species in any of the above-described tests within the specified time) is found in a "routine" test, the permittee shall conduct two additional acute toxicity tests in the same manner as the "routine" test on the specie(s) indicating unacceptable acute toxicity. For each additional test, the sample collection requirements and test acceptability criteria specified in Section 1 above must be met for the test to be considered valid. The first test shall begin within two weeks of the end of the "routine" tests, and shall be conducted weekly thereafter until two additional, valid tests are completed. The additional tests will be used to determine if the toxicity found in the "routine" test is still present.

b. Results from additional tests, required due to unacceptable acute toxicity in the "routine" test(s), must be reported on the Discharge Monitoring Report (DMR) Form for the month in which the test was begun. Such test results must be submitted within 45 days of completion of the second additional, valid test.

Part V

Whole Effluent Toxicity Testing Program, Acute Saltwater Language

As required by Part I of this permit, within 30-days after commencement of discharge, permittees discharging to marine waters, which are surface waters in which the chloride concentration at the surface is greater than or equal to 1500 milligrams per liter, shall initiate the series of tests described below to evaluate whole effluent toxicity of the discharge from the outfall. If more than one (1) outfall exists, separate tests will be performed on each outfall. All test species, procedures and quality assurance criteria used shall be in accordance with *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms*, EPA/600/4-90/027F, or the most current edition. The dilution/control water and effluent used will be adjusted to a salinity of 20 parts per thousand using artificial sea salts as described in EPA/600/4-90/027F, Section 7 (or the most current edition). A standard reference toxicant quality assurance test shall be conducted concurrently with each species used in the toxicity tests and the results submitted with the discharge monitoring report (DMR). Alternatively,

if monthly QA/QC reference toxicant tests are conducted, these results must be submitted with the DMR.

1. a. The permittee shall conduct 96-hour acute static-renewal multi-concentration toxicity tests using the mysid shrimp (*Mysidopsis bahia*) and the inland silverside (*Menidia beryllina*). All tests shall be conducted on one grab sample of 100% final effluent. All tests shall be conducted on a control (0%) and the following dilution concentrations at a minimum: 100.0%, 50.0%, 25.0%, 12.5%, and 6.25%.

b. If control mortality exceeds 10% for either species in any test, the test(s) for that species (including the control) shall be repeated. A test will be considered valid only if control mortality does not exceed 10% for either species.

2. The toxicity tests specified above shall be conducted once every month until three (3) valid monthly tests have been completed, and once every year thereafter for the duration of the permit, unless notified otherwise by the permit issuing authority. These tests are referred to as "routine" tests.

3. a. If unacceptable acute toxicity (an LC₅₀ of 100% or less occurs in either test species in any of the above-described tests within the specified time) is found in a "routine" test, the permittee shall conduct two additional acute toxicity tests in the same manner as the "routine" test on the specie(s) indicating unacceptable toxicity. For each additional test, the sample collection requirements and test acceptability criteria specified in Section 1 above must be met for the test to be considered valid. The first test shall begin within two weeks of the end of the "routine" tests, and shall be conducted weekly thereafter until two additional, valid tests are completed. The additional tests will be used to determine if the toxicity found in the "routine" test is still present.

b. Results from additional tests, required due to unacceptable acute toxicity in the "routine" test(s), must be reported on the Discharge Monitoring Report (DMR) Form for the month in which the test was begun. Such test results must be submitted within 45 days of completion of the second additional, valid test.

IFR Doc. 94-30952 Filed 12-15-94; 9:45 am

BILLING CODE 6660-60-D

APPENDIX C

ENGINEERING CALCULATIONS

TREATMENT SYSTEM DESIGN CONTAMINANT CONCENTRATIONS
NTC Orlando, McCoy Annex, Site 7174

Maximum contaminant concentrations at the treatment unit were estimated by calculating a weighted average of surrounding well contaminant concentrations under static conditions. The weighted average was based on the inverse of the distances from the recovery wells. When selecting well data to be used in calculations, the following points were considered:

1. The recovery wells were located near the area of highest concentrations.
2. Selection of wells were within the cone of influence of the recovery well.
3. Only wells with data from the same relative depth were used.
4. Site conditions which might influence the assumption that concentrations decrease with distance were considered.

For design purposes a 1.25 safety factor was used for sizing treatment equipment in the original RAP. In this RAP Addendum a 1.5 safety factor was used to qualify for the NPDES permit and direct discharge to the storm sewer onsite.

This general procedure which was used in the following calculation and an example of its application can be found in Section 2.3 of the Guidance Manual for Review of Petroleum Remedial Action Plans which was prepared for the Florida Department of Environmental Regulation, Division of Waste Management, Bureau of Waste Cleanup in November of 1990.

McCOY ANNEX
BLDG. 7174

INFLUENT CONCENTRATION CALCULATIONS

COMPLETED BY:
CHECKED BY :
DATE :

FJU
BSS
12/29/92

JOB NO. 8519.42

RECOVERY WELL #1

WELL #	DISTANCE 1/DIST (FEET)	BENZENE (ppb)	TOLUENE (ppb)	XYLENE (ppb)	ETHYL BENZENE (ppb)	NAPHTH-ALENE (ppb)	MTBE (ppb)	EDB (ppb)
OLD-7174-3	32.00 0.03	12.00	1.40	1.90	6.80	0.00	0.00	0.00
OLD-7174-15	23.00 0.04	5.80	0.00	0.00	0.00	0.00	7.70	0.00
OLD-7174-1	30.00 0.03	320.00	51.00	54.00	49.00	0.00	100.00	0.00
OLD-7174-2	7.00 0.14	120.00	2.40	6.60	22.00	258.00	60.00	0.00
OLD-7174-5	28.00 0.04	110.00	0.00	0.00	0.00	0.00	220.00	0.00
SUM :	0.29	567.80	54.80	62.50	77.80	258.00	387.70	0.00

CONC. (ppb) :	112.92	7.28	9.78	17.40	128.59	70.11	0.00
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RECOVERY WELL #2

WELL #	DISTANCE 1/DIST (FEET)	BENZENE (ppb)	TOLUENE (ppb)	XYLENE (ppb)	ETHYL BENZENE (ppb)	NAPHTH-ALENE (ppb)	MTBE (ppb)	EDB (ppb)
OLD-7174-11	42.00 0.02	5600.00	29000.00	19000.00	2900.00	396.00	6100.00	1.40
OLD-7174-12	6.00 0.17	29.00	0.00	27.00	27.00	26.00	150.00	0.00
SUM :	0.19	5629.00	29000.00	19027.00	2927.00	422.00	6250.00	1.40

CONC. (ppb) :	725.38	3625.00	2398.63	386.13	72.25	893.75	0.18
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RECOVERY WELL #3

WELL #	DISTANCE 1/DIST (FEET)	BENZENE (ppb)	TOLUENE (ppb)	XYLENE (ppb)	ETHYL BENZENE (ppb)	NAPHTH-ALENE (ppb)	MTBE (ppb)	EDB (ppb)
OLD-7174-13	5.00 0.20	430.00	360.00	810.00	27.00	13.00	58.00	0.00
SUM :	0.20	430.00	360.00	810.00	27.00	13.00	58.00	0.00

CONC. (ppb) :	430.00	360.00	810.00	27.00	13.00	58.00	0.00
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RECOVERY WELL #4

WELL #	DISTANCE 1/DIST (FEET)	BENZENE (ppb)	TOLUENE (ppb)	XYLENE (ppb)	ETHYL BENZENE (ppb)	NAPHTH-ALENE (ppb)	MTBE (ppb)	EDB (ppb)
OLD-7174-7	8.00 0.13	6.60	0.00	5.70	1.60	0.00	3.80	0.00
SUM :	0.13	6.60	0.00	5.70	1.60	0.00	3.80	0.00

CONC. (ppb) :	6.60	0.00	5.70	1.60	0.00	3.80	0.00
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DESIGN CONCS. (ppb)	BENZENE	TOLUENE	XYLENE	ETHYL BENZENE	NAPHTH-ALENE	MTBE	EDB
CONC. TO STRIPPER:	319	998	806	108	53	256	0.04
S. FACTOR 1.50	478	1497	1209	162	80	385	0.07
RECOM. EFF. CONC.	1	10	10	10	100	50	0.02

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum

DATE : 2/6/1995

ENGINEER : FJU

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PHYSICAL CONSTANTS

Design temperature : 70.0 degrees F.
Density of water : 62.3 lb/ft³
Density of air : 0.0749 lb/ft³
Viscosity of water : 6.57E-04 lb/ft.s
Viscosity of air : 1.19E-05 lb/ft.s
Surface tension of water : 73 dyne/cm
Atmospheric pressure : 1.00 atm

CONTAMINANT PROPERTIES

Name : Benzene
Molecular weight : 78.1 g/mol
Boiling point : 176 degrees F.
Molal volume at boiling point : 0.0960 L/mol
Henry's Constant : 0.23000
Temperature constant : 1849 deg K
Molecular diffusivity in air : 1.02E-04 ft²/s
Molecular diffusivity in water : 9.88E-09 ft²/s

PACKING PROPERTIES

Name : Lanpac
Packing Material : Plastic
Nominal Size : 2.30 inch
Specific Area : 68.0 ft²/ft³
Critical surface tension : 33 dyne/cm
Packing depth : 15.0 ft
Air friction factor : 20

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum
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LOADING RATES

Water mass loading rate	:	1.7 lb/ft ² .s	*
Air mass loading rate	:	0.207 lb/ft ² .s	*
Water volumetric loading rate	:	12.40 gpm/ft ²	*
Air volumetric loading rate	:	1240 gpm/ft ²	*
Air pressure gradient	:	0.074 " H2O/ft	#
Volumetric air/water ratio	:	100.0	
Stripping factor	:	24.2	

MASS TRANSFER PARAMETERS

Percentage of packing area wetted	:	41.6 %	
Wetted packing area	:	28.3 ft ² /ft ³	*
Transfer rate constant in water	:	0.000622 ft/s	
Transfer rate constant in air	:	0.011951 ft/s	
Overall transfer rate constant	:	0.000512 ft/s	
Overall mass transfer coefficient	:	0.0145 1/s	
NTU	:	7.8683	
HTU	:	1.9064 ft	

CONTAMINANT REMOVAL

Influent concentration	:	478.5 ug/L	
Effluent concentration	:	0.2 ug/L	
Fraction removed	:	99.9 %	
Mass of contaminant removed	:	0.07119 lb/ft ² .day	*
Concentration in airstream	:	0.13541 mg/ft ³	

* Expressed per unit of stripping tower cross-sectional area
 # Expressed per unit of tower length

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum
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PHYSICAL CONSTANTS

Design temperature : 70.0 degrees F.
Density of water : 62.3 lb/ft³
Density of air : 0.0749 lb/ft³
Viscosity of water : 6.57E-04 lb/ft.s
Viscosity of air : 1.19E-05 lb/ft.s
Surface tension of water : 73 dyne/cm
Atmospheric pressure : 1.00 atm

CONTAMINANT PROPERTIES

Name : Toluene
Molecular weight : 92.2 g/mol
Boiling point : 232 degrees F.
Molal volume at boiling point : 0.1182 L/mol
Henry's Constant : 0.19000
Temperature constant : 3517 deg K
Molecular diffusivity in air : 9.01E-05 ft²/s
Molecular diffusivity in water : 8.72E-09 ft²/s

PACKING PROPERTIES

Name : Lanpac
Packing Material : Plastic
Nominal Size : 2.30 inch
Specific Area : 68.0 ft²/ft³
Critical surface tension : 33 dyne/cm
Packing depth : 15.0 ft
Air friction factor : 20

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum DATE : 2/6/1995
 ENGINEER : FJU PAGE : 2/2

LOADING RATES

Water mass loading rate	:	1.7 lb/ft ² .s	*
Air mass loading rate	:	0.207 lb/ft ² .s	*
Water volumetric loading rate	:	12.40 gpm/ft ²	*
Air volumetric loading rate	:	1240 gpm/ft ²	*
Air pressure gradient	:	0.074 " H2O/ft	#
Volumetric air/water ratio	:	100.0	
Stripping factor	:	21.0	

MASS TRANSFER PARAMETERS

Percentage of packing area wetted	:	41.6 %	
Wetted packing area	:	28.3 ft ² /ft ³	*
Transfer rate constant in water	:	0.000585 ft/s	
Transfer rate constant in air	:	0.011032 ft/s	
Overall transfer rate constant	:	0.000467 ft/s	
Overall mass transfer coefficient	:	0.0132 1/s	
NTU	:	7.1732	
HTU	:	2.0911 ft	

CONTAMINANT REMOVAL

Influent concentration	:	1.5 mg/L	
Effluent concentration	:	1.5 ug/L	
Fraction removed	:	99.9 %	
Mass of contaminant removed	:	0.22262 lb/ft ² .day	*
Concentration in airstream	:	0.42341 mg/ft ³	

* Expressed per unit of stripping tower cross-sectional area
 # Expressed per unit of tower length

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum

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PHYSICAL CONSTANTS

Design temperature : 70.0 degrees F.
Density of water : 62.3 lb/ft³
Density of air : 0.0749 lb/ft³
Viscosity of water : 6.57E-04 lb/ft.s
Viscosity of air : 1.19E-05 lb/ft.s
Surface tension of water : 73 dyne/cm
Atmospheric pressure : 1.00 atm

CONTAMINANT PROPERTIES

Name : Ethylbenzene
Molecular weight : 106.2 g/mol
Boiling point : 277 degrees F.
Molal volume at boiling point : 0.1404 L/mol
Henry's Constant : 0.27000
Temperature constant : 1904 deg K
Molecular diffusivity in air : 8.16E-05 ft²/s
Molecular diffusivity in water : 7.87E-09 ft²/s

PACKING PROPERTIES

Name : Lanpac
Packing Material : Plastic
Nominal Size : 2.30 inch
Specific Area : 68.0 ft²/ft³
Critical surface tension : 33 dyne/cm
Packing depth : 15.0 ft
Air friction factor : 20

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum

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PAGE : 2/2

LOADING RATES

Water mass loading rate	:	1.7 lb/ft ² .s	*
Air mass loading rate	:	0.207 lb/ft ² .s	*
Water volumetric loading rate	:	12.40 gpm/ft ²	*
Air volumetric loading rate	:	1240 gpm/ft ²	*
Air pressure gradient	:	0.074 " H2O/ft	#
Volumetric air/water ratio	:	100.0	
Stripping factor	:	28.5	

MASS TRANSFER PARAMETERS

Percentage of packing area wetted	:	41.6 %	
Wetted packing area	:	28.3 ft ² /ft ³	*
Transfer rate constant in water	:	0.000555 ft/s	
Transfer rate constant in air	:	0.010330 ft/s	
Overall transfer rate constant	:	0.000467 ft/s	
Overall mass transfer coefficient	:	0.0132 1/s	
HTU	:	7.1751	
NTU	:	2.0906 ft	

CONTAMINANT REMOVAL

Influent concentration	:	162.0 ug/L	
Effluent concentration	:	0.2 ug/L	
Fraction removed	:	99.9 %	
Mass of contaminant removed	:	0.02409 lb/ft ² .day	*
Concentration in airstream	:	0.04582 mg/ft ³	

* Expressed per unit of stripping tower cross-sectional area
 # Expressed per unit of tower length

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum

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PHYSICAL CONSTANTS

Design temperature : 70.0 degrees F.
Density of water : 62.3 lb/ft³
Density of air : 0.0749 lb/ft³
Viscosity of water : 6.57E-04 lb/ft.s
Viscosity of air : 1.19E-05 lb/ft.s
Surface tension of water : 73 dyne/cm
Atmospheric pressure : 1.00 atm

CONTAMINANT PROPERTIES

Name : *Total Xylenes as*
p-Xylene
Molecular weight : 106.2 g/mol
Boiling point : 280 degrees F.
Molal volume at boiling point : 0.1404 L/mol
Henry's Constant : 0.29000
Temperature constant : 1904 deg K
Molecular diffusivity in air : 8.15E-05 ft²/s
Molecular diffusivity in water : 7.87E-09 ft²/s

PACKING PROPERTIES

Name : Lanpac
Packing Material : Plastic
Nominal Size : 2.30 inch
Specific Area : 68.0 ft²/ft³
Critical surface tension : 33 dyne/cm
Packing depth : 15.0 ft
Air friction factor : 20

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum DATE : 2/6/1995
 ENGINEER : FJU PAGE : 2/2

LOADING RATES

Water mass loading rate	:	1.7 lb/ft ² .s	*
Air mass loading rate	:	0.207 lb/ft ² .s	*
Water volumetric loading rate	:	12.40 gpm/ft ²	*
Air volumetric loading rate	:	1240 gpm/ft ²	*
Air pressure gradient	:	0.074 " H2O/ft	#
Volumetric air/water ratio	:	100.0	
Stripping factor	:	30.6	

MASS TRANSFER PARAMETERS

Percentage of packing area wetted	:	41.6 %	
Wetted packing area	:	28.3 ft ² /ft ³	*
Transfer rate constant in water	:	0.000555 ft/s	
Transfer rate constant in air	:	0.010323 ft/s	
Overall transfer rate constant	:	0.000472 ft/s	
Overall mass transfer coefficient	:	0.0134 1/s	
NTU	:	7.2540	
HTU	:	2.0678 ft	

CONTAMINANT REMOVAL

Influent concentration	:	1.2 mg/L	
Effluent concentration	:	1.0 ug/L	
Fraction removed	:	99.9 %	
Mass of contaminant removed	:	0.17982 lb/ft ² .day	*
Concentration in airstream	:	0.34200 mg/ft ³	

* Expressed per unit of stripping tower cross-sectional area
 # Expressed per unit of tower length

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum

DATE : 2/6/1995

ENGINEER : FJU

PAGE : 1/2

PHYSICAL CONSTANTS

Design temperature : 70.0 degrees F.
Density of water : 62.3 lb/ft³
Density of air : 0.0749 lb/ft³
Viscosity of water : 6.57E-04 lb/ft.s
Viscosity of air : 1.19E-05 lb/ft.s
Surface tension of water : 73 dyne/cm
Atmospheric pressure : 1.00 atm

CONTAMINANT PROPERTIES

Name : Napthalene
Molecular weight : 128.2 g/mol
Boiling point : 424 degrees F.
Molal volume at boiling point : 0.1476 L/mol
Henry's Constant : 0.04900
Temperature constant : 1904 deg K
Molecular diffusivity in air : 7.56E-05 ft²/s
Molecular diffusivity in water : 7.63E-09 ft²/s

PACKING PROPERTIES

Name : Lanpac
Packing Material : Plastic
Nominal Size : 2.30 inch
Specific Area : 68.0 ft²/ft³
Critical surface tension : 33 dyne/cm
Packing depth : 15.0 ft
Air friction factor : 20

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum

DATE : 2/6/1995

ENGINEER : FJU

PAGE : 2/2

LOADING RATES

Water mass loading rate	:	1.7 lb/ft ² .s	*
Air mass loading rate	:	0.207 lb/ft ² .s	*
Water volumetric loading rate	:	12.40 gpm/ft ²	*
Air volumetric loading rate	:	1240 gpm/ft ²	*
Air pressure gradient	:	0.074 " H2O/ft	#
Volumetric air/water ratio	:	100.0	
Stripping factor	:	5.2	

MASS TRANSFER PARAMETERS

Percentage of packing area wetted	:	41.6 %	
Wetted packing area	:	28.3 ft ² /ft ³	*
Transfer rate constant in water	:	0.000547 ft/s	
Transfer rate constant in air	:	0.009816 ft/s	
Overall transfer rate constant	:	0.000263 ft/s	
Overall mass transfer coefficient	:	0.0074 1/s	
NTU	:	4.0374	
HTU	:	3.7152 ft	

CONTAMINANT REMOVAL

Influent concentration	:	79.5 ug/L	
Effluent concentration	:	2.5 ug/L	
Fraction removed	:	96.9 %	
Mass of contaminant removed	:	0.01147 lb/ft ² .day	*
Concentration in airstream	:	0.02181 mg/ft ³	

* Expressed per unit of stripping tower cross-sectional area
 # Expressed per unit of tower length

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum

DATE : 2/6/1995

ENGINEER : FJU

PAGE : 1/2

PHYSICAL CONSTANTS

Design temperature : 70.0 degrees F.
Density of water : 62.3 lb/ft³
Density of air : 0.0749 lb/ft³
Viscosity of water : 6.57E-04 lb/ft.s
Viscosity of air : 1.19E-05 lb/ft.s
Surface tension of water : 73 dyne/cm
Atmospheric pressure : 1.00 atm

CONTAMINANT PROPERTIES

Name : Methyl tert-butyl ether
Molecular weight : 88.1 g/mol
Boiling point : 131 degrees F.
Molal volume at boiling point : 0.1190 L/mol
Henry's Constant : 0.02200
Temperature constant : 1900 deg K
Molecular diffusivity in air : 9.31E-05 ft²/s
Molecular diffusivity in water : 8.69E-09 ft²/s

PACKING PROPERTIES

Name : Lanpac
Packing Material : Plastic
Nominal Size : 2.30 inch
Specific Area : 68.0 ft²/ft³
Critical surface tension : 33 dyne/cm
Packing depth : 15.0 ft
Air friction factor : 20

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum

DATE : 2/6/1995

ENGINEER : FJU

PAGE : 2/2

LOADING RATES

Water mass loading rate	:	1.7 lb/ft ² .s	*
Air mass loading rate	:	0.207 lb/ft ² .s	*
Water volumetric loading rate	:	12.40 gpm/ft ²	*
Air volumetric loading rate	:	1240 gpm/ft ²	*
Air pressure gradient	:	0.074 " H2O/ft	#
Volumetric air/water ratio	:	100.0	
Stripping factor	:	2.3	

MASS TRANSFER PARAMETERS

Percentage of packing area wetted	:	41.6 %	
Wetted packing area	:	28.3 ft ² /ft ³	*
Transfer rate constant in water	:	0.000584 ft/s	
Transfer rate constant in air	:	0.011279 ft/s	
Overall transfer rate constant	:	0.000181 ft/s	
Overall mass transfer coefficient	:	0.0051 1/s	
NTU	:	2.7828	
HTU	:	5.3903 ft	

CONTAMINANT REMOVAL

Influent concentration	:	384.0 ug/L	
Effluent concentration	:	49.5 ug/L	
Fraction removed	:	87.1 %	
Mass of contaminant removed	:	0.04980 lb/ft ² .day	*
Concentration in airstream	:	0.09471 mg/ft ³	

* Expressed per unit of stripping tower cross-sectional area
 # Expressed per unit of tower length

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum

DATE : 2/6/1995

ENGINEER : FJU

PAGE : 1/2

PHYSICAL CONSTANTS

Design temperature : 70.0 degrees F.
Density of water : 62.3 lb/ft³
Density of air : 0.0749 lb/ft³
Viscosity of water : 6.57E-04 lb/ft.s
Viscosity of air : 1.19E-05 lb/ft.s
Surface tension of water : 73 dyne/cm
Atmospheric pressure : 1.00 atm

CONTAMINANT PROPERTIES

Name : Ethylenedibromide
Molecular weight : 187.9 g/mol
Boiling point : 270 degrees F.
Molal volume at boiling point : 0.0984 L/mol
Henry's Constant : 0.02800
Temperature constant : 1904 deg K
Molecular diffusivity in air : 9.02E-05 ft²/s
Molecular diffusivity in water : 9.74E-09 ft²/s

PACKING PROPERTIES

Name : Lanpac
Packing Material : Plastic
Nominal Size : 2.30 inch
Specific Area : 68.0 ft²/ft³
Critical surface tension : 33 dyne/cm
Packing depth : 15.0 ft
Air friction factor : 20

***** ANALYSIS OF STRIPPING TOWER *****

PROJECT : McCoy Annex, Site 7174 RAP Addendum

DATE : 2/6/1995

ENGINEER : FJU

PAGE : 2/2

LOADING RATES

Water mass loading rate	:	1.7 lb/ft ² .s	*
Air mass loading rate	:	0.207 lb/ft ² .s	*
Water volumetric loading rate	:	12.40 gpm/ft ²	*
Air volumetric loading rate	:	1240 gpm/ft ²	*
Air pressure gradient	:	0.074 " H2O/ft	#
Volumetric air/water ratio	:	100.0	
Stripping factor	:	3.0	

MASS TRANSFER PARAMETERS

Percentage of packing area wetted	:	41.6 %	
Wetted packing area	:	28.3 ft ² /ft ³	*
Transfer rate constant in water	:	0.000618 ft/s	
Transfer rate constant in air	:	0.011041 ft/s	
Overall transfer rate constant	:	0.000213 ft/s	
Overall mass transfer coefficient	:	0.0060 1/s	
NTU	:	3.2612	
HTU	:	4.5995 ft	

CONTAMINANT REMOVAL

Influent concentration	:	0.1 ug/L <i>≈ 0.06 ug/L</i>	
Effluent concentration	:	0.0 ug/L <i>≈ 0.005 ug/L</i>	
Fraction removed	:	92.1 %	
Mass of contaminant removed	:	0.00001 lb/ft ² .day	*
Concentration in airstream	:	0.00003 mg/ft ³	

- * Expressed per unit of stripping tower cross-sectional area
- # Expressed per unit of tower length

SIZE BLOWER FOR AIR STRIPPER
NTC Orlando, McCoy Annex, Site 7174

The following brief calculation is used to size a blower to match the design criteria specified in the Airstrip[®] design.

The air to water (A/W) ratio is combined with the groundwater flowrate to yield a design air flow rate required for the blower.

$$Q_a = A/W \times Q_w \times \frac{1 \text{ cubic foot}}{7.48 \text{ gallons}}$$

where:

A/W = Air to water ratio (dimensionless);
Q_w = Water flow rate into the tower (gpm); and
Q_a = Air flow rate from the blower required (cfm).

The air pressure gradient (P) through the packing material is determined through a multistep computation which is discussed in the Airstrip[®] Documentation, 1988. It is an iterative process; the air pressure gradient value is listed in the loading rate section of the Airstrip[®] printout.

The pressure gradient has units of inches of H₂O per foot of packing. Based on these units the static pressure resistance through the airstripping tower can be calculated as follows.

$$P_p = H \times P$$

where:

H = Height of packing (feet);
P = Air pressure gradient per foot of packing (inches H₂O/foot); and
P_p = Static pressure resistance in the tower (inches H₂O).

Minor losses will also be experienced due to friction in the stack. For pump sizing, this value is considered equal to the static pressure resistance (P_p) inch of H₂O was used. This value for stack pressure loss (P_s) is conservative and should be less than the static pressure resistance.

Total pressure (P_t) losses which must be overcome by the blower are then equated using the following equation.

$$P_t = P_p + P_s$$

where:

P_s = Pressure losses throughout the stack (inches H₂O) and
P_t = Total pressure loss blower selected must overcome (inches H₂O).

Reference: Haarhoff, J. and D. Schoeller. AIRSTRIP[®] Documentation: Theory and Design of Countercurrent Packed Aeration Towers. Release 1.2: Prepared by Professional Service Industries.

SIZE BLOWER FOR AIR STRIPPER

PROJECT: McCoy Annex, Site 7174

CHECKED BY: *BJS*

DATE: 6 February 95

ENGINEER: FJU

Symbol	Value	Units	Description
A/W	100:1		Air to water ratio in the Stripping tower
Qw	22.5	gpm	Design groundwater flow rate
Qa	300.80	cfm	Design air flow rate for specified A/W ratio
P	0.074	in/ft	Air pressure gradient per ft of packing
H	15	feet	Height of packing
Pp	1.11	in	Static pressure resistance in the tower
Ps	1.11	in	Pressure resistance due to stack emission
Pt	2.22	inches of H2O	Total static pressure required to size blower

BLOWER PERFORMANCE REQUIREMENTS

Flow rate 300.8 cfm
Total static pressure 2.22 inches of water

USE: 300.80 cfm at 2.22 inches of water

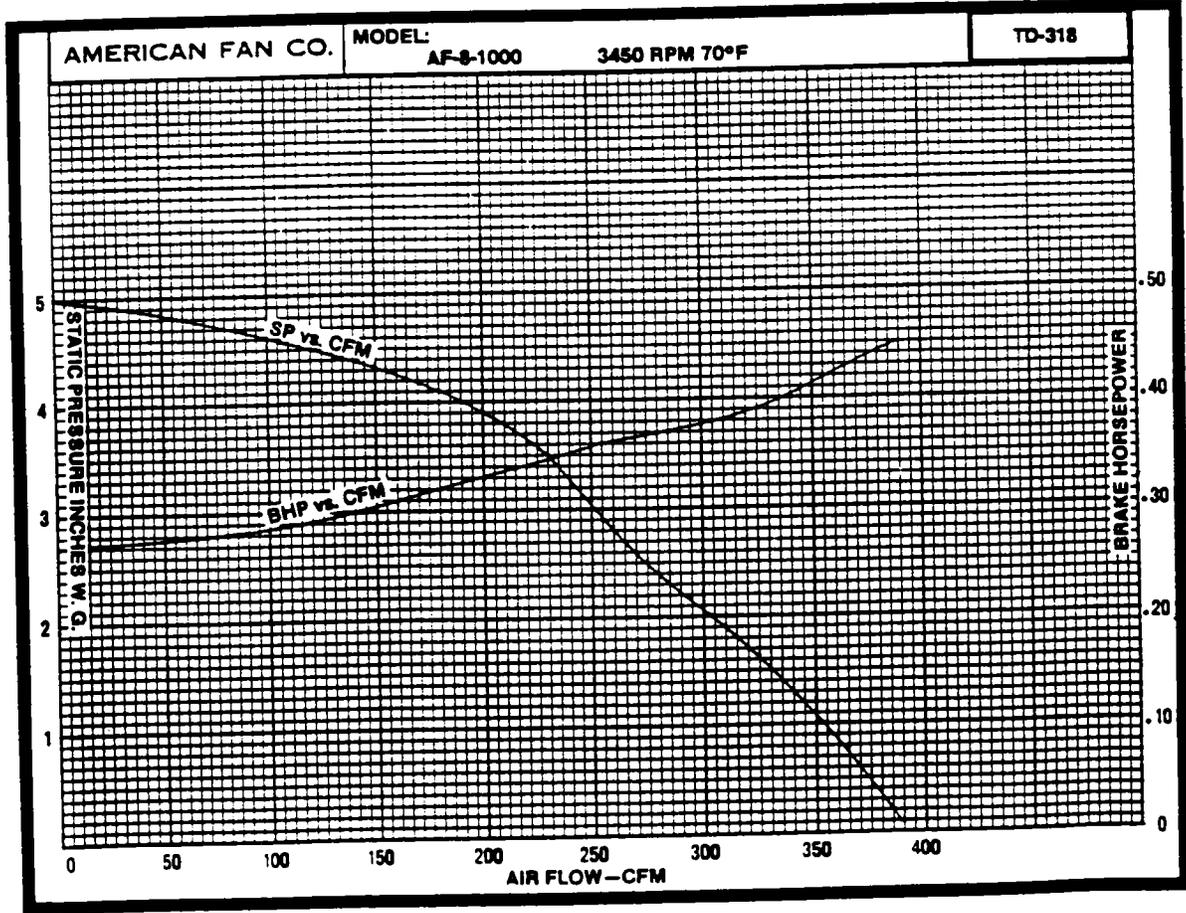
Recommended blower: AF-8-1000 - or equivalent.

AMERICAN FAN CO.

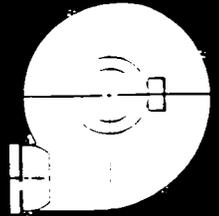
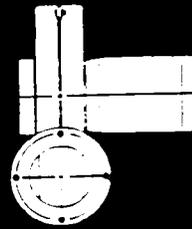
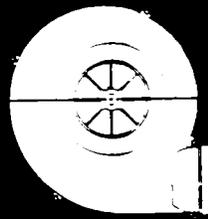


M	OV	0.50 SP		1.00 SP		1.50 SP		2.00 SP		2.50 SP		3.00 SP		3.50 SP		4.00 SP		4.50 SP		5.00 SP		6.00 SP		7.00 SP		8.00 SP		9.00 SP	
		RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
7	1000	1304	0.02	1702	0.04	2032	0.06	2316	0.09	2567	0.12	2796	0.15	3007	0.19	3203	0.23	3389	0.27	3566	0.31	3694	0.40	4196	0.50	4477	0.61	4741	0.72
5	1200	1419	0.02	1762	0.04	2078	0.07	2355	0.10	2605	0.13	2832	0.16	3040	0.20	3227	0.24	3421	0.28	3595	0.32	3919	0.42	4221	0.52	4502	0.62	4766	0.74
2	1400	1522	0.03	1838	0.05	2134	0.08	2403	0.11	2645	0.14	2871	0.18	3079	0.21	3273	0.25	3455	0.29	3628	0.34	3952	0.43	4251	0.53	4528	0.64	4791	0.76
0	1600	1640	0.04	1952	0.06	2205	0.09	2459	0.12	2696	0.15	2914	0.19	3118	0.23	3312	0.27	3494	0.31	3666	0.36	3986	0.45	4284	0.55	4561	0.66	4822	0.78
7	1800	1764	0.05	2059	0.08	2297	0.11	2527	0.13	2753	0.17	2965	0.20	3166	0.24	3352	0.29	3533	0.33	3705	0.38	4025	0.47	4319	0.58	4594	0.69	4855	0.81
5	2000	1888	0.06	2163	0.09	2415	0.12	2608	0.16	2820	0.18	3025	0.22	3218	0.26	3404	0.31	3579	0.35	3745	0.40	4064	0.50	4358	0.61	4632	0.72	4890	0.84
2	2200	2015	0.08	2281	0.11	2520	0.14	2724	0.17	2901	0.21	3093	0.24	3281	0.29	3457	0.33	3631	0.38	3796	0.42	4105	0.52	4397	0.63	4671	0.75	4929	0.87
9	2400	2141	0.09	2405	0.13	2623	0.16	2838	0.20	3010	0.24	3173	0.28	3330	0.31	3523	0.36	3689	0.40	3848	0.45	4156	0.55	4440	0.66	4711	0.78	4968	0.91
7	2600	2270	0.11	2528	0.15	2736	0.19	2940	0.22	3128	0.26	3280	0.31	3431	0.35	3595	0.39	3753	0.43	3911	0.48	4208	0.59	4491	0.70	4755	0.82	5007	0.94
4	2800	2400	0.13	2653	0.18	2859	0.22	3044	0.25	3232	0.29	3398	0.34	3538	0.38	3676	0.43	3830	0.47	3978	0.52	4269	0.63	4543	0.74	4806	0.86	5054	0.99
2	3000	2536	0.16	2779	0.20	2983	0.25	3198	0.29	3335	0.33	3507	0.37	3656	0.42	3787	0.47	3911	0.52	4057	0.57	4335	0.67	4603	0.78	4858	0.90	5106	1.03
9	3200	2676	0.19	2905	0.23	3106	0.28	3281	0.33	3440	0.37	3609	0.41	3767	0.46	3904	0.51	4027	0.57	4144	0.62	4409	0.72	4669	0.83	4919	0.95	5158	1.08
2	3400	2816	0.23	3032	0.26	3230	0.32	3405	0.37	3559	0.41	3713	0.46	3869	0.51	4017	0.56	4144	0.61	4260	0.67	4490	0.79	4740	0.89	4984	1.01	5219	1.14
4	3600	2958	0.27	3160	0.30	3356	0.36	3528	0.42	3682	0.46	3823	0.51	3972	0.56	4118	0.61	4257	0.66	4378	0.72	4595	0.84	4821	0.96	5053	1.07	5285	1.20
2	3800	3101	0.31	3290	0.34	3483	0.40	3652	0.46	3806	0.52	3945	0.57	4077	0.61	4221	0.67	4359	0.72	4490	0.78	4711	0.90	4912	1.04	5134	1.15	5352	1.27
9	4000	3244	0.36	3420	0.38	3609	0.45	3777	0.51	3929	0.58	4068	0.63	4197	0.68	4326	0.73	4462	0.78	4592	0.84	4829	0.96	5027	1.10	5215	1.24	5433	1.36
5	4200	3388	0.42	3557	0.43	3736	0.50	3903	0.56	4053	0.63	4193	0.70	4319	0.75	4441	0.80	4566	0.85	4694	0.91	4938	1.03	5145	1.17	5330	1.32	5447	1.39
4	4400	3534	0.47	3696	0.50	3864	0.55	4030	0.62	4177	0.69	4316	0.76	4443	0.82	4562	0.88	4677	0.93	4798	0.99	5039	1.11	5263	1.24	5447	1.39		
0	4600	3682	0.54	3836	0.56	3994	0.60	4155	0.68	4303	0.76	4439	0.83	4568	0.91	4686	0.96	4798	1.01	4907	1.07	5142	1.20	5365	1.33				
9	4800	3830	0.60	3977	0.64	4124	0.67	4282	0.75	4430	0.83	4563	0.90	4690	0.98	4810	1.05	4921	1.11	5028	1.16	5266	1.29	5467	1.43				
5	5000	3978	0.68	4118	0.71	4257	0.74	4410	0.81	4556	0.90	4689	0.98	4814	1.06	4934	1.14	5045	1.21										
4	5200	4127	0.76	4261	0.80	4395	0.82	4539	0.89	4682	0.97	4816	1.06	4939	1.14	5057	1.23	5170	1.31										
7	5400	4276	0.85	4403	0.89	4535	0.92	4669	0.97	4809	1.06	4942	1.15	5064	1.23	5180	1.32	5292	1.41										
9	5600	4425	0.94	4547	0.99	4675	1.02	4800	1.05	4937	1.14	5068	1.24	5191	1.33	5305	1.42	5416	1.51										
0	5800	4575	1.04	4691	1.10	4815	1.12	4934	1.15	5066	1.23	5194	1.33	5318	1.43	5431	1.52												

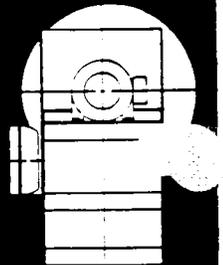
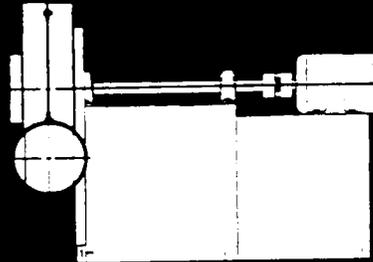
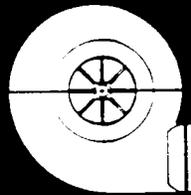
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		RPM	BHP	RPM	BHP
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5	1200	5016	0.86	5253	0.99
2	1400	5041	0.88	5278	1.01
0	1600	5068	0.90	5304	1.03
7	1800	5101	0.93	5336	1.06
5	2000	5135	0.96	5369	1.09
2	2200	5172	1.00	5404	1.13
9	2400	5211	1.04	5442	1.17
7	2600	5250	1.08	5482	1.21
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2	3000	5340	1.17		
9	3200	5392	1.22		
7	3400	5444	1.28		



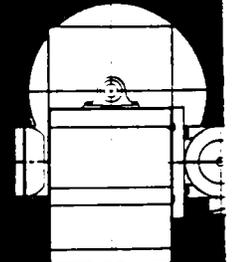
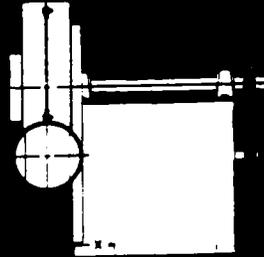
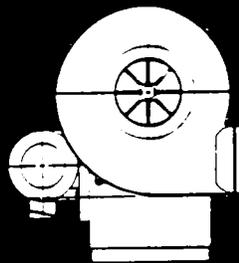
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9	3 ¹ / ₁₆	5	6	7 ¹ / ₁₆	6 ¹⁷ / ₃₂	7 ¹ / ₈	1 ¹ / ₈	3 ³ / ₄	1 ¹ / ₈	3 ¹ / ₁₆	5 ¹ / ₈	7 ¹ / ₁₆	13 ¹ / ₁₆	16 ⁷ / ₁₆	7 ³ / ₈	6 ¹ / ₈	1 ¹ / ₄
10	4 ¹ / ₁₆	6	6 ¹ / ₁₆	8 ¹ / ₁₆	7 ¹ / ₃₂	9	1 ³ / ₈	3 ³ / ₄	1 ¹ / ₂	3 ¹ / ₈	6 ¹ / ₈	8 ¹ / ₁₆	13 ¹ / ₁₆	17	7 ⁷ / ₈	6 ¹ / ₈	1 ¹ / ₄
12	5 ¹ / ₂	7	7 ¹ / ₄	9 ¹ / ₄	8 ¹ / ₂	10 ⁷ / ₁₆	1 ⁷ / ₁₆	4 ¹ / ₄	1 ¹ / ₂	3 ¹ / ₈	7 ¹ / ₁₆	9 ¹ / ₁₆	14 ⁷ / ₁₆	18 ¹ / ₂	9	P	1 ¹ / ₄
15	7 ¹ / ₂	*	9 ¹ / ₈	11	10	12	2 ¹ / ₁₆	5 ¹ / ₈	1 ¹ / ₂	4 ¹ / ₁₆	7 ¹ / ₈	11 ⁷ / ₁₆	18 ⁷ / ₁₆	23 ¹ / ₈	13 ¹ / ₂		



AF SIZE	A	B	C	D	E	F	G	H	I	J	K	L*	M	N	O	P	Q	R	S	56 143-T 145-T			182-T 184-T			213-T 215-T			254-T	
																				S	T*	T*	S	T*	T*	S	T*	T*		S
8	4	4	4 ¹ / ₁₆	5 ¹ / ₁₆	5 ³ / ₃₂	6 ¹ / ₁₆	1 ¹ / ₈	15	3 ¹ / ₂	1 ¹ / ₈	2 ¹ / ₈	3	4 ¹ / ₁₆	6 ¹ / ₁₆	5	6	7	7 ¹ / ₁₆	13 ¹ / ₁₆	34 ³ / ₁₆	34 ¹ / ₂	35 ¹ / ₂	—	—	—	—	—	—	—	
9	4	5	6	7 ¹ / ₁₆	6 ⁷ / ₃₂	7 ¹ / ₈	1 ¹ / ₁₆	15	3 ³ / ₄	1 ¹ / ₈	3 ¹ / ₁₆	3 ¹ / ₈	5 ¹ / ₁₆	7 ¹ / ₁₆	5	6	7	7 ¹ / ₁₆	13 ¹ / ₁₆	34 ⁷ / ₁₆	34 ¹ / ₁₆	35 ¹ / ₁₆	14 ¹ / ₁₆	35 ¹ / ₁₆	36 ¹ / ₁₆	—	—	—	—	—
10	5	6	6 ¹ / ₁₆	8 ¹ / ₁₆	7 ¹ / ₃₂	9	1 ¹ / ₁₆	15	3 ³ / ₄	1 ¹ / ₂	3 ³ / ₈	3 ¹ / ₈	6 ¹ / ₁₆	7 ¹ / ₁₆	5	6	7	7 ¹ / ₁₆	13 ¹ / ₁₆	35	35 ¹ / ₁₆	36 ¹ / ₁₆	14 ¹ / ₁₆	35 ¹ / ₁₆	36 ¹ / ₁₆	—	—	—	—	—
12	6	7	7 ¹ / ₄	9 ¹ / ₄	8 ¹ / ₂	10 ⁷ / ₁₆	1 ¹ / ₁₆	15	4 ¹ / ₄	1 ¹ / ₂	3 ³ / ₈	3 ³ / ₈	7 ¹ / ₁₆	8 ¹ / ₁₆	5	6	7	7 ¹ / ₁₆	13 ¹ / ₁₆	35 ¹ / ₂	35 ¹ / ₁₆	36 ¹ / ₁₆	14 ¹ / ₁₆	35 ¹ / ₁₆	36 ¹ / ₁₆	—	—	—	—	—
15	8	*	9 ¹ / ₈	11	10	12	1 ¹ / ₁₆	19 ⁷ / ₁₆	5 ¹ / ₈	1 ¹ / ₂	4 ¹ / ₁₆	4 ¹ / ₁₆	7 ¹ / ₁₆	10 ¹ / ₁₆	7	8	9	9 ¹ / ₁₆	17 ¹ / ₁₆	43 ¹ / ₁₆	43 ¹ / ₁₆	44 ¹ / ₁₆	18 ¹ / ₁₆	44 ¹ / ₁₆	45 ¹ / ₁₆	19 ¹ / ₂	44 ¹ / ₄	46 ¹ / ₄	20 ¹ / ₁₆	



AF SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S*	T	U	V	W*	X	Y	Z	AA	SHAFT DIA.	KEYWAY	MAX. MOTO FRAME
8	4	4	4 ¹ / ₁₆	5 ¹ / ₁₆	5 ³ / ₃₂	6 ¹ / ₁₆	15	1 ¹ / ₈	1	5	6	7	1 ¹ / ₈	3 ¹ / ₂	2 ¹ / ₈	3	12	1	3	21 ¹ / ₁₆	1	4 ¹ / ₁₆	6 ¹ / ₁₆	7 ¹ / ₁₆	3/8	7/16 x 3/32	184
9	4	5	6	7 ¹ / ₁₆	6 ⁷ / ₃₂	7 ¹ / ₈	15	1 ¹ / ₁₆	1	5	6	7	1 ¹ / ₁₆	3 ³ / ₈	3 ¹ / ₁₆	3 ¹ / ₈	12	1	3	22 ⁷ / ₁₆	1	5 ¹ / ₁₆	7 ¹ / ₁₆	7 ¹ / ₁₆	3/8	7/16 x 3/32	184
10	5	6	6 ¹ / ₁₆	8 ¹ / ₁₆	7 ¹ / ₃₂	9	15	1 ¹ / ₁₆	1	5	6	7	1 ¹ / ₂	3 ³ / ₈	3 ¹ / ₈	3 ¹ / ₈	12	1	3	22 ¹ / ₂	1	6 ¹ / ₁₆	7 ¹ / ₁₆	7 ¹ / ₁₆	1	7/16 x 1/8	184
12	6	7	7 ¹ / ₄	9 ¹ / ₄	8 ¹ / ₂	10 ⁷ / ₁₆	15	1 ¹ / ₁₆	1	5	6	7	1 ¹ / ₂	4 ¹ / ₄	3 ¹ / ₈	3 ¹ / ₈	12	1	3	23	1	7 ¹ / ₁₆	8 ¹ / ₁₆	7 ¹ / ₁₆	1	7/16 x 1/8	184
15	8	*	9 ¹ / ₈	11	10	12	19 ⁷ / ₁₆	1 ¹ / ₁₆	1	7	8	9	1 ¹ / ₂	5 ¹ / ₈	4 ⁷ / ₁₆	7 ¹ / ₁₆	12	2 ¹ / ₁₆	4 ¹ / ₁₆	31	4 ⁷ / ₁₆	7 ¹ / ₁₆	10 ¹ / ₁₆	7 ¹ / ₁₆	17 ¹ / ₁₆	7/16 x 1/8	256



REPRESENTED BY



2933 Symmes Road, Fairfield, Ohio 45014
Phone: (513) 874-2400 Teletax: (513) 874-4096

AIR STRIPPER AIR EMISSIONS IMPACT EVALUATION
 NTC Orlando, McCoy Annex, Site 7174

Contaminants removed from the groundwater by air stripping are discharged from the air stripper to the atmosphere. The air emissions must be properly evaluated and controlled if necessary to reduce risks to human health. An Acceptable Ambient Concentration (AAC) for each contaminant of concern can be calculated as follows.

$$ACC \frac{mg}{m^3} = \frac{40 \text{ hrs}}{T \text{ hrs}} \times \frac{TLV \frac{mg}{m^3}}{A}$$

where: T = number of hours of emissions per week
 TLV = Threshold Limit Value for emission constituent
 A = constant as follows:

100 for Category A which includes substances which are known or suspected to be carcinogenic or considered highly toxic.

50 for Category B which includes moderately toxic substances.

For benzene, toluene, ethylbenzene, xylene, and naphthalene emissions from a system operating continuously (168 hrs/wk), the AAC is as follows.

<u>CONSTITUENT</u>	<u>TLV (mg/m³)</u>	<u>CATEGORY</u>	<u>A</u>	<u>AAC (mg/m³)</u>
benzene	3	A	100	0.007
toluene	375	B	50	1.785
ethylbenzene	435	A	100	1.035
xylene	435	A	100	1.035
naphthalene	50	A	100	0.119

MTBE is not categorized and has no required threshold limit value (TLV).

These AAC values can be compared to maximum concentration estimates for 8 hour averaging times. These estimates are calculated using the USEPA air emissions screening model "TSCREEN". Results of the TSCREEN model for 100% transfer of the contaminants with a discharge from a 24-inch diameter tower at 25 feet above land surface and an air flow rate of 535 cubic feet per minute indicate that the AAC will be met. The TSCREEN output for the direct tower emissions for each of the BTEX constituents are attached. The "Estimated Maximum Concentration For 8 Hr Averaging Time" values are given at the end of each printout in micrograms per cubic meter, $\mu\text{g}/\text{m}^3$.

*** SCREEN-1.2 MODEL RUN ***
*** VERSION DATED 90XXX ***

NTC Orlando Site 7174 - Benzene

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = .6790E-03
STACK HEIGHT (M) = 7.62
STK INSIDE DIAM (M) = .61
STK EXIT VELOCITY (M/S) = .4864
STK GAS EXIT TEMP (K) = 293.00
AMBIENT AIR TEMP (K) = 293.00
RECEPTOR HEIGHT (M) = .00
IOPT (1=URB,2=RUR) = 2
BUILDING HEIGHT (M) = .00
MIN HORIZ BLDG DIM (M) = .00
MAX HORIZ BLDG DIM (M) = .00

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1.804	66.	0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .02 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
18.	.4296	1	1.0	1.0	320.0	7.3	5.7	2.8	NO
100.	1.671	4	1.0	1.0	320.0	7.3	8.2	4.7	NO
200.	1.510	5	1.0	1.0	5000.0	7.3	11.6	6.2	NO
300.	1.483	6	1.0	1.0	5000.0	7.3	11.2	5.6	NO
400.	1.230	6	1.0	1.0	5000.0	7.3	14.6	7.1	NO
500.	.9844	6	1.0	1.0	5000.0	7.3	18.0	8.4	NO
600.	.7925	6	1.0	1.0	5000.0	7.3	21.2	9.7	NO
700.	.6479	6	1.0	1.0	5000.0	7.3	24.5	10.9	NO
800.	.5430	6	1.0	1.0	5000.0	7.3	27.6	12.0	NO

900.	.4623	6	1.0	1.0	5000.0	7.3	30.8	13.0	NO
1000.	.3990	6	1.0	1.0	5000.0	7.3	33.9	14.0	NO
1100.	.3498	6	1.0	1.0	5000.0	7.3	37.0	14.8	NO
1200.	.3097	6	1.0	1.0	5000.0	7.3	40.0	15.7	NO
1300.	.2765	6	1.0	1.0	5000.0	7.3	43.0	16.5	NO
1400.	.2488	6	1.0	1.0	5000.0	7.3	46.0	17.3	NO
1500.	.2254	6	1.0	1.0	5000.0	7.3	49.0	18.0	NO
1600.	.2053	6	1.0	1.0	5000.0	7.3	52.0	18.8	NO
1700.	.1880	6	1.0	1.0	5000.0	7.3	54.9	19.5	NO
1800.	.1730	6	1.0	1.0	5000.0	7.3	57.9	20.2	NO
1900.	.1599	6	1.0	1.0	5000.0	7.3	60.8	20.9	NO
2000.	.1483	6	1.0	1.0	5000.0	7.3	63.7	21.6	NO
2100.	.1386	6	1.0	1.0	5000.0	7.3	66.6	22.2	NO
2200.	.1299	6	1.0	1.0	5000.0	7.3	69.4	22.8	NO
2300.	.1220	6	1.0	1.0	5000.0	7.3	72.3	23.3	NO
2400.	.1150	6	1.0	1.0	5000.0	7.3	75.1	23.9	NO
2500.	.1086	6	1.0	1.0	5000.0	7.3	77.9	24.4	NO
2600.	.1028	6	1.0	1.0	5000.0	7.3	80.8	25.0	NO
2700.	.9748E-01	6	1.0	1.0	5000.0	7.3	83.6	25.5	NO
2800.	.9262E-01	6	1.0	1.0	5000.0	7.3	86.4	26.0	NO
2900.	.8816E-01	6	1.0	1.0	5000.0	7.3	89.1	26.5	NO
3000.	.8405E-01	6	1.0	1.0	5000.0	7.3	91.9	27.0	NO
3500.	.6840E-01	6	1.0	1.0	5000.0	7.3	105.7	29.0	NO
4000.	.5720E-01	6	1.0	1.0	5000.0	7.3	119.2	30.8	NO
4500.	.4884E-01	6	1.0	1.0	5000.0	7.3	132.5	32.6	NO
5000.	.4240E-01	6	1.0	1.0	5000.0	7.3	145.7	34.2	NO
5500.	.3731E-01	6	1.0	1.0	5000.0	7.3	158.7	35.8	NO
6000.	.3319E-01	6	1.0	1.0	5000.0	7.3	171.6	37.2	NO
6500.	.2981E-01	6	1.0	1.0	5000.0	7.3	184.3	38.6	NO
7000.	.2698E-01	6	1.0	1.0	5000.0	7.3	197.0	40.0	NO
7500.	.2467E-01	6	1.0	1.0	5000.0	7.3	209.5	41.2	NO
8000.	.2269E-01	6	1.0	1.0	5000.0	7.3	222.0	42.3	NO
8500.	.2097E-01	6	1.0	1.0	5000.0	7.3	234.3	43.4	NO
9000.	.1948E-01	6	1.0	1.0	5000.0	7.3	246.6	44.4	NO
9500.	.1816E-01	6	1.0	1.0	5000.0	7.3	258.8	45.4	NO
10000.	.1699E-01	6	1.0	1.0	5000.0	7.3	270.9	46.4	NO
15000.	.1005E-01	6	1.0	1.0	5000.0	7.3	388.4	54.9	NO
20000.	.7104E-02	6	1.0	1.0	5000.0	7.3	500.9	60.3	NO
25000.	.5431E-02	6	1.0	1.0	5000.0	7.3	609.8	64.9	NO
30000.	.4363E-02	6	1.0	1.0	5000.0	7.3	715.6	68.8	NO
40000.	.3138E-02	6	1.0	1.0	5000.0	7.3	920.2	74.5	NO
50000.	.2432E-02	6	1.0	1.0	5000.0	7.3	1117.4	79.2	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 18. M:
66. 1.804 3 1.0 1.0 320.0 7.3 8.6 5.2 NO

DIST = DISTANCE FROM THE SOURCE
CONC = MAXIMUM GROUND LEVEL CONCENTRATION
STAB = ATMOSPHERIC STABILITY CLASS (1=A, 2=B, 3=C, 4=D, 5=E, 6=F)
U10M = WIND SPEED AT THE 10-M LEVEL
USTK = WIND SPEED AT STACK HEIGHT
MIX HT = MIXING HEIGHT
PLUME HT= PLUME CENTERLINE HEIGHT
SIGMA Y = LATERAL DISPERSION PARAMETER
SIGMA Z = VERTICAL DISPERSION PARAMETER
WASH = BUILDING DOWNWASH:
DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** USER SPECIFIED AVERAGING TIMES ***

ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME = 1.2628(p .3608)

** SCREEN-1.2 MODEL RUN ***
* VERSION DATED 90XXX ***

NTC Orlando Site 7174 - Toluene

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = .2125E-02
STACK HEIGHT (M) = 7.62
STK INSIDE DIAM (M) = .61
STK EXIT VELOCITY (M/S) = .4864
STK GAS EXIT TEMP (K) = 293.00
AMBIENT AIR TEMP (K) = 293.00
RECEPTOR HEIGHT (M) = .00
IOPT (1=URB,2=RUR) = 2
BUILDING HEIGHT (M) = .00
MIN HORIZ BLDG DIM (M) = .00
MAX HORIZ BLDG DIM (M) = .00

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	5.645	66.	0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .02 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
18.	1.345	1	1.0	1.0	320.0	7.3	5.7	2.8	NO
100.	5.229	4	1.0	1.0	320.0	7.3	8.2	4.7	NQ
200.	4.726	5	1.0	1.0	5000.0	7.3	11.6	6.2	NO
300.	4.641	6	1.0	1.0	5000.0	7.3	11.2	5.6	NO
400.	3.849	6	1.0	1.0	5000.0	7.3	14.6	7.1	NO
500.	3.081	6	1.0	1.0	5000.0	7.3	18.0	8.4	NO
600.	2.480	6	1.0	1.0	5000.0	7.3	21.2	9.7	NO
700.	2.028	6	1.0	1.0	5000.0	7.3	24.5	10.9	NO
800.	1.699	6	1.0	1.0	5000.0	7.3	27.6	12.0	NO

900.	1.447	6	1.0	1.0	5000.0	7.3	30.8	13.0	NO
1000.	1.249	6	1.0	1.0	5000.0	7.3	33.9	14.0	NO
1100.	1.095	6	1.0	1.0	5000.0	7.3	37.0	14.8	NO
1200.	.9691	6	1.0	1.0	5000.0	7.3	40.0	15.7	
1300.	.8654	6	1.0	1.0	5000.0	7.3	43.0	16.5	
1400.	.7787	6	1.0	1.0	5000.0	7.3	46.0	17.3	NO
1500.	.7053	6	1.0	1.0	5000.0	7.3	49.0	18.0	NO
1600.	.6426	6	1.0	1.0	5000.0	7.3	52.0	18.8	NO
1700.	.5885	6	1.0	1.0	5000.0	7.3	54.9	19.5	NO
1800.	.5415	6	1.0	1.0	5000.0	7.3	57.9	20.2	NO
1900.	.5004	6	1.0	1.0	5000.0	7.3	60.8	20.9	NO
2000.	.4641	6	1.0	1.0	5000.0	7.3	63.7	21.6	NO
2100.	.4337	6	1.0	1.0	5000.0	7.3	66.6	22.2	NO
2200.	.4064	6	1.0	1.0	5000.0	7.3	69.4	22.8	NO
2300.	.3820	6	1.0	1.0	5000.0	7.3	72.3	23.3	NO
2400.	.3599	6	1.0	1.0	5000.0	7.3	75.1	23.9	NO
2500.	.3399	6	1.0	1.0	5000.0	7.3	77.9	24.4	NO
2600.	.3217	6	1.0	1.0	5000.0	7.3	80.8	25.0	NO
2700.	.3051	6	1.0	1.0	5000.0	7.3	83.6	25.5	NO
2800.	.2899	6	1.0	1.0	5000.0	7.3	86.4	26.0	NO
2900.	.2759	6	1.0	1.0	5000.0	7.3	89.1	26.5	NO
3000.	.2630	6	1.0	1.0	5000.0	7.3	91.9	27.0	NO
3500.	.2141	6	1.0	1.0	5000.0	7.3	105.7	29.0	NO
4000.	.1790	6	1.0	1.0	5000.0	7.3	119.2	30.8	NO
4500.	.1529	6	1.0	1.0	5000.0	7.3	132.5	32.6	NO
5000.	.1327	6	1.0	1.0	5000.0	7.3	145.7	34.2	NO
5500.	.1168	6	1.0	1.0	5000.0	7.3	158.7	35.8	NO
6000.	.1039	6	1.0	1.0	5000.0	7.3	171.6	37.2	NO
6500.	.9328E-01	6	1.0	1.0	5000.0	7.3	184.3	38.6	NO
7000.	.8443E-01	6	1.0	1.0	5000.0	7.3	197.0	40.0	
7500.	.7721E-01	6	1.0	1.0	5000.0	7.3	209.5	41.2	NO
8000.	.7101E-01	6	1.0	1.0	5000.0	7.3	222.0	42.3	NO
8500.	.6564E-01	6	1.0	1.0	5000.0	7.3	234.3	43.4	NO
9000.	.6095E-01	6	1.0	1.0	5000.0	7.3	246.6	44.4	NO
9500.	.5683E-01	6	1.0	1.0	5000.0	7.3	258.8	45.4	NO
10000.	.5317E-01	6	1.0	1.0	5000.0	7.3	270.9	46.4	NO
15000.	.3145E-01	6	1.0	1.0	5000.0	7.3	388.4	54.9	NO
20000.	.2223E-01	6	1.0	1.0	5000.0	7.3	500.9	60.3	NO
25000.	.1700E-01	6	1.0	1.0	5000.0	7.3	609.8	64.9	NO
30000.	.1366E-01	6	1.0	1.0	5000.0	7.3	715.6	68.8	NO
40000.	.9821E-02	6	1.0	1.0	5000.0	7.3	920.2	74.5	NO
50000.	.7612E-02	6	1.0	1.0	5000.0	7.3	1117.4	79.2	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 18. M:
66. 5.645 3 1.0 1.0 320.0 7.3 8.6 5.2 NO

DIST = DISTANCE FROM THE SOURCE
CONC = MAXIMUM GROUND LEVEL CONCENTRATION
STAB = ATMOSPHERIC STABILITY CLASS (1=A, 2=B, 3=C, 4=D, 5=E, 6=F)
U10M = WIND SPEED AT THE 10-M LEVEL
USTK = WIND SPEED AT STACK HEIGHT
MIX HT = MIXING HEIGHT
PLUME HT= PLUME CENTERLINE HEIGHT
SIGMA Y = LATERAL DISPERSION PARAMETER
SIGMA Z = VERTICAL DISPERSION PARAMETER
DWASH = BUILDING DOWNWASH:
DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

USER SPECIFIED AVERAGING TIMES ***

ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME = 3.9515(p 1.129)

*** SCREEN-1.2 MODEL RUN ***
*** VERSION DATED 90XXX ***

NTC Orlando Site 7174 - Total Xylenes

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = POINT
EMISSION RATE (G/S) = .1716E-02
STACK HEIGHT (M) = 7.62
STK INSIDE DIAM (M) = .61
STK EXIT VELOCITY (M/S) = .4864
STK GAS EXIT TEMP (K) = 293.00
AMBIENT AIR TEMP (K) = 293.00
RECEPTOR HEIGHT (M) = .00
IOPT (1=URB,2=RUR) = 2
BUILDING HEIGHT (M) = .00
MIN HORIZ BLDG DIM (M) = .00
MAX HORIZ BLDG DIM (M) = .00

*** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	4.559	66.	0.

** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .02 M**4/S**2.

*** FULL METEOROLOGY ***

*** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
18.	1.086	1	1.0	1.0	320.0	7.3	5.7	2.8	NO
100.	4.223	4	1.0	1.0	320.0	7.3	8.2	4.7	NO
200.	3.817	5	1.0	1.0	5000.0	7.3	11.6	6.2	NO
300.	3.748	6	1.0	1.0	5000.0	7.3	11.2	5.6	NO
400.	3.108	6	1.0	1.0	5000.0	7.3	14.6	7.1	NO
500.	2.488	6	1.0	1.0	5000.0	7.3	18.0	8.4	NO
600.	2.003	6	1.0	1.0	5000.0	7.3	21.2	9.7	NO
700.	1.637	6	1.0	1.0	5000.0	7.3	24.5	10.9	NO
800.	1.372	6	1.0	1.0	5000.0	7.3	27.6	12.0	NO

900.	1.168	6	1.0	1.0	5000.0	7.3	30.8	13.0	NO
1000.	1.008	6	1.0	1.0	5000.0	7.3	33.9	14.0	NO
1100.	.8839	6	1.0	1.0	5000.0	7.3	37.0	14.8	NO
1200.	.7826	6	1.0	1.0	5000.0	7.3	40.0	15.7	NO
1300.	.6988	6	1.0	1.0	5000.0	7.3	43.0	16.5	NO
1400.	.6288	6	1.0	1.0	5000.0	7.3	46.0	17.3	NO
1500.	.5696	6	1.0	1.0	5000.0	7.3	49.0	18.0	NO
1600.	.5189	6	1.0	1.0	5000.0	7.3	52.0	18.8	NO
1700.	.4752	6	1.0	1.0	5000.0	7.3	54.9	19.5	NO
1800.	.4373	6	1.0	1.0	5000.0	7.3	57.9	20.2	NO
1900.	.4041	6	1.0	1.0	5000.0	7.3	60.8	20.9	NO
2000.	.3748	6	1.0	1.0	5000.0	7.3	63.7	21.6	NO
2100.	.3502	6	1.0	1.0	5000.0	7.3	66.6	22.2	NO
2200.	.3282	6	1.0	1.0	5000.0	7.3	69.4	22.8	NO
2300.	.3084	6	1.0	1.0	5000.0	7.3	72.3	23.3	NO
2400.	.2906	6	1.0	1.0	5000.0	7.3	75.1	23.9	NO
2500.	.2745	6	1.0	1.0	5000.0	7.3	77.9	24.4	NO
2600.	.2598	6	1.0	1.0	5000.0	7.3	80.8	25.0	NO
2700.	.2463	6	1.0	1.0	5000.0	7.3	83.6	25.5	NO
2800.	.2341	6	1.0	1.0	5000.0	7.3	86.4	26.0	NO
2900.	.2228	6	1.0	1.0	5000.0	7.3	89.1	26.5	NO
3000.	.2124	6	1.0	1.0	5000.0	7.3	91.9	27.0	NO
3500.	.1729	6	1.0	1.0	5000.0	7.3	105.7	29.0	NO
4000.	.1446	6	1.0	1.0	5000.0	7.3	119.2	30.8	NO
4500.	.1234	6	1.0	1.0	5000.0	7.3	132.5	32.6	NO
5000.	.1072	6	1.0	1.0	5000.0	7.3	145.7	34.2	NO
5500.	.9429E-01	6	1.0	1.0	5000.0	7.3	158.7	35.8	NO
6000.	.8388E-01	6	1.0	1.0	5000.0	7.3	171.6	37.2	NO
6500.	.7533E-01	6	1.0	1.0	5000.0	7.3	184.3	38.6	NO
7000.	.6818E-01	6	1.0	1.0	5000.0	7.3	197.0	40.0	NO
7500.	.6235E-01	6	1.0	1.0	5000.0	7.3	209.5	41.2	NO
8000.	.5734E-01	6	1.0	1.0	5000.0	7.3	222.0	42.3	NO
8500.	.5301E-01	6	1.0	1.0	5000.0	7.3	234.3	43.4	NO
9000.	.4922E-01	6	1.0	1.0	5000.0	7.3	246.6	44.4	NO
9500.	.4589E-01	6	1.0	1.0	5000.0	7.3	258.8	45.4	NO
10000.	.4294E-01	6	1.0	1.0	5000.0	7.3	270.9	46.4	NO
15000.	.2540E-01	6	1.0	1.0	5000.0	7.3	388.4	54.9	NO
20000.	.1795E-01	6	1.0	1.0	5000.0	7.3	500.9	60.3	NO
25000.	.1373E-01	6	1.0	1.0	5000.0	7.3	609.8	64.9	NO
30000.	.1103E-01	6	1.0	1.0	5000.0	7.3	715.6	68.8	NO
40000.	.7931E-02	6	1.0	1.0	5000.0	7.3	920.2	74.5	NO
50000.	.6147E-02	6	1.0	1.0	5000.0	7.3	1117.4	79.2	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 18. M:
66. 4.559 3 1.0 1.0 320.0 7.3 8.6 5.2 NO

DIST = DISTANCE FROM THE SOURCE
CONC = MAXIMUM GROUND LEVEL CONCENTRATION
STAB = ATMOSPHERIC STABILITY CLASS (1=A, 2=B, 3=C, 4=D, 5=E, 6=F)
U10M = WIND SPEED AT THE 10-M LEVEL
USTK = WIND SPEED AT STACK HEIGHT
MIX HT = MIXING HEIGHT
PLUME HT= PLUME CENTERLINE HEIGHT
SIGMA Y = LATERAL DISPERSION PARAMETER
SIGMA Z = VERTICAL DISPERSION PARAMETER
WASH = BUILDING DOWNWASH:
DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

** USER SPECIFIED AVERAGING TIMES **

ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME = 3.1913(p .9118)

DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

USER SPECIFIED AVERAGING TIMES ***

ESTIMATED MAXIMUM CONCENTRATION FOR 8 HR AVERAGING TIME = .21014(p .06004)

** SCREEN-1.2 MODEL RUN ***
* VERSION DATED 90XXX ***

NTC Orlando Site 7174 - Naphthalene

SIMPLE TERRAIN INPUTS:

```

SOURCE TYPE           = POINT
EMISSION RATE (G/S)  = .1130E-03
STACK HEIGHT (M)     = 7.62
STK INSIDE DIAM (M)  = .61
STK EXIT VELOCITY (M/S) = .4864
STK GAS EXIT TEMP (K) = 293.00
AMBIENT AIR TEMP (K) = 293.00
RECEPTOR HEIGHT (M) = .00
IOPT (1=URB,2=RUR)  = 2
BUILDING HEIGHT (M)  = .00
MIN HORIZ BLDG DIM (M) = .00
MAX HORIZ BLDG DIM (M) = .00

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 *** SUMMARY OF SCREEN MODEL RESULTS ***

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	.3002	66.	0.

 ** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **

BUOY. FLUX = .00 M**4/S**3; MOM. FLUX = .02 M**4/S**2.

*** FULL METEOROLOGY ***

 *** SCREEN AUTOMATED DISTANCES ***

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES **

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
18.	.7150E-01	1	1.0	1.0	320.0	7.3	5.7	2.8	NO
100.	.2781	4	1.0	1.0	320.0	7.3	8.2	4.7	NO
200.	.2513	5	1.0	1.0	5000.0	7.3	11.6	6.2	NO
300.	.2468	6	1.0	1.0	5000.0	7.3	11.2	5.6	NO
400.	.2047	6	1.0	1.0	5000.0	7.3	14.6	7.1	NO
500.	.1638	6	1.0	1.0	5000.0	7.3	18.0	8.4	NO
600.	.1319	6	1.0	1.0	5000.0	7.3	21.2	9.7	NO
700.	.1078	6	1.0	1.0	5000.0	7.3	24.5	10.9	NO
800.	.9037E-01	6	1.0	1.0	5000.0	7.3	27.6	12.0	NO

900.	.7694E-01	6	1.0	1.0	5000.0	7.3	30.8	13.0	NO
1000.	.6641E-01	6	1.0	1.0	5000.0	7.3	33.9	14.0	NO
1100.	.5821E-01	6	1.0	1.0	5000.0	7.3	37.0	14.8	NO
1200.	.5153E-01	6	1.0	1.0	5000.0	7.3	40.0	15.7	
1300.	.4602E-01	6	1.0	1.0	5000.0	7.3	43.0	16.5	NO
1400.	.4141E-01	6	1.0	1.0	5000.0	7.3	46.0	17.3	NO
1500.	.3751E-01	6	1.0	1.0	5000.0	7.3	49.0	18.0	NO
1600.	.3417E-01	6	1.0	1.0	5000.0	7.3	52.0	18.8	NO
1700.	.3130E-01	6	1.0	1.0	5000.0	7.3	54.9	19.5	NO
1800.	.2880E-01	6	1.0	1.0	5000.0	7.3	57.9	20.2	NO
1900.	.2661E-01	6	1.0	1.0	5000.0	7.3	60.8	20.9	NO
2000.	.2468E-01	6	1.0	1.0	5000.0	7.3	63.7	21.6	NO
2100.	.2306E-01	6	1.0	1.0	5000.0	7.3	66.6	22.2	NO
2200.	.2161E-01	6	1.0	1.0	5000.0	7.3	69.4	22.8	NO
2300.	.2031E-01	6	1.0	1.0	5000.0	7.3	72.3	23.3	NO
2400.	.1914E-01	6	1.0	1.0	5000.0	7.3	75.1	23.9	NO
2500.	.1807E-01	6	1.0	1.0	5000.0	7.3	77.9	24.4	NO
2600.	.1711E-01	6	1.0	1.0	5000.0	7.3	80.8	25.0	NO
2700.	.1622E-01	6	1.0	1.0	5000.0	7.3	83.6	25.5	NO
2800.	.1541E-01	6	1.0	1.0	5000.0	7.3	86.4	26.0	NO
2900.	.1467E-01	6	1.0	1.0	5000.0	7.3	89.1	26.5	NO
3000.	.1399E-01	6	1.0	1.0	5000.0	7.3	91.9	27.0	NO
3500.	.1138E-01	6	1.0	1.0	5000.0	7.3	105.7	29.0	NO
4000.	.9519E-02	6	1.0	1.0	5000.0	7.3	119.2	30.8	NO
4500.	.8129E-02	6	1.0	1.0	5000.0	7.3	132.5	32.6	NO
5000.	.7057E-02	6	1.0	1.0	5000.0	7.3	145.7	34.2	NO
5500.	.6209E-02	6	1.0	1.0	5000.0	7.3	158.7	35.8	NO
6000.	.5524E-02	6	1.0	1.0	5000.0	7.3	171.6	37.2	NO
6500.	.4960E-02	6	1.0	1.0	5000.0	7.3	184.3	38.6	NO
7000.	.4490E-02	6	1.0	1.0	5000.0	7.3	197.0	40.0	I
7500.	.4106E-02	6	1.0	1.0	5000.0	7.3	209.5	41.2	NC
8000.	.3776E-02	6	1.0	1.0	5000.0	7.3	222.0	42.3	NO
8500.	.3491E-02	6	1.0	1.0	5000.0	7.3	234.3	43.4	NO
9000.	.3241E-02	6	1.0	1.0	5000.0	7.3	246.6	44.4	NO
9500.	.3022E-02	6	1.0	1.0	5000.0	7.3	258.8	45.4	NO
10000.	.2828E-02	6	1.0	1.0	5000.0	7.3	270.9	46.4	NO
15000.	.1672E-02	6	1.0	1.0	5000.0	7.3	388.4	54.9	NO
20000.	.1182E-02	6	1.0	1.0	5000.0	7.3	500.9	60.3	NO
25000.	.9038E-03	6	1.0	1.0	5000.0	7.3	609.8	64.9	NO
30000.	.7261E-03	6	1.0	1.0	5000.0	7.3	715.6	68.8	NO
40000.	.5222E-03	6	1.0	1.0	5000.0	7.3	920.2	74.5	NO
50000.	.4048E-03	6	1.0	1.0	5000.0	7.3	1117.4	79.2	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 18. M:
66. .3002 3 1.0 1.0 320.0 7.3 8.6 5.2 NO

DIST = DISTANCE FROM THE SOURCE
CONC = MAXIMUM GROUND LEVEL CONCENTRATION
STAB = ATMOSPHERIC STABILITY CLASS (1=A, 2=B, 3=C, 4=D, 5=E, 6=F)
U10M = WIND SPEED AT THE 10-M LEVEL
USTK = WIND SPEED AT STACK HEIGHT
MIX HT = MIXING HEIGHT
PLUME HT= PLUME CENTERLINE HEIGHT
SIGMA Y = LATERAL DISPERSION PARAMETER
SIGMA Z = VERTICAL DISPERSION PARAMETER
DWASH = BUILDING DOWNWASH:
DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED

APPENDIX D
BEST MANAGEMENT PRACTICES PLAN

BEST MANAGEMENT PRACTICES PLAN

McCoy ANNEX BASE EXCHANGE SERVICE STATION
BUILDING 7174
NAVAL TRAINING CENTER
ORLANDO, FLORIDA

FDER Facility ID No. 488840202

INTRODUCTION

The facility to be governed by this Best Management Practices (BMP) Plan is base exchange service station at McCoy Annex, NTC Orlando. This service station is Building 7174 and is located at the intersection of Daetwyler Road and Binnacle Way in Orlando, Florida. At this location it is proposed to install a pump and treat system combined with a soil vapor extraction system (SVE) to remediate groundwater and soil contaminated with petroleum and diesel which was released from the former underground storage tanks. This treatment system will include air stripping and discharge of the treated effluent to an existing surface body of water. Extracted vapors will be treated using carbon adsorption.

As part of the requirements for obtaining a National Pollution Discharge Elimination System (NPDES) permit, a BMP plan will be implemented which prevents or minimizes the potential for the release of contaminants from the facility to the receiving waters. The objectives of this plan are to determine the potential for release of contaminants and to develop appropriate preventative measures.

BMP COMMITTEE

For this project, the BMP committee consists of the following personnel from ABB Environmental Services, Bechtel Environmental Incorporated and the department of public works at NTC Orlando.

NAME	PHONE
Michael Dunaway (ABB-ES)	(904) 656-1293
Tom Conrad (BEI)	(615) 220-2205
Steve Smith (Base Environmental Coordinator)	(407) 646-5837
Alternate:	
Joe Ullo (ABB-ES)	(904) 656-1293

The responsibilities of this committee include identification of toxic and hazardous materials, identification of potential spill sources, establishment of incident reporting procedures, development of BMP inspection and records procedures, review of environmental incidents and subsequent evaluation of BMP, coordination of incident response, and establishment of BMP training for company personnel.

In the event of an environmental incident, the project manager is responsible for notifying the appropriate government agencies within the required time frame.

RISK IDENTIFICATION AND ASSESSMENT

The equipment stockade which houses the air stripper and carbon adsorption system is the only area subject to the BMP plan. In the event of a treatment system malfunction, groundwater containing dissolved

hydrocarbons could potentially be discharged to the storm sewer. Therefore, the remediation system will include equipment designed to eliminate or minimize the potential for this release. Figures 4-3 and 4-4 are a flow schematic and a legend which summarize the components of the groundwater remediation system. The air stripper will be equipped with a pressure switch which monitors the differential pressure between the atmosphere and the exhaust port of the blower. This switch will automatically disable the recovery well pumps if there is a loss of pressure due to blower malfunction. A secondary safety mechanism on the air stripper includes telemetric monitoring of the pressure drop across the air stripper to notify the RAC contractor of fouling or other aeration system malfunction. Finally, a separate secondary fail-safe circuit must be provided for the primary treatment unit (in addition to the one required on all treatment units) to shut the groundwater recovery system down in the event of blower failure. A level sensing probe will be installed in the air stripper sump. This probe will shut down the system in the event of high water levels in the tower sump. See the Remedial Action Plan and the Addenda for further details.

These design characteristics significantly reduce the potential for water containing dissolved hydrocarbons to reach the receiving waters.

There are no toxic or hazardous materials associated with this treatment process. The only contaminant to be considered is groundwater containing dissolved hydrocarbons. Material safety data sheets for gasoline are readily available in the literature. No hazardous material will be stored at this facility.

REPORTING OF BEST MANAGEMENT PRACTICES (BMP) INCIDENTS

The BMP committee will be notified if any unforeseen incidents causing improper discharges occur. The committee will take appropriate actions and initiate steps to stop, reduce, or eliminate the discharges. A formal report will be prepared and the BMP plan will be revised to address this problem. The ABB-ES engineer is responsible for initiating all actions listed above.

MATERIALS COMPATIBILITY

All materials used in the treatment system that will be in contact with free product or contaminated groundwater will be compatible with hydrocarbons.

GOOD HOUSEKEEPING

Normal housekeeping techniques are adequate for upkeep of the treatment system. Basic safety guidelines will be followed to ensure the safety of the operation. It will be ensured that all pathways and walkways in the compound area will be free and clear for easy access. All instrument panels, valves, etc., will be checked for proper operation at each maintenance.

PREVENTIVE MAINTENANCE

The equipment installed will be inspected and tested as described in the Risk Identification and Assessment to ensure proper functioning of the treatment system. All faulty parts will be replaced. If the faulty part could cause a release of contamination to surface waters, the system will be shut down until the part can be replaced or repaired. All maintenance conducted and performed will be recorded and documented in a project log book for future references.

INSPECTION AND RECORDS

The systems will be inspected as indicated in the Risk Identification and Assessment when preventive maintenance is conducted. Inspections will be performed one time per month during sampling operations. All inspection results will be recorded in indelible ink in a permanent log book. A memorandum will be prepared to update the status of the project as required. The completion date and the results of each

inspection will be signed by the Bechtel engineer and maintained for a period of at least 3 years. If repairs are necessary, follow-up reports describing the repairs will also be kept on file.

SECURITY

The areas identified above will be surrounded by a privacy fence and the gate will be padlocked. The control panel for the system will be located within this fence and the panel itself will be contained in a locking cabinet. Only BEI personnel and ABB-ES personnel will have access to this area and the remediation system. The compound area will be lighted at night.

EMPLOYEE TRAINING

All employees conducting maintenance on the remediation system will have read and will understand the contents of this BMP Plan. Employees will be instructed on the reporting and record-keeping requirements.

COST ESTIMATE

This estimate is based upon ABB-ES' past experience and knowledge of the design, implementation, and operation of remedial systems, as well as laboratory costs of analyses run.

Cost Estimate for Remedial Action Plan Addendum Modifications	
Remedial Action Plan Addendum Building 7174, McCoy Annex NTC Orlando, Orlando, Florida	
Item	Cost
Telemetric monitoring of pressure drop through the air stripper	\$2,200
Secondary fail-safe circuit for the air stripper blower	\$200
Additional monitoring (assuming 6 month necessity)	\$2,100
Total Cost	\$4,500



March 1, 1995

Doc. No. 08519-42-3

Eric Nuzie
Bureau of Waste Cleanup
Florida Department of Environmental Protection
2600 Blairstone Rd.
Tallahassee, FL 32301

**SUBJECT: Remedial Action Plan Addendum 2, Site 7174, McCoy Annex, Orlando, Florida
Contract No. N62467-89-D-0317, CTO No. 107.**

Dear Eric:

Enclosed please find two copies of the Remedial Action Plan Addendum 2 for the McCoy Annex Base Exchange Service Station, Site 7174. This addendum incorporates the latest modifications in the effluent disposal option. Please note the tentative schedule of activities presented in Section 5. Bechtel Environmental Inc. plans to begin construction of the approved system by mid April which would allow for startup during the second week of June.

This addendum proposes discharge using a NPDES permit during remedial action at Site 7174. A short turn around time of approximately 2 weeks for regulatory approval is necessary to allow for notification and NPDES permit approval. This turn around time is considered reasonable and has been briefly discussed with FDEP as these modifications are minimal and the original RAP has already been approved. ABB-ES will contact FDEP following the submittal to obtain an approximate approval date. We hope that this RAP Addendum will complete all necessary requirements prior to remedial actions at this site.

If you have any further questions, please feel free to contact me or Mike Dunaway at (904) 656-1293.

Very truly yours,

ABB ENVIRONMENTAL SERVICES, INC.

Mark C. Doblin, P.G.
Senior Project Manager

Michael K. Dunaway, P.E., P.G.
Principal Engineer

Enclosures

cc: File
Luis Vazquez (SOUTHNAVFACENCOM)
Greg Brown (FDEP)
Steve Smith (NTC Orlando)

ABB Environmental Services Inc.