
United States Air Force

Environmental Restoration Program

FINAL

FIVE-YEAR REVIEW REPORT



Homestead Air Reserve Base, Florida

December 2004

10141409



HOMESTEAD AIR RESERVE BASE

FIVE-YEAR REVIEW REPORT

FINAL

Prepared by:
Homestead Air Reserve Base
Homestead, Florida

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LIST OF ACRONYMS

ACC	Air Combat Command
AFB	Air Force Base
AFBCA	Air Force Base Conversion Agency
AFRC	Air Force Reserve Command
AFRPA	Air Force Real Property Agency
AGE	Aircraft Ground Equipment
AOC	area of concern
ARAR	Applicable or Relevant and Appropriate Requirement
ARB	Air Reserve Base
ARS	Air Reserve Station
AST	aboveground storage tank
bgs	below ground surface
BRA	Baseline Risk Assessment
BRAC	Base Realignment and Closure
BCT	BRAC Cleanup Team
BTEX	benzene, toluene, ethylbenzene, and xylenes
CE	Civil Engineering
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CRP	Community Relations Plan
DCE	dichloroethene
DEA	Drug Enforcement Agency
DERM	Miami-Dade County Department of Environmental Resources Management
DoD	Department of Defense
EO	Executive Order
ESD	Explanation of Significant Differences
FDEP	Florida Department of Environmental Protection
FAC	Florida Administrative Code
FFA	Federal Facilities Agreement
FS	feasibility study
ft	foot
GCTL	ground-water cleanup target level
HRS	hazard ranking system
HSWA	Hazardous and Solid Waste Amendments
IC	institutional control
IRA	interim removal action
IRP	Installation Restoration Program
kg	kilogram
L	liters
LUC	land use control
mg	milligrams
MOA	Memorandum of Agreement
msl	mean sea level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFRAP	no further response action planned
NPL	National Priorities List
OL	Operating Location
OU	operable unit
OWS	oil/water separator
PA	Preliminary Assessment

PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PQL	practical quantitation limit
RA	remedial action
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RD	remedial design
RFA	RCRA facility assessment
RFI	RCRA facility investigation
RI	remedial investigation
ROD	record of decision
SAC	Strategic Air Command
SARA	Superfund Amendments and Reauthorization Act
SCTL	soil cleanup target level
SI	Site Investigation
SWCTL	surface water cleanup target level
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TAG	Tactical Air Command
TCA	trichloroethane
TCE	trichloroethene
TFW	Tactical Fighter Wing
TOC	total organic carbon
TPH	total petroleum hydrocarbons
TPH-D	diesel-range total petroleum hydrocarbons
TRPH	total recoverable petroleum hydrocarbons
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
UST	underground storage tank
µg	micrograms
VOC	volatile organic compound

EXECUTIVE SUMMARY

Introduction

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires that all remedies selected under CERCLA § 121, which result in hazardous substances, pollutants, or contaminants remaining at the site, be subject to a five-year review. Executive Order 12580 delegated CERCLA remedial responsibilities, including five-year reviews, to the Secretary of Defense, with respect to releases from any facility or vessel under the jurisdiction, custody, or control of the Department of Defense. At Homestead Air Reserve Base (ARE), certain remedial actions are being performed in accordance with CERCLA that require five-year reviews to verify that previously implemented remedies remain protective of human health and the environment.

Former Homestead Air Force Base (AFB) originally encompassed 2,938 acres. However, in 1994 part of the installation (i.e., 852 acres) transitioned from an active duty base to an Air Reserve Station (ARS) under management of the Air Force Reserve Command (AFRC). In 2003, Homestead ARS was officially realigned as an ARB that is comprised of 1,943 acres, which includes the runway and main taxi ways. This retained property, referred to as the cantonment area, comprises the current Homestead ARB. The Air Force Real Property Agency (AFRPA), formerly known as the Air Force Base Conversion Agency (AFBCA), is transitioning the remaining property that is within the confines of the former Homestead AFB but is outside of the AFRC cantonment area to civilian use. This Five-Year Review addresses sites located within the cantonment area within Homestead ARB property. Sites located outside the Homestead ARB cantonment area were addressed in a separate Five-Year Review finalized by the AFRPA in May 2003.

Organization

This Five-Year Review for 2003 constitutes the first required review/reporting cycle for Homestead ARB. The report addresses 13 Operable Units (OUs) and one Area of Concern (AOC).

- OU-1 Fire Protection Training Area No. 2 (FT-05, FPTA-2)
- OU-2 Residual Pesticide Disposal Area (OT-11, P-3)
- OU-3 Polychlorinated Biphenyl (PCB) Spill Area (SS-13, SP-3)
- OU-4 Motor Pool Oil Leak Area (SS-08, SP-2)
- OU-5 Electroplating Waste Disposal Area (WP-KSP-1)
- OU-7 Entomology Storage Area (SS-07, P-2)
- OU-8 Fire Protection Training Area No. 3 (FT-04, FPTA-3)
- OU-12 Entomology Shop - Building 371 (OT-25, P-1)
- OU-13 Hardfill Storage Area (SS-22)
- OU-15 Hazardous Waste Storage Area - Building 153 (SS-30)
- OU-19 Aircraft Ground Equipment Shop- Building 208 (SS-19)
- OU-25 Hush House Area (SWMU 59)
- OU-27 Jet Engine Test Cell Facility (SS-27)
- AOC-3 Munitions Storage Area

Conclusions and Recommendations

The decision documents for each CERCLA site identify the remedial action objectives, which define the scope and purpose of the cleanup action required to address the potential threats to human health and the environment. The decision documents for OU-1, OU-2, OU-4, OU-5, OU-7, OU-8, OU-13, and AOC-3 identify remedies that result in contaminants remaining on site at concentrations above unrestricted reuse and unlimited exposure

criteria. Therefore, these sites are subject to the CERCLA five-year review requirements. The selected remedies are designed to monitor, and prevent unacceptable exposure to, the residual contamination. Long-term ground-water monitoring and/or land use controls (LUCs) are the primary elements of each of the selected remedies. On 15 March 1999, Homestead ARS entered into a Memorandum of Agreement (MOA) with the U.S. Environmental Protection Agency (USEPA) and the Florida Department of Environmental Protection (FDEP) regarding the implementation of LUCs. The MOA requires that LUC Implementation Plans be prepared for all sites requiring LUCs, quarterly monitoring of implemented LUCs to verify ongoing effectiveness, and annual reporting.

The AFRC affirms (certifies) that the remedies for all of the sites addressed in this report remain protective of human health and the environment. The remedies also comply with Applicable or Relevant and Appropriate Requirements (ARARs) and are reasonably cost-effective. It is expected that the remedial activities and Land Use Controls/Institutional Controls (LUC/ICs) at Homestead ARB will permanently reduce the risks to human health by eliminating, reducing, or controlling exposures to human receptors through engineering and institutional controls. Furthermore, there are no known areas of noncompliance.

General recommendations for Homestead ARB include:

- The remedial actions should continue to be implemented in accordance with the USEPA and FDEP approved plans governing maintenance and long-term monitoring.
- Evaluations of environmental monitoring should continue and be used as a means of identifying opportunities to refine long-term monitoring activities.
- Future evaluations of long-term monitoring should attempt to identify the level of progress toward meeting site- or zone-specific cleanup goals developed during the remedy decision-making process.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site name (from WasteLAN): Homestead Air Reserve Base		
EPA ID (from WasteLAN): FL7570024037		
Region: IV	State: Florida	City/County: Miami-Dade County
SITE STATUS		
NPL status: <input checked="" type="checkbox"/> Final <input type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
Remediation status (choose all that apply): <input checked="" type="checkbox"/> Under Construction <input checked="" type="checkbox"/> Operating <input checked="" type="checkbox"/> Complete		
Multiple OUs?* <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Construction completion date: 12 / 16 / 1996	
Has site been put into reuse? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
REVIEW STATUS		
Lead agency: <input type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input checked="" type="checkbox"/> Other Federal Agency: U.S. Air Force Reserve Command		
Author name: Michael Andrejko		
Author title: Installation Restoration Program (IRP) Manager	Author affiliation: U.S. Air Force Reserve Command, 482d Reserve Fighter Wing, Environmental Flight	
Review period:** 5 / 27 / 2003 to 12 / 15 / 2003		
Date(s) of site inspection: 7 / 31 / 2003, 8 / 8 / 2003		
Type of review: <input checked="" type="checkbox"/> Post-SARA <input type="checkbox"/> Pre-SARA <input type="checkbox"/> NPL-Removal only <input type="checkbox"/> Non-NPL Remedial Action Site <input type="checkbox"/> NPL State/Tribe-lead <input type="checkbox"/> Regional Discretion		
Review number: <input checked="" type="checkbox"/> 1 (first) <input type="checkbox"/> 2 (second) <input type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify) _____		
Triggering action: <input checked="" type="checkbox"/> Actual RA Onsite Construction at OU # <u>6</u> <input type="checkbox"/> Actual RA Start at OU#____ <input type="checkbox"/> Construction Completion <input type="checkbox"/> Previous Five-Year Review <input type="checkbox"/> Other (specify)		
Triggering action date (from WasteLAN): 01 / 12 / 1996		
Due date (five years after triggering action date): 01 / 12 / 2001		

* ["OU" refers to operable unit.]

** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Issues:

None.

Recommendations and Follow-up Actions:

Ground-water monitoring required by the Records of Decision (RODs) for OU-1 and OU-2 has been completed, and the most recent ground-water monitoring data indicate that no contamination remains at levels of concern in ground water. Therefore, it is recommended that ground-water monitoring be terminated at these OUs.

Voluntary ground-water monitoring activities conducted at sites OU-4, OU-5, OU-8, OU-12, and OU-25 indicated that no significant contamination remains at levels of concern in ground water. Further ground-water monitoring should not be required at these OUs.

Ground-water monitoring activities conducted at sites OU-7 and OU-15 indicated that arsenic contamination remains at levels of concern. Annual ground-water monitoring should continue until the arsenic concentration falls below the ground-water cleanup target level (GCTL) for two consecutive sampling events.

The LUCs should remain in place where required to ensure that human exposure to contaminated soil and/or ground water is restricted.

Residual soil contamination remains at OU-12, OU-15, and OU-25 above concentrations that would allow unrestricted reuse and unlimited exposure, and the final remedy has not been selected. The final remedy should address this residual contamination. If the contamination is left in place, the final remedy should include LUCs to ensure that human exposure to unacceptable contaminant concentrations in soil is restricted.

Protectiveness Statement(s):

Based on the completed activities, the intent and goals of the RODs for OU-1, OU-2, OU-4, OU-5, and OU-7 have been met and have been found to be protective of human health and the environment.

Based on the completed activities, the intent and goals of the decision documents for OU-8, OU-19 and AOC-3 have been met and have been found to be protective of human health and the environment.

OU-8 is being addressed under the state petroleum program and is not subject to the CERCLA five-year review. Remedies have not been selected for OU-12, OU-15, and OU-25; therefore, the protectiveness evaluation was not conducted.

The intent and goals of the ROD for OU-27 will be protective of human health and the environment.

Other Comments:

None.

HOMESTEAD AIR RESERVE BASE HOMESTEAD, FLORIDA FIRST FIVE-YEAR REVIEW REPORT

1.0 INTRODUCTION

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires that all remedies selected under CERCLA § 121, which result in hazardous substances, pollutants, or contaminants remaining at the site, be subject to a five-year review. The purpose of the five-year review is to determine whether the remedies at a site remain protective of human health and the environment. The five year review report documents the methods, findings, and conclusions of the protectiveness evaluation, identifies issues found during the review, if any, and provides recommendations to address the issues.

The United States Air Force Reserve Command (FRC) is preparing this five-year review pursuant to CERCLA § 121, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and Executive Order (EO) 12580. CERCLA § 121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with the section [104 or 106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

EO 12580 establishes the Department of Defense (DoD) as the CERCLA lead agency for environmental restoration sites at their facilities. EO 12580 states:

The functions vested in the President by Sections 104(a), (b), and (c)(4), 113(k), 117(a) and (c), 779, and 727 of the Act (i.e., CERCLA) are delegated to the Secretaries of Defense and Energy, with respect to releases or threatened releases where either the release is on or the sole source of the release is from any facility or vessel under the jurisdiction, custody, or control of their departments.

The NCP further establishes the lead agency's responsibility to conduct five-year reviews at CERCLA remedial action sites. The NCP [40 CFR § 300.430(f)(4)(ii)] states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

As the lead agency, the United States Air Force (USAF) is responsible for conducting five-year reviews at their installations. Homestead Air Force Base (AFB) originally encompassed 2,938 acres. The location of the installation is shown on Figure 1-1. In 1994 part of the installation (i.e., 852 acres) transitioned from an active duty base to an Air Reserve Station (ARS) under the management of the AFRC. In 2003, Homestead ARS was officially realigned as an Air Reserve Base (ARB) that is comprised of 1,943 acres, which includes the runway and main taxiways. This retained property, referred to as the cantonment area, comprises the current Homestead ARB. The Air Force Real Property Agency (AFRPA) is transitioning the remaining property, outside the

cantonment area, to civilian use. Because a portion of the former Homestead AFB has been closed, separate five-year reviews were conducted for the closed and active portions of the installation.

The AFRPA, Formerly known as the Air Force Base Conversion Agency (AFBCA), conducted the first five-year review of the remedial actions implemented within the non-cantonment area of the former Homestead AFB, Florida, from January 2002 through October 2002. The final report (dated May 2003) documents the results of the review. The triggering action for this review was the initiation of a remedial action at Operable Unit (OU) 6 on January 12, 1996.

The AFRC conducted their first five-year review in accordance with their responsibilities as the CERCLA lead agency in 2003. The review was conducted from May 2003 through November 2004. This is the first five-year review for Homestead ARE and addresses those sites that are located within the cantonment area within Homestead ARE property. This report documents the results of the review. The site locations are shown on Figure 1-2.

This report addresses the following OUs and Area of Concern (AOC).

- OU-1 Fire Protection Training Area No. 2 (FT-05, FPTA-2)
- OU-2 Residual Pesticide Disposal Area (OT-11, P-3)
- OU-3 Polychlorinated Biphenyl (PCB) Spill Area (SS-13, SP-3)
- OU-4 Motor Pool Oil Leak Area (SS-08, SP-2)
- OU-5 Electroplating Waste Disposal Area (WP-1, SP-1)
- OU-7 Entomology Storage Area (SS-07, P-2)
- OU-8 Fire Protection Training Area No. 3 (FT-04, FPTA-3)
- OU-12 Entomology Shop - Building 371 (OT-25, P-1)
- OU-13 Hardfill Storage Area (SS-22)
- OU-15 Hazardous Waste Storage Area - Building 153 (SS-30)
- OU-19 Aircraft Ground Equipment Shop - Building 208 (SS-19)
- OU-25 Hush House Area (SWMU 59)
- OU-27 Jet Engine Test Cell Facility (SS-27)
- AOC-3 Munitions Storage Area

The report is organized to include an introductory section that addresses issues that are common to all of the sites, followed by sections that address each of the OUs separately. Each OU-specific section includes the following:

- History of Contamination,
- Initial Response and Basis for Taking Action,
- Remedial Actions,
- Five-Year Review Process,
- Technical Assessment,
- Issues,
- Recommendations and Follow-up Actions, and
- Protectiveness Statement.

1.1 SITE CHRONOLOGY

Homestead Army Air Field, a predecessor of Homestead ARB, was officially activated in September 1942, when the Caribbean Wing Headquarters took over the airfield previously used by Pan American Air Ferries, Inc. The airline had developed the site a few years earlier and used it primarily for pilot training. Prior to that

time, the site was undeveloped. Initially, Homestead Army Air Field served as a staging facility for the Army Transport Command, which was responsible for maintaining and dispatching aircraft to overseas locations. In 1943, the field mission was changed when the 2nd Operational Training Unit was activated to train the transport pilots and crews.

In September 1945, a severe hurricane caused extensive damage to the airfield. Both the cost of rebuilding the field and the anticipated postwar reductions in military activities led to the base being placed on an inactive status in October 1945. The base property was turned over to the Dade County Port Authority, which retained possession for the next eight years. The runways were used by crop dusters, and the buildings housed a few small industrial and commercial operations.

In 1953, the federal government again acquired the installation and some surrounding property and rebuilt it as a Strategic Air Command (SAC) base. The first operational squadron arrived at Homestead AFB in February 1955, and the base was formally reactivated in November of the same year. Except for a short period during 1960, when modifications were made to accommodate B-52 aircraft, the base remained an operational SAC base until 1968.

The command of Homestead AFB was changed from SAC to the Tactical Air Command (TAG) in July 1968, and the 4531st Tactical Fighter Wing (TFW) became the new host unit, flying F-100 Cs and Ds during this time. When the 31st TFW returned from Southeast Asia in October 1970, the 4531st TFW was deactivated and the 31st TFW became the host unit for Homestead AFB, flying F-4 D and E aircraft. In 1981, the 31st TFW was redesignated the 31st Tactical Training Wing. In October 1984, the base was converted to the 31st TFW and was home to F-16 aircraft. The base was transferred to Headquarters Air Combat Command (ACC) on 1 June 1992.

On 24 August 1992, Hurricane Andrew struck south Florida, causing extensive damage and leaving approximately 97 percent of base facilities dysfunctional. As a result of the destruction caused by the hurricane, the DoD Base Realignment and Closure (BRAC) Commission recommended Homestead AFB for realignment in 1993. The ACC departed the base on 31 March 1994, and two-thirds of the property was transferred to the AFBCA for disposal. The remaining one-third of the installation, the cantonment area, was transferred to the AFRC for use as an Air Reserve Station hosted by the 482nd Reserve Fighter Wing, which flies F-16 aircraft.

On 1 October 1996, responsibility for Installation Restoration Program (IRP) sites located within the cantonment area was transferred from the AFBCA to Homestead ARS. In 2002 the AFBCA became the AFRPA, which retains responsibility for managing IRP sites within the non-cantonment area of the former installation property. In 2003, Homestead ARS was officially realigned as an ARB that is comprised of 1,943 acres. This retained property, referred to as the cantonment area, comprises the current Homestead ARB.

1.2 BACKGROUND

1.2.1 Physical Characteristics

Homestead ARB is located along the flank of the Atlantic Coastal Ridge and the Southern Coastal Slope, which are subdivisions of the southern distal zone of the Atlantic Coastal Plain physiographic province. The surface topography at the base is relatively flat, with elevations ranging from 2 feet above mean sea level (ft-msl) to 10 ft-msl.

The prevailing weather pattern at Homestead ARB is typical of subtropical climates. The average annual temperature is 74° F, with approximately 37 days reaching temperatures above 90° F. The mean annual precipitation is approximately 58 inches, with 70 percent of the rainfall occurring between May and October.

Surface soils at Homestead ARB are typically less than 6 inches thick and consist of native marl, weathered limestone bedrock, or imported fill. The uppermost lithologic unit at the base contains 15 to 20 feet of oolitic and bryozoan limestone facies of the Miami Oolite Formation, consisting of soft, cream, or tan limestone, interbedded with sandy limestone, and thin layers of hard limestone. The underlying Fort Thompson Formation contains 50 feet of alternating shallow marine, brackish-marine, and freshwater limestone consisting of white and tan to gray calcareous sandstone and sandy limestone with some quartz sand. Both of the formations are highly permeable and are the principal components of the Biscayne Aquifer. Underlying the Fort Thompson Formation is the Tamiami Formation consisting of clayey, calcareous marl, silty shelly sands, and limestone, and the Hawthorn Formation consisting of green dolosilt to quartz sand.

The water table occurs at depths ranging from 0 to 5 ft below ground surface. Although the general direction of ground-water flow within the shallow aquifer beneath Homestead ARB is southeasterly toward Biscayne Bay, the hydraulic gradients throughout the base are very flat. As a result, local flow directions are strongly influenced by rainfall and the presence of the drainage canal along the base boundary (Boundary Canal). The surficial aquifer, the Biscayne Aquifer, is the sole source of potable water in Miami-Dade County and has been declared a sole-source aquifer by the U.S. Environmental Protection Agency (USEPA), pursuant to Section 1425 of the Federal Safe Drinking Water Act.

1.2.2 Land and Resource Use

Homestead ARB is located within southeastern Miami-Dade County near the southern tip of peninsular Florida, as shown in Figure 1-1. Homestead ARB is located near U.S. Highway 1 approximately 25 miles southwest of Miami, immediately east of the city of Homestead, and 2 miles west of Biscayne Bay. The former military installation covered 2,938 acres, and approximately 1,943 acres of the original base comprises the current cantonment area, which has been retained for military use by the AFRC. Homestead ARB is bordered on the north and northeast by the BRAC portion of the former Homestead AFB, on the south and east by agricultural land, and on the west by residential and agricultural lands.

1.2.3 History of Contamination

The IRP at Homestead AFB was initiated in 1983 with a Phase I Records Search to identify IRP sites and AOCs. On 30 August 1990, Homestead AFB was placed on the National Priorities List (NPL), which brought it under the federal facility provisions of Section 120 of CERCLA. This action required the Air Force to enter into a Federal Facilities Agreement (FFA) with the USEPA Region IV and the Florida Department of Environmental Protection (FDEP).

IRP studies, investigations, remedial designs (RDs), and remedial actions (RAs) have been performed at Homestead AFB/ARB. Key regulatory dates/actions for IRP activities conducted at the base are as follows:

- In August 1983, Homestead AFB initiated a Phase I Records Search to identify IRP sites and AOCs. The Phase I Records Search document, prepared by Engineering Science, identified 13 locations as having the potential for environmental contamination.
- In March 1986, a Phase II-Confirmation/Quantification IRP report was prepared by Science Applications International Corporation to quantify the extent and degree of contamination at the 13 sites.
- In 1988 and 1989, Geraghty & Miller, Inc., conducted Phase IV Additional Investigations at OUs 1 through 9. The objectives of the investigations were to determine the horizontal and vertical extent of subsurface constituents at each possible source of contamination and determine the potential risks to human health and the environment.

- On 5 January 1990, a permit was issued to Homestead APB under the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA). The permit listed 21 Solid Waste Management Units (SWMUs), required that RCRA Facility Investigations (RFIs) be performed at eight of the 21 SWMUs, and required further assessment of one of the 21 SWMUs. Each of the eight sites requiring RFIs have been investigated under the ERP, pursuant to Executive Order 12580, and in accordance with RCRA guidelines.
- In accordance with Section 120(d)(2) of the Superfund Amendments and Reauthorization Act of 1986 (SARA), the USEPA prepared a final Hazard Ranking System (HRS) scoring package. As a result of the HRS score, the facility was proposed for inclusion on the NPL on 14 July 1989.
- On 30 August 1990, the installation was officially added to the NPL.
- As a result of the placement on the NPL, the USEPA Region IV, the State of Florida, and the Air Force entered into an FFA for Homestead AFB (signed on 5 February 1991).
- In January 1991, the installation entered into a Consent Agreement with the FDEP making it subject to the requirements of Florida Administration Code (FAC) 62-770, governing discharges of petroleum products to the environment.
- Remedial investigations (RIs) were completed at OUs 1, 2, 3, 4, 5, 7, and 8 in 1991 and 1993.
- On 24 August 1992, Hurricane Andrew struck south Florida, destroying 97 percent of Homestead AFB capabilities. The base was subsequently slated for realignment in 1993. This listing resulted in the IRP being subject to the requirements of the Community Environmental Response Facilitation Act (CERFA), accelerating the CERCLA process. The listing also resulted in the establishment of an operating location (OL) of the AFBCA on site.
- In 1993, Montgomery Watson was retained by the U.S. Army Corps of Engineers (USACE) to perform data gap investigations at nine CERCLA sites within the cantonment area, and ten potential sources of contamination. A preliminary assessment/site investigation (PA/SI) was completed at OUs 12 and 13.
- In April 1993, a site walk of Homestead AFB was conducted to evaluate possible releases resulting from Hurricane Andrew. Sixty-four on-base SWMUs were identified. These were discussed in the RFA produced in 1994.
- In 1994, upon the departure of the ACC from Homestead AFB, the cantonment area was transitioned to the AFRC.
- In 1994, through an AFBCA initiative, Woodward-Clyde conducted confirmation sampling at 38 of the SWMUs identified in the 1994 RFA.
- In 1994, interim removal actions (IRAs) were completed to remove contaminated soil from OUs 7 and 8, and a ROD was finalized for OU-3.
- In 1995, IRAs were completed to remove contaminated soil from OUs 5 and 8, and RODs were finalized for OUs 1 and 4. Extended SIs were completed at OUs 12 and 13.
- In October 1996, administration of the IRP within the cantonment area was transferred from AFBCA to AFRC.

- In 1996, IRAs were completed to remove contaminated soil from OUs 1,5, 19, and 25, and the ROD was finalized for OU-2. PA/SIs were completed at AOC-3 and OUs 15, 19, and 25. An RI was completed for OU-27.
- In 1997, an Explanation of Significant Differences (ESD) was completed for OU-1, a ROD was finalized for OU-5, and decision documents (DDs) were finalized for OUs 8 and 13. Supplemental/extended SIs were completed at OU-19 and AOC-3.
- In 1998, contaminated soil was excavated from OU-2 during ROD implementation, and the ROD was finalized for OU-7. An expanded SI was completed at OU-15.
- In 1999, an RI/Baseline Risk Assessment (BRA) was completed at OU-15.
- On 15 March 1999, Homestead ARS entered into a Memorandum of Agreement (MOA) with the USEPA and the FDEP regarding the implementation of LUCs. The MOA requires that LUC Implementation Plans be prepared for all sites requiring LUCs, quarterly monitoring of implemented LUCs to verify ongoing effectiveness, and annual reporting.
- In 2000, voluntary IRAs were completed to remove contaminated soil from OUs 4, 12, and 19, and a Record of Findings was finalized for AOC-3.
- In 2001, voluntary IRAs were completed to remove contaminated soil from OUs 15 and 27.
- In 2003, Homestead ARS was officially realigned as an ARB and the AFRC cantonment area was expanded to include a total of 1,943 acres, including the runway and taxiways.
- Streamlined feasibility studies (FSs) and RODs are currently being completed for OUs 12, 15, 25, and 27.

1.3 FIVE-YEAR REVIEW PROCESS

1.3.1 Administrative Components

Representatives of the USEPA, the FDEP, and the Miami-Dade County Department of Environmental Resources Management (DERM) were notified of the initiation of the five-year review during the BRAC Cleanup Team (BCT) meeting held on 29 July 2003. The initial Homestead ARB Five Year Review team was led by Mr. Michael Andrejko, IRP Manager, 482d Reserve Fighter Wing.

1.3.2 Community Involvement

The AFRC has a public participation program at Homestead ARB to promote public understanding of the cleanup process and its results, and to ensure that the community's concerns are solicited, considered, and thoroughly addressed. The backbone of this program is the Community Relations Plan (CRP), which assesses the public's level of knowledge, interest, and information needs by conducting community interviews and researching local social, demographic, economic, and political information. The CRP recommended compatible public involvement strategies that included a Restoration Advisory Board (RAB), newsletters, fact sheets, an information repository, and public meetings at project milestones.

RABs are a joint creation of the DoD and the USEPA and are a vehicle for community input during environmental restoration. A RAB was formed for Homestead AFB in October 1993 and meets routinely.

Community members of the RAB exchange information and discuss restoration issues with the government representatives, which include representatives from the Air Force, the USEPA, and the FDEP. Currently, there are seven community members on the Homestead AFB RAB.

RAB meetings provide opportunities for direct public participation. Presentation topics include current investigations, results, plans for the environmental restoration program, and current issues. All RAB meetings are open to the public and include a public comment period for the audience members to ask questions and express opinions and/or concerns.

Newsletters and fact sheets are developed to update community members on the current issues and environmental investigation and/or remediation activities. Newsletters have been published four times a year and fact sheets have been published when needed to provide more detail on specific activities and at major milestones in the environmental restoration process at Homestead AFB/ARB.

The AFRC has kept and will continue to keep the public informed of and involved in the decision making process for the initial five-year review through the RAB.

1.3.3 Interviews

Each of the sites addressed in the initial five-year review were discussed in detail with Mr. Michael Andrejko, IRP Manager, 482d Reserve Fighter Wing during site visits in May and June 2003 and throughout the review process. Formal interviews of other base personnel were not conducted.

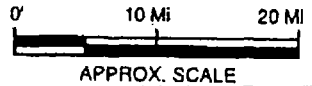
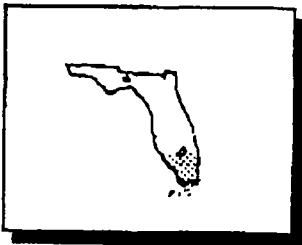
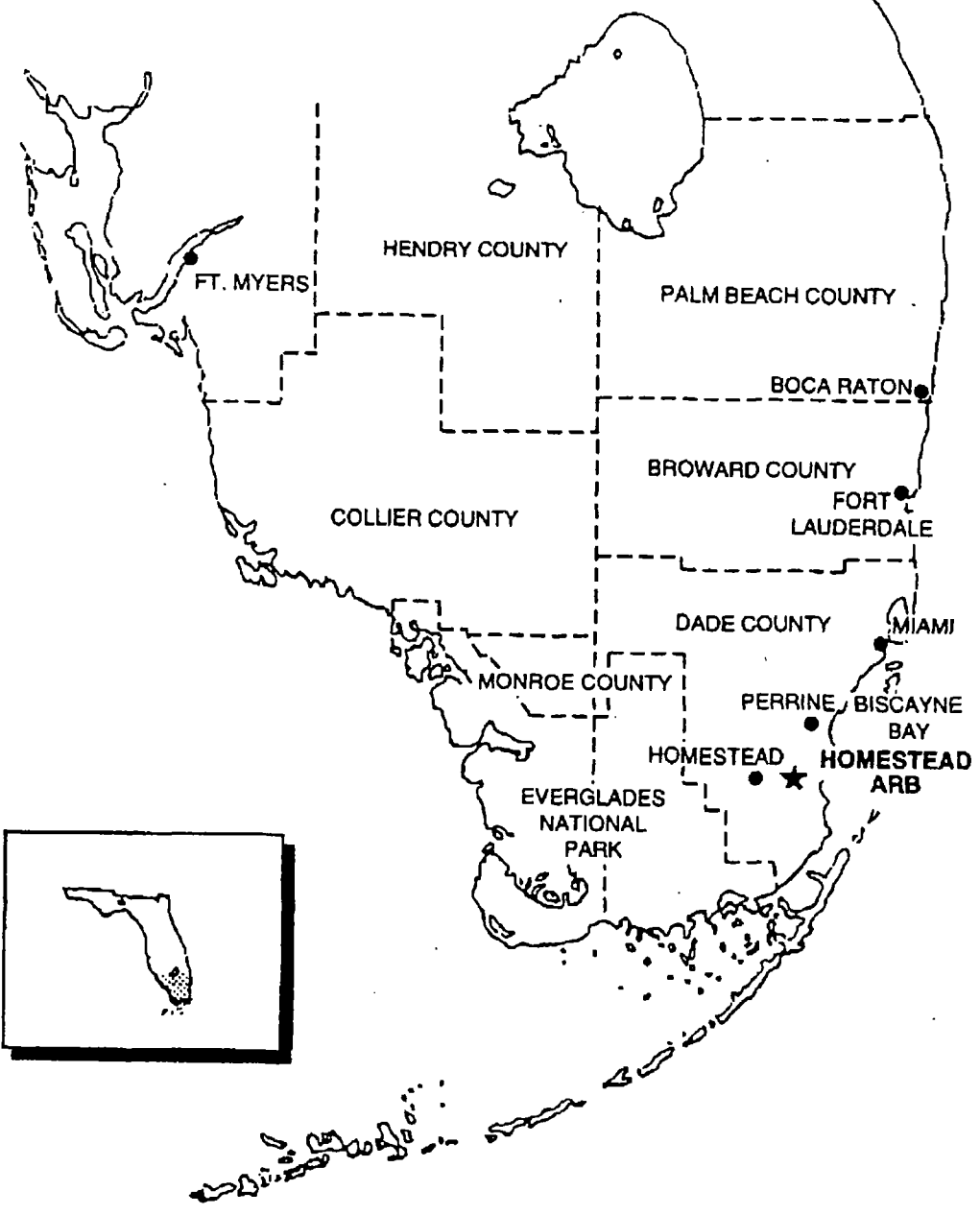


FIGURE 1-1
Installation Location
Homestead ARB, Florida

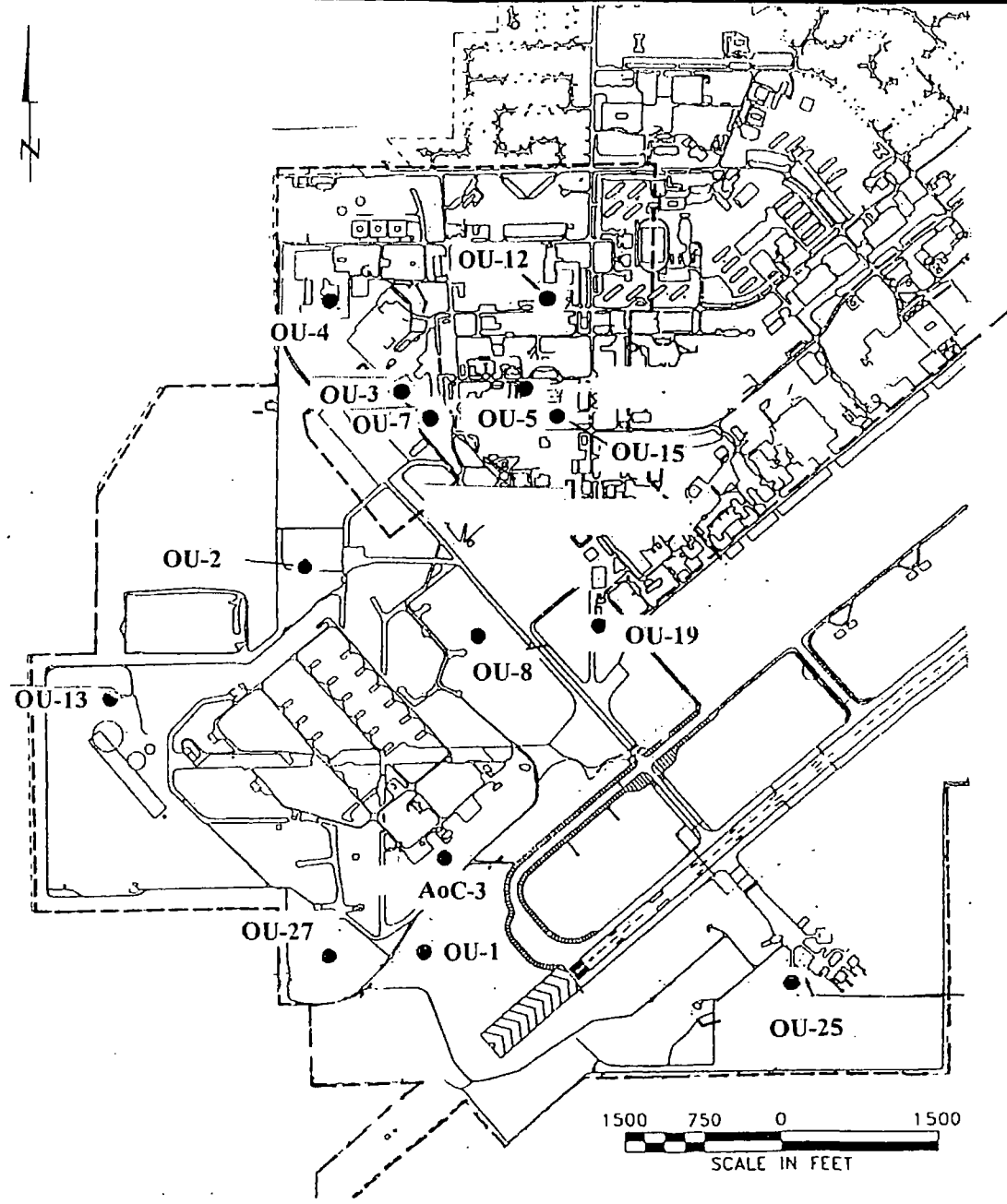


FIGURE 1-2
Site Locations
Homestead ARB, Florida

2.0 OPERABLE UNIT 1

2.1 HISTORY OF CONTAMINATION

OU-1 is former Fire Protection Training Area No. 2 (FPTA-2), also known as Site FT-5. The site location is depicted on Figure 1-2. The site is located in the extreme southern portion of Homestead ARE, near the southwest end of the runway. Taxiway A is located approximately 300 feet to the east, and the approach zone for the runway is located approximately 600 feet to the southeast. The site is bordered on the south and west by grassy fields and on the north by the munitions storage area (AOC 3). A drainage ditch, which typically contains one to two feet of water, is located adjacent to the east and south sides of the site. A site plan is included as Figure 2-1.

The site served as a fire training area from 1955 to 1972. Aerial photographs indicate that five burn pits were operated at the site, and historical documents indicate that the pits were not equipped with liners to contain the residual fuels. A variety of materials were burned at the site, including jet fuel, aviation gasoline, and liquid wastes from the base shops (e.g., oil, lubricants, and solvents). After fire training activities were terminated in 1972, construction debris was disposed of at the site, resulting in an area of elevated fill material approximately 450 feet wide, 600 feet long, and three to six feet thick.

A list of important historical events and relevant dates in the site chronology is shown below. The identified events are illustrative, not comprehensive.

Event	Date
Fire Training Operations	1955-1972
Construction Debris Disposal	1970s
IRP Phase I- Records Search	1983
IRP Phase II- Confirmation/Quantification Study	1986
IRP Phase IV- Additional Investigations	1988 and 1989
RI	1991 and 1993
FS	1994
ROD	1995
IRA	1996
ESD	1997
ROD Implementation	1997
Ground-Water Monitoring	1996, 1997, 1998, 2001,2002

2.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

An IRP Phase I Records Search was completed in 1983 and OU-1 was determined to have a moderate to high potential for environmental contamination; therefore, the site was recommended for the IRP Phase II - Confirmation/Quantification.

In 1988 and 1989, the IRP Phase IV - Additional Investigation was conducted in order to determine the lateral extent of contamination. Based on the results of this investigation, RIs were conducted at the site in 1991 and 1993.

Significant results of these investigations revealed the following:

Soil

Contaminants detected in OU-1 soil include volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, diesel-range total petroleum hydrocarbons (TPH-D), and metals. Relatively low concentrations of VOCs were detected in the soil samples, including methylene chloride, acetone, benzene, bromodichloromethane, 2-butanone, tetrachloroethene (PCE), chlorobenzene, ethylbenzene, and xylenes. Acetone, methylene chloride, and 2-butanone are common laboratory contaminants. SVOCs, primarily polynuclear aromatic hydrocarbons (PAHs), were the most prevalent constituents detected in soil at OU-1. Heptachlor epoxide, 4,4'-DDD, and 4,4'-DDE were detected in shallow soils. Lead and sixteen other metals also were detected.

Ground Water

Contaminants detected in OU-1 ground water include VOCs, SVOCs, total recoverable petroleum hydrocarbons (TRPH), and metals. Numerous metals were detected in the ground water at OU-1 prior to 1993, most notably lead. Elevated metal concentrations in these samples have been attributed to suspended solids that are not representative of ground-water conditions. Redevelopment of the wells was conducted prior to the 1993 sampling event. In 1993, eight metals were detected, including barium, calcium, iron, magnesium, manganese, potassium, sodium, and arsenic. Arsenic was detected only in one well in 1993, and lead was not detected in any samples.

Sediment

Contaminants detected in OU-1 sediments include SVOCs, pesticides, and metals. SVOCs were not detected in the sediment samples collected in 1988, but PAHs were detected in all five samples collected in 1993. Two pesticides (4,4'-DDD and 4,4'-DDE) were detected in sediment samples collected in 1993. 4,4'-DDD was detected in two of the five samples, and 4,4'-DDE was detected in three of the five samples. Lead was detected in all five sediment samples collected in 1988, with a maximum concentration of 44 milligrams per kilogram (mg/kg). Similar concentrations of lead were detected in the sediment samples collected in 1993. Other metals detected in the 1993 sampling event included aluminum, calcium, chromium, iron, magnesium, manganese, sodium, vanadium, zinc, and arsenic.

Surface Water

Contaminants detected in OU-1 surface water include VOCs, SVOCs, and metals. VOCs were not detected in the surface water samples collected in 1988, but low concentrations of bromodichloromethane, 2-butanone, methylene chloride, and 1,1,1-trichloroethane (TCA) [<10 micrograms per liter ($\mu\text{g/L}$)] were detected in the samples collected in 1993. Bis(2-ethylhexyl) phthalate and butylbenzylphthalate were the only SVOCs detected in surface water, and they were only detected during the 1993 investigation. Methylene chloride, 2-butanone, bis(2-ethylhexyl) phthalate, and butylbenzylphthalate are likely attributable to laboratory contamination and not representative of site conditions. Lead was detected in all five surface water samples collected in 1988, but was not detected in surface water samples collected in 1993. The only other metals detected in surface water were calcium, magnesium, potassium, and sodium, which are attributable to background conditions.

Based on the results of the RI/BRA, the site moved on to the FS and Proposed Plan phases of the CERCLA process.

2.3 REMEDIAL ACTIONS

2.3.1 Remedy Selection

The OU-1 ROD (Montgomery Watson, 1995) was finalized in May 1995. The alternative selected was:

Access Restrictions for Ground Water, Use Restrictions for Soil, and Ground-Water Monitoring for Contaminant Migration and Attenuation

The selected remedy consisted of:

- Implementation of deed restrictions or restrictive covenants to limit usage of the site to prevent schools, playgrounds, hospitals, and residential units from being built at the site to limit exposure to adults and children,
- Elimination and prevention of the practice of continued rubble disposal at the site, Restriction of the placement of potable water wells into the contaminated ground water beneath the site.
- Two years of semi-annual ground-water monitoring followed by a review of the site to assess the migration and attenuation of ground-water contaminants, and
- Five-year review to determine whether the remedy remains protective of human health and the environment and evaluate the need for further action.

In 1997, an ESD was completed for OU-1. The ESD required that semi-annual surface water and sediment monitoring be conducted at OU-1 for a period of two years, in conjunction with the ground-water monitoring.

2.3.2 Remedy Implementation

Restrictive covenants have not been implemented because the property remains in AFRC control. Currently, access to the property is limited to site workers. Construction activities that would require excavation of soil are monitored by the Environmental Flight to ensure no potable water wells are installed and personnel are not exposed to unacceptable levels of contamination. Access to the site is restricted and closely monitored due to its proximity to the taxiway, runway, and weapons storage area. The past practice of disposing of construction debris at the site has been terminated.

Semi-annual ground-water monitoring was conducted as required by the ROD. The first year of semi-annual monitoring was conducted in April and October 1996. The second year of monitoring was conducted in December 1997 and May 1998. All of the samples were analyzed for VOCs, SVOCs, and TRPH. Samples collected during the first year of monitoring were also analyzed for lead. In addition, voluntary ground-water monitoring for the presence of isopropyl benzene and TRPH was conducted in 2001 and 2002.

One surface water and one sediment sample were collected during four semi-annual sampling events beginning in July 1997. Samples were analyzed for VOCs, SVOCs, and TPH, in accordance with the ESD.

Although not required by the ROD, an IRA was conducted in 1996 to remove lead-contaminated soil at sample location FPTA2-SL-0010. Lead was previously detected at this location at a concentration of 1,100 milligrams per kilogram (mg/kg). Approximately 2,163 cubic yards of contaminated soil were excavated from this location and disposed of off site.

2.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

2.4 FIVE-YEAR REVIEW PROCESS

2.4.1 Document Review

This five-year review consisted of a review of relevant documents including the BRA, ROD, ROD implementation report, voluntary IRA report, and ground-water monitoring reports.

2.4.2 Data Review

Data from previous investigation, confirmation sampling, and ground-water monitoring activities were compared against currently applicable risk-based cleanup criteria to evaluate whether constituents remain in place at concentrations that exceed unlimited exposure and unrestricted reuse criteria.

Soil Contamination

Data from all previous investigations and confirmation sample results from the IRA were compared to the FAC Chapter 62-777 Soil Cleanup Target Levels (SCTLs). Sample locations that were excavated during the IRA were excluded from the evaluation. The review indicated that residual contamination remains in soil. Ten PAHs, pentachlorophenol, arsenic, heptachlor epoxide, TRPH, and vanadium exceeded the residential SCTL. Six of these PAHs also exceeded the commercial/industrial SCTL. The maximum concentration of benzo(a)pyrene was 150 mg/kg.

Ground-Water Contamination

Post-ROD monitoring data were reviewed from two years of semi-annual monitoring and voluntary ground-water monitoring activities performed in 2001 and 2002. Data from sampling events in 1996 through 2002 are presented in Tables 2-1 through 2-6.

Benzo(a) pyrene and TRPH were the only constituents that exceeded their respective FAC Chapter 62-777 ground-water cleanup target levels (GCTLs) during the first year of ground-water monitoring. The concentration of benzo(a) pyrene (0.72J $\mu\text{g/L}$) in the April 1996 sample from monitoring well FPTA2-MW4 slightly exceeded the GCTL of 0.2 $\mu\text{g/L}$. The TRPH concentration (7.5 mg/L) in the October 1996 sample from monitoring well FPTA2-MW1 slightly exceeded the GCTL of 5.0 mg/L. Benzo(a) pyrene was not detected in subsequent sampling rounds, and the concentrations of TRPH declined to 4.3 mg/L in December 1997, 0.27J mg/L in May 1998, and non-detect in July 2001 and January 2002.

Isopropylbenzene and bis(2-ethylhexyl) phthalate were the only constituents that exceeded their respective GCTLs during the second year of ground-water monitoring. The concentration of isopropylbenzene in monitoring well FPTA2-MW1 exceeded the GCTL of 0.8 $\mu\text{g/L}$ in December 1997 (1.6 $\mu\text{g/L}$) and May 1998 (2.5 $\mu\text{g/L}$). The concentration of bis(2-ethylhexyl) phthalate in May 1998 (20 $\mu\text{g/L}$) exceeded the GCTL of 6 $\mu\text{g/L}$. Isopropylbenzene was not detected during voluntary monitoring conducted in July 2001 or January 2002. In addition, bis(2-ethylhexyl) phthalate has not routinely been detected in ground-water samples collected from OU-1 and is likely attributable to field or laboratory contamination. Overall, the data review indicates that there are no significant site-related impacts to ground water.

Sediment Contamination

Data from the 1988 and 1993 investigations were compared to the SCTLs for the residential and industrial direct exposure scenarios. Concentrations of arsenic (12 mg/kg), benzo(a) pyrene (0.85 mg/kg), and dibenz(a,h) anthracene (0.14) exceed the residential SCTLs. Arsenic and benzo(a) pyrene also exceed the commercial/industrial SCTLs of 3.7 mg/kg and 0.5 mg/kg, respectively, but benzo(a) pyrene did not exceed the base-specific background level of 1.5 mg/kg.

Data from the sediment monitoring conducted in 1997 and 1998 to meet the requirements of the ESD were also reviewed. TRPH was detected at a concentration of 830 mg/kg during the initial sampling event, but declined to a concentration of 2 mg/kg during the most recent sampling event. Because the samples were collected at the same sampling station, the data indicate that the elevated levels of TRPH originally detected have degraded naturally. No other constituents were detected at concentrations greater than the SCTLs.

Surface Water Contamination

Data from the 1988 and 1993 investigations and surface water monitoring conducted in 1997 and 1998 to meet the requirements of the ESD were reviewed. All results were less than the standards defined by FAC Chapter 62-777 Surface Water Cleanup Target Levels (SWCTLs).

Overall, the data review indicates that there are no significant site-related impacts to ground water, surface water, or sediment at OU-1. However, residual soil contamination, primarily PAHs, remains at OU-1 above unrestricted reuse and unlimited exposure criteria.

2.4.3 Site Inspection

A site inspection was conducted on 8 August 2003. No indications of trespassing, vandalism, unauthorized excavation, or well installations were observed. Monitoring wells were visually inspected and found to be locked and in acceptable condition. No changes in on-site or surrounding land use were observed. Overall, the inspection indicated that the remedy is being implemented in accordance with the ROD and effectively precludes unauthorized access to the site.

2.5 TECHNICAL ASSESSMENT

A technical assessment was conducted for OU-1 to determine whether the selected remedy is functioning as intended and remains protective of human health and the environment. The results of this assessment are presented below.

Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, Applicable or Relevant and Appropriate Requirements (ARARs), risk assumptions, and results of the site inspection indicates that the remedy is functioning as intended by the ROD.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

There have been no changes to the exposure assumptions, cleanup levels, and remedial action objectives that would affect the protectiveness of the remedy.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy ?

There is no other information that would call into question the protectiveness of the remedy.

2.6 ISSUES

There are no issues at this site.

2.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Residual soil contamination remains at OU-1 above concentrations that would allow unrestricted reuse and unlimited exposure. As a result, the land use controls (LUCs) established in the ROD should remain in place to ensure that human exposure to contaminated soil is restricted.

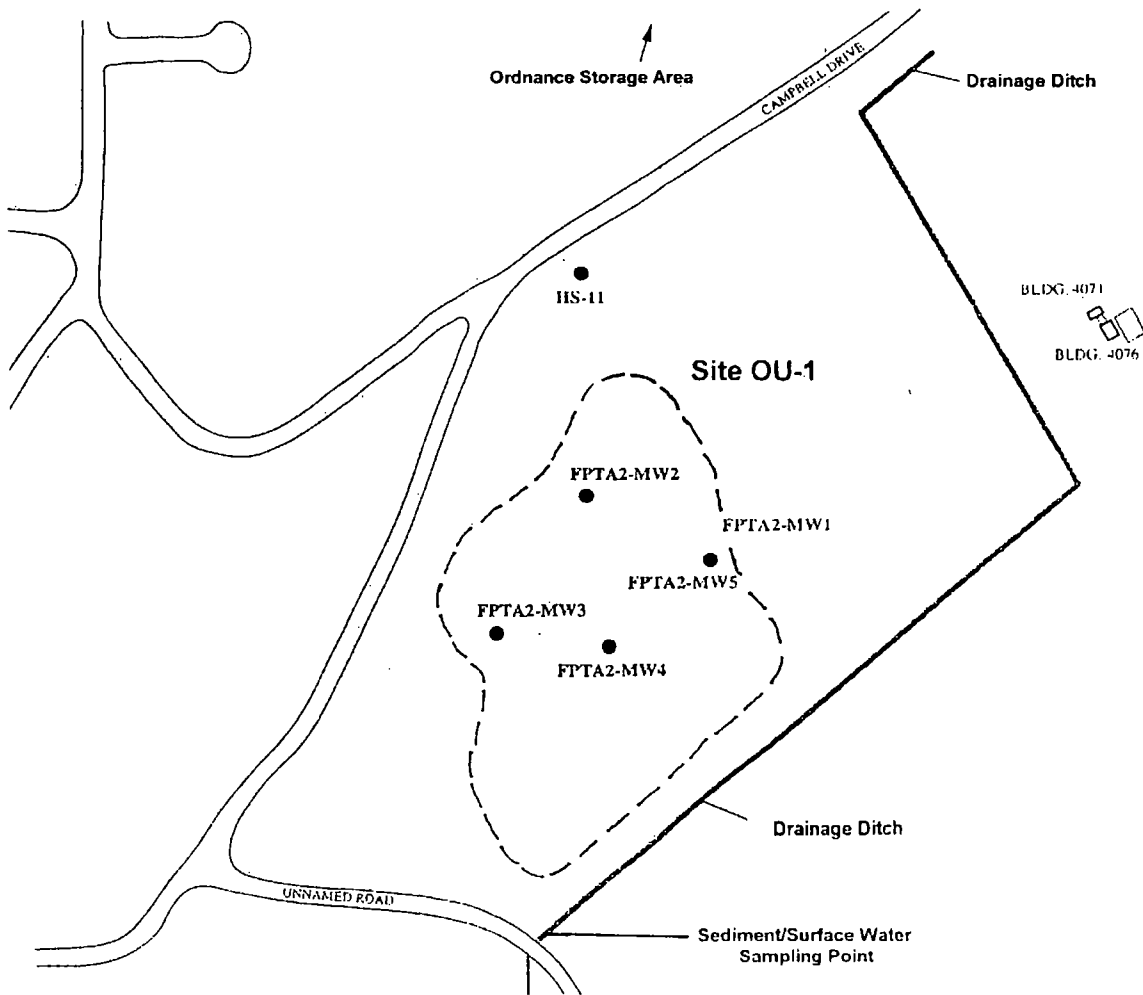
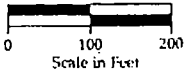
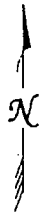
The two years of ground-water monitoring required by the ROD have been completed. In addition, voluntary ground-water monitoring was conducted in 2001 and 2002. The data indicate that no significant contamination remains at levels of concern in the ground water at OU-1. Therefore, it is recommended that no further ground-water monitoring be performed and the ROD monitoring wells should be abandoned in accordance with applicable regulatory guidelines. The site should be granted a No Further Investigation (NFI) with LUCs status.

2.8 PROTECTIVENESS STATEMENT

Based on the completed activities, the intent and goals of the ROD for OU-1 have been met and have been found to be protective of human health and the environment.

2.9 NEXT REVIEW

The next five-year review for OU-1 is required by December 2009, five years from the date of this review.



LEGEND

- | | | | |
|--|--|--|-------------------------------|
| | Existing Building (with Building Number) | | Shallow Monitoring Well |
| | Drainage Canal | | Elevated Fill/Vegetation Area |
| | Road | | |

FIGURE 2-1
OU-1, Fire Protection Training Area No. 2
Site Plan
Homestead ARB, Florida

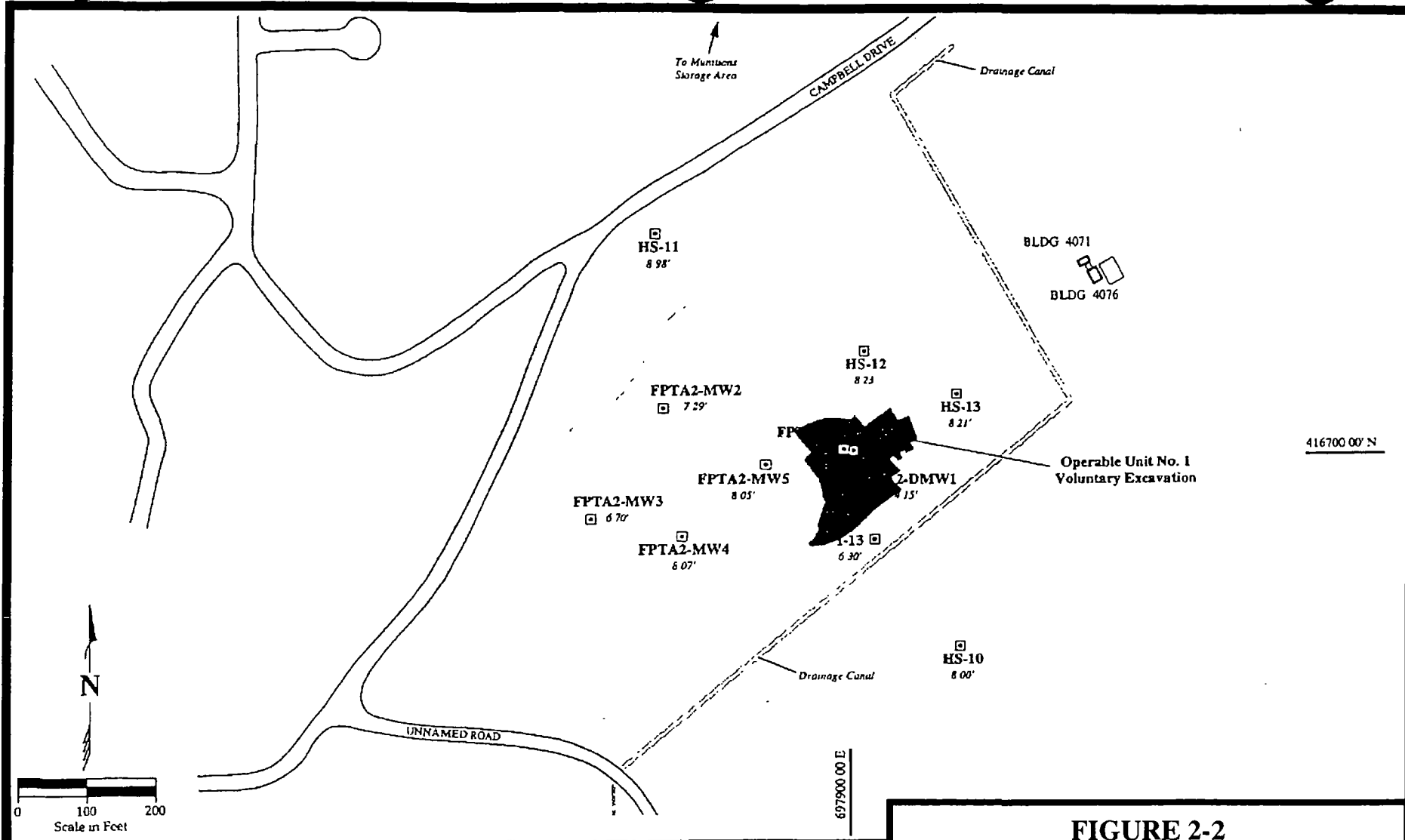


FIGURE 2-2
OU-1, Fire Protection Training Area No. 2
Excavation Location
Homestead ARB, Florida



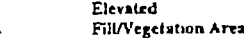





 OHM Remediation Services Corp.	LEGEND		 Shallow Monitoring Well	 Elevated Fill/Vegetation Area
	 Existing Building (with Building Number)	 Intermediate Depth Monitoring Well	 Road	 FPTA2-MW4 8 07' <i>Elevation of top of well casing (NGVD)</i>
	 Drainage Canal			

TABLE 2-1

OU-1, FIRE PROTECTION TRAINING AREA NO. 2

GROUND-WATER ANALYTICAL RESULTS

YEAR 1 SEMI-ANNUAL GROUND-WATER MONITORING

APRIL AND OCTOBER 1996

MONITORING WELL NO./FIELD NO.	First Semiannual Sampling Event						Second Semiannual Sampling Event					
	FPTA2-MW1	FPTA2-MW2	FPTA2-MW3	FPTA2-MW4	FPTA2-MW6	HS-11	FPTA2-MW1	FPTA2-MW2	FPTA2-MW3	FPTA2-MW4	FPTA2-MW5	HS-11
Laboratory Accession No.	82113-1	82113-2	82113-3	82113-4	82113-5	82113-7	85950-1	85909-1	85909-7	85909-6	85909-2	85909-4
FIELD DATA												
Date Well Sampled	04/12/96	04/12/96	04/12/96	04/12/96	04/12/96	04/12/96	10/07/96	10/04/96	10/04/96	10/04/96	10/04/96	10/04/96
Depth To Water At Sampling (ft, BTC)	2.51	5.65	5.05	6.46	6.41	7.32	2.05	5.10	4.40	5.85	5.60	6.70
Temperature (F)	74.9	74.8	74.3	75.3	76.1	78.8	80.5	80.2	78.9	80.2	82.4	82.5
Conductivity (uS/cm)	418	440	448	469	524	373	400	610	511	609	735	480
pH (SU)	7.3	7.3	7.1	7.3	7.2	7.3	7.3	7.1	7.3	7.1	7.0	7.3
Turbidity (NTU)	2.9	3.5	2.8	6.2	2.8	7.2	0.8	1.0	1.8	4.1	5.3	1.4
LABORATORY ANALYSES												
Units: ug/l PQL												
TCL Volatile Organic Compounds (SW-846 Method 8240)												
Methylene Chloride	ug/l	6	1.6JB	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	ug/l	5	<5	<5	<5	<5	<5	<5	<5	0.87J	<5	0.91J
Toluene-d8 (surrogate)	% recovery	59-133	100	95	100	98	100	98	102	100	102	102
4-Bromofluorobenzene (surrogate)	% recovery	60-136	102	102	102	100	104	92	88	88	90	88
1,2-Dichloroethane-d4 (surrogate)	% recovery	49-144	102	100	104	102	100	108	104	102	102	102
Date Analyzed	04/19/96	04/19/96	04/19/96	04/19/96	04/19/96	04/19/96	10/13/96	10/11/96	10/11/96	10/11/96	10/11/96	10/11/96
Laboratory Batch I.D.	0418L-M	0418L-M	0418L-M	0418L-M	0418L-M	0418L-M	1011B	1011B	1011B	1011B	1011B	1011B
TCL Semi-Volatile Organic Compounds (SW-846 Method 8270)												
Acenaphthene	ug/l	<10	<10	<10	0.88J	1.2J	<10	<10	<10	<10	0.80J	0.63J
Dibenzofuran	ug/l	<10	<10	<10	<10	1.1J	<10	<10	<10	<10	0.67J	<10
Fluorene	ug/l	<10	<10	<10	<10	1.4J	<10	0.66J	<10	<10	<10	<10
Phenanthrene	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.16J	<10
Anthracene	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	0.80J	<10
Fluoranthene	ug/l	<10	<10	<10	3.1J	1.2J	<10	0.86J	<10	2.2J	0.99J	<10
Pyrene	ug/l	<10	<10	<10	3.0J	1.2J	<10	0.71J	<10	1.6J	0.66J	<10
Bis (2-Ethylhexyl) phthalate	ug/l	<10	<10	<10	<10	<10	2.4JB	0.66JB	1.7JB	0.58JB	1.8JB	<10
Chrysene	ug/l	<10	<10	<10	0.84J	<10	<10	<10	<10	<10	<10	<10
Di-n-octylphthalate	ug/l	<10	<10	<10	<10	0.22J	<10	<10	<10	<10	<10	<10
Benzo (b) fluoranthene	ug/l	<10	<10	<10	0.98J	<10	<10	<10	<10	<10	<10	<10
Benzo (a) pyrene	ug/l	<10	<10	<10	0.72J	<10	<10	<10	<10	<10	<10	<10
Benzo (g,h,i) perylene	ug/l	<10	<10	<10	0.51J	<10	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene	ug/l	<10	<10	<10	<10	<10	<10	4.2J	<10	<10	<10	<10
Naphthalene	ug/l	<10	<10	<10	<10	<10	<10	1.6J	<10	<10	<10	<10
Phenol d5 (surrogate)	% recovery	14-136	78	93	92	66	81	83	79	82	60	78
2-Fluorophenol (surrogate)	% recovery	18-123	76	85	89	59	77	82	79	73	74	71
2,4,6-Tribromophenol (surrogate)	% recovery	10-102	100	100	100	100	99	110	120	110	120	110
Nitrobenzene-d5 (surrogate)	% recovery	29-120	72	84	86	60	76	70	72	72	70	74
2-Fluorobiphenyl (surrogate)	% recovery	25-129	72	82	84	66	80	76	72	68	72	74
Terphenyl-d14 (surrogate)	% recovery	11-144	88	88	76	90	54	82	70	100	86	80
Date Extracted	04/16/96	04/16/96	04/16/96	04/16/96	04/16/96	04/16/96	10/09/96	10/09/96	10/09/96	10/09/96	10/09/96	10/09/96
Date Analyzed	04/19/96	04/19/96	04/19/96	04/19/96	04/19/96	04/19/96	10/12/96	10/12/96	10/12/96	10/12/96	10/12/96	10/12/96
Laboratory Batch I.D.	0416C-K	0416C-K	0416C-K	0416C-K	0416C-K	0416C-K	1009B	1009B	1009B	1009B	1009B	1009B
Total Petroleum Hydrocarbons (Method FL-PRO)												
TPH	mg/l	0.34	0.55	0.11J	0.11J	0.13J	0.21J	0.10J	7.8	<0.34	<0.34	<0.34
O-Terphenyl (surrogate)	% recovery	10-185	97	91	94	94	89	96	114	116	98	90
Date Extracted	04/16/96	04/16/96	04/16/96	04/16/96	04/16/96	04/16/96	10/09/96	10/09/96	10/09/96	10/09/96	10/09/96	10/09/96
Date Analyzed	04/19/96	04/19/96	04/19/96	04/19/96	04/19/96	04/19/96	10/12/96	10/12/96	10/12/96	10/12/96	10/12/96	10/12/96
Laboratory Batch I.D.	0416A	0416A	0416A	0416A	0416A	0416A	1009C	1009C	1009C	1009C	1009C	1009C
Total Lead (SW-846 Method 7421)												
Lead	mg/l	0.003-0.005	<0.003	<0.003	<0.003	<0.003	<0.003	0.001J	<0.005	<0.005	<0.005	<0.005
Date Extracted	04/16/96	04/16/96	04/16/96	04/16/96	04/16/96	04/16/96	10/09/96	10/09/96	10/09/96	10/09/96	10/09/96	10/09/96
Date Analyzed	04/17/96	04/17/96	04/17/96	04/17/96	04/17/96	04/17/96	10/10/96	10/10/96	10/10/96	10/10/96	10/10/96	10/10/96
Laboratory Batch I.D.	0416I	0416I	0416I	0416I	0416I	0416I	1009J	1009J	1009J	1009J	1009J	1009J

Only detected compounds are listed.
 <PQL = Less than Practical Quantitation Limit
 BTC = Below Top of Casing
 TCL = Target Compound List
 TPH = Total Petroleum Hydrocarbons

J = Estimated value, below the PQL and at or above the MCL
 B = Analyte was found in an associated equipment blank
 ug/l = Micrograms per liter
 mg/l = Milligrams per liter

Above FAC Chapter 61-950 Primary Drinking Water Standards
 Above FAC Chapter 61-770 Groundwater Target Level

TABLE 2-2

OU-1, FIRE PROTECTION TRAINING AREA NO. 2
VOLATILE ORGANIC COMPOUNDS IN GROUND WATER (ug/L)
YEAR 2 SEMI-ANNUAL GROUND-WATER MONITORING
DECEMBER 1997

Parameter	HS-11	FPTA2-MW1	FPTA2-MW2	FPTA2-MW3	FPTA2-MW4	FPTA2-MW5	DUP1	GWCC
sec-Butylbenzene	0.5 U	0.54 F	0.5 U	0.5 U	0.5 U	0.5 U	0.61 F	NL
tert-Butylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NL
Chlorobenzene	0.3 U	1.4	0.3 U	0.3 U	0.3 U	0.3 U	1.5	NL
1,4 -Dichlorobenzene	0.2 U	0.52 F	0.2 U	0.2 U	0.2 U	0.2 U	0.57 F	75.0 ^a
Isopropylbenzene	0.5 U	1.5	0.5 U	0.5 U	0.5 U	0.5 U	1.6	0.8 ^b
p-Isopropyltoluene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NL
Naphthalene	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	6.8 ^b
n-Propylbenzene	0.4 U	1.0	0.4 U	0.4 U	0.4 U	0.4 U	1.1	NL
1,3,5-Trimethylbenzene	0.4 U	1.5	0.4 U	0.4 U	0.4 U	0.4 U	1.7	10 ^b
Toluene	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	1,000 ^a

Notes:

No target analytes were detected in the quality control blanks.

Analyses performed by VOC Laboratories

ug/L - micrograms per Liter or parts per billion

DUP1 - duplicate sample of FPTA2-MW1

F - analyte positively identified, but numerical value is below PQL

PQL - AFCEE practical quantitation limit

U - material was analyzed for, but not detected

Source:

¹ = "Groundwater Guidance Concentrations", Chapter 62-520, FAC

^a = primary drinking water standard

^b = guidance concentration (organoleptic)

TABLE 2-3
OU-1, FIRE PROTECTION TRAINING AREA NO. 2
VOLATILE ORGANIC COMPOUNDS IN GROUND WATER (ug/L)
YEAR 2 SEMI-ANNUAL GROUND-WATER MONITORING
MAY 1998

Parameter	HS-11	FPTA2-MW1	FPTA2-MW2	FPTA2-MW3	FPTA2-MW4	FPTA2-MW5	DUP1	GWGC ¹
sec-Butylbenzene	1.3 U	0.93 J	1.3 U	1.3 U	1.3 U	1.3 U	0.47 J	NL
tert-Butylbenzene	1.4 U	0.96 J	1.4 U	1.4 U	1.4 U	1.4 U	0.47 J	NL
Chlorobenzene	0.4 U	1.7	0.5 U	0.5 U	0.5 U	0.5 U	1.4	NL
1,4-Dichlorobenzene	0.3 U	0.82	0.5 U	0.5 U	0.5 U	0.5 U	0.51	75.0 ^a
Isopropylbenzene	0.5 U	2.5	0.5 U	0.5 U	0.5 U	0.5 U	1.3	0.8 ^b
p-Isopropyltoluene	1.2 U	1.2	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	NL
Naphthalene	1.0 U	2.8	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	6.8 ^b
n-Propylbenzene	0.5 U	2.4	0.5 U	0.5 U	0.5 U	0.5 U	1.3	NL
1,3,5-Trimethylbenzene	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	10 ^b
Toluene	1.1 U	0.61 J	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1,000 ^a

Notes:

No target analytes were detected in the quality control-blanks.

Analyses performed by Quanterra, Inc.

ug/L - micrograms per Liter or parts per billion

DUP1 - duplicate sample of FPTA2-MW1

J - analyte positively identified, the quantitation is an estimation

U - material was analyzed for, but not detected

Source:

¹ = "Groundwater Guidance Concentrations", Chapter 62-520, FAC

^a = primary drinking water standard

^b = guidance concentration (organoleptic)

TABLE 2-4

OU-1, FIRE PROTECTION TRAINING AREA NO. 2
 SEMIVOLATILE ORGANIC COMPOUNDS IN GROUND WATER (ug/L)
 YEAR 2 SEMI-ANNUAL GROUND-WATER MONITORING
 DECEMBER 1997 AND MAY 1998

Well No.	Bis(2-Ethylhexyl) phthalate		Fluoranthene	
	Dec-97	May-98	Dec-97	May-98
HS11	2.0 U	8.6 U	2.0 U	8.6 U
FPTA 2 MW-1	15.0	7.5 J	2.0 U	8.6 U
FPTA 2 MW-2	9.1 F	8.6 U	2.0 U	8.6 U
FPTA 2 MW-3	2.0 U	8.6 U	2.0 U	8.6 U
FPTA 2 MW-4	2.0 U	8.6 U	2.0 U	1.7 J
FPTA 2 MW-5	2.0 U	20	2.0 U	8.6 U
Duplicate	15.0	7.7 J	2.0 U	8.6 U
Equipment Blank	2.6 F	8.6 U	2.0 U	8.6 U

Notes:

ug/L - micrograms per Liter or parts per billion

Duplicate - sample collected from FPTA 2 MW-1

F - analyte positively identified, but numerical value is below PQL

J - analyte positively identified, quantitation is an estimation

PQL - AFCEE practical quantitation limit (10.0 ug/L for both analytes)

U - material was analyzed for, but not detected

¹ - analyses performed by VOC Laboratories

² - analyses performed by Quanterra, Inc.

TABLE 2-5

OU-1, FIRE PROTECTION TRAINING AREA NO. 2

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS IN GROUND WATER (ug/L)

YEAR 2 SEMI-ANNUAL GROUND-WATER MONITORING

DECEMBER 1997 AND MAY 1998

Well No.	Concentrations	
	Dec-97	May-98
HS 11	< 0.05	< 0.50
FPTA 2 MW-1	4.3	0.27 J
FPTA 2 MW-2	0.24 F	< 0.50
FPTA 2 MW-3	0.14 F	< 0.50
FPTA 2 MW-4	< 0.05	< 0.50
FPTA 2 MW-5	< 0.05	< 0.50
Duplicate	2.4	1.4
Equipment Blank	< 0.05	< 0.50
GWGC	5.0	5.0

Notes:

F - analyte positively identified, numerical value is below PQL

J - analyte positively identified, quantitation is an estimation

PQL - practical quantitation limit

Duplicate - sample collected from FPTA2 MW-1

GWGC - Chapter 62-770 Groundwater Target Level

¹ - analyses performed by VOC Laboratories

² - analyses performed by Quanterra, Inc.

TABLE 2-6

OU-1, FIRE PROTECTION TRAINING AREA NO. 2

VOLATILE ORGANIC COMPOUNDS AND TOTAL RECOVERABLE PETROLEUM HYDROCARBONS IN
GROUND WATER

VOLUNTARY GROUND-WATER MONITORING

JULY 2001 AND JANUARY 2002

Well ID:		FPTA2-MW1R		FPTA2-MW2R	FPTA2-MW5
Client Sample ID:		OU-1-FPTA2-MW1R		OU-1-FPTA2-MW2R	OU-1-FPTA2-MW5
Lab Sample ID:		2001/07365-21	2002/01409-4	2001/07365-22	2002/01409-5
Date Sampled:		07/18/01	01/23/02	07/18/01	01/23/02
Analyte	GCTL	Result	Result	Result	Result
VOC 8260B (ug/L)					
Isopropylbenzene	0.8	<0.7	<0.7	<0.7	<0.7
TRPH FL-PRO (mg/L)					
TRPH	5	<0.4	<0.4	<0.4	<0.4

3.0 OPERABLE UNIT 2

3.1 HISTORY OF CONTAMINATION

OU-2 is the former Residual Pesticide Disposal Area, also known as Site OT-11 (formerly Site P-3). The site is located within the western portion of Homestead ARE, north of the munitions storage area, as depicted on Figure 1-2. The site encompasses approximately 20 acres and is bounded on the west by the Boundary Canal and on the south by the munitions storage area. The property immediately to the north of the site is occupied by the new fire training facility. Taxiway B lies about 600 feet to the east. A drainage ditch bisects the site from east to west and discharges into the Boundary Canal, as depicted in Figure 3-1.

The site is located within a restricted access portion of the installation due to its proximity to the aforementioned taxiway and munitions storage area. It is enclosed by anchor fencing with warning signs and two locked access gates. The site is heavily overgrown with vegetation and is covered by dense stands of miscellaneous invasive, non-native trees, shrubs, and tall reeds.

This site was used as a rinse area for pesticide application equipment from 1977 to 1982 and for the occasional storage of asphalt debris generated from a number of locations within the former Homestead AFB. Pesticide rinsate was disposed of by spraying or dumping the diluted material over a one-acre area followed by an application of chlorine bleach and ammonia to accelerate decomposition. Prior to 1977, pesticide rinsate materials were routinely discharged into the installation's sewage treatment plant, which is no longer in service.

A list of important historical events and relevant dates in the site chronology are shown below. The identified events are illustrative, not comprehensive.

Event	Date
Pesticide Rinsate Disposal	1977-1982
IRP Phase I- Records Search	1983
IRP Phase II- Confirmation/Quantification Study	1986
IRP Phase IV- Additional Investigations	1988
RI	1991 AND 1993
FS	1995
ROD	1996
ROD Implementation	1998
Ground-water Monitoring	1998,2000,2001, 2002, and 2003

3.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

An IRP Phase I Records Search was completed in 1983. OU-2 was determined to have a low potential for environmental contamination. At that time, no further action was recommended for the site.

In 1988 the IRP Phase IV - Additional Investigation was conducted in order to determine the lateral extent of contamination. Based on the results of this investigation, RIs were conducted at the site in 1991 and 1993.

Significant results of these investigations revealed the following:

Soil

Constituents detected in OU-2 soil include VOCs, SVOCs, pesticides and metals. Ten VOCs were detected in soil, but only acetone was detected above the practical quantitation limit (PQL). A total of 21 SVOCs were detected, primarily PAHs such as benzo(a) pyrene, dibenzo(a, h) anthracene, benzo(a) anthracene, and benzo(b) fluoranthene. The highest concentrations of PAHs were detected in two sample locations (P3-SL0030 and P3-SL-0031) at the original ground surface beneath the overlying Fill material and may be attributable to asphalt debris. A total of 17 metals were detected in the soil samples, the most significant of which was lead located in the northern portion of the site.

Ground Water

Constituents detected in OU-2 ground water include SVOCs and metals. Ground-water samples were analyzed for VOCs during the 1993 investigation and for pesticides during the 1988 and 1993 investigations, but no VOCs or pesticides were detected. Fourteen SVOCs, primarily PAHs, and seven metals were detected in the two ground-water samples collected in 1993.

Based on the results of the RI/BRA, the site moved on to the FS and Proposed Plan phases of the CERCLA process.

3.3 REMEDIAL ACTIONS

3.3.1 Remedy Selection

The OU-2 ROD (Montgomery Watson, 1996) was finalized in April 1996. The alternative selected was:

Excavation, Off-Site Disposal of Soils, Access Restriction for Ground Water, Site Fencing, and Ground-water Monitoring

The selected remedy consisted of:

- Excavation and off-site disposal of approximately 60 cubic yards of soil from two sampling locations where the highest concentrations of PAHs and lead were detected,
- Installation of two shallow monitoring wells and annual ground-water monitoring for five years,
- Institutional controls to restrict the placement of potable water wells into the ground water beneath the site, Installation of a perimeter fence to restrict site access, and
- Five-year review to determine whether the remedy remains protective of human health and the environment.

3.3.2 Remedy Implementation

The remedy specified in the ROD was implemented, beginning in 1998. A total of 264 tons of contaminated soil was excavated from two locations centered on previous sample locations P3-SL-0030 and P3-SL-0031, where the highest concentrations of PAHs and lead had been detected. The locations were initially excavated in August 1998. Additional excavation was conducted in October 1998 because the original confirmation samples indicated that remediation objectives had not been achieved. Two additional monitoring wells were installed in August 1998 and the initial round of ground-water monitoring was conducted in October 1998. The boundary fence was installed in November 1998.

Annual ground-water monitoring has been conducted at the site since October 1998. Subsequent sampling events occurred in July of 2000, 2001, 2002, and 2003. The July 2003 sampling event completed the five years of monitoring required by the ROD. All samples were analyzed for pesticides, PAHs, and priority pollutant metals, in accordance with the ROD.

3.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

3.4 FIVE-YEAR REVIEW PROCESS

3.4.1 Document Review

This five-year review consisted of a review of relevant documents including the BRA, ROD, ROD implementation report, and ground-water monitoring reports.

3.4.2 Data Review

Data from previous investigation, confirmation sampling, and monitoring activities were compared against currently applicable risk-based cleanup criteria to evaluate whether constituents remain in place at concentrations that exceed unlimited exposure and unrestricted reuse criteria.

Soil

Contamination Data from all previous investigations and confirmation sample results from the IRA were compared to the SCTLs. Sample locations that were excavated during the IRA were excluded from the evaluation. Two VOCs, four PAHs, and three metals were detected at concentrations greater than the residential SCTLs at locations that have not been excavated. Chloroform, 1,1-dichloroethene (DCE), benzo(a) pyrene, benzo(b) fluoranthene, dibenz(a, h) anthracene, indeno(1, 2,3-cd) pyrene, arsenic, lead, and vanadium exceeded the residential SCTLs. Chloroform, 1,1-DCE, benzo(a) pyrene, dibenz(a, h) anthracene, and arsenic also exceeded the commercial/industrial SCTLs. However, the maximum concentration of arsenic (6.5 mg/kg) was less than the base-specific background concentration of 10 mg/kg and the concentration of benzo(a) pyrene (1.38 mg/kg) was less than the base-specific background concentration of 1.5 mg/kg.

Ground-Water Contamination

Post-ROD monitoring data were reviewed from five years of annual monitoring. Lead was detected at a concentration (0.407 mg/L) greater than the GCTL of 0.015 mg/L during the first annual monitoring event in October 1998. However, lead was not detected in any of the subsequent sampling events. No other constituents were detected at concentrations that exceeded the GCTLs in any sampling event.

3.4.3 Site Inspection

A site inspection was conducted at this site on 8 August 2003. Perimeter fencing required by the ROD remains in place and no damage was observed. In addition, although not required by the ROD, signs have been affixed to the fence to notify persons of the presence of environmental contamination. No indications of trespassing, vandalism, unauthorized excavation, or well installation were observed. Monitoring wells were not visually inspected due to their location within the fenced area in thick brush, but have been found to be in acceptable condition during annual ground-water monitoring events conducted at the site. No changes in on-site or surrounding land use were observed. Overall, the inspection indicated that the remedy is being implemented in accordance with the ROD and effectively deters unauthorized access to the site.

3.5 TECHNICAL ASSESSMENT

A technical assessment was conducted for OU-2 to determine whether the selected remedy is functioning as intended and remains protective of human health and the environment. The results of this assessment are presented below.

Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, ARARs, risk assumptions, and results of the site inspection indicates that the remedy is functioning as intended by the ROD.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

There have been no changes to the exposure assumptions, cleanup levels, and remedial action objectives that would affect the protectiveness of the remedy.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

There is no other information that would call into question the protectiveness of the remedy.

3.6 ISSUES

There are no issues at this site.

3.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Residual soil contamination remains at OU-2 above concentrations that would allow unrestricted reuse and unlimited exposure. As a result, the LUCs established in the ROD should remain in place to ensure that human exposure to contaminated soil is restricted. However, review of the historical data suggests that the area requiring LUCs is significantly smaller than the current 20 acres. Therefore, it is also recommended that the BCT re-examine the extent of soil contamination to determine if the area requiring LUCs can be reduced.

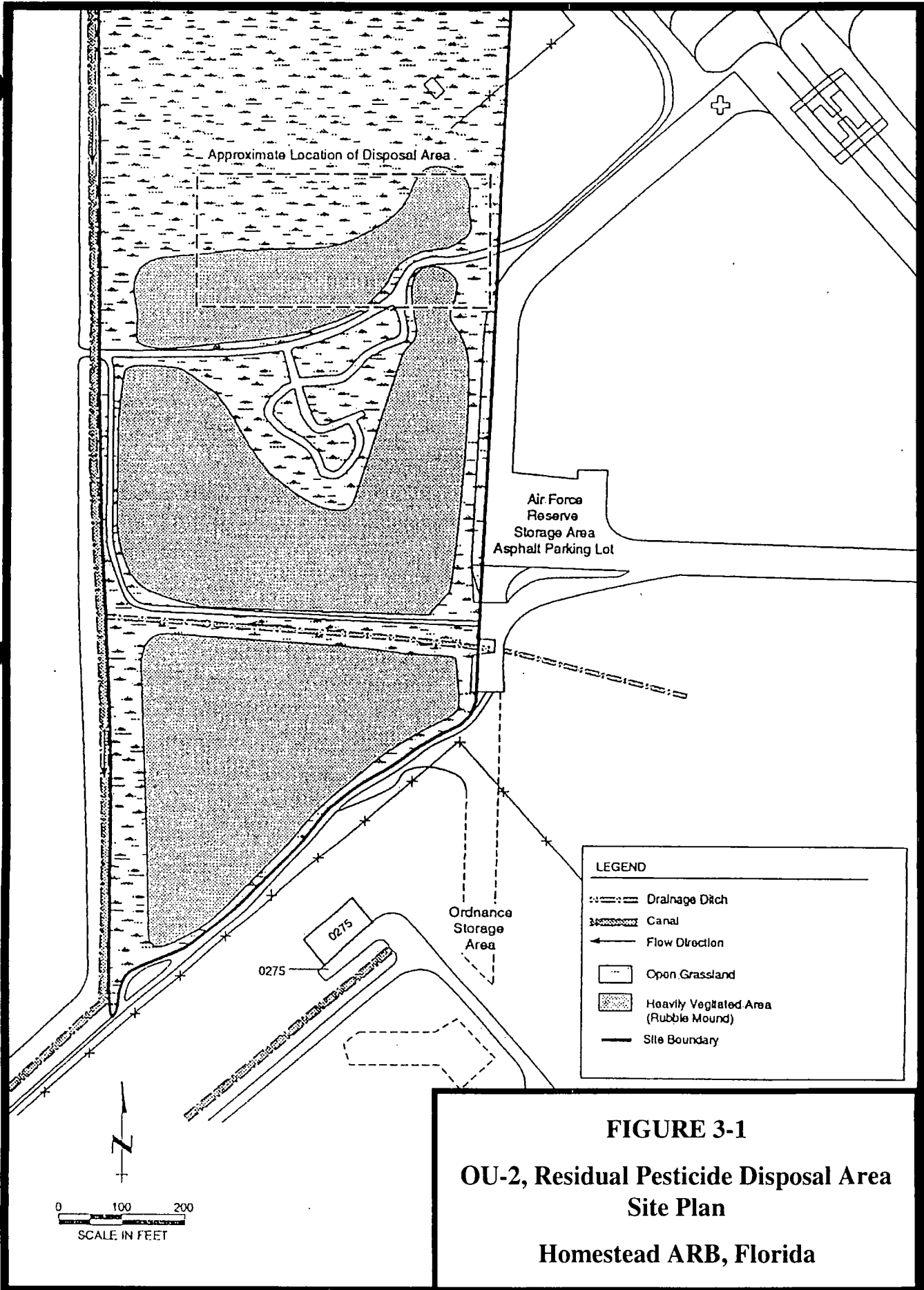
The five years of ground-water monitoring required by the ROD have been completed and indicate that no contamination is present at levels of concern in the ground water at OU-2. Therefore, it is recommended that ground-water monitoring be terminated, and the ROD monitoring wells should be abandoned in accordance with applicable regulatory guidelines. The site should be granted NFI with LUCs status.

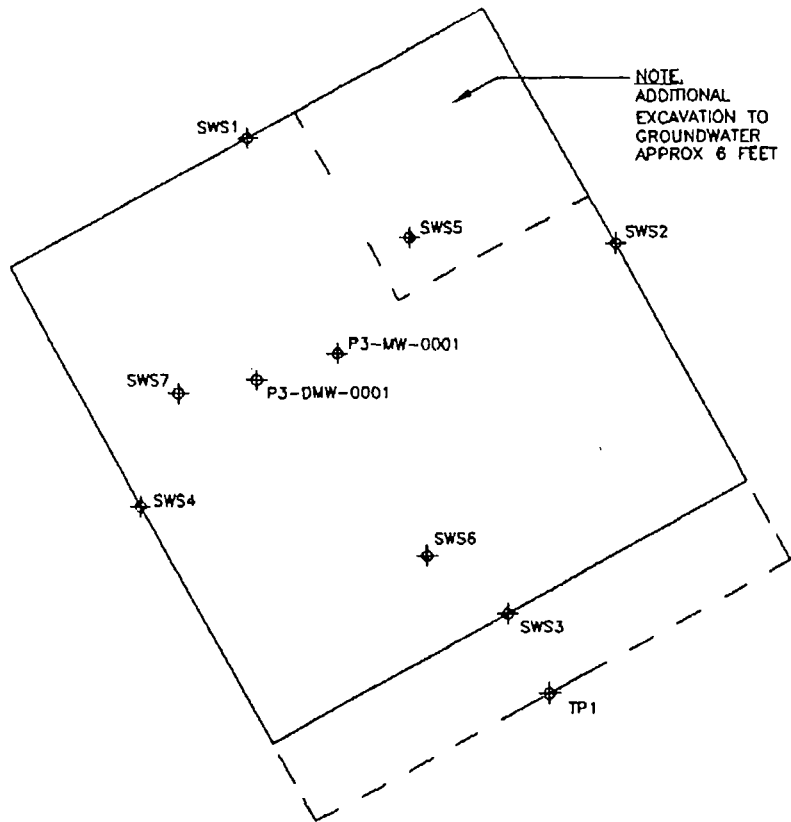
3.8 PROTECTIVENESS STATEMENT

Based on the completed activities, the intent and goals of the OU-2 ROD have been met and have been found to be protective of human health.

3.9 NEXT REVIEW

The next five-year review for OU-2 is required by December 2009, five years from the date of this review.





NOTE:
EXCAVATION 2 FOOT BLS

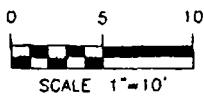
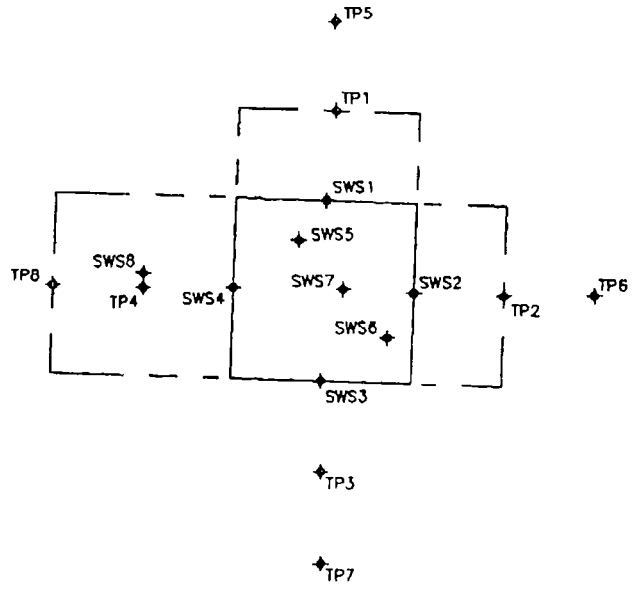


FIGURE 3-2
OU-2, Residual Pesticide Disposal Area
Area A Excavation
Homestead ARB, Florida



NOTE:
ENTIRE EXCAVATION
4 FEET BLS

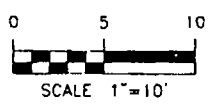


FIGURE 3-3
OU-2, Residual Pesticide Disposal Area
Area B Excavation
Homestead ARB, Florida

TABLE 3-1

OU-2, RESIDUAL PESTICIDE DISPOSAL AREA

GROUND-WATER ANALYTICAL RESULTS

YEAR 1 THROUGH 5 ANNUAL GROUND-WATER MONITORING

Well ID:	P3-MW-0001					
Client Sample ID:	OU-2-P3-MW-0001					
Event:		Year 1	Year 2	Year 3	Year 4	Year 5
Lab Sample ID:		AB60656		200107256-5	200207425-1	200307547-3
Date Sampled:		10/21/98	Jun-00	07/16/01	07/19/02	07/28/03
Analyte	GCTL	Result	Result	Result	Result	Result
PAH 8310 (ug/L)						
Acenaphthene	20	<0.0971	<3	<0.1	<0.1 M	<0.1
Acenaphthylene	210	<0.0971	<3	<0.1	<0.1	<0.1
Anthracene	2100	<0.0971	<0.3	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.2	<0.146	<0.2	<0.1	<0.1	<0.1
Benzo(a)pyrene	0.2	<0.146	<0.2	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	0.2	<0.146	<0.2	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	210	<0.738	<0.2	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	0.5	<0.146	<0.05	<0.1	<0.1 M	<0.1
Chrysene	4.8	<0.971	<1	<0.1	<0.1	<0.1
Dibenzof(a,h)anthracene	0.2	<0.146	<0.2	<0.1	<0.1	<0.1
Fluoranthene	280	<0.971	<0.3	0.38	<0.1	0.2
Fluorene	280	<0.971	<5	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	0.2	<0.146	<0.2	<0.1	<0.1	<0.1
Naphthalene	20	<1.94	<5	<0.1	<0.1	<0.1
Phenanthrene	210	<0.971	<5	<0.1	<0.1	<0.1
Pyrene	210	<0.971	<0.3	<0.1	<0.1	<0.1
1-Methylnaphthalene	20	<0.136	<5	<0.1	<0.1	<0.1
2-Methylnaphthalene	20	<0.097	<5	<0.1	<0.1	<0.1
Pesticides 8081A (ug/L)						
alpha-BHC	0.006	<0.0315	<0.01	<0.1	<0.1	<0.004
beta-BHC	0.02	<0.0525	<0.01	<0.1	<0.1	<0.006
delta-BHC	2.1	<0.0525	<0.01	<0.1	<0.1	<0.1
gamma-BHC (Lindane)	0.2	<0.042	<0.01	<0.1	<0.1	<0.1
Chlordane	2	NR	<0.01	<1	<1	<1
alpha-Chlordane	2	<0.0525	NR	NR	NR	NR
gamma-Chlordane	2	<0.0525	NR	NR	NR	NR
4,4'-DDD	0.1	<0.105	<0.01	<0.1	<0.1	<0.1
4,4'-DDE	0.1	<0.021	<0.01	<0.1	<0.1	<0.1
4,4'-DDT	0.1	<0.105	<0.01	<0.1	<0.1	<0.1
Aldrin	0.005	<0.042	<0.01	<0.1	<0.1	<0.003
Dieldrin	0.005	<0.021	<0.01	<0.1	<0.1	<0.003
Endosulfan I	42	<0.0525	<0.01	<0.1	<0.1	<0.1
Endosulfan II	42	<0.42	<0.01	<0.1	<0.1	<0.1
Endosulfan sulfate	NS	<0.105	<0.01	<0.1	<0.1	<0.1
Endrin	2	<0.063	<0.01	<0.1	<0.1	<0.1
Endrin aldehyde	NS	<0.105	<0.02	<0.1	<0.1	<0.1
Heptachlor	0.4	<0.0315	<0.01	<0.1	<0.1	<0.1
Heptachlor epoxide	0.2	<0.0525	<0.09	<0.1	<0.1	<0.1
Methoxychlor	40	<0.525	<0.01	<1	<1	<1
Toxaphene	3	<2.1	<0.25	<2	<2	<2

M=Matrix Effect

NR=Not Reported

NS=No Standard

Detects are bolded

GCTL=Groundwater Cleanup Target Level

GCTL exceedances are shaded

TABLE 3-1 (cont.)

OU-2, RESIDUAL PESTICIDE DISPOSAL AREA
GROUND-WATER ANALYTICAL RESULTS
YEAR 1 THROUGH 5 ANNUAL GROUND-WATER MONITORING

Well ID:	P3-MW-0001					
Client Sample ID:	OU-2-P3-MW-0001					
Event:		Year 1	Year 2	Year 3	Year 4	Year 5
Lab Sample ID:		AB60656		200107256-5	200207425-1	200307547-3
Date Sampled:		10/21/98	Jun-00	07/16/01	07/19/02	07/28/03
Analyte	GCTL	Result	Result	Result	Result	Result
PCB 8082 (ug/L)						
PCB-1016	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1221	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1232	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1242	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1248	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1254	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1260	0.5	NR	<0.07	<0.5	<0.5	<0.5
Metals 6010B/7470A (mg/L)						
Antimony	0.006	0.005	<0.005	<0.005	<0.005	<0.005
Arsenic	0.05	<0.025	<0.1	<0.01	<0.01	<0.01
Beryllium	0.004	<0.003	<0.002	<0.003	<0.004	<0.004
Cadmium	0.005	<0.005	<0.005	<0.004	<0.005	<0.005
Chromium	0.1	0.0372	0.008	<0.01	<0.01	<0.01
Copper	1	0.0142	<0.01	<0.01	<0.01	<0.01
Lead	0.015	0.007	<0.005	<0.005	<0.005	<0.005
Mercury	0.002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005
Nickel	0.1	<0.02	<0.002	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.01	<0.01	<0.01	<0.01
Silver	0.1	<0.015	<0.001	<0.01	<0.01	<0.01
Thallium	0.002	<0.001	<0.002	<0.002	<0.002	<0.002
Zinc	5	0.0218	<0.01	<0.01	0.028	0.012

M=Matrix Effect
NR=Not Reported
NS=No Standard
Detects are bolded
GCTL=Groundwater Cleanup Target Level
GCTL exceedances are shaded

TABLE 3-1 (cont.)

OU-2, RESIDUAL PESTICIDE DISPOSAL AREA
GROUND-WATER ANALYTICAL RESULTS

YEAR 1 THROUGH 5 ANNUAL GROUND-WATER MONITORING

Well ID:	MW-2					
Client Sample ID:	OU-2-MW-2					
Event:	Year 1	Year 2	Year 3	Year 4	Year 5	
Lab Sample ID:	AB60657		2001/07256-6	2002/07425-2	2003/07547-4	
Date Sampled:	10/21/98	Jun-00	07/16/01	07/19/02	07/28/03	
Analyte	GCTL	Result	Result	Result	Result	Result
PAH 8310 (ug/L)						
Acenaphthene	20	<0.98	<3	<0.1	<0.1	<0.1
Acenaphthylene	210	<0.98	<3	<0.1	<0.1	<0.1
Anthracene	2100	<0.98	<0.3	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.2	<0.147	<0.2	<0.1	<0.1	<0.1
Benzo(a)pyrene	0.2	<0.147	<0.2	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	0.2	<0.147	<0.2	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	210	<0.745	<0.2	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	0.5	<0.147	<0.05	<0.1	<0.1	<0.1
Chrysene	4.8	<0.98	<1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.2	<0.147	<0.2	<0.1	<0.1	<0.1
Fluoranthene	280	<0.98	<0.3	<0.1	<0.1	<0.1
Fluorane	280	<0.98	<5	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	0.2	<0.147	<0.2	<0.1	<0.1	<0.1
Naphthalene	20	<1.96	<5	<0.1	<0.1	<0.1
Phenanthrene	210	<0.98	<5	<0.1	<0.1	<0.1
Pyrene	210	<0.98	<0.3	<0.1	<0.1	<0.1
1-Methylnaphthalene	20	<0.137	<5	<0.1	<0.1	<0.1
2-Methylnaphthalene	20	<0.098	<5	<0.1	<0.1	<0.1
Pesticides 8081A (ug/L)						
alpha-BHC	0.006	<0.0315	<0.01	<0.1	<0.1	<0.004
beta-BHC	0.02	<0.0525	<0.01	<0.1	<0.1	<0.006
delta-BHC	2.1	<0.0525	<0.01	<0.1	<0.1	<0.1
gamma-BHC (Lindane)	0.2	<0.042	<0.01	<0.1	<0.1	<0.1
Chlordane	2	NR	<0.01	<1	<1	<1
alpha-Chlordane	2	<0.0525	NR	NR	NR	NR
gamma-Chlordane	2	<0.0525	NR	NR	NR	NR
4,4'-DDD	0.1	<0.105	<0.01	<0.1	<0.1	<0.1
4,4'-DDE	0.1	<0.021	<0.01	<0.1	<0.1	<0.1
4,4'-DDT	0.1	<0.105	<0.01	<0.1	<0.1	<0.1
Aldrin	0.005	<0.042	<0.01	<0.1	<0.1	<0.003
Dieldrin	0.005	<0.021	<0.01	<0.1	<0.1	<0.003
Endosulfan I	42	<0.0525	<0.01	<0.1	<0.1	<0.1
Endosulfan II	42	<0.42	<0.01	<0.1	<0.1	<0.1
Endosulfan sulfate	NS	<0.105	<0.01	<0.1	<0.1	<0.1
Endrin	2	<0.063	<0.01	<0.1	<0.1	<0.1
Endrin aldehyde	NS	<0.105	<0.02	<0.1	<0.1	<0.1
Heptachlor	0.4	<0.0315	<0.01	<0.1	<0.1	<0.1
Heptachlor epoxide	0.2	<0.0525	<0.09	<0.1	<0.1	<0.1
Methoxychlor	40	<0.525	<0.01	<1	<1	<1
Toxaphene	3	<2.1	<0.25	<2	<2	<2

M=Matrix Effect
NR=Not Reported
NS=No Standard
Detects are bolded
GCTL=Groundwater Cleanup Target Level
GCTL exceedances are shaded

TABLE 3-1 (cont.)

OU-2, RESIDUAL PESTICIDE DISPOSAL AREA

GROUND-WATER ANALYTICAL RESULTS

YEAR 1 THROUGH 5 ANNUAL GROUND-WATER MONITORING

Well ID:	MW-2					
Client Sample ID:	OU-2-MW-2					
Event:		Year 1	Year 2	Year 3	Year 4	Year 5
Lab Sample ID:		AB60657		2001/07256-6	2002/07425-2	2003/07547-4
Date Sampled:		10/21/98	Jun-00	07/16/01	07/19/02	07/28/03
Analyte:	GCTL	Result	Result	Result	Result	Result
PCB 8082 (ug/L)						
PCB-1016	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1221	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1232	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1242	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1248	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1254	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1260	0.5	NR	<0.07	<0.5	<0.5	<0.5
Metals 6010B/7470A (mg/L)						
Antimony	0.006	<0.002	<0.005	0.005	<0.005	<0.005
Arsenic	0.05	<0.025	<0.01	<0.01	<0.01	<0.01
Beryllium	0.004	<0.003	<0.002	<0.003	<0.004	<0.004
Cadmium	0.005	<0.005	<0.005	<0.004	<0.005	<0.005
Chromium	0.1	0.0115	<0.005	<0.01	<0.01	<0.01
Copper	1	<0.005	<0.01	<0.01	<0.01	<0.01
Lead	0.015	<0.003	<0.005	<0.005	<0.005	<0.005
Mercury	0.002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005
Nickel	0.1	<0.02	<0.002	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.01	<0.01	<0.01	<0.01
Silver	0.1	<0.015	<0.001	<0.01	<0.01	<0.01
Thallium	0.002	<0.001	<0.002	<0.002	<0.002	<0.002
Zinc	5	<0.01	<0.01	<0.01	0.016	0.012

M=Matrix Effect

NR=Not Reported

NS=No Standard

Detects are bolded

GCTL=Groundwater Cleanup Target Level

GCTL exceedances are shaded

TABLE 3-1 (cont.)

OU-2, RESIDUAL PESTICIDE DISPOSAL AREA

GROUND-WATER ANALYTICAL RESULTS

YEAR 1 THROUGH 5 ANNUAL GROUND-WATER MONITORING

Well ID:		MW-3				
Client Sample ID:		OU-2-MW-3				
Event:		Year 1	Year 2	Year 3	Year 4	Year 5
Lab Sample ID:		AB60658		2001/070255-1	2002/07425-3	2003/07547-5
Date Sampled:		10/21/98	Jun-00	07/16/01	07/19/02	07/28/03
Analyte	GCTL	Result	Result	Result	Result	Result
PAH 8310 (ug/L)						
Acenaphthene	20	<0.952	<3	<0.1	<0.1	<0.1
Acenaphthylene	210	<0.952	<3	<0.1	<0.1	<0.1
Anthracene	2100	<0.952	<0.3	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.2	<0.143	<0.2	<0.1	<0.1	<0.1
Benzo(a)pyrene	0.2	<0.143	<0.2	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	0.2	<0.143	<0.2	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	210	<0.724	<0.2	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	0.5	<0.143	<0.05	<0.1	<0.1	<0.1
Chrysene	4.8	<0.952	<1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.2	<0.143	<0.2	<0.1	<0.1	<0.1
Fluoranthene	280	<0.952	<0.3	<0.1	<0.1	<0.1
Fluorone	280	<0.952	<5	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	0.2	<0.143	<0.2	<0.1	<0.1	<0.1
Naphthalene	20	<1.9	<5	<0.1	<0.1	<0.1
Phenanthrene	210	<0.952	<5	<0.1	<0.1	<0.1
Pyrene	210	<0.952	<0.3	<0.1	<0.1	<0.1
1-Methylnaphthalene	20	<0.133	<5	<0.1	<0.1	<0.1
2-Methylnaphthalene	20	<0.0952	<5	<0.1	<0.1	<0.1
Pesticides-8081A (ug/L)						
alpha-BHC	0.006	<0.0315	<0.01	<0.1	<0.1	<0.004
beta-BHC	0.02	<0.0525	<0.01	<0.1	<0.1	<0.006
delta-BHC	2.1	<0.0525	<0.01	<0.1	<0.1	<0.1
gamma-BHC (Lindane)	0.2	<0.042	<0.01	<0.1	<0.1	<0.1
Chlordane	2	NR	<0.01	<1	<1	<1
alpha-Chlordane	2	<0.0525	NR	NR	NR	NR
gamma-Chlordane	2	<0.0525	NR	NR	NR	NR
4,4'-DDD	0.1	<0.105	<0.01	<0.1	<0.1	<0.1
4,4'-DDE	0.1	<0.021	<0.01	<0.1	<0.1	<0.1
4,4'-DDT	0.1	<0.105	<0.01	<0.1	<0.1	<0.1
Aldrin	0.005	<0.042	<0.01	<0.1	<0.1	<0.003
Dieldrin	0.005	<0.021	<0.01	<0.1	<0.1	<0.003
Endosulfan I	42	<0.0525	<0.01	<0.1	<0.1	<0.1
Endosulfan II	42	<0.42	<0.01	<0.1	<0.1	<0.1
Endosulfan sulfate	NS	<0.105	<0.01	<0.1	<0.1	<0.1
Endrin	2	<0.063	<0.01	<0.1	<0.1	<0.1
Endrin aldehyde	NS	<0.105	<0.02	<0.1	<0.1	<0.1
Heptachlor	0.4	<0.0315	<0.01	<0.1	<0.1	<0.1
Heptachlor epoxide	0.2	<0.0525	<0.09	<0.1	<0.1	<0.1
Methoxychlor	40	<0.525	<0.01	<1	<1	<1
Toxaphene	3	<2.1	<0.25	<2	<2	<2

M=Matrix Effect
 NR=Not Reported
 NS=No Standard
 Detects are bolded
 GCTL=Groundwater Cleanup Target Level
 GCTL exceedances are shaded

TABLE 3-1 (cont.)

OU-2, RESIDUAL PESTICIDE DISPOSAL AREA
GROUND-WATER ANALYTICAL RESULTS

YEAR 1 THROUGH 5 ANNUAL GROUND-WATER MONITORING

Well ID:	MW-3					
Client Sample ID:	OU-2-MW-3					
Event:		Year 1	Year 2	Year 3	Year 4	Year 5
Lab Sample ID:		AB60658		2001070256-1	200207425-3	200307547-5
Date Sampled:		10/21/98	Jun-00	07/16/01	07/19/02	07/28/03
Analyte	GCTL	Result	Result	Result	Result	Result
PCB 8082 (ug/L)						
PCB-1016	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1221	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1232	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1242	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1248	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1254	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1260	0.5	NR	<0.07	<0.5	<0.5	<0.5
Metals 6018B/7470A (mg/L)						
Antimony	0.006	0.002	<0.005	<0.005	<0.005	<0.005
Arsenic	0.05	<0.025	<0.01	<0.01	<0.01	<0.01
Beryllium	0.004	<0.003	<0.002	<0.003	<0.004	<0.004
Cadmium	0.005	<0.005	<0.005	<0.004	<0.005	<0.005
Chromium	0.1	0.012	<0.005	<0.01	<0.01	<0.01
Copper	1	<0.005	<0.01	<0.01	<0.01	<0.01
Lead	0.015	<0.003	<0.005	<0.005	<0.005	<0.005
Mercury	0.002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005
Nickel	0.1	<0.02	<0.002	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.01	<0.01	<0.01	<0.01
Silver	0.1	<0.015	<0.001	<0.01	<0.01	<0.01
Thallium	0.002	<0.001	<0.002	<0.002	<0.002	<0.002
Zinc	5	<0.01	<0.01	<0.01	<0.01	0.01

M=Matrix Effect
NR=Not Reported
NS=No Standard
Detects are bolded
GCTL=Groundwater Cleanup Target Level
GCTL exceedances are shaded

TABLE 3-1 (cont.)

OU-2, RESIDUAL PESTICIDE DISPOSAL AREA
GROUND-WATER ANALYTICAL RESULTS

YEAR 1 THROUGH 5 ANNUAL GROUND-WATER MONITORING

Well ID:	P3-DMW-0001					
Client Sample ID:	OU-2-P3-DMW-0001					
Event:		Year 1	Year 2	Year 3	Year 4	Year 5
Lab Sample ID:		ABG0654		2001/07256-4	2002/07425-4	2003/07547-2
Date Sampled:		10/21/98	June 00	07/16/01	07/19/02	07/28/03
Analyte	GCTL	Result	Result	Result	Result	Result
PAH 8310 (ug/L)						
Acenaphthene	20	<0.962	<3	<0.1	<0.1	<0.1
Acenaphthylene	210	<0.962	<3	<0.1	<0.1	<0.1
Anthracene	2100	<0.962	<0.3	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.2	<0.144	<0.2	<0.1	<0.1	<0.1
Benzo(a)pyrene	0.2	<0.144	<0.2	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	0.2	<0.144	<0.2	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	210	<0.731	<0.2	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	0.5	<0.144	<0.05	<0.1	<0.1	<0.1
Chrysene	4.8	<0.962	<1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.2	<0.144	<0.2	<0.1	<0.1	<0.1
Fluoranthene	280	<0.962	<0.3	0.84	<0.1	<0.1
Fluorene	280	<0.962	<5	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	0.2	<0.144	<0.2	<0.1	<0.1	<0.1
Naphthalene	20	<1.92	<5	<0.1	<0.1	<0.1
Phenanthrene	210	<0.962	<5	<0.1	<0.1	<0.1
Pyrene	210	<0.962	<0.3	0.67	<0.1	<0.1
1-Methylnaphthalene	20	<0.135	<5	<0.1	<0.1	<0.1
2-Methylnaphthalene	20	<0.096	<5	<0.1	<0.1	0.64
Pesticides B081A (ug/L)						
alpha-BHC	0.006	<0.0315	<0.01	<0.1	<0.1	<0.004
beta-BHC	0.02	<0.0525	<0.01	<0.1	<0.1	<0.006
delta-BHC	2:1	<0.0525	<0.01	<0.1	<0.1	<0.1
gamma-BHC (Lindane)	0.2	<0.042	<0.01	<0.1	<0.1	<0.1
Chlordane	2	NR	<0.01	<1	<1	<1
alpha-Chlordane	2	<0.0525	NR	NR	NR	NR
gamma-Chlordane	2	<0.0525	NR	NR	NR	NR
4,4'-DDD	0.1	<0.105	<0.01	<0.1	<0.1	<0.1
4,4'-DDE	0.1	<0.021	<0.01	<0.1	<0.1	<0.1
4,4'-DDT	0.1	<0.105	<0.01	<0.1	<0.1	<0.1
Aldrin	0.005	<0.042	<0.01	<0.1	<0.1	<0.003
Dieldrin	0.005	<0.021	<0.01	<0.1	<0.1	<0.003
Endosulfan I	42	<0.0525	<0.01	<0.1	<0.1	<0.1
Endosulfan II	42	<0.42	<0.01	<0.1	<0.1	<0.1
Endosulfan sulfate	NS	<0.105	<0.01	<0.1	<0.1	<0.1
Endrin	2	<0.063	<0.01	<0.1	<0.1	<0.1
Endrin aldehyde	NS	<0.105	<0.02	<0.1	<0.1	<0.1
Heptachlor	0.4	<0.0315	<0.01	<0.1	<0.1	<0.1
Heptachlor epoxide	0.2	<0.0525	<0.09	<0.1	<0.1	<0.1
Methoxychlor	40	<0.525	<0.01	<1	<1	<1
Toxaphene	3	<2.1	<0.25	<2	<2	<2

M=Matrix Effect
NR=Not Reported
NS=No Standard
Detects are bolded
GCTL=Groundwater Cleanup Target Level
GCTL exceedances are shaded

TABLE 3-1 (cont.)

OU-2, RESIDUAL PESTICIDE DISPOSAL AREA
GROUND-WATER ANALYTICAL RESULTS

YEAR 1 THROUGH 5 ANNUAL GROUND-WATER MONITORING

Well ID:	P3-DMW-0001					
Client Sample ID:	OU-2-P3-DMW-0001					
Event:	Year 1	Year 2	Year 3	Year 4	Year 5	
Lab Sample ID:	ABG0654		2001/07256-4	2002/07425-4	2003/07547-2	
Date Sampled:	10/21/98	June-00	07/16/01	07/19/02	07/28/03	
Analyte	GCTL	Result	Result	Result	Result	Result
PCB 8082 (ug/L)						
PCB-1016	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1221	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1232	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1242	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1248	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1254	0.5	NR	<0.07	<0.5	<0.5	<0.5
PCB-1260	0.5	NR	<0.07	<0.5	<0.5	<0.5
Metals 6010B/7470A (mg/L)						
Antimony	0.005	<0.002	<0.005	<0.005	<0.005	<0.005
Arsenic	0.05	<0.025	<0.01	<0.01	<0.01	<0.01
Beryllium	0.004	<0.003	<0.002	<0.003	<0.004	<0.004
Cadmium	0.005	<0.005	<0.005	<0.004	<0.005	<0.005
Chromium	0.1	<0.01	<0.005	<0.01	<0.01	<0.01
Copper	1	<0.005	<0.01	<0.01	<0.01	<0.01
Lead	0.015	<0.003	<0.005	<0.005	<0.005	<0.005
Mercury	0.002	<0.0002	<0.001	<0.0005	<0.0005	<0.0005
Nickel	0.1	<0.02	<0.002	<0.01	<0.01	<0.01
Selenium	0.05	<0.005	<0.01	<0.01	<0.01	<0.01
Silver	0.1	<0.015	<0.001	<0.01	<0.01	<0.01
Thallium	0.002	<0.001	<0.002	<0.002	<0.002	<0.002
Zinc	5	0.0168	<0.01	<0.01	<0.01	0.015

A=Matrix Effect
NR=Not Reported
NS=No Standard
Detects are bolded
GCTL=Groundwater Cleanup Target Level
GCTL exceedances are shaded

4.0 OPERABLE UNIT 3

4.1 HISTORY OF CONTAMINATION

OU-3 is the PCB Spill Area, also known as Site SS-13 (formerly Site SP-3). The site is located within the northwest portion of Homestead ARE, as depicted on Figure 1-2. The site encompasses approximately 0.5 acres and was located within the northern portion of the Civil Engineering (CE) Storage Area, immediately behind former Building 220. The site was redeveloped in 1996, with the construction of the new CE Complex. Currently the majority of the site is located beneath the current shop building at the northern end of the CE Complex, as depicted in Figure 4-1.

The area was previously used to store transformers, and in 1981 a spill of less than 100 gallons of PCB-containing (>50 and <500 mg/L) transformer fluid occurred immediately southeast of former Building 220. The impacted soil was analyzed and found to contain less than 50 mg/kg of PCBs. The impacted soil subsequently was excavated and disposed of off site.

A list of important historical events and relevant dates in the site chronology are shown below. The identified events are illustrative, not comprehensive.

Event	Date
Transformer Fluid Spill	1981
IRP Phase 1- Records Search	1983
RI	1991 and 1993
ROD	1994

4.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

An IRP Phase I Records Search was completed in 1983. OU-3 was determined to have a low potential for environmental contamination. At that time, no further action was recommended for the site.

In 1991 an RI was conducted to verify that all of the PCB-contaminated soil had been removed during the original spill response. Ten soil samples were collected from the upper two feet of the soil/weathered bedrock, and four ground-water samples were collected from newly-installed monitoring wells. In 1993, an additional monitoring well was installed in the center of the site, and one soil and one ground-water sample were collected.

Significant results of these investigations revealed the following:

Soil

PCBs were not detected in any of the soil samples collected during the 1991 or 1993 sampling events.

Ground Water

PCBs were not detected in any of the ground-water samples collected during the 1991 or 1993 sampling events.

Based on the results of the RI, the site moved on to the ROD phase of the CERCLA process.

4.3 REMEDIAL ACTIONS

4.3.1 Remedy Selection

The OU-3 ROD (Montgomery Watson, 1994) was finalized in June 1994. The alternative selected was:

No Further Action

4.3.2 Remedy Implementation

No further response actions have taken place at the site.

4.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

4.4 FIVE-YEAR REVIEW PROCESS

4.4.1 Document Review

The remedy for OU-3 is No Further Action and no contamination was left in place. Therefore, a formal five-year review and protectiveness evaluation was not conducted. The review was limited to an evaluation of historical data.

4.4.2 Data Review

PCBs were not detected in any of the soil or ground-water samples collected during the 1991 and 1993 investigations.

4.4.3 Site Inspection

The remedy for OU-3 is No Further Action, and no contamination was left in place. As such, there are no remedy components that require inspection.

4.5 TECHNICAL ASSESSMENT

As described above, the remedy for OU-3 is No Further Action, and no contamination was left in place. Therefore, a technical assessment of remedy protectiveness was not conducted.

4.6 ISSUES

There are no issues at this site.

4.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

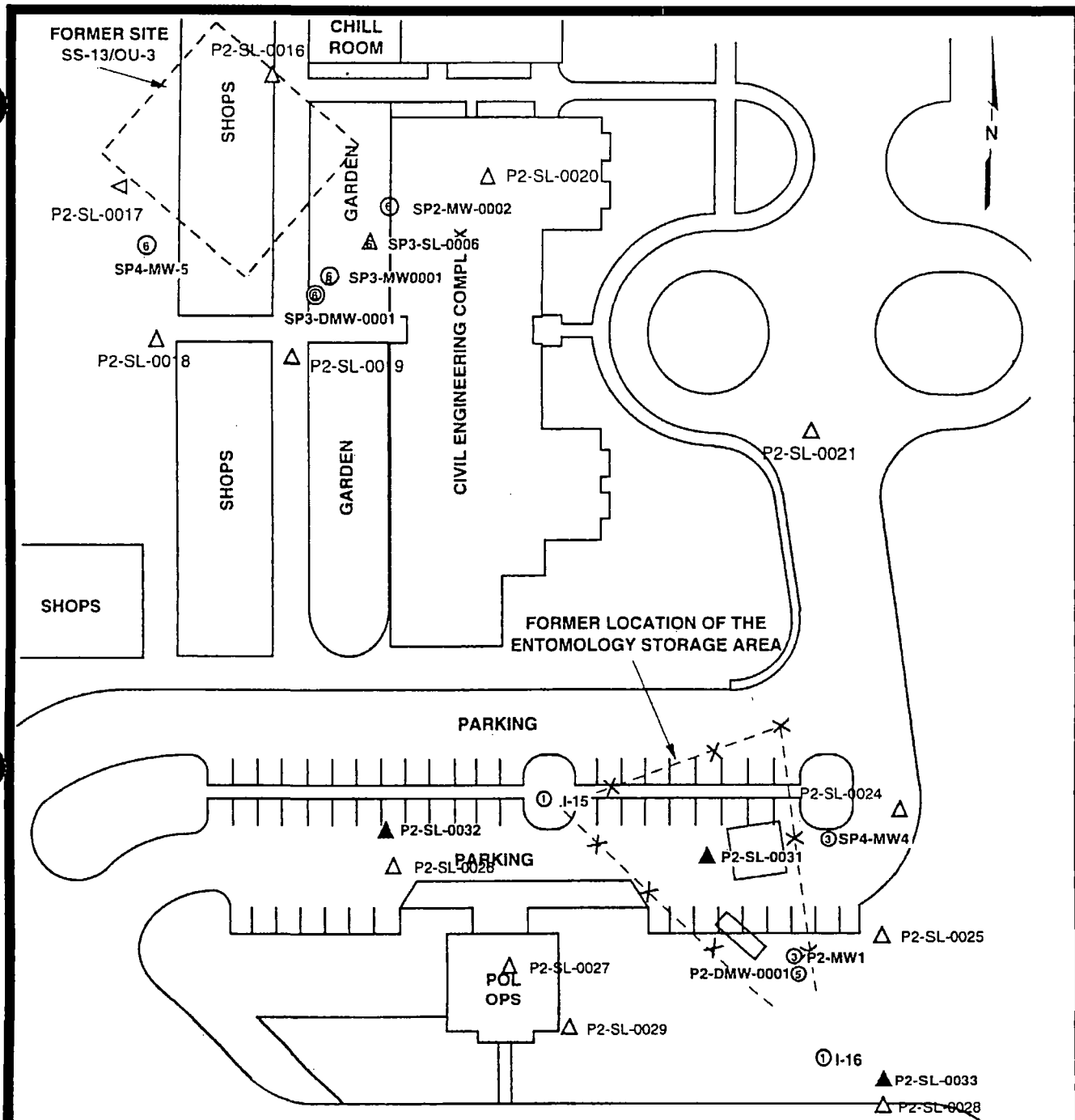
None.

4.8 PROTECTIVENESS STATEMENT

As described above, the remedy for OU-3 is No Further Action, and no contamination was left in place. Therefore, a protectiveness evaluation was not conducted.

4.9 NEXT REVIEW

Because no contamination remains at OU-3, five-year reviews are not required in the future.



LEGEND

TANK FARM

- DEEP MONITORING WELL
- △ 1991 SOIL BORING LOCATIONS
- ▲ 1993 SOIL BORING LOCATION
- ① MONITORING WELL, INSTALLED 1984 BY SAIC
- ② MONITORING WELL, INSTALLED 1989 BY GERAGHTY & MILLER
- ③ MONITORING WELL, INSTALLED 1993 BY MONTGOMERY WATSON
- ④ SITE SS-13/OU-3 SAMPLE LOCATION

■ New Site Layout

APPROXIMATE SITE LAYOUT IS NOT TO SCALE

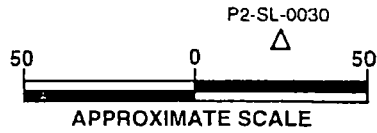


FIGURE 4-1
OU-3, PCB Spill Area
Site Plan
Homestead ARB, Florida

5.0 OPERABLE UNIT 4

5.1 HISTORY OF CONTAMINATION

OU-4 is the Motor Pool Oil Leak Area, also known as Site SS-8 (formerly Site SP-2). The site is located along the northern portion of the western boundary of Homestead ARE, as depicted on Figure 1-2. Property immediately surrounding the site consists of vacant fields of sparse grasses overlying weathered limestone. The Boundary Canal is located approximately 250 feet west of the site, and the bulk fuel storage facility (a non-CERCLA IRP site, designated as SS-2A) is located approximately 150 feet northeast of the site, as depicted in Figure 5-1.

OU-4 consists primarily of an asphalt lot that is surrounded on all four sides by a shallow drainage ditch system. There are two buildings located within the site boundary (Buildings 307 and 312). Building 312 is the main motor pool shop. Prior to Hurricane Andrew, the site housed numerous roofed concrete slabs used as loading bays and wash racks. The covers and frames of these facilities were destroyed by the hurricane.

The motor pool has been in operation at this location since the installation was reactivated in the 1950s. The site is primarily used for cleaning, servicing, and repairing vehicles. Waste oils were collected and stored in two 500-gallon aboveground storage tanks (ASTs) located northeast of Building 307. Leaks from the tanks and spills from used batteries were reported at various times since the 1960s.

A list of important historical events and relevant dates in the site chronology are shown below. The identified events are illustrative, not comprehensive.

Event	Date
Motor Pool Operations	1950s-Present
IRP Phase I- Records Search	1983
IRP Phase II- Confirmation/Quantification Study	1986
IRP Phase IV- Additional Investigations	1988
RI	1991 and 1993
BRA	1994
FS	`994
ROD	`995
ROD Implementation	1996
Ground-Water Monitoring	1996 and 2001
Voluntary Removal Action	2000

5.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

An IRP Phase I Records Search was completed in 1983. OU-4 was determined to have a moderate to high potential for environmental contamination, due to the moderate quantity of liquid wastes used and the high potential for contaminant migration in site surface and ground waters.

In 1988 and 1989, the IRP Phase IV - Additional Investigation was conducted in order to determine the lateral extent of contamination. Based on the results of this investigation, RIs were conducted at the site in 1991 and 1993.

Significant results of these investigations revealed the following:

Soil
Constituents detected in OU-4 soil include VOCs, SVOCs, and metals. Toluene was the only VOC detected, and it was detected only in one sample. The primary SVOCs detected were PAHs. Because the samples were collected beneath or adjacent to paved surfaces, the asphalt may have been a source of the PAH contamination. A total of 13 metals were detected in the soil samples, including elevated levels of lead.

Ground Water
Constituents detected in OU-4 ground water were limited to metals. A total of 14 metals were detected during the 1991 investigation, including elevated levels of aluminum, chromium, and lead. The elevated metal concentrations were suspected to be attributable to high turbidity in the samples. During the 1993 investigation, samples were collected for select metal analyses for both total and dissolved constituents. Concentrations of target metals were found to be significantly lower than those detected in 1991, and no dissolved concentrations of either chromium or lead were detected.

Based on the results of the RI/BRA, the site moved on to the FS and Proposed Plan phases of the CERCLA process.

5.3 REMEDIAL ACTIONS

5.3.1 Remedy Selection

The OU-4 ROD (Montgomery Watson, 1995) was finalized in January 1995. The alternative selected was:

Institutional Controls and Ground-Water Monitoring

The selected remedy consisted of:

- Implementation of deed restrictions or restrictive covenants to limit usage of the site to the installation worker and to limit construction activities to only those where workers are appropriately protected, and erosion and silt control implemented,
- Site fencing and signage indicating use of the site,
- Semi-annual ground-water monitoring for two years to assess potential release of contaminants from the identified source, and
- Five-year review to determine whether the remedy remains protective of human health and the environment.

5.3.2 Remedy Implementation

Restrictive covenants have not been implemented because the property remains in APRC control. Currently, access to the property is limited to site workers, and construction activities that would require excavation of soil are monitored by the Environmental Flight to ensure that personnel are not exposed to unacceptable levels of contamination. The perimeter fencing and signage required by the ROD were installed in April and May 1996.

Semi-annual ground-water monitoring was conducted in February and August 1996, as required by the ROD. Samples were analyzed for SVOCs and total and dissolved metals. The ROD-required ground-water monitoring activities were discontinued after the first year of monitoring; however, additional ground-water sampling was conducted in July 2001.

Although not required by the ROD, in 2000 a removal action was conducted within the drainage ditches located near the northeastern corner of the site and across Elmendorf Street from the bulk fuel storage area. Approximately 105 tons of lead- and arsenic-contaminated soil, rock, and detrital material were excavated from the drainage ditches and disposed of off site. The ditches were excavated to a depth of approximately one foot deep, four feet wide, and 600 feet long.

5.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

5.4 FIVE-YEAR REVIEW

5.4.1 Document Review

This five-year review consisted of a review of relevant documents including the BRA, ROD, ROD implementation report, voluntary remedial action report, and ground-water monitoring reports.

5.4.2 Data Review

Data from previous investigation, confirmation sampling, and monitoring activities were compared against currently applicable risk-based cleanup criteria to evaluate whether constituents remain in place at concentrations that exceed unlimited exposure and unrestricted reuse criteria.

Soil Contamination

Data from all previous investigations were compared to the SCTLs for the residential direct exposure scenario. Five PAHs (benzo(a) anthracene, benzo(a) pyrene, benzo(b) fluoranthene, dibenz(a, h) anthracene, and indeno(1, 2,3-cd) pyrene), and arsenic were detected in soil at concentrations exceeding the current residential SCTLs. The maximum concentrations of benzo(a) pyrene (5.5 mg/kg), benzo(b) fluoranthene (7 mg/kg), and dibenz(a, h) anthracene (1.2 mg/kg) also exceeded the commercial/industrial SCTLs. The majority of the contamination was detected at soil borings SP2SL0001 and SP2SL0002, with the highest PAH concentrations in the 3- to 4-foot depth interval at soil boring SP2SL0001.

Ground-Water Contamination

Post-ROD monitoring data were reviewed from semi-annual monitoring conducted in February and August 1996 (Table 5-1) and voluntary ground-water monitoring performed in 2001 (Table 5-2). No SVOCs were detected and calcium was the only metal detected. Based on the 1996 monitoring results, monitoring was discontinued after the first year of monitoring. Additional ground-water sampling was conducted in July 2001. Monitoring well HS-9 was sampled for TRPH, which was not detected. Overall, the data review indicates that there are not significant site-related impacts to ground water at OU-4.

5.4.3 Site Inspection

A site inspection was conducted at OU-4 on 31 July 2003. The site remains paved and perimeter fencing required by the ROD remains in place and no damage was observed. No indications of trespassing, vandalism, or unauthorized excavation were observed. Monitoring wells were visually inspected and found to be locked

and in good condition. No changes in on-site or surrounding land use were observed. Overall, the inspection indicated that the remedy is being implemented in accordance with the ROD and effectively deters unauthorized access to the site.

5.5 TECHNICAL ASSESSMENT

A technical assessment was conducted for OU-4 to determine whether the selected remedy is functioning as intended and remains protective of human health and the environment. The results of this assessment are presented below.

Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, ARARs, risk assumptions, and results of the site inspection indicates that the remedy is functioning as intended by the ROD.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

Because land use associated with OU-4 has not changed significantly, the exposure assumptions used to evaluate risks in the baseline risk assessment remain valid. The remedy was selected based on these risk estimates and therefore remains protective.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

There is no other information that would call into question the protectiveness of the remedy.

5.6 ISSUES

There are no issues at this site.

5.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Residual soil contamination remains at OU-4 above concentrations that would allow unrestricted reuse and unlimited exposure. Therefore, the LUCs established in the ROD should remain in place to ensure that human exposure to unacceptable contaminant concentrations in soil is restricted.

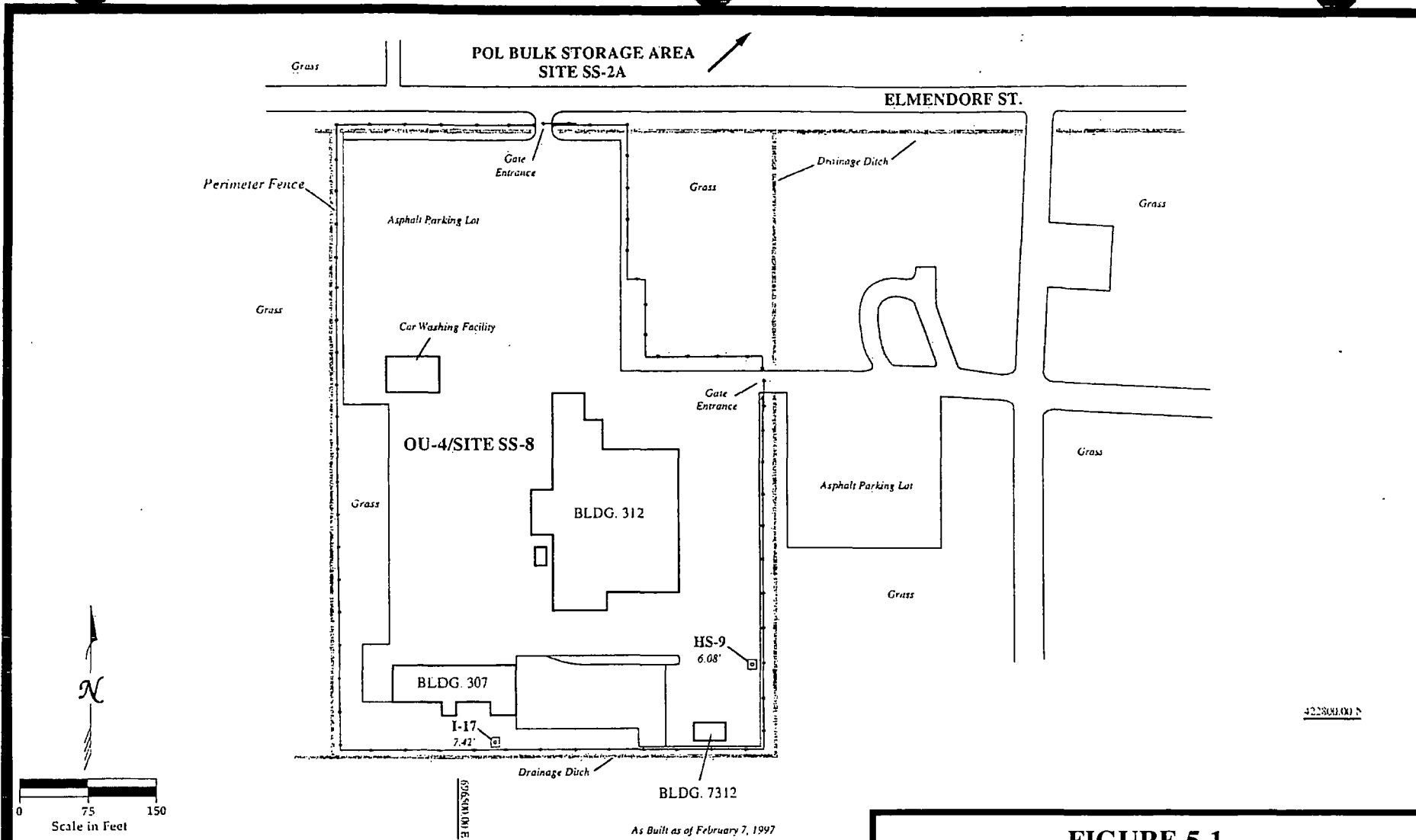
Semi-annual ground-water monitoring conducted in 1996 and 2001 indicate that there are no constituents at levels of concern within the site ground water. Therefore, further ground-water monitoring should not be required, and the ROD monitoring wells should be abandoned according to applicable regulatory guidelines. The site should be granted NFI with LUCs status.

5.8 PROTECTIVENESS STATEMENT

Based on the completed activities, the intent and goals of the OU-4 ROD have been met and found to be protective of human health and the environment.

5.9 NEXT REVIEW



The next five-year review for OU-4 is required by December 2009, five years from the date of this review.




OHM Remediation
Services Corp.

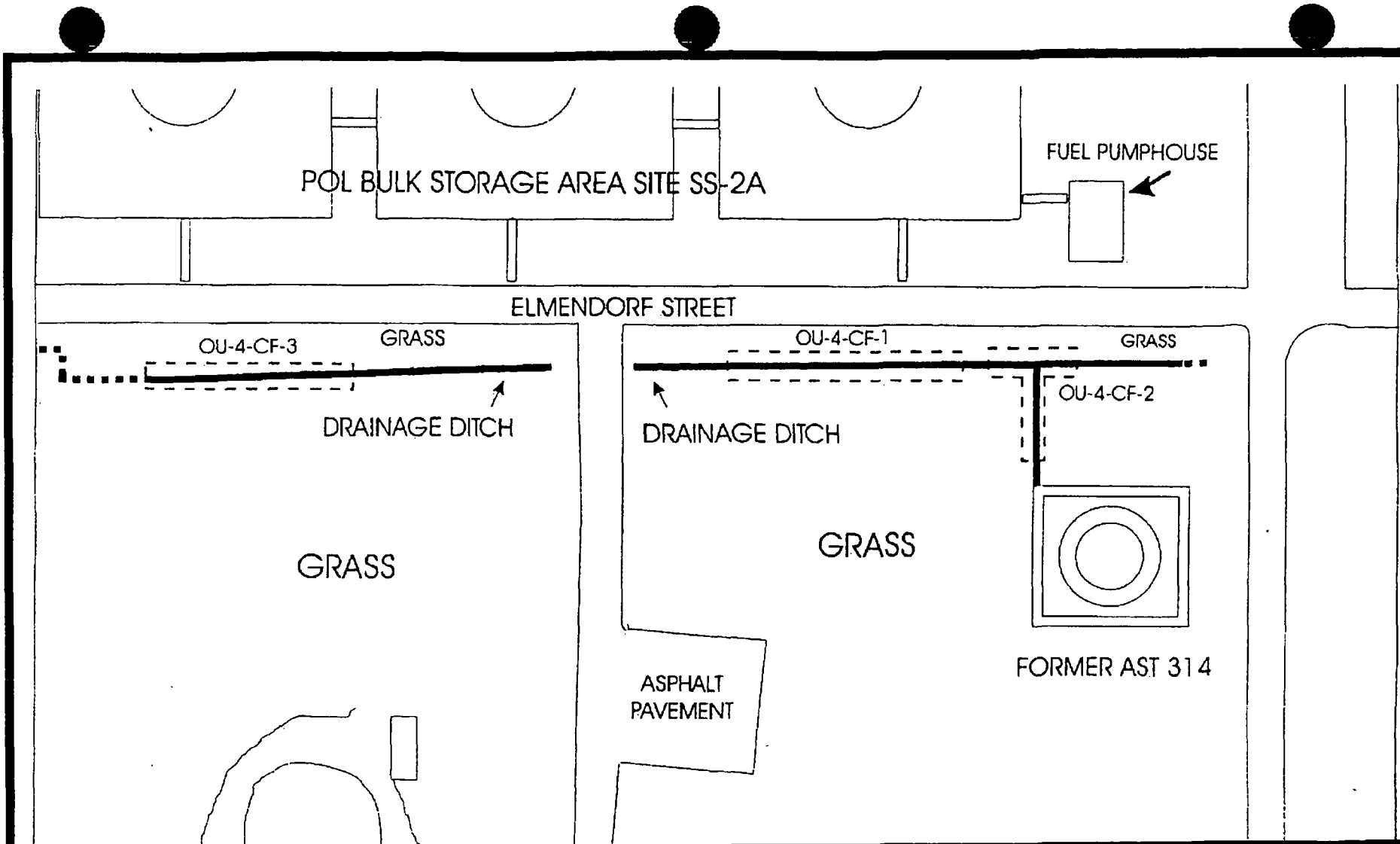
LEGEND

- 312 Existing Building (with Building Number)
- Shallow Monitoring Well

-  Drainage Ditch
-  Security Fence

□ HS-9
6.08'
Elevation of top of well casing (NGVD).

FIGURE 5-1
OU-4, Motor Pool Oil Leak Area
Site Plan
Homestead ARB, Florida



LEGEND

- Ditch "Versar 2000 Excavation"
- Ditch "OHM 1997 Excavation"
- - - - Confirmation Sampling Area

FIGURE 5-2

**OU-4, Motor Pool Oil Leak Area
Excavation Locations**

Homestead ARB, Florida

TABLE 5-1
OU-4, MOTOR POOL OIL LEAK AREA
SEMIVOLATILE ORGANIC COMPOUNDS AND METALS IN GROUND WATER
YEAR 1 SEMI-ANNUAL GROUND-WATER MONITORING
FEBRUARY AND AUGUST 1996

MONITORING WELL NO./FIELD NO.	First Semiannual Sampling Event		Second Semiannual Sampling Event	
	HS-9	I-17	HS-9	I-17
Laboratory Accession No.	81066-1	81066-2	84979-2	84979-3
FIELD DATA				
Date Well Sampled	02/22/96	02/22/96	08/22/96	08/22/96
Depth To Water At Sampling (ft. BTC)	4.15	5.48	3.45	4.83
Temperature (F)	79.3	76.7	85.9	83.6
Conductivity (uS/cm)	558	540	492	546
pH (SU)	6.9	7.4	7.3	7.6
Turbidity (NTU)	2.0	9.0	1.8	8.5
LABORATORY ANALYSES				
	Units	PQL		
TCL Semi-Volatile Organic Compounds (SW-846 Method 8270)				
All Compounds	ug/l		<PQL	<PQL
Phenol d5 (surrogate)	% recovery	10-106	59	80
2-Fluorophenol (surrogate)	% recovery	10-104	57	74
2,4,6-Tribromophenol (surrogate)	% recovery	41-143	74	89
Nitrobenzene-d5 (surrogate)	% recovery	32-117	62	80
2-Fluorobiphenyl (surrogate)	% recovery	31-118	70	86
Terphenyl-d14 (surrogate)	% recovery	33-141	64	64
Date Extracted			02/23/96	02/23/96
Date Analyzed			02/27/96	02/27/96
Laboratory Batch I.D.			0223A-K	0223A-K
TAL Metals (SW-846 Method 6010)				
Total Calcium*	mg/l	0.1	100	94
Dissolved Calcium*	mg/l	0.1	100	91
Preparation Date			02/26/96	02/23/96
Date Analyzed			02/29/96	02/29/96
Laboratory Batch I.D.			0226H	0223Z

Only detected compounds are listed
 <PQL = Less than Practical Quantitation Limit
 ug/l = Micrograms per liter
 mg/l = Milligrams per liter

BTC = Below Top of Casing
 TCL = Target Compound List
 TAL = Target Analyte List
 * = No Federal or State Groundwater MCL

TABLE 5-2
OU-4, MOTOR POOL OIL LEAK AREA
TOTAL RECOVERABLE PETROLEUM HYDROCARBONS IN GROUND WATER
VOLUNTARY GROUND-WATER MONITORING
JULY 2001

Well ID:		HS-9
Client Sample ID:		OU-4-HS-9
Lab Sample ID:		07365-12
Date Sampled:		07/18/01
Analyte	GCTL	Result
TRPH FL-PRO (mg/L)		
TRPH	5.0	<0.4
Bold type indicates detectable concentrations.		
Concentrations above the FAC Chapter 62-777 Ground-water Cleanup Target Level (GCTL)		

6.0 OPERABLE UNIT 5

6.1 HISTORY OF CONTAMINATION

OU-5 is the former Electroplating Waste Disposal Area, also known as Site WP-1 (formerly Site SP-1). The site is located within the central portion of Homestead ARE, as depicted on Figure 1-2. The site consists of two areas, the North and South Areas.

The North Area is bounded on the west by Building 164, to the southeast by Building 153 (OU-15), on the north by Biggs Street, and on the east by a vacant field, as depicted in Figure 6-1. Two drainage swales previously crossed the site. One of the swales was located to the east of Building 164 and ran from north to south, parallel to the building. The second drainage swale was located north of Building 153 and ran from east to west parallel to the building. Both drainage swales flowed into a culvert near the southeast corner of Building 164. The culvert flowed south beneath Bikini Boulevard for approximately 500 feet prior to discharging to a third drainage swale south of the equipment storage area. The South Area consists of this third, southern swale, which is located between Buildings 179 and 185, south of the equipment storage area. A site plan is included as Figure 6-1.

The North Area of the site was formerly used as a disposal area for spent plating baths and rinses originating from a non-Air Force owned or operated electroplating shop located in Building 164. The electroplating shop operated between 1946 and 1953, during the period when the installation was militarily inactive and the property was managed by the Dade County Port Authority. Spent plating solutions containing chromium, nickel, copper, and sulfuric and hydrochloric acid were routinely disposed of by discharging them on the ground in an area just east of Building 164. Approximately 250 gallons of spent plating solutions containing chromium, nickel, copper, sulfuric acid, and hydrochloric acid were generated per month for a period of two years.

A list of important historical events and relevant dates in the site chronology are shown below. The identified events are illustrative, not comprehensive.

Event	Date
Electroplating Shop Operations	1946-1953
IRP Phase I- Records Search	1983
IRP Phase II- Confirmation/Quantification Study	1986
IRP Phase IV- Additional Investigations	1988
RI	1991 and 1993
Confirmation Soil Sampling	1994
IRA	1995 and 1996
Confirmation Ground-Water Sampling	1996
ROD	1997
Voluntary Ground-Water Monitoring	2001

6.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

An IRP Phase I Records Search was completed in 1983. OU-5 was determined to have a moderate to high potential for environmental contamination, due to the nature of the waste and potential for contaminants to migrate to ground water.

In 1988 the IRP Phase IV - Additional Investigation was conducted in order to determine the lateral extent of contamination. Ground-water samples were collected from the existing monitoring wells and analyzed for total select metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and sodium) and cyanide. Only one target metal, arsenic, was detected above its individual PQL.

Based on the results of this investigation, RIs were conducted at the site in 1991 and 1993.

IRAs were conducted at OU-5 on two occasions prior to the ROD. In 1995, approximately 94 tons of soil, sediment, and limestone were excavated from the two drainage swales in the North Area of the site. Both swales were excavated to a depth of one foot and extended three feet to either side of the centerline. Confirmation samples indicated that remediation goals had not been met, so additional excavation was performed at two locations in 1996. A total of 150 additional tons of material was excavated and the swales were backfilled with clean fill to a level even with the ground surface.

In 1996 confirmation ground-water samples were collected from the four existing monitoring wells and analyzed for VOCs, SVOCs, pesticides, PCBs, metals, and cyanide.

Significant results of these investigations revealed the following:

Soil/Sediment

Constituents detected in OU-5 soil/sediment that remain in place after the excavation activities include SVOCs, pesticides, and metals. Acetone was the only VOC that was detected, and it was attributed to isopropyl alcohol being used in decontamination of sampling equipment. SVOCs, primarily PAHs, were detected in one sample during the 1991 investigation, but the results were suspected to be attributable to the adjacent parking lot. Nineteen metals were detected, including aluminum, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, sodium, vanadium, and zinc. Cyanide was not detected in any of the soil samples.

Ground Water

Constituents detected in OU-5 ground-water samples included VOCs, SVOCs, and metals. A total of 13 metals were detected in ground water during the 1991 sampling event, including aluminum, arsenic, barium, calcium, chromium, iron, lead, magnesium, manganese, potassium, sodium, vanadium, and zinc. The elevated metal concentrations during the 1991 sampling event were suspected to be attributable to high turbidity in the samples. Concentrations were significantly lower during the 1993 and 1996 sampling events, and in 1996 only seven metals were detected: arsenic, barium, calcium, chromium, magnesium, potassium, and sodium.

Based on the results of the RI/BRA, the site moved on to the Proposed Plan and ROD phases of the CERCLA process.

6.3 REMEDIAL ACTIONS

6.3.1 Remedy Selection

The OU-5 ROD (Montgomery Watson, 1997) was finalized in June 1997. The selected alternative per the draft ROD is:

No Further Investigation with Land Use Controls

The ROD did not specify specific land use control requirements. The goal of the remedy is to alert personnel of the presence of residual soil/sediment contamination at the site and monitor the site to ensure that residual soil contamination is not disturbed.

6.3.2 Remedy Implementation

Signs have been installed at the site, and the Environmental Flight closely monitors activity to ensure that residual contamination is not disturbed.

Although not required by the ROD, additional ground-water monitoring was conducted at OU-5 in July 2001. Ground-water samples were collected from four wells and were analyzed for select metals. None of the target metals were detected.

6.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

6.4 FIVE-YEAR REVIEW

6.4.1 Document Review

This five-year review consisted of a review of relevant documents including the BRA, IRA reports, and ROD.

6.4.2 Data Review

Data from previous investigations, confirmation sampling, and monitoring activities were compared against currently applicable risk-based cleanup criteria to evaluate whether constituents remain in place at concentrations that exceed unlimited exposure and unrestricted reuse criteria.

Soil Contamination

Data from all previous investigations were compared to the SCTLs for the residential direct exposure scenario. Sample locations that were previously excavated were excluded from the evaluation. Benzo(a) pyrene, arsenic, copper, and nickel were detected at concentrations above the current residential SCTL. The maximum concentrations of benzo(a) pyrene (0.46 mg/kg), arsenic (6.9 mg/kg), copper (160 mg/kg), and nickel (300 mg/kg) were detected in confirmation sample CS01, collected after the IRA conducted in 1995. Benzo(a) pyrene (0.36 mg/kg) and arsenic (9.7 mg/kg) also exceeded the SCTL in sample SPI-SL-0007. Arsenic also exceeded the commercial/industrial SCTL, but the maximum concentration (9.7 mg/kg) was less than the base-specific background level of 10 mg/kg.

Ground-Water Contamination

Ground-water monitoring data were reviewed from the voluntary ground-water monitoring performed in 2001. The samples were analyzed for select metals only, and none of the target metals were detected. Post-ROD ground-water monitoring data is included in Table 6-1.

6.4.3 Site Inspection

A site inspection was conducted at OU-5 on 31 July 2003. Signs remain in place to alert personnel of the presence of contamination. No indications of trespassing, vandalism, or unauthorized excavation were

observed. Monitoring wells were visually inspected and found to be locked and in good condition. No changes in on-site or surrounding land use were observed. Overall, the inspection indicated that the remedy is being implemented in accordance with the ROD and effectively prevents exposure to contaminated soil.

6.5 TECHNICAL ASSESSMENT

A technical assessment was conducted for OU-5 to determine whether the selected remedy is functioning as intended and remains protective of human health and the environment. The results of this assessment are presented below.

Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, ARARs, risk assumptions, and results of the site inspection indicates that the remedy is functioning as intended by the ROD.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

Because land use associated with OU-5 has not changed significantly, the exposure assumptions used to evaluate risks in the baseline risk assessment remain valid. The remedy was selected based on these risk estimates and, therefore, remains protective.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

There is no other information that would call into question the protectiveness of the remedy.

6.6 ISSUES

There are no issues at this site.

6.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Residual soil contamination remains at OU-5 above concentrations that would allow unrestricted reuse and unlimited exposure. Therefore, the land use controls established in the ROD should remain in place to ensure that human exposure to unacceptable contaminant concentrations in soil is restricted.

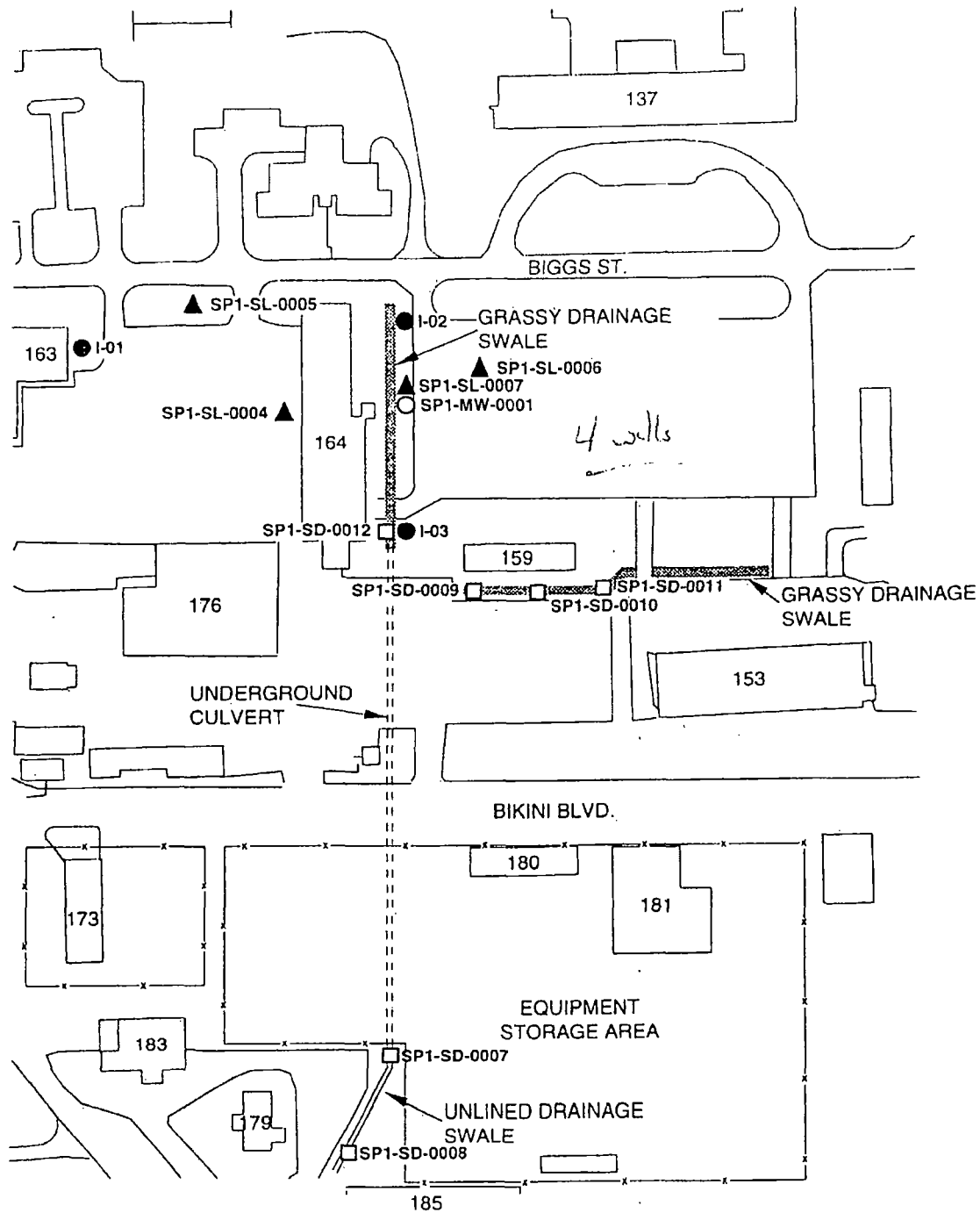
Ground-water monitoring conducted in 1996 and 2001 indicates that there are no target constituents at levels of concern in the site ground water. Therefore, further ground-water monitoring should not be required, and the ROD monitoring wells should be abandoned in accordance with applicable regulatory guidelines. The site should be granted a NFI with LUCs status.

6.8 PROTECTIVENESS STATEMENT

Based on the completed activities, the intent and goals of the OU-5 ROD have been met and found to be protective of human health and the environment.

6.9 NEXT REVIEW

The next five-year review for OU-5 is required by December 2009, five years from the date of this review.



LEGEND

- ▲ SOIL BORING LOCATION
- MONITORING WELL INSTALLED BY SAIC, 1984
- MONITORING WELL INSTALLED BY GERAGHTY & MILLER, 1991
- SEDIMENT SAMPLING LOCATION
- ▨ DRAINAGE SWALE
- UNLINED DRAINAGE SWALE

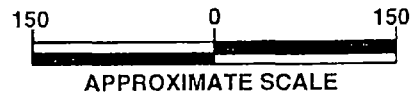
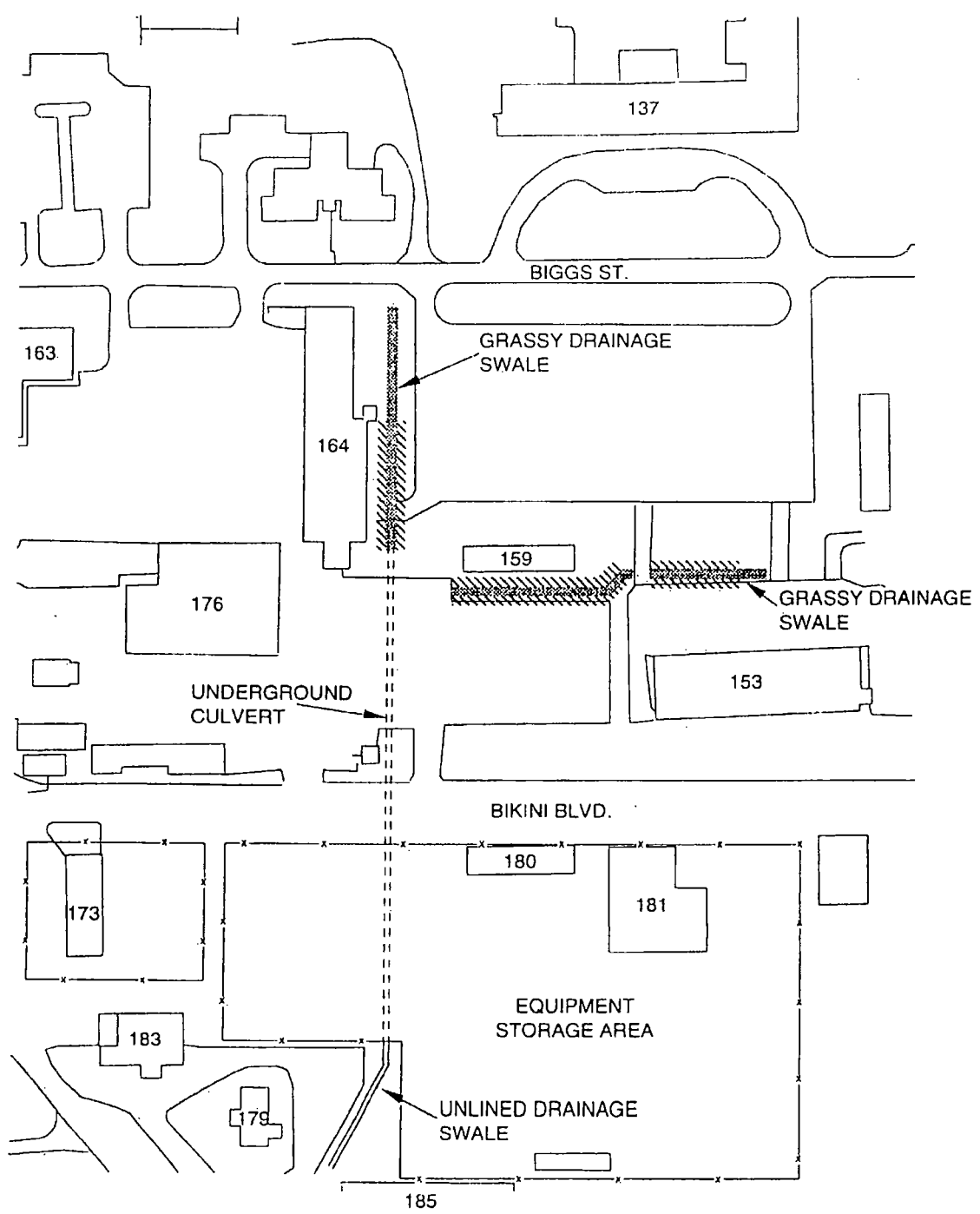





FIGURE 6-1
OU-5, Electroplating Waste Disposal Area
Site Plan
Homestead ARB, Florida



LEGEND

- 
 AREA OF EXCAVATION
- 
 DRAINAGE SWALE
- 
 UNLINED DRAINAGE SWALE

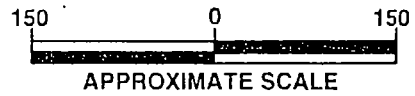


FIGURE 6-2
OU-5, Electroplating Waste Disposal Area
Excavation Locations
Homestead ARB, Florida

TABLE 6-1
OU-5, ELECTROPLATING WASTE DISPOSAL AREA
METALS IN GROUND WATER
VOLUNTARY GROUND-WATER MONITORING
JULY 2001

Well ID:		I-01(R)	I-02(R)	I-03	SP1-MW-0001(R)
Client Sample ID:		OU-5-I-01(R)	OU-5-I-02(R)	OU-5-I-03	OU-5-SP1-MW-0001(R)
Lab Sample ID:		07365-13	07365-16	07365-15	07365-14
Date Sampled:		07/18/01	07/18/01	07/18/01	07/18/01
Analyte	GCTL	Result	Result	Result	Result
Metals 200/6010B/7000 (mg/L)					
Antimony	0.006	<0.005	<0.005	<0.005	<0.005
Arsenic	0.05	<0.01	<0.01	<0.01	<0.01
Beryllium	0.004	<0.003	<0.003	<0.003	<0.003
Cadmium	0.005	<0.004	<0.004	<0.004	<0.004
Chromium	0.1	<0.01	<0.01	<0.01	<0.01
Copper	1	<0.01	<0.01	<0.01	<0.01
Lead	0.015	<0.005	<0.005	<0.005	<0.005
Mercury	0.002	<0.0005	<0.0005	<0.0005	<0.0005
Nickel	0.1	<0.01	<0.01	<0.01	<0.01
Selenium	0.05	<0.01	<0.01	<0.01	<0.01
Silver	0.1	<0.01	<0.01	<0.01	<0.01
Thallium	0.002	<0.002	<0.002	<0.002	<0.002
Zinc	5	<0.01	<0.01	<0.01	<0.01
Bold type indicates detectable concentrations.					
Concentrations above the FAC Chapter 62-777 Ground-water Cleanup Target Level (GCTL)					

7.0 OPERABLE UNIT 7

7.1 HISTORY OF CONTAMINATION

OU-7 encompasses the former Entomology Storage Area, also known as Site SS-7 (formerly Site P-2). The site is located within the northwestern portion of Homestead ARB, as depicted on Figure 1-2. The Entomology Storage Area consisted of a 0.13-acre fenced triangular area located within the southeast corner of the old CE Storage Compound. OU-7 covers approximately four acres, including the former Entomology Storage Area and surrounding property.

The site was originally bordered by a concrete wall at the western edge of the CE Storage Compound, roofed concrete car racks to the east, an asphalt parking area and former Building 220 to the north, and open land consisting of crushed and weathered limestone covered by grass to the south. The overall site and general vicinity was redeveloped in 1996. Currently, the site is bordered on the north by the new CE Complex, which includes CE offices and shops, and on the south by Petroleum Operations facilities. The site lies largely beneath the south side of the new CE Complex and adjacent parking lot, as depicted in Figure 7-1.

The former Entomology Storage Area was used in the 1960s as a storage area for bulk quantities of pesticides. Diesel fuel was also reportedly stored at the site.

A list of important historical events and relevant dates in the site chronology are shown below. The identified events are illustrative, not comprehensive.

Event	Date
Pesticide Storage	1960s
IRP Phase I- Records Search	1983
IRP Phase II- Confirmation/Quantification Study	1986
IRP Phase IV- Additional Investigations	1988 and 1989
RI	1991 and 1993
Delineation Sampling and Analysis	1994
IRA	1994
ROD	1998
Ground-Water Monitoring	1998 through 2003

7.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

An IRP Phase I Records Search was completed in 1983. OU-7 was determined to have a moderate to high potential for environmental contamination, due to the nature of the waste and potential for contaminants to migrate to ground water.

In 1988 and 1989, the IRP Phase IV - Additional Investigation was conducted in order to determine the lateral extent of contamination. Based on the results of this investigation, RIs were conducted at the site in 1991 and 1993.

Interim removal actions to address arsenic and pesticide contaminated soils were conducted at two locations within OU-7 in 1994. The locations of these removal actions were beneath the triangular fenced-in area that enclosed the Entomology Storage Area, and the vicinity of former Building 220.

Significant results of these investigations revealed the following:

Soil

Constituents detected in OU-7 soil that remain in place after the excavation include VOCs, SVOCs, pesticides, and metals. A total of 23 SVOCs were detected, primarily PAHs. Phthalates and phenols were also detected. A total of 20 pesticides were detected at relatively low concentrations and PCBs were detected at four locations. A total of 21 metals were detected, most notably lead and arsenic, at elevated concentrations.

Ground Water

Constituents detected in OU-7 ground water included VOCs, SVOCs, pesticides, and metals. The VOCs detected were acetone, chloroform, 2-butanone, bromodichloromethane, 1,2-dichloropropane, and dibromochloromethane. Four pesticides (alpha-BHC, 4,4'-ODD, 4,4'-DDE, and 4,4'-DDT) and 17 SVOCs were detected. Sixteen metals were detected, including arsenic at elevated concentrations.

Based on the results of the RI/BRA, the site moved on to the Proposed Plan and ROD phases of the CERCLA process.

7.3 REMEDIAL ACTIONS

7.3.1 Remedy Selection

The OU-7 ROD (Montgomery Watson, 1998) was finalized in January 1998. The alternative selected was:

Access and Use Restrictions for Soil and Ground Water and Ground-water Monitoring

The selected remedy consisted of:

- Capping of the site by construction of buildings, pavement, and grassways to prevent exposure to soil and ground-water contaminants;
- Land use restrictions to prevent digging/excavation activities around areas where elevated concentrations of arsenic were detected in soil and ground water;
- Institutional controls to prevent the placement of potable water wells into the ground water beneath the site; Installation of one additional shallow ground-water well and ground-water monitoring for five years, if necessary. The initial set of ground-water samples were to be analyzed for organochlorine pesticides, SVOCs, and metals; and
- Five-year review to determine whether the remedy remains protective of human health and the environment.

7.3.2 Remedy Implementation

Capping of the site by the construction of the CE Complex and associated parking lot was accomplished in 1996, prior to the ROD. Digging restrictions and well installation restrictions are managed by the Environmental Flight through the digging permit program. The Environmental Flight closely monitors activity at the site to ensure that residual contamination is not disturbed. Their offices are located in the adjacent CE Complex. The additional monitoring well required by the ROD was installed in June 1996.

Ground-water monitoring has been conducted at the site since 1998. The sampling frequency followed during the first and subsequent years was in accordance with the schedule established in the ROD. In addition, changes in the suite of target constituents was determined by agreement over the years with the BCT members. The initial sampling event occurred in June 1998. Quarterly monitoring was conducted for the first year with sampling events in June and October 1998 and February and September 1999. During the first year, samples were collected from three monitoring wells (MW204-1-OLD-MW-1, MW-1-207-1, and OU7-MW-1) and analyzed for SVOCs, pesticides, PCBs, and metals. Semi-annual monitoring was conducted in the second year with sampling events in April and November 2000. Samples collected during the April 2000 sampling event were analyzed for SVOCs, pesticides, PCBs, herbicides, arsenic, and thallium. Three additional monitoring wells were added to the monitoring program (OWS206-MW1, OU7-MW-10, and OU7-MW-11) and sampled during the April 2000 event to further delineate the extent of arsenic and thallium in ground water. In November 2000 the monitoring program was reduced to two wells (OU7-MW-1 and OWS206-MW1) and analyses were conducted only for arsenic and thallium.

The ground water was sampled annually for the third through the fifth years, with sampling events occurring in July of 2001, 2002, and 2003. Samples were analyzed for arsenic and thallium only. The July 2003 sampling event completed the five years of monitoring required by the ROD.

7.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

7.4 FIVE-YEAR REVIEW

7.4.1 Document Review

This five-year review consisted of a review of relevant documents including the baseline risk assessment, IRA report, ROD, and ground-water monitoring reports.

7.4.2 Data Review

Data from previous investigation, confirmation sampling, and monitoring activities were compared against currently applicable risk-based cleanup criteria to evaluate whether constituents remain in place at concentrations that exceed unlimited exposure and unrestricted reuse criteria'.

Soil Contamination

Data from all previous investigations were compared to the SCTLs for the residential direct exposure scenario. Sample locations that were previously excavated were excluded from the evaluation. Fourteen constituents exceeded the current residential SCTL, including five PAHs, three pesticides, and six metals. The most significant exceedances were benzo(a) pyrene, dibenz(a, h) anthracene, arsenic, and lead. Each of these constituents exceeded the SCTL by more than an order of magnitude for at least one sample. Arsenic and benzo(a) pyrene results in numerous soil and confirmation samples exceeded their individual SCTLs. Dibenz(a,h) anthracene exceeded its SCTL in several samples, and lead exceeded the SCTL only in one sample. Lead was detected in a confirmation sample from the southernmost excavation at a concentration of 6,050 mg/kg. Additional excavation was not conducted because the sample was collected beneath the edge of a concrete wall. A horizontal boring was advanced beneath the wall and the lead sample result from the beneath the wall was 6.4 mg/kg, indicating that the extent of lead contamination is minimal. This sample location is now covered by the CE Complex parking lot. The remaining sample location (SP3-SL-0006) with the highest arsenic concentration (123 mg/kg) is located in the grassy area between the CE Complex offices and the shops behind the main building.

Ground-Water Contamination

Post-ROD monitoring data were reviewed from five years of ground-water monitoring (Table 7-1). Initially, some SVOCs, pesticides and metals were all detected at concentrations greater than their respective residential GCTLs. As a result, the analytical monitoring included these constituents for the first five sampling events from June 1998 through April 2000. No pesticides, herbicides, PCBs, or SVOCs were detected in the April 2000 sampling event. In subsequent sampling events, analyses have been limited to arsenic and thallium. Arsenic has consistently been detected above its GCTL in one monitoring well (i.e., OU7-MW-1). Thallium has not been detected since April 2000. Overall, the data review indicates that ground-water contamination from arsenic remains at OU-7 in only one well.

7.4.3 Site Inspection

A site inspection was conducted at OU-7 on 31 July 2003. Buildings and parking lots constructed over the site in 1996 remain in place, actively used, and in good condition. No indications of trespassing, vandalism, or unauthorized excavation or well installation were observed. Monitoring wells were visually inspected and found to be locked and in good condition. No changes in on-site or surrounding land use were observed. Overall, the inspection indicated that the remedy is being implemented in accordance with the ROD and effectively prevents exposure to contaminated soil and ground water.

7.5 TECHNICAL ASSESSMENT

A technical assessment was conducted for OU-7 to determine whether the selected remedy is functioning as intended and remains protective of human health and the environment. The results of this assessment are presented below.

Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, ARARs, risk assumptions, and results of the site inspection indicates that the remedy is functioning as intended by the ROD.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

Because land use associated with OU-7 has not changed significantly, the exposure assumptions used to evaluate risks in the baseline risk assessment remain valid.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

There is no other information that would call into question the protectiveness of the remedy.

7.6 ISSUES

There are no issues at this site.

7.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Residual soil contamination remains at OU-7 above concentrations that would allow unrestricted reuse and unlimited exposure. Therefore, the LUCs established in the ROD should remain in place to ensure that human exposure to unacceptable contaminant concentrations in soil is restricted.

Ground-water monitoring conducted in 2003 indicates that arsenic contamination in monitoring well OU7-MW-1 remains at levels of concern at OU-7. Annual ground-water monitoring of two existing wells should continue until the arsenic concentration falls below the GCTL for two consecutive sampling events. The remaining on-site monitoring wells should be abandoned according to applicable regulatory guidelines.

7.8 PROTECTIVENESS STATEMENT

Based on the completed activities, the intent and goals of the OU-7 ROD have been met and found to be protective of human health and the environment.

7.9 NEXT REVIEW

The next five-year review for OU-7 is required by December 2009, five years from the date of this review.

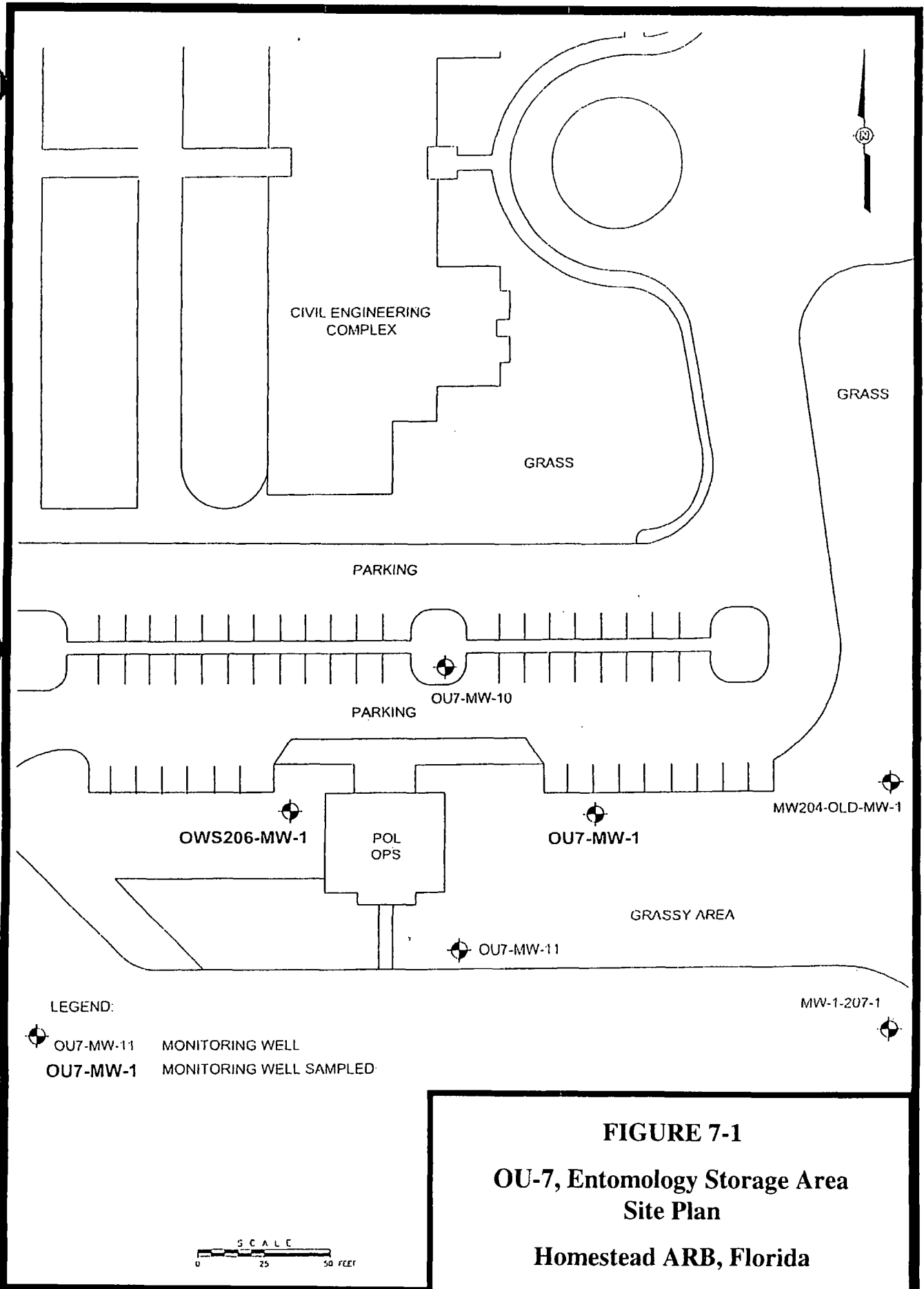
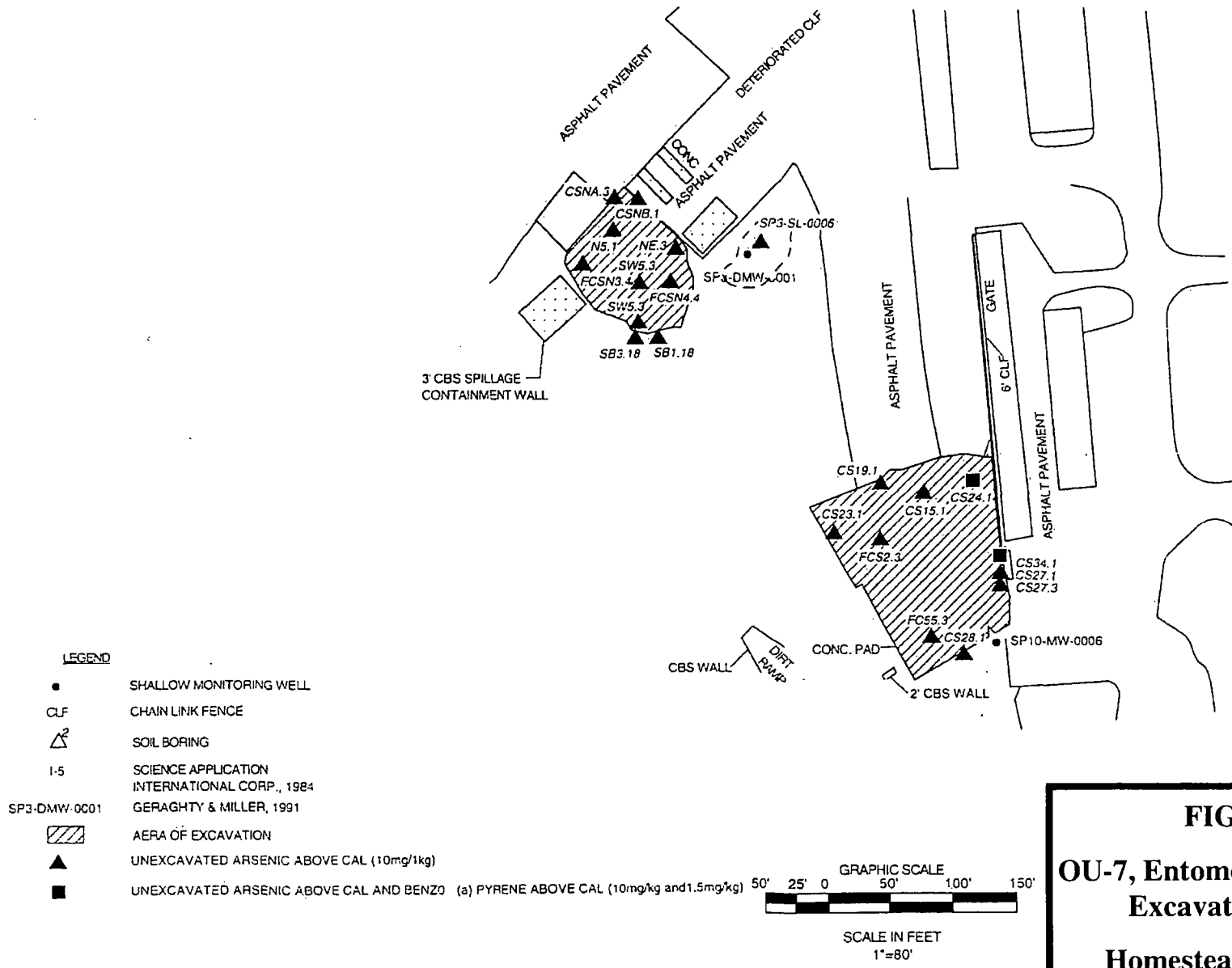


FIGURE 7-1
OU-7, Entomology Storage Area
Site Plan
Homestead ARB, Florida



- LEGEND**
- SHALLOW MONITORING WELL
 - CLF CHAIN LINK FENCE
 - △ SOIL BORING
 - I-5 SCIENCE APPLICATION INTERNATIONAL CORP., 1984
 - SP3-DMW-0001 GERAGHTY & MILLER, 1991
 - ▨ AREA OF EXCAVATION
 - ▲ UNEXCAVATED ARSENIC ABOVE CAL (10mg/kg)
 - UNEXCAVATED ARSENIC ABOVE CAL AND BENZO (a) PYRENE ABOVE CAL (10mg/kg and 1.5mg/kg)

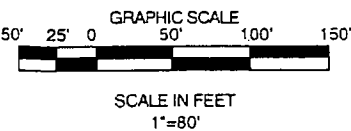


FIGURE 7-2
OU-7, Entomology Storage Area
Excavation Locations
Homestead ARB, Florida

TABLE 7-1

OU-7, ENTOMOLOGY STORAGE AREA

ARSENIC AND THALLIUM IN GROUND WATER

YEAR 1 THROUGH 5 GROUND-WATER MONITORING

Well ID:	MW-1									
Lab Sample ID:								2001/07365-9	2002/07303-2	2003/07539-8
Event:		Y1Q1	Y1Q2	Y1Q3	Y1Q4	Y2SA1	Y2SA2	Y3A	Y4A	Y5A
Date Sampled:		05/03/98	10/22/98	02/17/99	09/06/99	04/12/00	11/08/00	07/17/01	07/12/02	07/25/03
Analyte	GCTL									
Metals 200.7/6010B (mg/L)										
Arsenic	0.05	0.53	0.42	0.3	0.39	0.36	0.24	0.18	0.23	0.37
Thallium	0.002	<0.01	<0.004	<0.013	<0.01	0.003	<0.002	<0.002	<0.002	NA

TABLE 7-1 (cont.)

OU-7, ENTOMOLOGY STORAGE AREA

ARSENIC AND THALLIUM IN GROUND WATER

YEAR 1 THROUGH 5 GROUND-WATER MONITORING

Well ID:	OWS206-MW-1					
Lab Sample ID:				2001/07385-10	2002/07303-1	2003/07539-8
Event:		Y2SA1	Y2SA2	Y3A	Y4A	Y5A
Date Sampled:		04/12/00	11/08/00	07/17/01	07/12/02	07/25/03
Analyte:	GCTL					
Metals 200.7/6010B (mg/L)						
Arsenic	0.05	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	0.002	<0.002	<0.002	<0.002	<0.002	NA

8.0 OPERABLE UNIT 8

8.1 HISTORY OF CONTAMINATION

OU-8 is former Fire Protection Training Area No. 3 (FPTA-3), also known as Site FT-4. The site occupies approximately 18.5 acres and is located within the central portion of Homestead ARB, as depicted on Figure 1-2. The site consists of and is surrounded by vacant grassy fields. Taxiway B is adjacent to the northeast side of the site. The munitions storage area is located approximately 500 feet to the southwest and Taxiway Papa is located approximately 1,000 feet to the southeast.

Three burn pits were formerly located at the site, as shown on Figure 8-1. Burn Pit 1 was lined and bermed, but Burn Pits 2 and 3 were not equipped with liners or a residual fuel collection system. Fire training activities were conducted at the site between 1970 and 1985. Materials burned in the pits initially included jet fuel and waste materials, such as oils, solvents, and lubricants, but since the late 1970s only fuels were burned at the site. Training exercises were conducted as often as once per week and utilized between 50 and 1,000 gallons of fuel per event.

In January 1984, a total of 5,500 gallons of diethyl ether supplied by the U.S. Drug Enforcement Agency (DEA) were burned in Burn Pit 3. This occurrence is the sole reason for former Homestead AFB being placed on the NPL on 30 August 1990. As a result of an agreement by the BCT in 1996, this site was removed from the list of on-base CERCLA sites, and was placed under the Florida Administrative Code (FAC) for monitoring of petroleum-contaminated sites. Because this is the initial CERCLA five-year review, the site has been included to maintain continuity with historical records.

A list of important historical events and relevant dates in the site chronology are shown below. The identified events are illustrative, not comprehensive.

Event	Date
Fire Training Activities	1970-1985
IRP Phase I- Records Search	1983
IRP Phase II- Confirmation/Quantification Study	1986
IRP Phase IV- Additional Investigations	1987 and 1988
RI	1991 and 1993
IRA	1994 and 1995
Decision Document	1997
Ground-Water Monitoring	1998 and 2001

8.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

An IRP Phase I Records Search was completed in 1983. OU-8 was determined to have a moderate to high potential for environmental contamination, due to the quantity of the liquid wastes burned at the site and potential for contaminants to migrate to ground water.

In 1987 and 1988, the IRP Phase IV - Additional Investigation was conducted in order to determine the lateral extent of contamination. Based on the results of this investigation, RIs were conducted at the site in 1991 and 1993.

IRAs were conducted at six locations within OU-8 in 1994. Based on the delineation sample results, over 11,000 tons of contaminated soil and debris were excavated and disposed of off site. Confirmation samples from the excavations at Burn Pits 1 and 3 were analyzed for VOCs, SVOCs, organochlorine pesticides, PCBs, metals, and cyanide. Confirmation samples from the other four areas were analyzed only for TRPH. The excavations were backfilled with crushed limestone.

In 1995 the buried fuel distribution lines that led from an AST on the southern portion of the site to each of the three burn pits were removed. During the removal of the lines, additional petroleum-contaminated soil was encountered. More than 2,000 tons of contaminated soil were excavated and 24 confirmation samples were collected and analyzed for TRPH.

Significant results of these investigations revealed the following:

Soil

Investigations conducted between 1987 and 1994 revealed extensive petroleum-contaminated soil, resulting from historical fire training activities; however, the majority of this contamination was excavated during the 1994 and 1995 removal actions. SVOCs and TRPH were detected at several sample locations that were not excavated, including 13 PAHs and 4 phthalates. Two pesticides (heptachlor and 4,4'-DDD) and one PCB (Aroclor 1260) also were detected at isolated locations. Numerous metals also were detected, most notably antimony, arsenic, chromium, and vanadium.

Ground Water

Constituents detected in OU-8 ground water include VOCs, SVOCs, TRPH, and metals. VOCs were detected in ground-water samples collected in 1987 and 1988, including benzene, toluene, ethylbenzene, and xylenes (BTEX) and chlorobenzene. TRPH and metals, including lead, also were detected during the initial sampling events. Subsequent sampling events in 1991 and 1993 indicated similar VOC contamination and also indicated the presence of several SVOCs, primarily PAHs. Pesticides and PCBs were not detected.

Based on the results of the RI/BRA, the site moved on to the Decision Document phase.

8.3 REMEDIAL ACTIONS

8.3.1 Remedy Selection

The decision document (Montgomery Watson, 1997) for OU-8 was finalized in April 1997. The alternative selected was:

No Further Investigation

The Decision Document also stipulated that the contaminants at the site primarily involved petroleum waste, which is regulated by the State of Florida under FAC 62-770, Fuel Contaminated Sites. As such, it was determined that any further action would be conducted under the state petroleum program, rather than CERCLA. The site was transferred from CERCLA to the FDEP Petroleum Program on 30 July 1994.

8.3.2 Remedy Implementation

Although the Decision Document for OU-8 specified no further investigation, the FDEP required additional monitoring well installations and ground-water monitoring activities. In 1998, twelve new monitoring wells were installed at the site (designated as MW-1 through MW-12), since many of the previously installed wells had been removed or affected during excavation activities. The resulting suite of 17 monitoring wells at the site

were sampled on a quarterly basis in 1998. All of the ground-water samples were analyzed for VOCs, SVOCs, and TRPH, and a subset of the samples were analyzed for select metals.

In addition, land use controls (LUCs) have been implemented at the site to restrict ground-water access/use and prohibit residential use of the property. As with the other sites, all digging permits are reviewed by the Environmental Flight.

8.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

8.4 FIVE-YEAR REVIEW PROCESS

8.4.1 Document Review

Because this site is now being addressed by the state petroleum program and is no longer being addressed under CERCLA, a five-year review is not required. Therefore, a formal five-year review and protectiveness evaluation were not conducted. The review was limited to an evaluation of historical data and development of recommendations for future actions at the site. This evaluation consisted of a review of relevant documents, including the decision document, and ground-water monitoring reports.

8.4.2 Data Review

Data from previous investigation, confirmation sampling, and monitoring activities were compared against currently applicable risk-based cleanup criteria to evaluate whether constituents remain in place at concentrations that exceed unlimited exposure and unrestricted reuse criteria.

Soil Contamination

Data from all previous investigations were compared to the SCTLs for the residential direct exposure scenario. Sample locations that were previously excavated were excluded from the evaluation. Although the vast majority of the contamination has been removed from the site, the data review indicates that several constituents remain at concentrations above the SCTLs. TRPH was detected above the residential SCTL (350 mg/kg) in three locations that have not been excavated. The highest of these concentrations (1,900 mg/kg) was in the soil sample collected during the installation of monitoring well MW-8 in 1998. Antimony, arsenic, chromium, and vanadium concentrations also slightly exceed their respective residential SCTLs in at least one soil sample collected outside of the excavated areas.

Ground-Water Contamination

Ground-water monitoring data were reviewed from the 1998 quarterly ground-water monitoring events and the 2001 ground-water monitoring event. Initially, ground-water data from the 1998 quarterly monitoring events indicated that three VOCs, five SVOCs, TRPH, antimony, and iron were all present at concentrations greater than the residential GCTLs. While target analytes were detected in several different monitoring wells, one monitoring well (OU-8-MW-8) had the highest overall concentrations and number of detections of VOCs, SVOCs, and TRPH. As a result, additional ground-water sampling was conducted in 2001 at OU-8-MW-8 and from two other nearby monitoring well locations (1-11 and 1-12). Results from the most recent ground-water data from OU-8-MW-8 indicate that all VOCs, SVOCs, and metals that previously exceeded the GCTLs were either not detected or were detected at concentrations below their respective residential GCTLs. Ground-water monitoring results from the 2001 ground-water monitoring event are presented in Table 8-1. Overall, the data review indicates that there are no significant site-related impacts to ground water at OU-8.

8.4.3 Site Inspection

A site inspection was conducted at OU-8 on 8 August 2003. No indications of trespassing, vandalism, or unauthorized excavation were observed. Monitoring wells were visually inspected and found to be locked and in good condition. No changes in on-site or surrounding land use were observed. Overall, the inspection indicated that LUCs implemented at the site effectively prevent exposure to contaminated soil.

8.5 TECHNICAL ASSESSMENT

As described above, this site is being addressed under the state petroleum program. As such, there are no CERCLA remedies at this site that require technical assessment to evaluate protectiveness.

8.6 ISSUES

There are no issues at this site.

8.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

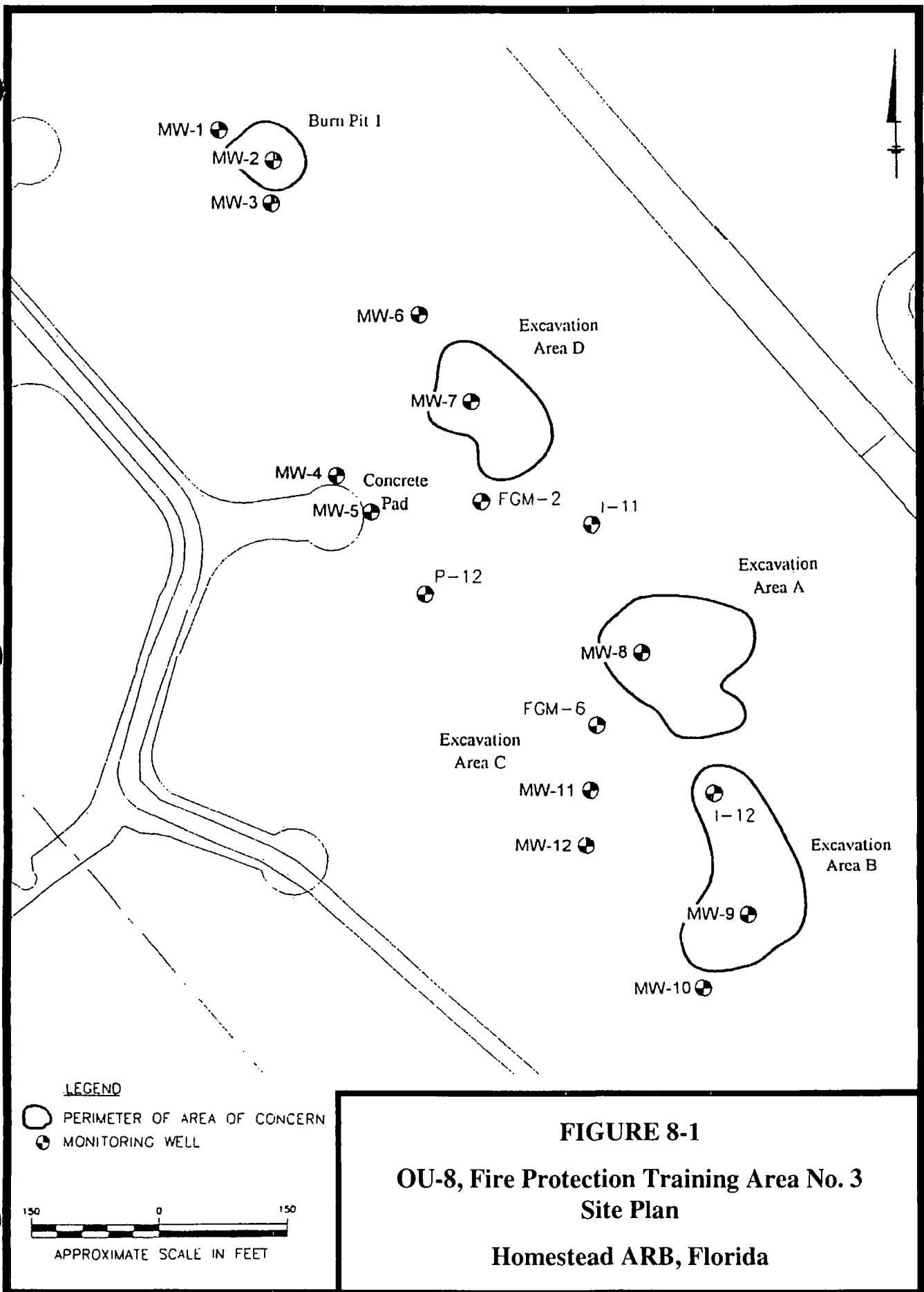
The analytical results of the ground-water monitoring conducted in 2001 indicated that there are no target constituents at levels of concern in the site ground water. Therefore, further ground-water monitoring should not be required, and the existing monitoring wells should be abandoned according to applicable regulatory guidelines.

8.8 PROTECTIVENESS STATEMENT

As described above, this site is being addressed under the state petroleum program. As such, there are no CERCLA remedies for which a protectiveness evaluation is required.

8.9 NEXT REVIEW

Because this site is being addressed by the state petroleum program and is no longer being addressed under CERCLA, additional five-year reviews are not required.



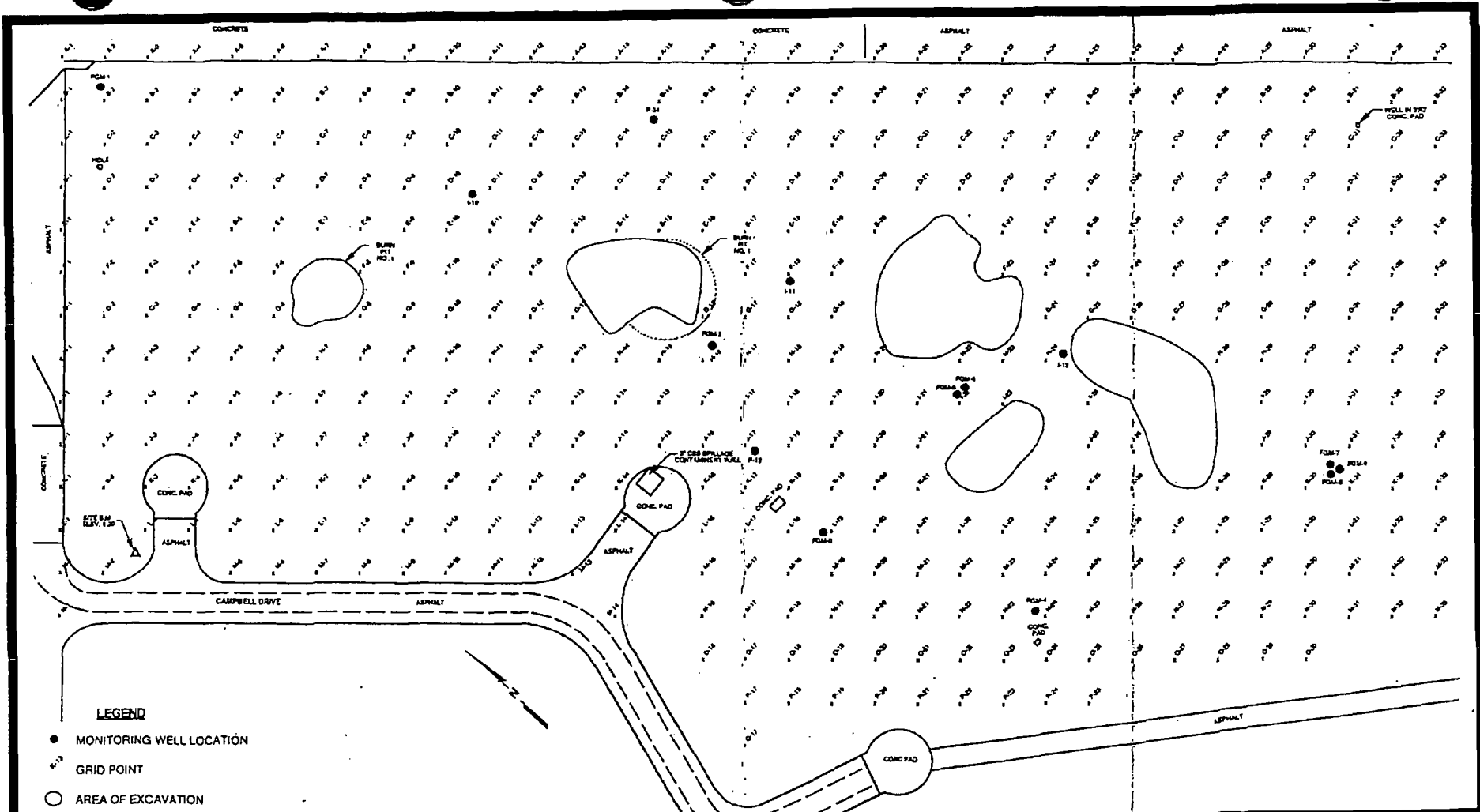


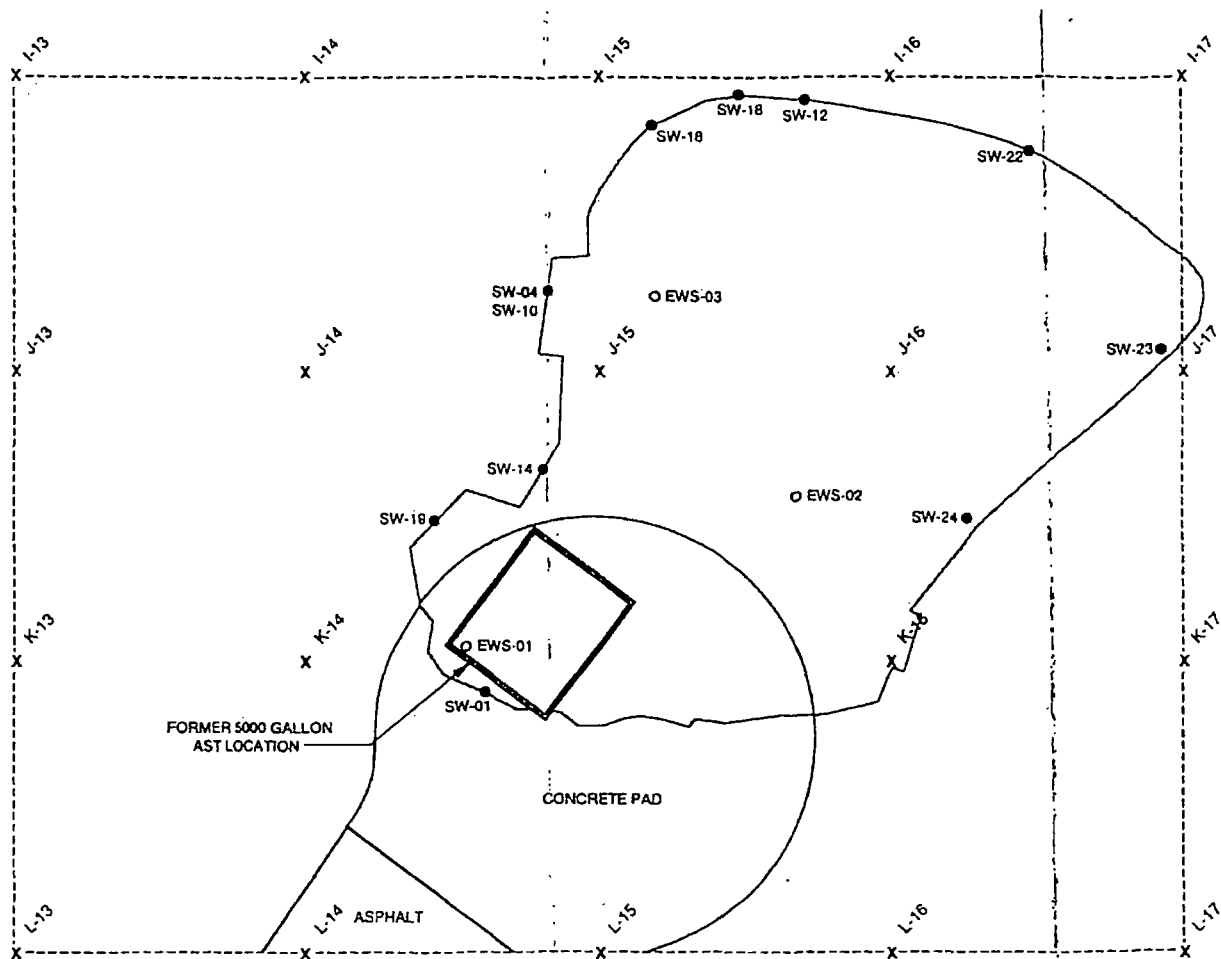
FIGURE 8-2

**OU-8, Fire Protection Training Area No. 3
Delineation Grid and Excavation Locations**

Homestead ARB, Florida

SAMPLE LOCATION	SAMPLE DEPTH (INCHES)	BLS	TPH RESULT (MG/KG)	DATE SAMPLED
SW-01	42	21	03/30/95	
SW-04	12	11	03/30/95	
SW-10	40	22	04/04/95	
SW-11	12	ND	04/04/95	
SW-12	12	ND	04/04/95	
SW-14	42	17	04/12/95	
SW-18	36	ND	04/14/95	
SW-19	42	12	04/18/95	
SW-22	36	ND	04/21/95	
SW-23	36	48	04/21/95	
SW-24	36	15	04/21/95	

ND DENOTES NOT DETECTED



LEGEND

- CONFIRMATION SAMPLE LOCATION
- ✕ GRID POINT
- AREA OF EXCAVATION
- EXCAVATION WATER SAMPLE

FIGURE 8-3
OU-8, Fire Protection Training Area No. 3
Fuel Distribution Line Excavation Location
Homestead ARB, Florida

TABLE 8-1
OU-8, FIRE PROTECTION TRAINING AREA NO. 3
GROUND-WATER ANALYTICAL RESULTS
VOLUNTARY GROUND-WATER MONITORING
JULY 2001

Well ID:		I-11	I-12	MW-8
Client Sample ID:		OU-8-I-11	OU-8-I-12	OU-8-MW-8
Lab Sample ID:		07365-23	07365-24	07365-25
Date Sampled:		07/18/01	07/18/01	07/18/01
Analyte	GCTL	Result	Result	Result
PAH 8310 (ug/L)				
Acenaphthene	20	<0.1	<0.1	<0.1
Acenaphthylene	210	<0.1	<0.1	0.19
Anthracene	2100	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.2	<0.1	<0.1	<0.1
Benzo(a)pyrene	0.2	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	0.2	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	210	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	0.5	<0.1	<0.1	<0.1
Chrysene	4.8	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.2	<0.1	<0.1	<0.1
Fluoranthene	280	<0.1	<0.1	0.42
Fluorene	280	<0.1	0.51	1.5
Indeno(1,2,3-cd)pyrene	0.2	<0.1	<0.1	<0.1
Naphthalene	20	<0.1	<0.1	5.1
Phenanthrene	210	<0.1	<0.1	<0.1
Pyrene	210	<0.1	<0.1	<0.1
1-Methylnaphthalene	20	<0.1	0.34	14
2-Methylnaphthalene	20	<0.1	<0.1	12
TRPH FL-PRO (mg/L)				
TRPH	5	<0.4	<0.4	1.2
Metals 200/6010B/7000 (mg/L)				
Aluminum	0.2	<0.1	<0.1	<0.1
Antimony	0.006	<0.005	<0.005	<0.005
Iron	0.3	0.024	<0.01	0.18
Lead	0.015	<0.005	<0.005	<0.005
Manganese	0.05	<0.01	<0.01	<0.01
Bold type indicates detectable concentrations.				
Concentrations above the FAC Chapter 62.777 Ground-water Cleanup Target Level (GCTL)				

9.0 OPERABLE UNIT 12

9.1 HISTORY OF CONTAMINATION

OU-12 is the former Entomology Storage Shop (former Building 371), also known as Site OT-25 and P-1. The site location is depicted in Figure 1-2. The site is located within the northeastern portion of Homestead ARB and occupies approximately 0.4 acres on the north side of St. Lo Boulevard, approximately 300 feet west of Coral Sea Boulevard, as depicted in Figure 9-1. Building 360, which is currently used as the Wing Headquarters, is located immediately east and north of the site. The installation's former water treatment plant is located immediately west of the site. The site consists of a vacant grassy area and a small parking area.

Former Building 371 was a wood and concrete-floored storage building. It was used to store a wide variety of organochlorine pesticides from the 1940s until the building's demolition in the mid-1980s. The building also was reportedly used to store water treatment chemicals and small equipment prior to its demolition.

A list of important historical events and relevant dates in the site chronology are shown below. The identified events are illustrative, not comprehensive.

Event	Date
Pesticide Storage	1940s-mid-1980s
IRP Phase I- Records Search	1983
PA/SI	1993
Extended SI/Preliminary Risk Evaluation	1995 and 1997
IRA	2000
Ground-water Monitoring	2000, 2002, 2003

9.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

An IRP Phase I Records Search was completed in 1983. OU-12 was determined to have a low potential for contamination, due to the nature of the chemicals stored in the building and the absence of evidence that significant spills had occurred at the site; however, additional investigation activities were required to support a no further action decision.

A series of soil and ground-water investigations and a voluntary IRA were conducted at OU-12 between 1993 and 2000, including a PA/SI (1993), an extended SI and preliminary risk evaluation (1995), an SI addendum (1997), and an IRA (2000). The voluntary IRA was conducted to address contaminants detected to date, including pesticides, PAHs, and assorted metals, most notably arsenic and lead. Approximately 450 tons of soil were excavated from the ground surface into the underlying bedrock.

In April 2002, post voluntary IRA soil sampling was conducted to collect more representative confirmation soil samples from the former excavation area. A total of seven floor and eight sidewall soil samples were collected from the former excavation area and were analyzed for PAHs, pesticides, and metals.

In 2000 and 2002, semi-annual ground-water monitoring was conducted at six OU-12 monitoring wells.

Significant results of these investigations revealed the following:

Soil

Constituents detected in OU-12 soil at various locations during investigations in 1993, 1995, 1997, and 2000 including VOCs, pesticides, metals, and SVOCs, primarily PAHs. VOCs were generally detected at low concentrations during the investigations in 1993 and 1995. As a result, VOC analyses were not performed in subsequent investigations. Confirmation soil samples collected during the ERA in 2000 and in the follow-up confirmation samples collected in April 2002 indicated that select PAHs, pesticides, and metals were still present in the soil after the IRA.

Ground Water

Constituents detected in OU-12 ground water include VOCs, SVOCs, and metals. Carbon disulfide and tetrachloroethene were detected in 1995 at concentrations below the PQL, and chloroform was detected at a low concentration in 1997. Three phthalates were the only SVOCs detected in any of the sampling events, all at concentrations below their respective PQLs.

Pesticides were detected in ground-water samples collected in 1993, 1995, and 1997, including aldrin, beta-BHC, delta-BHC, chlordane, 4,4'-DDE, 4,4'-DDT, endrin, endrin aldehyde, heptachlor epoxide. Numerous metals were detected in 1993 and 1995, but only calcium, magnesium, potassium, and sodium were detected in 1997.

During the first year of post voluntary IRA ground-water monitoring in 2000, no PAHs, pesticides, or PCBs were detected. Chromium was the only target constituent detected. During the second year of monitoring in 2002, antimony was the only target constituent detected. As with the 2000 samples, no pesticides or PAHs were detected. In 2003, a third ground-water monitoring event was conducted and samples were analyzed only for the presence of antimony. There were no antimony detections.

9.3 REMEDIAL ACTIONS

9.3.1 Remedy Selection

Formal remedy selection has not been conducted for OU-12. No decision document or ROD has been prepared to select a remedy.

9.3.2 Remedy Implementation

The remedy for OU-12 has not been selected.

9.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

9.4 FIVE-YEAR REVIEW PROCESS

9.4.1 Document Review

The remedy for OU-12 has not been selected. Therefore, a formal five-year review and protectiveness evaluation was not conducted. The review was limited to an evaluation of historical data and development of recommendations for future actions at the site. This evaluation consisted of a review of relevant documents including the extended SI, IRA, and ground-water monitoring reports.

9.4.2 Data Review

Data from previous investigation, confirmation sampling, and monitoring activities were compared against currently applicable risk-based cleanup criteria to evaluate whether constituents remain in place at concentrations that exceed unlimited exposure and unrestricted reuse criteria.

Soil Contamination

Data from all previous investigations, confirmation sample results from the 2000 IRA, and post-IRA confirmation sample results from 2002 were compared to the SCTLs for the residential and industrial direct exposure scenario. Sample locations that were excavated during the IRA were excluded from the evaluation. It should be noted that the extent of the excavation activities was limited in some places by the presence of building foundations and underground utility lines.

Concentrations of indeno(g, h, i) perylene exceeded the residential SCTL but did not exceed the industrial SCTL. PAHs that exceeded their respective industrial SCTLs included benzo(a) anthracene, benzo(b) fluoranthene, benzo(a) pyrene, and dibenzo(a, h) anthracene. In particular, elevated PAH concentrations remain present at sample location OT25-SL-0004 and OT25-SS-0009, which are located outside of the excavated area. These samples were located on the east side of the site adjacent to the south side of Building 361 and the north side of the site adjacent to the south side of Building 360, respectively. The most notable PAH concentration was for benzo(a) pyrene, which was detected at a concentration of 6.1 mg/kg in sample OT25-SL-0004 and 4.3 mg/kg in sample OT25-SS-0009.

Arsenic was the only metal that exceeded the residential and industrial SCTL. The maximum arsenic concentration was at sample location OUI2-SS7, which is a sidewall sample collected on the southwest side of the excavation in April 2002. Arsenic was detected at a concentration of 28 mg/kg at this location and was not removed during the IRA in 2000 because the sample is located adjacent to an asphalt-paved parking lot. This concentration of arsenic exceeds both the industrial SCTL (3.7 mg/kg) and the base-specific background level (10 mg/kg). Arsenic concentrations exceeding the residential SCTL were also detected at other sampling locations outside of the excavation area; however, in all cases the concentrations were less than the base-specific background level.

Ground-Water Contamination

Post voluntary IRA ground-water monitoring data were reviewed from ground-water monitoring activities performed in 2000, 2002, and 2003. Data from the most recent ground-water sampling event in 2003 is provided in Table 9-1

During the first year of ground-water monitoring in 2000, no PAHs, pesticides, or PCBs were detected. Chromium was the only metal detected and concentrations were well below the GCTL. Antimony was the only constituent detected during the second year of monitoring in 2002 and concentrations slightly exceeded the GCTL. Pesticides and PAHs were not detected. In 2003, a third ground-water monitoring event was conducted and samples were analyzed for antimony. Antimony was not detected.

9.4.3 Site Inspection

The remedy for OU-12 has not been selected. Therefore, a site inspection was not conducted.

9.5 TECHNICAL ASSESSMENT

As described above, a remedy has not been selected for OU-12. Therefore, a technical evaluation of remedy protectiveness was not conducted.

9.6 ISSUES

No issues were identified.

9.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Residual soil contamination remains at OU-12 above concentrations that would allow unrestricted reuse and unlimited exposure. The final remedy should address this residual contamination. If the contamination is left in place, the final remedy should include LUCs to ensure that human exposure to unacceptable contaminant concentrations in soil is restricted.

Ground-water monitoring conducted in 2003 indicates that there are no constituents at levels of concern in site ground water. Further ground-water monitoring should not be required, and the current monitoring wells should be abandoned in accordance with applicable regulatory guidelines. The site should be granted a NFI with LUCs status.

A ROD will be prepared for the subject site during 2004.

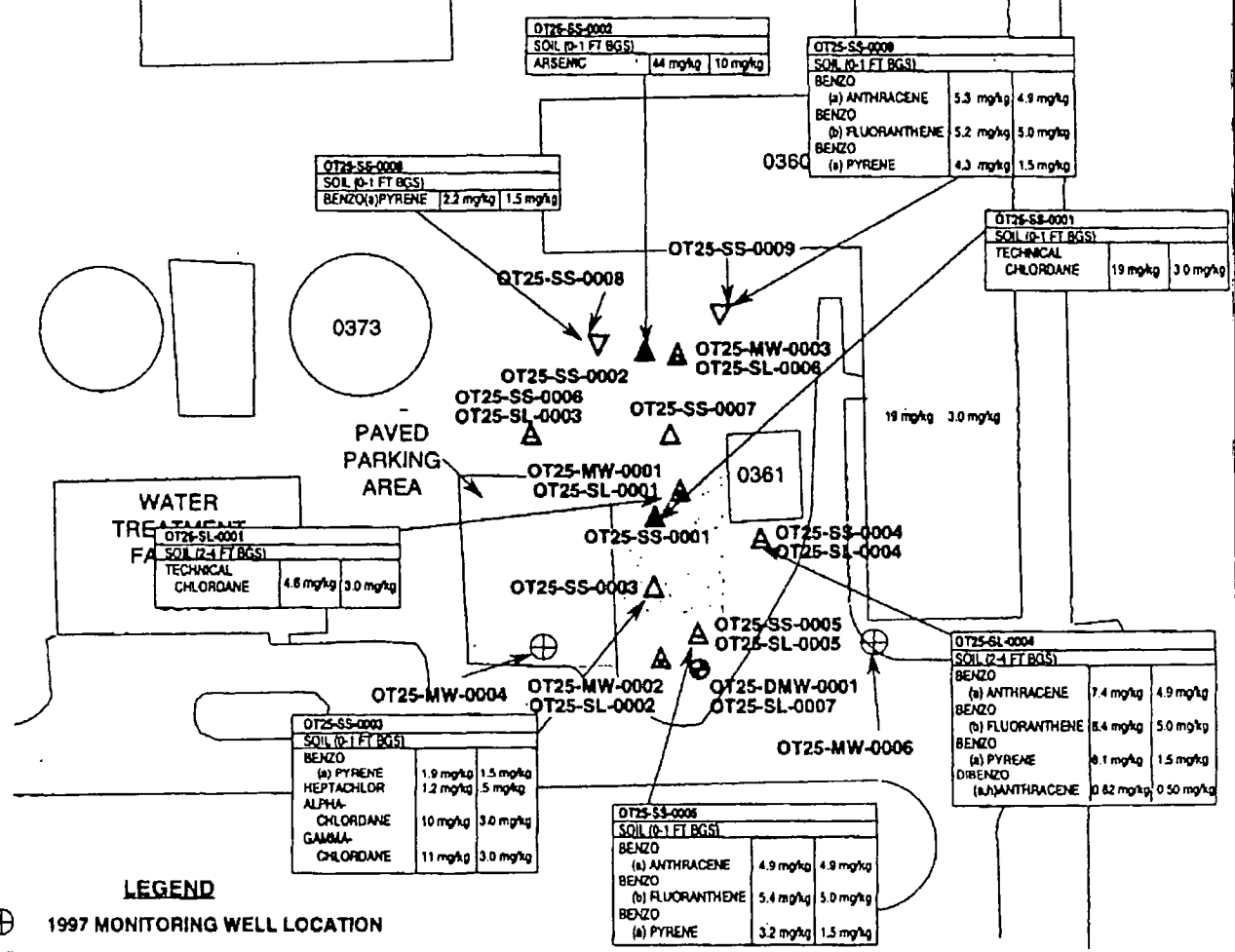
9.8 PROTECTIVENESS STATEMENT

As described above, a remedy has not been selected for OU-12. Therefore, a protectiveness evaluation was not conducted.

9.9 NEXT REVIEW

If the final remedy for this site leaves constituents in place at concentrations that do not allow unrestricted reuse and unlimited exposure, then five-year reviews will be required in the future. In this case the next five-year review for OU-12 would be required by December 2009, five years from the date of this review.

2996 92



LEGEND

- ⊕ 1997 MONITORING WELL LOCATION
- ▽ 1997 SURFACE SOIL SAMPLING LOCATION
- ▲ 1983 SHALLOW MONITORING WELL LOCATION WITH SUBSURFACE SOIL SAMPLING
- ▲ 1993 SURFACE SOIL SAMPLING LOCATION
- ⊕ 1995 DEEP MONITORING WELL LOCATION WITH SUBSURFACE SOIL SAMPLING
- ▲ 1995 SHALLOW MONITORING WELL LOCATION WITH SUBSURFACE SOIL SAMPLING
- △ 1995 SURFACE SOIL SAMPLING LOCATION
- △ 1995 SURFACE AND SUBSURFACE SOIL SAMPLING LOCATION

SAMPLE LOCATION		
MEDIA	DETECTED CONCENTRATION	SOIL TARGET LEVEL
ANALYTE		

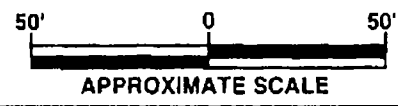
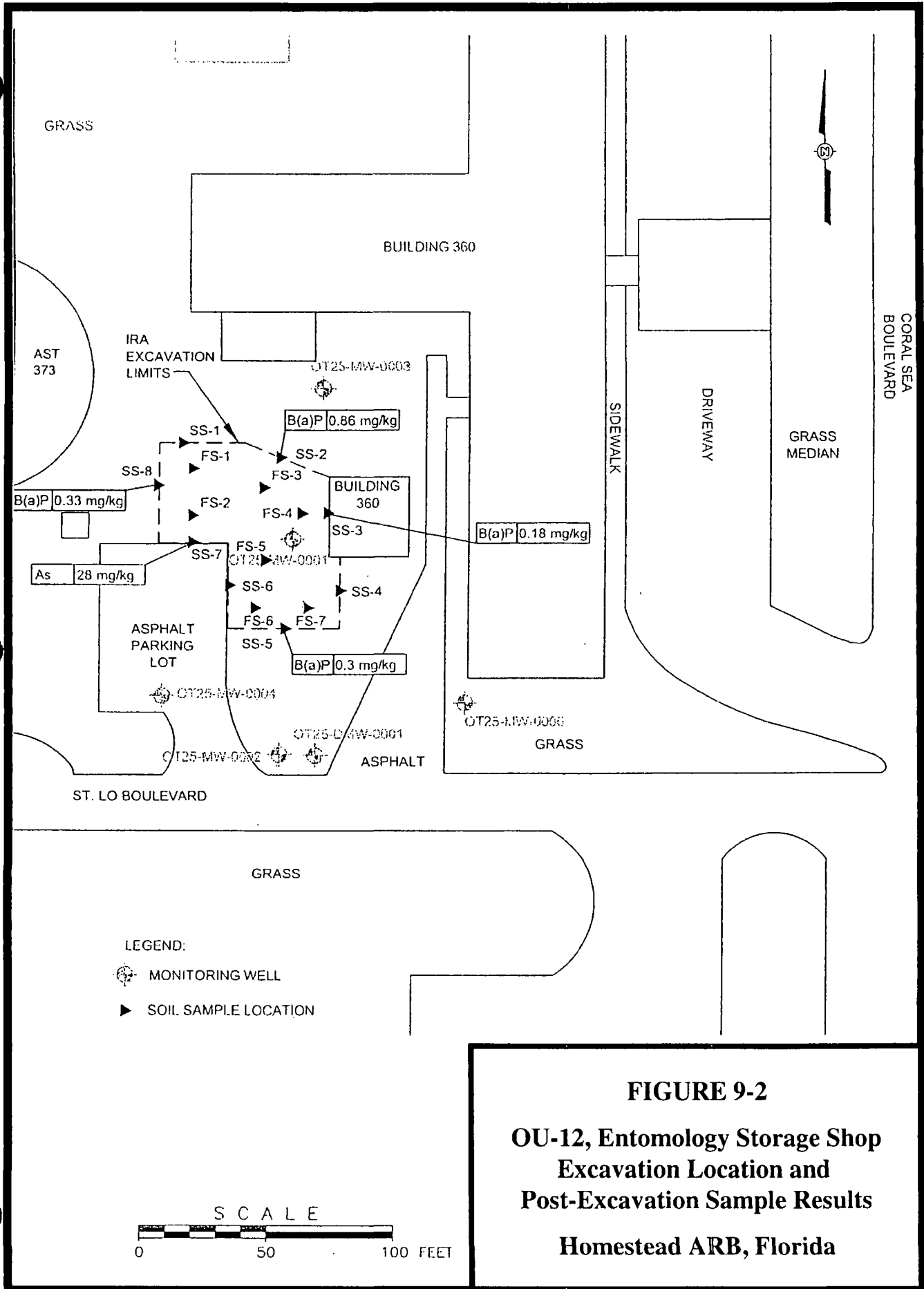


FIGURE 9-1
OU-12, Entomology Storage Shop
Site Plan and Pre-Excavation Sample Results
Homestead ARB, Florida



GRASS

BUILDING 360

CORAL SEA BOULEVARD

GRASS MEDIAN

DRIVEWAY

SIDEWALK

AST 373

IRA EXCAVATION LIMITS

OT25-MW-0003

B(a)P 0.86 mg/kg

SS-1

SS-2

FS-1

FS-3

BUILDING 360

B(a)P 0.18 mg/kg

SS-8

FS-2

FS-4

B(a)P 0.33 mg/kg

SS-7

FS-5

SS-3

As 28 mg/kg

SS-6

FS-6

SS-4

ASPHALT PARKING LOT

SS-5

FS-7

B(a)P 0.3 mg/kg

OT25-MW-0004

OT25-L/MW-0001

OT25-L/MW-0000

GRASS

ST. LO BOULEVARD

ASPHALT

GRASS

LEGEND:

MONITORING WELL

SOIL SAMPLE LOCATION

SCALE

0 50 100 FEET

FIGURE 9-2

OU-12, Entomology Storage Shop
Excavation Location and
Post-Excavation Sample Results

Homestead ARB, Florida

10.0 OPERABLE UNIT 13

10.1 HISTORY OF CONTAMINATION

OU-13 is former Hardfill Storage Area No. 3, also known as Site SS-22. The site location is depicted in Figure 1-2. The site is located within the southwestern portion of Homestead ARB near the property boundary. The site consists of land northwest of the ordnance storage area and was used to dispose of construction and demolition debris. The site is located within a predominantly unused portion of the base near the grenade practice range. The site is covered with high grass and vegetation with a mound in the land surface approximately 8 to 10 feet above the surrounding terrain. The mounded area is approximately 300 feet in diameter and is believed to be the locations of discarded construction and demolition debris. Materials that were disposed of at OU-13 reportedly included concrete, asphalt, wood, excavated earth, and other construction debris. After a severe hurricane in 1945, building materials were burned on the base, possibly at OU-13, and the debris and ashes may have been disposed of at this site.

A list of important historical events and relevant dates in the site chronology are shown below. The identified events are illustrative, not comprehensive.

Event	Date
Construction and Demolition Materials Disposal	Unknown
IRP Phase 1- Records Search	1983
Draft Decision Document	1990
PA/SI	1993
Extended SI	1995
Decision Document	1997

10.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

An IRP Phase I Records Search was completed in 1983. OU-13 was not identified as a potential source of contamination in the IRP Phase I report; thus, the site was not further evaluated using the Hazard Assessment Rating Methodology. The rationale for omitting OU-13 from further evaluation was the inert nature of the construction rubble disposed of at the site, which was not determined to be a source of contamination for surface water or ground water.

A draft Decision Document developed in 1990 concluded that OU-13 posed no significant threat to public health or the environment. The document, which was based on the IRP Phase I report, concluded that the No Further Action alternative was appropriate and that the site should be closed out under the IRP. Review of this 1990 draft Decision Document by the USEPA produced comments that required site sampling and analysis to further evaluate the potential impacts of previous disposal activities.

In 1993, a PA/SI was conducted. The objective of the PA/SI was to evaluate the potential hazards and to determine if further action at the site may be necessary. The field effort was designed to provide site-specific chemical data for soil and ground water to verify the presence or absence of contaminants at OU-13. Based on the detection of PAHs and metals in soil and ground water, confirmation sampling was recommended at OU-13 to further define the nature and extent of contamination associated with the site. An Extended SI was conducted in 1995.

Significant results of these investigations revealed the following:

Soil
Constituents detected in OU-13 soil included VOCs, pesticides, metals, and SVOCs, primarily PAHs. Benzo(a) pyrene, benzo(a) anthracene, benzo(b) fluoranthene, indeno(1, 2,3-cd) perylene, and arsenic were the constituents detected at the most significant levels.

Ground Water
Constituents detected in OU-13 ground water in several different monitoring wells include two VOCs, four phthalates, three PAHs, and several metals. No contaminant concentrations exceeded their respective GCTLs. It should also be noted that phthalates were detected at low concentrations and are most likely a result of field or laboratory contamination.

10.3 REMEDIAL ACTIONS

10.3.1 Remedy Selection

A second Draft Decision Document (Montgomery Watson, 1996) was prepared in 1996. The alternative selected was:

No Further Investigation

Although the Decision Document was not finalized, subsequent correspondence from FDEP on 22 January 1997, and from USEPA on 24 September 1997, granted No Further Response Action Planned (NFRAP) status for the site. Copies of the letters are included in Appendix D.

10.3.2 Remedy Implementation

No further action has been conducted since the site was granted NFRAP status in 1997.

10.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

10.4 FIVE-YEAR REVIEW PROCESS

10.4.1 Document Review

This evaluation consisted of a review of relevant documents including the Extended SI report and Decision Document.

10.4.2 Data Review

Data from previous investigation, confirmation sampling, and monitoring activities were compared against currently applicable risk-based cleanup criteria to evaluate whether constituents remain in place at concentrations that exceed unlimited exposure and unrestricted reuse criteria.

Soil Contamination

Concentrations of benzo(a) pyrene (22 mg/kg), benzo(a) anthracene (19 mg/kg), benzo(b) fluoranthene (23 mg/kg), and indeno(1, 2,3-cd) pyrene (11 mg/kg) in sample SS22-SS-0006 exceeded their respective residential

and industrial SCTLs. Concentrations of benzo(a) pyrene (2.0 mg/kg) and dibenz(a, h) anthracene (0.87 mg/kg) in sample SS22-SS-0001 also exceeded residential and industrial SCTLs. Arsenic concentrations exceeded the SCTLs at several locations. However, the maximum arsenic concentration (6.9 mg/kg) was less than the base-specific background level of 10 mg/kg. The concentration of barium (150 mg/kg) in sample SS22-SS-0001 slightly exceeded the residential SCTL of 110 mg/kg.

Ground-Water Contamination

Ground-water monitoring data from site investigation activities conducted in 1993 and 1995 were reviewed and compared with GCTLs. Aluminum, iron, lead, and manganese exceeded the GCTL in 1993, but only iron exceeded the GCTL in 1995. Overall, the data indicate that there are no significant impacts to the ground water at OU-13.

10.4.3 Site Inspection

The remedy for OU-13 is no further action. As such, there are no remedy components that require inspection.

10.5 TECHNICAL ASSESSMENT

A technical assessment was conducted for OU-13 to determine whether the selected remedy is functioning as intended and remains protective of human health and the environment. The results of this assessment are presented below.

Question A: Is the remedy functioning as intended by the decision documents?

Review of the historic documentation, ARARs, and sampling results indicates that the remedy for OU-13 is functioning as intended. Although residual contamination remains in soil above SCTLs, the site is located in an isolated portion of the installation, where human exposure is unlikely to be significant.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

There have been no changes to the exposure assumptions, cleanup levels, and remedial action objectives that would affect the protectiveness of the remedy.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has been presented or identified during the course of the five-year review that calls into question the protectiveness of the remedy.

10.6 ISSUES

No issues were identified.

10.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Based on a review of the historical data for OU-13, minimal PAH contamination remains in soil above unrestricted reuse and unlimited exposure criteria. This contamination does not pose a risk under the current land use scenario. However, if the property transfers from Air Force control in the future, additional excavation or LUCs should be implemented to ensure that residential exposure to the PAH contamination does not occur.

10.8 PROTECTIVENESS STATEMENT

Based on the completed activities, the intent and goals of the OU-13 Decision Document have been met and found to be protective of human health and the environment.

10.9 NEXT REVIEW

Because the remedy for this site is No Further Action, no five-year reviews will be required in the future.



LEGEND

- ▲ 1993 SHALLOW MONITORING WELL LOCATION WITH SUBSURFACE SOIL SAMPLING
- ▲ 1993 SURFACE SOIL SAMPLING LOCATION
- 1993 SHALLOW MONITORING WELL LOCATION
- ⊙ 1995 DEEP MONITORING WELL LOCATION
- 1995 SHALLOW MONITORING WELL LOCATION
- ▲ 1995 SHALLOW MONITORING WELL LOCATION WITH SUBSURFACE SOIL SAMPLING
- △ 1995 SURFACE SOIL SAMPLING LOCATION
- ▲ 1995 SUBSURFACE SOIL SAMPLING LOCATION
- 1995 APPROXIMATE HARDFILL LOCATION

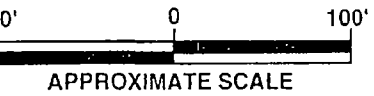


FIGURE 10-1
OU-13, Hardfill Storage Area No. 3
Site Plan
Homestead ARB, Florida

11.0 OPERABLE UNIT 15

11.1 HISTORY OF CONTAMINATION

OU-15 is the former Hazardous Waste Storage Building (Building 153). The site is located in the east-central portion of Homestead ARE on the north side of Bikini Boulevard and west of the intersection with Coral Sea Boulevard. The site location is depicted on Figure 1-2. Building 153 is a concrete block structure with an elevated loading dock on the south side of the building. The building is surrounded on the north and east by paved parking areas. A grass strip 200 ft long and 40 ft wide is located on the south side of the building, between the building and Bikini Boulevard. A site plan is included as Figure 11-1.

Building 153 was used between 1973 and 1976 to store small containers (i.e., no larger than 5 gallons) of hazardous materials. Materials typically stored in the building included battery electrolytes, paint thinners, hydraulic fluids, and motor oils. Interviews with former personnel indicated that in the mid-1970s, expired chemicals were routinely disposed of by dumping them off the loading dock on the grassy strip on the south side of the building.

A list of important historical events and relevant dates in the site chronology are shown below. The identified events are illustrative, not comprehensive.

Event	Date
Hazardous Materials Storage	1973-1976
PA/SI	1995-1996
Expanded SI	1998
RI/Baseline Risk Assessment	1999
IRA	2001
Ground-water Monitoring	2001, 2002, 2003

11.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

A PA/SI was conducted at OU-15 in 1995 and 1996. Soil and ground-water samples were collected and analyzed for VOCs, SVOCs, organochlorine pesticides, PCBs, metals, and cyanide (ground water only). Results indicated elevated levels of arsenic and SVOCs in soil and metals in ground water.

An expanded SI and an RI were conducted in 1998 and 1999, respectively, to further delineate contamination at OU-15. A voluntary IRA was conducted at OU-15 in 2001 to remove arsenic- and PAH-contaminated soil from the western end of Building 153. A total of 187 tons of soil was excavated and disposed of off-site. Additionally, ground-water monitoring for arsenic was conducted at the site in 2001 and 2003.

Significant results of these investigations revealed the following:

Soil

Low concentrations of VOCs, including BTEX constituents, chlorobenzene, and methylene chloride were detected during the SI. Similarly, pesticides, including 4,4'-ODD, 4,4'-DDE, 4,4'-DDT, endrin ketone, and chlordane also were detected a low concentrations during the SI. Since they were not detected at elevated

concentrations, VOC and pesticide analyses were not performed in subsequent investigations.

PAHs and metals were detected in soil at elevated concentrations in each of the sampling events, most notably benzo(a) pyrene and arsenic.

The voluntary IRA conducted in 2001 resulted in the excavation of 187 tons of arsenic- and PAH-contaminated soil from the western end of Building 153. However, select PAHs and arsenic still were detected in the confirmation samples collected from the floor and sidewalls of the excavation in 2001. The PAH concentrations in the confirmation samples were low; however, arsenic concentrations remained elevated in confirmation samples collected along the southern and eastern portions of the excavation. In addition, arsenic concentrations in some soil samples previously collected from soil borings located to the east of the excavation area and adjacent to Bikini Boulevard also were significantly elevated.

Ground Water

Constituents detected in OU-15 ground water include VOCs, SVOCs, pesticides, and metals. VOCs and pesticides were not monitored in later events due to low concentrations and/or inconsistent detections. Phthalates were the only SVOCs detected in ground water at OU-15. Di-n-butylphthalate was the only SVOC detected in the 1998 sampling event. Bis(2-ethylhexyl) phthalate had been detected in previous sampling events. Both are likely attributable to laboratory contamination. Several metals have been detected in ground-water samples, most notably arsenic. Arsenic has been consistently detected at elevated concentrations in ground-water samples collected from the monitoring wells on the south side of Building 153. The maximum concentration of arsenic during the initial sampling event in October 1995 was 130 µg/L in monitoring well OU15-MW-1. Monitoring wells OU15-MW-3 and OU15-MW-11 have also exhibited high arsenic concentrations. The most recent high concentrations of arsenic (100 µg/L in July 2002, and 79 µg/L in July 2003) were also detected in the samples collected from monitoring well OU15-MW-1.

11.3 REMEDIAL ACTIONS

11.3.1 Remedy Selection

Formal remedy selection has not been conducted for OU-15. No decision document has been prepared to select a remedy.

11.3.2 Remedy Implementation

The remedy for OU-15 has not been selected.

11.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

11.4 FIVE-YEAR REVIEW

11.4.1 Document Review

The remedy for OU-15 has not been selected. Therefore, a formal five-year review and protectiveness evaluation was not conducted. The review was limited to an evaluation of historical data and development of recommendations for future actions at the site. This evaluation consisted of a review of relevant documents including the PA/SI, Extended SI, RI, BRA, IRA, and ground-water monitoring reports.

11.4.2 Data Review

Data from previous investigation, confirmation sampling, and monitoring activities were compared against currently applicable risk-based cleanup criteria to evaluate whether constituents remain in place at concentrations that exceed unlimited exposure and unrestricted reuse criteria.

Soil Contamination

Data from all previous investigations and from confirmation samples collected following the IRA were evaluated and compared to the SCTLs for the residential and industrial direct exposure scenario. Sample locations that were previously excavated were excluded from the evaluation.

Initially, arsenic and select PAHs (i.e., benzo(a) anthracene, benzo(a) pyrene, benzo(b) fluoranthene, and dibenz(a, h) anthracene) were identified as contaminants of concern in soils during the 1995/1996 PA/SI conducted at OU-15. The maximum concentration of arsenic detected was 165 mg/kg in soil boring 153MNW-1, which is located south of Building 153, adjacent to Bikini Boulevard. Elevated arsenic concentrations were also detected in numerous other soil samples collected from locations southeast, south, west, and northwest of Building 153.

Following the excavation activities conducted along the western side of the site during the voluntary ERA performed in 2001, five PAHs and arsenic remained at concentrations greater than their respective SCTLs in other parts of the site. Benzo(a) anthracene, benzo(a) pyrene, benzo(b) fluoranthene, dibenz(a, h) anthracene, and indeno(1, 2,3-cd) pyrene exceeded the residential SCTL and all of these except indeno(1, 2,3-cd) pyrene also exceed the commercial/industrial SCTL. The maximum PAH concentrations were located at shallow soil boring location 153HA-12, which is located in the vicinity of monitoring well MNW-11, near the intersection of Bikini Boulevard and Coral Sea Boulevard. Arsenic concentrations in soil also exceeded the residential and commercial/industrial SCTLs at several locations. The majority of the remaining PAH and arsenic contamination at concentrations of concern is located south of Building 153, between the building and Bikini Boulevard. Lower concentrations of arsenic are present along the west side of Building 153, as indicated by confirmation samples collected from the previously discussed IRA excavation.

Ground-Water Contamination

Data from all ground-water sampling events, including post voluntary IRA ground-water monitoring, were compared to the GCTLs. The results of this comparison are presented in Table 11-1.

Initially, VOCs, SVOCs, pesticides, and metals were detected in ground-water monitoring events conducted during the 1995/1996 PA/SI. However, only arsenic was detected consistently and at significant concentrations. The maximum arsenic concentrations detected in ground-water monitoring conducted during the 1995/1996 PA/SI was 260 µg/l in monitoring well 153MNW-1. Aluminum, iron, and manganese were also detected at elevated concentrations during sampling conducted in 1995.

In subsequent ground-water sampling performed in 1998, 1999, 2001, 2002, and 2003, the maximum arsenic concentrations were 140 µg/L, 223 µg/L, 72 µg/L, 100 µg/L, and 79 µg/L, respectively. These concentrations all exceed the GCTL of 50 µg/l. In all years except 1999, the maximum arsenic concentration was detected in monitoring well 153MNW-1. In 1999, the maximum arsenic concentration was detected in monitoring well 153MNW-3. This comparison indicates that arsenic remains at elevated concentrations in ground water on the south side of Building 153.

Overall, the data review indicates that both soil and ground-water contamination remains at OU-15 above unrestricted reuse and unlimited exposure criteria. Arsenic has consistently been detected in ground water at elevated concentrations since 1995, and PAHs and arsenic remain in soil at elevated concentrations at locations that have not been excavated.

11.4.3 Site Inspection

The remedy for OU-15 has not been selected. As such, there are no remedy components that require inspection.

11.5 TECHNICAL ASSESSMENT

As described above, a remedy has not been selected for OU-15. Therefore, a technical evaluation of remedy protectiveness was not conducted.

11.6 ISSUES

No issues were identified.

11.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Residual soil contamination (i.e., select PAHs and arsenic) remains in some portions of OU-15 above concentrations that would allow unrestricted reuse and unlimited exposure. The final remedy should address this residual contamination. If the contamination is left in place, the final remedy should include LUCs to ensure that human exposure to unacceptable contaminant concentrations in soil is restricted.

Ground-water monitoring conducted in 2003 indicates that arsenic contamination still remains at levels of concern in the samples collected from monitoring wells along the south side of Building 153. Annual ground-water monitoring of these wells should continue until the arsenic concentrations fall below the GCTL for two consecutive sampling events.

A ROD will be prepared for the subject site during 2004.

11.8 PROTECTIVENESS STATEMENT

As described above, a remedy has not been selected for OU-15. Therefore, a protectiveness evaluation was not conducted.

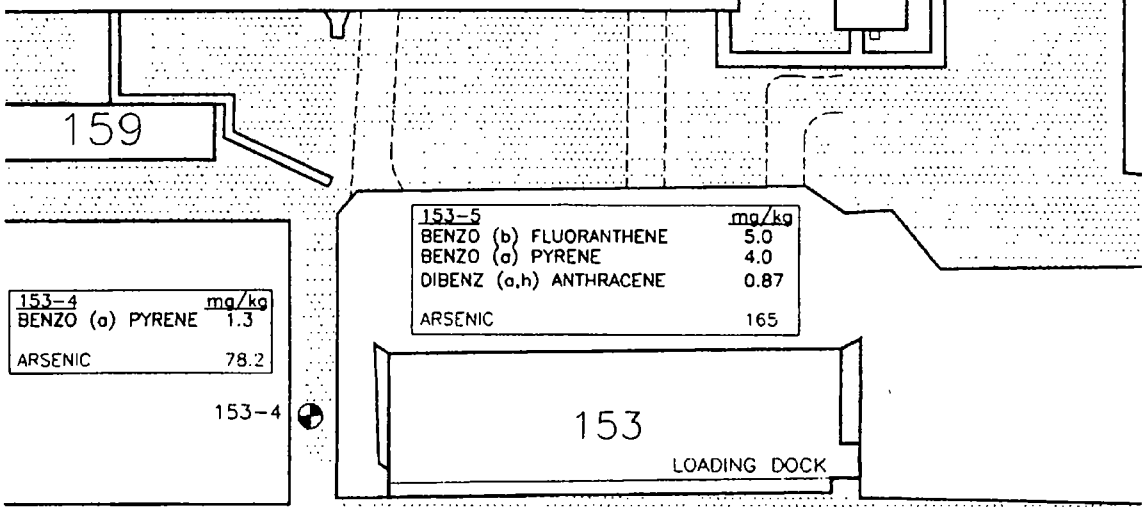
11.9 NEXT REVIEW

If the final remedy for this site leaves constituents in place at concentrations that do not allow unrestricted reuse and unlimited exposure, then five-year reviews will be required in the future. In this case the next five-year review for OU-15 would be required by December 2009, five years from the date of this review.



FL DEP INDUSTRIAL CLEANUP GOALS FOR SOIL (mg/kg)	
BENZO (a) ANTHRACENE	= 4.9
BENZO (a) PYRENE	= 0.5
BENZO (b) FLUORANTHENE	= 5.0
DIBENZ (a,h) ANTHRACENE	= 0.5
ARSENIC	= 3.1

PARKING LOT



153-4	mg/kg
BENZO (a) PYRENE	1.3
ARSENIC	78.2

153-5	mg/kg
BENZO (b) FLUORANTHENE	5.0
BENZO (a) PYRENE	4.0
DIBENZ (a,h) ANTHRACENE	0.87
ARSENIC	165

153-4

153

LOADING DOCK

153-2 153-1 153-3 153-5

BIKINI BLVD



DRAINAGE DITCH

153-2	mg/kg
BENZO (a) PYRENE	1.6
ARSENIC	16.0

153-1	mg/kg
BENZO (a) PYRENE	0.7
ARSENIC	6.3

153-3	mg/kg
BENZO (a) ANTHRACENE	8.30
BENZO (b) FLUORANTHENE	8.20
BENZO (a) PYRENE	6.70
DIBENZ (a,h) ANTHRACENE	1.50J
ARSENIC	106

LEGEND

-  GRASSY AREAS
-  SOIL BORING/MONITORING WELL

NOTES:

1. RESULTS GIVEN IN mg/kg (MILLIGRAMS PER KILOGRAM OR PARTS PER MILLION).
2. DEFINITIONS FOR QUALIFIERS ARE INCLUDED IN THE TABLES.

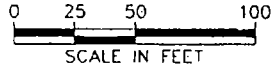


FIGURE 11-1
OU-15, Hazardous Waste Storage Building
Site Plan and Soil Boring Sample Results
Homestead ARB, Florida



PARKING LOT

159

153HA-3	mg/kg
BENZO (a) PYRENE	= 2.2
ARSENIC	= 60.0

153HA-2 (AS=11)

153HA-3 (AS=60)

153-4

153

LOADING DOCK

153HA-4 (AS=27)

153-2

153-1

153HA-8 (AS=53)

153HA-10 (AS=62)

153HA-1 (AS=86)

153HA-5 (AS=78)

153HA-6 (AS=41)

153HA-7 (AS=45)

153-3

153HA-9 (AS=120)

153-5

153HA-11 (AS=110)

153HA-12 (AS=44)

BIKINI BLVD




DRAINAGE DITCH

CORAL SEA BLVD

FL DEP INDUSTRIAL CLEANUP GOALS FOR SOIL (mg/kg)

BENZO (a) ANTHRACENE	= 4.9
BENZO (a) PYRENE	= 0.5
BENZO (b) FLUORANTHENE	= 5.0
ARSENIC	= 3.1

LEGEND

-  GRASSY AREAS
-  MONITORING WELL
-  HAND AUGER BORING

NOTES:

1. RESULTS GIVEN IN mg/kg (MILLIGRAMS PER KILOGRAM OR PARTS PER MILLION)
2. EXAMPLE: 153HA-1 (AS=86)

153HA-12	mg/kg
BENZO (a) ANTHRACENE	= 6.5
BENZO (b) FLUORANTHENE	= 5.6
BENZO (a) PYRENE	= 6.0
ARSENIC	= 44.0

FIGURE 11-2

OU-15, Hazardous Waste Storage Building Hand Auger Sample Results

Homestead ARB, Florida

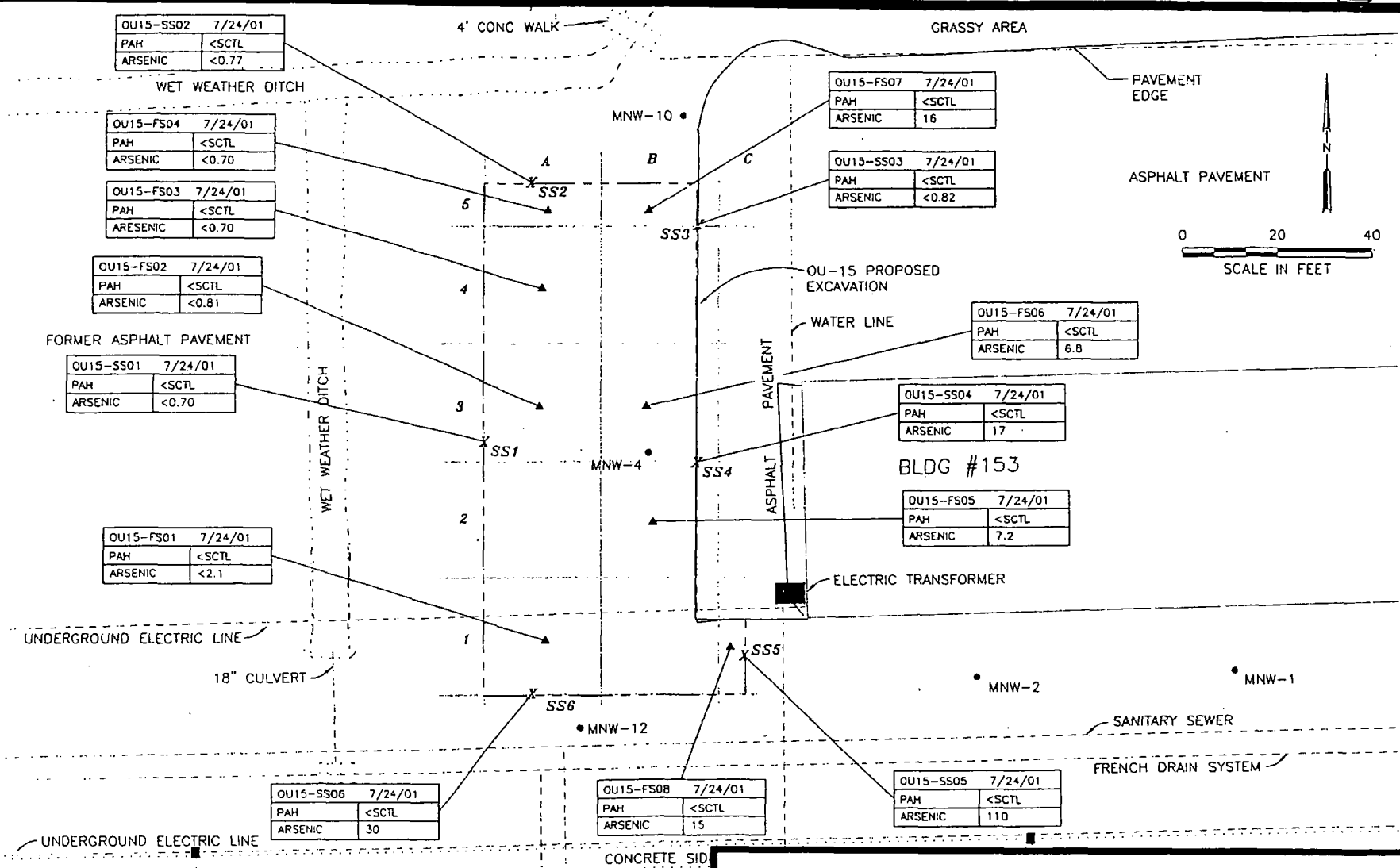


FIGURE 11-3
OU-15, Hazardous Waste Storage Building
Excavation Location and Confirmation Sample Results
Homestead ARB, Florida

TABLE 11-1

OU-15, HAZARDOUS WASTE STORAGE BUILDING

ARSENIC IN GROUND WATER

1995 THROUGH 2003 GROUND-WATER MONITORING

Well ID:	OU-15-MW-1										
Lab Sample ID:		510387-2	511491-2	604258-001	9801430-4	L9804290-05	90117765	2001/07365-1	2002/01387-12	2002/07303-4	2003/07538-9
Date Sampled:		10/18/95	11/11/95	04/10/96	01/22/98	04/15/98	12/15/99	07/17/01	01/21/02	07/15/02	07/26/03
Analyte	GCTL	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Metals 200.7 (mg/L)											
Arsenic	0.05	0.13	0.1	0.26	0.14	0.11	0.06	0.072	0.093	0.1	0.029
Well ID:	OU-15-MW-2										
Lab Sample ID:		510365-1	511491-3	604256-002	9801430-5	L9804290-13	90117766	2001/07365-2	2002/01438-3	2002/07303-5	2003/07536-10
Date Sampled:		10/18/95	11/11/95	04/10/96	01/22/98	04/15/98	12/15/99	07/17/01	01/25/02	07/15/02	07/26/03
Analyte	GCTL	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Metals 200.7 (mg/L)											
Arsenic	0.05	0.0561	0.0257	0.036	0.1	0.028	<0.01	0.012	0.025	0.024	0.019
Well ID:	OU-15-MW-3										
Lab Sample ID:		510372-1	511491-4	604256-003	9801430-3	L9804290-06	90117767	2001/07365-3	2002/01387-11	2002/07303-6	2003/07536-11
Date Sampled:		10/18/95	11/11/95	04/10/96	01/22/98	04/15/98	12/15/99	07/17/01	01/21/02	07/15/02	07/26/03
Analyte	GCTL	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Metals 200.7 (mg/L)											
Arsenic	0.05	0.0433	0.0397	0.038	0.074	0.07	0.223	0.07	0.068	0.085	0.074
Well ID:	OU-15-MW-4										
Lab Sample ID:		510365-1	511491-5	604256-004	9801430-6	L9804290-12	90117768	2001/07365-5	2002/01438-2	2002/07303-8	2003/07538-12
Date Sampled:		10/18/95	11/11/95	04/10/96	01/22/98	04/15/98	12/15/99	07/17/01	01/25/02	07/15/02	07/26/03
Analyte	GCTL	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Metals 200.7 (mg/L)											
Arsenic	0.05	0.0452	0.0684	0.1	0.045	0.042	0.027	0.058	0.038	0.078	0.044

TABLE 11-1 (cont.)

OU-15, HAZARDOUS WASTE STORAGE BUILDING

ARSENIC IN GROUND WATER

1995 THROUGH 2003 GROUND-WATER MONITORING

Well ID:		OU-15-MW-5									
Lab Sample ID:		510370-1	511491-5	604256-005	9801430-1	L9804280-09	80117769	2001/07365-6	2002/01387-10	2002/07303-9	2003/07538-14
Date Sampled:		10/18/95	11/11/95	04/10/98	01/22/98	04/15/98	12/15/99	07/17/01	01/21/02	07/15/02	07/26/03
Analyte	GCTL	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Metals 200.7 (mg/L)											
Arsenic	0.05	0.0369	0.032	0.036	0.034	0.029	<0.01	0.038	0.023	0.048	0.017
Well ID:		OU-15-MW-11									
Lab Sample ID:		NA	NA	NA	NA	NA	80117772	2001/07365-7	2002/01387-9	2002/07303-10	2003/07538-15
Date Sampled:		NA	NA	NA	NA	NA	12/15/99	07/17/01	01/21/02	07/15/02	07/26/03
Analyte	GCTL	NA	NA	NA	NA	NA	Result	Result	Result	Result	Result
Metals 200.7 (mg/L)											
Arsenic	0.05	NA	NA	NA	NA	NA	0.055	0.01	0.014	0.019	0.013
Well ID:		OU-15-MW-12									
Lab Sample ID:		NA	NA	NA	NA	NA	90117774	2001/07365-8	2002/01438-4	2002/07303-11	2003/07538-16
Date Sampled:		NA	NA	NA	NA	NA	12/15/99	07/17/01	01/25/02	07/15/02	07/26/03
Analyte	GCTL	NA	NA	NA	NA	NA	Result	Result	Result	Result	Result
Metals 200.7 (mg/L)											
Arsenic	0.05	NA	NA	NA	NA	NA	0.028	0.055	<0.01	0.094	0.068

12.0 OPERABLE UNIT 19

12.1 HISTORY OF CONTAMINATION

OU-19 is the Aircraft Ground Equipment (AGE) Shop (Building 208). The site is located within the southeast portion of Homestead ARE, as depicted in Figure 1-2. The building is constructed of concrete blocks and occupies approximately 1 acre. The building is surrounded by grassy areas, but it is located directly adjacent to the active flight operations area. Taxiway B is located approximately 450 ft southwest of the site. A site plan is included as Figure 12-1.

An oil/water separator (OWS) and waste oil underground storage tank (UST) were located near the northeast corner of the building. According to interviews with installation personnel, Building 208 has been used for AGE maintenance and repair since 1950. Unused supplies of oil and lubricants were stored in 55-gallon steel drums and waste oil was stored in the UST.

A list of important historical events and relevant dates in the site chronology are shown below. The identified events are illustrative, not comprehensive.

Event	Date
AGE Maintenance	1950-present
Confirmation Sampling	1994
SI	1996
Supplemental SI	1997
IRA	1996, 2000

12.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

Preliminary investigation of OU-19 was completed in 1994 as part of the Confirmation Sampling Program. Investigations focused on an oil-stained area at the southwest corner of Building 208. One surface soil sample (0-2 ft below ground surface (bgs)), one subsurface soil sample (2-4 ft bgs), and one ground-water sample were collected. Samples were analyzed for VOCs, SVOCs, and metals.

An IRA was conducted in 1996 to remove elevated lead concentrations in surface soil samples collected during the investigations conducted in 1994. Approximately 15 tons of contaminated soil were excavated from an area 10 ft long, 10 ft wide, and 2 ft deep, centered on the location of the surface soil sample collected in 1994 (SM23-SS-01) and disposed of off site. Confirmation sample results indicated that significant concentrations of lead remained in unexcavated portions of the site.

An SI was conducted at OU-19 in 1996 and a Supplemental SI was conducted in 1997 to further delineate the horizontal and vertical extent of lead-contaminated soil.

A second IRA was conducted in 2000. Approximately 25 tons of contaminated soil was excavated from an area 20 ft wide, 55 ft long, and up to 1.5 ft deep. Three confirmation samples were collected and were analyzed for arsenic, cadmium, chromium, lead, and antimony. Based on the confirmation sample results, six additional inches of soil were excavated from Area 1, and a new confirmation sample was collected and analyzed for arsenic only.

Significant results of these investigations are summarized below.

Soil
Several metals were detected in soil at OU-19 at elevated concentrations, most notable of which was lead. Lead was detected in a surface soil sample collected during the initial investigation at a concentration of 1,170 mg/kg. Much lower concentrations were detected in subsurface soil, including lead at 0.59 mg/kg. Subsequent investigations revealed lead concentrations as high as 3,500 mg/kg. Toluene was detected at a low concentration (i.e., 5 µg/kg) in soil during the initial sampling event. Otherwise, VOCs and SVOCs were not detected.

Confirmation samples were collected after the excavation in 1996, and lead was detected in each of the confirmation samples. Lead concentrations ranged from 331 mg/kg to 875 mg/kg.

The majority of the contamination was removed during the second IRA in 2000. All of the previous surface soil sample locations were excavated, including the areas of elevated lead concentrations and the toluene detection referenced above. Arsenic, lead, and antimony were detected in the final confirmation samples collected after the IRA in 2000. Concentrations of each constituent were significantly lower than previously detected.

Ground Water

Constituents detected in OU-19 ground water were limited to metals. Several metals were detected in monitoring well SM23-MW-0001 at low concentrations during the initial sampling event in 1994. VOCs and SVOCs were not detected. Lead was detected at a concentration of 1.4 µg/L during the initial sampling event in 1994, but it was not detected when the monitoring well was resampled during the IRA in 1996.

12.3 REMEDIAL ACTIONS

12.3.1 Remedy Selection

Based on the results of the IRA in 2000, the Air Force recommended no further action as the appropriate remedy for OU-19.

12.3.2 Remedy Implementation

FDEP, USEPA, and DERM approved the recommendation for no further action in correspondence dated 1, 4, and 22 June 2001, respectively. Copies of the letters are included in Appendix D.

12.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

12.4 FIVE-YEAR REVIEW

12.4.1 Document Review

This five-year review consisted of a review of relevant documents including the Confirmation Sampling, SI, Supplemental SI, and IRA reports.

12.4.2 Data Review

Data from previous investigation and confirmation sampling activities were compared against currently

applicable risk-based cleanup criteria to evaluate whether constituents remain in place at concentrations that exceed unlimited exposure and unrestricted reuse criteria.

Soil Contamination

Data from all previous investigations were compared to the SCTLs for the residential direct exposure scenario. Sample locations that were previously excavated were excluded from the evaluation.

Antimony, arsenic, cadmium, chromium, and lead were detected in shallow soils associated with OU-19. Maximum concentrations of arsenic and lead were 15.2 mg/kg and 3,500 mg/kg, respectively, which exceeded their respective industrial SCTLs. Antimony slightly exceeded the residential SCTL in one sample (SM23-SB-0001-4) collected during the 1994 investigation. Concentrations of cadmium and chromium did not exceed SCTLs.

Following IRA excavation activities, arsenic was detected at a maximum concentration of 4.6 mg/kg in the final confirmation samples. Although this concentration of arsenic exceeds the residential and commercial/industrial SCTLs, it is below the base-specific background concentration of 10 mg/kg. The concentration of lead in all final confirmation samples was less than the SCTL.

Ground-Water Contamination

Data from the most recent ground-water sampling events for each constituent were compared to the standards defined by the GCTLs. The results of this comparison are presented in Table 12-1. The comparison indicates that there are no constituents in ground water at OU-19 at levels of concern.

12.4.3 Site Inspection

The remedy for OU-19 is no further action. As such, there are no remedy components that require inspection.

12.5 TECHNICAL ASSESSMENT

A technical assessment was conducted for OU-19 to determine whether the selected remedy is functioning as intended and remains protective of human health and the environment. The results of this assessment are presented below.

Question A: is the remedy functioning as intended by the decision documents?

Review of the historic documentation, ARARs, and sampling results indicates that the remedy for OU-19 is functioning as intended. The selected remedy was no further action, and evaluation of the data indicate that given the current land use at the site, no further action remains an appropriate remedy.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

During the ERA in 2000, the SCTLs were used as cleanup criteria. The base-specific background concentration of 10 mg/kg was used as the cleanup level for arsenic. Confirmation sampling results indicate that these criteria were not exceeded. These criteria remain in effect and have not been changed since the time of the excavation.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has been presented or identified during the course of the five-year review that calls into question the protectiveness of the remedy.

12.6 ISSUES

No issues were identified.

12.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

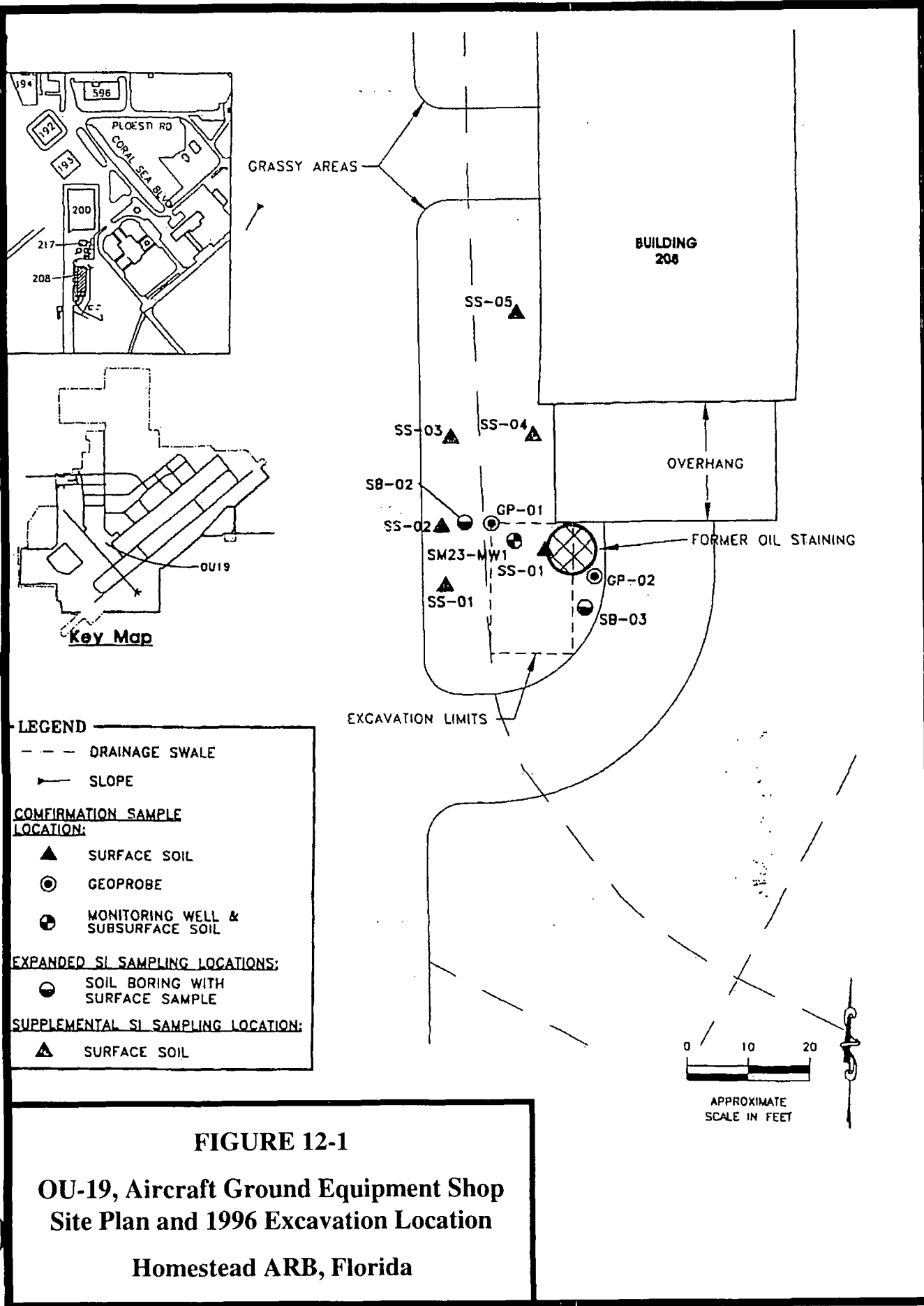
A remedy of No Further Action has been approved for OU-19. Therefore, no follow-up actions are warranted.

12.8 PROTECTIVENESS STATEMENT

Based on the completed activities, the intent and goals of the OU-19 remedy have been met and found to be protective of human health and the environment.

12.9 NEXT REVIEW

Because no contamination remains at OU-19, five-year reviews are not required in the future.



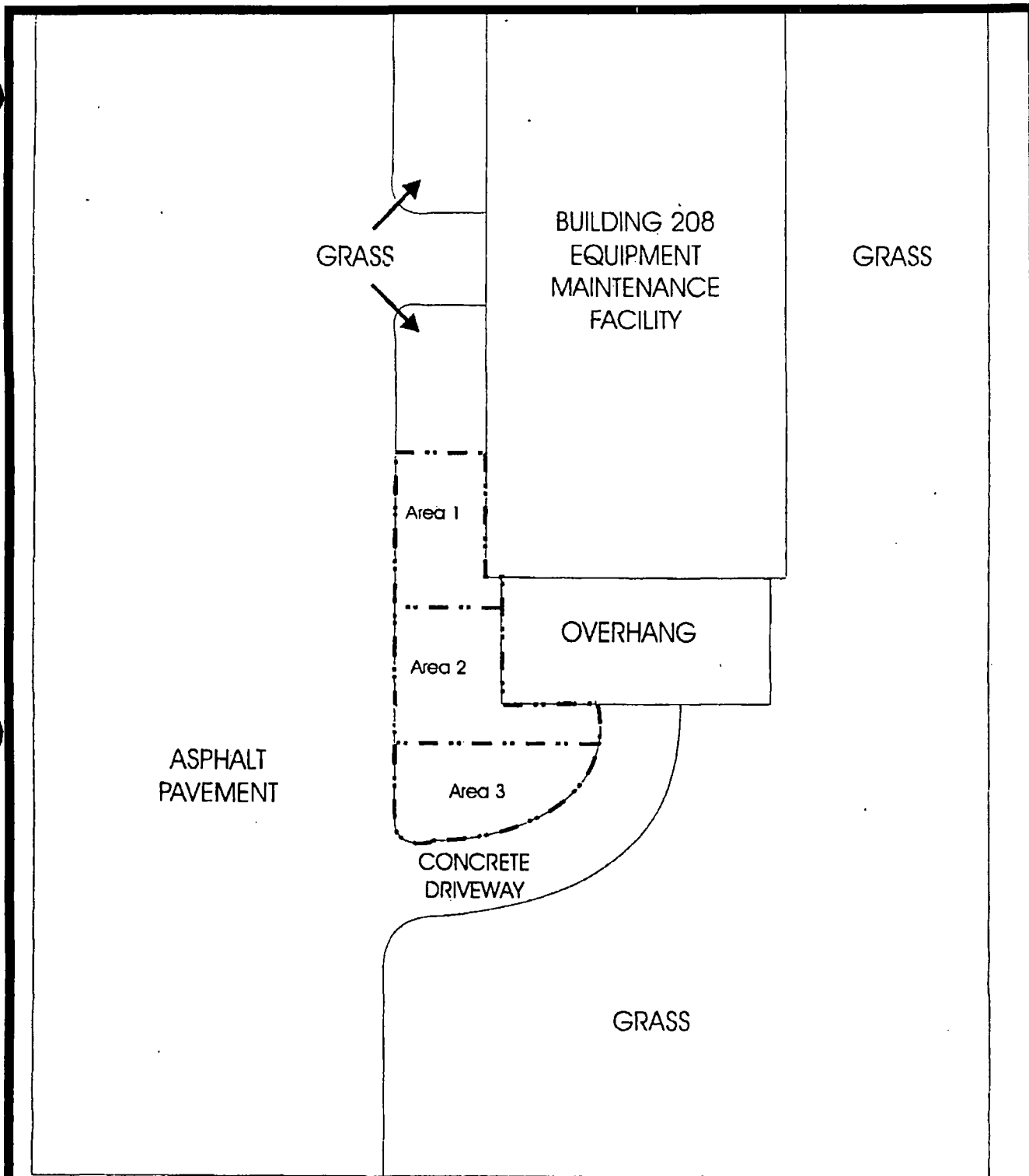


FIGURE 12-2
OU-19, Aircraft Ground Equipment Shop
2000 Excavation Location
Homestead ARB, Florida

13.0 OPERABLE UNIT 25

13.1 HISTORY OF CONTAMINATION

OU-25 is the Hush House Area, formerly known as SWMU 59. The site is located in the extreme southern portion of Homestead ARB and occupies an area of approximately 0.4 acres, including the hardstand pad near Building 814. The site location is depicted on Figure 1-2. This area of the installation is undeveloped and lies on the far side of the runway, isolated from the main portion of Homestead ARB. Grassy fields surround the pad on the north, east, and south. Heavy brush is located to the west of the pad. The runway is located approximately 1,200 feet northwest of the site. A site plan is included as Figure 13-1.

The hardstand pad is a square concrete pad that had been used to secure aircraft for engine testing prior to construction of the hush houses in the mid-1980s. In addition, this location was used to stage and consolidate a variety of materials and waste that were collected from around the base after Hurricane Andrew in 1992. Materials and wastes reportedly staged in the area included pesticides, herbicides, paints, paint thinners, waste and lube oils, and contaminated soil.

A list of important historical events and relevant dates in the site chronology are shown below. The identified events are illustrative, not comprehensive.

Event	Date
Aircraft Engine Testing	Prior to the mid-1980s
Material/Waste Storage	1992
Confirmation Sampling	1994
IRA	1996
SI	1996
Ground-Water Monitoring	1997, 1998, 2001

13.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

Preliminary investigation of OU-25 was completed in 1994 as part of the Confirmation Sampling Program. Elevated concentrations of lead and chromium were detected in a soil sample (SM59-SS-02).

An IRA was conducted in 1996 to remove elevated lead and chromium concentrations in surface soil observed during the investigations conducted in 1994. Approximately 27.7 tons of contaminated soil were excavated and disposed of off site from an area 15 feet long, 15 feet wide, and 2 ft deep, centered on the location of the surface soil sample collected in 1994 (SM59-SS-02).

In 1996, an SI was conducted to collect additional soil and ground-water samples. Additionally, ground-water monitoring was conducted at the two existing monitoring wells at the site in July 1997, January 1998, and July 2001. Ground-water samples collected during the 1997 and 1998 sampling events were analyzed for VOCs, SVOCs, organochlorine pesticides, PCBs, and metals. In 2001, the analyses were limited to VOCs and metals.

Significant results of these investigations revealed the following:

Soil

Constituents detected in OU-25 soil include VOCs, SVOCs, pesticides, PCBs, and metals. Elevated metals concentrations, including lead at 1,400 mg/kg and chromium at 229 mg/kg, were detected at sample location SM59-SS-02. In 1996, an IRA was conducted to remove surface soil in the vicinity of sample location SM59-SS-02. Confirmation samples collected from the floor and sidewalls of the excavation indicate that this area of contamination was successfully remediated.

Additional investigations conducted as part of the SI in 1996 were consistent with previous investigations, indicating low levels of PAH and elevated metal concentrations in isolated areas.

Ground Water

Constituents detected in OU-25 ground water include VOCs, SVOCs, and metals. Low concentrations of VOCs were detected in the grab ground-water samples collected from the direct-push borings in 1994, including BTEX constituents (e.g., 1.0 µg/L benzene) at SM59-GP-006. Low concentrations of chlorinated VOCs also were detected in several samples, with the highest concentration at SM59-GP-007 (e.g., 5.71 µg/L PCE). VOCs and SVOCs were not detected in monitoring well SM59-MW-0001. Low concentrations of two VOCs (carbon disulfide and total 1,2-DCE) and two SVOCs (naphthalene and 2-methylnaphthalene) were detected in monitoring well SM59-MW-0002. Several metals also were detected, none of which were at significantly elevated concentrations. These results indicate that the lead and chromium contamination in soil in this vicinity did not adversely affect ground water.

Ground-water samples collected during the SI in 1996 were consistent with the 1994 sample results. Ground-water monitoring conducted in 1997, 1998, and 2001 continued to indicate the presence of low concentrations of VOCs in ground water, including cis-1, 2-dichloroethene, isopropylbenzene, and tetrachloroethene.

13.3 REMEDIAL ACTIONS

13.3.1 Remedy Selection

Formal remedy selection has not been conducted for OU-25. No decision document has been prepared to select a remedy.

13.3.2 Remedy Implementation

The remedy for OU-25 has not been selected.

13.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

13.4 FIVE-YEAR REVIEW PROCESS

13.4.1 Document Review

The remedy for OU-25 has not been selected. Therefore, a formal five-year review and protectiveness evaluation was not conducted. The review was limited to an evaluation of historical data and development of recommendations for future actions at the site. This evaluation consisted of a review of relevant documents including the confirmation sampling, SI, IRA, and ground-water monitoring reports.

13.4.2 Data Review

Data from previous investigation, confirmation sampling, and monitoring activities were compared against currently applicable risk-based cleanup criteria to evaluate whether constituents remain in place at concentrations that exceed unlimited exposure and unrestricted reuse criteria.

Soil Contamination

Data from all previous investigations were compared to the SCTLs for the residential and industrial direct exposure scenario. Sample locations that were previously excavated were excluded from the evaluation.

Following excavation activities associated with the BRA, a review of the remaining soil contamination indicates that five PAHs and six metals remain in soil at OU-25 at concentrations greater than the SCTLs. Benzo(a) anthracene, benzo(a) pyrene, benzo(b) fluoranthene, dibenz(a, h) anthracene, and indeno(1, 2,3-cd) pyrene exceed the residential SCTL and benzo(a) pyrene, benzo(b) fluoranthene, and dibenz(a, h) anthracene also exceed the commercial/industrial SCTL. Maximum concentrations of benzo(a) pyrene, benzo(b) fluoranthene, and dibenz(a, h) anthracene were 4.1 mg/kg, 4.9 mg/kg, and 0.78 mg/kg, respectively. Antimony, arsenic, barium, copper, lead, and vanadium exceeded the residential SCTL, but only arsenic exceeded the industrial SCTL, at a concentration of 21.5 mg/kg. Lead exceeded the residential SCTL at two locations, with a maximum concentration of 647 mg/kg, which was below the industrial SCTL, being located at sample OU25-SS-0006.

Ground-Water Contamination

Data from all ground-water sampling events for each constituent were compared to the GCTLs. Data from the most recent sampling event are presented in Table 13-1. Isopropylbenzene was the only contaminant in ground-water samples that exceeded the GCTL. Isopropylbenzene was detected in monitoring well SM59-MW-2 at a concentration of 7.0 µg/L, 11.0 µg/L, and 2.4 µg/L in 1997, 1998, and 2001, respectively. These concentrations all exceed the GCTL of 0.8 µg/L, which is an FDEP organoleptic criterion, not a Federal or State primary or secondary drinking water standard.

Overall, the data review indicates that there are not significant site-related impacts to ground water at OU-25. However, residual soil contamination, primarily lead, arsenic, and PAHs, remain at OU-25 above unrestricted reuse and unlimited exposure criteria.

13.4.3 Site Inspection

The remedy for OU-25 has not been selected. As such, there are no remedy components that require inspection.

13.5 TECHNICAL ASSESSMENT

As described above, a remedy has not been selected for OU-25. Therefore, a technical evaluation of remedy protectiveness was not conducted.

13.6 ISSUES

No issues were identified.

13.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Residual soil contamination remains at OU-25 above concentrations that would allow unrestricted reuse and unlimited exposure. The final remedy should address this residual contamination. If the contamination is left in

place, the final remedy should include LUCs to ensure that human exposure to unacceptable contaminant concentrations in soil is restricted.

Ground-water monitoring conducted in 2001 indicates that isopropyl benzene was the only constituent that exceeded a GCTL in site ground water. The exceedance of this non-primary or secondary drinking water standard was minimal and limited to a single monitoring well. Therefore, further ground-water monitoring should not be required, and the current monitoring wells should be abandoned in accordance with applicable regulatory guidelines. The site should be granted a NFI with LUCs status.

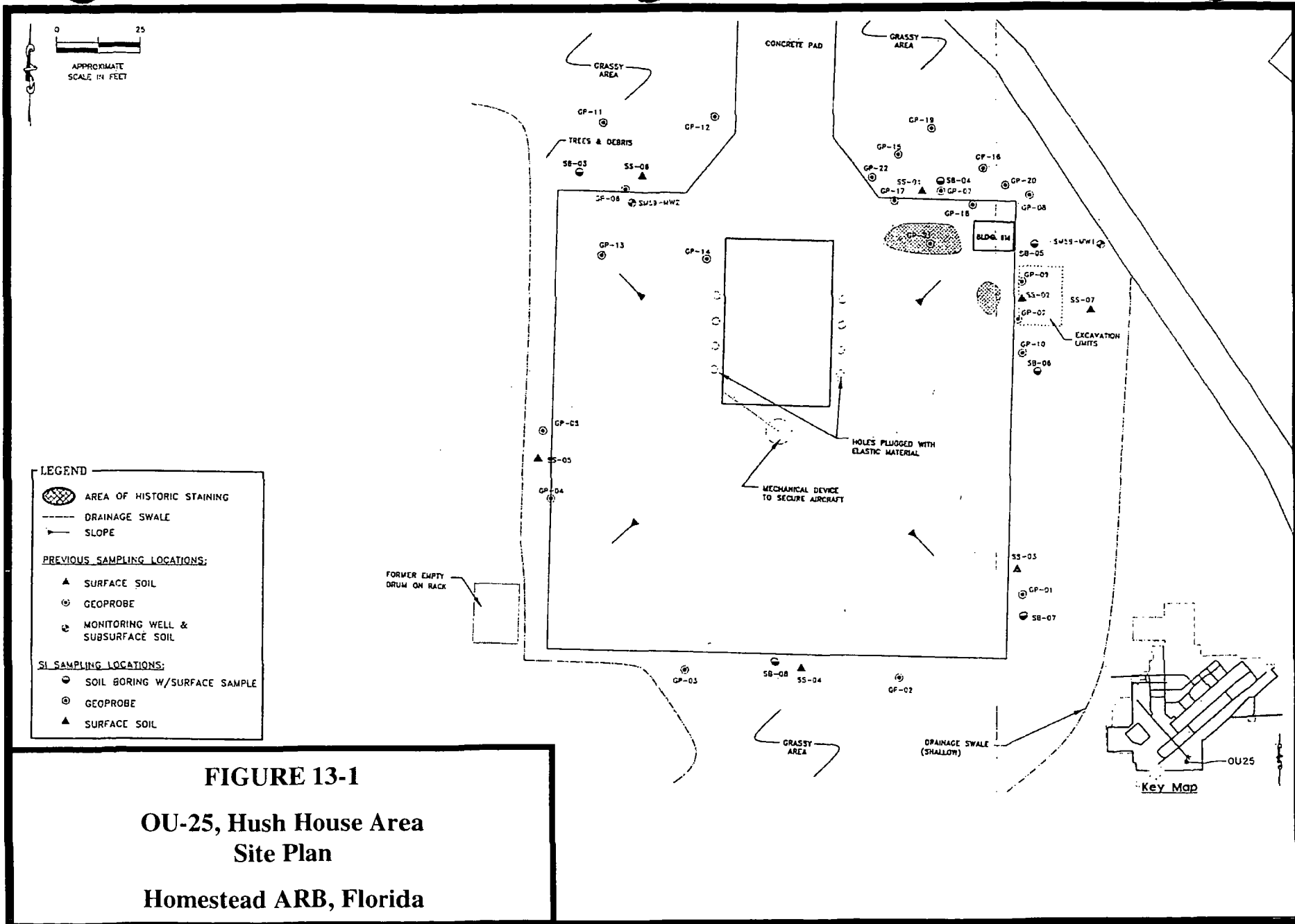
A ROD will be prepared for the subject site during 2004.

13.8 PROTECTIVENESS STATEMENT

As described above, a remedy has not been selected for OU-25. Therefore, a protectiveness evaluation was not conducted.

13.9 NEXT REVIEW

If the final remedy for this site leaves constituents in place at concentrations that do not allow unrestricted reuse and unlimited exposure, then five-year reviews will be required in the future. In this case the next five-year review for OU-25 would be required by December 2009, five years from the date of this review.



LEGEND

- AREA OF HISTORIC STAINING
- DRAINAGE SWALE
- SLOPE

PREVIOUS SAMPLING LOCATIONS:

- SURFACE SOIL
- GEOPROBE
- MONITORING WELL & SUBSURFACE SOIL

SI SAMPLING LOCATIONS:

- SOIL BORING W/SURFACE SAMPLE
- GEOPROBE
- SURFACE SOIL

FIGURE 13-1
OU-25, Hush House Area
Site Plan
Homestead ARB, Florida

TABLE 13-1
OU-25, HUSH HOUSE AREA
GROUND-WATER ANALYTICAL RESULTS
VOLUNTARY GROUND-WATER MONITORING
JULY 2001

Well ID:		SM59-MW1	SM59-MW2
Client Sample ID:		OU-25-SM59-MW1	OU-25-SM59-MW2
Lab Sample ID:		07365-17	07365-18
Date Sampled:		07/18/01	07/18/01
Analyte	GCTL	Result	Result
VOC 8260B (ug/L)			
1,1,1,2-Tetrachloroethane	1.3	<1	<1
1,1,1-TCA	200	<1	<1
1,1,2,2-Tetrachloroethane	0.2	<1	<1
1,1,2-TCA	5	<1	<1
1,1-DCA	70	<1	<1
1,1-DCE	7	<1	<1
1,1-Dichloropropene	NS	<1	<1
1,2,3-Trichlorobenzene	70	<1	<1
1,2,3-Trichloropropane	0.2	<1	<1
1,2,4-Trichlorobenzene	70	<1	<1
1,2,4-Trimethylbenzene	10	<1	<1
1,2-DCA	3	<1	<1
1,2-DCB	600	<1	<1
1,2-Dibromo-3-chloropropane	0.2	<1	<1
1,2-Dichloropropane	5	<1	<1
1,2-EDB	0.02	<1	<1
1,3,5-Trimethylbenzene	10	<1	<1
1,3-DCB	10	<1	<1
1,3-Dichloropropane	NS	<1	<1
1,4-DCB	75	<1	<1
2,2-Dichloropropane	NS	<1	<1
2-Chlorotoluene	140	<1	<1
4-Chlorotoluene	140	<1	<1
Benzene	1	<1	<1
Bromobenzene	NS	<1	<1
Bromochloromethane	91	<1	<1
Bromodichloromethane	0.6	<1	<1
Bromoform	4.4	<1	<1
Bromomethane	9.8	<1	<1
Carbon tetrachloride	3	<1	<1
Chlorobenzene	100	<1	<1
Chloroethane	12	<1	<1
Chloroform	5.7	<1	<1
Chloromethane	2.7	<1	<1
cis-1,2-DCE	70	8.6	21

TABLE 13-1 (cont.)
OU-25, HUSH HOUSE AREA
GROUND-WATER ANALYTICAL RESULTS
VOLUNTARY GROUND-WATER MONITORING
JULY 2001

Well ID:		SM59-MW1	SM59-MW2
Client Sample ID:		OU-25-SM59-MW1	OU-25-SM59-MW2
Lab Sample ID:		07365-17	07365-18
Date Sampled:		07/18/01	07/18/01
Analyte	GCTL	Result	Result
VOC 8260B (ug/L) continued			
cis-1,3-Dichloropropene	0.2	<1	<1
Dibromochloromethane	0.4	<1	<1
Dibromomethane	NS	<1	<1
Dichlorodifluoromethane	1400	<1	<1
Ethylbenzene	30	<1	<1
Hexachlorobutadiene	0.5	<1	<1
Isopropylbenzene	0.8	<0.7	2.4
Methylene chloride	5	<5	<5
n-Butylbenzene	NS	<1	<1
n-Propylbenzene	NS	<1	1.5
Naphthalene	20	<1	<1
p-Isopropyltoluene	NS	<1	2.2
sec-Butylbenzene	NS	<1	1.3
Styrene	100	<1	<1
TCE	3	<1	<1
tert-Butylbenzene	NS	<1	<1
Tetrachloroethene	3	<1	<1
Toluene	40	<1	<1
trans-1,2-DCE	100	<1	2
trans-1,3-Dichloropropene	0.2	<1	<1
Trichlorofluoromethane	2100	<1	<1
Vinyl chloride	1	<1	<1
Xylenes, total	20	<1	<1
Metals 200.7/245.7 (mg/L)			
Arsenic	0.05	<0.01	<0.01
Barium	2	<0.01	0.014
Cadmium	0.005	<0.004	<0.004
Chromium	0.1	<0.01	<0.01
Lead	0.015	<0.005	<0.005
Mercury	0.002	<0.0005	<0.0005
Selenium	0.05	<0.01	<0.01
Silver	0.1	<0.01	<0.01
Bold type indicates detectable concentrations.			
Concentrations above the FAC Chapter 62-777 Ground-water Cleanup Target Level (GCTL)			

14.0 OPERABLE UNIT 27

14.1 HISTORY OF CONTAMINATION

OU-27 is the former Jet Engine Test Cell Facility, formerly known as SWMU 68. The site encompasses approximately 2.75 acres located in the extreme southwestern portion of Homestead ARE, as shown on Figure 1-2. This area of the installation is undeveloped and lies near the southwest end of the runway in a restricted access area. The munitions storage area is located immediately north of the site, and OU-1, Fire Protection Training Area No. 2, is located approximately 700 feet east of the site. The Boundary Canal is located immediately west and approximately 900 feet south of the site. A site plan is included as Figure 14-1.

The facility was constructed in the early 1970s and was used to conduct jet engine testing until the mid-1980s. After several years of inactivity, the area was reportedly used for small-scale painting of aircraft ground equipment and other corrosion control activities until 1992. The area included Building 268 (the main test facility), Building 257 (an auxiliary building), a 2,000-gallon AST located near Building 268, and an OWS located approximately 50 feet west-southwest of Building 268. The OWS handled coolant/noise suppression water prior to discharge to the Boundary Canal. The subject buildings and associated structures are no longer present on site.

A list of important historical events and relevant dates in the site chronology are shown below. The identified events are illustrative, not comprehensive.

Event	Date
Jet engine testing	Early-1970s- mid-1980s
Painting and corrosion control activities	Late-1980s-1992
Confirmation Sampling	1994
RI	1996
Ground-Water Monitoring	1997
ROD (not signed)	2000
IRA (Soil Sampling)	2001
Post-IRA soil sampling	2002

14.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

Preliminary investigation of OU-27 was completed in 1994 as part of the Confirmation Sampling Program. Additional investigation was conducted as part of an RI conducted in 1996. Forty-nine additional ground-water samples were collected from direct-push borings and analyzed in the field for VOCs. Thirteen surface soil samples and six subsurface soil samples were collected, including two duplicates. In addition, three monitoring wells were installed, and ground-water samples were collected from all four existing monitoring wells. All samples were analyzed for VOCs, SVOCs, pesticides, PCBs, metals, and cyanide. Subsurface soil samples also were analyzed for total organic carbon (TOC). A one-time sampling event was conducted in July 1997 in response to a request by the FDEP to investigate the 1996 detection of antimony above the GCTL. The sample was analyzed for RCRA metals.

An IRA was conducted in 2001 to remove elevated PAH and metal concentrations in surface soil observed during the investigations conducted in 1994 and 1996. Approximately 125 tons of contaminated soil were initially excavated from five separate areas adjacent to the concrete pads. Each area was excavated to a depth of 0.5 to 1.0 foot. The confirmation sample collected from Area 5 contained elevated concentrations of PAHs, so 25 additional tons of contaminated soil were excavated, and an additional confirmation sample was collected from the overexcavated area.

In 2002, additional soil sampling was conducted to verify the adequacy of the previous excavations. A total of fourteen sidewall and floor samples were collected from excavation areas 2 and 5. The samples were analyzed for antimony and chromium.

Significant results of these investigations revealed the following:

Soil

Constituents detected in OU-27 soil include VOCs, SVOCs, pesticides, metals, and cyanide. During the confirmation sampling in 1994, two VOCs (toluene and xylenes), eleven SVOCs (all PAHs) and numerous metals were detected. VOC concentrations were less than 10 µg/kg, and 2-methylnaphthalene was the only PAH with a concentration greater than 1 mg/kg.

Higher concentrations of PAHs and metals were detected during the RI in 1996. Maximum PAH concentrations were detected at sample locations OU27-SS-0015 and OU27-SS-0016. The concentrations of benzo(a) pyrene at these locations were 12 mg/kg and 2 mg/kg, respectively. Elevated concentrations of metals, most notably chromium and lead, also were detected. The maximum concentrations of metals were detected in the surface soil samples collected at OU27-SB-0002 and OU-27-SB-0003. Lead and chromium were detected at maximum concentrations of 1,050 mg/kg and 356 mg/kg, respectively, in soil boring OU27-SB-0002. Low concentrations of VOCs and pesticides also were detected. PCBs were not detected and cyanide was detected in only one sample (OU27-SB-0002) at a concentration of 0.86 mg/kg.

During the 2001 IRA, final confirmation samples from the Area 5 excavation contained no detectable levels of PAHs. Elevated concentrations of antimony and chromium were detected in the confirmation samples from Areas 2 and 5. However, no elevated concentrations were detected in a second round of confirmation samples collected from Areas 2 and 5 during the post voluntary IRA soil sampling conducted in 2002.

Ground Water

Constituents detected in OU-27 ground water include VOCs and metals. VOCs were detected in the grab ground-water samples collected from the direct-push borings in 1994 and 1996; however, VOCs were not detected in the ground-water sample collected from the newly-installed monitoring well (i.e., SM68-MW-0001).

VOCs, SVOCs, pesticides, PCBs, and cyanide were not detected in ground-water samples collected from the four permanent monitoring wells in 1996. Several metals were detected. The maximum concentrations of most metals were detected at monitoring well OU27-MW-0004, including an elevated concentration of antimony. However, none of the metals were detected above their respective drinking water standards during the 1997 sampling event.

14.3 REMEDIAL ACTIONS

14.3.1 Remedy Selection

A ROD was prepared for OU-27 in September 2000 and submitted for regulatory review. The selected remedy

was no further action with LUCs. USEPA comments on the document, dated 14 August 2001, recommended that the ROD be revised and reissued as a No Action ROD, because the site had been remediated for unrestricted reuse during the 2001 IRA. The ROD is currently being revised for resubmission.

14.3.2 Remedy Implementation

As described above, the ROD has not been finalized, and the remedy has not been implemented.

14.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

14.4 FIVE-YEAR REVIEW PROCESS

14.4.1 Document Review

The remedy for OU-27 has not been selected. Therefore, a formal five-year review and protectiveness evaluation was not conducted. The review was limited to an evaluation of historical data and development of recommendations for future actions at the site. This evaluation consisted of a review of relevant documents including the confirmation sampling, RI, and IRA reports.

14.4.2 Data Review

Data from previous investigation, confirmation sampling, and monitoring activities were compared against currently applicable risk-based cleanup criteria to evaluate whether constituents remain in place at concentrations that exceed unlimited exposure and unrestricted reuse criteria.

Soil Contamination

Data from all previous investigations were compared to the SCTLs for the residential and industrial direct exposure scenario. Sample locations that were previously excavated were excluded from the evaluation.

Based on a review of the remaining soil concentrations following excavation activities, benzo(a) pyrene, antimony, and arsenic exceeded the residential SCTL, but only arsenic exceeded the commercial/industrial SCTL, at a concentration of 4.9 mg/kg. The maximum concentration of arsenic was detected in soil sample SS-0005. It should be noted that the aforementioned detections above the respective SCTLs were isolated, and the benzo(a) pyrene and arsenic results are less than the established base-specific background levels of 1.5 mg/kg and 10 mg/kg, respectively.

Ground-Water Contamination

Data from all ground-water sampling events for each constituent were compared to the GCTLs. Initially, several VOCs and metals were detected in GeoProbe ground-water samples collected from OU-27 in 1995. Constituents that exceeded GCTLs included benzene, ethylbenzene, toluene, xylenes, TCE, PCE, 1,1-DCE, cis 1,2-DCE, and antimony. A second round of ground-water sampling was conducted as part of the Remedial Investigation in 1996. Ground-water samples were collected from all four monitoring wells and analyzed for VOCs, SVOCs, pesticides, PCBs, metals, and cyanide. No VOCs, SVOCs, pesticides, PCBs, or cyanides were detected. Twelve metals were detected; however, antimony was the only constituent that exceeded the GCTL at a concentration of 24.6 µg/L. Antimony was only detected in monitoring well OU27-MW-004 during the 1996 sampling event and was not detected at an elevated concentration during resampling in 1997.

Overall, the data review indicates that there are no significant site-related impacts to soil or ground water at OU-27. Only a few isolated sample results exceed unrestricted reuse and unlimited exposure criteria.

14.4.3 Site Inspection

The remedy for OU-27 has not been selected. As such, there are no remedy components that require inspection.

14.5 TECHNICAL ASSESSMENT

As described above, a remedy has not been selected for OU-27. Therefore, a technical evaluation of remedy protectiveness was not conducted.

14.6 ISSUES

No issues were identified.

14.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

The majority of the contamination at OU-27 has been removed. As a result, it is unlikely that exposure to soils and ground water from OU-27 would result in an unacceptable risk to either industrial or residential receptors. Therefore, No Further Action is recommended.

14.8 PROTECTIVENESS STATEMENT

As described above, a remedy has not been selected for OU-27. Therefore, a protectiveness evaluation was not conducted.

14.9 NEXT REVIEW

Because significant contamination does not remain at OU-27 above unrestricted reuse and unlimited exposure criteria, additional five-year reviews should not be required in the future.

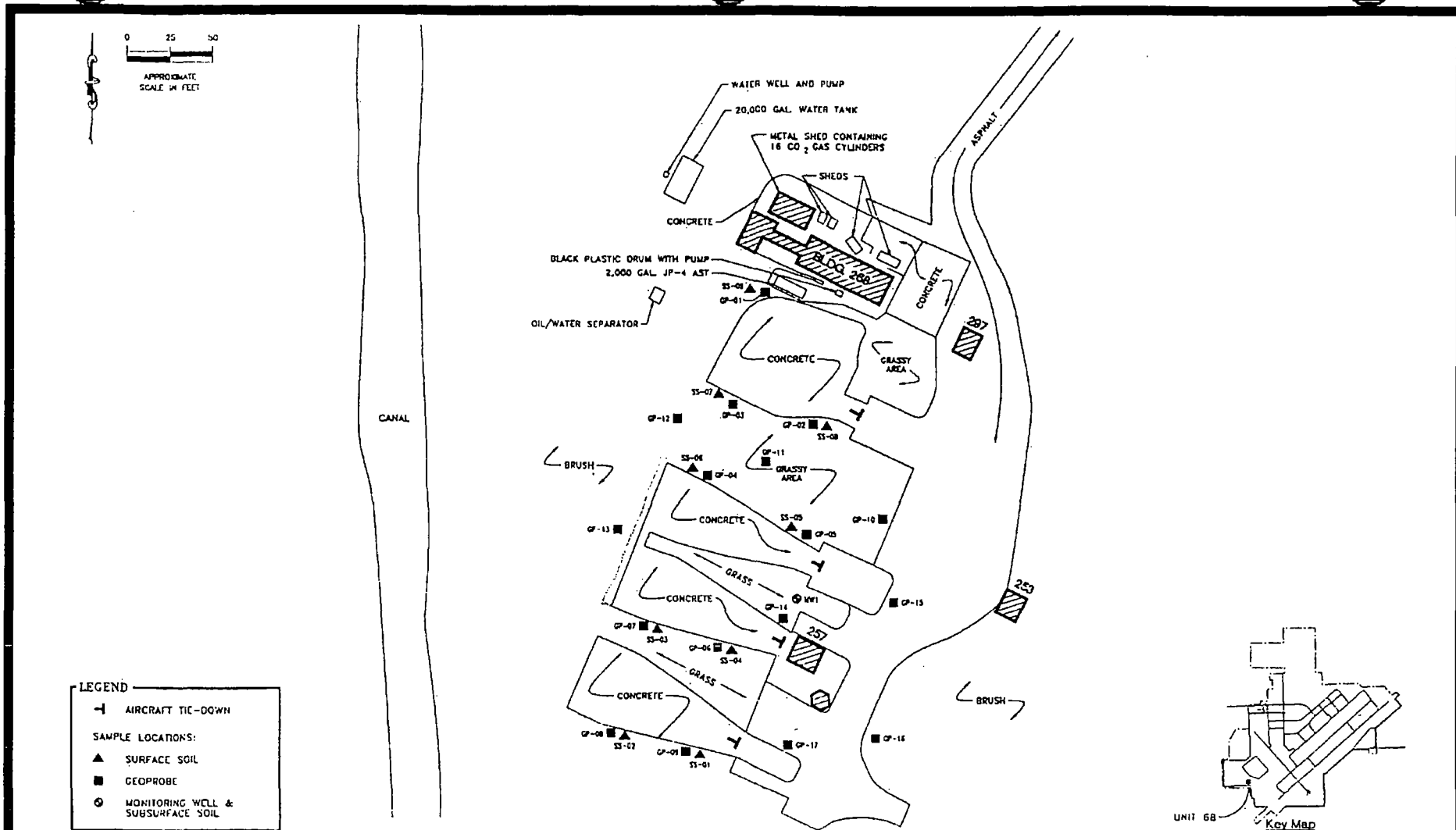


FIGURE 14-1

**OU-27, Jet Engine Test Cell Facility
Site Plan**

Homestead ARB, Florida

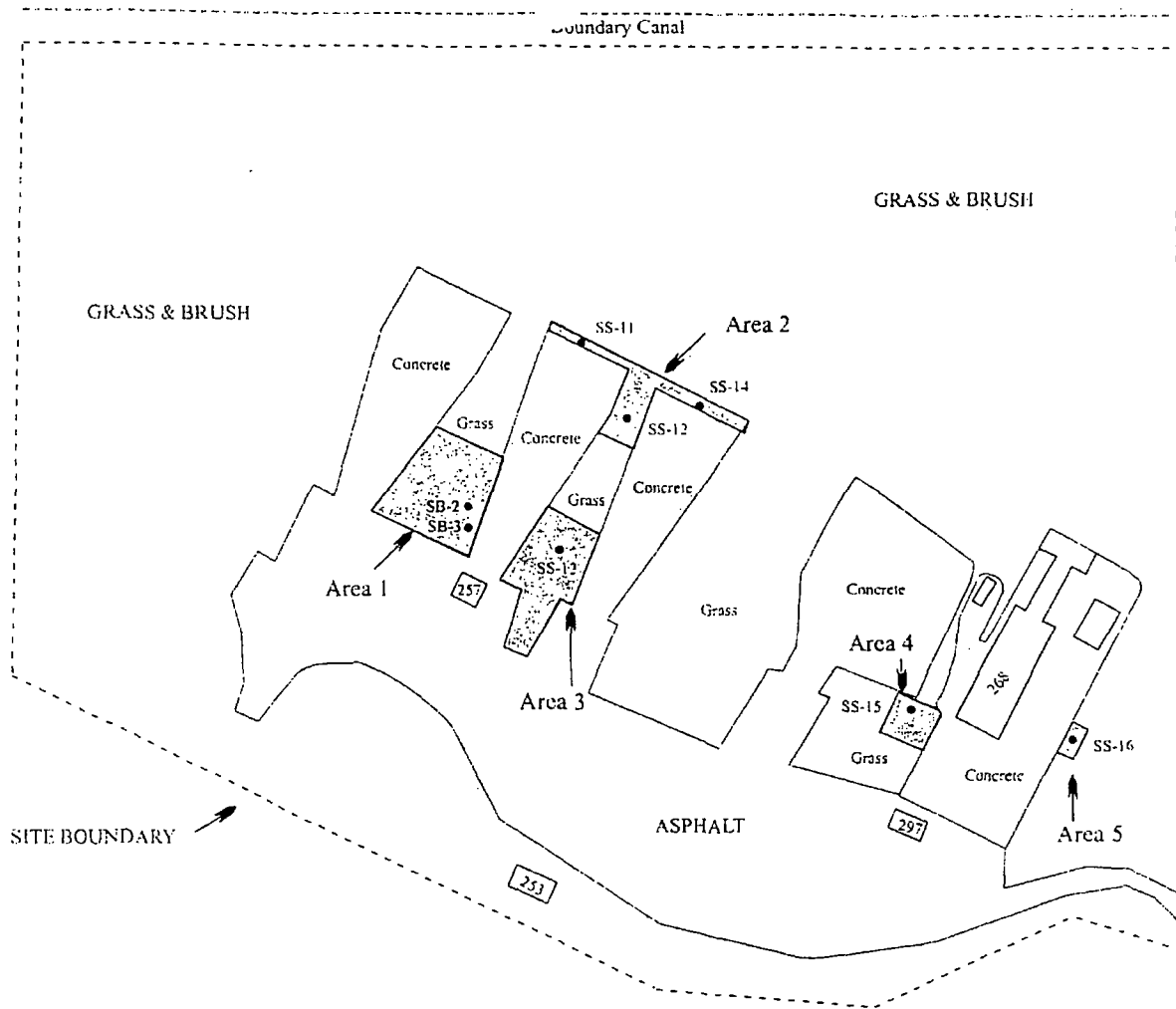


FIGURE 14-2

**OU-27, Jet Engine Test Cell Facility
Excavation Locations**

Homestead ARB, Florida

15.0 AREA OF CONCERN 3

15.1 HISTORY OF CONTAMINATION

AOC-3 is a 50-acre area within the 125-acre Munitions Storage Area, also known as Site OT-34 (formerly SWMU 63). The site is located within the southwestern portion of Homestead ARE, as shown on Figure 1-2. The munitions storage area consists of bermed munitions bunkers, munitions storage, and administration facilities. The area comprising AOC-3 includes Buildings 246, 248, 249, 251, 252, 253, and F259. A site plan is included as Figure 15-1.

The site is located within a high security portion of the installation, where munitions are stored. Security fencing encloses the site and access is strictly limited to authorized personnel. Grassy fields surround the munitions storage area. OU-1 is located immediately southeast and OU-8 is located immediately northeast of AOC-3.

The site has been used for munitions storage, munitions painting, and light maintenance of munitions trailers since the installation became fully operational in approximately 1950.

A list of important historical events and relevant dates in the site chronology are shown below. The identified events are illustrative, not comprehensive.

Event	Date
Munitions storage	1950-present
Confirmation Sampling	1994
SI	1996
Extended SI	1997
IRA	1998
Record of Findings	2000

15.2 INITIAL RESPONSE AND BASIS FOR TAKING ACTION

Preliminary investigation of AOC-3 was completed in 1994 as part of the Confirmation Sampling Program. Additional investigation was conducted as part of an expanded SI in 1996. Three soil borings were advanced southeast of Building 252 to further investigate elevated arsenic concentrations detected during the 1994 investigation. Three surface soil samples and three subsurface soil samples were collected, one from each boring. A second monitoring well (AOC3-MW-0002) was installed in one of the soil borings and ground-water samples were collected from both monitoring wells.

An IRA was conducted in 1998 to excavate surface soil with elevated levels of arsenic (e.g., in the vicinity of sample location MS63-SS-0006).

Significant results of these investigations revealed the following:

Soil

Constituents detected in AOC-3 soil include VOCs, SVOCs, pesticides, and metals. During the Confirmation

Sampling in 1994, toluene was the only VOC detected, with a maximum concentration of 8 µg/kg. A total of twelve SVOCs were detected in surface soil samples, including ten PAHs and two phthalates; however, it should be noted that the presence of phthalates is likely attributable to field or laboratory contamination. The highest concentrations of PAHs were detected in samples SM63-SS-0001 and SM63-SS-0002, located adjacent to Buildings 251 and F259, respectively. The concentrations of benzo(a) pyrene at these two locations were 0.46 mg/kg and 0.49 mg/kg, respectively. Thirteen metals were detected, including arsenic in sample MS63-SS-0006 at a concentration of 179 mg/kg. VOCs and SVOCs were not detected and metals were detected at relatively low concentrations in the subsurface soil sample collected from the monitoring well boring.

Toluene was the only VOC detected in soil during the 1996 investigation, at a maximum concentration of 2 µg/kg. Seven pesticides, eleven PAHs, and three phthalates also were detected, all at relatively low concentrations. The detection of phthalates suggests that they may be the result of laboratory or field contamination. Arsenic concentrations ranged from 4.9 mg/kg to 12 mg/kg in surface soil, and 1.1 mg/kg to 1.2 mg/kg in subsurface soil. Similar concentrations of arsenic, ranging from 0.5 to 12.3 mg/kg, were detected in confirmation samples collected after the IRA in 1998.

Ground Water

Constituents detected in AOC-3 ground water include VOCs and metals. Low concentrations of VOCs were detected in the grab ground-water samples collected from the direct-push borings in 1994; however, VOCs and SVOCs were not detected in the monitoring well installed during this sampling event (i.e., SM63-MW-0001).

No VOCs, SVOCs, pesticides, or PCBs were detected in ground-water samples collected in 1996. Several metals were detected, all at relatively low concentrations.

153 REMEDIAL ACTIONS

15.3.1 Remedy Selection

A Record of Findings was finalized for AOC-3 in July 2000. The selected alternative is:

No Further Investigation with Land Use Controls

The selected remedy consisted of:

- Maintenance of existing signage and fencing to prevent unauthorized access.
- Restrictions on construction activities and requirements for digging permits.
- Prohibitions against residential use and installation of water supply wells.

15.3.2 Remedy Implementation

LUCs were implemented at the site following completion of the Record of Findings in 2000. The site remains enclosed by security fencing, and access to the munitions storage area is tightly monitored and controlled. The Environmental Flight manages a digging permit program, which restricts digging and well installation at the installation. The Environmental Flight closely monitors activity at the site to ensure that residual contamination is not disturbed.

15.3.3 System Operations/Operation and Maintenance

There are no remediation systems operating at the site.

15.4 FIVE-YEAR REVIEW PROCESS

15.4.1 Document Review

This five-year review consisted of a review of relevant documents, including the Confirmation Sampling, SI, Expanded SI, IRA, and Record of Findings reports.

15.4.2 Data Review

Data from previous investigation, confirmation sampling, and monitoring activities were compared against currently applicable risk-based cleanup criteria to evaluate whether constituents remain in place at concentrations that exceed unlimited exposure and unrestricted reuse criteria.

Soil Contamination

Data from all previous investigations were compared to the SCTLs for the residential and industrial direct exposure scenario. Sample locations that were previously excavated were excluded from the evaluation.

Based on a review of the remaining soil concentrations following excavation activities, benzo(a) pyrene, antimony, and arsenic were the only remaining constituents that exceeded the residential SCTL and only arsenic exceeded the industrial SCTL, at a concentration of 12.3 mg/kg. The maximum concentrations of antimony (10.5 mg/kg) and benzo(a) pyrene (0.26 mg/kg) were detected in soil boring SB-004. The maximum concentration of arsenic was detected in confirmation sample CSS-02. The benzo(a) pyrene results are less than the base-specific background levels of 1.5 mg/kg, but arsenic slightly exceeds the base-specific background concentration of 10 mg/kg.

Ground-Water Contamination

Data from all ground-water sampling events for each constituent were compared to the GCTLs. All results were less than the GCTLs.

Overall, the data review indicates that there are not significant site-related impacts to ground water at AOC-3. Only a few isolated soil results exceed unrestricted reuse and unlimited exposure criteria, including arsenic in the vicinity of the previous excavation.

15.4.3 Site Inspection

A site inspection was conducted at AOC-3 on 8 August 2003. The site remains within the munitions storage area security fence. No indications of trespassing, vandalism, or unauthorized excavations were observed. No changes in on-site or surrounding land use were observed. Overall, the inspection indicated that the remedy is being implemented in accordance with the Record of Findings and effectively deters unauthorized access to the site.

15.5 TECHNICAL ASSESSMENT

A technical assessment was conducted for AOC-3 to determine whether the selected remedy is functioning as intended and remains protective of human health and the environment. The results of this assessment are presented below.

Question A: Is the remedy functioning as intended by the decision documents?

Review of the historic documentation, ARARs, toxicity data, and sampling results indicates that the remedy for AOC-3 is functioning as intended by the Record of Findings.

The remedy selected for AOC 3 is functioning as intended and is expected to remain protective of human health and the environment in the future. The implementation of LUCs combined with the access restrictions due to fencing and security associated with flight operations have effectively prevented exposure to contaminants in soil and ground water at AOC-3.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

Because land use associated with AOC-3 has not changed significantly, the exposure assumptions, toxicity data, and remedial action objectives remain valid.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy ?

No other information that would call into question the protectiveness of the remedy has been identified during this five-year review.

15.6 ISSUES

No issues were identified.

15.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Residual soil remains at AOC-3 above concentrations that would allow unrestricted reuse and unlimited . exposure. As a result, the LUCs established in the Record of Findings should remain in place to ensure that human exposure to contaminated soil is prohibited. Ground-water monitoring wells remain in place at AOC-3 and are no longer required. These wells should be abandoned in accordance with applicable requirements.

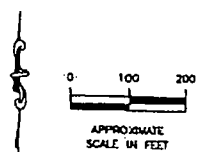
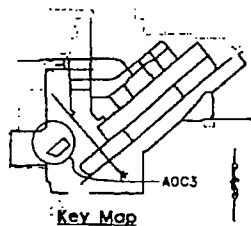
15.8 PROTECTIVENESS STATEMENT

Based on the completed activities, the intent and goals of the Record of Findings have been met at AOC-3 and found to be protective of human health.

15.9 NEXT REVIEW

The next five-year review for AOC-3 is required by December 2009, five years from the date of this review.

2445 94



- LEGEND**
- OVERHEAD UTILITY LINE
 - FENCE
 - - - - - DEMOLISHED BUILDING
 - o UTILITY POLE
 - SLOPE
- PREVIOUS SAMPLING LOCATIONS:**
- ▲ SURFACE SOIL
 - ⊙ GEOPROBE
 - ⊗ MONITORING WELL & SUBSURFACE SOIL
- SI SAMPLING LOCATIONS:**
- ⊖ SOIL BORING W/SURFACE SAMPLE
 - ⊕ SOIL BORING/MONITORING WELL W/ SURFACE SAMPLE

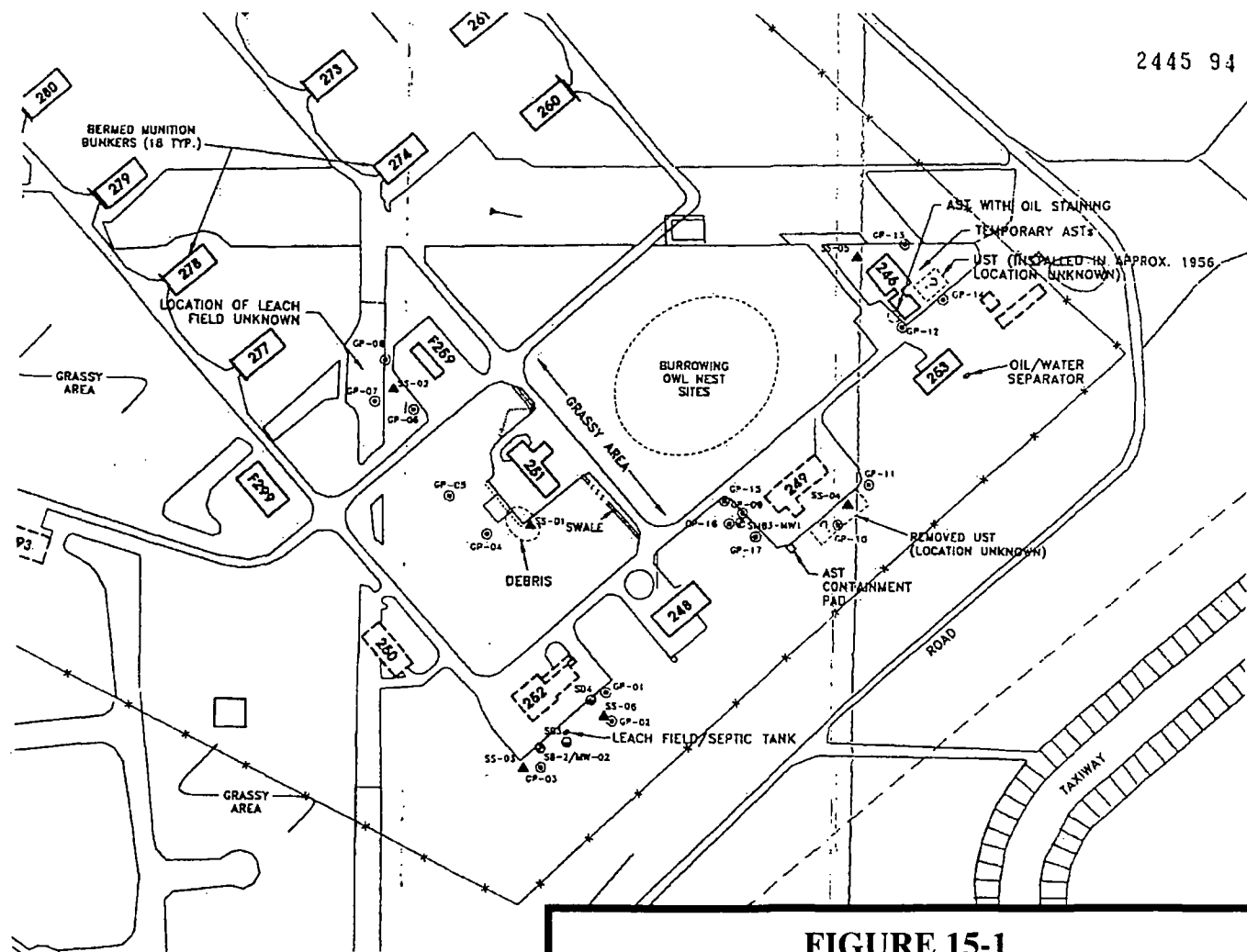


FIGURE 15-1
AOC-3, Munitions Storage Area
Site Plan
Homestead ARB, Florida

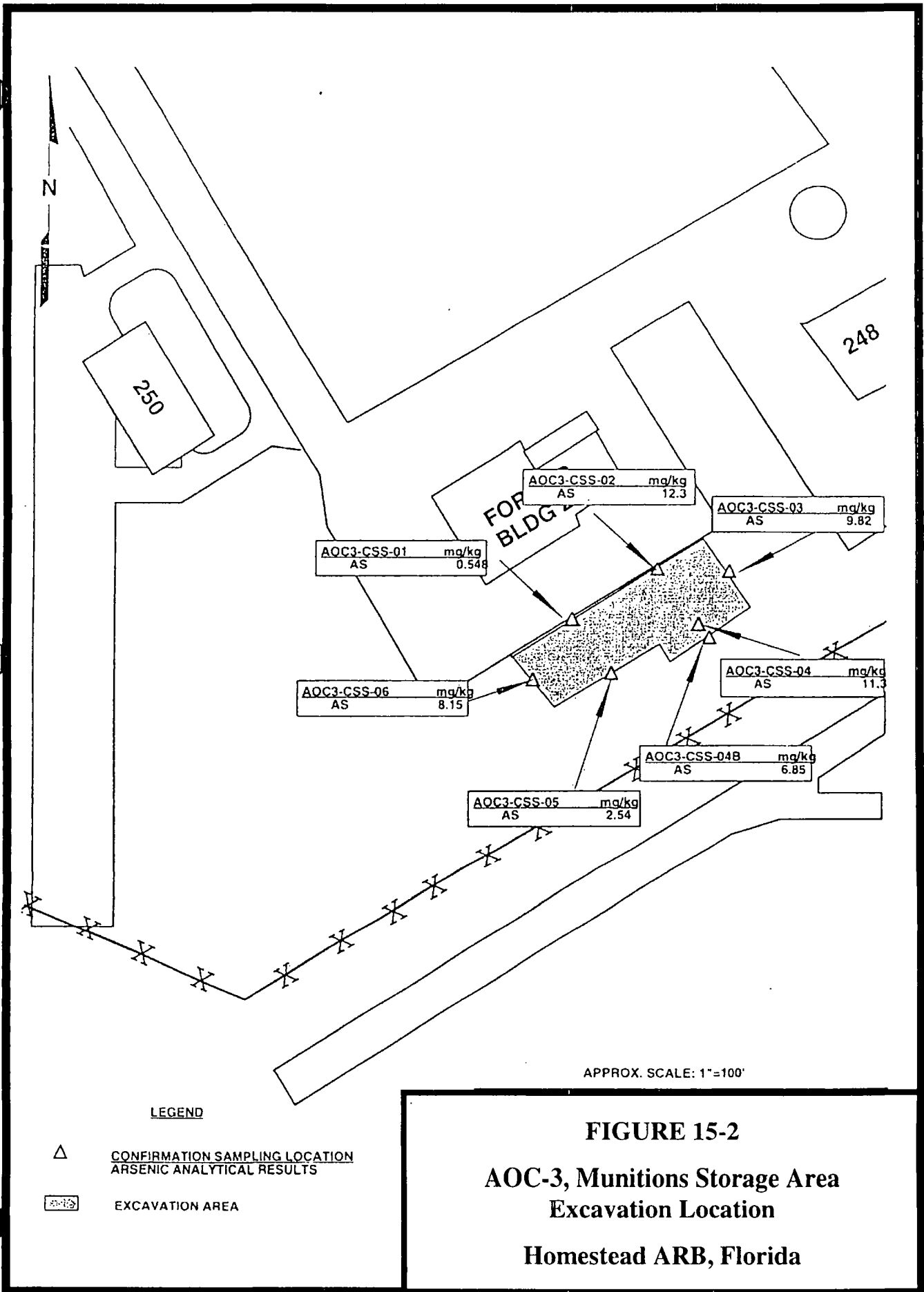


FIGURE 15-2
AOC-3, Munitions Storage Area
Excavation Location
Homestead ARB, Florida

APPENDIX A

REFERENCES

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APPENDIX B

PHOTOGRAPHIC LOG

FIVE-YEAR REVIEW PHOTOGRAPHIC LOG

**HOMESTEAD AIR RESERVE BASE, FLORIDA
SEPTEMBER 2003**



Photograph 1: Operable Unit 1 – Fire Protection Training Area No. 2



Photograph 2: Operable Unit 2 – Residual Pesticide Disposal Area

FIVE-YEAR REVIEW PHOTOGRAPHIC LOG
HOMESTEAD AIR RESERVE BASE, FLORIDA
SEPTEMBER 2003



Photograph 3: Operable Unit 4 – Motor Pool Oil Leak Area



Photograph 4: Operable Unit 5 – Electroplating Waste Disposal Area

FIVE-YEAR REVIEW PHOTOGRAPHIC LOG

**HOMESTEAD AIR RESERVE BASE, FLORIDA
SEPTEMBER 2003**



Photograph 5: Operable Unit 7 – Entomology Storage Area



Photograph 6: Operable Unit 8 – Fire Protection Training Area No. 3

FIVE-YEAR REVIEW PHOTOGRAPHIC LOG
HOMESTEAD AIR RESERVE BASE, FLORIDA
SEPTEMBER 2003



Photograph 7: Operable Unit 12 – Entomology Shop



Photograph 8: Operable Unit 15 – Hazardous Waste Storage Building

FIVE-YEAR REVIEW PHOTOGRAPHIC LOG
HOMESTEAD AIR RESERVE BASE, FLORIDA
SEPTEMBER 2003



Photograph 9: Operable Unit 19 – Aircraft Ground Equipment (AGE) Shop

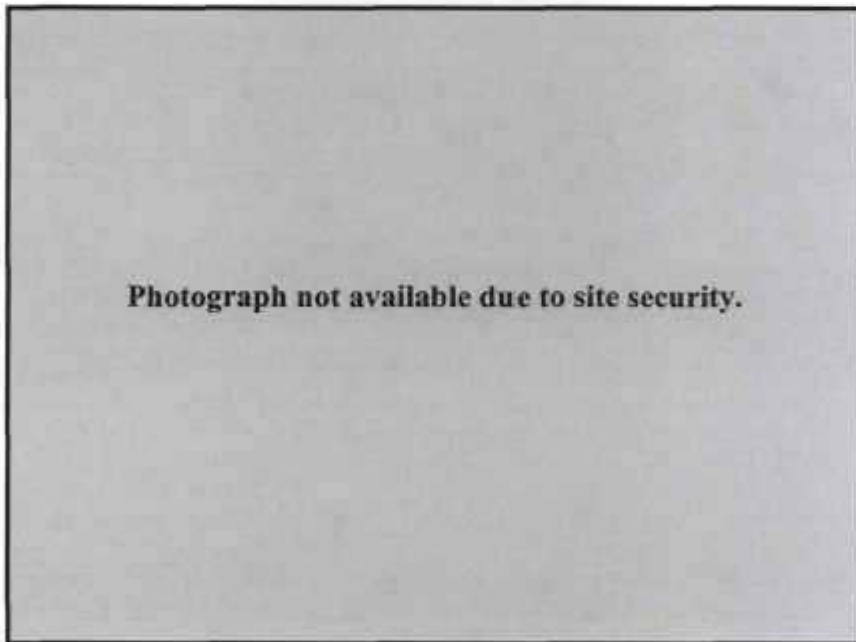


Photograph 10: Operable Unit 25 – Hush House Area

FIVE-YEAR REVIEW PHOTOGRAPHIC LOG
HOMESTEAD AIR RESERVE BASE, FLORIDA
SEPTEMBER 2003



Photograph 11: Operable Unit 27 – Jet Engine Test Cell Facility



Photograph 12: Area of Concern 3 – Munitions Storage Area

APPENDIX C

SITE INSPECTION CHECKLIST

Site Inspection Checklist

I. SITE INFORMATION

Site name: OU-1 (FT-5/FPTA-2)	Date of inspection: 8/8/03
Location and Region: Homestead, Florida, EPA Region IV	EPA ID: FL7570024037
Agency, office, or company leading the five-year review: U.S. Air Force Reserves, 482d Reserve Fighter Wing, Environmental Flight	Weather/temperature: 91 degrees F, cloudy
Remedy Includes: (Check all that apply)	
<input type="checkbox"/> Access controls	OU(s) _____
<input checked="" type="checkbox"/> Institutional controls	OU(s) <u>groundwater/soil use restrictions</u>
<input checked="" type="checkbox"/> Groundwater monitoring	OU(s) _____
<input checked="" type="checkbox"/> Other: <u>No further investigation</u>	OU(s) _____

II. ON-SITE DOCUMENTS & RECORDS VERIFIED

1.	Decision Documents Record of Decision (ROD) <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A ROD Amendment(s) <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>ROD document was located on proper shelf as indicated by index</u> _____ _____ _____
2.	Land Use Control (LUC) Records LUC Implementation Plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Annual Reports <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>Issues of concern are brought up at BCT meetings.</u> _____ _____ _____
3.	Groundwater Monitoring Records Monitoring Reports <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____ _____ _____ _____

III. ACCESS AND INSTITUTIONAL CONTROLS

A. Fencing

Applicable

N/A

1. **Required fencing in place?** *(As required by ROD)*

Yes

No *(Describe deficiencies below)*

Remarks Not required by the ROD

2. **Fencing damaged?**

Yes

No *(Location shown on site map)*

Remarks N/A

B. Other Access Restrictions

Applicable

N/A

1. **Required signs in place?** *(As required by ROD)*

Yes

No *(Location shown on site map)*

Remarks No signage required by ROD. Proximity to runway prohibits signage.

2. **Other security measures**

Describe _____

C. Institutional Controls (ICs)

Applicable

N/A

1. Implementation and enforcement

- Site conditions imply ICs not properly implemented Yes No N/A
- Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by): Drive by/field traverse

Frequency: Monthly

Responsible party/agency: 482d Reserve Fighter Wing, Environmental Flight

Contact: Mike Andrejko IRP Manager (305) 224-7344
Name Title Phone Number

Reporting is up-to-date Yes No N/A

Reports are verified by the lead agency Yes No N/A

Specific requirements in decision documents have been met Yes No N/A

Violations have been reported Yes No N/A

Other problems or suggestions: _____

2. Adequacy

ICs are adequate

ICs are inadequate

Remarks _____

D. General	
1.	Vandalism/trespassing <input type="checkbox"/> Yes (<i>Location shown on site map</i>) <input checked="" type="checkbox"/> No trespassing/vandalism evident Remarks _____ _____ _____
2.	Land use changes on site <input type="checkbox"/> Yes (<i>Describe below</i>) <input checked="" type="checkbox"/> No changes in on-site land use evident Remarks _____ _____ _____
3.	Land use changes off site <input type="checkbox"/> Yes (<i>Describe below</i>) <input checked="" type="checkbox"/> No changes in off-site land use evident Remarks _____ _____ _____

IV. GROUNDWATER MONITORING		
A. Monitoring System	<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Monitoring wells accessible and clearly labeled? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (<i>Describe below</i>) Remarks _____ _____ _____	

2. **Monitoring wells secure?**

Yes, lock on well cover or cap secured and functioning properly

No (*Describe below*)

Remarks _____

3. **Condition of monitoring wells acceptable?**

Yes

No (*List damaged wells below, describe damage*)

Remarks _____

B. Monitoring Data

1. **Monitoring data is routinely submitted on time**

Yes

No (*Describe below*)

Remarks two years of semiannual groundwater monitoring required and completed

2. **Monitoring data is of acceptable quality**

Yes

No (*Describe below*)

Remarks _____

3. **Monitoring data suggests groundwater plume is effectively contained (stable/not expanding)**

Yes

No (*Describe below*)

Remarks _____

4. **Monitoring data suggests contaminant concentrations are declining**

Yes

No (*Describe below*)

Remarks _____

V. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

O&M is adequate and protective of human health/environment.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

None observed or expected.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None observed or expected.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None observed or expected.

Site Inspection Checklist

I. SITE INFORMATION

Site name: OU-2 (OT-11)	Date of inspection: 8/8/03
Location and Region: Homestead, Florida, EPA Region IV	EPA ID: FL7570024037
Agency, office, or company leading the five-year review: U.S. Air Force Reserves, 482d Reserve Fighter Wing, Environmental Flight	Weather/temperature: 91 degrees F, cloudy
Remedy Includes: (Check all that apply)	
<input checked="" type="checkbox"/> Access controls	OU(s) <u>perimeter fence</u>
<input checked="" type="checkbox"/> Institutional controls	OU(s) <u>groundwater restriction</u>
<input checked="" type="checkbox"/> Groundwater monitoring	OU(s) _____
<input checked="" type="checkbox"/> Other: _____	OU(s) <u>excavation/off-site soil disposal</u>

II. ON-SITE DOCUMENTS & RECORDS VERIFIED

1.	Decision Documents
	Record of Decision (ROD) <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A
	ROD Amendment(s) <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
	Remarks <u>ROD document was located on proper shelf as indicated by index</u>

2.	Land Use Control (LUC) Records
	LUC Implementation Plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
	Annual Reports <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
	Remarks <u>Issues of concern are brought up at BCT meetings.</u>

3.	Groundwater Monitoring Records
	Monitoring Reports <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A
	Remarks _____

III. ACCESS AND INSTITUTIONAL CONTROLS

A. Fencing

Applicable

N/A

1. **Required fencing in place?** (*As required by ROD*)

Yes

No (*Describe deficiencies below*)

Remarks _____

2. **Fencing damaged?**

Yes

No (*Location shown on site map*)

Remarks _____

B. Other Access Restrictions

Applicable

N/A

1. **Required signs in place?** (*As required by ROD*)

Yes

No (*Location shown on site map*)

Remarks signs not required by ROD, but have been placed on fencing

2. **Other security measures**

Describe _____

C. Institutional Controls (ICs)

Applicable

N/A

1. Implementation and enforcement

- Site conditions imply ICs not properly implemented Yes No N/A
- Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by): drive-by/field traverse

Frequency: Monthly

Responsible party/agency: 482d Reserve Fighter Wing, Environmental Flight

Contact: Mike Andrejko IRP Manager (305) 224-7344
Name Title Phone Number

- Reporting is up-to-date Yes No N/A
- Reports are verified by the lead agency Yes No N/A

- Specific requirements in decision documents have been met Yes No N/A
- Violations have been reported Yes No N/A

Other problems or suggestions: _____

2. Adequacy

- ICs are adequate
- ICs are inadequate

Remarks _____

D. General

1. **Vandalism/trespassing**

- Yes (*Location shown on site map*)
 No trespassing/vandalism evident

Remarks _____

2. **Land use changes on site**

- Yes (*Describe below*)
 No changes in on-site land use evident

Remarks _____

3. **Land use changes off site**

- Yes (*Describe below*)
 No changes in off-site land use evident

Remarks _____

IV. GROUNDWATER MONITORING

A. Monitoring System

- Applicable N/A

1. **Monitoring wells accessible and clearly labeled?**

- Yes
 No (*Describe below*)

Remarks MWs located beyond fenceline in thick brush, not visually observed due to
accessibility issues. Enviro Flight Chief reports wells are accessed annually
by contractor, therefore, inferred that wells are in good shape.

2. **Monitoring wells secure?**
 Yes, lock on well cover or cap secured and functioning properly
 No (*Describe below*)
Remarks _____

3. **Condition of monitoring wells acceptable?**
 Yes
 No (*List damaged wells below, describe damage*)
Remarks _____

B. Monitoring Data

1. **Monitoring data is routinely submitted on time**
 Yes
 No (*Describe below*)
Remarks 5 years of annual groundwater monitoring required.

2. **Monitoring data is of acceptable quality**
 Yes
 No (*Describe below*)
Remarks _____

3. **Monitoring data suggests groundwater plume is effectively contained (stable/not expanding)**

Yes

No (*Describe below*)

Remarks _____

4. **Monitoring data suggests contaminant concentrations are declining**

Yes

No (*Describe below*)

Remarks _____

V. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Remedy is adequate and protective of human health/environment.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

None observed/expected.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None observed/expected.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None observed/expected.

Site Inspection Checklist

I. SITE INFORMATION

Site name: OU-4 (SS-8/SP-2)	Date of inspection: 7/31/03								
Location and Region: Homestead, Florida, EPA Region IV	EPA ID: FL7570024037								
Agency, office, or company leading the five-year review: U.S. Air Force Reserves, 482d Reserve Fighter Wing, Environmental Flight	Weather/temperature: 86 degrees F, light rain								
Remedy Includes: (Check all that apply) <table style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 30%;"><input type="checkbox"/> Access controls</td> <td style="width: 30%;">OU(s) _____</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td>OU(s) <u>deed restrictions, security fencing and signs</u></td> </tr> <tr> <td><input checked="" type="checkbox"/> Groundwater monitoring</td> <td>OU(s) _____</td> </tr> <tr> <td><input checked="" type="checkbox"/> Other: <u>No further investigation</u></td> <td>OU(s) _____</td> </tr> </table>		<input type="checkbox"/> Access controls	OU(s) _____	<input checked="" type="checkbox"/> Institutional controls	OU(s) <u>deed restrictions, security fencing and signs</u>	<input checked="" type="checkbox"/> Groundwater monitoring	OU(s) _____	<input checked="" type="checkbox"/> Other: <u>No further investigation</u>	OU(s) _____
<input type="checkbox"/> Access controls	OU(s) _____								
<input checked="" type="checkbox"/> Institutional controls	OU(s) <u>deed restrictions, security fencing and signs</u>								
<input checked="" type="checkbox"/> Groundwater monitoring	OU(s) _____								
<input checked="" type="checkbox"/> Other: <u>No further investigation</u>	OU(s) _____								

II. ON-SITE DOCUMENTS & RECORDS VERIFIED

1.	Decision Documents Record of Decision (ROD) <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A ROD Amendment(s) <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>ROD document was located on proper shelf as indicated by index</u> _____ _____ _____
2.	Land Use Control (LUC) Records LUC Implementation Plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Annual Reports <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>Issues of concern are brought up at BCT meetings</u> _____ _____ _____
3.	Groundwater Monitoring Records Monitoring Reports <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____ _____ _____ _____

III. ACCESS AND INSTITUTIONAL CONTROLS

A. Fencing

Applicable

N/A

1. **Required fencing in place?** *(As required by ROD)*

Yes

No *(Describe deficiencies below)*

Remarks _____

2. **Fencing damaged?**

Yes

No *(Location shown on site map)*

Remarks _____

B. Other Access Restrictions

Applicable

N/A

1. **Required signs in place?** *(As required by ROD)*

Yes

No *(Location shown on site map)*

Remarks signs were not observed, however, access to area is limited to GOVs and
area is further secured by chain link fencing with barb wire.

2. **Other security measures**

Describe refer to B-1

C. Institutional Controls (ICs) Applicable N/A

1. Implementation and enforcement

- Site conditions imply ICs not properly implemented Yes No N/A
Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by): Drive by/field traverse

Frequency: Monthly

Responsible party/agency: 482d Reserve Fighter Wing, Environmental Flight

Contact: Mike Andrejko IRP Manager (305) 224-7344
Name Title Phone Number

Reporting is up-to-date Yes No N/A

Reports are verified by the lead agency Yes No N/A

Specific requirements in decision documents have been met Yes No N/A

Violations have been reported Yes No N/A

Other problems or suggestions: _____

2. Adequacy

ICs are adequate

ICs are inadequate

Remarks _____

D. General	
1.	Vandalism/trespassing <input type="checkbox"/> Yes (<i>Location shown on site map</i>) <input checked="" type="checkbox"/> No trespassing/vandalism evident Remarks _____ _____ _____ _____
2.	Land use changes on site <input type="checkbox"/> Yes (<i>Describe below</i>) <input checked="" type="checkbox"/> No changes in on-site land use evident Remarks _____ _____ _____ _____
3.	Land use changes off site <input type="checkbox"/> Yes (<i>Describe below</i>) <input checked="" type="checkbox"/> No changes in off-site land use evident Remarks _____ _____ _____ _____

IV. GROUNDWATER MONITORING	
A. Monitoring System	<input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A
1.	Monitoring wells accessible and clearly labeled? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (<i>Describe below</i>) Remarks _____ _____ _____ _____

2. **Monitoring wells secure?**

Yes, lock on well cover or cap secured and functioning properly

No (*Describe below*)

Remarks _____

3. **Condition of monitoring wells acceptable?**

Yes

No (*List damaged wells below, describe damage*)

Remarks _____

B. Monitoring Data

1. **Monitoring data is routinely submitted on time**

Yes

No (*Describe below*)

Remarks Semiannual groundwater monitoring required. Could not locate any results.

2. **Monitoring data is of acceptable quality**

Yes

No (*Describe below*)

Remarks _____

3. **Monitoring data suggests groundwater plume is effectively contained (stable/not expanding)**

Yes

No (*Describe below*)

Remarks _____

4. **Monitoring data suggests contaminant concentrations are declining**

Yes

No (*Describe below*)

Remarks _____

V. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

O&M is adequate and protective of human health/environment.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

None observed or expected.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None observed or expected.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None required.

Site Inspection Checklist

I. SITE INFORMATION

Site name: OU-5 (WP-1/SP-1)	Date of inspection: 7/31/03								
Location and Region: Homestead, Florida, EPA Region IV	EPA ID: FL7570024037								
Agency, office, or company leading the five-year review: U.S. Air Force Reserves, 482d Reserve Fighter Wing, Environmental Flight	Weather/temperature: 86 degrees F, cloudy								
Remedy Includes: (Check all that apply) <table style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 40%;"><input type="checkbox"/> Access controls</td> <td>OU(s) _____</td> </tr> <tr> <td><input checked="" type="checkbox"/> Institutional controls</td> <td>OU(s) _____</td> </tr> <tr> <td><input type="checkbox"/> Groundwater monitoring</td> <td>OU(s) _____</td> </tr> <tr> <td><input checked="" type="checkbox"/> Other: <u>no further investigation</u></td> <td>OU(s) _____</td> </tr> </table>		<input type="checkbox"/> Access controls	OU(s) _____	<input checked="" type="checkbox"/> Institutional controls	OU(s) _____	<input type="checkbox"/> Groundwater monitoring	OU(s) _____	<input checked="" type="checkbox"/> Other: <u>no further investigation</u>	OU(s) _____
<input type="checkbox"/> Access controls	OU(s) _____								
<input checked="" type="checkbox"/> Institutional controls	OU(s) _____								
<input type="checkbox"/> Groundwater monitoring	OU(s) _____								
<input checked="" type="checkbox"/> Other: <u>no further investigation</u>	OU(s) _____								

II. ON-SITE DOCUMENTS & RECORDS VERIFIED

1.	Decision Documents Record of Decision (ROD) <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A ROD Amendment(s) <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>ROD document was located on proper shelf as indicated by index</u> _____ _____ _____
2.	Land Use Control (LUC) Records LUC Implementation Plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Annual Reports <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>Issues of concern are brought up at BCT meetings.</u> _____ _____ _____
3.	Groundwater Monitoring Records Monitoring Reports <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____ _____ _____ _____

III. ACCESS AND INSTITUTIONAL CONTROLS

A. Fencing

Applicable

N/A

1. **Required fencing in place?** *(As required by ROD)*

Yes

No *(Describe deficiencies below)*

Remarks Not required by ROD

2. **Fencing damaged?**

Yes

No *(Location shown on site map)*

Remarks N/A

B. Other Access Restrictions

Applicable

N/A

1. **Required signs in place?** *(As required by ROD)*

Yes

No *(Location shown on site map)*

Remarks Signage was added; not required by ROD

2. **Other security measures**

Describe _____

C. Institutional Controls (ICs)	<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Implementation and enforcement		
Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Type of monitoring (<i>e.g., self-reporting, drive by</i>): <u>Drive by/field traverse</u>		
Frequency: <u>Monthly</u>		
Responsible party/agency: <u>482d Reserve Fighter Wing, Environmental Flight</u>		
Contact: <u>Mike Andrejko</u>	<u>IRP Manager</u>	<u>(305) 224-7344</u>
Name	Title	Phone Number
Reporting is up-to-date	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Reports are verified by the lead agency	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Specific requirements in decision documents have been met	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Violations have been reported	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Other problems or suggestions: _____		

2. Adequacy		
<input checked="" type="checkbox"/> ICs are adequate		
<input type="checkbox"/> ICs are inadequate		
Remarks _____		

D. General

1. **Vandalism/trespassing**

- Yes (*Location shown on site map*)
- No trespassing/vandalism evident

Remarks _____

2. **Land use changes on site**

- Yes (*Describe below*)
- No changes in on-site land use evident

Remarks _____

3. **Land use changes off site**

- Yes (*Describe below*)
- No changes in off-site land use evident

Remarks _____

IV. GROUNDWATER MONITORING

A. Monitoring System

- Applicable
- N/A

1. **Monitoring wells accessible and clearly labeled?**

- Yes
- No (*Describe below*)

Remarks _____

2. **Monitoring wells secure?**
 Yes, lock on well cover or cap secured and functioning properly
 No (*Describe below*)
Remarks _____

3. **Condition of monitoring wells acceptable?**
 Yes
 No (*List damaged wells below, describe damage*)
Remarks _____

B. Monitoring Data

1. **Monitoring data is routinely submitted on time**
 Yes
 No (*Describe below*)
Remarks monitoring data is not required

2. **Monitoring data is of acceptable quality**
 Yes
 No (*Describe below*)
Remarks Monitoring is not required

3. **Monitoring data suggests groundwater plume is effectively contained (stable/not expanding)**

Yes

No (*Describe below*)

Remarks N/A

4. **Monitoring data suggests contaminant concentrations are declining**

Yes

No (*Describe below*)

Remarks N/A

V. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

No further investigation is required. Remedy is deemed effective.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

Signs are in place which are not required as part of ROD.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None observed or expected.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None required.

Site Inspection Checklist

I. SITE INFORMATION	
Site name: OU-7 (SS-7/P-2)	Date of inspection: 7/31/03
Location and Region: Homestead, Florida, EPA Region IV	EPA ID: FL7570024037
Agency, office, or company leading the five-year review: U.S. Air Force Reserves, 482d Reserve Fighter Wing, Environmental Flight	Weather/temperature: 86 degrees F, rain
Remedy Includes: (Check all that apply)	
<input checked="" type="checkbox"/> Access controls	OU(s) <u>site capping</u>
<input checked="" type="checkbox"/> Institutional controls	OU(s) <u>groundwater/soil use restrictions</u>
<input checked="" type="checkbox"/> Groundwater monitoring	OU(s) _____
<input type="checkbox"/> Other: _____	OU(s) _____

II. ON-SITE DOCUMENTS & RECORDS VERIFIED	
1.	Decision Documents Record of Decision (ROD) <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A ROD Amendment(s) <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>ROD document was located on proper shelf as indicated by index</u> _____ _____ _____
2.	Land Use Control (LUC) Records LUC Implementation Plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Annual Reports <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>Issues of concern are brought up at BCT meetings.</u> _____ _____ _____
3.	Groundwater Monitoring Records Monitoring Reports <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks _____ _____ _____ _____

III. ACCESS AND INSTITUTIONAL CONTROLS

A. Fencing

Applicable

N/A

1. **Required fencing in place?** *(As required by ROD)*

Yes

No *(Describe deficiencies below)*

Remarks No fencing required by ROD

2. **Fencing damaged?**

Yes

No *(Location shown on site map)*

Remarks N/A

B. Other Access Restrictions

Applicable

N/A

1. **Required signs in place?** *(As required by ROD)*

Yes

No *(Location shown on site map)*

Remarks N/A

2. **Other security measures**

Describe _____

C. Institutional Controls (ICs) Applicable N/A

1. **Implementation and enforcement**

- Site conditions imply ICs not properly implemented Yes No N/A
- Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by): Drive by/field traverse

Frequency: Monthly

Responsible party/agency: 482d Reserve Fighter Wing, Environmental Flight

Contact: Mike Andrejko IRP Manager (305) 224-7344
Name Title Phone Number

- Reporting is up-to-date Yes No N/A
- Reports are verified by the lead agency Yes No N/A

- Specific requirements in decision documents have been met Yes No N/A
- Violations have been reported Yes No N/A

Other problems or suggestions: _____

2. **Adequacy**

- ICs are adequate
- ICs are inadequate

Remarks _____

D. General	
1.	Vandalism/trespassing <input type="checkbox"/> Yes (<i>Location shown on site map</i>) <input checked="" type="checkbox"/> No trespassing/vandalism evident Remarks _____ _____ _____ _____
2.	Land use changes on site <input type="checkbox"/> Yes (<i>Describe below</i>) <input checked="" type="checkbox"/> No changes in on-site land use evident Remarks _____ _____ _____ _____
3.	Land use changes off site <input type="checkbox"/> Yes (<i>Describe below</i>) <input checked="" type="checkbox"/> No changes in off-site land use evident Remarks _____ _____ _____ _____

IV. GROUNDWATER MONITORING	
A. Monitoring System	<input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A
1.	Monitoring wells accessible and clearly labeled? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (<i>Describe below</i>) Remarks _____ _____ _____ _____

2. **Monitoring wells secure?**
 Yes, lock on well cover or cap secured and functioning properly
 No (*Describe below*)
Remarks _____

3. **Condition of monitoring wells acceptable?**
 Yes
 No (*List damaged wells below, describe damage*)
Remarks _____

B. Monitoring Data

1. **Monitoring data is routinely submitted on time**
 Yes
 No (*Describe below*)
Remarks 5 years of groundwater monitoring required. Could not locate year 5 results.

2. **Monitoring data is of acceptable quality**
 Yes
 No (*Describe below*)
Remarks _____

3. **Monitoring data suggests groundwater plume is effectively contained (stable/not expanding)**

Yes

No (*Describe below*)

Remarks _____

4. **Monitoring data suggests contaminant concentrations are declining**

Yes

No (*Describe below*)

Remarks Arsenic remains at a concentration above FDEP standards in one well.

V. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Remedy goal is to minimize exposure. Remedy is deemed effective.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

O&M is adequate and protective of human health/environment.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None observed or expected.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None required.

Site Inspection Checklist

I. SITE INFORMATION	
Site name: OU-8	Date of inspection: 8/8/03
Location and Region: Homestead, Florida, EPA Region IV	EPA ID: FL7570024037
Agency, office, or company leading the five-year review: U.S. Air Force Reserves, 482d Reserve Fighter Wing, Environmental Flight	Weather/temperature: 90 degrees F, pt cloudy
Remedy Includes: (Check all that apply) <input type="checkbox"/> Access controls OU(s) _____ <input type="checkbox"/> Institutional controls OU(s) _____ <input type="checkbox"/> Groundwater monitoring OU(s) _____ <input checked="" type="checkbox"/> Other: <u>no further investigation</u> OU(s) _____	

II. ON-SITE DOCUMENTS & RECORDS VERIFIED	
1.	Decision Documents Record of Decision (ROD) <input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A ROD Amendment(s) <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>ROD document was located on proper shelf as indicated by index</u> _____ _____ _____
2.	Land Use Control (LUC) Records LUC Implementation Plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Annual Reports <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks <u>Mr. Andrejko indicated that annual reports are not completed. Issues of</u> <u>concern are brought up at BCT meetings.</u> _____ _____ _____
3.	Groundwater Monitoring Records Monitoring Reports <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks _____ _____ _____ _____

III. ACCESS AND INSTITUTIONAL CONTROLS

A. Fencing

Applicable

N/A

1. **Required fencing in place?** *(As required by ROD)*

Yes

No *(Describe deficiencies below)*

Remarks _____

2. **Fencing damaged?**

Yes

No *(Location shown on site map)*

Remarks _____

B. Other Access Restrictions

Applicable

N/A

1. **Required signs in place?** *(As required by ROD)*

Yes

No *(Location shown on site map)*

Remarks signs not required per ROD, but in place none-the-less

2. **Other security measures**

Describe _____

C. Institutional Controls (ICs)	<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Implementation and enforcement		
Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Type of monitoring (e.g., self-reporting, drive by): <u>drive by/field traverse</u>		
Frequency: _____		
Responsible party/agency: <u>482d Reserve Fighter Wing, Environmental Flight</u>		
Contact: <u>Mike Andrejko</u>	<u>Chief, Environmental Flight</u>	<u>(305) 224-7163</u>
Name	Title	Phone Number
Reporting is up-to-date	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Reports are verified by the lead agency	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Specific requirements in decision documents have been met	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Violations have been reported	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Other problems or suggestions: _____		

2. Adequacy		
<input type="checkbox"/> ICs are adequate		
<input type="checkbox"/> ICs are inadequate		
Remarks _____		

D. General

1. **Vandalism/trespassing**

- Yes (*Location shown on site map*)
 No trespassing/vandalism evident

Remarks _____

2. **Land use changes on site**

- Yes (*Describe below*)
 No changes in on-site land use evident

Remarks _____

3. **Land use changes off site**

- Yes (*Describe below*)
 No changes in off-site land use evident

Remarks _____

IV. GROUNDWATER MONITORING

A. Monitoring System

- Applicable N/A

1. **Monitoring wells accessible and clearly labeled?**

- Yes
 No (*Describe below*)

Remarks _____

2. **Monitoring wells secure?**
 Yes, lock on well cover or cap secured and functioning properly
 No (*Describe below*)
Remarks _____

3. **Condition of monitoring wells acceptable?**
 Yes
 No (*List damaged wells below, describe damage*)
Remarks _____

B. Monitoring Data

1. **Monitoring data is routinely submitted on time**
 Yes
 No (*Describe below*)
Remarks _____

2. **Monitoring data is of acceptable quality**
 Yes
 No (*Describe below*)
Remarks _____

3. **Monitoring data suggests groundwater plume is effectively contained (stable/not expanding)**

Yes

No (*Describe below*)

Remarks _____

4. **Monitoring data suggests contaminant concentrations are declining**

Yes

No (*Describe below*)

Remarks _____

V. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Site is listed as No Further Action.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

Remedial actions have restored site to where no significant adverse impact to human health/environment is expected

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None observed or expected.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None required.

Site Inspection Checklist

I. SITE INFORMATION	
Site name: AOC-3 (OT-34/Unit 63)	Date of inspection: 8/8/03
Location and Region: Homestead, Florida, EPA Region IV	EPA ID: FL7570024037
Agency, office, or company leading the five-year review: U.S. Air Force Reserves, 482d Reserve Fighter Wing, Environmental Flight	Weather/temperature: 91 degrees F, cloudy
Remedy Includes: (Check all that apply)	
<input type="checkbox"/> Access controls	OU(s) _____
<input checked="" type="checkbox"/> Institutional controls	OU(s) <u>land use controls</u>
<input type="checkbox"/> Groundwater monitoring	OU(s) _____
<input checked="" type="checkbox"/> Other: <u>no further investigation</u>	OU(s) _____

II. ON-SITE DOCUMENTS & RECORDS VERIFIED	
1. Decision Documents	
Record of Decision (ROD)	<input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A
ROD Amendment(s)	<input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
Remarks <u>ROD document was located on proper shelf as indicated by index</u>	

2. Land Use Control (LUC) Records	
LUC Implementation Plan	<input checked="" type="checkbox"/> Readily available <input checked="" type="checkbox"/> Up to date <input type="checkbox"/> N/A
Annual Reports	<input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
Remarks <u>MOA included in ROD, LUCs implemented. Issues of concern are brought up at BCT meetings.</u>	

3. Groundwater Monitoring Records	
Monitoring Reports	<input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A
Remarks _____	

III. ACCESS AND INSTITUTIONAL CONTROLS

A. Fencing

Applicable

N/A

1. Required fencing in place? (As required by ROD)

Yes

No (Describe deficiencies below)

Remarks area is within fenceline of Base, as well as secure/controlled fenceline of
ammo area

2. Fencing damaged?

Yes

No (Location shown on site map)

Remarks _____

B. Other Access Restrictions

Applicable

N/A

1. Required signs in place? (As required by ROD)

Yes

No (Location shown on site map)

Remarks signs not required

2. Other security measures

Describe area is enclosed within secured/fenced area

C. Institutional Controls (ICs)

Applicable

N/A

1. Implementation and enforcement

Site conditions imply ICs not properly implemented Yes No N/A

Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by): drive by/field traverse

Frequency: Monthly

Responsible party/agency: 482d Reserve Fighter Wing, Environmental Flight

Contact: Mike Andrejko IRP Manager (305) 224-7344
Name Title Phone Number

Reporting is up-to-date Yes No N/A

Reports are verified by the lead agency Yes No N/A

Specific requirements in decision documents have been met Yes No N/A

Violations have been reported Yes No N/A

Other problems or suggestions: _____

2. Adequacy

ICs are adequate

ICs are inadequate

Remarks _____

D. General

1. **Vandalism/trespassing**

- Yes (*Location shown on site map*)
 No trespassing/vandalism evident

Remarks _____

2. **Land use changes on site**

- Yes (*Describe below*)
 No changes in on-site land use evident

Remarks _____

3. **Land use changes off site**

- Yes (*Describe below*)
 No changes in off-site land use evident

Remarks _____

IV. GROUNDWATER MONITORING

A. Monitoring System

Applicable N/A

1. **Monitoring wells accessible and clearly labeled?**

- Yes
 No (*Describe below*)

Remarks N/A _____

2. **Monitoring wells secure?**

Yes, lock on well cover or cap secured and functioning properly

No (*Describe below*)

Remarks N/A

3. **Condition of monitoring wells acceptable?**

Yes

No (*List damaged wells below, describe damage*)

Remarks N/A

B. Monitoring Data

1. **Monitoring data is routinely submitted on time**

Yes

No (*Describe below*)

Remarks N/A

2. **Monitoring data is of acceptable quality**

Yes

No (*Describe below*)

Remarks N/A

3. **Monitoring data suggests groundwater plume is effectively contained (stable/not expanding)**

Yes

No (*Describe below*)

Remarks N/A

4. **Monitoring data suggests contaminant concentrations are declining**

Yes

No (*Describe below*)

Remarks N/A

V. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

Remedy is adequate and protective of human health/environment.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

N/A

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None observed or expected.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None observed or expected.

APPENDIX D

REGULATORY CORRESPONDENCE



Department of Environmental Protection

File: 173-13
T.B. 1268 1-73

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

November 2, 1994

Mr. Alan K. Olsen, Director
Air Force Conversion Agency
1700 N. Moore Street, Suite 2300
Arlington, Virginia 22209-2802

Dear Mr. Olsen:

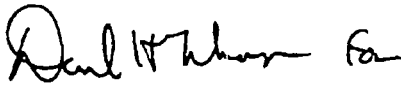
The Florida Department of Environmental Protection agrees with the Air Force's selected alternative for Operable Unit 3 (Site SS-13), PCB Spill Area at Homestead Air Force Base.

The Record of Decision specifies that the No Action Alternative at Site SS-13 is a cost effective remedy and provides adequate protection of public health, welfare, and the environment from PCB-related contamination. Note, a subsequent investigative effort to address inorganic constituents found at Site SS-13 will be performed under the scope of a Remedial Investigation for Site SS-7 (Entomology Storage Area) located southwest of Site SS-13. The determination of closing Site SS-13 so that further investigation proceeds under the scope of Site SS-7 is consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act and the National Contingency Plan (40 CFR 300).

In accordance with CERCLA as amended by SARA, the site will undergo a five-year review with the costs of the review to be absorbed by the Air Force.

We appreciate your continued cooperation and look forward to an expeditious economic and environmental recovery of Homestead Air Force Base.

Sincerely,


Virginia B. Wetherell
Secretary

VBW/jrc

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

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

SEP 16 1994

1364 1 ✓
File:
T.B. 178-13
1374 ✓

4WD-FFB

Certified Mail
Return Receipt Requested

Mr. Alan Olsen
AFBCA/DR
1700 North Moore Street, Suite 2300
Arlington, Virginia 22209-2802

SUBJ: Record of Decision for Operable Unit 3, PCB Spill Area
Homestead Air Force Base, Florida

Dear Mr. Olsen:

The U.S. Environmental Protection Agency (EPA) Region IV has reviewed the above referenced decision document and concurs with the No Action Record of Decision for Operable Unit 3, PCB Spill Area, as supported by the previously approved Remedial Investigation and Baseline Risk Assessment Reports.

The selected remedy is one of "No Further Action". This action is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action and is cost effective.

It is understood that the selected remedy for Operable Unit 3 is the final remedial action to address all media potentially affected by past disposal practices at this unit.

Sincerely,

John H. Hankinson
John H. Hankinson
Regional Administrator

cc: Mary Bridgewater, Air Force Base Conversion Agency
Robert Johns, Dade County Environmental Resources
Management
Eric Nuzie, Florida Department of Environmental Protection
Humberto Rivero, Air Force Base Conversion Agency,
Operating Location Y (Homestead Air Reserve Base)



Department of Environmental Protection

T.C. 17B-22

3233
3233

2
1

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

January 22, 1997

Mr. Tom Bartol
AFBCA OL-Y
29050 Coral Sea Blvd.
HARB, Florida 33039-1299

RE: No Further Remedial Action Planned for OU-13
(Site SS-22). Homestead ARB, Florida

Dear Mr. Bartol:

Based upon the review of the Risk Evaluation dated November 1996 (received November 15, 1996) as well as the Supplemental Site Assessment dated March 1996 (received March 18, 1996) showing that there's no confirmed releases or contamination in all media at the above site, I concur with the determination of No Further Remedial Action Planned for Operable Unit 13.

If I can be of any assistance in this matter, please contact me at 904/921-9988.

Sincerely,

Jorge R. Caspary, P.G.

cc: Earl Bozeman, EPA-Atlanta
Bob Johns, DERM-Miami
John Mitchell, AFRES-Homestead
Taunya Howe, Corps-Omaha

TJB B JJC JJC ESN ESN

h297.doc

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2540 1
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
100 ALABAMA STREET, S.W.
ATLANTA, GEORGIA 30303-3104

File: 17B-10
T.B. 11 13
12 14

2540
SEP 25 1996

September 24, 1997

4WD-FFB

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Thomas J. Bartol
Department of the Air Force
AFBCA/DD Homestead (3)
29050 Coral Sea Blvd., Box 36
Homestead ARB, FL 33039-1299

SUBJ: Extended Site Investigation/Preliminary Risk Evaluation (ESI/PRE) Report for Operable Units (OUs) 10-14; Homestead Air Force Base, Florida

Dear Mr. Bartol:

The Environmental Protection Agency (EPA) has reviewed the subject document transmitted by the December 17, 1996, memorandum from Humberto Rivero to Earl Bozeman and others. This document satisfactorily addresses Earl Bozeman's May 23, 1996, comments. Based on the information contained in this document, EPA agrees with the recommendation for No Further Remedial Action Planned (NFRAP) at this time for Operable Units (OUs) 10, 13, and 14. Operable Units 11 and 12 should continue through the CERCLA process. If I can be of further assistance, please call me at (404) 562-8549.

Sincerely,

Doyle J. Brittain
Senior Remedial Project Manager

cc: Jorge Caspary, FDEP
Hugh Vick, Gannett-Fleming



Jeb Bush
Governor

3642 1
**Department of
Environmental Protection**

File:
T.C.

17B-19
3/2/02

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

June 1, 2001

Mr. John B. Mitchell, Director
Environmental Division
Homestead Air Force Base
29050 Coral Sea Boulevard, Building 232
Homestead, Florida 33039-1299

Dear Mr. Mitchell:

The Florida Department of Environmental Protection agrees with the Air Force's selected remedial alternative for Operable Unit 19, Former Aircraft Equipment Shop (Building 208). The Decision Document specifies No Further Action as the selected alternative.

This alternative has been selected as a solution that provides adequate protection of public health and the environment. The determination to implement the selected alternative is consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA) and the National Contingency Plan (40 CFR 300). Accordingly, Operable Unit 19 shall undergo a five-year review with the costs of the review to be absorbed by the federal government.

We appreciate your continued cooperation. If you have any questions concerning this letter of concurrence, please contact Mr. Jorge R. Caspary, our Homestead Air Force Base Remedial Project Manager, at (850) 921-9986.

Sincerely, _____

John M. Ruddell, Director
Waste Management Division

JMR/jrc

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3576 1
File:
T.C. 17B-19
3576

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

June 4, 2001

4WD-FFB

FAX

John B. Mitchell, Flight Chief
Homestead Air Reserve Station
482d SPTG/CEV
360 Coral Sea Blvd.
Homestead ARS, FL 33039-1299

SUBJ: Letter Report, Voluntary Interim Remedial Activities, Operable Unit 19
Homestead Air Reserve Station, Florida

Dear Mr. Mitchell:

The Environmental Protection Agency (EPA) has reviewed and approves the subject document, including the recommendation for no further action. In response to a comment in the Site Investigation Report, an Expanded Site Investigation and Voluntary Interim Removal were conducted resulting in all contaminants being removed below regulatory levels. Please document this in the Expanded Site Investigation Report in which the subject document should be referenced. If I can be of further assistance, please call me at (404) 562-8549.

Sincerely,

Doyle T. Brittain
Senior Remedial Project Manager

cc: Timothy J. Caretti, HAFB/AFBCA
Jorge Caspary, FDEP
Curt Williams, DERM

3703 1

File: 17B-2
T.C. 17B-7
17B-19

MIAMI-DADE COUNTY, FLORIDA



ENVIRONMENTAL RESOURCES MANAGEMENT
POLLUTION CONTROL DIVISION
33 S W 2nd AVENUE
SUITE 800
MIAMI, FLORIDA 33130-1540
(305) 372-6817

June 22, 2001

John B. Mitchell, Chief
Environmental Engineering Flight
482nd SPTG/CEV
29050 Coral Sea Blvd., Box 68
Homestead ARS, Florida 33039-1299

CERTIFIED MAIL NO 7000 1670 0004 7257 9713
RETURN RECEIPT REQUESTED

Re: OU-2, OU-7 and OU-19 Final Reports.

Dear Mr. Mitchell:

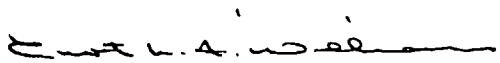
The Department of Environmental Resources Management has completed its review of the below-referenced documents:

1. OU-2, Final Letter Report, Year 2, Annual Groundwater Monitoring Report, dated May 7, 2001 and received on May 14, 2001.
2. OU-7, Final Overpumping Activity Report, dated May 7, 2001 and received on May 14, 2001.
3. OU-19, Final Letter Report, Voluntary IRA Report dated May 7, 2001 and received on May 14, 2001.

Attached you will find comments from the Pollution Remediation Section.

If you have any questions concerning the above, please contact me at (305) 372-6818.

Sincerely,


Curt L.A. Williams, Chief
Airports Section

CW

Pc: Timothy J Caretti – AFBCA/DA Homestead
Doyle T. Brittain – U.S. EPA
Jorge R. Caspary – FDEP
File



MEMORANDUM



TO: Curt L.A. Williams, Chief
Airports Section

DATE: May 17, 2001

FROM: Wilbur Mayorga, P.E., Chief
Pollution Remediation Section

SUBJECT: HARS
OU-2, OU-7 and OU-19
Final Letter Reports

The Pollution Remediation Section (PRS) has reviewed the OU-2 Final Letter Report, Annual Groundwater Monitoring Y2 (HWR-60/File-14732), the OU-7 Final Letter Report, Overpumping Activity Report (HWR-73/File-9879) and the OU-19 Final Letter Report, Voluntary IRA and request for No Further Action (HWR-125/File-9880) all dated May 7, 2001 and received by DERM on May 14, 2001.

The PRS does not have any additional comments other than those provided in the draft versions and does not object to approving the reports as final.

Please contact Thomas Kux at ext. 6614 if you have any questions regarding this memo.

TK

5/22

APPENDIX E

FIVE-YEAR REVIEW COMMENTS AND RESOLUTION



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

March 24, 2004

4WD-FFB

FAX & US MAIL

Lawrence Ventura, Environmental Flight Chief
Homestead Air Reserve Station
482d SPTG/CEV
360 Coral Sea Blvd.
Homestead ARB, FL 33039-1299

SUBJ: Draft Five-Year Review for Homestead Air Reserve Base
Homestead Air Reserve Base, Florida

Dear Mr. Ventura:

The Environmental Protection Agency (EPA) has reviewed the subject document and offers the enclosed comments. If you have any questions, please call me at (404) 562-8549.

Sincerely,

Doyle J. Brittain
Senior Remedial Project Manager

Enc.

cc: Lee Conesa, HAFB/AFRPA
David Grabka, FDEP
Jose Gonzalez, DERM
Susan Markley, DERM
Richard Curry, BNP/NPS

**Environmental Protection Agency Comments on the
Draft Five-Year Review for Homestead Air Reserve Base**

The subject document has been well prepared and closely follows the *Comprehensive Five-Year Review Guidance*, EPA 540-R-01-007; OSWER No. 9355.7-03B-P; June 2001. Minor comments are provided below which EPA requests be addressed in the final document.

1. Page 16, OU-1 - EPA agrees with the proposed recommendation.
2. Page 20, OU-2 - EPA agrees with the proposed recommendation. EPA suggests that a sampling plan be submitted for State and EPA approval to delineate the extent of contamination for the purpose of reducing the amount of land subject to Land Use Controls.
3. Page 21, OU-3 - EPA agrees with the proposed recommendation.
4. Page 24, OU-4 - EPA agrees with the proposed recommendation.
5. Page 31, OU-5 - EPA agrees with the proposed recommendation.
6. Page 35, OU-7 - EPA agrees with the proposed recommendation.
7. Page 40, OU-8 - This site was transferred from CERCLA to the FDEP Petroleum Program July 30, 1994. EPA agrees with the proposed recommendation.
8. Page 44, OU-12 - Since no final RI/FS/BRA or ROD has been submitted on this site, EPA is not in a position to make a technically sound decision. At this time, EPA recommends that an RI/FS/BRA Report be submitted followed by a ROD.
9. Page 45, OU-13 - EPA agrees with the proposed recommendation.
10. Page 52, OU-15 - Since no final RI/FS/BRA or ROD has been submitted on this site, EPA is not in a position to make a technically sound decision. At this time, EPA recommends that an RI/FS/BRA Report be submitted followed by a ROD.
11. Page 56, OU-19 - EPA agrees with the proposed recommendation.
12. Page 59, OU-25 - Since no final RI/FS/BRA or ROD has been submitted on this site, EPA is not in a position to make a technically sound decision. At this time, EPA recommends that an RI/FS/BRA Report be submitted followed by a ROD.



Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

May 17, 2004

Mr. Michael Andrejko
482d MSG/CEV
29050 Coral Sea Blvd.
Homestead ARB, FL 33039-1299

RE: Draft Five-Year Review, Homestead Air Reserve Base, Miami-Dade County, Florida.

Dear Mr. Andrejko:

I have completed my review of the Draft Five-Year Review, Year Four Annual Ground-Water Monitoring Results, Homestead Air Reserve Base, dated February 2004 (received February 16, 2004). Please excuse the lateness of this review. At first, I thought it necessary to try to learn as much as I could, as quickly as I could, about the many sites discussed in the report. However, this led to quite a bit of confusion. I ended up reviewing the 5-Year Review from the perspective of a regulator who was not very familiar with the sites and who would have certain questions on the status of the sites. I have the following comments on the report:

General Comments

- (1) The Department entered into a Memorandum of Agreement (MOA) with the Air Force and EPA for the Homestead Air Reserve Station on March 15, 1999. The purpose of the MOA was to specify the actions required by the various parties to enact and maintain land use controls (LUCs) on sites requiring restrictions on property use in order to ensure that human health and the environment is protected. The MOA required that individual Land Use Control Implementation Plans (LUCIPs) be prepared for all known sites. I could find no mention of either the MOA or that LUCIPs were prepared for the sites listed in the 5-year review. Incorporating these LUCIPs into the 5-year review would show those areas requiring land use controls at the various sites. Additionally, a discussion in the 5-year review as to whether the LUCs as described in the LUCIPs remain protective and whether the boundaries should be changed should also be added.

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- (2) For those sites where soil excavations have taken place, there should be a figure showing the locations of those excavations.
- (3) For each site that has had a Remedial Investigation finalized, there should be a list of contaminants of concern (COCs) that were identified for each media. These COCs should be those contaminants that have not been screened out and that have been identified by a risk assessment as posing risks to human health or the environment. In the text of the 5-year review, it should be explained for each identified COC what remedial actions have taken place to address the risks posed by each contaminant in each media. These actions may include the imposition of LUCs, monitoring of groundwater, soil removals or other remedial actions. The text should describe how COCs were subsequently added or removed and the document and regulatory approvals that document these changes.
- (4) I found some of the groundwater analytical tables at the end of the sections describing the sites to be extraneous. While including the latest groundwater information collected has some value, the previous analytical information seems unnecessary. If that information is being used in the 5-year review report to indicate that groundwater contamination is no longer a concern, I believe simply referencing previous groundwater monitoring report(s), and noting whether EPA, FDEP and DERM have concurred with the recommendations of that report(s), should be sufficient.

Operable Unit 1

- (1) Please attach the LUCIP for Operable Unit 1 to Section 2.0 showing those areas requiring institutional or engineering controls. The LUCIP should indicate those areas requiring land use restrictions and past groundwater use restrictions.
- (2) Please indicate whether a revised LUCIP is required based upon the groundwater monitoring information that has been collected.
- (3) Based upon the information contained in the 5-year review, I would concur that no further groundwater monitoring will be necessary and that monitoring wells should be abandoned in accordance with applicable regulatory guidelines.

Operable Unit 2

- (1) Please attach the LUCIP for Operable Unit 2 to Section 3.0 showing those areas requiring institutional or engineering controls. The LUCIP should indicate those areas requiring land use restrictions, groundwater use restrictions and engineering controls.
- (2) Please indicate whether a revised LUCIP is required based upon the groundwater monitoring information that has been collected.
- (3) Please indicate in a figure where soil was excavated as part of remedial actions to address soil contamination.
- (4) Based upon the information contained in the 5-year review, I would concur that no further groundwater monitoring will be necessary and that monitoring wells should be abandoned in accordance with applicable regulatory guidelines.

Operable Unit 3

- (1) I concur with the recommendation that No Further Action is appropriate for this site and that 5-year reviews will not be required in the future unless evidence of contamination caused by Air Force activities is discovered in the future.

Operable Unit 4

- (1) Please attach the LUCIP for Operable Unit 4 to Section 5.0 showing those areas requiring institutional or engineering controls. The LUCIP should indicate those areas requiring land use restrictions, groundwater use restrictions and engineering controls.
- (2) Please indicate whether a revised LUCIP is required based upon the groundwater monitoring information that has been collected.
- (3) Please indicate in a figure where soil/sediment was excavated from the drainage ditches as part of remedial actions to address contamination.
- (4) Based upon the information contained in the 5-year review, I would concur that no further groundwater monitoring will be necessary and that monitoring wells should be abandoned in accordance with applicable regulatory guidelines.

Operable Unit 5

- (1) Please attach the LUCIP for Operable Unit 5 to Section 6.0 showing those areas requiring institutional or engineering controls. The LUCIP should indicate those areas requiring land use restrictions.
- (2) Please indicate whether a revised LUCIP is required based upon the groundwater monitoring information that has been collected.
- (3) Please indicate in a figure where soil was excavated as part of remedial actions to address soil contamination.
- (4) Based upon the information contained in the 5-year review, I would concur that no further groundwater monitoring will be necessary and that monitoring wells should be abandoned in accordance with applicable regulatory guidelines.

Operable Unit 7

- (1) Please attach the LUCIP for Operable Unit 7 to Section 7.0 showing those areas requiring institutional or engineering controls. The LUCIP should indicate those areas requiring land use restrictions, groundwater use restrictions and engineering controls.
- (2) Please indicate whether a revised LUCIP is required based upon the groundwater monitoring information that has been collected.
- (3) Please indicate in a figure where soil was excavated as part of remedial actions to address soil contamination.

Operable Unit 8

- (1) I concur that this site is being addressed under the petroleum program and that, as such, there are no requirements to conduct further 5-year reviews.

Operable Unit 12

- (1) Please indicate in a figure those areas that were excavated as part of the soil Interim Remedial Actions.
- (2) Please indicate in a figure those areas of soil contamination still exceeding residential and leachability SCTLs.
- (3) I will defer commenting upon whether further groundwater monitoring will be required based upon further review of the

groundwater data and whether soil contamination above leachability SCTLs remains on the site.

Operable Unit 13

- (1) According to the document, there has been no Decision Document finalized for this site. Please describe any proposed actions to be taken by the Air Force to remedy this situation.
- (2) Section 10.4.2 states that concentrations of PAHs at two locations exceed the Department's residential and industrial soil cleanup target levels and that barium at one location exceeds the Department's residential soil cleanup target level. However, it says in Section 10.4.3 that the remedy for OU-13 is no further action. In Section 10.7, it states that minimal PAH contamination remains in soil above unrestricted reuse and unlimited exposure criteria. The above statements seem to contradict each other. Also, as a Decision Document has not been finalized (see comment 1), it would seem premature to state that the remedy is no further action.
- (3) Section 10.7 further states that the PAH contamination that remains in soil at OU-13 does not pose a risk under the current land use scenario. This does not specify what the current land use scenario is or under what exposure assumptions it has been determined that the site poses no unacceptable risk. As mentioned before, Section 10.4.2 states that PAH contaminant levels above both residential and industrial soil cleanup target levels may still reside in surface soils at OU-13.
- (4) Please determine whether a LUCIP is required for OU-13 as provided for in the Memorandum of Agreement between the Air Force, EPA and the Department.

Operable Unit 15

- (1) Please indicate on Figure 11-1 where soil contamination remains at some portions of OU-15 above concentrations that would allow unrestricted reuse and unlimited exposure.

Operable Unit 19

- (1) Please indicate on a figure where soil removal activities occurred during the Interim Remedial Actions of 1996 and 2000.

- (2) Based on the information contained in the Draft 5-year review, I continue to concur that No Further Action is warranted at this site.

Operable Unit 25

- (1) Please indicate on a figure where soil contamination remains above concentrations that would allow unrestricted reuse and unlimited exposure.
- (2) Apparently, the only current contaminant of concern in groundwater is isopropylbenzene, which has been detected in groundwater at concentrations that exceed its GCTL. The 5-year review recommends that because the GCTL for isopropylbenzene is based solely upon organoleptic concerns, that further groundwater monitoring should not be required and the monitoring wells properly abandoned. While the Department may in the future be able to agree to no further action for groundwater with institutional controls, because a Decision Document has not been approved for this site, it would be premature of the Department to agree to the discontinue groundwater monitoring or the abandonment of the monitoring wells.

Operable Unit 27

- (1) Please indicate on a figure where soil contamination was removed during Interim Remedial Actions.
- (2) Please include the latest groundwater analytical data that indicates that the antimony detected in 1996 in monitoring well OU27-MW-004 at concentrations above primary standards is no longer a contaminant of concern.

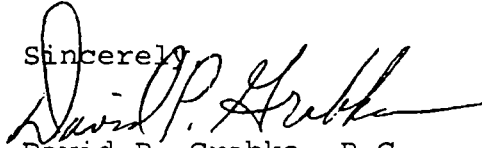
Area of Concern 3

- (1) Please indicate whether previous investigations determined whether contamination from explosive residues were analyzed for in soil and groundwater in previous investigations. As this site is the Munitions Storage Area where munitions have been stored and painted, it would seem reasonable to test for releases of explosive residues. If explosives have not been analyzed for another reason, please include that reason in the text.
- (2) Please indicate where monitoring wells were installed in a figure. Please also indicate in the text whether those monitoring wells still exist or if they have been properly abandoned.

Mr. Andrejko
Page Seven
May 17, 2004

If you have any concerns regarding this letter, please contact me at (850)245-8997.

Sincerely,



David P. Grabka, P.G.
Remedial Project Manager

CC: Doyle Brittain, EPA Region 4, Atlanta
Lance McDaniel, HQ AFRC
Lee Conesa, AFCEE-ERB
Jose Gonzalez, DERM
Paul Wierzbicki, FDEP Southeast District

JJC ESN ESN



ENVIRONMENTAL RESOURCES MANAGEMENT
POLLUTION CONTROL DIVISION
33 S.W. 2nd AVENUE
SUITE 800
MIAMI, FLORIDA 33130-1540
(305) 372-6817

March 15, 2004

Michael Andrejko
482nd MSG/CEV
29050 Coral Sea Blvd., Bldg. 232
Homestead ARB, FL 33039

CERTIFIED MAIL NO. 70001670000546474906
RETURN RECEIPT REQUESTED

RE: Draft Five Year Review Report dated February 2004 and submitted by the Department of the Air Force for OU-1 (HWR-51/File-14728), OU-2 (HWR-60/File-14732), OU-3 (HWR-66/File-14736), OU-4 (HWR-67/File-9885), OU-5 (HWR-69/File-13179), OU-7 (HWR-73/File-9879), OU-8 (HWR-124/File-14775), OU-12 (HWR-102/File-12223), OU-13 (HWR-103/File-14761), OU-15 (HWR-120/File-14771), OU-19 (HWR-125/File-9880), OU-25 (HWR-144/File-14795), OU-27 (HWR-146/File-12296), and AOC-3 (HWR-24/File-15320) located at, near, or in the vicinity of the Homestead Air Reserve Base, Homestead, Miami-Dade County, Florida.

Dear Mr. Andrejko:

The Pollution Remediation Section of the Department of Environmental Resources Management (DERM) has reviewed the above referenced report received on February 17, 2004. The Following comments are provided:

OU-8:

This site is being addressed as a petroleum site governed by Chapter 62-770, Florida Administrative Code (FAC) and conditional closure is the selected remedy for the site. DERM recommends that the provisions of Rule 62-770.680(2), FAC and the Florida Department of Environmental Protection's (FDEP) Institutional Controls Procedure Guidance document be utilized to implement the required No Further Action with Conditions.

OU-13:

Although the FDEP and United States Environmental Protection Agency (USEPA) issued a No Further Response Action Planned (NFRAP) for this site, the order itself does not contain provisions to be protective of human health and the environment for soils that exceed cleanup target levels (CTLs). This remedy (order) is not consistent with the remedy for other sites contained in the 5 Year Review that exceed soil CTLs. It is recommended that the appropriate Land Use Controls (LUCs) and other required provisions for conditional closure be implemented.

OU-25:

The groundwater CTL of 0.8 ug/l for isopropyl benzene (cumene) is applicable to this site. Groundwater samples continue to indicate exceedances of the groundwater CTL. Although additional groundwater monitoring is not required, groundwater restrictions should continue to be considered part of the proposed LUCs.

OU-27:

Refer to the attached January 10, 2003 DERM letter regarding the remedy options for this OU.

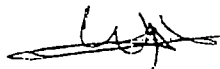
Appendix B:

Photograph 10 of OU-25 appears to be the same as in photograph 11 of OU-27.

DERM does not object to approving the remainder of the document as final.

If you have any questions regarding this letter please contact Thomas Kux, P.G., of the Pollution Remediation Section at (305) 372-6700.

Sincerely,



Wilbur Mayorga, P.E., Chief
Pollution Remediation Section

TK
attach

Pc: Jose Gonzalez, DERM
David Grabka, P.G., FDEP (TAL)
HWR-150 File-14801



ENVIRONMENTAL RESOURCES MANAGEMENT
POLLUTION CONTROL DIVISION
33 S.W. 2nd AVENUE
SUITE 800
MIAMI, FLORIDA 33130-1540
(305) 372-6817

January 10, 2003

CERTIFIED MAIL NO. 7001 0320 0003 8095 3971
RETURN RECEIPT REQUESTED

W. Craig Overstreet, Acting Chief
482 MSG/CEV
29050 Coral Sea Blvd.
Building 232, Box 68
Homestead ARS, FL 33039-1299

RE: Draft Letter Report, Operable Unit No. 27 Post Voluntary IRA Soil Analytical Results report dated December 2002 and submitted by the Department of the Air Force for OU-27 (HWR-146/File-12296) located at, near, or in the vicinity of the former Homestead Air Reserve Station, Homestead, Miami-Dade County, Florida.


Dear Mr. Overstreet:

The Pollution Remediation Section of the Department of Environmental Resources Management (DERM) has reviewed the above referenced report received December 4, 2002. Based on historical exceedances of leachability-based cleanup target levels (CTLs) without SPLP testing (i.e. cadmium, chromium, copper, lead, acetone, benzo(a)anthracene, benzo(b)fluoranthene, and carbazole), the lack of discrete confirmation samples from the walls and bottoms of the soil removal areas (January 2002 Voluntary Interim Remedial Action Activity report), and the presence of PAHs above the residential soil CTLs but below the HARB-specific soil CTL of 1.5 mg/kg (i.e. April 1994 confirmation sample SS-0006), DERM would only concur with a conditional closure for soils following a minimum of one year of groundwater monitoring which must include those parameters which exceed leachability-based CTLs.

DERM would only concur with an unconditional closure for soils if the requirements for unconditional closure in accordance with applicable regulations and as stipulated in the attached June 12, 2000 and April 2, 2002 DERM letters have been met.

If you have any questions regarding this letter please contact Thomas Kux, P.G., of the Pollution Remediation Section at (305) 372-6700.

Sincerely,


Wilbur Mayorga, P.E., Chief
Pollution Remediation Section

TK

Attach: June 12, 2000 and April 2, 2002 DERM letters

**Air Force Reserve Command Responses to Technical Review Comments
Draft Five-Year Review (February 2004)
Homestead Air Reserve Base, Florida**

Comments from Doyle T. Brittain, USEPA-Region 4, dated 24-Mar-03

The subject document has been well prepared and closely follows the Comprehensive Five-Year Review Guidance, EPA 540-R-01-007; OSWER No. 9355-7-03B-P; June 2001. Minor comments are provided below which EPA requests be addressed in the final document.

Comment 1: Page 15, OU-1. EPA agrees with the proposed recommendation.

AFRC Response: Comment acknowledged.

Comment 2: Page 20, OU-2. EPA agrees with the proposed recommendation. EPA suggests that a sampling plan be submitted for State and EPA approval to delineate the extent of contamination for the purpose of reducing the amount of land subject to Land Use Controls.

AFRC Response: Agreed.

Comment 3: Page 22, OU-3. EPA agrees with the proposed recommendation.

AFRC Response: Comment acknowledged.

Comment 4: Page 27, OU-4. EPA agrees with the proposed recommendation.

AFRC Response: Comment acknowledged.

Comment 5: Page 31, OU-5. EPA agrees with the proposed recommendation.

AFRC Response: Comment acknowledged.

Comment 6: Page 35, OU-7. EPA agrees with the proposed recommendation.

AFRC Response: Comment acknowledged.

Comment 7: Page 40, OU-8. This site was transferred from CERCLA to the FDEP Petroleum Program on 30 July 1994. EPA agrees with the proposed recommendation.

AFRC Response: Comment acknowledged.

Comment 8: Page 44, OU-12. Since no final RI/FS/BRA or ROD has been submitted on this site, EPA is not in a position to make a technically sound decision. At this time, EPA recommends that an RI/FS/BRA Report be submitted followed by a ROD.

AFRC Response: Comment acknowledged. Following the streamlined format established by the BCT, a site-specific draft ROD is scheduled to be produced for this site in CY04. The site-specific recommendations brought up in the draft Five-Year Review will be addressed in the subject ROD.

Comment 9: Page 47, OU-13. EPA agrees with the proposed recommendation.

AFRC Response: Comment acknowledged.

Comment 10: Page 52, OU-15. Since no final RI/FS/BRA or ROD has been submitted on this site, EPA is not in a position to make a technically sound decision. At this time, EPA recommends that an RI/FS/BRA Report be submitted followed by a ROD.

AFRC Response: Comment acknowledged. It should be noted that a site-specific RI/BRA was produced in 1999. Following the streamlined format established by the BCT, a site-specific draft ROD is scheduled to be produced for this site in CY04. The site-specific recommendations brought up in the draft Five-Year Review will be addressed in the subject ROD.

Comment 11: Page 56, OU-19. EPA agrees with the proposed recommendation.

AFRC Response: Comment acknowledged.

Comment 12: Page 59, OU-25. Since no final RI/FS/BRA or ROD has been submitted on this site, EPA is not in a position to make a technically sound decision. At this time, EPA recommends that an RI/FS/BRA Report be submitted followed by a ROD.

AFRC Response: Comment acknowledged. Following the streamlined format established by the BCT, a site-specific draft ROD is scheduled to be produced for this site in CY04. The site-specific recommendations brought up in the draft Five-Year Review will be addressed in the subject ROD.

Comment 13: Page 64, OU-27. Since no final RI/FS/BRA or ROD has been submitted on this site, EPA is not in a position to make a technically sound decision. At this time, EPA recommends that an RI/FS/BRA Report be submitted followed by a ROD.

AFRC Response: Comment acknowledged. Following the streamlined format established by the BCT, a site-specific ROD is scheduled to be produced for this site in CY04. The site-specific recommendations brought up in the draft Five-Year Review will be addressed in the subject ROD.

Comment 14: Page 68, AOC-3. EPA agrees with the proposed recommendation.

AFRC Response: Comment acknowledged.

Comment 15: Site Inspection Checklist. Page 5, Section B. The "Remarks" are misleading. This site was closed with State and EPA approval 1 May 1997. The "Remarks" need to be reworded to reflect the correct status of the site.

AFRC Response: Each "Site Inspection Checklist" within Appendix C consists of seven pages. It is unclear from the reviewer's comment as to which site the reviewer's comment refers to.

Comment 16: Site Inspection Checklist. Page 7, Section B. "Degradation" is not the correct word to use here. A better word or phrase is needed.

AFRC Response: Agreed. Page 7, Section B of the "Site Inspection Checklist" for OU-8 will be changed as requested.

**Air Force Reserve Command Responses to Technical Review Comments
Draft Five-Year Review (February 2004)
Homestead Air Reserve Base, Florida**

Comments from Wilbur Mayorga, P. E., DERM, dated 15-Mar-04

The Pollution Remediation Section of the Department of Environmental Resources Management (DERM) has reviewed the above referenced report received on 17 February 2004. The following comments are provided:

Comment 1 - OU-8: *This site is being addressed as a petroleum site governed by Chapter 62-770, Florida Administrative Code (FAC) and conditional closure is the selected remedy for the site. DERM recommends that the provisions of Rule 62-770.680(2), FAC and Florida Department of Environmental Protection's (FDEP) Institutional Controls Procedure Guidance document be utilized to implement the required No Further Action with Conditions.*

AFRC Response: Agreed.

Comment 2 - OU-13: *Although the FDEP and the United States Environmental Protection Agency (USEPA) issued a No Further Response Action Planned (NFRAP) for this site, the order itself does not contain provisions to be protective of human health and the environment for soils that exceed cleanup target levels (CTLs). This remedy (order) is not consistent with the remedy for other sites contained in the 5 Year Review that exceed soil CTLs. It is recommended that the appropriate Land Use Controls (LUCs) and other required provisions for conditional closure be implemented.*

AFRC Response: Because of its close proximity to the base's Munitions Storage Area, the subject site is located within a more secure area of the base where all land use activities are already under strict control and direction. No changes can occur at the subject site. Therefore, no further action is deemed necessary for this site because of the approved NFRAP designation.

Comment 3 - OU-25: *The ground-water CTL of 0.8 µg/l for isopropyl benzene (cumene) is applicable to this site. Ground-water samples continue to indicate exceedances of the ground-water CTL. Although ground-water monitoring is not required, ground-water restrictions should continue to be considered part of the proposed LUCs.*

AFRC Response: Comment acknowledged. It should be noted, that a site-specific draft ROD is scheduled to be produced for this site in CY04. The aforementioned issue regarding the detection of isopropylbenzene in past ground-water samples will be addressed in the subject ROD.

Comment 4 - OU-27: *Refer to the attached 10 January 2003 DERM letter regarding the remedy options for this OU.*

AFRC Response: Comment acknowledged. It should be noted, that a draft site-specific ROD is scheduled to be produced for this site in CY04. The subject issue regarding past DERM concerns for OU-27 will be addressed in the ROD.

Comment 5 - Appendix B: *Photograph 10 of OU-25 appears to be the same as in photograph 11 of OU-27.*

AFRC Response: The reviewer's observation is correct. The subject photograph is a duplicate. A replacement photograph that is site-specific for OU-27 will be placed in the document revisions.

Comment 6: *DERM does not object to approving the remainder of the document as final.*

AFRC Response: Comment acknowledged.

**Air Force Reserve Command Responses to Technical Review Comments
Draft Five-Year Review (February 2004)
Homestead Air Reserve Base, Florida**

Comments from David. P. Grabka, P. G., FDEP, dated 17-May-04

General Comments:

Comment 1: *The Department entered into a Memorandum of Agreement (MOA) with the Air Force and the EPA for the Homestead Air Reserve Station on 15 March 1999. The purpose of the MOA was to specify the actions required by the various parties to enact and maintain land use controls (LUCs) on sites requiring restrictions on property use in order to ensure that human health and the environment is protected. The MOA required that individual Land Use Control Implementation Plans (LUCIPs) be prepared for all known sites. I could find no mention of either the MOA or that LUCIPs were prepared for the sites listed in the 5-year review. Incorporating these LUCIPs into the 5-year review would show those areas requiring land use controls at the various sites. Additionally, a discussion in the 5-year review as to whether the LUCs described in the LUCIP remain protective and whether the boundaries should be changed should also be added.*

AFRC Response: As requested, the mention of the subject MOA will be insert in two places of the revised document; i.e., within the first paragraph of page 2 of the "Executive Summary", and as the last bullet on page 9, Section 1.2.3 "History of Contamination". In addition, please note that the AFRC will begin to produce an annual LUCIP document in accordance with the MOA.

Comment 2: *For those sites where soil excavations have taken place, there should be a figure showing the locations of those excavations.*

AFRC Response: Agreed. We will add the requested site-specific figures for those sites where soil excavation activities have been performed.

Comment 3: *For each site that has had a remedial investigation finalized, there should be a list of contaminants of concern (COCs) that were identified for each media. These COCs should be those contaminants that have not been screened out and that have been identified by a risk assessment as posing risks to human health or the environment. In the text of the 5-year review, it should be explained for each identified COC what remedial actions have taken place to address the risks posed by each contaminant in each media. These actions may include the imposition of LUCs, monitoring of ground water, soil removals or other remedial actions. The text should describe how COCs were subsequently added or removed and the document and regulatory approvals that document these changes.*

AFRC Response: Disagree. The detailed discussions concerning site-specific COCs, and associated risk assessments and selected remedial actions, etc. have already been well documented in the various applicable site-specific documents (e.g., FSs, RODs, etc.). We do not feel there is any need to add any of the subject detailed discussions to the text of the revised Five-Year Review.

Comment 4: *I found some of the ground-water analytical tables at the end of the sections describing the sites to be extraneous. While including the latest ground-water information collected has some value, the previous analytical information seems unnecessary. If that information is being used in the 5-year review report to indicate that ground-water contamination is no longer a concern, I believe simply referencing previous ground-water monitoring report(s), and noting whether EPA, FDEP, and DERM have concurred with the recommendations of the report(s), should be sufficient.*

AFRC Response: It should be noted that the referenced ground-water analytical information was included in the text of the Five-Year Review in response to a suggestion made during a BCT meeting by the previous FDEP representative. He felt the inclusion of the data would be useful as a means of easier reference during regulatory review.

Specific Comments:

Operable Unit 1

Comment 1: *Please attach the LUCIP for Operable Unit 1 to Section 2.0 showing those areas requiring institutional or engineering controls. The LUCIP should indicate those areas requiring land use restrictions and past ground-water use restrictions.*

AFRC Response: Please see the response to General Comment No. 1 regarding LUCIPs.

Comment 2: *Please indicate whether a revised LUCIP is required based upon ground-water monitoring information that has been collected.*

AFRC Response: Please see the response to General Comment No. 1 regarding LUCIPs.

Comment 3: *Based upon the information contained in the 5-year review, I would concur that no further ground-water monitoring will be necessary and the monitoring wells should be abandoned in accordance with applicable regulatory guidelines.*

AFRC Response: Comment acknowledged.

Operable Unit 2

Comment 1: *Please attach the LUCIP for Operable Unit 1 to Section 3.0 showing those areas requiring institutional or engineering controls. The LUCIP should indicate those areas requiring land use restrictions and past ground-water use restrictions.*

AFRC Response: Please see the response to General Comment No. 1 regarding LUCIPs.

Comment 2: *Please indicate whether a revised LUCIP is required based upon ground-water monitoring information that has been collected.*

AFRC Response: Please see the response to General Comment No. 1 regarding LUCIPs.

Comment 3: *Please indicate in a figure where the soil was excavated as part of the remedial actions to address soil contamination.*

AFRC Response: Agreed. As noted in the response to General Comment No. 2, a figure showing the location of the soil excavation activities will be added.

Comment 4: *Based upon the information contained in the 5-year review, I would concur that no further ground-water monitoring will be necessary and the monitoring wells should be abandoned in accordance with applicable regulatory guidelines.*

AFRC Response: Comment acknowledged.

Operable Unit 3

Comment 1: I concur with the recommendation that No Further Action is appropriate for this site and that 5-year reviews will not be required in the future unless evidence of contamination cause by Air Force activities is discovered in the future.

AFRC Response: Comment acknowledged.

Operable Unit 4

Comment 1: Please attach the LUCIP for Operable Unit 1 to Section 5.0 showing those areas requiring institutional or engineering controls. The LUCIP should indicate those areas requiring land use restrictions and past ground-water use restrictions.

AFRC Response: Please see the response to General Comment No. 1 regarding LUCIPs.

Comment 2: Please indicate whether a revised LUCIP is required based upon ground-water monitoring information that has been collected.

AFRC Response: Please see the response to General Comment No. 1 regarding LUCIPs.

Comment 3: Please indicate in a figure where the soil/sediment was excavated from the drainage ditches as part of remedial actions to address contamination.

AFRC Response: Agreed. As noted in the response to General Comment No. 2, a figure showing the location of the soil/sediment excavation activities will be added.

Comment 4: Based upon the information contained in the 5-year review, I would concur that no further ground-water monitoring will be necessary and the monitoring wells should be abandoned in accordance with applicable regulatory guidelines.

AFRC Response: Comment acknowledged.

Operable Unit 5

Comment 1: Please attach the LUCIP for Operable Unit 5 to Section 6.0 showing those areas requiring institutional or engineering controls. The LUCIP should indicate those areas requiring land use restrictions and past ground-water use restrictions.

AFRC Response: Please see the response to General Comment No. 1 regarding LUCIPs.

Comment 2: Please indicate whether a revised LUCIP is required based upon ground-water monitoring information that has been collected.

AFRC Response: Please see the response to General Comment No. 1 regarding LUCIPs.

Comment 3: Please indicate in a figure where soil was excavated as part of remedial actions to address contamination.

AFRC Response: Agreed. As noted in the response to General Comment No. 2, a figure showing the location of the soil excavation activities will be added.

Comment 4: *Based upon the information contained in the 5-year review, I would concur that no further ground-water monitoring will be necessary and the monitoring wells should be abandoned in accordance with applicable regulatory guidelines.*

AFRC Response: Comment acknowledged.

Operable Unit 7

Comment 1: *Please attach the LUCIP for Operable Unit 7 to Section 7.0 showing those areas requiring institutional or engineering controls. The LUCIP should indicate those areas requiring land use restrictions, ground-water use restrictions and engineering controls.*

AFRC Response: Please see the response to General Comment No. 1 regarding LUCIPs.

Comment 2: *Please indicate whether a revised LUCIP is required based upon ground-water monitoring information that has been collected.*

AFRC Response: Please see the response to General Comment No. 1 regarding LUCIPs.

Comment 3: *Please indicate in a figure where the soil was excavated as part of remedial actions to address soil contamination.*

AFRC Response: Agreed. As noted in the response to General Comment No. 2, a figure showing the location of the soil excavation activities will be added.

Operable Unit 8

Comment 1: *I concur that this site is being addressed under the petroleum program and that, as such, there are no requirements to conduct further 5-year reviews.*

AFRC Response: Comment acknowledged.

Operable Unit 12

Comment 1: *Please indicate in a figure those areas that were excavated as part of the soil Interim Remedial Actions.*

AFRC Response: Agreed. As noted in the response to General Comment No. 2, a figure showing the location of the soil excavation activities will be added.

Comment 2: *Please indicate in a figure those areas of soil contamination still exceeding residential and leachability SCTLs.*

AFRC Response: Agreed. A figure will be added that shows the locations of the post-IRA confirmatory soil samples and the analytical results that are above levels of regulatory concern.

Comment 3: *I will defer comment upon whether further ground-water monitoring will be required based upon further review of the ground-water data and whether soil contamination above leachability SCTLs remains on site.*

AFRC Response: Comment acknowledged. It should be noted, that a site-specific draft ROD is scheduled to be produced for this site in CY04. The subject issues regarding future potential ground-water monitoring activities and applicable leachability SCTLs will be addressed in the upcoming subject ROD.

Operable Unit 13

Comment 1: According to the document, there has been no Decision Document finalized for this site. Please describe any proposed actions to be taken by the Air Force to remedy this situation.

AFRC Response: Section 10.3.1 (Remedy Selection) on page 46 of our draft five-year review, states, "...Although the Decision Document was not finalized, subsequent correspondence from the FDEP on 22 January 1997, and from USEPA on 24 September 1997 granted No Further Response Action Planned (NFRAP) status for the site. Copies of the letters are included in Appendix D." Because the aforementioned regulatory approval was granted back in 1997, the AFRC feels there is no need for any additional remedy action to be taken.

Comment 2: Section 10.4.2 states that concentrations of PAHs at two locations exceed the Department's residential and industrial soil cleanup target levels and that barium at one location exceeds the Department's residential soil cleanup target level. However, it says in section 10.4.3 that the remedy for OU-13 is no further action. In Section 10.7, it states that minimum PAH contamination remains in soil above unrestricted reuse and unlimited exposure criteria. The above statements seem to contradict each other. Also, as a Decision Document has not been finalized (see Comment 1) it would seem premature to state that the remedy is no further action.

AFRC Response: As noted in Section 10.1 of the draft five-year review, the subject site (former Hardfill Storage Area No. 3) was used historically to store construction and demolition debris (including materials from asphalt road surfaces). It is highly likely then that the two PAH detections of concern are directly related to the presence of waste asphalt demolition materials. In addition, as noted in the response to the previous FDEP comment, regulatory approval for a NFRAP status for OU-13 was granted by both the EPA and the FDEP back in 1997. As a result, the AFRC feels there is no need for any additional remedy action to be taken.

Comment 3: Section 10.7 further states that the PAH contamination that remains in the soil at OU-13 does not pose a risk under the current land use scenario. This does not specify what the current land use scenario is or under what exposure assumptions it has been determined that the site poses no unacceptable risks. As mentioned before, Section 10.4.2 states that PAH contaminant levels above both residential and industrial soil cleanup target levels may still reside in surface soils at OU-13.

AFRC Response: Because of its close proximity to the base's Munitions Storage Area, the subject site is located within a more secure area of the base where all land use activities are already under strict control and direction. As a result, no site condition changes can occur at the subject site. Therefore, no further action is deemed necessary at this time for this site because of the approved NFRAP designation.

Operable Unit 15

Comment 1: Please indicate on Figure 11.1 where soil contamination remains at some portion of OU-15 above concentrations that would allow unrestricted reuse and unlimited exposure.

AFRC Response: Agreed. The subject figure will be changed to show the locations of the post-IRA confirmatory soil samples and other soil samples with analytical results that are above levels of regulatory concern.

Operable Unit 19

Comment 1: Please indicate on a figure where soil removal activities occurred during the Interim Remedial Actions of 1996 and 2000.

AFRC Response: Agreed. As noted in the response to General Comment No. 2, a figure showing the location of the soil excavation activities will be added

Comment 2: *Based on the information contained in the Draft 5-year review, I continue to concur that No Further Action is warranted at this site.*

AFRC Response: Comment acknowledged.

Operable Unit 25

Comment 1: Please indicate on a figure where soil contamination remains above concentrations that would allow unrestricted reuse and unlimited exposure.

AFRC Response: Agreed. A figure will be added that shows the locations of the post-IRA confirmatory soil samples with analytical results that are above levels of regulatory concern.

Comment 2: *Apparently, the only current contaminant of concern in ground water is isopropylbenzene, which has been detected in ground water at concentrations that exceed its GCTL. The 5-year review recommends that because the GCTL for isopropylbenzene is based solely on organoleptic concerns, that further ground-water monitoring should not be required and the monitoring wells properly abandoned. While the Department may in the future be able to agree to no further action for ground water with institutional controls, because a Decision Document has not been approved for this site, it would be premature of the Department to agree to the discontinued ground-water monitoring or the abandonment of the monitoring wells.*

AFRC Response: Comment acknowledged. It should be noted, that a site-specific draft ROD is scheduled to be produced for this site in CY04. The issue regarding the detection of isopropylbenzene during past ground-water monitoring events will be addressed in the subject ROD.

Operable Unit 27

Comment 1: *Please indicate on a figure where soil contamination was removed during Interim Remedial Actions.*

AFRC Response: Agreed. As noted in the response to General Comment No. 2, a figure showing the location of the soil excavation activities will be added

Comment 2: *Please include the latest ground-water analytical data that indicates that the antimony detected in monitoring well OU27-MW-004 at concentrations above primary standards is no longer a contaminant of concern.*

AFRC Response: Agreed. The subject ground-water data will be added.

Area of Concern 3

Comment 1: *Please indicate whether previous investigations determined whether contamination from explosive residues was analyzed for in the soil and ground water in previous investigations. As this site is the Munitions Storage Area where munitions have been stored and painted, it would seem reasonable to test for releases of explosive residues. If explosives have not been analyzed for another reason, please include that reason in the text.*

AFRC Response: According to the AFRC representative who has been here for 30 years and is currently the head of the base's Munitions Storage Area (MSA), there has not been a need to deal with exposed explosives as a general rule. According to him, the only time the base may have had to deal with "exposed explosives" in the past was if a 20-mm round was found to be damaged, at which time any perforation was sealed with tape and either sent back to the AF depot in this condition or taken to the old on-base grenade range for destruction.

Therefore, there has been no need to test for the potential presence of explosive residue release at the subject MSA. It should be noted, however, that the subject old grenade range (which is no longer in use) is scheduled to undergo a standard PA/SI study under Military Munitions Response protocol during FY05.

Comment 2: Please indicate where monitoring wells were installed in a figure. Please indicate in the text whether those monitoring wells still exist or if they have been properly abandoned.

AFRC Response: Agreed. The subject monitoring well information will be added to the text.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

August 3, 2004

4WD-FFB

FAX & US MAIL

Lawrence Ventura, Environmental Flight Chief
Homestead Air Reserve Station
482d SPTG/CEV
360 Coral Sea Blvd.
Homestead ARS, FL 33039-1299

SUBJ: Draft Initial Five-Year Review; Homestead Air Reserve Base, Florida

Dear Mr. Ventura:

The Environmental Protection Agency (EPA) has reviewed the Homestead Air Force Base Air Force Reserve Command's (HAFB/AFRC's) response to comments on the subject document and consider them acceptable. We look forward to receipt of a document that adequately includes these comments and can approve. If you have any questions, please call me at (404) 562-8549.

Sincerely,

A handwritten signature in black ink that reads "Doyle T. Brittain". The signature is fluid and cursive, with a large initial "D" and a long horizontal stroke at the end.

Doyle T. Brittain
Senior Remedial Project Manager

cc: Lee Conesa, HAFB/AFRPA
David Grabka, FDEP
Jose Gonzalez, DERM
Susan Markley, DERM
Richard Curry, BNP/NPS



Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

October 14, 2004

Mr. Michael Andrejko
482d MSG/CEV
29050 Coral Sea Blvd.
Homestead ARB, FL 33039-1299

RE: Responses to EPA, FDEP and DERM review comment on Draft
Initial Five-Year Review, Homestead Air Reserve Base, Miami-
Dade County, Florida.

Dear Mr. Andrejko:

I have reviewed the Air Force's responses to FDEP comments on the Initial Five-Year Review, Homestead Air Reserve Base, dated July 12, 2004 (received July 13, 2004). Overall, I felt the responses were acceptable. The only site description where there appeared to be major disagreement was for Operable Unit 13 (Site SS-22). Because the description of the Remedy Selection in Section 10.3.1 said that a Decision Document was not finalized, and because of my unfamiliarity with the No Further Response Action Planned (NFRAP) terminology, I was under the impression that a Decision Document was still necessary for closing out the remedy selection process for Operable Unit 13. I have researched the NFRAP remedy and find that the Department's January 22, 1997 letter concurring with the NFRAP status for Operable Unit 13 closed out the site, with respect to either requiring further investigation or remediation or imposing Land Use Controls, at the Preliminary Assessment/Site Investigation stage. Therefore, your responses to my comments regarding Operable Unit 13 are also accepted. The Department has no plans in reopening the site.

If you have any concerns regarding this letter, please contact me at (850)245-8997.

Sincerely,

David P. Grabka, P.G.
Remedial Project Manager

CC: Tim Bahr, FDEP
Doyle Brittain, EPA Region 4, Atlanta
Lance McDaniel, HQ AFRC
Lee Conesa, AFCEE-ERB
Jose Gonzalez, DERM
Paul Wierzbicki, FDEP Southeast District

JJC ESN

"More Protection, Less Process"



ENVIRONMENTAL RESOURCES MANAGEMENT
POLLUTION CONTROL DIVISION
33 S.W. 2nd AVENUE
SUITE 800
MIAMI, FLORIDA 33130-1540
(305) 372-6817

July 27, 2004

CERTIFIED MAIL NO. 70001670000546454861
RETURN RECEIPT REQUESTED

Lawrence Ventura, Jr.
482nd MSG/CEV
29050 Coral Sea Blvd., Bldg. 232
Homestead ARB, FL 33039

RE: Response to comments on the February 2004 Draft Five Year Review Report dated July 12, 2004 and submitted by the Department of the Air Force for OU-1 (HWR-51/File-14728), OU-2 (HWR-60/File-14732), OU-3 (HWR-66/File-14736), OU-4 (HWR-67/File-9885), OU-5 (HWR-69/File-13179), OU-7 (HWR-73/File-9879), OU-8 (HWR-124/File-14775), OU-12 (HWR-102/File-12223), OU-13 (HWR-103/File-14761), OU-15 (HWR-120/File-14771), OU-19 (HWR-125/File-9880), OU-25 (HWR-144/File-14795), OU-27 (HWR-146/File-12296), and AOC-3 (HWR-24/File-15320) located at, near, or in the vicinity of the Homestead Air Reserve Base, Homestead, Miami-Dade County, Florida.

Dear Mr. Ventura:

The Pollution Remediation Section of the Department of Environmental Resources Management (DERM) has reviewed the above referenced report received on July 13, 2004. DERM does not object to approving the report as final. However, for OU-13, DERM recommends that a written mechanism containing the restrictions for the site be implemented to ensure the protectiveness of the remedy.

If you have any questions regarding this letter please contact Thomas Kux, P.G., of the Pollution Remediation Section at (305) 372-6700.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kevin' followed by a stylized surname.

Wilbur Mayorga, P.E., Chief
Pollution Remediation Section

TK
Pc: Jose Gonzalez, DERM
David Grabka, P.G., FDEP (TAL)
HWR-150 File-14801