
Final

Environmental Baseline Survey Main Airfield Parcel Hamilton Army Airfield

Prepared for
U.S. Army Corps of Engineers



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Acronyms and Abbreviations

ACM	asbestos containing material
Action Goals	Environmental Action Contaminant Concentration Goals
AMSF	Aircraft Maintenance and Storage Facility
Army	Department of the Army
ASR	Archives Search Report
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
ATG	Applied Technical Group
BCP	BRAC Cleanup Plan
bgs	below ground surface
BRAC	Base Realignment and Closure
BTEX	benzene, toluene, ethylbenzene, and xylenes
Cal EPA	California Environmental Protection Agency
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CERFA	Community Environmental Response Facilitation Act
CSM	Coastal Salt Marsh
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichlorethylene
DDT	dichlorodiphenyltrichloroethane
DHS	California Department of Health Services
DoD	Department of Defense
DTSC	Department of Toxic Substances Control
EBS	Environmental Baseline Survey
ELCDDA	East Levee Construction Debris Disposal Area

ERL	effects-range low
ERNS	Emergency Response Notification System
ESI	Engineering-Science, Inc.
ESI	Engineering-Science, Inc.
ETC	Earth Technology Corporation
FFS	Focused Feasibility Study
FOSET	Finding of Suitability for Early Transfer
FSTP	Former Sewage Treatment Plant
GSA	General Services Administration
HAAF	Hamilton Army Airfield
HWRP	Hamilton Wetland Restoration Project
IT	IT Corporation
JSA	Jones & Stokes Associates, Inc.
LF	Landfill
LSA	LAS Associates, Inc.
LUST	California Leaking Underground Storage Tank
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MW	monitoring well
NHP	New Hamilton Partnership
NOAA	Formerly National Marine Fisheries Service
NPL	National Priorities List
NWADA	Northwest Alleged Disposal Area
ODD	Outboard Drainage Ditch
OE	Ordnance and Explosives
ONSFL	Onshore Fuel Line
OS	Open space
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls

PDD	Perimeter Drainage Ditch
POL	Petroleum, Oil, and Lubricant HILL
ppm	parts per million
PWA	Phillip Williams & Associates
RAP	Remedial Action Plan
RCI	Remedial Constructors, Inc.
RCRA	Resource Conservation and Recovery Act
RCRIS-TSD	Resource Conservation and Recovery Information System—treatment, storage, and disposal
RFB	Robert Bein, William Frost & Associates
RI	Remedial Investigation
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
SCL	California Sites Database
SPL	California Sites Priorities List
SS	sanitary sewer
SVOCs	semivolatile organic compounds
SWLF	Solid Waste Landfill
SWMU	Solid Waste Management Unit
SWPPP	Storm Water Pollution Prevention Plan
TACAN	tactical aeronautic navigation
TPH	total petroleum hydrocarbons
TPH-D	TPH measured as diesel
TPH-E	TPH extractables
TPH-G	TPH measured as gasoline
TPH-JP-4	TPH measured as JP-4
TPH-P	TPH purgeables
TW	temporary monitoring wells
ug/L	micrograms per liter
UHE	unknown extractable hydrocarbon

UHP	unknown purgeable hydrocarbon
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USC	United States Code
USGS	U.S. Geological Survey
UST	underground storage tank
UXO	unexploded ordnance
VISTA	VISTA Information Solutions
VOCs	volatile organic hydrocarbons
VSI	visual site inspection
WC	Woodward-Clyde
WCFS	Woodward-Clyde Federal Services
Weston	Roy R. Weston, Inc.

Executive Summary

This Environmental Baseline Survey (EBS) documents the physical condition of real property referred to as the Main Airfield Parcel at Hamilton Army Airfield, California. It addresses the release, or disposal of hazardous substances and petroleum products (and petroleum derivatives) over the property's history. It also establishes a baseline for the Department of the Army (Army) to use in making decisions concerning real property transactions. The Main Airfield Parcel is a 644.19-acre parcel and comprises the Inboard Area sites and portions of the Coastal Salt Marsh (see Figure ES-1, all figures are at the end of the section). The preparation of an EBS is required by Department of Defense (DoD) policy before any property can be leased, transferred, sold, or acquired. The EBS is primarily an environmental management benchmark document that will also be used by the Army to meet obligations under the Community Environmental Response Facilitation Act (CERFA) (Public Law 102-426) amending the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 120(h) [also referred to as Title 42 United States Code Section 9620(h)].

Methodology

The overall purposes of the EBS are to document the current environmental condition of the Main Airfield Parcel, to establish an environmental baseline to limit future Army liability, and to support the early transfer of the Main Airfield Parcel consistent with DoD policy and Section 334 of Public Law 104-201, amending CERCLA Section 120(h)(3)(C) for the transfer of property prior to completion of all remedial actions. This survey also updates the CERFA report for those sites included in the Main Airfield Parcel.

The EBS is based on information obtained through a series of records searches, staff interviews, and visual inspections conducted between September 2000 and April 2003. The records search included a review of federal, state, and local records to identify areas where use, release, or disposal of hazardous substances or any petroleum product or its derivatives have occurred. Also, the records search included a review of all reasonably obtainable federal, state, and local government records for each adjacent facility where there has been a release of any hazardous substance or petroleum product that is likely to cause, or contribute to, contamination of the Main Airfield Parcel. Agency records were accessed through an electronic database provided by VISTA Information Solutions. A visual inspection team performed visual inspections of the Main Airfield Parcel and facilities. Interviews with current and former key employees were also conducted. The EBS includes an assessment of the environmental condition of adjacent parcels surrounding the Main Airfield Parcel that could pose environmental concern or affect the condition of the Main Airfield Parcel as a result of hazardous substance migration. Physical visual inspections were conducted in areas immediately adjacent to the Main Airfield Parcel.

Findings

The EBS identifies documented releases of hazardous substances at the Main Airfield Parcel. Although hazardous substances have been stored, there are no records indicating specific quantities. Areas where petroleum products were stored, used, and potentially released are also identified. The Main Airfield Parcel is designated with Base Realignment and Closure (BRAC) Parcel numbers as listed in Table ES-1. Findings regarding the environmental condition of the Main Airfield Parcel are summarized in Table ES-2.

Property Categorization

Each parcel within the Main Airfield Parcel is categorized into one of the seven DoD categories based on the most current available data. Category definitions are consistent with the 1995 BRAC Cleanup Plan Guidebook as amended in 1996. Property categorization factors are based on environmental conditions that, if present, may pose a threat to human health or the environment. These substances or conditions include, but are not limited to hazardous substances defined in CERCLA Section 1201(14) and petroleum substances.

The Main Airfield Parcel is classified in Table ES-2 (also see Figure 5-1). Each parcel is presented with color-coded markings to show results of the EBS property categorization in Section 5 (Figure 5-1).

In addition to property categorization factors, this document examines non-CERCLA disclosure factors that may influence the transfer of property for unrestricted use. These factors include asbestos, lead-based paints, polychlorinated biphenyls (PCBs), radon, ordnance, radionuclides, installation-wide dichlorodiphenyltrichloroethane (DDTs), and polynuclear aromatic hydrocarbons (PAHs) adjacent to the southern end of the runway.

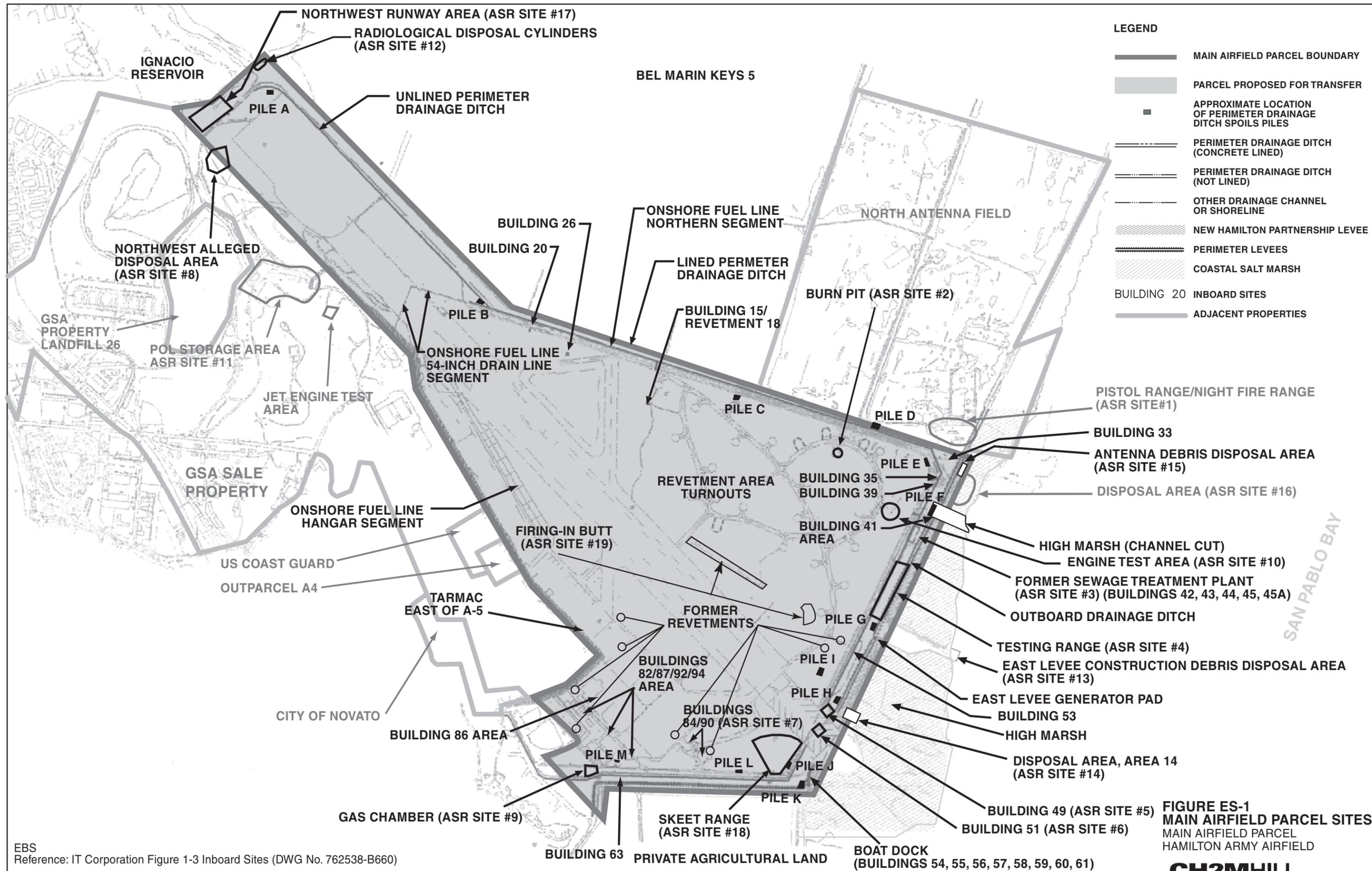
TABLE ES-1
 Main Airfield Parcel, Parcel Numbers
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Site Name	BRAC Parcel	Site Name	BRAC Parcel	Site Name	BRAC Parcel	Site Name
1	Main Airfield Parcel (excluding other BRAC parcels)	20	Perimeter Drainage Ditch (PDD) Spoils Pile J	39	Revetment 10	58	Coastal Salt Marsh Sites
2	Former Sewage Treatment Plant (including sanitary and industrial waste lines)	21	PDD Spoils Pile K	40	Revetment 11		High Marsh (Nonchannel Cut)
3	Building 20	22	PDD Spoils Pile L	41	Revetment 12		High Marsh Channel Cut
4	Building 26	23	PDD Spoils Pile M	42	Revetment 13		Outfall Drainage Ditch
5	Building 35/39	24	East Levee Generator Pad	43	Revetment 14		Historic Outfall Drainage Ditch
6	Building 41 Area	25	Onshore Fuel Line (ONSFL)-54-inch Drain Line Segment	44	Revetment 15		Antenna Debris Disposal Area
7	Building 82/87/92/94 (including storm drains)	26	ONSFL- Hangar Segment	45	Revetment 16		East Levee Construction Debris Disposal Area
8	Building 84/90 Area	27	ONSFL- Northern Segment	46	Revetment 17		Area 14
9	Building 86 (including storm drains)	28	Northwest Runway Area	47	Revetment 19	59	Boat Dock
10	PDD, unlined and lined portions	29	Tarmac East of Outparcel A-5	48	Revetment 20		Boat Dock Nonchannel Area
11	PDD Spoils Pile A	30	Revetment 1	49	Revetment 21		Boat Dock Channel Area
12	PDD Spoils Pile B	31	Revetment 2	50	Revetment 22	60	ASR Sites
13	PDD Spoils Pile C	32	Revetment 3	51	Revetment 23		Testing Range
14	PDD Spoils Pile D	33	Revetment 4	52	Revetment 24		Northwest Alleged Disposal Area
15	PDD Spoils Pile E	34	Revetment 5	53	Revetment 25		Skeet Range
16	PDD Spoils Pile F	35	Revetment 6	54	Revetment 26		Firing-In-Butt
17	PDD Spoils Pile G	36	Revetment 7	55	Revetment 27	61	Former Revetments
18	PDD Spoils Pile H	37	Revetment 8	56	Revetment 28		
19	PDD Spoils Pile I	38	Revetment 9	57	Revetment 18/ Building 15		

TABLE ES-2
DoD Environmental Condition Categories for the Main Airfield Parcel
Environmental Baseline Survey, Hamilton Army Airfield

Category	Definition	BRAC Parcel
BRAC Parcels in the following DoD categories are suitable for transfer.		
1	Areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas)	1, 28
2	Areas where only release or disposal of petroleum products has occurred	3, 4, 24, 25, 26, 27, 34, 37, 43, 44, 46, 48, 50, 52, 55, 56, 57
3	Areas where release, disposal, and/or migration of hazardous substances have occurred, but at concentrations that do not require a removal or remedial response	8, 29
4	Areas where release, disposal, and/or migration of hazardous substances have occurred, and all removal or remedial actions to protect human health and the environment have been taken	15, 18, 38, 39
BRAC Parcels in the following DoD categories are suitable for transfer only under a Finding of Suitability for Early Transfer.		
5	Areas where release, disposal, and/or migration of hazardous substances have occurred, and removal or remedial actions are underway, but all required remedial actions have not yet been taken	6, 16, 35, 36
6	Areas where release, disposal, and/or migration of hazardous substances have occurred, but required actions have not yet been implemented	1 ^a , 2, 5, 7, 9, 10, 11, 12, 13, 14, 17, 19, 20, 21, 22, 23, 28 ^a , 30, 31, 32, 33, 40, 41, 42, 45, 47, 49, 51, 53, 54, 58, 59, 61
7	Areas that are not evaluated or require additional evaluation	60

^a The Army does not view the Inboard Area-Wide DDTs and PAHs adjacent to the runway as a release that is actionable under CERCLA and therefore considers the parcel to be a Category 1. DTSC does view the Inboard Area-Wide DDTs and PAHs adjacent to the runway as a CERCLA release and considers the parcel to be a Category 6. The Record of Decision and Remedial Action Plan addresses this issue to everyone's satisfaction, and it is anticipated that the deferred CERCLA warranty is expected to be issued in the future for the whole Property.



EBS
Reference: IT Corporation Figure 1-3 Inboard Sites (DWG No. 762538-B660)

SECTION 1

Introduction

1.1 Background

CH2M HILL prepared this Environmental Baseline Study (EBS) for the Department of the Army (Army) under contract to the U.S. Army Corps of Engineers (USACE), contract number DACW05-99-D-0021, Delivery Order No. 8. This section describes the purpose and scope of the survey and provides background information.

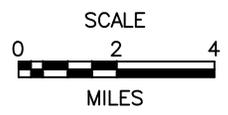
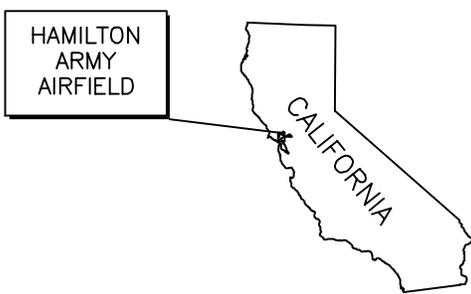
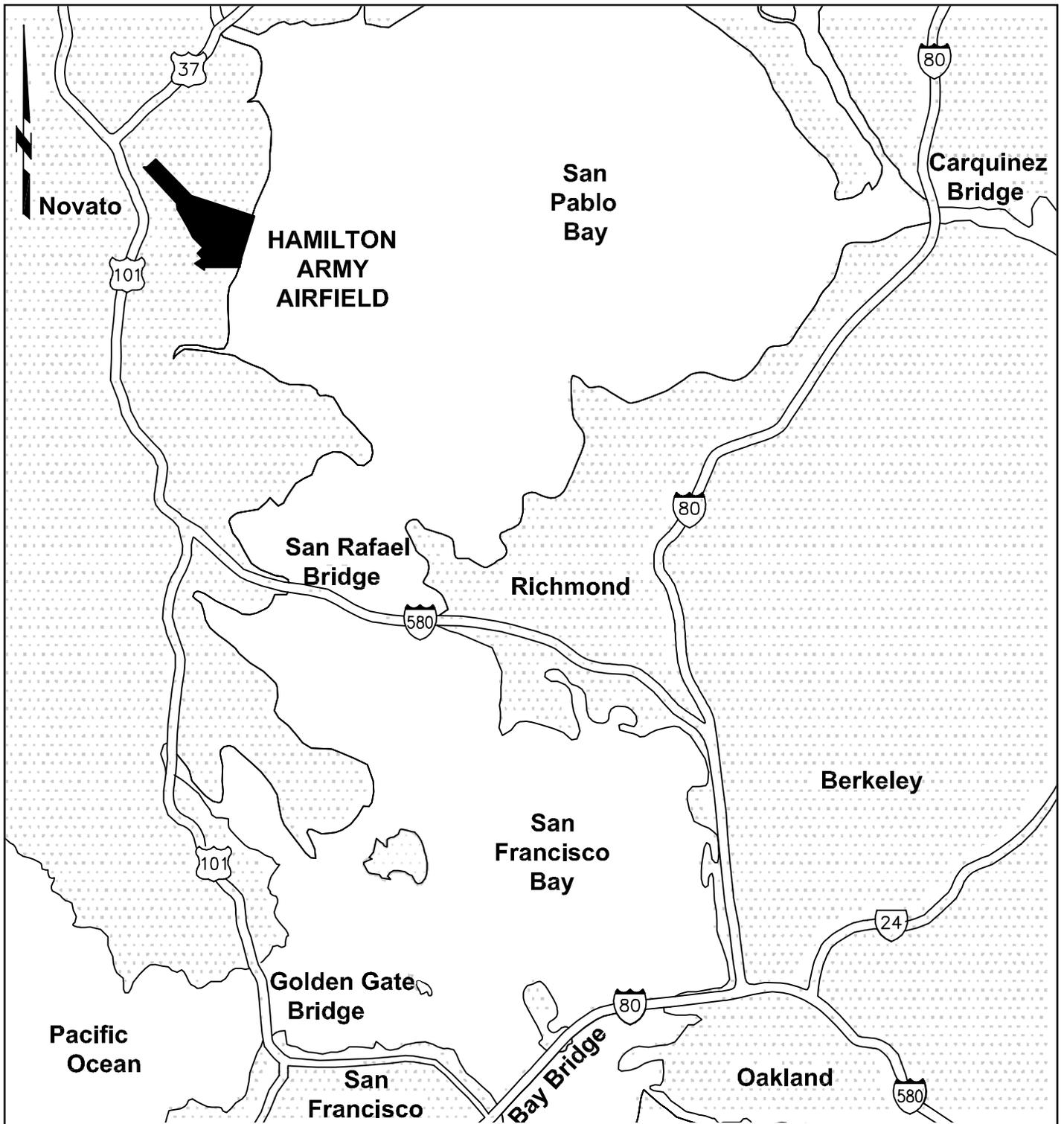
During the Base Realignment and Closure Act (BRAC) process for Hamilton Army Airfield (HAAF) (Figure 1-1), the installation was divided into groups of sites to facilitate the investigation, remediation, and transfer process. The groups are referred to as the Inboard Area sites, Coastal Salt Marsh (CSM) sites, and Outparcels (Figure 1-2). To support base closure and redevelopment activities, in 1994, the USACE conducted a Community Environmental Response Facilitation Act (CERFA) investigation for the BRAC parcels to determine portions of real property that could be reused and redeveloped immediately (Earth Technology Corporation (ETC), 1994a).

This EBS updates the CERFA report for those sites included in the Main Airfield Parcel (the Inboard Area sites and portions of the CSM) (Figure 1-3). Two BRAC Outparcels, Hospital Hill and Petroleum, Oil, and Lubricant (POL) Hill, are addressed in a separate EBS (CH2M HILL, 2001). Outparcels A2, A3, A5, and A6 have already been transferred. Outparcel A4 is addressed in a separate EBS (CH2M HILL, 2001). The overall purpose of this EBS is to establish an environmental baseline to limit future Army liability and document the current environmental condition of the Main Airfield Parcel.

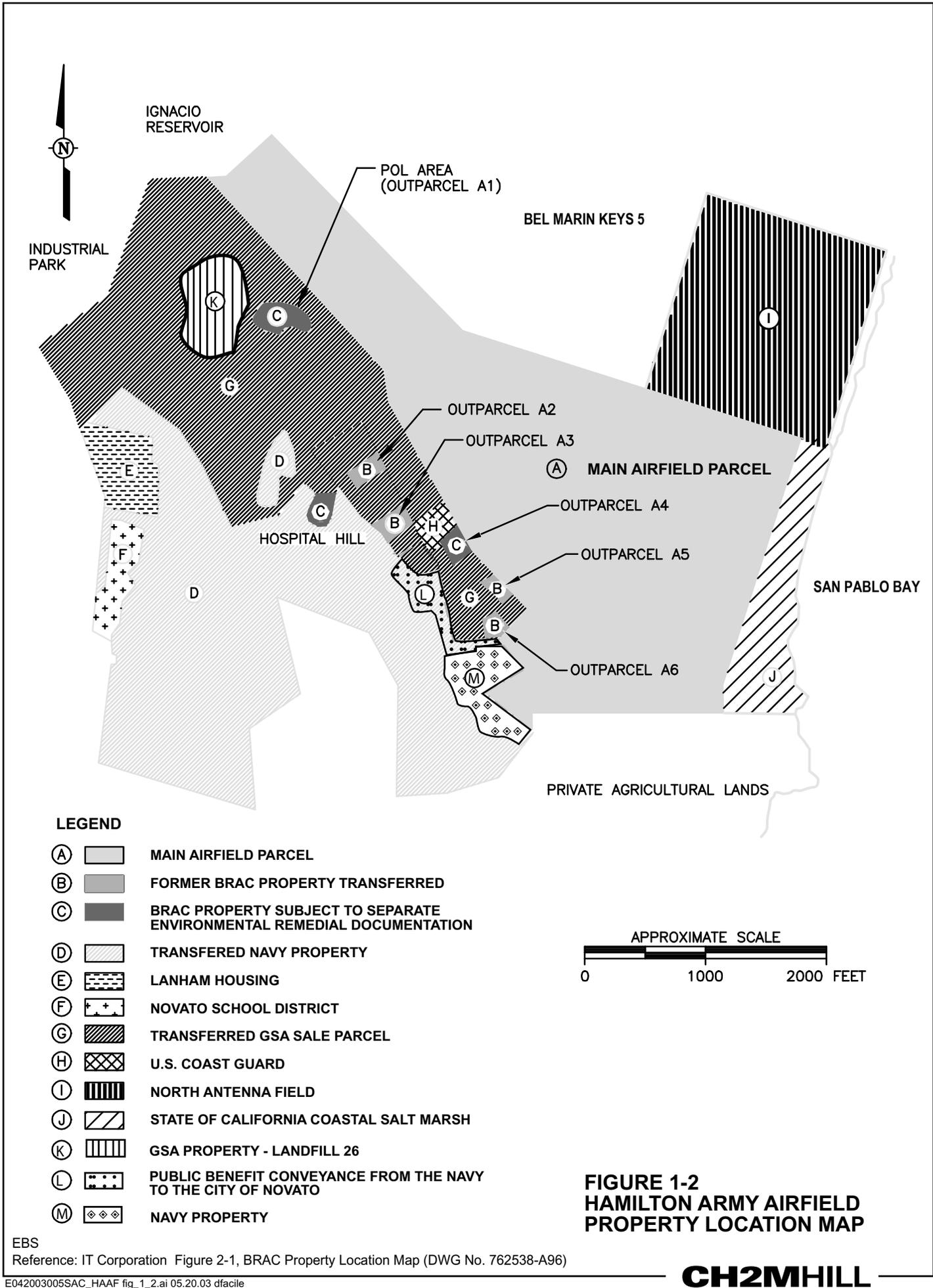
The Main Airfield Parcel has undergone extensive investigation and remediation activities since the preparation of the 1994 CERFA report. This EBS documents the condition of the Main Airfield Parcel and provides basic documentation for its transfer. The property is slated for transfer in fee to the Conservancy City of Novato for use as an open space for wetland reestablishment and levee footprint under a Finding of Suitability for Early Transfer (FOSET).

1.2 Authority for the EBS

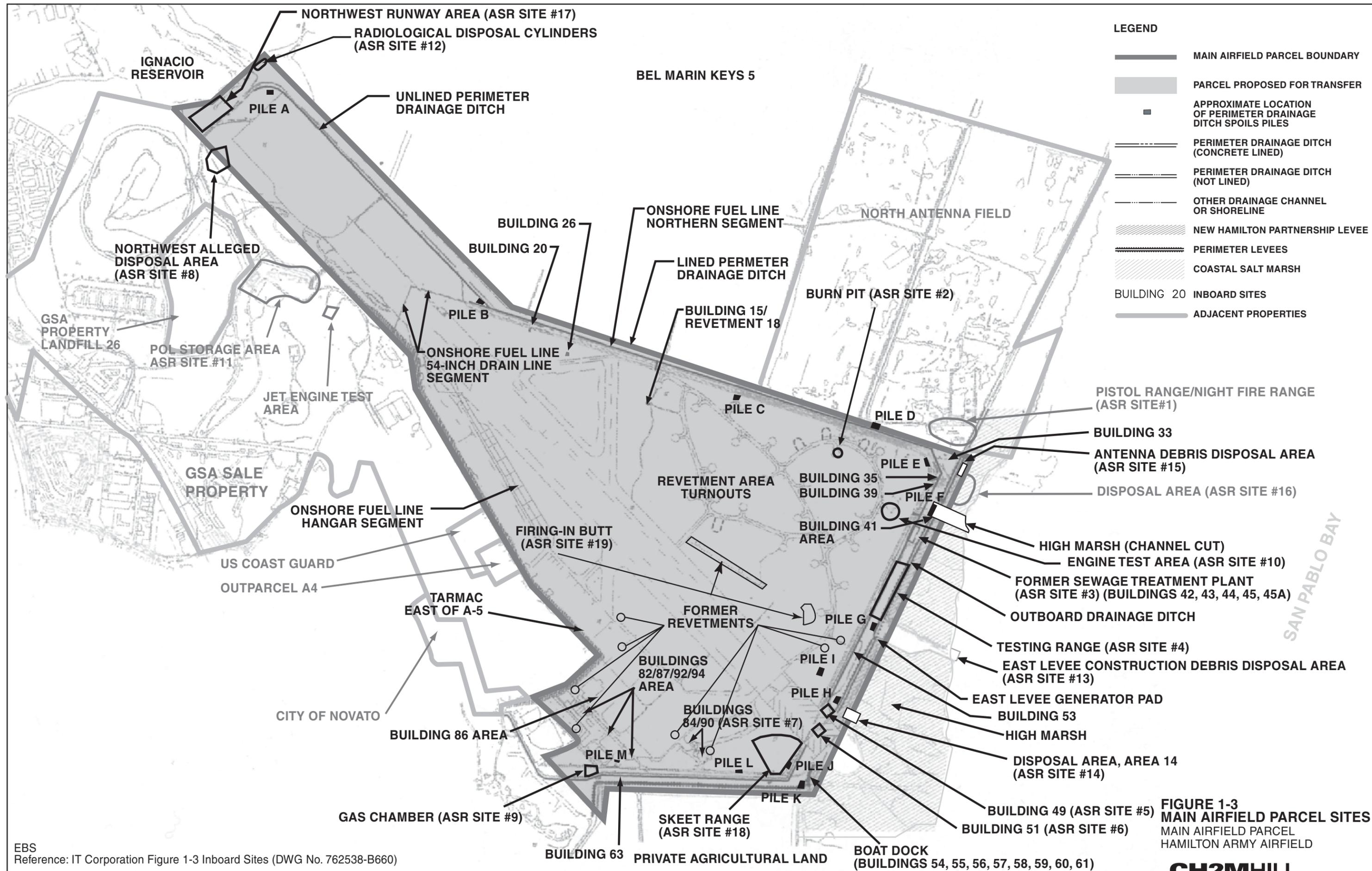
The Department of Defense (DoD) has established policy guidelines for BRAC actions associated with disposal and reuse of military bases. The term, disposal, is used in this document to mean the process by which the Army transfers responsibility for operations and use of real property to another entity. The DoD has established policy requiring the preparation of an EBS before any property can be sold, leased, transferred, or acquired. This EBS will be used by the Army to meet its obligations under CERCLA, Title 42, United States Code (USC) Section 9620(h) [also referred to as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120(h)], as amended by CERFA (Public Law 102-426).



**FIGURE 1-1
SITE LOCATION MAP
MAIN AIRFIELD PARCEL
HAMILTON ARMY AIRFIELD**



EBS
Reference: IT Corporation Figure 2-1, BRAC Property Location Map (DWG No. 762538-A96)



- LEGEND**
- MAIN AIRFIELD PARCEL BOUNDARY
 - ▭ PARCEL PROPOSED FOR TRANSFER
 - APPROXIMATE LOCATION OF PERIMETER DRAINAGE DITCH SPOILS PILES
 - PERIMETER DRAINAGE DITCH (CONCRETE LINED)
 - PERIMETER DRAINAGE DITCH (NOT LINED)
 - OTHER DRAINAGE CHANNEL OR SHORELINE
 - ▨ NEW HAMILTON PARTNERSHIP LEVEL
 - ▨ PERIMETER LEVELS
 - ▨ COASTAL SALT MARSH
 - ▭ BUILDING 20 INBOARD SITES
 - ADJACENT PROPERTIES

FIGURE 1-3
MAIN AIRFIELD PARCEL SITES
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

EBS
 Reference: IT Corporation Figure 1-3 Inboard Sites (DWG No. 762538-B660)

In preparing this EBS, the Army followed *BRAC 95 EBS/BRAC Cleanup Plan (BCP) Guidance* prepared by the USACE, Base Closure Division, dated Fall 1995/September 1996 Revision.

1.3 Objective

The primary objective of this EBS is to classify the Main Airfield Parcel into DoD BRAC Parcel categories to facilitate transfer to the Conservancy. Recent DoD guidance, described in the BCP Guidebook (Fall 1995/September 1996 Revision), requires bases undergoing closure to classify BRAC Parcels on their installation into one of seven categories. It also requires preparation of an environmental condition property map to identify locations of the areas. The property classification categories are described subsequently.

1.4 DoD Property Classification

The DoD Guidebook specifies that each BRAC Parcel be classified into one of the following seven categories based on the Fall 1995/September 1996 Revision category definitions.

Category 1: Areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).

Category 2: Areas where only release or disposal of petroleum products has occurred.

Category 3: Areas where release, disposal, and/or migration of hazardous substances have occurred, but at concentrations that do not require a removal or remedial response.

Category 4: Areas where release, disposal, and/or migration of hazardous substances have occurred, and all removal or remedial actions to protect human health and the environment have been taken.

Category 5: Areas where release, disposal, and/or migration of hazardous substances have occurred, and removal or remedial actions are under way, but all required remedial actions have not yet been taken.

Category 6: Areas where release, disposal, and/or migration of hazardous substances have occurred, but required actions have not yet been implemented.

Category 7: Areas that are not evaluated or require additional evaluation.

1.5 Organization of EBS

This EBS report is organized as follows:

- Table of Contents (followed by lists of appendices, tables, figures, and acronyms and abbreviations)
- Executive Summary
- Sections 1 and 2 (introduction and survey methodology used to prepare this report, approaches to archival research, interviews, visual inspection, and title documents are detailed)

- Section 3 (extensive information related to processes and practices, facilities, permits, surrounding environment, and land uses)
- Section 4 (investigation results of key areas of concern, such as underground storage tanks [USTs], polychlorinated biphenyls [PCBs], and hazardous substances)
- Section 5 (the CERFA Letter Report)
- Appendices (detailed information related to specific issues)

1.6 Limitations

This survey was conducted with the degree of skill and care consistent with customarily accepted good practices and procedures that were applicable at the time and place of this study and for the types of services performed. Conclusions and recommendations require the balance of diverse scientific, regulatory, economic, business, legal, and other criteria. Conclusions presented are based on an assessment of conditions existing on dates of the field reconnaissance as well as readily available data (records, reports, and employee interviews), which may undergo revision as additional data are obtained. Conflicting data and information gathered from various sources are resolved to the extent possible, given the constraints of this study. The diverse scientific and technical disciplines required to perform environmental, scientific, and related services are developing rapidly and are highly sensitive to changes in regulatory criteria, scientific methodologies, and interpretations. This report is not a guarantee that hazardous substances exist or do not exist at a specific site; further investigations may be required. This study does not consider consequences of demolishing facilities. If demolition is contemplated, additional environmental studies may be required.

SECTION 2

Survey Methodology

Archival research, staff interviews, and visual site inspections (VSIs) were used to obtain the necessary information for preparing this EBS. The general methodology follows.

2.1 Existing Investigation Documents

The BRAC Environmental Coordinator provided existing investigation documents at Hamilton Army Airfield (HAAF). Documents reviewed include site investigations, groundwater and soil sampling reports, UST reports, and others. A complete list of the documents reviewed is included in Appendix A.

2.2 Federal, State, and Local Government Regulatory Records

A detailed record search of federal, state, and local records was performed to identify areas where storage (for 1 year or more), release, or disposal of hazardous substances or any petroleum product or its derivatives has occurred. Also, a review was conducted of all reasonably obtainable federal, state, and local government records for each adjacent facility where there has been a release of any hazardous substance or petroleum product that is likely to cause, or contribute to, contamination at HAAF. A list of agency records reviewed follows. All agency records were accessed through an electronic database provided by VISTA Information Solutions (VISTA). This database was queried for adjacent properties based on minimum search distances recommended by American Society for Testing and Materials (ASTM) guidelines for conducting Phase I Site Assessments. The search encompassed an area within a 4-mile radius of a reference point centrally located at HAAF to ensure that adjacent properties within a 1-mile radius were captured for all sites on the Main Airfield Parcel.

The VISTA environmental database includes the following lists:

- Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)
- National Priorities List (NPL)
- California Sites Priorities List (SPL), database provided by the California Environmental Protection Agency (Cal EPA), Department of Toxic Substances Control (DTSC)
- California Sites Database (SCL), provided by DTSC
- Resource Conservation and Recovery Information System—treatment, storage, and disposal (RCRIS-TSD) facilities and RCRIS-TSDC, which are RCRIS-TSD facilities subject to corrective action under the Resource Conservation and Recovery Act (RCRA)
- Resource Conservation and Recovery Information System—Large Quantity Generators

- Resource Conservation and Recovery Information System—Small Quantity Generators
- RCRIS Corrective Action Sites
- Emergency Response Notification System (ERNS)
- California Leaking Underground Storage Tank (LUST) Information System and LUST information for various regions for Region 1: Active Toxic Site Investigations; Region 2: Fuel Leak List; and Region 6: Leaking Underground Storage Tanks
- California UST and USTs for the City of Sebastopol, the City of Healdsburg, the City of Santa Rosa, the City of San Rafael, Sonoma County, and the City of Petaluma
- California Aboveground Storage Tanks (AST) information
- Spills for Region 1: Active Toxic Site Investigations, and Region 2: SLIC Site List
- California Solid Waste Inventory System and U.S. Geological Survey (USGS) Solid Waste Landfills (SWLF); and the City of Los Angeles Landfills, Transfer Stations
- No Further Remedial Action Planned Sites
- Waste management unit data system

A summary of the VISTA report is provided in Appendix B.

2.3 Aerial Photographs

A complete review of historical aerial photographs was conducted for the CERFA report (ETC, 1994b) preparation. Pertinent information obtained through that review is included here, where appropriate. Aerial photos taken after 1994 were reviewed as necessary only to update or clarify information in the CERFA report.

A historical aerial photo review (1941, 1946, 1952, 1968, and 1990) was included as part of the Final Archives Search Report (ASR) (USACE, 2001b). Pertinent information related to existing sites at the Main Airfield Parcel is included here, where appropriate.

2.4 Interviews

Current and past key personnel were interviewed to gather relevant information regarding the Main Airfield Parcel. These interviews support the categorization of each parcel into one of seven DoD categories. The interviews were structured to obtain information to close data gaps identified during the records search and VSI phases of the EBS.

EBS interviews were conducted between September 2000 and June 2001. Individuals interviewed include Mr. Brad Call (USACE), Mr. Ed Keller (HAAF BRAC Environmental Coordinator), Mr. Hyland Morrow (USACE), and Mr. Hugh Ashley (USACE).

Interviews were also conducted during the preparation of the ASR to identify historical activities that could pose a threat to human health and the environment (USACE, 2001b).

Pertinent information related to existing sites at the Main Airfield Parcel is included, where appropriate.

2.5 Visual Site Inspection

The visual inspection team used information gathered from the archival research and interviews to identify possible contaminant source areas and exposure pathways. The team also observed adjacent properties to identify sources of contamination that might have migrated or could migrate onto the Main Airfield Parcel.

2.5.1 Visual Site Inspection Approach

An interdisciplinary team led by a senior EBS program manager conducted the VSI for the Main Airfield Parcel. The initial approach included a review and understanding of:

- Health and safety issues related to protecting VSI team members conducting the inspection
- Scope of work for the EBS, its requirements, limitations, and level of effort
- Historical and current information on the site, buildings and structures, processes, operational practices, and management procedures conducted on the Main Airfield Parcel
- Coordination with staff for access
- Assessing information derived from the interview and research teams to identify key data gaps

2.5.2 Purpose of the Visual Site Inspection

Primarily, the VSI provided documentation used as supporting evidence for the classification of each of the BRAC Parcels into one of seven DoD categories.

2.5.3 Visual Site Inspection Summary Overview

VSI's conducted on the Main Airfield Parcel on September 7, 2000, resolved any major differences between historical information, information on past operations and practices at the parcels, and information gained from interviews of more experienced personnel at HAAF. Pertinent information obtained through the VSI's is included, where appropriate.

2.5.4 VSI's of Surrounding Properties

VSI's, conducted on properties surrounding the Main Airfield Parcel on September 7, 2000, include both parcels immediately adjacent to the Main Airfield Parcel as well as properties beyond the adjacent parcels. These inspections were performed to identify observable sources of contamination that might have migrated or have the potential to migrate and affect the Main Airfield Parcel. Pertinent information obtained through the VSI's is included, where appropriate.

2.6 Title Documents

The chain-of-title and transfer documents for HAAF parcels, which chronicle the time the Army acquired the installation, were reviewed during preparation of the CERFA report. The USACE, Sacramento District furnished these documents. CERCLA 120(h)(4)(A)(ii) requires review of the “recorded chain-of-title documents regarding the real property.” For the CERFA assessment, USACE requested a review of HAAF installation tract maps and transfer documents to identify prior property owners at the time of transfer to the Army. The purpose of this review was to collect additional information concerning the prior use and environmental condition of the Main Airfield Parcel at the time of transfer to the Army. Previous ownership and dates of transfer to the Army are provided on a 1948 real estate map included in the CERFA report (ETC, 1994b) and in Appendix C. According to USACE real estate personnel, this information has not changed with respect to the Main Airfield Parcel since production of the CERFA report.

Property Characterization

3.1 General Property Information

Hamilton Army Airfield is a 1,600-acre former military installation approximately 22 miles north of San Francisco on San Pablo Bay in Marin County, California (Figure 1-1). The former location of HAAF was bounded on the north by the North Antenna Field (a former defense site), private agricultural lands, and a private residential community (Bel Marin Keys); on the east by state-owned land and San Pablo Bay; on the south by private agricultural fields; and on the west by Nave Drive, U.S. Highway 101, and Ignacio Reservoir marsh.

The Main Airfield Parcel addressed by this EBS is a 644.19-acre parcel that primarily comprises the former runway and runway support areas of HAAF (Figure 3-1). The property is adjoined on the north by the North Antenna Field and by privately owned agricultural land. Located on the west and southwest are former General Services Administration (GSA) properties, including GSA Sale Areas and military housing administered by the U.S. Coast Guard. The San Pablo Bay and portions of the CSM area border the eastern Main Airfield Parcel boundary. Acreage of the Main Airfield Parcel includes the New Hamilton Partnership levee footprint (approximately 14 acres) and approximately 10 acres of coastal salt marsh land on the bayward side of the east levee.

During preparation of the CERFA report, the ETC conducted a review of tract maps and transfer documents to identify former property owners of parcels at the time of their transfer to the Army. This review determined the property's prior use and environmental condition. Previous ownership and dates of transfer to the Army for the property are indicated on Plate 1 of the CERFA report (Appendix C).

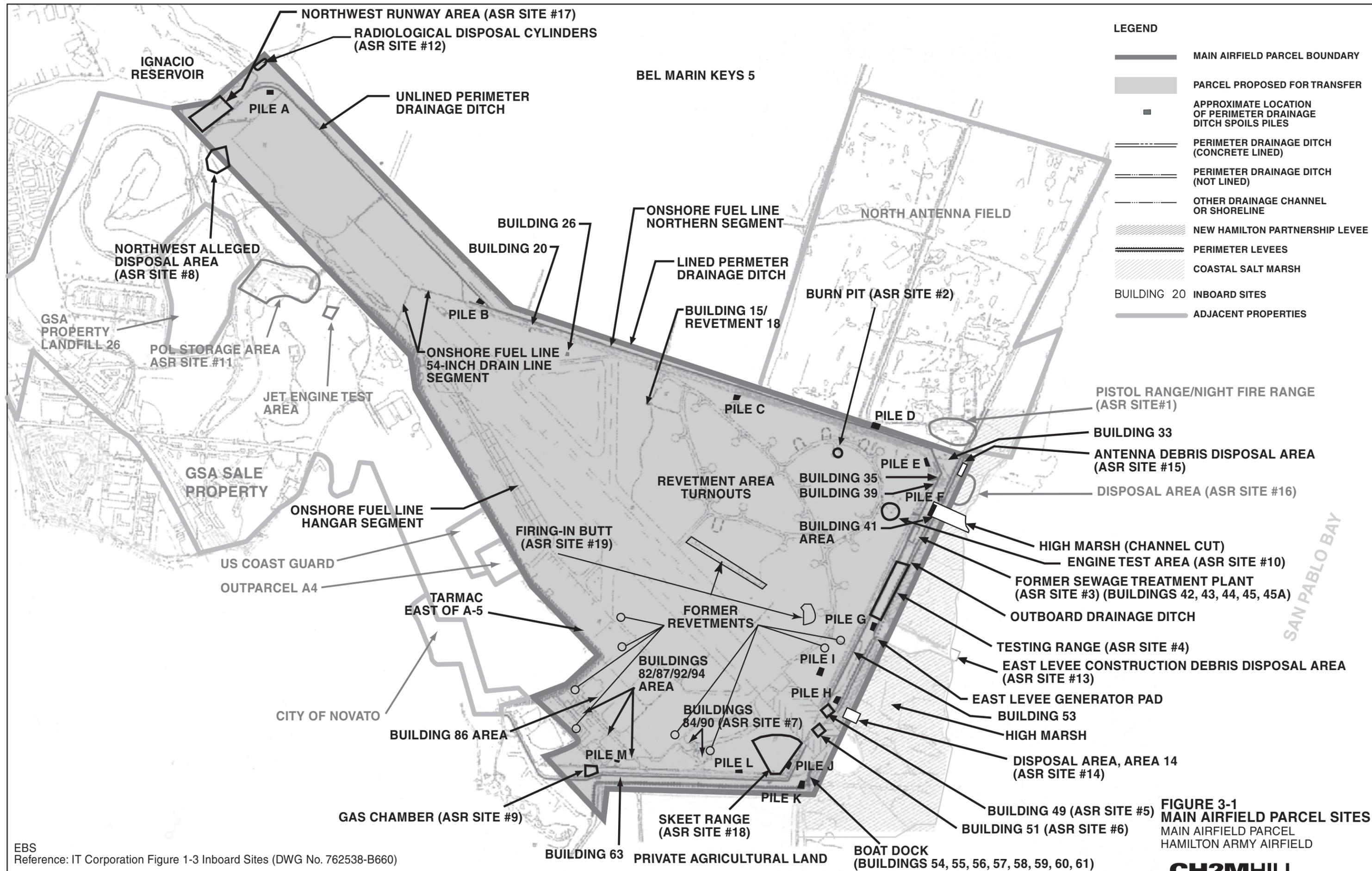
3.2 Description of Facilities

Fifteen existing buildings are identified on the Main Airfield Parcel. Table 3-1 provides a list of past and present structures on the property. The table summarizes the year of construction, square footage, historical use, and status.

3.3 Property History

3.3.1 HAAF

The Army Air Corps constructed Hamilton Army Airfield on reclaimed tidal mud flats in 1932. The site, previously known as Marin Meadows, had been used as ranch and farm land since the Mexican Land Grant. Military operations began in December 1932, first as a base for bombers and later as a base for transport and fighter aircraft. The base played a major role in World War II as a training field and staging area for Pacific operations. During the



LEGEND

- MAIN AIRFIELD PARCEL BOUNDARY
- PARCEL PROPOSED FOR TRANSFER
- APPROXIMATE LOCATION OF PERIMETER DRAINAGE DITCH SPOILS PILES
- PERIMETER DRAINAGE DITCH (CONCRETE LINED)
- PERIMETER DRAINAGE DITCH (NOT LINED)
- OTHER DRAINAGE CHANNEL OR SHORELINE
- NEW HAMILTON PARTNERSHIP LEVEL
- PERIMETER LEVELS
- COASTAL SALT MARSH
- BUILDING 20 INBOARD SITES
- ADJACENT PROPERTIES

EBS
Reference: IT Corporation Figure 1-3 Inboard Sites (DWG No. 762538-B660)

FIGURE 3-1
MAIN AIRFIELD PARCEL SITES
MAIN AIRFIELD PARCEL
HAMILTON ARMY AIRFIELD



TABLE 3-1
 Past and Present Structures on the Main Airfield Parcel
Environmental Baseline Survey, Hamilton Army Airfield

Building	Year Built	Area (SF)	Historical Use	Current Status
Building 15	<1978 ^e	365 ^c	Radar Building Tactical Aeronautic Navigation (TACAN). ^d	Present
Building 16	<1978	NA	Shack located on Revetment 20.	Demolished
Building 20	1957 ^f	140 ⁱ	Generator Building. ^d	Present
Building 26	<1978 ^e	1536 ^c	Ground Approach Radar Building (a 1,000-gallon underground diesel storage tank was removed from the west end of this building. The tank fed a power generator). ^a	Present
Building 35	<1940	492 ^c	Secondary stormwater pump station (an aboveground diesel storage tanks was associated with this building). ^a	Present
Building 38 (Building 53)	<1940	NA	Generator to power pump stations. ^a	Present
Building 39 (Building 59)	<1940 <1952	489 ^c	Automatic pump station (aboveground diesel storage tank next to this building was removed). ^a	Present
Building 40	<1978 ^e	NA	Generator to power pump stations (aboveground storage tank next to this building). ^a	Demolished
Building 41	<1978 ^e	2454 ^c	Stormwater pump station. ^a Contains four diesel powered pumps for water removal.	Demolished
Building 42	<1978 ^e	550 ^c	Former sewage treatment facility. ^a	Demolished ^{a,g}
Building 43	<1978 ^e	733 ^c	Former sewage treatment facility. ^a	Demolished ^{a,g}
Building 44	<1978 ^e	151 ^c	Former sewage treatment facility. ^a	Demolished ^{a,g}
Building 45	<1978 ^e	1012 ^c	Former sewage treatment facility. ^a	Demolished ^{a,g}
Building 45 A	<1978 ^f	NA	Former sewage treatment facility.	Demolished
Building 46	<1978	NA	Storage for engine test stand at Revetment 6.	Demolished
Building 47	<1940	NA	Storage shed at testing range	Demolished
Building 48	<1978 ^e	300 ^c	Former Generator Building near the firing-in butt. ^d	Present ^h
Building 49	1934 ⁱ	706 ⁱ	Black powder magazine.	Demolished
Building 51	1934 ⁱ	813 ⁱ	Demolition bombs magazine.	Demolished
Building 53	<1945	NA	AAA Barracks	Demolished
Building 54	<1945	NA	Storehouse	Demolished
Building 55	<1945	NA	Supply	Demolished
Building 56	<1945	NA	Lumber Storehouse	Demolished

TABLE 3-1
 Past and Present Structures on the Main Airfield Parcel
Environmental Baseline Survey, Hamilton Army Airfield

Building	Year Built	Area (SF)	Historical Use	Current Status
Building 57	<1978 ^e	3060 ^j	Barracks and bathhouse ^j	Demolished
Building 58	<1952	450 lineal feet ⁱ	Wharf and Bulkhead ⁱ . Structure located near the southeast corner of the Main Airfield Parcel as part of the Boat Dock complex, designating the dock and associated turning basin.	Present
Building 59	<1945	NA	Mess Hall	Demolished
Building 60	<1978 ^e	651 ^j	Boathouse ^j	Demolished
Building 61	<1945	NA	Boat House Paint Shop	Demolished
Building 63	<1945	NA	AAA Barracks	Demolished
Building 65	1942	NA	Former gas chamber located in the southwest area of the Main Airfield Parcel between the Perimeter Drainage Ditch and Perimeter Road.	Demolished
Building 82	1969 ^f	14960 ^c	Storage of MEDEVAC supplies (previously authorized to store war-ready materials). ^a Aircraft rescue and first aid. ^g	Present
Building 83	<1978 ^e	121 ^c	Oxygen storage shed. ^f	Present
Building 84	1961 ^b	12132 ^c	Used by the 12 th Special Forces of the 4 th Army for training (entry denied). ^a Reportedly used for electronics equipment repair. ^b	Present
Building 86	1967 ^f	68797 ^k	Storage and light maintenance area for aircraft with classrooms on the third floor. ^a Storage Area 2 on southwest corner of building (maintenance related fluids). Storage Area 1 on northeast corner for drums. Building surrounded by concrete aircraft aprons. ^g	Demolished
Building 87	<1978 ^e	464 ^c	Storage area for unopened chemical containers (oil, grease, antifreeze, solvent, paint, etc). 55-gal drums and CONEX outside, drums contained PD-680, aircraft cleaning compound, or turbine engine cleaner, CONEX contained cans of gasoline. ^a	Present ^g
Building 88	<1978 ^e	NA	Unknown	Demolished
Building 90	1961 ^b	2986 ^c	Aircraft avionics shop. ^b	Present
Building 91	<1978	NA	Requisition/Quartermaster supply.	Demolished

TABLE 3-1
 Past and Present Structures on the Main Airfield Parcel
Environmental Baseline Survey, Hamilton Army Airfield

Building	Year Built	Area (SF)	Historical Use	Current Status
Building 92	1972 ^f	4000 ^c	Crash/rescue station with fire truck (had some compressed gas cylinders and small drums of purple K). ^a Currently used for storage of supplies and records. ^g	Present ^g
Building 93	Circa 1945 ^b	NA	Formerly used as a passenger terminal and aircraft maintenance activities. ^a 25 to 30 buildings/storage facilities located northwest of 93. ^h	Demolished (but foundation still exists) ^b
Building 94	1962 ^f	4020 ^c	Former training facility (currently vacant). ^a Storage Area 3 on northeastern side contained maintenance related fluids (fuel, paint and solvents, etc.). ^g	Present ^g

^a Weston, Roy R., Inc. (Weston), 1990

^b Woodward-Clyde (WC), 1995

^c Occusafe, Inc., 1989

^d Earth Tech, Inc., 1995

^e ETC, 1994a

^f IT Corporation (IT), 2001

^g Woodward-Clyde Federal Services (WCFS), 1996

^h IT, 1999

ⁱ Completion Report, Six Ordnance Magazines

^j Basic Layout Plan, 16 May 1945

^k Real Property Record DA Form 2877

NA not available

war, the base hospital served as an acute care and rehabilitation facility for thousands of war casualties a month. The base was renamed Hamilton Army Air Force Base in 1947, when it was transferred to the newly created U.S. Air Force (USAF). The USAF used the base primarily as a training and fighter installation until 1975. The USAF ended military operations at the base in 1976, and the property was declared surplus by the DoD as part of the BRAC of 1988. In 1976, with permission from the USAF, the Army began aircraft operations at the airfield and its supporting facilities. In 1984, airfield property was officially transferred back to the U.S. Army and renamed Hamilton Army Airfield. The Army continued to use the airfield for Army Reserve aircraft operations until March 1994. Currently, the BRAC program for Hamilton is managed by Forces Command Headquarters at Fort McPherson, Georgia. The Main Airfield Parcel is on the real property books of I Corps at Fort Lewis, Washington.

3.3.2 Property History

This section provides a brief history of the use of primary buildings and site features on the Main Airfield Parcel. Results of environmental studies (if any) are discussed in this section.

3.3.2.1 Former Sewage Treatment Plant

The Former Sewage Treatment Plant (FSTP) was constructed in 1941/42 and is inboard of the East Levee at the eastern edge of the Main Airfield Parcel, close to Perimeter Road and the Perimeter Drainage Ditch (PDD), and immediately southwest of the Pump Station Area. Prior to its construction sewage was discharged to San Pablo Bay through a pipeline which extended 600 feet into the Bay near the southeast end of the runway. Figures 3-2 and 3-3 represent the site features and sampling history at the FSTP. Sewage generated at HAAF was processed by primary and secondary treatment at the plant. Treated effluent water was discharged into San Pablo Bay via an outfall pipe. Beginning in 1986, sewage from remaining operating areas of the base was directed offbase to the Novato Sanitation District. The FSTP was demolished in 1987 (IT, 2001a).

The FSTP consisted of several buildings: a digester, four sludge drying beds, and various sewer lines. The beds were unlined and contained in earthen berms. The FSTP was demolished in 1987. Demolition of the FSTP included removing the sludge, berms, bed dikes, and all other structures (Buildings 42, 43, 44, 45, 45A) (IT, 2001a).

3.3.2.2 Building 16

Building 16, located on Revetment 20, was a former range tower building. No known environmental concerns are associated with this building.

3.3.2.3 Building 20

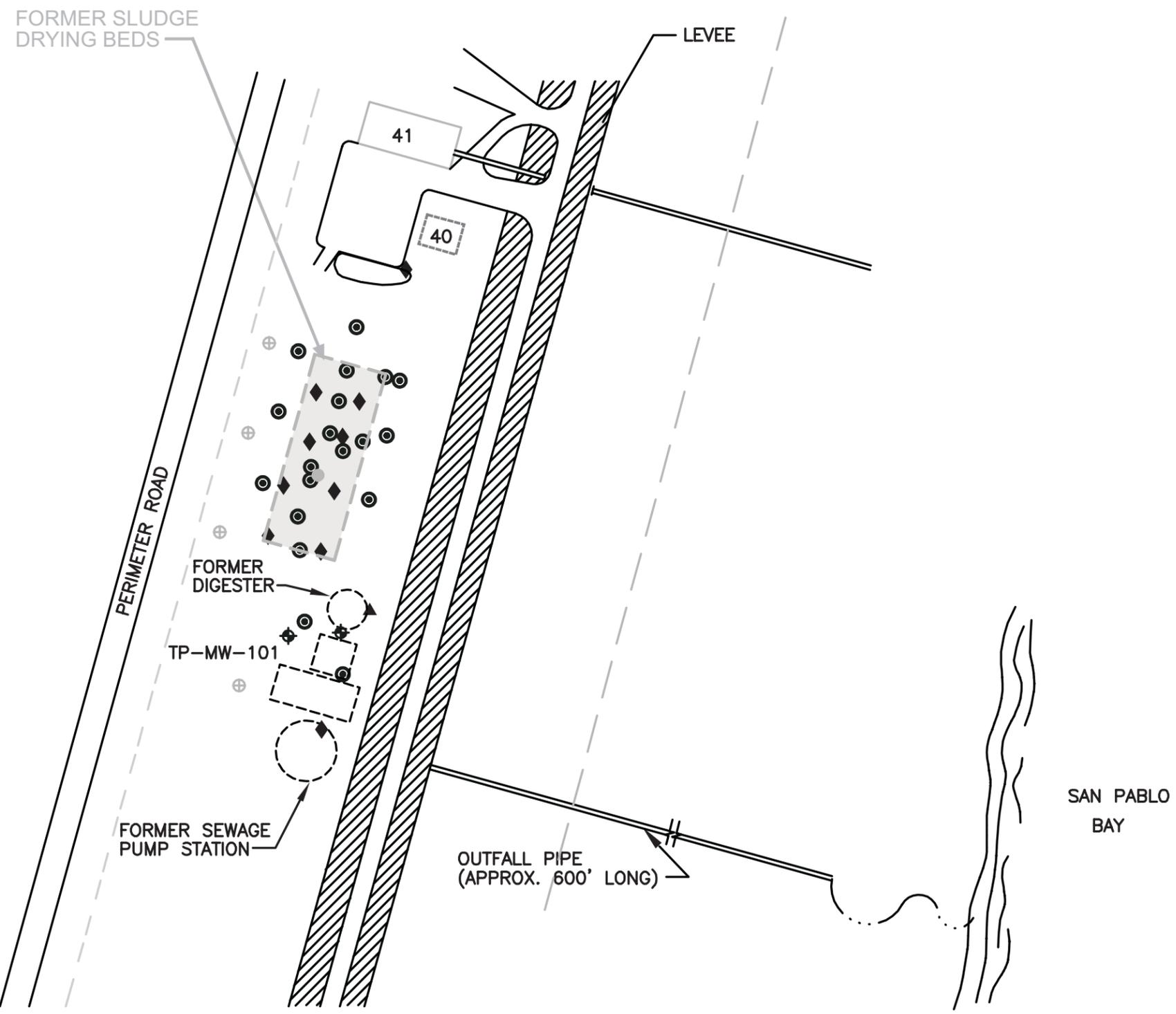
Building 20, the westernmost airfield building, is located along the northern Perimeter Road near the Landfill 26 borrow area (IT, 2001a). Figure 3-4 depicts the site features and sampling history at Building 20. The building formerly contained a generator that provided electrical power for airfield activities, such as runway lighting (IT, 2000b). A UST was removed from the south side of the building, and a transformer was removed from its position adjacent to the east wall. A transformer pad remains in this area (IT, 2001a).

3.3.2.4 Building 26

Building 26 is located along the northern Perimeter Road, approximately 500 feet southeast of Building 20. Figure 3-5 represents the site features and sampling history near Building 26. A transformer pad is on the west side of the building, and a UST was removed adjacent to its southern side. A former AST was inside the building. A concrete pad on the south side of the building contains concrete pillars and steel structures that may have supported an antenna or tower (IT, 2001a).

3.3.2.5 Building 35/39 Area

The Building 35/39 Area is at the north end of the Pump Station Area near the northeast corner of the Main Airfield Parcel. Figure 3-6 depicts the site features and sampling history in the Building 35/39 Area. Both buildings contain high-capacity pumps for removing water from the Main Airfield Parcel via the PDD. The water is discharged via outfall pipes into the outfall drainage ditch located immediately outside the perimeter levee, which flows into San Pablo Bay. Features in this area include Building 35, which contains a manually operated pump; former AST-6, at the northeast corner of Building 35; Building 39, which contains an automatically operated pump; former AST-5, southeast of Building 39; three



- LEGEND**
- BRAC PROPERTY BOUNDARY
 - - - PERIMETER DRAINAGE DITCH
 - ▭ APPROXIMATE LOCATION OF FORMER SLUDGE DRYING BED
 - 41 EXISTING BUILDING
 - ▭ FORMER BUILDING SITE
 - ⊙ SOIL BORING
 - ◆ SURFACE SAMPLE
 - ⊕ MONITORING WELL
 - ⊕ TEMPORARY WELL
 - ▲ POTHOLE SOIL SAMPLE

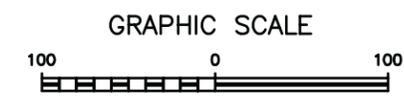


FIGURE 3-2
SITE FEATURES AND SAMPLE
LOCATIONS FORMER SEWAGE
TREATMENT PLANT (Figure 1 of 2)
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

EBS
 Reference: IT Corporation Figure 5-12 Soil Sample Results for Metals in
 Sludge and Soil 1987 Investigation (Pre-Removal) Former Sewage
 Treatment Plant (DWG No. 762538-B209)

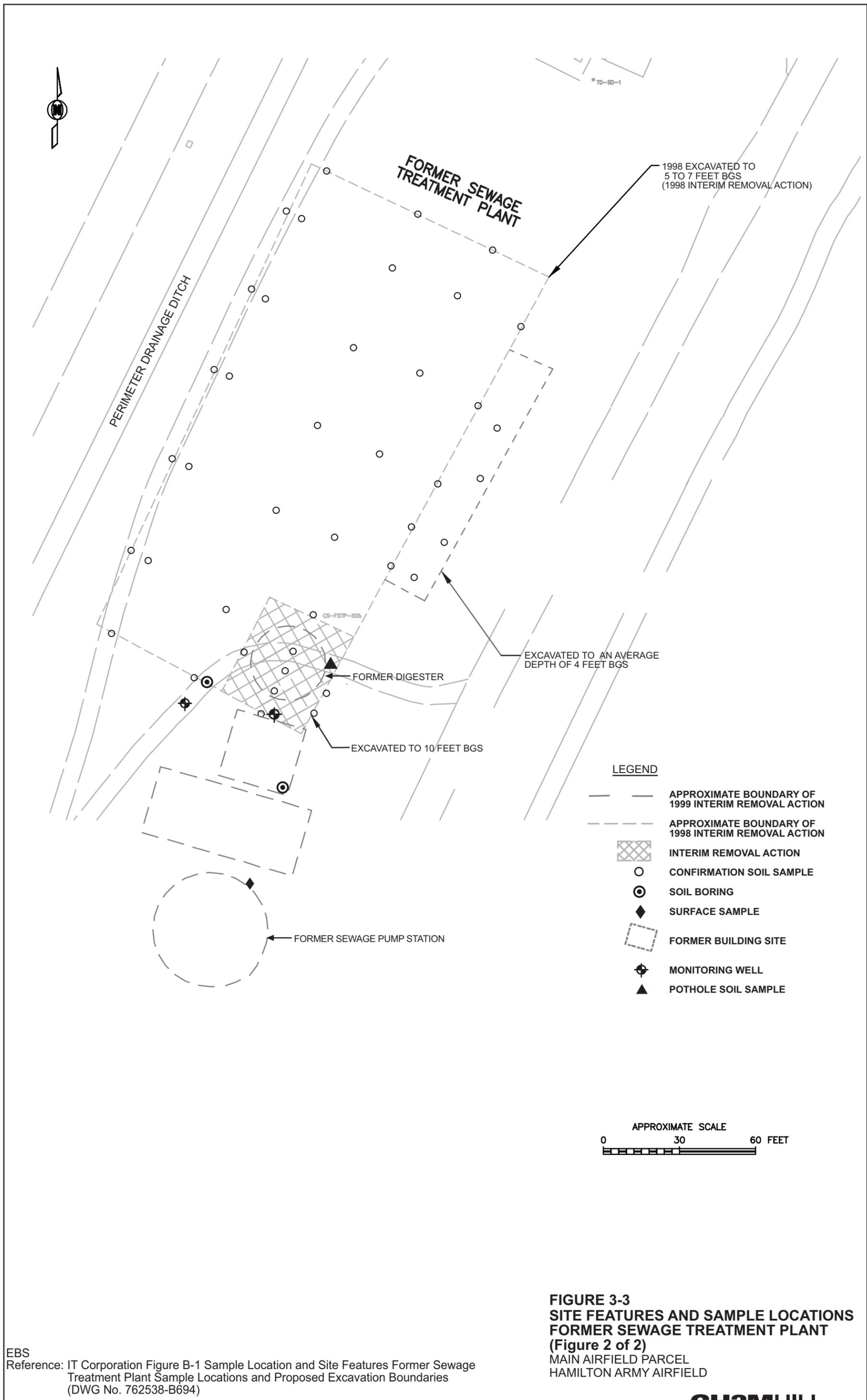
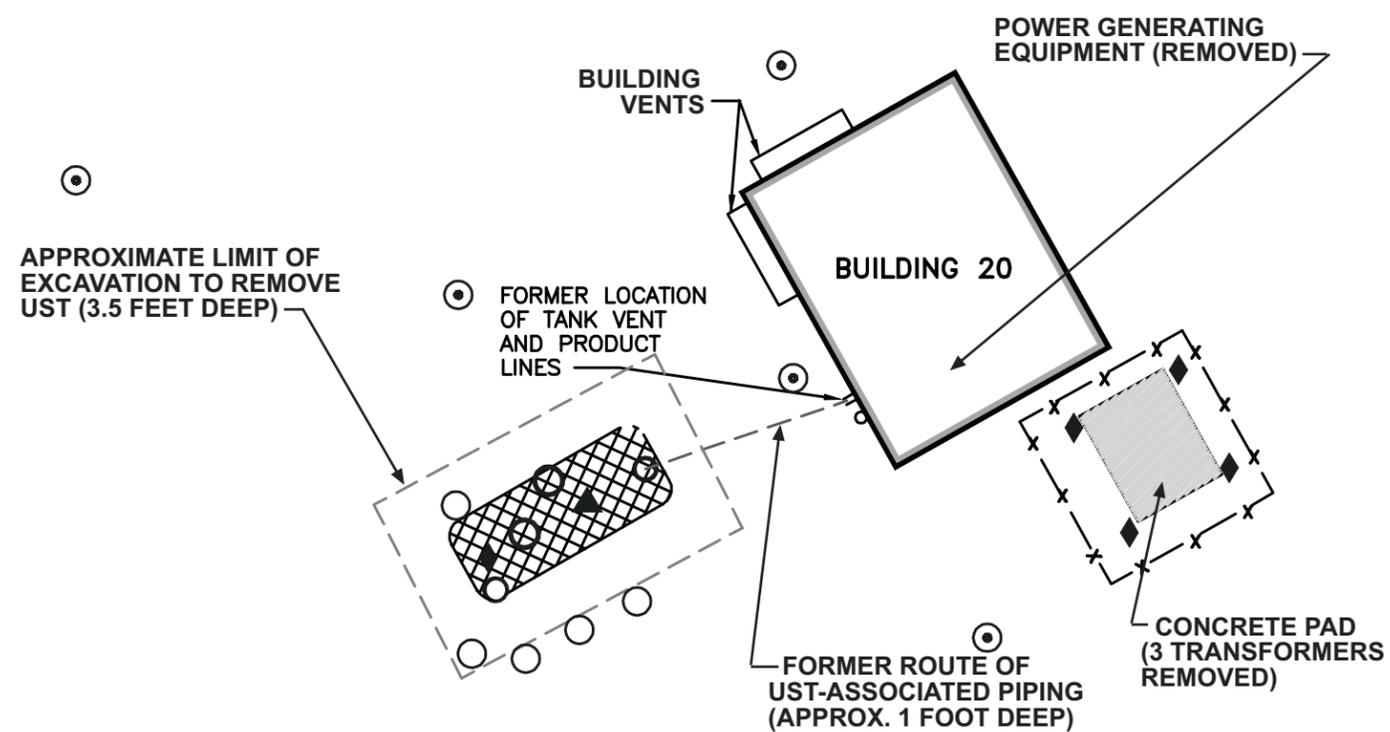


FIGURE 3-3
SITE FEATURES AND SAMPLE LOCATIONS
FORMER SEWAGE TREATMENT PLANT
(Figure 2 of 2)
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

EBS
 Reference: IT Corporation Figure B-1 Sample Location and Site Features Former Sewage Treatment Plant Sample Locations and Proposed Excavation Boundaries (DWG No. 762538-B694)

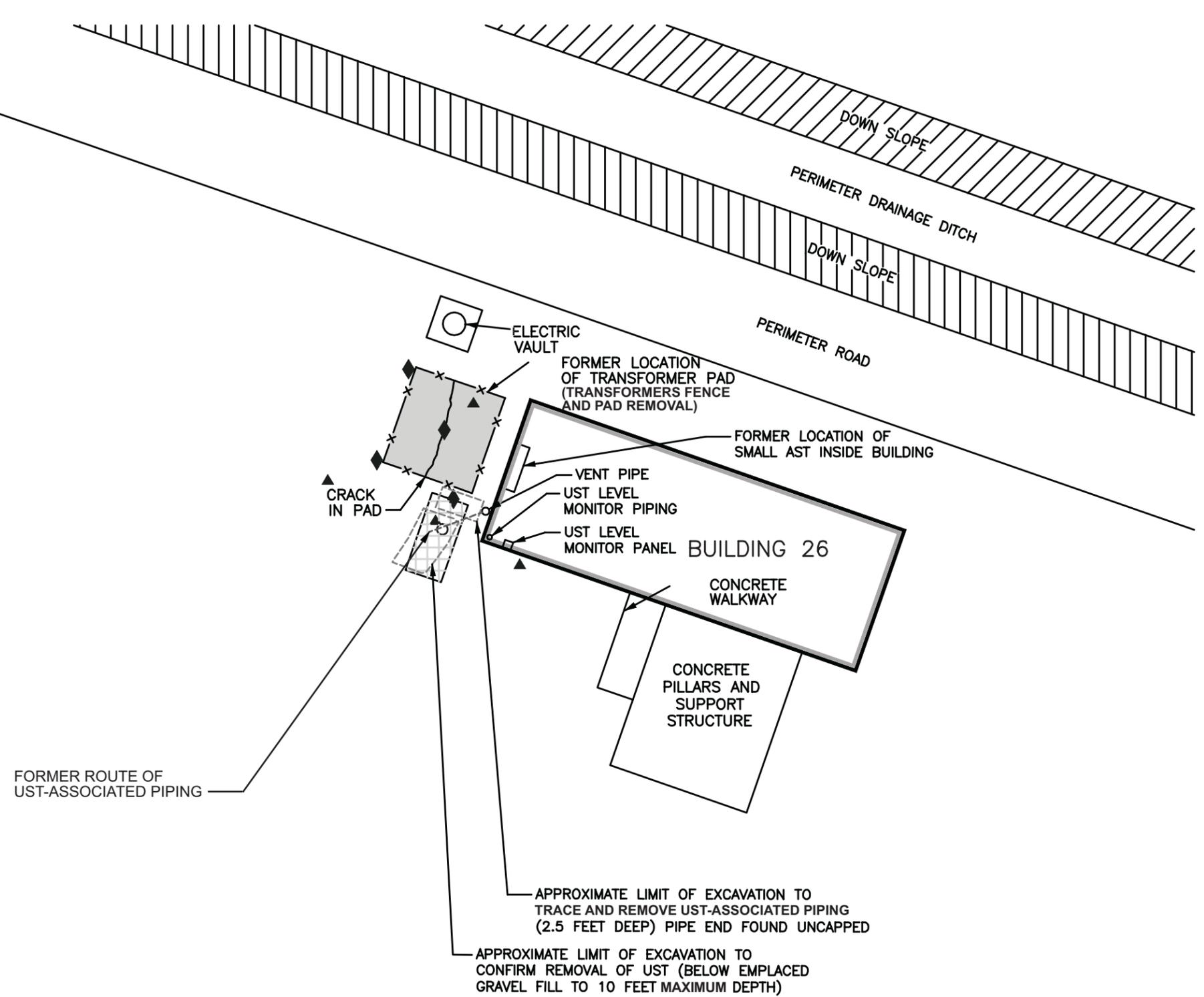


LEGEND

- X--X- FENCE
- [Hatched Box] FORMER TANK LOCATION
- CONFIRMATION SOIL SAMPLE
- ◆ SURFACE-SOIL SAMPLE
- EXCAVATION GROUNDWATER SAMPLE
- ▲ POTHOLE SOIL SAMPLE
- ⊙ SOIL BORING LOCATION



FIGURE 3-4
SITE FEATURES AND SAMPLE
LOCATIONS BUILDING 20
MAIN AIRFIELD PARCEL
HAMILTON ARMY AIRFIELD

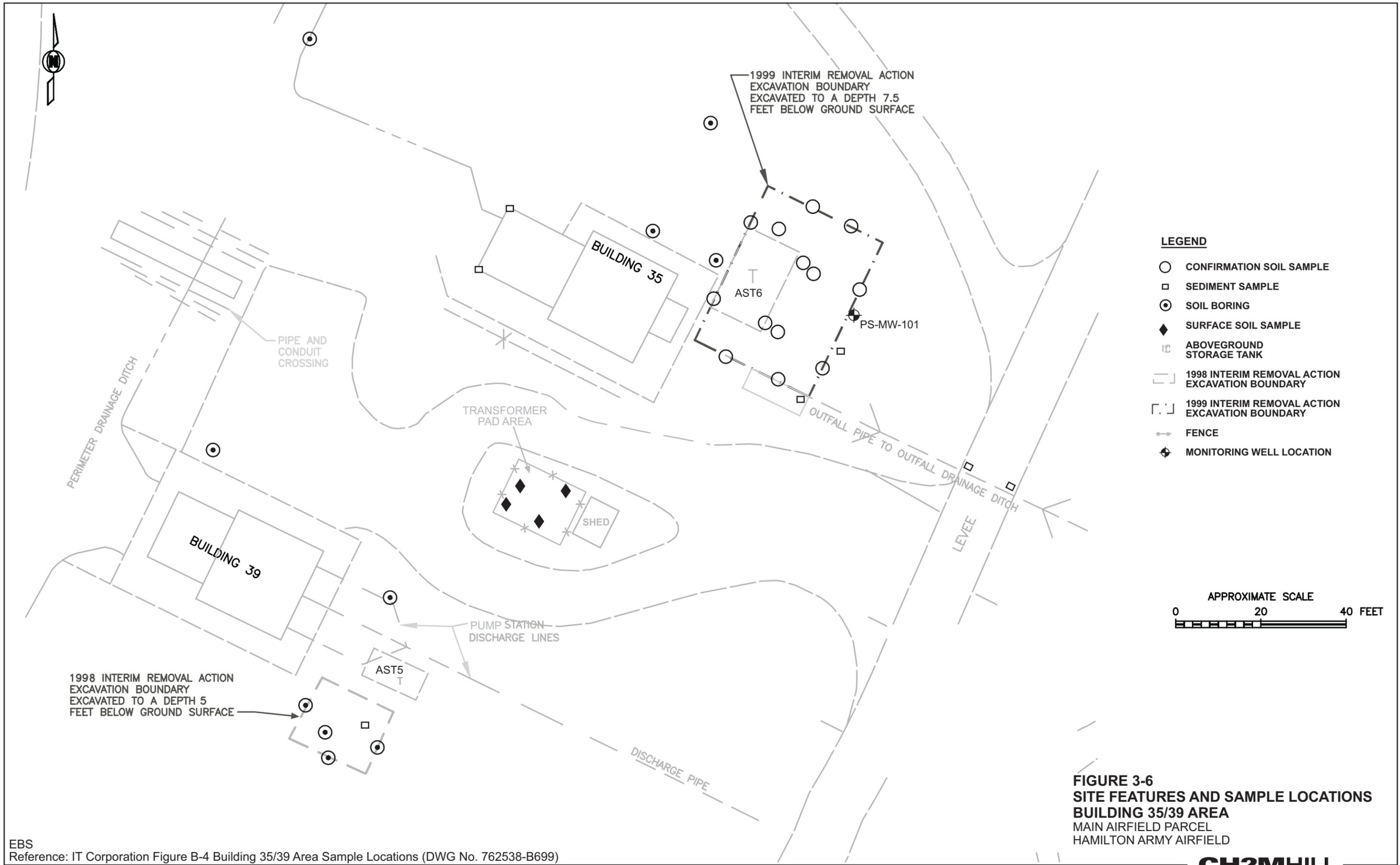


LEGEND

- APPROXIMATE FORMER LOCATION OF UNDERGROUND STORAGE TANK (UST) REMOVED DURING PREVIOUS INVESTIGATION (AREA FOUND SETTLED AND UNCOMPACTED)
- APPROXIMATE LIMITS OF EXPLORATORY EXCAVATION
- FENCE
- POTHOLE SOIL SAMPLE LOCATION
- SURFACE-SOIL SAMPLE LOCATION
- CONFIRMATION SOIL SAMPLE



FIGURE 3-5
SITE FEATURES AND SAMPLE LOCATIONS
BUILDING 26
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



- LEGEND**
- CONFIRMATION SOIL SAMPLE
 - SEDIMENT SAMPLE
 - ⊙ SOIL BORING
 - ◆ SURFACE SOIL SAMPLE
 - ▣ ABOVEGROUND STORAGE TANK
 - - - 1998 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY
 - · - 1999 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY
 - +— FENCE
 - ⊕ MONITORING WELL LOCATION

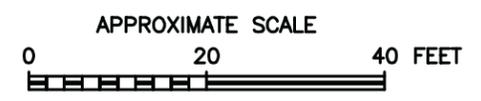


FIGURE 3-6
SITE FEATURES AND SAMPLE LOCATIONS
BUILDING 35/39 AREA
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

active transformers midway between the two buildings; and outfall pipes that discharge water from the pumps through the levee into the outfall drainage ditch (IT, 2001a).

3.3.2.6 Building 41 Area

The Building 41 Area is in the southern portion of the Pump Station Area near the northeast corner of the Main Airfield Parcel. Figure 3-7 represents the site features and sampling history in the Building 41 Area. This former pump station contains high-capacity pumps for removing water from the Main Airfield Parcel via the PDD. The water was discharged via outfall pipes into the outfall drainage ditch, located immediately outside the perimeter levee, which flowed into San Pablo Bay. Two 1,100-gallon diesel USTs, which supplied fuel for the pump at the building, have been removed from the property. Features in the vicinity of the Building 41 included (IT, 2001a):

- Four inoperable diesel-powered pumps in Building 41
- Two ASTs (removed from locations 10 feet west of Building 40 and 10 feet east of Building 41)
- A generator in Building 40 for emergency power provided to Building 41
- Three former transformers removed from a concrete pad 3 feet northeast of Building 40
- An outfall pipe that extends 80 feet southeast of Building 41, through the levee, to a discharge point in the outfall drainage ditch

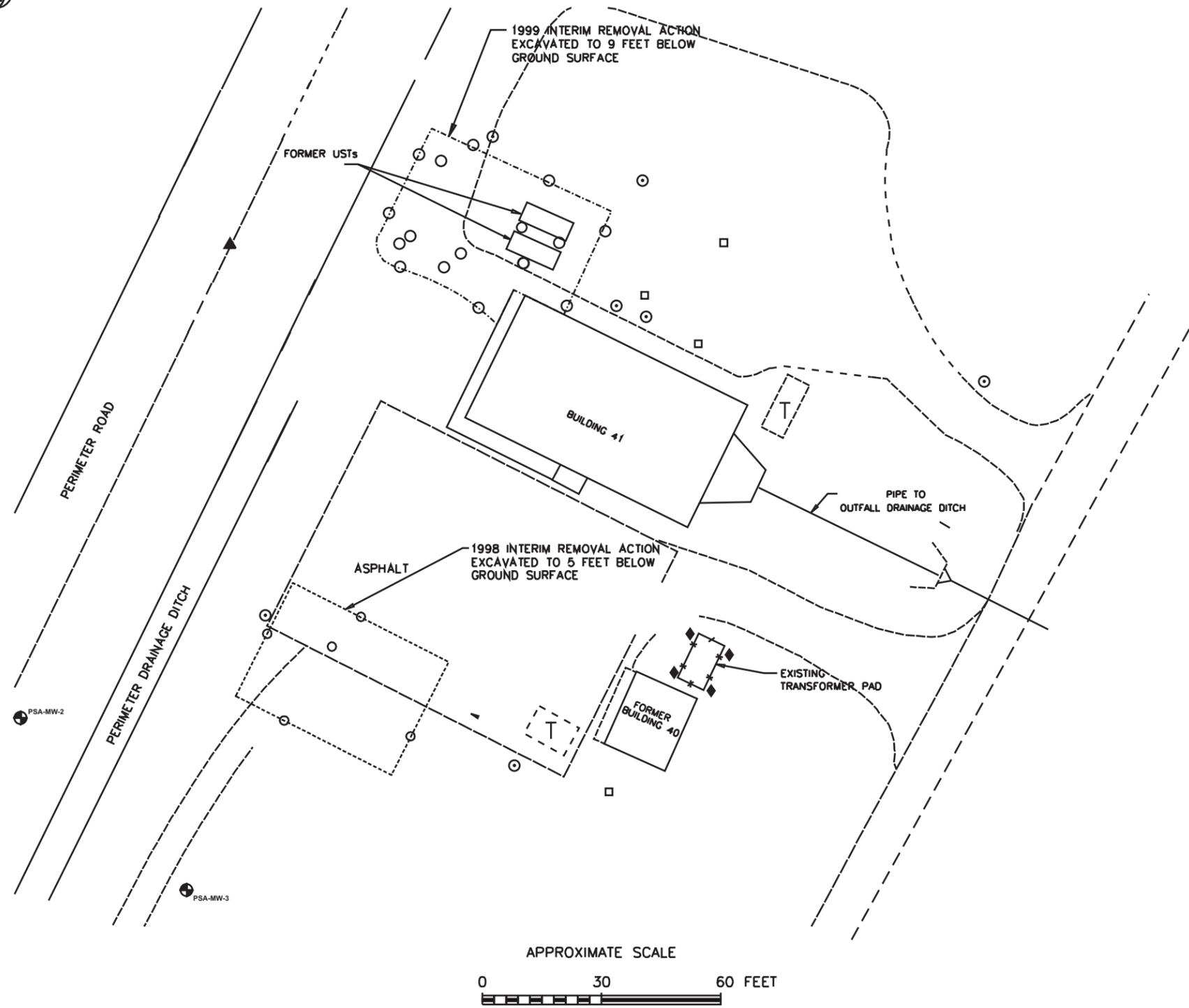
3.3.2.7 Building 46

Building 46, located across the taxiway from the entrance to Revetment 6, was a former storage building for an engine test stand. No known environmental concerns are associated with this building.

3.3.2.8 Building 82/87/92/94 Area

Building 82 is south of Building 86, approximately 50 feet from Perimeter Road. Figure 3-8 represents the site features and sampling history in this vicinity. Its former use was for aircraft rescue and first aid. It is currently used by the Marin County Sheriff's Department for storage of training and safety equipment and as the office for the BRAC Environmental Coordinator. It is surrounded by deteriorating asphalt, which is underlain by a 3- to 4-foot-thick layer of clayey gravel fill. A transformer was previously located on a concrete pad northwest of Building 82 (IT, 2001a). Also, one propane tank is located on the northeastern corner of the building.

Building 87 is east of Building 82, along Perimeter Road. The building is immediately south of the aircraft parking lot. The building was used to store unopened packaged products (5 gallons or less), such as paint, oil, grease, antifreeze, and solvents. The area surrounding Building 87 contained horizontal dispensing racks used to hold 55-gallon drums of solvent and cleaning compounds. A metal CONEX container was located near Building 87 and contained unleaded gasoline in 5-gallon containers. The racks and drums were occasionally moved to various locations around the building (Engineering-Science, Inc. [ESI], 1993; IT, 2001a).



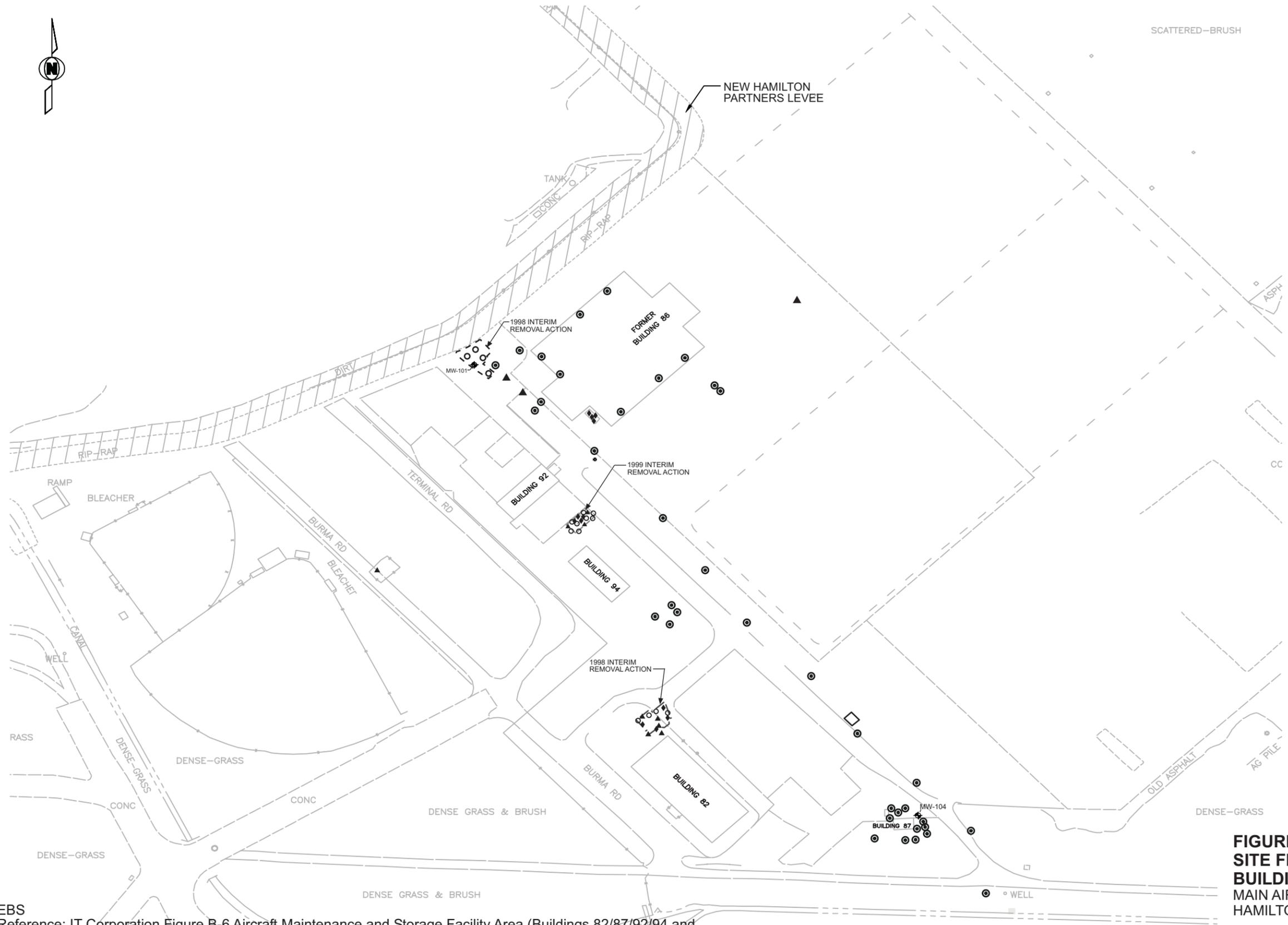
LEGEND

- ⊙ SOIL BORING
- CONFIRMATION SOIL SAMPLE
- SEDIMENT SOIL SAMPLE
- ◆ SURFACE SOIL SAMPLE
- ▲ POTHOLE SOIL SAMPLE
- ⊕ MONITORING WELL LOCATION
- +— FENCE
- ⌈⌋ INTERIM REMOVAL ACTIONS EXCAVATION BOUNDARY
- ⌈T⌋ ABOVEGROUND STORAGE TANK (AST)

FIGURE 3-7
SITE FEATURES AND SAMPLE LOCATIONS
BUILDING 41 AREA
MAIN AIRFIELD PARCEL
HAMILTON ARMY AIRFIELD



SCATTERED-BRUSH



- LEGEND**
- ◆ SURFACE SOIL SAMPLE
 - ⊙ SOIL BORING
 - CONFIRMATION SOIL SAMPLE
 - ▲ POTHOLE SOIL SAMPLE
 - ⊕ MONITORING WELL
 - ▭ 1999 INTERIM REMOVAL ACTION EXCAVATION
 - ▭ 1998 INTERIM REMOVAL ACTION EXCAVATION
 - FENCE
 - SB-UST41-03 SAMPLE LOCATION

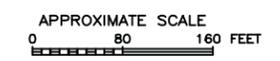


FIGURE 3-8
SITE FEATURES AND SAMPLE LOCATIONS
BUILDING 82/87/92/94 AREA AND BUILDING 86
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

EBS
 Reference: IT Corporation Figure B-6 Aircraft Maintenance and Storage Facility Area (Buildings 82/87/92/94 and Building 86 Sample Locations and Proposed Excavation Boundaries (DWG No. 762538-D110)



Buildings 92 and 94 are located together midway between Buildings 82 and 86. Their former use was storage of supplies for aircraft rescue and offices; they are currently used to store sampling equipment and records storage. Three transformers were previously located on a concrete pad between Buildings 92 and 94, referred to as the Building 92/94 transformer pad. Asphalt on the south, west, and east sides of the pad is deteriorated. A former storage area was identified approximately 20 feet east of Building 94. The storage area consisted of five metal containers used to store maintenance-related fluids, such as fuel, paint, and solvents (IT, 2001a).

3.3.2.9 Building 84/90

The Building 84/90 Area is at the southeastern end of the former Aircraft Maintenance and Storage Facility (AMSF) area, northwest of Perimeter Road and south of the taxiways. Figure 3-9 represents the site features and sampling history surrounding Buildings 84 and 90. The two buildings were constructed in 1961 (IT, 2001a).

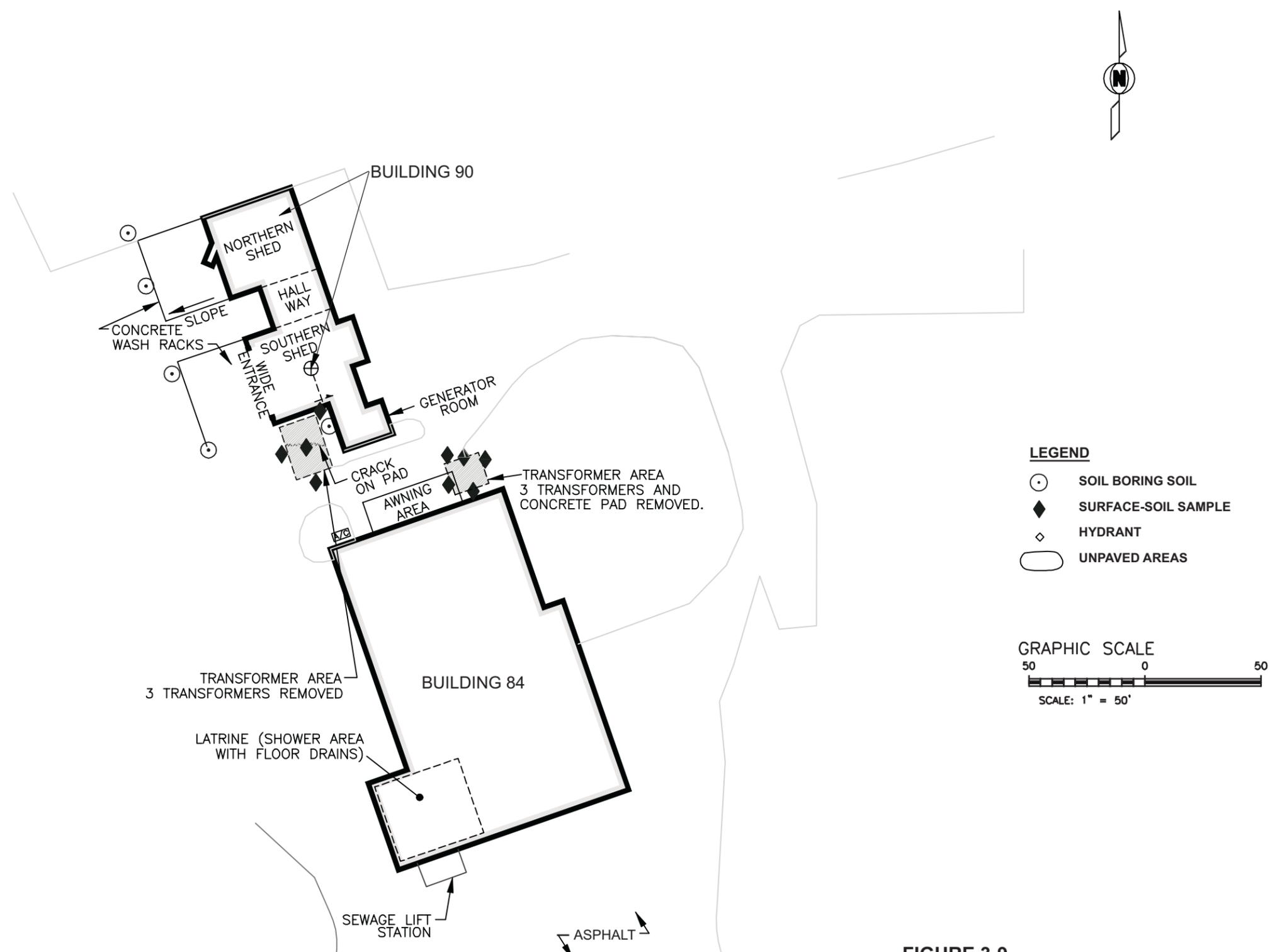
Building 84, which was used for repair of aircraft electronics equipment (WCFS, 1996), has a concrete block exterior and a concrete slab floor. A fenced enclosure just northeast of the building formerly contained a concrete slab and three transformers. The transformers were removed in 1995 (Remedial Constructors, Inc. [RCI], 1996). Three electrical units of unknown use are located on the north exterior wall beneath an awning.

Building 90 was an aircraft avionics Shop (USACE, 2003). Based on the recent historical research conducted by the Army, the area was used for aircraft avionics maintenance activities, including radar systems testing and calibration (USACE, 2003). Previous documents (IT, 1999a; IT 1999b) indicated that other activities had been conducted here; however, the recent research does not support the previous report. The recent historical research by the Army is believed to be most accurate. The southern end of the building is a small utility/electrical room, and two wash racks adjoin the west side of the building. A small sump is on the southern side of the building. This sump was used as a receiving structure for a floor drain inside the southern shed of Building 90. A fenced-enclosed transformer pad adjoined the southern side of the building. The transformers were removed in 1991 (IT, 1999a).

3.3.2.10 Building 86

Building 86, formerly located approximately 50 feet southeast of the New Hamilton Partnership (NHP) levee, was an aircraft maintenance hangar used primarily for light maintenance of aircraft (IT, 2001a). Figure 3-8 represents the site features and sampling history near Building 86. Building 86 was demolished and removed in 1998. The remaining building pad is adjoined by concrete aircraft aprons on the north, east, and south and by a concrete slab on the west (IT, 2001a). A flammable materials locker and at least one recirculating solvent parts cleaner were in Building 86. Substances used and waste generated at the hangar included stripping and degreasing solvents, oils, and paints.

During historical operations, waste material from activities at Building 86 were taken to a storage area at the southwest corner of the building (Storage Area 2) (ESI, 1993) by Army personnel. Storage Area 2 consisted of 55-gallon drums and smaller containers that stored waste oils, waste fuel, and other maintenance-related fluids. The materials were stored in a metal container that rested on a gravel surface. Storage Area 1, a drum storage area, was



LEGEND

- SOIL BORING SOIL
- ◆ SURFACE-SOIL SAMPLE
- ◇ HYDRANT
- UNPAVED AREAS

GRAPHIC SCALE

50 0 50

SCALE: 1" = 50'

FIGURE 3-9
SITE FEATURES AND SAMPLE LOCATIONS
BUILDING 84/90
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

near the northeast corner of Building 86. Drums were placed horizontally on metal storage and dispensing racks.

A large, high voltage transformer was located at the southern corner of the Building 86 pad. It rested on the concrete apron at the Building 86 exterior and was enclosed by a 5-inch-high concrete curb and a wire fence. Stains were visible on the concrete adjacent to the transformer in 1997. In 1997 four soil samples, analyzed for PCBs, were collected from under the transformer pad at depths ranging from 6.5 to 22 inches. No contamination was reported (IT, 1999a). The transformer was de-energized and removed in late March 2001.

3.3.2.11 Perimeter Drainage Ditch – Lined and Unlined Portions

The PDD is a manmade drainage channel that encircles all but the western margin of the Main Airfield Parcel. Figures 3-10 and 3-10a represent the site features and sampling history near the PDD, unlined and lined portion, respectively. The entire PDD is approximately 17,500 feet long. When HAAF was constructed in 1932, the PDD began at what is currently the discharge point of the 54-inch-diameter storm drain and ran around the perimeter of the Main Airfield Parcel, exiting the Main Airfield Parcel near the southwestern boundary. The Army lined this portion of the PDD with concrete in 1940 to expedite runoff and reduce maintenance costs associated with removing vegetation that impeded flow in the ditch (U.S. Army, 1940). The concrete lining extends approximately 5 feet up the side of the ditch, with 3 to 4 feet of bare soil from the top of the liner to the top of the ditch. The concrete lining is cracked, and pieces of the concrete liner have broken away over the years. However, a vast majority of the lining is intact.

In the 1950s, the drainage ditch was realigned to accommodate the extension of the runway. The new ditch began at the base of POL Hill, flowed north to a subsurface storm drain at the north end of the runway, and turned south to meet up with the original lined PDD, as shown on Figure 2.1-1. This portion of the PDD is not lined.

The PDD is a drainage channel constructed to convey surface water runoff to the pump stations located on the eastern levee for lifting and discharge into the outfall drainage ditch and San Pablo Bay. The PDD also conveys water from portions of the GSA properties, from privately owned agricultural lands adjoining the north side of the airfield, and overflow from Ignacio Reservoir. Additionally, there is an open drainage ditch at the base of Reservoir Hill in the GSA Phase I Sale Area that connects to the north end of the PDD at the Main Airfield Parcel by an underground storm-drain pipe (WCFS, 1996; IT, 2001a). Historically, drainage from the adjacent Hamilton North Antenna Field also entered the PDD. Rainfall in the North Antenna Field currently ponds onsite, and no longer drains to the PDD.

Near the Pump Station Area, the bottom of the PDD is 8 to 10 feet below ground surface (bgs) and approximately 15 to 18 feet below mean sea level. The PDD was originally lined with concrete along the bottom and up to 3 feet high along the channel sides. This lining was intact throughout most of the ditch segments in 1997 (IT, 1997). However, fractures and open cracks were visible in the concrete lining at some locations, and some of the concrete panels had been removed from areas where the ditch had been dredged. The north PDD is unlined from the western property boundary to the confluence with the 54-inch storm drain line (IT, 2001a).

3.3.2.12 Perimeter Drainage Ditch Spoils Piles

PDD spoils piles were located adjacent to portions of the PDD at the Main Airfield Parcel. Figures 3-10 (Spoils Pile A), 3-11, 3-12, and 3-22 (Spoils Pile F) represent the site features and sampling history at the different PDD spoils piles. The piles were the result of periodic dredging of the PDD, which occurred during the course of military operations at the airfield. Historically, cleared vegetative matter and sediment were stockpiled on the site. Thirteen dredge spoils stockpiles were identified, based on previous investigation maps, a review of aerial photographs, and field reconnaissance. The spoils piles are designated A through M. Locations were later verified (except for Spoils Pile F) by further field reconnaissance after mowing the vegetation (IT, 2001a). The location for Spoil Pile F was recently identified in the field using global position measurements. Two piles with apparent drainage ditch debris were located. Spoil Pile F is in the middle of the Pump Station area near the northeast corner of the Main Airfield Parcel.

3.3.2.13 East Levee Generator Pad

This site is located just inboard of the east levee, midway between the FSTP and the south end of the runway. Figure 3-13 represents the site features and sampling history at this site. Although this site is directly across the east levee from the southwest corner of the East Levee Construction Debris Disposal Area (ELCDDA), it is not associated with the historical disposal area (IT, 2001a). It was used as a facility to provide electrical generation for airfield operations. This site consisted of a transformer, an adjacent generator, and a small AST next to the generator to supply fuel. The generator was located on a concrete pad and the transformer was enclosed in a steel box on a separate concrete pad. The date the transformer, generator, and tank were removed is uncertain. No contamination was identified following concrete pad removal, investigation, and sampling in 1998 (IT, 2001a).

3.3.2.14 Onshore Fuel Line (54-inch Drain Line Segment, Hangar Segment, Northern Segment)

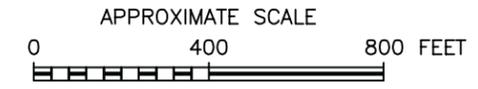
From circa 1945 until 1975, the onshore fuel line (ONSFL) was used to transport aviation gasoline and, later, JP-4 liquid fuels from the Offshore Fuel System to several locations around the airfield. Before the installation of the fuel line, fuel was delivered by rail or tanker truck.

The fuel line included an offshore portion, between the unloading terminal three miles from shore in San Pablo Bay and the booster pump station just inside the east levee; and an onshore portion, which extended from the booster pump station to the airfield hangars. The offshore portion was previously closed, as documented in letters from Regional Water Quality Control Board (RWQCB) and DTSC, dated July 30, 1999, and September 9, 1999 (RWQCB, 1999 and DTSC, 1999). For the purposes of evaluation during the Remedial Investigation (RI) and risk assessment, the onshore fuel line (ONSFL) was divided into three sections:

- 54-inch Drain Line Segment (former 6-inch-diameter fuel pipeline that ran under the northwestern end of the runway via a 54-inch-diameter storm drainage culvert)
- Northern Segment (former 6-inch-diameter fuel line along the northern perimeter of the Inboard Sites parcel)
- Hangar Segment (southeast trending parallel fuel pipelines formerly located in the grassy area between the runway and the hangars)



IGNACIO RESERVOIR

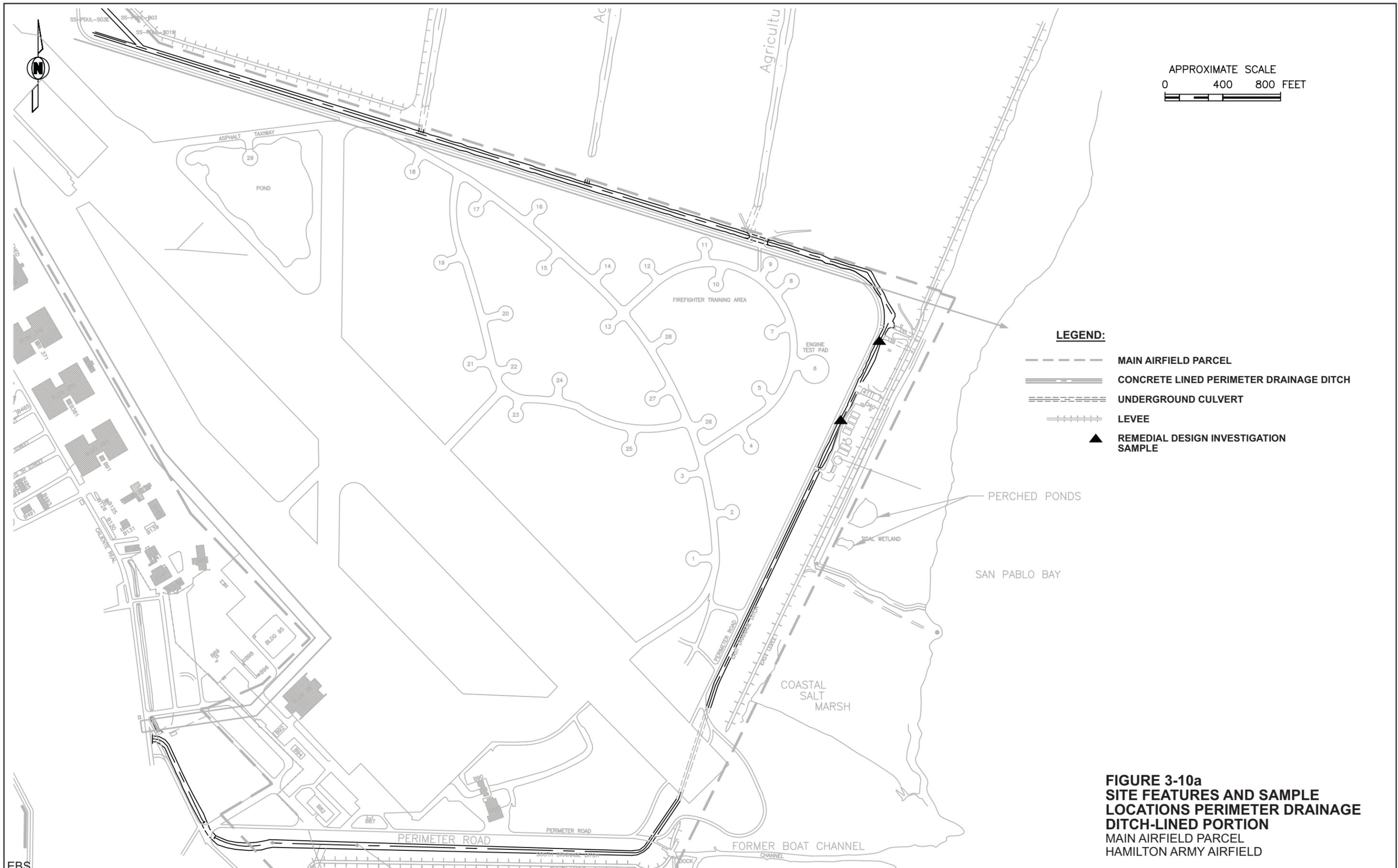


LEGEND:

- MAIN AIRFIELD PARCEL
- ==== CONCRETE LINED PERIMETER DRAINAGE DITCH
- ===== UNDERGROUND CULVERT
- +++++ LEVEE
- SEDIMENT SOIL SAMPLE
- CONFIRMATION SOIL SAMPLE



FIGURE 3-10
SITE FEATURES AND SAMPLE LOCATIONS
PERIMETER DRAINAGE DITCH-UNLINED
PORTION AND SPOIL PILE A
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

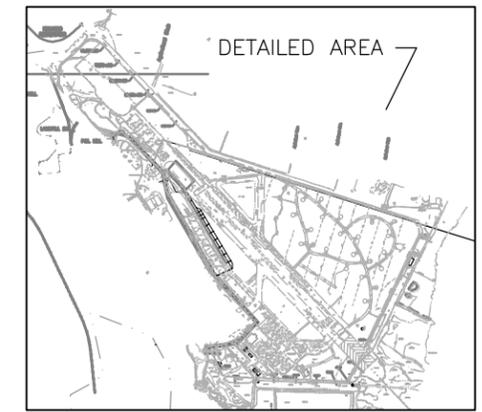
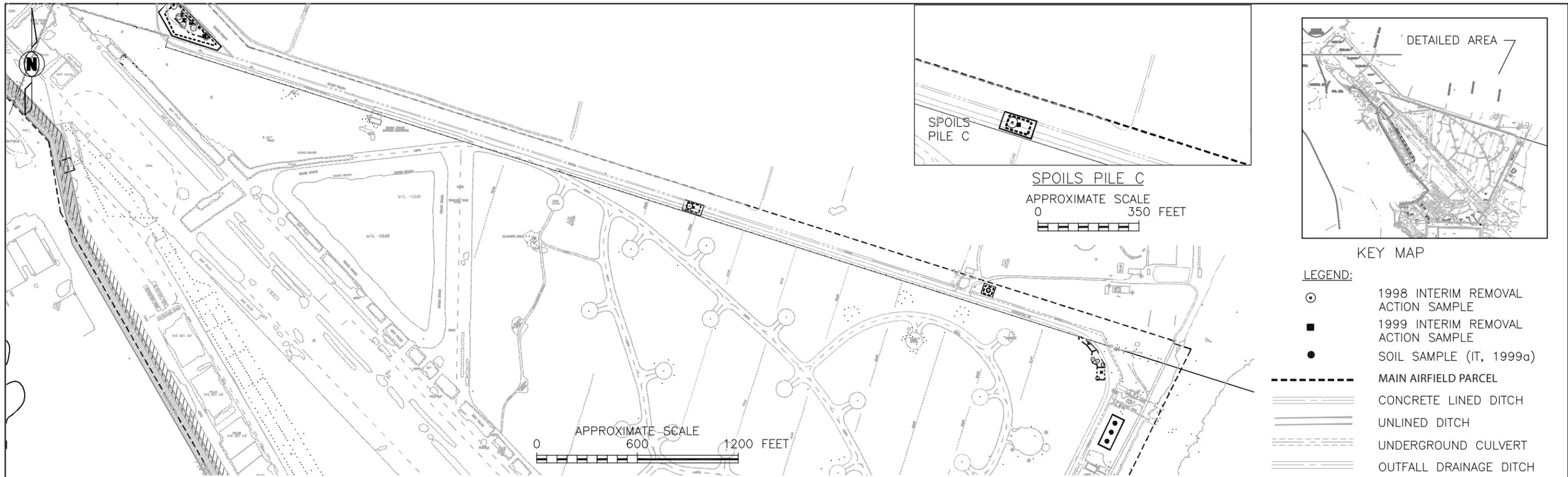


APPROXIMATE SCALE
 0 400 800 FEET

LEGEND:

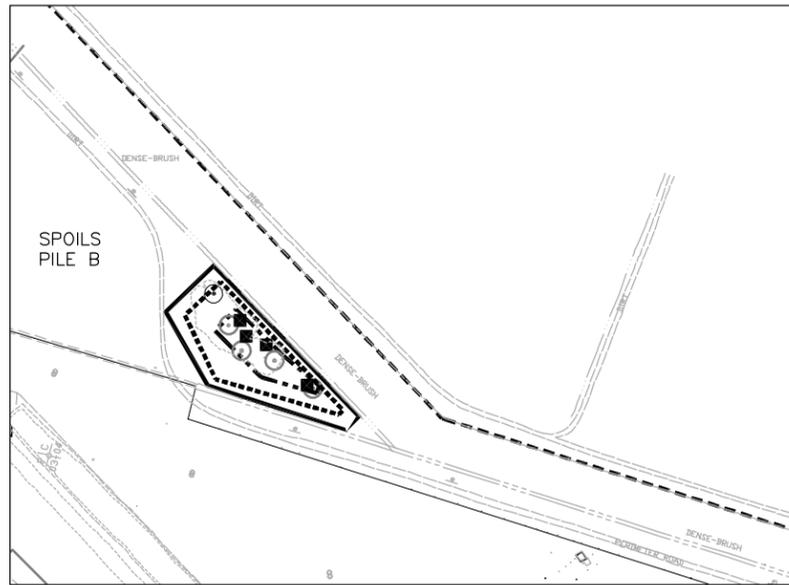
- MAIN AIRFIELD PARCEL
- ==== CONCRETE LINED PERIMETER DRAINAGE DITCH
- ===== UNDERGROUND CULVERT
- +++++ LEVEE
- ▲ REMEDIAL DESIGN INVESTIGATION SAMPLE

FIGURE 3-10a
SITE FEATURES AND SAMPLE
LOCATIONS PERIMETER DRAINAGE
DITCH-LINED PORTION
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

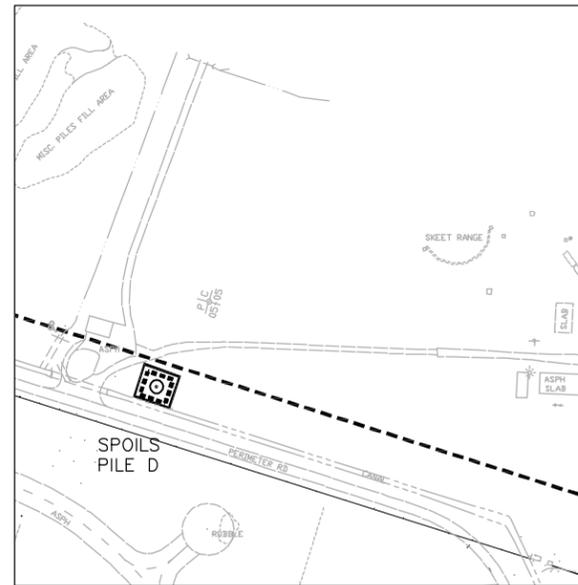


KEY MAP

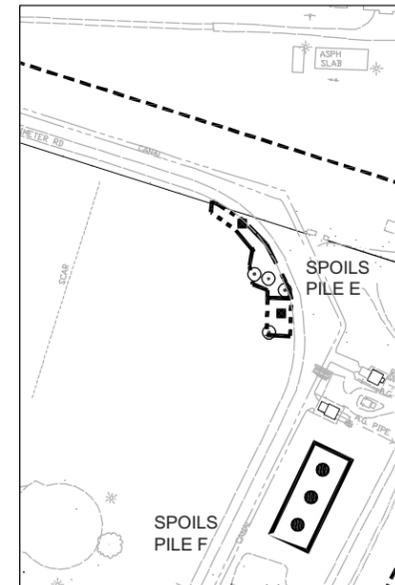
- LEGEND:
- ⊙ 1998 INTERIM REMOVAL ACTION SAMPLE
 - 1999 INTERIM REMOVAL ACTION SAMPLE
 - SOIL SAMPLE (IT, 1999a)
 - MAIN AIRFIELD PARCEL
 - ==== CONCRETE LINED DITCH
 - UNLINED DITCH
 - - - - UNDERGROUND CULVERT
 - ==== OUTFALL DRAINAGE DITCH
 - ==== LEVEE
 - ▨ NEW HAMILTON ARTNERSHIP NHP LEVEE
 - PROPOSED REMEDIAL ACTION AREA
 - ⋯ 1998 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY
 - ⋯ 1999 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY



SPOILS PILE B
APPROXIMATE SCALE
0 350 FEET



SPOILS PILE D
APPROXIMATE SCALE
0 350 FEET



SPOILS PILES E & F
APPROXIMATE SCALE
0 350 FEET

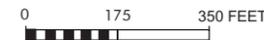
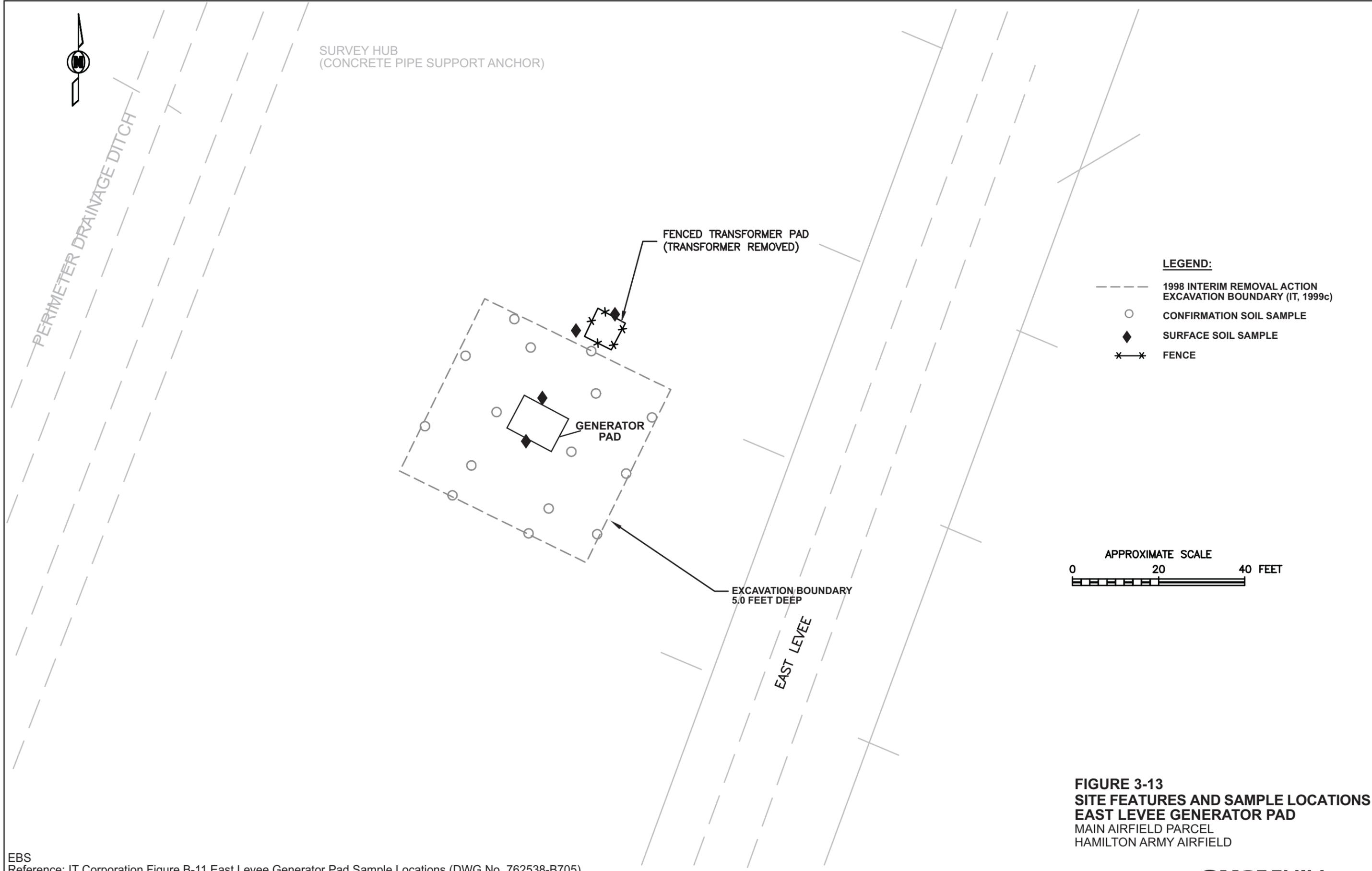


FIGURE 3-11
SITE FEATURES AND SAMPLE
LOCATIONS PERIMETER
DRAINAGE DITCH SPOILS PILES
(NORTH SECTION)
MAIN AIRFIELD PARCEL
HAMILTON ARMY AIRFIELD



SURVEY HUB
(CONCRETE PIPE SUPPORT ANCHOR)

PERIMETER DRAINAGE DITCH

FENCED TRANSFORMER PAD
(TRANSFORMER REMOVED)

GENERATOR
PAD

EXCAVATION BOUNDARY
5.0 FEET DEEP

EAST LEVEE

LEGEND:

- 1998 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY (IT, 1999c)
- CONFIRMATION SOIL SAMPLE
- ◆ SURFACE SOIL SAMPLE
- *-* FENCE

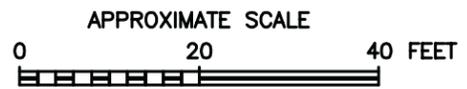


FIGURE 3-13
SITE FEATURES AND SAMPLE LOCATIONS
EAST LEVEE GENERATOR PAD
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

The fuel lines were removed in 1995 except for the portion from the PDD to the levee, which was removed in 1998. Figures 3-14, 3-15, and 3-16 represent the site features and sampling history at the 54-inch Drain Line Segment, Northern Segment, and Hangar Segment, respectively.

3.3.2.15 Northwest Runway Area

The Northwest Runway Area is at the extreme northern end of the Main Airfield Parcel. Figure 3-17 represents the site features and sampling history in the area. The site is along the southeastern slope of the northern perimeter levee, between Ignacio Reservoir Marsh and an alkali marsh on HAAF. Although investigated as part of the GSA Phase II Sale Area (IT, 1998), the Northwest Runway Area is primarily located on the Main Airfield Parcel. Formerly called the Suspected Landfill 23, this site was originally identified as a potential concern because of geophysical survey anomalies. Subsequent soil and groundwater investigations, which included installing three trenches and four test pits, did not encounter debris that would be indicative of landfill activity (IT, 2001a). A series of additional groundwater samples from eight wells confirmed ground water chemistry was consistent with ambient (background) concentrations of metals and few organic compounds were detected.

3.3.2.16 Tarmac East of Outparcel A-5

The tarmac area, northwest of Building 86, is a concrete-paved taxiway connecting the AMSF with the northwestern portion of the runway (IT, 2001a). Figure 3-18 represents the site features and sampling history in this tarmac area. The Tarmac East of Outparcel A-5 directly adjoins and includes a portion of the NHP's levee constructed at the boundary between the GSA property and the Main Airfield Parcel.

3.3.2.17 Revetments 1-17 and 19-28

The Revetment Area, east of the runway, is transected by asphalt-paved taxiways that connect 28 circular concrete parking areas (revetment turnouts) and extensive areas of open space. Figures 3-19 and 3-20 represent the site features and sampling history in the Revetment Area. The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area, respectively (IT, 1999a). Fuels, solvents, and vehicles were periodically ignited and doused at Revetment 10 from 1975 to 1987. Aircraft fueling via fuel trucks also reportedly occurred in this area. Twenty-four of the revetment turnouts are paved with concrete, and 4 revetments are unpaved (9, 11, 12, and 23). Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.

3.3.2.18 Revetment 18/Building 15

Because of their geographic proximity, Revetment 18 includes Building 15. Building 15 is south of the revetment along the northern perimeter of the Main Airfield Parcel. Figure 3-21 represents the site features and sampling history in the Revetment 18/Building 15 area. Building 15 was a former TACAN building also referred to as a precision radar facility. Building 15 formerly contained a generator that provided electrical power for airfield activities, such as runway lighting. Fuel for the generator was stored in a 120-gallon AST at

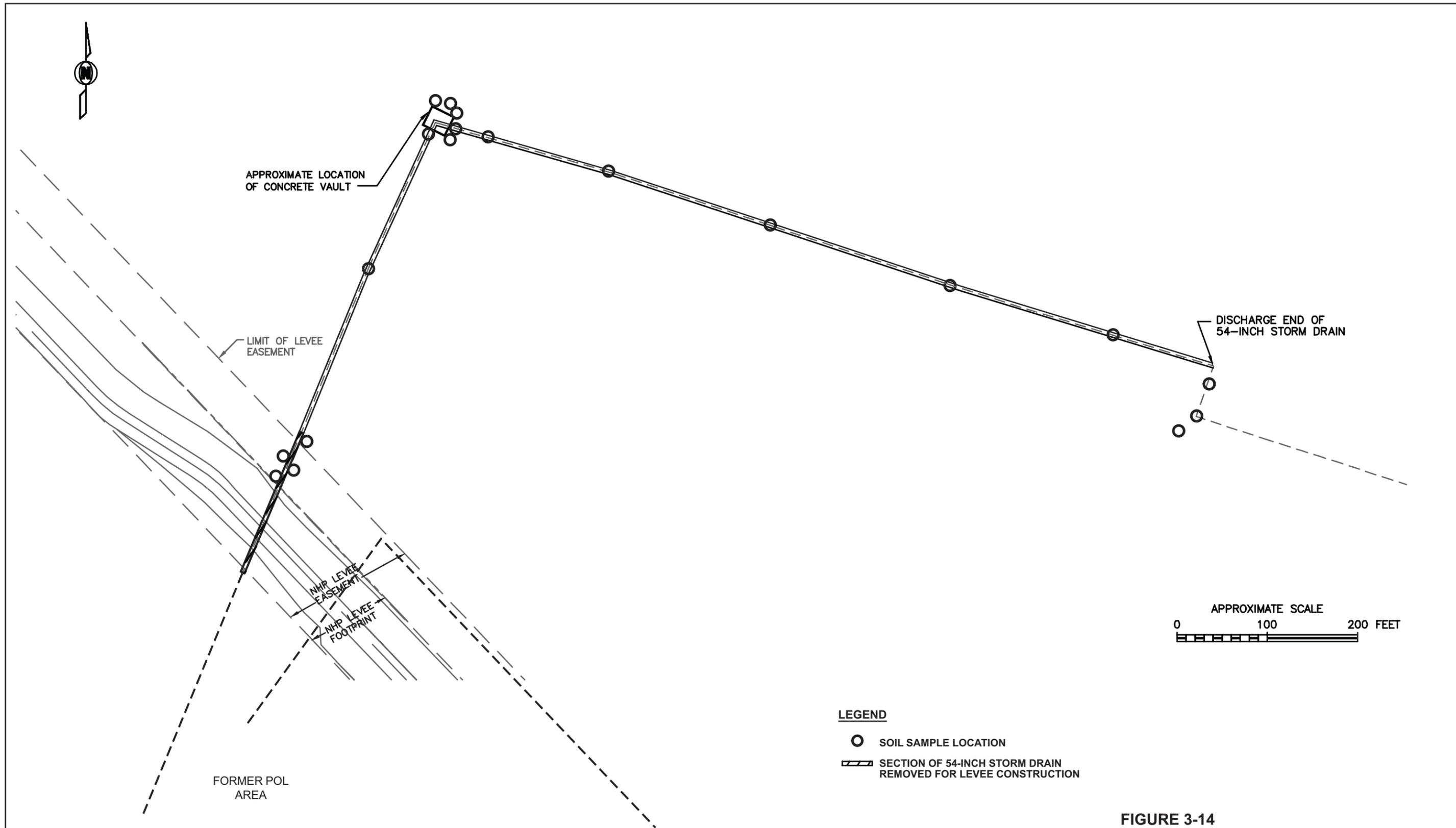


FIGURE 3-14
SITE FEATURES AND SAMPLE LOCATIONS
ONSHORE FUEL LINE 54-INCH DRAIN LINE
SEGMENT
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



- LEGEND:**
- ▲ POTHOLE SOIL SAMPLE
 - - - MAIN AIRFIELD PARCEL
 - ==== PERIMETER DRAINAGE DITCH (CONCRETE LINED)
 - SAMPLE LOCATION
 - ===== PERIMETER LEVEES
 - FORMER LOCATION OF FUEL LINE

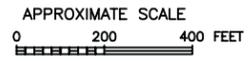
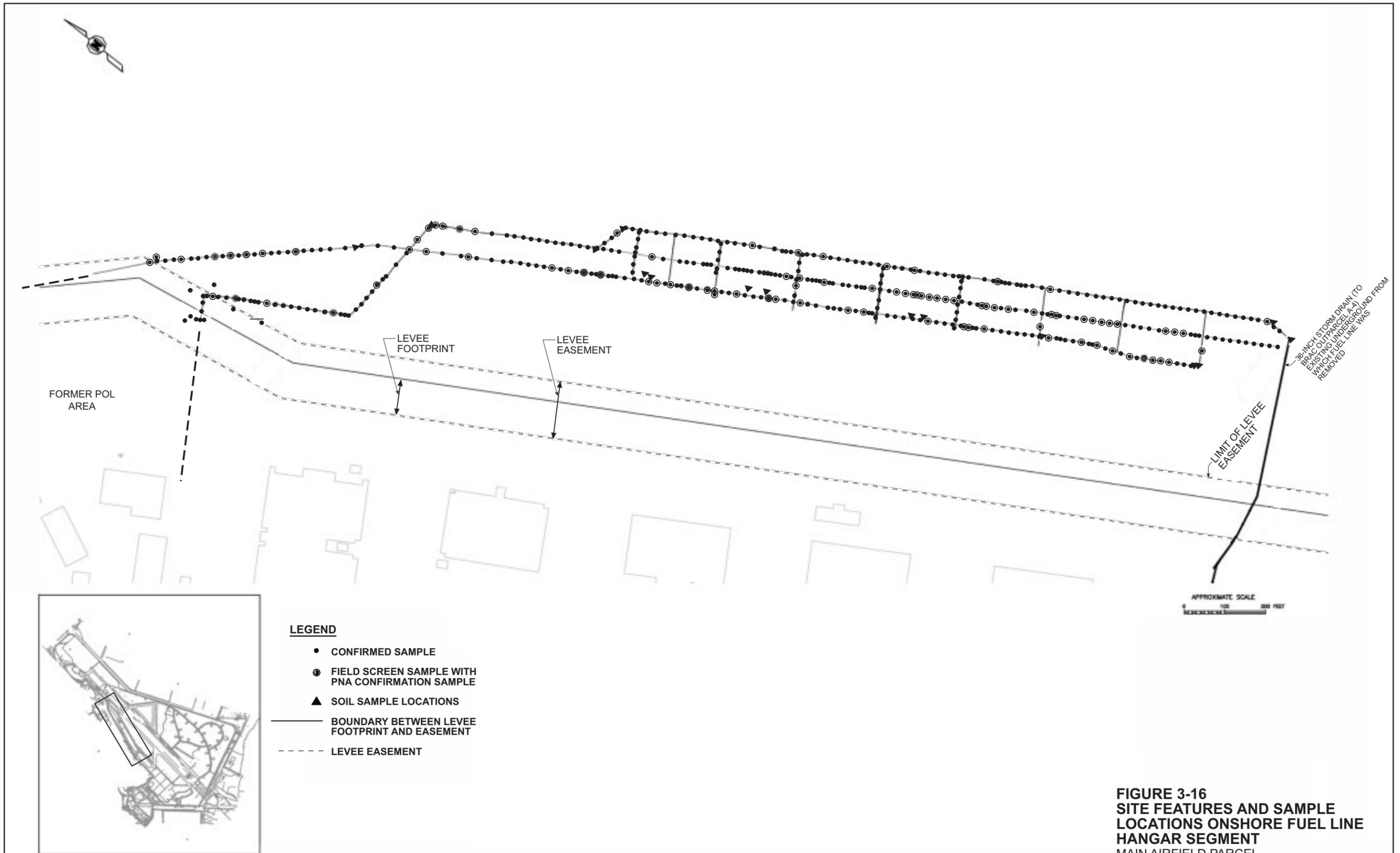


FIGURE 3-15
SITE FEATURES AND SAMPLE
LOCATIONS ONSHORE FUEL LINE,
NORTHERN SEGMENT
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



- LEGEND**
- CONFIRMED SAMPLE
 - ⊙ FIELD SCREEN SAMPLE WITH PNA CONFIRMATION SAMPLE
 - ▲ SOIL SAMPLE LOCATIONS
 - BOUNDARY BETWEEN LEVEE FOOTPRINT AND EASEMENT
 - - - LEVEE EASEMENT

FIGURE 3-16
SITE FEATURES AND SAMPLE
LOCATIONS ONSHORE FUEL LINE
HANGAR SEGMENT
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

EBS
 Reference: IT Corporation Figure B-13 Onshore Fuel Line Hangar Area Sample Locations and Proposed Excavation Boundaries (Drawing No. 762538-D109)

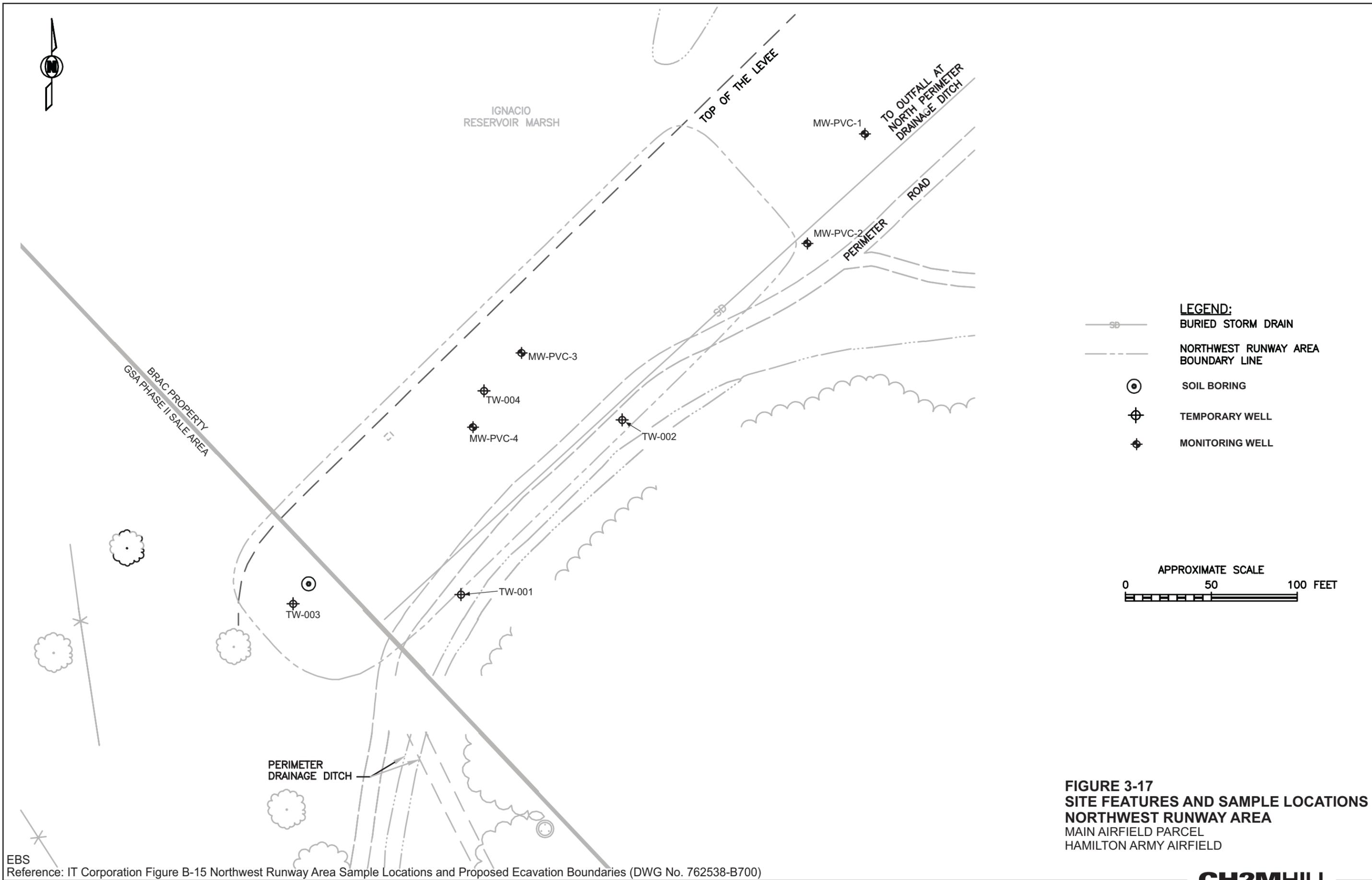
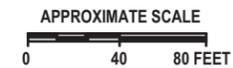
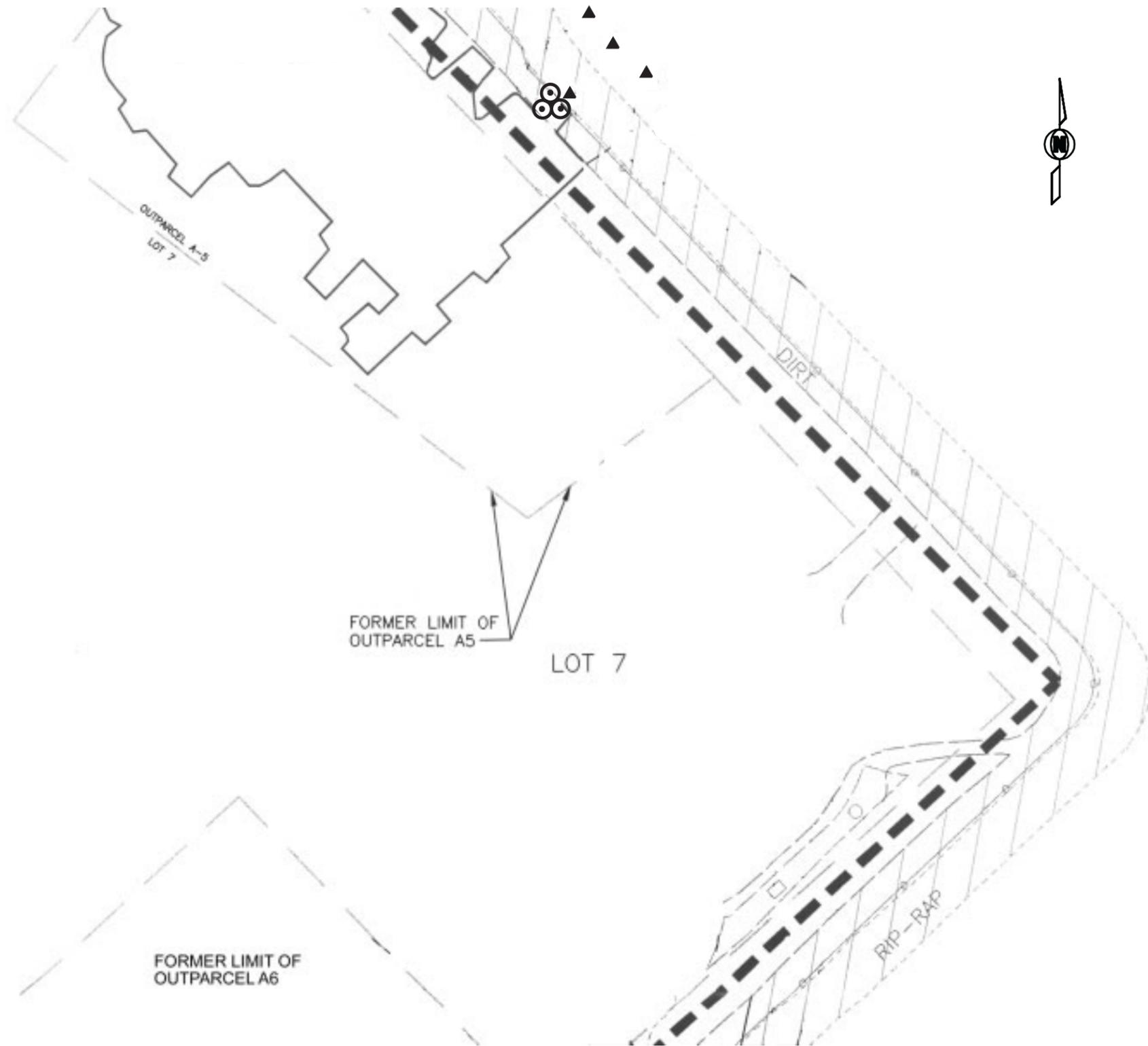


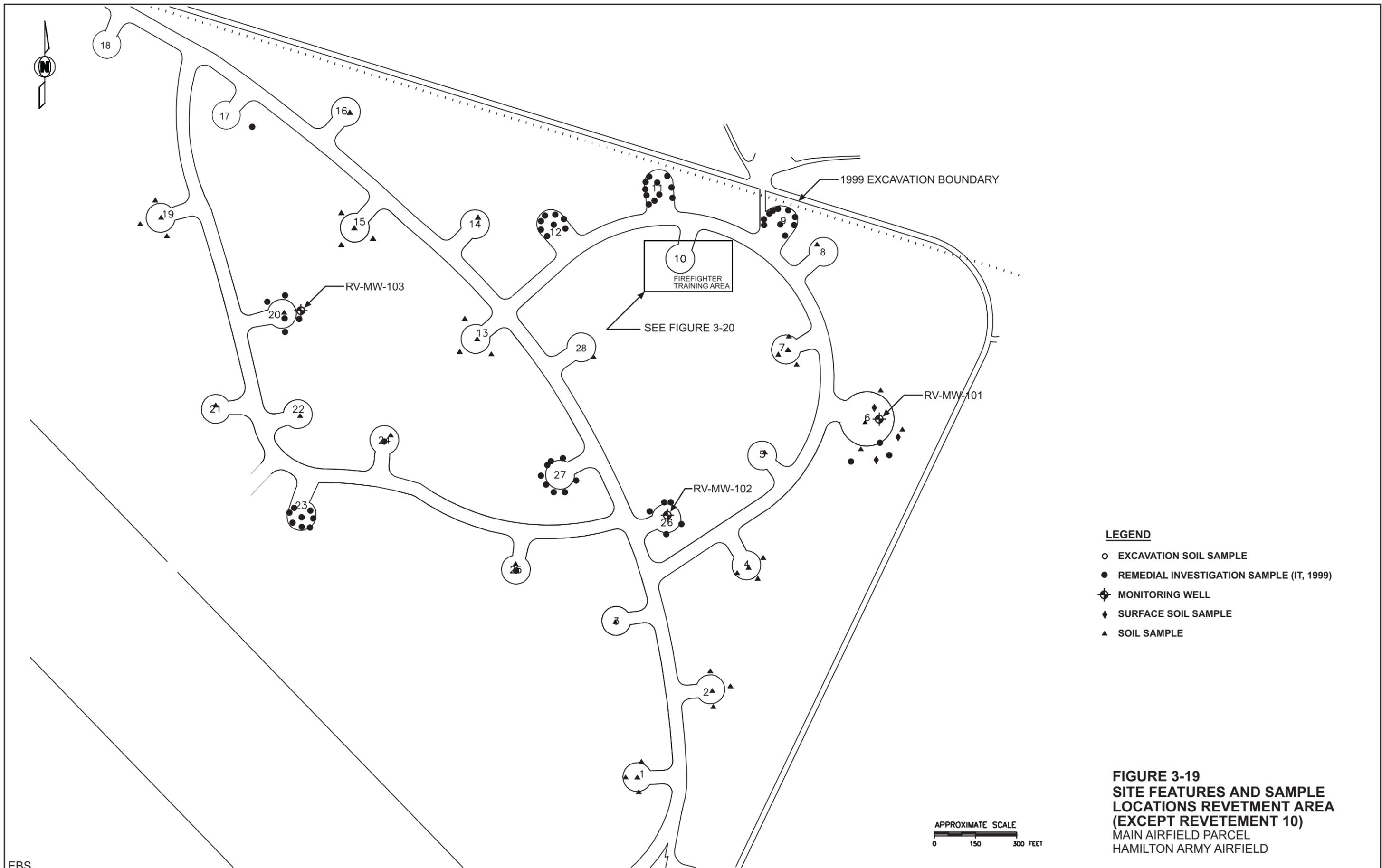
FIGURE 3-17
SITE FEATURES AND SAMPLE LOCATIONS
NORTHWEST RUNWAY AREA
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



LEGEND

- ▬ BRAC PROPERTY
- ⊙ SOIL BORING
- ▲ POTHOLE SOIL SAMPLE

FIGURE 3-18
SITE FEATURES AND SAMPLE LOCATIONS
TARMAC EAST OF OUTPARCEL A-5
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

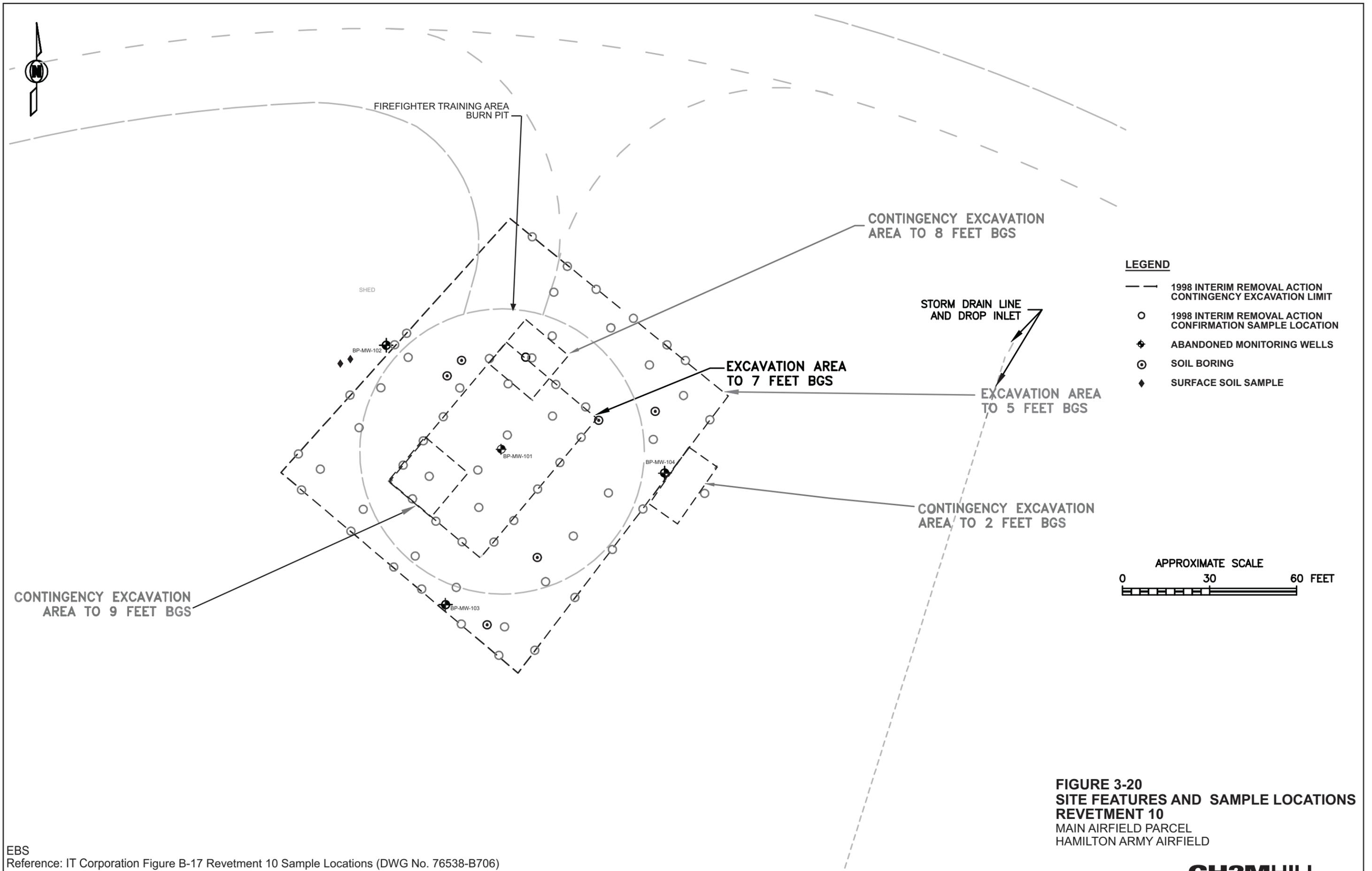


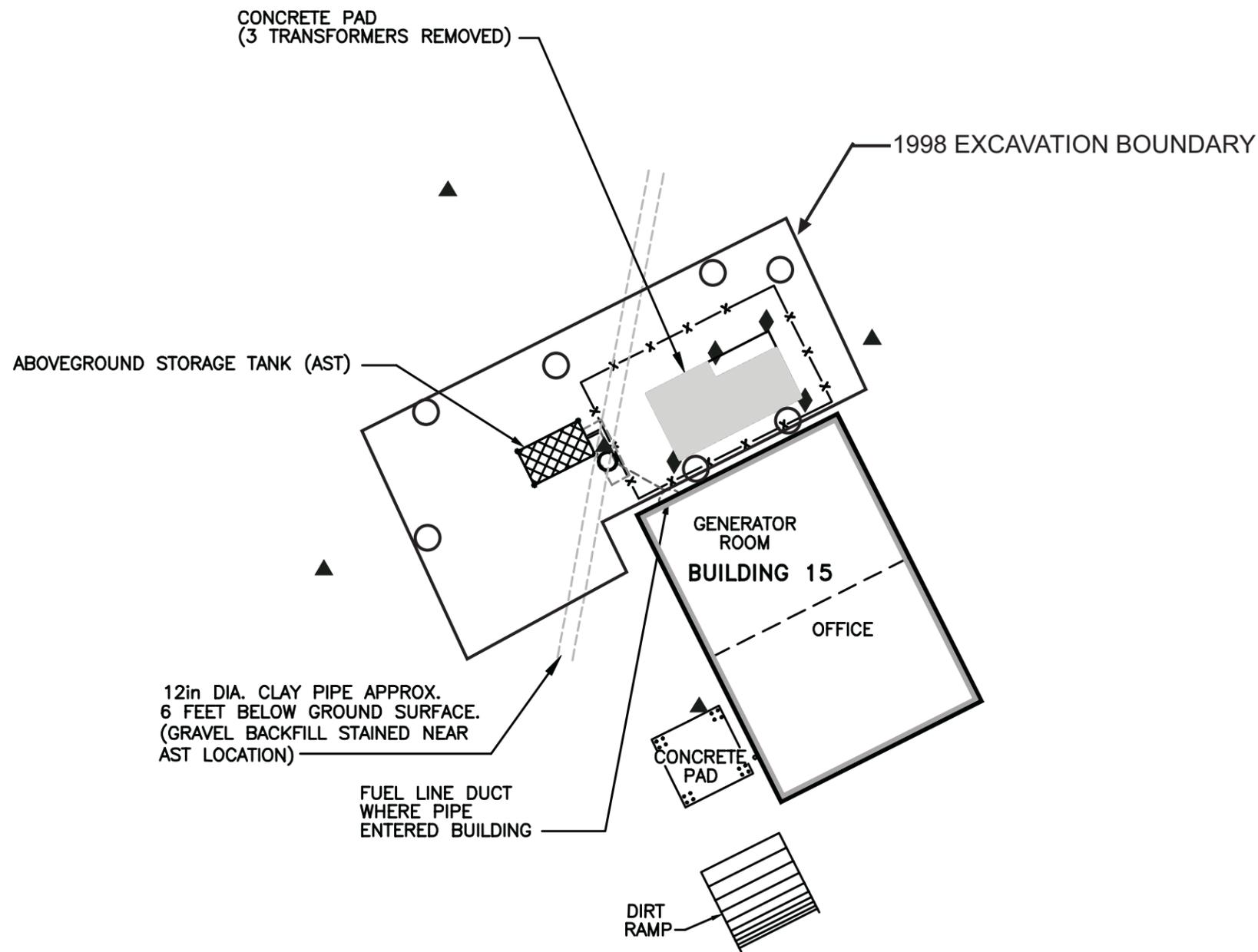
LEGEND

- EXCAVATION SOIL SAMPLE
- REMEDIAL INVESTIGATION SAMPLE (IT, 1999)
- ⊠ MONITORING WELL
- ◆ SURFACE SOIL SAMPLE
- ▲ SOIL SAMPLE

FIGURE 3-19
SITE FEATURES AND SAMPLE
LOCATIONS REVETMENT AREA
(EXCEPT REVETEMENT 10)
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

APPROXIMATE SCALE
 0 150 300 FEET

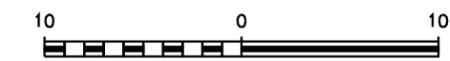




LEGEND

-  FORMER LOCATION OF 120 GALLON DIESEL ABOVEGROUND STORAGE TANK (AST)
-  AREA OF SHALLOW TRENCH TO REMOVE PIPING
-  PIPING ASSOCIATED WITH AST (REMOVED)
-  FENCE
-  CONFIRMATION SOIL SAMPLE
-  SURFACE SOIL SAMPLE
-  POTHOLE SOIL SAMPLE

GRAPHIC SCALE



SCALE: 1" = 10'

FIGURE 3-21
SITE FEATURES AND SAMPLE LOCATIONS
BUILDING 15
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

the northwest corner of Building 15 and was removed in 1997. A concrete transformer pad is adjacent to the west side of the building. Three transformers (removed in 1995) were also located on the concrete pad adjacent to the west edge of the building (IT, 2001a).

3.3.2.19 Former Revetments

In addition to the 28 revetments discussed above, the Archive Search Report identified 8 former revetments in the Main Airfield Parcel. Figure 3-24 represents the site features of the former revetments. Five of these were paved over during the construction of the aircraft maintenance area, two became dirt roads, and one has been revegetated by the surrounding grass. These 8 former revetments have not been investigated.

3.3.2.20 High Marsh

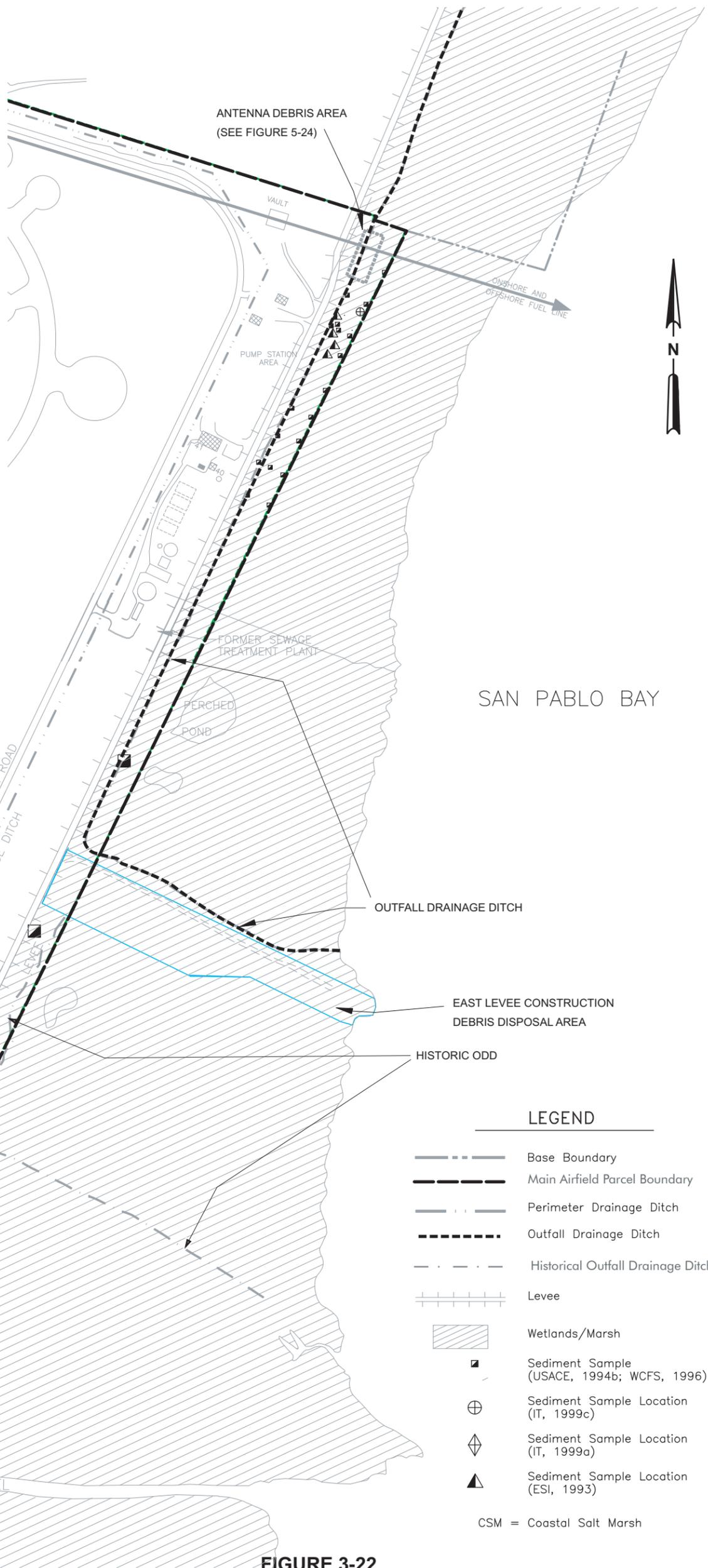
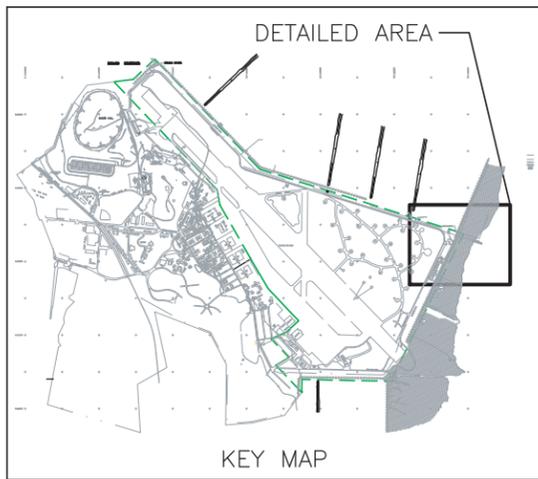
For the purposes of the EBS, the High Marsh Area within the Main Airfield Parcel is located between the east levee and the eastern Army property boundary. This portion of the CSM is dominated by pickleweed habitat. The proposed channel cut for the Hamilton Wetland Restoration Project is located within the High Marsh Area. Figure 3-22 represents the site features and sample locations in the High Marsh.

3.3.2.21 Boat Dock (Nonchannel area)

A Boat Dock is at the southeastern corner of the Main Airfield Parcel, at the south end of the runway where the east and south levee intersect. Figure 3-23 represents the site features and sampling history in the vicinity of the Boat Dock. Before 1965, when the base was active, the launch was maintained at the dock for rescue in the event of an emergency in San Pablo Bay. The Boat Dock had electrical power supplied by two transformers and one or more small, enclosed structures. The transformers have been removed and impacted soils were removed in 1998. A gasoline-powered winch was used to lower the launch down a steel track into a dredged channel and turning basin. The facility has been abandoned and only piers and the main platforms remain (USACE, 2001a).

3.3.2.22 Boat Dock Channel Area

The Boat Dock Channel Area is shown on Figure 3-23. The Channel Area extends west from San Pablo Bay to the launch ramp at the Boat Dock, where it bends and continues to extend south to adjacent agricultural land. This portion of the Channel Area received agricultural runoff and stormwater from the Airfield. Aerial photographs suggest that maintenance of the channel and turnaround areas for the dock was discontinued during the 1960s. Because maintenance has stopped, the original contours of the channel leading from the dock to the bay have changed dramatically, as a result of the deposits of silt from San Pablo Bay. Historical photos indicate the original channel was more than 100 feet wide (USACE, 2001a). According to Army records the dredged depth of the channel was 6 to 8 feet below mean sea level. The turnaround area could accommodate boats up to 40 feet long. Currently, the existing channel at the dock is approximately 15 feet wide and over grown with rushes. The turnaround area is virtually non-existent and is covered with a dense growth of pickleweed. The channel in this area receives some runoff from the Las Gallinas Valley Sanitary District gray water spraying operation.



LEGEND

- Base Boundary
 - Main Airfield Parcel Boundary
 - Perimeter Drainage Ditch
 - Outfall Drainage Ditch
 - Historical Outfall Drainage Ditch
 - Levee
 - Wetlands/Marsh
 - Sediment Sample (USACE, 1994b; WCFS, 1996)
 - Sediment Sample Location (IT, 1999c)
 - Sediment Sample Location (IT, 1999a)
 - Sediment Sample Location (ESI, 1993)
- CSM = Coastal Salt Marsh

FIGURE 3-22
SITE FEATURES AND SAMPLE LOCATIONS HIGH MARSH, OUTBOARD DRAINAGE DITCH, HISTORICAL OUTBOARD DRAINAGE DITCH, ELCCDDA, SPOILS PILE F, AND AREA 14
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



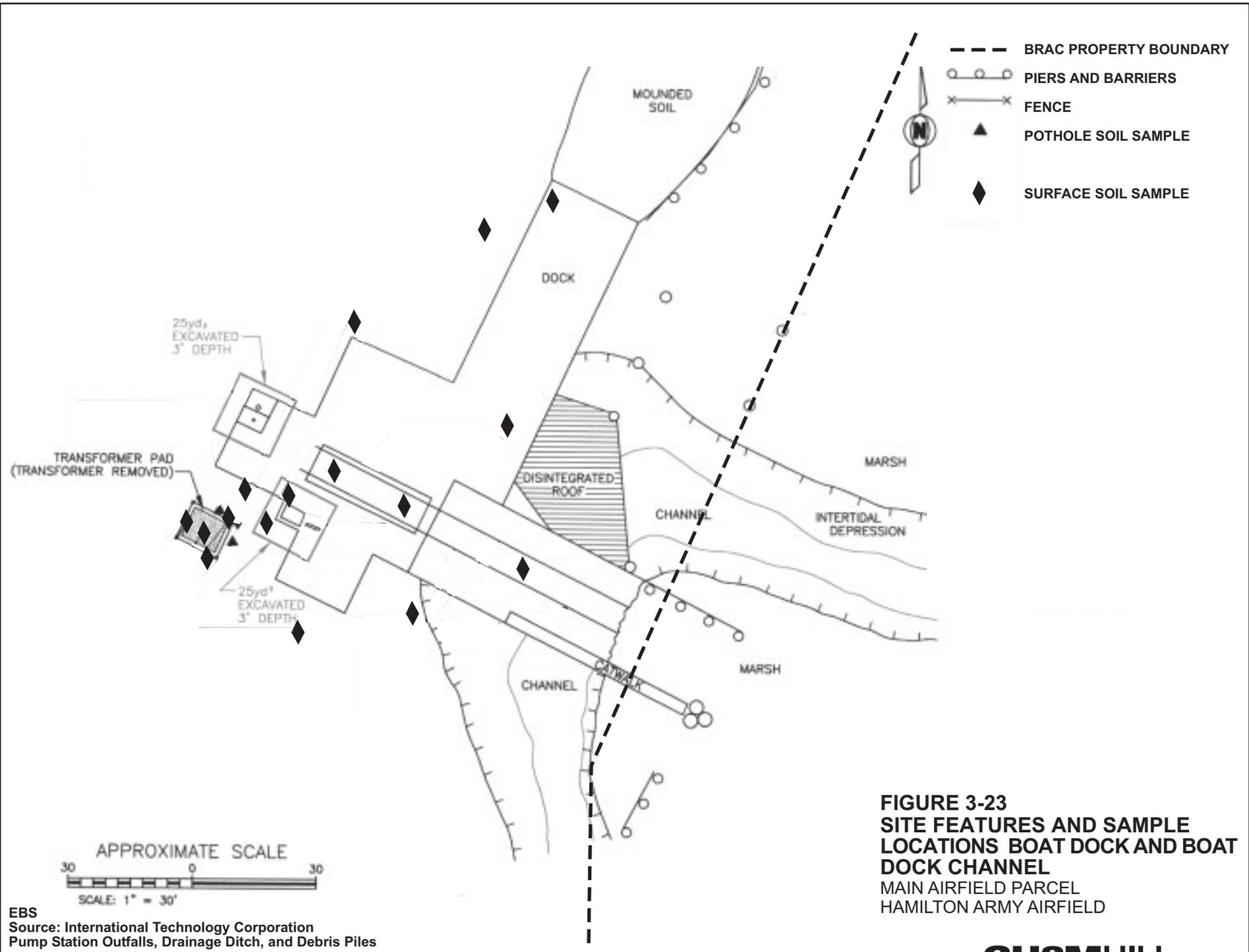


FIGURE 3-23
SITE FEATURES AND SAMPLE
LOCATIONS BOAT DOCK AND BOAT
DOCK CHANNEL
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

EBS
 Source: International Technology Corporation
 Pump Station Outfalls, Drainage Ditch, and Debris Piles

3.3.2.23 Outfall Drainage Ditch

The Outfall Drainage Ditch (ODD) is located on the coastal salt marsh side of, and parallel to, the east perimeter levee. Figure 3-22 represents site features and sampling history in the ODD area. The ditch receives stormwater runoff and drainage from the Inboard Area sites and PDD. Historically, the ODD ran from the northernmost portion of the Main Airfield Parcel south to the Historic ODD, which emptied into the Boat Dock channel. The ODD receives water from the airfield stormwater collection system. The water is discharged to the ODD from the pump house area. When the south runway extension was constructed in 1953, the northern portion of the ditch was rerouted to San Pablo Bay at a point near the northern edge of the ELCDDA. Currently, the ODD runs from the northernmost portion of the Main Airfield Parcel to the northern edge of the ELCDDA. From this point, the ditch makes a 90-degree turn and runs to its discharge point in San Pablo Bay. The ODD is 3 to 4 feet deep and 6 to 10 feet wide.

3.3.2.24 Historic ODD

The Historic ODD is on the CSM side of and parallel to the east perimeter levee (see Figure 3-22). The Historic ODD runs from the southern edge of the ELCDDA south to the north side of the Boat Dock Area (USACE, 2001a). Storm water flowed the entire length of the ODD and discharged to the Boat Dock Channel Areas before the construction of the runway extension and the ELCDDA.

3.3.2.25 Antenna Debris Disposal Area

The Antenna Debris Disposal Area is located along the northern portion of the CSM, adjacent to the ODD. Two debris piles are approximately 170 feet northeast of Building 35 in the CSM. One debris pile is on the east side of the ODD and the other is on the west side (USACE, 2001a). The dimensions of the debris area are approximately 150 feet by 80 feet. Visual inspection of discrete piles at this site suggest discarded materials from the former antenna facilities and building demolition were placed here (USACE, 1999).

3.3.2.26 East Levee Construction Debris Disposal Area

The ELCDDA is centrally located and runs from the East Levee Road east to the San Pablo Bay (USACE, 2001a). Figure 3-22 provides the site features and sampling history in the vicinity of the ELCDDA. A dirt road runs through the central portion of the ELCDDA. Pickleweed grows up to the edges of the road. From 1961 and on, the site was primarily used for the disposal of construction debris. The ELCDDA includes a burn pit located at the eastern end. The area of the burn pit extends out into San Pablo Bay and has a slightly higher elevation than most of the ELCDDA and the CSM. The nature and quantity of any wastes burned at the site are not known, and no waste materials were evident at the surface or in soil samples collected at the site.

3.3.2.27 Area 14

Area 14 was a barren area identified in a 1941 aerial photograph. The area is located north of the boat dock, just east of the east levee. Figure 3-22 represents site features and sampling history in Area 14. Little is known about this area, although it may have been a fill, spoil, disposal, or demolition area. An anti aircraft artillery battery was located east of the vicinity of area 14 before the runway was extended in the 1950s. Area 14 is a marsh habitat,

overgrown with pickleweed. Concrete, brick, and asphalt building materials are visible in this area near the levee and may have been used as riprap.

3.3.3 Archive Search Report Sites

Sites that have already been identified and have already been addressed by the Army BRAC program are as follows: Burn Pit at Revetment 10 (ASR Site #2, see Section 3.3.2.17), Former Sewage Treatment Plant (ASR Site #3, see Section 3.3.2.1), Engine Test Area (ASR Site #10, see Section 3.3.2.17), POL Storage Area (ASR Site #11, see Section 4.3.2), Radiological Disposal Site (ASR Site #12, see Section 4.4.6), Landfill and Burn Pit (ASR Site #13, 3.3.2.26 and 4.3.4.1), Disposal Area (ASR Site #14, see Section 3.3.2.27), Spoil Area (ASR Site #15, see Section 3.3.2.25), High Marsh (ASR Site #16, see Section 3.3.2.20), and Possible Disturbed Area (ASR Site #17, see Section 3.3.2.15).

Other sites that were discussed in the ASR are summarized below:

3.3.3.1 Pistol Range/Night Firing Range (ASR Site #1)

The ASR identified the Pistol Range/Night Fire Range as located in the northeastern corner of the Main Airfield Parcel. According to the ASR, the site was identified and located based on review of aerial photography. Further research revealed that the Pistol Range / Night Fire Range did exist; however, it was not located on the Main Airfield Parcel. GSA documents, including the *Site Investigation Report North Antenna Field*, confirm that the Pistol Range/Night Firing Range is located on the North Antenna Field, a former GSA property. The ASR itself contains a "Trip Report" dated May 5, 1998 regarding an ordnance inspection of the North Antenna Field. The Trip Report lists the Pistol Range/Night Fire Range as one of the ranges visited and located in the North Antenna Field (U.S. Army, 2003).

3.3.3.2 Black Powder Magazine and Demolition Bombs Magazine (ASR Sites #5 and #6)

Two former structures were identified along the eastern perimeter levee, as a Black Powder Magazine and a Demolition Bombs Magazine. The BRAC office has base maps dated 1945 and 1952, which confirm the location and designation of both structures. In 1952, they were demolished and the ground bulldozed in preparation for the runway extension of 1953 (Aerial photo June 1952 and 8 July 1952). The site of the Demolition Bombs Magazine is now located beneath the south runway extension constructed in 1953 (aerial photo 15 May 1953). Contrary to what the ASR asserts, and according to all post 1952 aerial photography, there are no remnants of the foundation of the two magazines on site (U.S. Army, 2003).

3.3.3.3 Aircraft Harmonization Range (ASR Site #7)

Building 90 was identified as an Aircraft Harmonization Range. Building 90 was an aircraft avionics shop. According to the ASR, the designation of "Harmonization Range" was the result of reviewing a June 1959 map that depicts an unnamed structure with theoretical lines radiating from the building as recreated in Plate 3 of the ASR. These lines were affiliated with shooting projectiles from the building. The projectiles were shot into the marsh at a buoy located in San Pablo Bay for the purposes of aligning the machine guns. However, the ASR does not identify a target nor firing lines on aerial photography. The following was determined (U.S. Army, 2003):

- At the time of Building 90's construction, aircraft technology had advanced beyond the use/need for a machine gun harmonization range.
- Harmonizing machine guns from this location would be logistically unreasonable. Building 90 is on a slab of concrete 5 ft. below sea level. The top of the levee is between 5 and 6 feet above sea level resulting in a difference of between 10 and 11 feet. The theorized target's distance is too far away for machine gun harmonization. Alternatively, it would be unlikely that guns were fired across the runway and into the levee itself considering the consequences to integrity of the levee and the angle of the levee relative to building 90. Projectiles fired at the levee itself would impact the berm at an angle and potentially ricochet into the revetment area, which would pose a costly and unsafe risk to people and machinery.

The structure is a metal building with cut outs so that the nose of the aircraft could be pulled into the building. Inside the building, is an elaborate electrical conduit network and markings designating the crew and squadron assigned there as well as warnings to remove jewelry while working on electrical equipment. The floor of the building features aircraft tie-downs with identifying lettering "Static Ground Connection Ohmic testing." According to interviews with former military servicemen who worked in building 90, aircraft were pulled into the building for electrical maintenance and radar systems were calibrated using hi-tech equipment. No projectiles were fired from building 90 (U.S. Army, 2003).

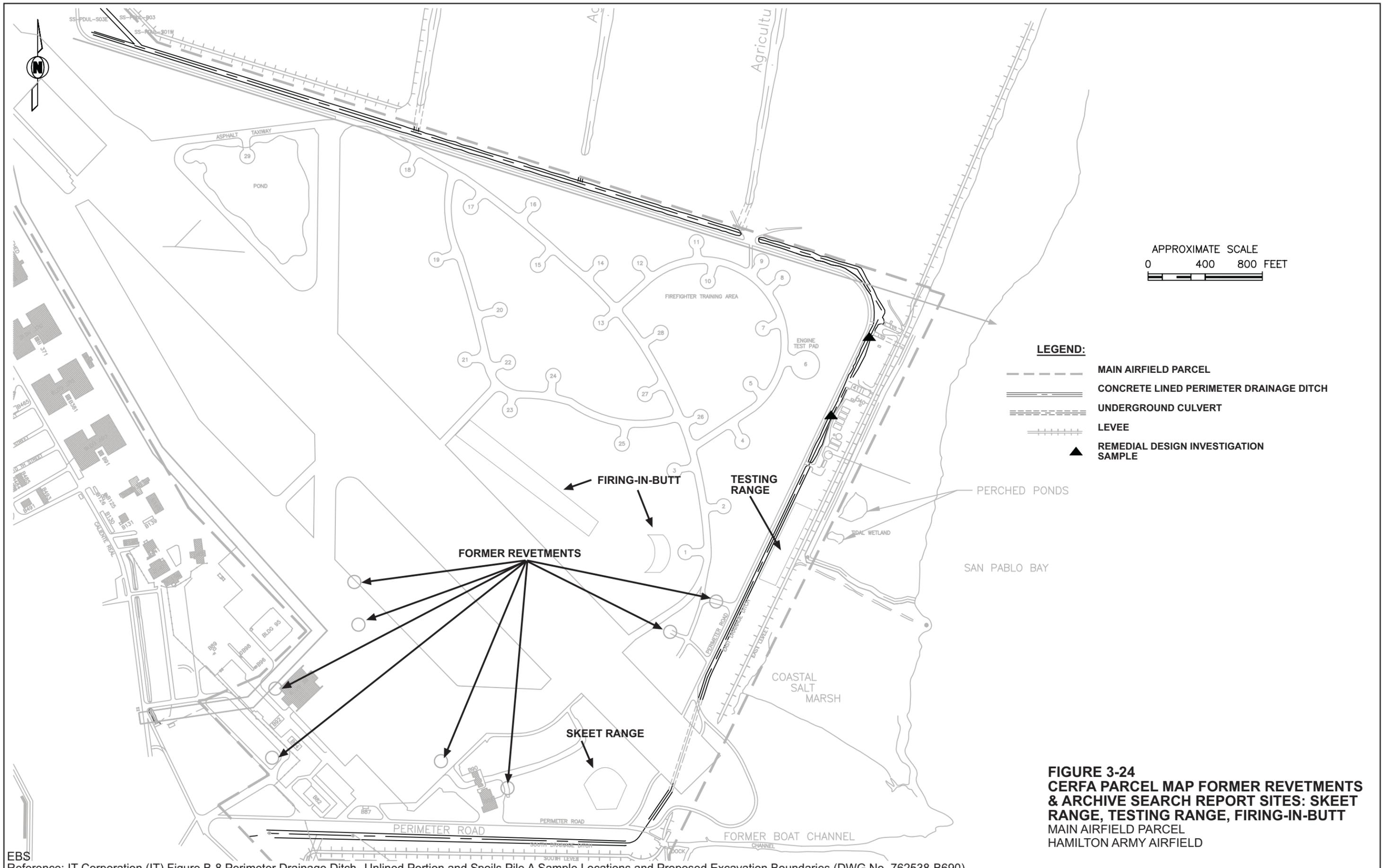
The radiating lines present in site diagrams depict a "clear zone" prohibitive of radar reflecting objects within the vicinity (U.S. Army, 2003).

3.3.3.4 Gas Chamber (ASR Site #9)

A former gas chamber was identified on 1940's imagery. According to a map dated 16 May 1945, a gas chamber was located in the southwest area of Hamilton between the Perimeter Drainage Ditch and South Boundary Road (now Perimeter Road) southwest of what is now Building 82. Aerial photography confirms the presence of a structure in that vicinity (18 Jan 1942 and 26 Apr 1943). The structure appears to have been demolished and the area bulldozed as it appears in aerial photography dated August 1946. The WWII era gas chamber served as a facility for education and practice in the use of personal protective equipment. Historical documents explain that gas chamber exercises, using chlorine and tear gas, were conducted in January and February 1945. According to the ASR, no evidence of chemical warfare material was found during the team's inspection (U.S. Army, 2003).

3.3.3.5 Testing Range (ASR Site #4)

The Archive Search Report identified an area labeled as the "Testing Area" based on an aerial photograph dated August 1946. Figure 3-24 provides the site features in the vicinity of the Testing Range. The area is described as a "rectangle approximately 1,000 feet by 100 feet between the sewage treatment plant and the black powder magazine." The Archive Search Report did not explain the basis for labeling the area as a "testing area;" however, the Army BRAC office has historical maps dated 16 May 1945 and 4 December 1952 that outline an area approximately 940 feet by 100 feet labeled "testing range." Neither the BRAC office nor the Archive Search Report team was able to locate accounts on how the site was used. Because Hamilton was not a research and development base, it is not likely that testing of weapons occurred here. Based on the survey of additional maps dated 25 February 1959,



LEGEND:

- MAIN AIRFIELD PARCEL
- ==== CONCRETE LINED PERIMETER DRAINAGE DITCH
- ==== UNDERGROUND CULVERT
- ++++ LEVEE
- ▲ REMEDIAL DESIGN INVESTIGATION SAMPLE

APPROXIMATE SCALE
 0 400 800 FEET

FIGURE 3-24
CERFA PARCEL MAP FORMER REVETMENTS
& ARCHIVE SEARCH REPORT SITES: SKEET
RANGE, TESTING RANGE, FIRING-IN-BUTT
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

15 December 1963, and 22 November 1963 that depict a portion of the testing range called a “firing range,” the Army BRAC office concludes that the “testing range” may have been a small arms target practice area (U.S. Army, 2003).

3.3.3.6 Northwest Alleged Disposal Area (ASR #8)

In December of 2000, a local resident and former military facility inspector stated that during a routine inspection of Hamilton, in the mid-1980s, he was told various chemicals were improperly disposed of in an area near the north end of the runway (the Alleged Hazardous, Toxic, and Radiological Waste Disposal Site). Figure 3-25 provides the site features in the vicinity of the Northwest Alleged Disposal Area. The resident surmised, based on the lack of disturbed soil during his inspection, that the waste was not buried but was poured out of containers onto the ground. For the purposes of further investigation, this area is being referred to as the Northwest Alleged Disposal Area (U.S. Army, 2003).

3.3.3.7 Skeet Range (ASR #18)

A skeet range was identified in the ASR as ASR Site #18. Figure 3-24 provides the site features in the vicinity of the Skeet Range. The range was situated inboard at the corner where South Boundary Road meets East Boundary Road and west of what is now the south runway extension. It is visible on aerial photography dating up to 26 April 1943, but is not observable in photographs beginning in 1946 (U.S. Army, 2003).

3.3.3.8 Firing-In-Butt (ASR #19)

A firing-in-butt was identified in the ASR as ASR Site #19. Figure 3-24 provides the site features in the vicinity of the Northwest Alleged Disposal Area. The ASR accurately located the historical Firing-In Butt in the vicinity of the runway and Revetment 25. However, the ASR incorrectly shows the Butt as being closer to the firing line than photos indicate and incorrectly states the date of its removal. There were three hardstands and a “butt” which is a target surrounded by barricade material. Aircraft machine guns, on both sides of the aircraft, were fired into an earthen mound called a “butt” to check firing alignment. The hardstands with connecting road still exist and are visible in 1960s aerial imagery. The Butt was removed in its entirety in 1947, the disposition of the barricade soil not known (U.S. Army, 2003).

3.4 Permitting Status

The permit status of HAAF is summarized from information obtained through prior environmental document reviews provided in the CERFA report (ETC, 1994b); the electronic database search of federal, state, and local databases; and interviews with USACE personnel.

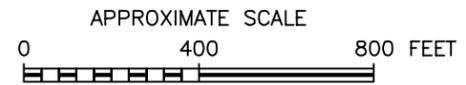
HAAF records showed that, as of 1994, the installation did not have any permits from regulatory agencies to conduct installation operations as indicated in the CERFA report. The installation did not store waste regulated under RCRA in sufficient quantities and for sufficient duration to require a hazardous waste storage permit. Today, HAAF has its own EPA ID Number (USEPA ID No. CA3570024288). However, during the investigation and remediation activities conducted at the Main Airfield Parcel, hazardous wastes were reported, manifested, and handled under the USEPA ID number for the Presidio of



IGNACIO RESERVOIR

SPOILS PILE A

NORTHWEST ALLEGED DISPOSAL AREA



LEGEND:

- MAIN AIRFIELD PARCEL
- ==== CONCRETE UNLINED PERIMETER DRAINAGE DITCH
- ==== UNDERGROUND CULVERT
- ++++ LEVEE
- SEDIMENT SOIL SAMPLE
- CONFIRMATION SOIL SAMPLE

FIGURE 3-25
CERFA PARCEL MAP ARCHIVE SEARCH
REPORT SITE: NORTHWEST ALLEGED
DISPOSAL AREA
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

San Francisco (USEPA ID No. CA7210020791), because HAAF was a sub-installation to the Presidio at that time. Hazardous waste generated at HAAF (including hazardous waste manifesting and annual and biannual reporting) was handled through the Presidio, which was classified as a small-quantity generator of hazardous waste.

In 1999, the USACE prepared a Storm Water Pollution Prevention Plan (SWPPP), according to requirements of State Water Resources Control Board Order No. 92-08 DWQ, National Pollutant Discharge Elimination System General Permit No. CAS000002, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity (IT, 1999b). This SWPPP addresses the storm water management and sampling practices specific to construction and remediation activities performed at HAAF. The areas included in the SWPPP include the Main Airfield Parcel. Prior to this 1999 SWPPP, the Main Airfield Parcel and GSA property at HAAF were covered under separate plans.

There are no records of federal, state, or local permits related to activities that were conducted on the Main Airfield Parcel.

3.5 Surrounding Environment and Land Uses

3.5.1 Demographics

HAAF is in southeast Novato in eastern Marin County, California. With its closure, the former installation became one of the largest land holdings suitable for development along the U.S. 101 corridor in Marin County. Open space (OS) is the preferred use for the Main Airfield Parcel. The OS designation is for use as wetland reestablishment as stated in the Hamilton Army Airfield Reuse Plan (October, 1995).

Wetlands reestablishment on part of the airfield parcel and adjoining abandoned antennae field constitutes the wetland project area and is consistent with and helps implement applicable local, regional, and state plans, including the Hamilton Reuse Plan, the City of Novato General Plan, and the San Francisco Bay Conservation and Development Commission San Francisco Bay Plan. There are three wetland project objectives that satisfy these previously mentioned plans: (1) to create a diverse array of wetland and wildlife habitats that benefits a number of threatened, endangered, and other species; (2) to reduce in-water disposal of cover material and beneficially reuse cover materials as feasible; and (3) to facilitate the base closure and reuse process.

Under the future wetlands end-use, the existing levee surrounding the airfield will be breached, and water from San Pablo Bay would be allowed to reclaim the airfield, eventually returning the area to a wetlands state. Because much of the Main Airfield Parcel has subsided to elevations below that of a productive salt marsh, the restored wetlands must rise to a level that will sustain a permanent marsh habitat through placing imported fill material augmented by natural sedimentation. Main tidal channels will be constructed in the dredged material, and lower order channels will form naturally.

The initial construction phase of the wetlands restoration project is scheduled for approximately 5 to 8 years. Following construction, the levee will be breached, and the wetlands will be allowed to equilibrate and mature.

Urbanized land uses in Marin County are concentrated along U.S. 101, with some urbanized use along the shoreline of the Bay. The urban corridor centered along U.S. 101 is primarily characterized by residential and commercial development. The western portions of Marin County are largely agricultural, with significant areas of publicly owned space. The general region is characterized by moderately dense pockets of urban development surrounded by large tracts of open space, including areas with wetlands, floodplains, and steep terrain (Robert Bein, William Frost & Associates [RBF], 1995).

Census 2000 data show that total population in Marin County was 247,289, and the median income was \$52,869. According to the 2000 Census, 47,630 people live in the City of Novato.

3.5.2 Climatology

The climate at HAAF and the surrounding area is Mediterranean, which is characterized by warm, dry summers and cool, wet winters. The temperature is moderated by HAAF's proximity to San Pablo Bay and the Pacific Ocean. The deflection of the sea breeze and fog by coastal mountains gives the region an entirely different temperature regime compared to areas west of the mountains and in San Francisco. Daily variation in temperature is relatively small. Daytime temperatures are more moderate than those of most Bay Area cities (January and July mean maximum temperatures are 56°F and 80°F, respectively); however, 100°F days occur occasionally in late summer. The frequent clear skies (40 percent annually) and light winds enhance convection cooling at night. Therefore, nighttime temperatures are relatively low (January and July mean minimum temperatures are 36°F and 50°F, respectively). The average maximum temperature is 72°F; the average minimum temperature is 47°F.

The rainy season extends roughly from November through March; during these months, rainfall averages between 4 to 7 inches a month. The mean annual precipitation is 28 inches. The winter influx of rain has a dramatic effect on this area, resulting in an elevated groundwater table and some surface flooding. During summer months, rainfall averages less than 0.1 inch a month. This results in the evaporation of surface waters, a drop in the groundwater table, and extensive desiccation of shallow soil horizons (WCFS, 1996).

3.5.3 Hydrology

HAAF is in the southern portion of the Novato Creek Drainage Basin and Watershed (EIP Associates, 1993). Historically, tidal marsh and mudflats covered the area. The main slough channel drainage system in the HAAF panhandle area (the rectangular area to the east of Ammo Hill and to the northwest of the triangular pond) drained to the northwest into the tidal reaches of Novato Creek (Phillip William & Associates [PWA], 1998), which then drained into San Pablo Bay. Using a system of levees and drainage ditches, the area that is now HAAF was reclaimed for agricultural use in the late 1800s. The surface water flow pattern was further modified through a series of PDDs, culverts, and levees on the property.

Today, regional surface water flow is generally from the upland areas in the west toward the San Pablo Bay in the east. From areas west of HAAF, Pacheco Creek and Arroyo San Jose carry surface water along the northwestern boundary of HAAF. Both Pacheco Creek and Arroyo San Jose discharge into the Ignacio Reservoir, which occupies

approximately 120 acres and has a storage capacity of 480 acre-feet (Jones & Stokes Associates, Inc. [JSA], 1998). The reservoir drains into Novato Creek through a leveed channel with a flap-gate outlet located at the Bel Marin Keys Boulevard bridge.

Storm water drainage system conduits ranging in diameter from less than 12 inches to as large as 54 inches in diameter are distributed in several general areas of the HAAF. The component lines in each network span various distances and lie at various depths. One network drains the mid-airfield just north of the revetment area. Another network drains the revetment area itself, while a third drains the aircraft maintenance area to the west of the revetments. The drains in the AMSF convey water to discharge into the PDD to the west of the central portion of the airfield (CH2M HILL, 2001). This water is then conveyed through a network of drainage ditches and the PDD, which conveys drainage to three pump stations (Buildings 35, 39, and 41) on the margin of San Pablo Bay.

Runoff from the adjacent Landfill 26 area and 40 acres in the northern Reservoir Hill area enters the panhandle and drains into the PDD, located parallel to the northern border of the airfield. The runoff from the north side of Reservoir Hill enters the panhandle through a culvert in the south corner of the panhandle. Modified underground storm drains along the northwest and southwest sides of the panhandle convey Reservoir Hill runoff into the northern PDD. The northern PDD conveys storm water to the eastern end of the airfield, where the aforementioned three pumps transport runoff from the airfield into San Pablo Bay (JSA, 1998).

Seasonal surface runoff from the Landfill 26 area is routed around the landfill in grass-lined swales and temporary ponds into a small depression north of the landfill. This pond releases runoff to the panhandle via a 4-foot-diameter tide-gated culvert that empties into a drainage ditch, then enters a seasonal wetland mitigation site. When water in the wetland reaches an elevation of -3 feet National Geodetic Vertical Datum, it spills over a constructed weir into the northern PDD (PWA, 1998). A second PDD, located along the southern and eastern sides of the airfield, carries runoff from other parts of the airfield and from adjacent property west and south of the airfield to the HAAF pumps (PWA, 1998). The southern PDD system receives drainage from several proximate areas including drainage from the NHP development, the eastern portion of the Coast Guard housing area, and other areas adjacent to the west side of the airfield that are conveyed to the ditch in two outfalls: one near Reservoir Hill (west outfall) and one near the southwest corner of the airfield (east outfall) (JSA, 1998).

3.5.4 Hydrogeology

Three shallow hydrogeologic units occur within the HAAF Main Airfield Parcel and adjacent marsh: fill, soft Bay Mud, and desiccated Bay Mud. The “fill” was originally used to reclaim the bay margin lowlands for agriculture and has very similar content and hydrogeological properties to the Bay Mud. A different type of “fill” referenced in the RI (IT, 1999a) is the imported construction material used for geotechnical applications and foundation and drainage properties and is not part of the hydrogeologic unit. This type of “fill” may be found in pipeline trenches and as a bridging layer beneath some of the formerly developed areas. This fill will be referred to as “imported fill” when used. Soil permeability and groundwater flow characteristics are summarized below:

- Fill materials have moderate to low hydraulic conductivities. Preferential groundwater flow through the fill may be controlled by the distributions of different fill types.
- Soft Bay Mud generally has low hydraulic conductivity. Preferential flow, if existent, is probably horizontal and confined to peat layers or shell lenses, which are discontinuous and limited in aerial extent.
- Desiccated Bay Mud has low hydraulic conductivity with some fracture permeability. The desiccation cracks are potentially transient in nature and may heal or infill during periods of saturation.

3.5.5 Sensitive Environments

This section contains descriptions of habitats and biota currently existing in the Inboard Area and in the CSM that borders the east Main Airfield Parcel boundary. This summary is not intended to be an exhaustive compilation of plants and wildlife but, rather, a list of potential ecological receptors.

Several studies since 1986 have characterized the biological resources (flora and fauna) in the vicinity of the Inboard Area and CSM. The surveys were conducted to support environmental impact reports for base closure and subsequent use of the Main Airfield Parcel. The discussions of biological resources in this section are based on reports by EIP Associates (1986 and 1993) and USACE (1994a). Information in these reports includes results of botanical field surveys conducted in August 1993 and May 1994 and wildlife surveys conducted in May 1994.

Additional wildlife investigations were conducted in 1997 and 1998 and include the following:

- A bat survey (LSA Associates, Inc. [LSA], 1997a)
- California Clapper Rail (*Rallus longirostris obsoletus*) and California black rail (*Laterallus jamaicensis coturniculus*) Survey (LSA, 1998)
- Burrowing Owl (*Athene cunicularia*) Study and Relocation (LSA, 1997b)
- Red Legged Frog (*Rana aurora*) Survey (LSA, 1997c)

There are some differences among the various HAAF BRAC project documents as to which special-status species, of those not actually observed on the property or salt marsh areas, are likely to be present. The *Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS* (JSA, 1998) lists 56 special-status species and evaluates their potential for occurrence, or reports documented observations. It is concluded from this information that after elimination of species for which habitat is lacking, or species that may only incidentally use the site, 14 special-status species are known to occur or are assumed to use suitable habitat at the site. These species include:

- Longfin smelt (*Spirinchus thaleichthys*)
- Central California steelhead (*Oncorhynchus mykiss*)
- Central California Coast Coho salmon (*Oncorhynchus kisutch*)
- Chinook salmon (*Oncorhynchus tshawytscha*)

- Double-crested cormorant (*Phalacrocorax auritus*)
- California brown pelican (*Pelicanus occidentalis californicus*)
- California clapper rail
- California black rail
- Northern harrier (*Circus cyaneus*)
- White-tailed kite (*Elanus leucurus*)
- Burrowing owl
- Salt marsh common yellowthroat (*Geothlypis trichas sinuosa*)
- San Pablo song sparrow (*Melospiza melodia samuelis*)
- Salt marsh harvest mouse (*Reithrodontomys raviventris*)

Habitats in the Inboard Area consist primarily of upland habitat (grassland), paved and or landscaped areas. Within the Inboard Area, a portion of the site (approximately 0.25 acre) lies within Ignacio Reservoir, which is a wetland created as a mitigation measure. Ignacio Reservoir provides habitat for several species. In addition, a wildlife habitat was established at the northwest end of the site as wetland mitigation for destruction of habitat associated with the construction of a cap over Landfill 26. The Inboard Area (excluding Ignacio Reservoir) also provides habitat for the gopher snake (*Pituophis catenifer*), western fence lizard (*Sceloporus occidentalis*), turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), California quail (*Callipepla californica*), ring-necked pheasant (*Phasianus colchicus*), savannah sparrow (*Passerculus sandwichensis*), western meadowlark (*Sturnella neglecta*), black-tailed jackrabbit (*Lepus bennettii*), desert cottontail (*Sylvilagus audubonii*), black-tailed deer (*Odocoileus hemionus*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), and raccoon (*Procyon lotor*). The western burrowing owl, a species of concern, has previously occurred in the Inboard Area and several individuals have been captured and relocated offsite. The seasonal wetlands provide foraging habitat for great egrets, (*Ardea alba*), red-winged blackbirds (*Agelaius phoeniceus*), shorebirds, killdeer (*Charadrius vociferus*), raccoon, and aquatic garter snakes (*Thamnophis spp.*). Coastal salt marsh and brackish marsh under tidal influence are located between the perimeter levee at the eastern end of the project area and the open water of San Pablo Bay. This habitat can be divided into three distinct zones, based on the frequency and duration of tidal inundation (USACE, 2000):

- Low marsh is inundated daily and occupies the elevations between mean tide level and mean high water. In the project area, low marsh is adjacent to the open water of San Pablo Bay and is dominated by California cord grass (*Spartina foliosa*).
- Middle marsh habitat occupies the elevations between mean high water and mean higher high water and is dominated by common pickleweed (*Salicornia sp.*). Middle marsh is predominant outboard of the perimeter levee and is inundated frequently throughout each month, although for shorter periods than low marsh.
- High transitional marsh habitat occupies the elevations between mean higher high water and the highest tide level; this habitat is inundated infrequently and for short periods. High marsh habitat occupies a narrow strip along the bay side of the levee and supports plant species that are tolerant of saline conditions, but have not adapted to frequent, long-term inundation, including salt grass (*Distichlis spicata*), alkali heath (*Frankenia salina*), fat-hen salt plant (*Atriplex fatula*), and gum plant (*Grindelia sp.*). The tidal coastal

salt marsh community provides food, cover, and breeding habitat for many wetland-dependent wildlife species. The dense vegetation and large invertebrate populations typically associated with salt marshes provide ideal nesting and foraging conditions for a variety of bird species including rails, egrets, herons, waterfowl, and shorebirds. In addition to being important habitat for wetland-associated wildlife, the salt marsh community is also a crucial component of the San Pablo Bay ecosystem, providing nutrients and organic matter to the mudflats and open water of the bay. These, in turn, are important habitats for a variety of waterfowl, shorebirds, and other water birds. Wildlife species observed in this habitat include double-crested cormorant, great blue heron (*Ardea herodias*), great egret, American coot (*Fulica americana*), killdeer, northern harrier (*Circus cyaneus*), black rail, California clapper rail, and San Pablo song sparrow. Other species expected to use coastal salt marsh habitat include the longfin smelt, small fish, invertebrates, raccoon, shrews, salt marsh harvest mouse (*Reithrodontomys raviventris*), mallard (*Anas platyrhynchos*), sora (*Porzana carolina*), Virginia rail, the endangered California brown pelican (*Pelecanus occidentalis californicus*), salt marsh yellowthroat (*Geothlypis trichas sinuosa*), and willet (*Catoptrophorus semipalmatus*).

Brackish marsh occurs along portions of the ODD. Because marsh vegetation associated with ditches occurs in narrow linear bands, these habitat areas typically support a lower diversity of wildlife than do larger, more contiguous units of brackish marsh. Drainage ditch banks and channels also provide foraging habitat and cover for species such as herons, egrets, and dabbling ducks, and movement corridors for striped skunks, raccoons, and other species.

SECTION 4

EBS Investigation Results

The results of investigations on the Main Airfield Parcel are summarized in the following sections:

- **Section 4.1:** Categorization Factor Findings: New Areas Identified by EBS Investigation. Identifies areas of potential concern not addressed in previous studies.
- **Section 4.2:** Categorization Factor Findings: Previously Identified Sites. Summarizes investigation results for previously identified sites in the Main Airfield Parcel.
- **Section 4.3:** Adjacent or Surrounding Property. Evaluates adjacent properties for potential sources of contamination to the Main Airfield Parcel.
- **Section 4.4:** Disclosure of Non-CERCLA Issues. Summarizes findings for non-CERCLA issues pertaining to the Main Airfield Parcel.

4.1 Categorization Factor Findings: New Areas Identified by EBS Investigation

No new potential areas of hazardous substance use, storage, disposal, or release were identified for the Main Airfield Parcel during preparation of this EBS.

4.2 Categorization Factor Findings: Previously Identified Sites

Previously identified areas of environmental concern within the Main Airfield Parcel are summarized below.

A number of studies conducted on the Main Airfield Parcel including the RI, the Interim Removal Actions, and the Remedial Design Investigation identified whether the Main Airfield Parcel sites were affected by past operations.

The investigation and remedial efforts established thresholds to determine the extent of contamination and whether additional studies or actions were necessary. These terms are used appropriately throughout the document to describe these activities and to summarize the results of each investigation.

The definitions of these thresholds are described below:

Stepout Criterion – a level of contaminant concentration established during the RI to determine when stepping out or additional excavation was required for evaluating total petroleum hydrocarbons (TPH) contamination.

Baseline Concentration - the cumulative concentration of an analyte present in soil due to both natural occurrence and anthropogenic activities that are unrelated to activities

conducted at a site. Used throughout the RI to represent background concentrations for metals and PAHs.

Interim Removal Action Guidance Levels or Guidance Levels – concentrations of specific contaminants used to establish excavation limits during interim removal actions. Regulatory agencies and resource trustees recommended these levels. These levels were not used as strict clean up goals.

Environmental Action Contaminant Concentration Goals (Action Goals)–were established in the Record of Decision/Remedial Action Plan (ROD/RAP) to protect wetland receptors (U.S. Army, 2003). The action goals are based primarily on site specific ambient concentrations, in combination with RWQCB-developed numbers for San Francisco Bay Ambient sediments in combination with NOAA-Fisheries (formerly National Marine Fisheries Service) effects-range low (ERL) sediment concentrations.

In May 2003 the Army and regulatory agencies prepared a ROD/RAP for the Main Airfield Parcel. The ROD/RAP recommends the environmental response actions to be taken by the Army BRAC restoration program and additional environmental assurances to be provided by the Army Civil Works Program through the Hamilton Wetland Restoration Project (HWRP) to address potential risks associated with residual contaminants on the Main Airfield Parcel and restoration of a wetland at HAAF. The remedy recommendations in the ROD/RAP were used in categorizing the sites for this EBS.

4.2.1 Petroleum Use and Storage, Release, and Remediation

Petroleum products and derivatives were used throughout the Main Airfield Parcel. Primarily these substances were used to supply fuel to generators and pumps and for maintenance aircraft activities, aircraft staging, and refueling. Fuels were also used for an engine test pad and firefighter training area. Fuels and petroleum hydrocarbons were used, stored, and released in these areas summarized below.

4.2.1.1 Building 20

Petroleum Use and Storage

The Building 20 area contained one UST located on the south side of the building (Table 4-1). The UST supplied diesel fuel to the generator that was located in the building (IT, 1999a).

TABLE 4-1
Fuel Storage Tanks at Building 20
Environmental Baseline Survey, Hamilton Army Airfield

Building	Tank Type	Tank Size (gallons)	Contents	Current Status
20	UST	Was not defined by the records review	Diesel fuel	Removed

Petroleum Release

Investigation activities at Building 20 were conducted to assess potential environmental impact from fuels stored in the UST. Details from the activities and sampling activities are summarized below.

A scoping visit was conducted by IT in June 1996. At Building 20, a 4-foot by 4-foot area of stained soil was found, located approximately 10 feet west of the building. A strong petroleum odor was noted, and several metal pipes were observed in the vicinity of the building. The survey concluded that the UST at Building 20 had been removed previously. RI activities were conducted to assess environmental impacts to this area from the UST. The investigation also characterized the area of stained soil identified by IT during the 1996 UST/AST investigation. Confirmation sampling was performed to identify the nature and extent of contamination resulting from the storage and use of the UST at Building 20.

During the RI, one surface soil sample was collected from the stained soil west of the building and analyzed for TPH purgeables (TPH-P), TPH extractables (TPH-E), benzene, toluene, ethylbenzene, and xylenes (BTEX), lead, and PAHs. During sample collection, refusal was encountered between 1 to 2 feet below ground surface (bgs). Subsequent excavation located a UST, which was exposed and found to contain a liquid product. Two soil samples were collected from the excavated area surrounding the UST and sampled for TPH-P, TPH-E, BTEX, PAHs, and lead at a depth of 3.5 to 4.5 feet bgs. A groundwater sample was also collected from the excavation and sampled for TPH-E, TPH-P, BTEX, PAHs, and lead (IT, 1999a).

One surface soil sample and one of two excavation soil samples contained unknown extractable hydrocarbon (UHE) and unknown purgeable hydrocarbon (UHP) above the step-out criteria. Therefore, four step-out soil samples were collected to evaluate the extent of potential impact. Samples were collected at depths of 1.5 to 2.5 feet bgs, 5.5 to 6.5 feet bgs, and 10.5 to 11.5 feet bgs and were analyzed for TPH-P, TPH-E, BTEX, PAHs, and lead. Samples from the four step-out soil borings had no detectable petroleum hydrocarbons. Lead was detected above its soil baseline concentration in samples directly beneath the former tank location and in step-out samples above 2.5 feet bgs. Lead concentrations in deeper samples from all of the step-out soil borings were below soil baseline concentrations (IT, 1999a).

The UST excavation extended downward to 10 feet bgs, and samples were collected at 5 and 10 feet bgs in the excavation area and analyzed for TPH-P, TPH-E, BTEX, PAHs, and lead. The 5-foot-bgs sample contained UHE above the step-out criterion; however, the 10-foot-bgs sample did not reveal detectable petroleum hydrocarbons or lead concentrations in excess of soil baseline concentrations. The excavation pit water sample resulted in detections of UHE, UHP, and lead. The concentrations were not suspected to be representative of the groundwater outside of the UST excavation area, because the water was in contact with soil contaminated with UHE, UHP, and lead (IT, 1999a).

The RI identified samples with elevated levels of UHE and UHP above interim removal action guidance levels, as described above. The maximum concentrations were 71,000 milligrams per kilogram (mg/kg) for UHE and 670 mg/kg for UHP. These constituents were found in the same sample located near the southwest corner of the former UST, 1 foot bgs adjacent to the UST fill port (IT, 2000b).

Petroleum Remediation

The following interim removal activities were conducted at Building 20. Details from the interim removal actions are summarized below.

When the tank was removed, no holes or cracks were observed in the tank or piping. Site restoration of the excavation effort included abandonment of the step-out soil borings by filling them with grout and backfilling the pothole with previously excavated material.

Tank removal was conducted under Marin County guidance/oversight (IT, 1999a).

An interim removal action was conducted at Building 20 in 1998. Approximately 150 cubic yards of soil were removed from an approximately 420-square-foot area to a depth of 10 feet bgs within an area located immediately adjacent to the southwest edge of Building 20. The area of excavation included the former tank location and the sample locations beneath the tank that had exceeded interim removal action guidance levels. An existing soil stockpile (approximately 100 cubic yards) remaining from past removal activities, located immediately adjacent to the excavation, was removed during the interim removal action. Soil from the Building 20 excavation was transported to an offsite Class II disposal facility (IT, 2000b).

Eight confirmation samples were collected from the final excavation and two from the footprint of the stockpile after its removal. Confirmation samples were analyzed for TPH-P, TPH-E, BTEX, PAHs and metals. Only metals (i.e., lead) were detected below the interim removal action guidance levels (IT, 2000b).

The Focused Feasibility Study (FFS) determined that no contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action (CH2M HILL, 2003a). The ROD/RAP recommends no further action for this site (U.S. Army, 2003).

4.2.1.2 Building 26

Petroleum Use and Storage

The Building 26 area contained one diesel fuel UST located on the west side of the building (adjacent to the south side of the transformer pad, which was also located on the west side of the building) and one AST located inside the building (Table 4-2). The USACE Environmental Design Section identified the UST and the AST in March 1994, during a basewide site visit. The UST vent pipe was found on the exterior of the building, and an empty AST was found inside the building. The UST and AST supplied diesel fuel for Building 26 activities (IT, 1999a).

TABLE 4-2
Fuel Storage Tanks at Building 26
Environmental Baseline Survey, Hamilton Army Airfield

Building	Tank Type	Tank Size (gallons)	Contents	Current Status
26	UST	1,000	Diesel fuel	Removed between 1994 (March) and 1995 by IT ^a
26	AST	150-300 ^b	Diesel fuel	Removed ^a

^a IT, 1999a

^b Defined by site interview

Petroleum Release

Investigation activities at Building 26 were conducted to assess potential environmental impact from fuels stored in the UST and AST. Details from the RI activities and sampling activities are summarized below.

During the RI, site reconnaissance and exploratory trenching indicated that a UST had previously been removed. A trench was excavated to 4 to 5 feet bgs in fill material at the suspected former UST location. No UST was found; however, approximately 10 linear feet of suspected fuel piping were uncovered and removed. No visible indications of fuel impact were noted in the trench. One soil sample was collected from the bottom of the excavated piping trench at 5.5 feet bgs, and one sample was collected from 6 inches below the bottom of the piping trench. Both samples were analyzed for TPH-P, TPH-E, BTEX, PAHs, and lead. Groundwater was not encountered in the excavation (IT, 1999a).

The sample from the piping trench resulted in no detectable petroleum hydrocarbons. The sample collected infill at 5.5 feet bgs in the UST exploratory trench contained UHE (770 mg/kg) above the step-out criterion; therefore, the trench was extended downward to 10 feet bgs. One sample was collected at the bottom of the pothole and analyzed for TPH-P, TPH-E, BTEX, PAHs, and lead. Four step-out potholes were excavated at locations 20 feet away from the original excavation. Soil samples were collected at 5 feet bgs and 10 feet bgs in each pothole and analyzed for TPH-P, TPH-E, BTEX, PAHs, and lead. No groundwater was encountered in the potholes (IT, 1999a).

Step-out pothole samples had no detections of UHE in excess of the step-out criterion, with one exception. One soil sample from the 5-foot-bgs sample contained UHE (370 mg/kg) above the step-out criterion; however, UHE was not detected in the 10-foot-bgs sample from the same location.

The horizontal extent of soil potentially impacted with fuel is not defined southwest of the former UST location at Building 26. However, the concentration of UHE at this location, 20 feet from the former UST location, is approximately 50 percent of the maximum concentration at the former tank pit (770 mg/kg) (IT, 1999a).

Petroleum Remediation

The following interim removal activities were conducted at Building 26. Details from the interim removal actions are summarized below.

The RI concluded that a UST at Building 26 had been removed previously between 1994 and 1995, based on the documentation for previous surveys. Site restoration activities from the remedial investigation previously described included backfilling all trenches and potholes with the previously excavated material (IT, 1999a).

The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy to address residual petroleum in soil at this site (U.S. Army, 2003). The FFS determined that no other contaminants were identified as a concern at this site (CH2M HILL, 2003a).

4.2.1.3 Building 35/39 Area

Petroleum Use and Storage

The Building 35/39 Area contained two ASTs, one located at the northeast corner of Building 35 and the other located southeast of Building 39 (Table 4-3). The pump station had ASTs located at Building 35/39 to provide diesel to fuel the pumps in the event of a power outage (IT, 2000a).

TABLE 4-3
Fuel Storage Tanks at Building 35/39
Environmental Baseline Survey, Hamilton Army Airfield

Building	Tank Type	Tank Size (gallons)	Contents	Current Status
35	AST-6	2,000 ^a	Diesel fuel	Removed in 1999 by Cerrudo Services
39	AST-5	2,000 ^b	Diesel fuel	Removed in 1999 by Cerrudo Services

^a Assumed to be the same capacity as AST-5 from visual comparison of figures during records review

^b Tank capacity was referred to in WC 1995 CAP

Petroleum Release

Investigation activities at Building 35/39 were conducted to assess potential environmental impact from fuels in the ASTs. Details from the RI activities and sampling activities are summarized below.

Results from a previous ESI investigation (ESI, 1993) indicated that the soil around the ASTs at Buildings 35 and 39 contained detections of lead, PAHs, and toluene above soil baseline concentrations. The only other detections in the pump station area were pesticides and metals in sediment at the outfalls and pesticides, diesel, PCBs, PAHs, and metals at the Building 35 sump. The objective of the RI was to characterize sediment at the Building 35 outfall. Results indicated that sediment at the Building 35 outfall contained pesticides (IT, 1999a). See Section 4.4.7 for pesticide discussion.

Petroleum Remediation

The following interim removal activities were conducted at Building 35/39. Details from the interim removal actions are summarized below.

Excavation and confirmation sampling were conducted southeast of Building 39 as part of the 1998 interim removal actions downslope of AST-5. The excavation was based on a sample collected in 1991. The sample contained petroleum hydrocarbons at 166,000 mg/kg in the surface soils. Approximately 50 cubic yards of soil were excavated to a depth of 5 feet bgs to remove elevated diesel and PAH concentrations (IT, 2001a). Soil from the excavation was transported to an offsite Class II disposal facility (IT, 2000b).

Four sidewall confirmation samples and one bottom confirmation sample were collected from the Building 39 excavation and analyzed for TPH-E, PAHs, and lead. Total petroleum hydrocarbons were detected in the north sidewall sample and the bottom sample (250 mg/kg and 110 mg/kg, respectively). After completion of excavation and sampling, a 1-foot-thick layer of bunker rock was placed over a geotextile fabric in the excavation

bottom, and onbase borrow material was placed over the bunker rock to backfill the excavation (IT, 2001a).

To identify future remedial action limits for 1999 remedial actions, five soil borings were drilled and sampled adjacent to Building 35 and AST-6 during the 1998 interim removal actions. Two borings were located along the southeast edge of AST-6 and drilled beneath the AST-6 concrete pad. Two additional borings were drilled along the northeast edge of Building 35, and one boring was drilled at the northeast corner of the AST-6 pad. Diesel and UHE exceeded the interim removal action guidance level in two boring samples. Diesel was detected at 5,500 mg/kg at 5.5 feet bgs in the boring located on the southeast edge of AST-6. UHE was detected at 96 mg/kg from 5.5 feet bgs in the boring located at the northeast corner of AST-6 (IT, 2000b).

During the 1999 interim removal actions, AST-5 and -6 were removed by Cerrudo Services, and approximately 332 cubic yards of soil were excavated by IT from a 1,200-square-foot area to a depth of 7.5 feet bgs from the area around former AST-6. Because of stability issues at the discharge pipe and concrete sump, the excavation was kept 5 feet from the footings of both structures; therefore, the impacted soil was removed to the greatest extent practicable. Ten confirmation samples were collected (two from each sidewall and the bottom of the excavation) and sampled for TPH-E, pesticides, and lead. Pesticides and UHE were detected above their interim remedial action guidance levels on the southeastern side of the excavation, and UHE also was detected above its guidance level on the west-southwestern side of the excavation. Both samples with exceedances were located on the sidewall closest to the Building 35 sump and the discharge pipe (IT, 2000a).

Because of stability concerns, the impacted soil in these areas (by the sump and discharge pipe) has been removed to the greatest extent practical. The excavation was backfilled with onsite borrow material to original grade immediately after confirmation samples were collected to protect the integrity of the levee, discharge pipe, and sump (IT, 2000a).

The FFS determined that no contaminants related to petroleum storage, release, or disposal at this site are present at concentrations that require remedial action (CH2M HILL, 2003a). The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy to address contaminants other than petroleum at this site (U.S. Army, 2003). (See Section 4.2.3.2)

4.2.1.4 Building 41 Area

Petroleum Use and Storage

The Building 41 Area contained two ASTs located 10 feet west of Building 40 and 10 feet east of Building 41, and two USTs located on the northwestern side of Building 41 (Table 4-4). The former ASTs and USTs supplied diesel fuel to the pumps at the building.

Petroleum Release

Investigation activities at Building 41 were conducted to assess potential environmental impact from fuels stored in the ASTs and USTs. Details from the RI activities and sampling activities are summarized below.

TABLE 4-4
 Fuel Storage Tanks at Building 41
Environmental Baseline Survey, Hamilton Army Airfield

Building	Tank Type	Tank Size (gallons)	Contents	Current Status
41	AST	Was not defined by the records review	Diesel fuel	Removed
41	AST	Was not defined by the records review	Diesel fuel	Removed
41	UST	1,100	Diesel fuel	Removed in 1995 by ATG ^a
41	UST	1,100	Diesel fuel	Removed in 1995 by ATG ^a

^a ATG: Applied Technology Group

During the RI, soils around the ASTs at Buildings 40 and 41 were potentially impacted with fuel. The horizontal extent was approximately 20 feet, and the vertical extent was approximately 5 feet bgs. One previous investigation sample between the perimeter ditch and Building 40 suggested that the lateral extent may have been greater than 20 feet in the direction of the perimeter ditch (IT, 1999a).

Four soil borings were drilled around the former location of the USTs at distances of 7 to 15 feet from the corners of the UST excavation, and samples were collected at various depths (1.5 to 15 feet bgs). The samples were analyzed for TPH-P, TPH-E, BTEX, PAHs, and lead. UHE was detected (1,100 mg/kg) above its step-out criterion, and lead was detected above its soil baseline concentration in a sample collected from the southwestern side of the USTs at a depth of 8 feet bgs. UHE was not detected at the 15 feet bgs sample location within this boring (IT, 1999a).

A step-out pothole was excavated and sampled to evaluate the westward extent of potential impact. A stepout pothole sample was collected from an area located across the PDD, to determine the westward extent of fuel contamination. Pothole samples were collected from three depth intervals ranging from 2.5 feet to 10 feet bgs and analyzed for TPH-P, TPH-E, BTEX, lead, and PAHs. Lead was detected below its baseline concentration.

Results from the RI indicated that the potential impact of fuel in soil resulting from leakage or spillage at the former UST location at Building 41 is limited to 20 feet laterally and between 2.5 and 15 feet bgs vertically. The highest concentration of fuel is located at the southwest corner of the former UST location, near the junction of the perimeter drainage ditch and the Building 41 sump (IT, 1999a).

Four monitoring wells (MWs), PSA-MW1 through PSA-MW4, were installed by WCFS (WCFS, 1996) in the vicinity of Building 41. During the RI, one groundwater sample was collected from monitoring well PSA-MW3 located southeast of Building 41 and analyzed for metals, PAHs, pesticides, PCBs, TPH, and volatile organic hydrocarbons (VOCs). The groundwater sample contained two metals and UHE at a concentration of 0.094 milligram per liter (mg/L) (IT, 1999a).

The investigations at Building 41 were also intended to evaluate the potential petroleum hydrocarbon impact to sediment at the Building 41 pump outfall. Two sediment samples were collected at the outfall from the Building 41 pump. The outfall is located about 120 feet east-southeast of the building in the outfall drainage ditch. The samples were collected at depths of 6 inches and 1 foot bgs and analyzed for PCBs and pesticides. Analytical results for outfall sediment samples included only DDE at 1 foot bgs (IT, 1999a).

Petroleum Remediation

The following removal activities were conducted at Building 41. Details from the removal actions are summarized below.

The Building 41 area had two USTs that were abandoned prior to the mid-1970s and were removed by ATG in 1995 (IT, 1999a). When the USTs were removed, holes were observed in each tank. Soil samples collected in the excavation showed detections of diesel ranging from 140 to 7,600 mg/kg. Excavated soil was replaced into the excavation on a sheet of plastic. Analytical data collected from borings during the 1998 interim removal actions indicate that concentrations of TPH-E were present in the soil. The 1999 interim removal actions removed the previously excavated soil and additional soil identified by the boring samples collected during the 1998 interim removal actions (IT, 2000a).

Excavation and confirmation sampling were conducted west of Building 40 and 100 feet south of Building 41 at the former AST location during the 1998 interim removal actions. Approximately 250 cubic yards of soil were excavated to a depth of 5 feet bgs. Soil from the excavation was transported to an offsite Class II disposal facility (IT, 2000b).

Four sidewall confirmation samples and one bottom confirmation sample were collected from the excavation and analyzed for TPH-E, PAHs, and lead. UHE was detected in the excavation from two sidewall samples (south and east) and a bottom sample (620, 3,100, and 360 mg/kg, respectively). Lead was detected below its interim removal action guidance level. After completion of excavation and sampling, a 1-foot-thick layer of bunker rock was placed over a geotextile fabric in the excavation bottom, and onbase borrow material was placed over the bunker rock to backfill the excavation (IT, 2001a).

To identify future remedial action limits for 1999 remedial actions, three soil borings were drilled and sampled north of Building 41 during the 1998 interim removal actions. Two soil borings were located along the north edge of Building 41 and angled under the building foundation. One boring was located approximately at the midpoint of the north edge of Building 41 and one was at the northwest building corner. A third boring was drilled immediately northeast of the confluence of the PDD and the inlet structure to the Building 41 sump and angled to the south and west toward the inside corner of the confluence. UHE exceeded the interim removal action guidance level in two boring samples. UHE was detected at 1,300 mg/kg from 15.5 feet bgs at the midpoint of the north edge of Building 41. UHE was also detected at 620 mg/kg from 3.8 feet bgs at the confluence of the PDD and the sump inlet. Several PAHs were detected above interim removal action guidance levels in the two samples from one boring. PAHs were detected from 12 feet and 15.5 feet bgs at the midpoint of the north edge of Building 41. The highest PAH concentration was 49 mg/kg for naphthalene in the 15.5-foot sample (IT, 2000b).

Excavation and confirmation sampling were conducted east of Building 41 at the other former UST location during the 1999 interim removal actions (IT, 2000a). Approximately 490 cubic yards of soil were removed to a depth of 9 feet bgs from an approximate 1,500-square-foot area. Because of stability issues, the excavation remained at least 5 feet from the building footings and the wall of the lined PDD to protect the integrity of these foundations (IT, 2001a). The plastic that had been placed in the previous excavation after the removal of the USTs was located during the removal. Based on the location of the plastic, the boundaries of the excavation were modified slightly to ensure removal of all of the previously excavated soil. The soil and the plastic were both removed and disposed (IT, 2000a).

Thirteen confirmation samples were collected from the excavation (five bottom samples and eight sidewall samples) and analyzed for TPH. Seven of the samples (two bottom samples and five sidewall samples) had detections of TPH-E (ranging from 110 to 1,200 mg/kg) exceeding the interim removal action guidance level (IT, 2001a).

In December 2001, Building 41 and its subsurface structures were demolished and soil was excavated from five distinct areas (the areas were identified as the North Excavation, West "L" Excavation, PDD Bank Excavation, South Excavation, and Transformer Pad Excavation) near Building 41. The soil was transported offsite for appropriate disposal. The analytical results of the soil removal activities are provided in *Final Construction Report Building 41 Demolition and Soil Removal, Spoils Pile F Removal, and Revetments 6 and 7 Removal* (IT, 2003). After reviewing the analytical data from that event, the Army and regulatory agencies agreed that some additional samples are needed to determine whether the remedial actions are complete. Therefore, the ROD/RAP evaluated the site as though the actions had not yet taken place.

The ROD/RAP recommends excavation and offsite disposal as the remedy to address residual petroleum and other contaminants in soil at this site (U.S. Army, 2003). The FFS determined that remedial action is required to protect future wetland receptors (CH2M HILL, 2003a).

4.2.1.5 Building 82/87/92/94 Area

Building 82

Petroleum Use and Storage

Because of maintenance aircraft activities at Building 82, the use and storage of petroleum hydrocarbons occurred at this building and Storage Area 3 associated with this site.

Petroleum Release

Investigation activities at the Building 82/87/92/94 area were conducted to assess potential environmental impact from the storage of petroleum hydrocarbons. Details from the RI activities and sampling activities are summarized below.

The RI identified soil northeast of the transformer pad that was impacted by fuel hydrocarbons from an unknown source. The RI identified a layer of green staining, and a petroleum odor was noted, apparently emanating from the fill in each investigative pothole. Because of these observations, an additional sample was collected from the stained fill in each pothole and analyzed for TPH-E, TPH-P, BTEX, PAHs, and lead. UHE was detected in two of the pothole samples. UHE in exceedance of the step-out criterion was detected in one

pothole at a depth of 2 feet bgs (IT, 1999a). The UHE was detected at a concentration of 3,700 mg/kg in the pothole sample 10 feet northeast of the transformer pad (IT, 2000b). The vertical extent of petroleum hydrocarbon contamination was 6 feet bgs. The horizontal extent was expected to be less than 20 feet, based on low hydraulic conductivity values for soil on the Main Airfield Parcel (IT, 1999a).

Groundwater in the vicinity of Building 82 was not impacted with fuel; however, the existing wells were crossgradient from the transformer pad rather than downgradient. The downgradient impact is unknown. Groundwater occurs at 3 to 6 feet bgs (IT, 1999a).

The Army conducted an additional soil and groundwater investigation at Building 82 in September 2002 (Cerrudo Services, 2002). Soil and groundwater samples were collected inside and outside of Building 82 and analyzed for TPH constituents and BTEX. Based upon the results from this study, the Army and regulatory agencies agree no further action for groundwater is necessary at this site.

Petroleum Remediation

The following interim removal activities were conducted at Building 82. Details from the interim removal actions are summarized below.

During the 1998 removal activities, approximately 170 cubic yards of soil were excavated to a depth of 4 feet bgs. The area of excavation included the Building 82 transformer pad area and the sample locations that exceeded interim removal action guidance levels for UHE. Analysis for TPH-P was included as a sampling parameter during confirmation sampling, based on odor observed by the sample crew during confirmation sampling.

Ten confirmation samples (seven sidewall and three bottom samples) were collected from the excavation and analyzed for TPH-E and TPH-P. UHE and UHP were detected above their interim removal action guidance levels at depths ranging from 2.5 to 4.5 feet bgs on the south, southeast, and northwest edge of the transformer pad. Maximum detected concentrations were 930 mg/kg for UHE and 340 mg/kg for UHP.

The 1999 interim removal action consisted of additional excavation at Building 82, based on the 1998 confirmation sample results. The excavation at Building 82 removed approximately 317 cubic yards of soil to a depth of 4.5 to 6.5 feet bgs. During the excavation activities, an area of blue-green stained soil with a fuel-like odor was discovered. This soil was at the bottom of the original excavation limit (5 feet). The stained soil appeared to follow beneath an old clay sewer pipe. Two exploratory samples were collected and analyzed for TPH-E, TPH-P, and BTEX. These samples were used to direct further excavation at Building 82 (IT, 2000a).

Based on the sample results, the excavation was extended laterally along the sewer pipe until the stained soil was removed, and vertically to the black layer of Bay Mud on the bottom. This extended the depth of the excavation by an additional 1 to 1.5 feet bgs. Exploratory samples, as well as any apparently contaminated soil, were removed from the excavation. Contamination appeared to continue in a northeast direction at the northwest corner of Building 82. Therefore, soil continued to be removed in that direction. Two additional potholes along the sewer pipe to the south of the main excavation were excavated to 7 feet bgs to investigate the extent of petroleum hydrocarbon impact along the sewer line

trench. No visual evidence of contamination was present in the potholes. Groundwater was present in the potholes (IT, 2000a).

Three temporary wells were installed in the Building 82 excavation and potholes. One temporary well was placed in the main excavation and one in each of the two potholes to the southeast of the main excavation. Under the direction of the USACE the two southernmost temporary wells (located in the potholes) were sampled and analyzed for TPH-E. The well between the southernmost pothole and the main excavation had a concentration of TPH-E at 300 micrograms per liter (ug/L), which is below established water screening levels. These wells were left in place after the 1999 interim removal actions to allow for future monitoring (IT, 2000a).

Four confirmation samples were collected from the excavation: one sidewall, two bottom samples, and one pothole soil sample. The samples were analyzed for TPH-E and TPH-P. All four samples have residual concentrations of diesel below their interim removal action guidance levels at depths ranging from 0.5 to 7 feet bgs. After the confirmation samples were collected, the excavation was backfilled with the previously removed clean fill and additional fill from the onsite borrow area. The fill was brought to ground surface and graded for proper drainage (IT, 2000a).

Building 87

Petroleum Use and Storage

Because of maintenance aircraft activities at Building 87, the use and storage of petroleum hydrocarbons occurred at this building and Storage Area 3 associated with this site.

Petroleum Release

No RI activities were conducted at Building 87, because the results of previous investigations adequately characterized the site. In a 1993 investigation conducted by ESI, soil samples were collected from the test pits and storm drain sediment. Three soil borings and monitoring well AM-MW-104 were drilled. Results of the soil sampling indicated metals were above their soil baseline concentrations. PAHs, metals, and VOCs were detected in the sediments; the concentrations of PAHs and metals were above their soil baseline concentrations. TPH was not detected. Metals also were detected in the groundwater (IT, 1999a).

Petroleum Remediation

Remediation activities were not performed at Building 87.

Building 92/94 Area

Petroleum Use and Storage

Because of maintenance aircraft activities at Buildings 92 and 94, the use and storage of petroleum hydrocarbons occurred at these buildings and Storage Area 3 associated with this site.

Petroleum Release

RI activities were conducted at Buildings 92/94 to address the potential impacts to soil from PCBs. See Section 4.2.3 for PCB discussion. Samples were collected from each PCB investigative pothole during the step-out sampling, because a green-stained rocky fill was observed at the base of the fill. Fuel hydrocarbons were not detected in the samples of stained fill, and lead was detected below its soil baseline concentration (IT, 1999a).

Petroleum Remediation

The following interim removal activities were conducted at Buildings 92 and 94. Details from the interim removal actions are summarized below.

Interim removal actions took place at the Building 92/94 Area transformer pad. During the excavation activities in the area of Buildings 92 and 94, approximately 125 cubic yards of PCB-impacted soil were removed to a depth of 4 feet bgs. The transformer pad and switches were also removed during excavation activities. The excavations were backfilled.

Additionally, numerous locations in the vicinity of the Building 82/87/92/94 Area were sampled along the storm drain line during RI activities. Pothole samples were conducted along the storm drain line (IT, 1999a) in locations having potential for exfiltration based on video logging results (IT, 2001a).

The FFS determined that no contaminants related to petroleum storage, release, or disposal at this site are present at concentrations that require remedial action (CH2M HILL, 2003a). However, the ROD/RAP recommends manage in situ with monitoring and maintenance as a remedy to address other residual contaminants at the Building 82/87/92/94 site (U.S. Army, 2003). (See Section 4.2.3.3)

4.2.1.6 Building 86

Petroleum Use and Storage

Because of maintenance aircraft activities at Building 86, the use and storage of petroleum hydrocarbons occurred at Building 86 and Storage Areas 1 and 2.

Petroleum Release

Investigation activities at the Building 86 area were conducted to assess potential environmental impact from the storage of petroleum hydrocarbons. Details from the RI activities and sampling activities are summarized below.

RI activities were conducted at Building 86 to address the impacts of TPH and other chemicals to the soil and the potential to impact groundwater at monitoring well AM-MW-101. Five soil borings were collected from an area adjacent to the linear, grate-covered storm drains inside Building 86, and an exterior boring was made along the linear, grate-covered drain located southeast of the building. Soil samples were also collected from the western corner of Building 86 and from storm drain SD-1 located on the west side of the building. Surface soil samples were collected from beneath the concrete around the transformer located on the southwest corner of the building, and a groundwater sample was collected from monitoring well AM-MW-101 (IT, 1999a).

Results of the sampling along the interior and exterior drains returned detections of UHE and UHP at concentrations below their step-out criteria, lead concentrations below its soil baseline concentration, and one PAH above its soil baseline concentration. The other samples collected from the west side of Building 86, along storm drain SD-1, resulted in UHE and UHP detections above their step-out criteria, and lead was detected above its soil baseline concentration. Fuel was not detected in step-out samples to the north, east, and west at this location. Fuel was also not detected in shallow 2-foot-deep potholes from previous investigations to the northwest, south, and southeast. Soil samples at other

locations in the vicinity of Building 86 were not impacted (IT, 1999a). Metals and UHE were detected in the groundwater.

Groundwater

In 1993, ESI installed four groundwater monitoring wells. Wells AM-MW-101, -102, and -103 were located on the northwest and southwest sides of Building 86, and well AM-MW-104 was installed alongside the storm drain alignment near Building 87. Groundwater samples collected from the four monitoring wells were analyzed for VOCs, semivolatile organic compounds (SVOCs), and metals. Thirteen metals were detected in the wells. Four organic compounds were reported, two in AM-MW-101 and two in AM-MW-103; no organic compounds occurred in the samples from AM-MW-102 and -104 (IT, 1999a).

In 1995, WCFS installed monitoring wells AMA-MW1 and -MW2 alongside the perimeter road east of Building 87 and ESI's well AM-MW-104 (WCFS, 1996). Groundwater samples from the two new wells were analyzed for metals and organics. Analytical results showed detections of eight metals, four of which had previously been reported in AM-MW-104. No organic compounds were detected in the WCFS wells (WCFS, 1996), nor were any reported for AM-MW-104 (ESI, 1993; IT, 1999a).

During the RI, a groundwater sample was collected from existing monitoring well AM-MW-101 and analyzed for TPH-P, TPH-E, VOCs, BTEX, PAHs, pesticides, PCBs and metals. The groundwater sample from well AM-MW-101 contained UHE and no other organic compounds. The previous investigation (ESI, 1993) found two organic compounds in groundwater from AM-MW-101 but no UHE. The sample also contained five metals, four of which had previously been reported in groundwater from this well. The UHE detected in groundwater may be related to the UHE detected in the soil at this location (IT, 1999a).

Petroleum Remediation

The following interim removal activities were conducted at the Building 86 area. Details from the interim removal actions are summarized below.

In 1995, IT removed TPH-impacted soil from Outparcel A-6 and a small adjoining area of the Main Airfield Parcel located within 30 feet of Building 86 (IT, 1999a). During the GSA Phase I Sale Area remediations, some of the soil was removed from the BRAC Outparcel A-6.

During the 1998 removal activities, a storm drain investigation was conducted at Building 86. Ten soil boring locations were drilled and sampled along the storm drain line SD-1 to the south of Building 86, approximately 1 foot and 5 feet below the bottom of the storm drain line. Shallow samples were also taken from the fill material adjacent to the storm drainpipe in five of the 10 soil borings. Shallow samples were not collected in the remaining soil borings because their location was adjacent to catch basins. All soil boring samples were submitted for laboratory analysis for TPH-E, TPH-P, PAHs, and metals. One soil boring sample contained detections of PAH above interim removal action guidance levels located at 1 foot bgs (IT, 2000b).

The FFS determined that no contaminants related to petroleum storage, release, or disposal at this site are present at concentrations that require remedial action (CH2M HILL, 2003a).

However, the ROD/RAP recommends manage in-situ with monitoring and maintenance to address other residual contaminants at this site (U.S. Army, 2003). (See Section 4.2.3.5.)

4.2.1.7 East Levee Generator Pad

Petroleum Use and Storage

The East Levee Generator Pad is located midway between the FSTP and the southern end of the runway. The East Levee Generator Pad was reported to have contained a 55-gallon drum and a former AST located on a concrete slab adjacent to the generator pad (IT, 1999a) (Table 4-5). Both the 55-gallon drum and the AST supplied diesel fuel to the generator that was located at this site (IT, 1999a).

TABLE 4-5
Fuel Storage Tanks at the East Levee Generator Pad
Environmental Baseline Survey, Hamilton Army Airfield

Site	Tank Type	Tank Size (gallons)	Contents	Current Status
East Levee Generator Pad	Drum	55	Diesel fuel	Removed
East Levee Generator Pad	AST	Was not defined by records review	Diesel fuel	Removed

During the RI, an empty 55-gallon drum was found resting on an AST cradle on a concrete slab adjacent to the generator pad. The drum was fitted with copper tubing and apparently supplied fuel to the generator after removal of a presumed former AST (IT, 1999a).

Petroleum Release

Investigation activities at the East Levee Generator Pad were conducted to assess potential environmental impact from the storage of petroleum hydrocarbons and diesel fuel stored in the AST. Details from the RI activities and sampling activities are summarized below.

This site was investigated during the RI to evaluate potential fuel-related constituents at the former generator and AST locations. Surface soil samples were collected from areas adjacent to the nearby generator pad and analyzed for TPH-P, TPH-E, BTEX, SVOC, pesticides, PCBs, and lead. There are no wells in the vicinity of the East Levee Transformer and Generator Pads to assess any groundwater impact. Groundwater sampling was not a part of the RI activities (IT, 1999a).

Both samples collected on the north and south sides of the generator pad contained UHE above the step-out criterion. Lead and seven PAHs were also detected in the sample collected north of the generator pad; lead was also detected in the southern sample. Step-out samples were not collected to determine the extent of UHE contamination. Therefore, the lateral and vertical extent of fuel-related hydrocarbon impact in soils at this site have not been determined (IT, 1999a).

The RI identified samples with elevated levels of UHE and lead in one sample, and elevated UHE in a second sample at the East Levee Generator and Tank Pads site, as described above. The maximum UHE concentration was 300 mg/kg at a depth of 0.5 foot bgs. The

maximum lead concentration was 568 mg/kg, also at 0.5 foot bgs. Both maximum levels were from the same sample located on the southwest side of the generator pad (IT, 2000b).

Petroleum Remediation

The following interim removal activities were conducted at the East Levee Generator Pad. Details from the interim removal actions are summarized below.

Excavation and confirmation sampling were conducted beneath the generator pad as part of the 1998 interim removal actions. These activities involved the removal of the generator pad, the adjacent AST cradle and concrete slab, the empty 55-gallon drum, and approximately 380 cubic yards of impacted soil. The excavation was approximately 2,025-square-foot in area and 5 feet bgs in depth. The excavation area included the two surface sample locations from the RI adjacent to the generator pad, which contained exceedances of interim removal action guidance levels for UHE and lead (IT, 2000b).

Fifteen confirmation samples were collected from the excavation at the East Levee Generator and Tank Pads. Nine confirmation samples were collected from the sidewalls and six from the bottom. Samples were analyzed for TPH-E, PAHs, and metals. UHE and PAH were not detected in confirmation samples from the East Levee excavation. Lead and other metals were detected below their respective interim removal action guidance levels (IT, 2000b).

Soil and debris from the East Levee Generator and Tank Pad excavation was transported to an offsite Class II disposal facility. After completing the excavation and collecting confirmation samples, soil from an onsite borrow area was brought in to backfill the excavation to reestablish the integrity of the east levee at this location (IT, 2000b).

The FFS determined no contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action (CH2M HILL, 2003a). The ROD/RAP recommends no further action for this site (U.S. Army, 2003).

4.2.1.8 Onshore Fuel Line (54-Inch Drain Line, Hangar Segment, Northern Segment)

Petroleum Use and Storage

From circa 1945 until 1975, the ONSFL was used to transport aviation gasoline and, later, JP-4 liquid fuels from the Offshore Fuel System to several locations around the airfield. Before the installation of the fuel line, fuel was delivered by rail or tanker truck.

Petroleum Release

The soil beneath the board-mounted transformer, located at the booster pump station in the northeastern corner of the Main Airfield Parcel, was investigated for PCBs during the RI. PCBs were not detected. Additional sampling was also conducted along previous sample areas of the fuel line to determine the extent of fuel contamination for locations with high concentrations of fuel contamination. Results of the sampling indicated that most of the contamination is within 20 feet of the trench; however, one location required step-outs to 50 feet beyond the trench.

Petroleum Remediation

The fuel lines were removed in 1995, except for the portion from the PDD to the levee, which was removed in 1998. TPH-P, ethylbenzene, xylenes, PAHs, and lead were detected in the samples collected after removal of the fuel lines.

The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy to address residual petroleum hydrocarbons in soil at this site (U.S. Army, 2003).

4.2.1.9 Tarmac East of Outparcel A-5

Petroleum Use and Storage

The tarmac itself did not use or store petroleum. The tarmac was identified for further investigation following the delineation of a petroleum hydrocarbon and PAH plume located at Outparcel A-5 that extended northeast onto the Main Airfield Parcel. The plume, located beneath a former aircraft wash rack, was evaluated and remediated up to the Main Airfield Parcel boundary as part of the GSA Phase I project. Because the plume was found to extend northeastward beyond Outparcel A-5 onto the Main Airfield Parcel, its delineation was completed during the BRAC RI (IT, 1999a).

Petroleum Release

Investigations at the tarmac were conducted to assess potential environmental impact from Outparcel A-5. Details from the RI activities and sampling activities are summarized below.

During a previous investigation, three samples were collected 3 feet bgs located beneath the concrete taxiway at 3 feet bgs. These sample locations are now beneath the NHP levee. One sample contained UHE, detected at 1,400 mg/kg. A second sample contained UHP, detected at 2,100 mg/kg. A third sample contained UHP, detected at 1,000 mg/kg (IT, 1999a).

No previous data exist for the tarmac directly east of former Outparcel A-5. The objective of the RI was to characterize the extent of TPH-impacted soil. Investigative activities were conducted to evaluate the northeastern extent of the Outparcel A-5 petroleum hydrocarbon plume on the Main Airfield Parcel. The activities consisted of excavating potholes to collect and analyze soil samples. Soil samples were collected from three potholes located approximately 20 feet northeast of the levee adjacent to Outparcel A-5. The excavations were approximately 10 feet deep. Samples were collected from zero to 4 feet bgs, 4 feet bgs, and below 9 feet bgs. The samples were analyzed for TPH-P, TPH-E, BTEX, lead, and PAHs (IT, 1999a).

Results of the sampling indicated the PAHs were detected below soil baseline concentrations; lead was detected slightly above its baseline concentration (at a depth of 4.5 feet bgs); and UHP was detected below the step-out criterion. BTEX and TPH-E were not detected (IT, 1999a).

Petroleum Remediation

The following interim removal activities were conducted at the tarmac.

Outparcel A-5 was remediated during GSA Phase I, due to VOCs and TPH in the soil. Confirmation sampling indicated that TPH-impacted soil extended onto the Main Airfield Parcel (IT, 1999a).

Based on the remedial investigation, the maximum horizontal extent of the plume is less than 20 feet east of the levee beneath the concrete tarmac and within the levee easement. Based on previous investigations, the bulk of the impacted soil appears to be just below the concrete at 3 feet bgs. Based on results for the main Outparcel A-5 excavation, impacted soil may extend to 10 feet bgs. Groundwater in the vicinity of Outparcel A-5 is not impacted, based on data published in the *Lot 7 Closure Report* (IT, 1999a).

The FFS determined that no contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action (CH2M HILL, 2003a). The ROD/RAP recommends no further action for this site (U.S. Army, 2003).

4.2.1.10 Revetment 18/Building 15

Petroleum Use and Storage

The Revetment 18/Building 15 area contained one AST located on the north side of the building (IT, 2001a) (Table 4-6). The AST supplied diesel fuel to the generator that was stored in the building (IT, 2000b).

TABLE 4-6
Fuel Storage Tanks at Revetment 18/Building 15
Environmental Baseline Survey, Hamilton Army Airfield

Building	Tank Type	Tank Size (gallons)	Contents	Current Status
15	AST	120	Diesel fuel	Removed in 1997 by IT

Petroleum Release

Investigations at Building 15 were conducted to assess potential environmental impact from fuels stored in the AST. Details from the RI activities and sampling activities are summarized below.

During the RI, one confirmation soil sample was collected southeast of the AST in the excavation of the piping alignment at 1.5 feet bgs and analyzed for TPH-P, TPH-E, BTEX, lead, and PAHs. UHE was detected above the step-out criterion, and lead was detected above its soil baseline concentration. Because of the detections in the confirmation sample, the excavation was extended to 10 feet bgs, and soil samples were collected at 7 and 8.5 feet bgs within this pothole. Four step-out potholes were excavated approximately 20 feet away from the original excavation in four directions. The potholes were excavated to a depth of 10 feet bgs. Soil samples were collected from each pothole at depths of 5 and 10 feet bgs. A groundwater sample was collected from the step-out pothole east of the concrete pad at approximately 10 feet bgs. Groundwater was not observed at the other four potholes (IT, 1999a).

Petroleum hydrocarbon detections at Revetment 18/Building 15 consisted of two UHE detections above the step-out criterion at 1.5 feet bgs in the initial confirmation soil sample and at 7 feet bgs in the pothole at the same location. Petroleum hydrocarbons were not detected in the sample collected at 8.5 feet bgs in the initial pothole, nor in any samples from the four step-out potholes. The groundwater sample contained UHE at 72 ug/L. No other petroleum hydrocarbons were found in samples from this site (IT, 1999a).

Lead was found above its soil baseline concentration at 7 feet bgs in the initial pothole, but was detected below the soil baseline concentration at 8.5 feet bgs in the same location. All other lead concentrations, including those in the step-out potholes, were below the soil baseline concentrations (IT, 1999a).

The RI identified samples at Revetment 18/Building 15 with levels of UHE exceeding the interim removal action guidance level of 68 mg/kg, as previously described above. The maximum concentration of UHE identified during the remedial investigation was 1,200 mg/kg. Hydrocarbon-impacted soil was also found to extend to a depth of 7 feet at an adjacent location (IT, 2000b).

In 1999, a soil sample was collected beneath the pavement of Revetment 18. The sample was analyzed for TPH, PAHs, VOCs, and metals. VOCs were detected in the surface soil sample.

Petroleum Remediation

The following interim removal activities were conducted at Revetment 18/Building 15. Details from the interim removal actions are summarized below.

During the RI, the AST and approximately 8 linear feet of piping outside Building 15 were removed. Soil was excavated to a depth and width of approximately 1 foot along the piping alignment (IT, 1999a).

An interim removal action was conducted in the Revetment 18/Building 15 area in 1998. Approximately 170 cubic yards of soil were removed from an approximately 530-square-foot area to a depth of 8.5 feet bgs located immediately adjacent to the north edge of Building 15. Seven confirmation samples were collected from the final excavation (six sidewall and one bottom) and analyzed for TPH-E and lead at depths ranging from 5.5 to 9.5 feet bgs. Confirmation sampling yielded detections of these contaminants below the interim removal action guidance levels for TPH-E and lead (68 and 218 mg/kg, respectively). Lead was selected as a sampling parameter for interim removal action confirmation sampling, because of its possible association with detections of TPH (IT, 2000b).

The excavation removed UHE at levels exceeding the interim removal action guidance level of 68 mg/kg. Soil from the Building 15 excavation was transported to an offsite Class II disposal facility (IT, 2000b). Site restoration included backfilling the piping trench and potholes with the previously excavated material.

The FFS determined that no contaminants were present at levels that could pose a risk to future wetland receptors or that would require remedial action (CH2M HILL, 2003a). The ROD/RAP recommends no further action for this site (U.S. Army, 2003).

4.2.2 Petroleum and Hazardous Substance Storage, Release, and Disposal at the Revetment Areas

Petroleum issues have been identified at Revetments 5, 8, 14, 15, 17, 20, 22, 24, 27, and 28. Hazardous substance issues have been identified at Revetments 1-4, 6, 7, 9, 10-13, 16, 19, 21, 23, 25, and 26. The text below is excerpted from previous studies, which summarize investigations and remediation activities for the entire revetment area. To provide a comprehensive understanding for each revetment, Table 5-2 summarizes the findings for each individual revetment. Revetment 18 is discussed with Building 15 in Section 4.2.1.

In addition to the 28 revetments discussed above, the Archive Search Report identified 8 former revetments in the Main Airfield Parcel. Five of these were paved over during the

construction of the aircraft maintenance area, two became dirt roads, and the surrounding grass has revegetated one. These 8 former revetments have not been investigated.

4.2.2.1 Revetments 1-17 and 19-28 and Former Revetments

Use and Storage

The revetments and former revetments were historically used for aircraft staging and refueling, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area, respectively. Fuels, solvents, and vehicles were periodically ignited and doused at Revetment 10. Aircraft fueling via fuel trucks was also reported to have occurred in this area (IT, 1999a).

Release

Investigations at the revetments were conducted to assess potential environmental impact from historical activities related to petroleum hydrocarbons. Storm drain and sewer system investigations and remediation in the Revetment Area are summarized in Section 4.4.9. Details from the RI activities and sampling activities are summarized below. The 8 former revetments have not been investigated.

Revetments 1, 2, 3, 4, 7, 8, 13 Through 22, 24 Through 28 - Releases

During the 1993 ESI investigation, the degree of surface soil contamination was determined by collecting surface soil samples from the revetment pads. Five samples were collected from each area and composited at the laboratory. The samples were analyzed for SVOCs, TPH, and lead. TPH and lead were detected at Revetments 1, 2, 3, 4, 7, 8, 13 through 22, 24, and 28. Lead was detected below background levels at all of these revetments, except revetments 13 and 20, where it was detected at or slightly above background.

Bis(2-ethylhexyl)phthalate (a common laboratory contaminant) was detected at Revetments 3 and 8. SVOCs were detected in the composite samples at Revetments 7, 15, 19 (only in the duplicate sample), 20, and 27 (IT, 1999a).

Additional sampling was conducted at Revetments 17, 20, 26, and 27 in 1993. Four soil borings were drilled around each pad, and soil samples were collected at 4 to 5 feet bgs. The samples were analyzed for TPH, BTEX, and lead. TPH was detected at Revetments 17, 26, and 27. Lead was detected above baseline concentrations at Revetment 27; however, BTEX was not detected (IT, 1999a).

ESI installed two additional wells in 1993, RV-MW-103 at Revetment 20 and RV-MW-102 at Revetment 26. Two rounds of groundwater monitoring were conducted at RV-MW-103. Recharge was insufficient at RV-MW-102; therefore, the groundwater was not sampled. The groundwater samples were analyzed for TPH, BTEX, and lead. No constituents were detected in the groundwater (IT, 1999a).

RI activities were conducted at Revetments 17 and 27. Samples were collected from the revetments to obtain more accurate TPH results than previously reported. Two samples were collected at Revetment 17, and one sample was collected at Revetment 27. TPH was not detected, but lead was detected below its baseline concentration at Revetments 17 and 27 (IT, 1999a).

Revetments 1, 2, 3, 4, 7, 8, 13 Through 17, 19, 20, 21, 22, and 24 Through 28 - Releases

In 1999, soil samples were collected at three locations surrounding Revetments 1, 2, 4, 7, 13, 15, and 19, and one sample was collected beneath the pavement at each location. At Revetments 3, 8, 14, 16, 17, 20, 21, 22, and 24 through 28, one sample was collected beneath the pavement at each location. The samples were analyzed for TPH, PAHs, VOCs, and metals. UHE and UHP were detected in the surface soil samples collected from Revetments 1, 7, 13, 19, 21, 22, and 26. UHE also was detected in the surface soil samples at Revetments 2, 14, 24, 25, and 28, and UHP was detected at Revetments 3 and 4. TPH-D also was detected at Revetment 19. Metals were detected in the surface soil samples collected from all of the revetments. PAHs were detected in the surface soil samples collected from Revetments 1, 2, 4, 7, 13, 19, 21, 22, 24, and 25. Analyses at Revetments 15 and 19 resulted in estimated detections of VOCs in surface samples, and analyses at Revetment 27 resulted in confirmed detections of VOCs in surface samples (F-W, 2000).

Revetment 5 - Releases

In 1993, ESI collected five surface soil samples from Revetment 5 and composited the samples at the laboratory. Samples were analyzed for SVOCs, TPH, and lead. TPH and lead were detected; lead was detected below background (IT, 1999a).

WC installed monitoring wells RVT-MW1 through RVT-MW3 around a catch basin located next to Revetment 5 in 1996 (IT, 1999a). The groundwater collected from these wells was analyzed for TPH, oil and grease, PAHs, VOCs, BTEX, pesticides, herbicides, and metals. Ten metals were detected in the groundwater, but no organics were detected (IT, 1999a).

In 1999, a soil sample was collected beneath the pavement at Revetment 5. The sample was analyzed for TPH, PAHs, VOCs, and metals. Analyses at Revetment 5 resulted in estimated detections of VOCs in the soil sample. UHP was detected in the surface soil sample collected at Revetment 5 (F-W, 2000).

Revetment 6 - Releases

During previous investigations, monitoring well RV-MW-101 was installed adjacent to Revetment 6 by Jordan in 1990 (IT, 1999a). A groundwater sample was collected and analyzed for VOCs, SVOCs, TPH, and lead. Five metals and cyanide were detected.

Two rounds of groundwater monitoring were conducted at RV-MW-101. The groundwater samples were analyzed for TPH, BTEX, and metals. Cyanide and five metals were the only constituents detected in groundwater (IT, 1999a). In 1993, ESI collected surface and subsurface soil samples from the edge of Revetment 6. The samples were analyzed for VOCs, SVOCs, TPH, and lead. Lead, toluene, and bis(2-ethylhexyl)phthalate (a common laboratory contaminant) were detected in the soil. Lead was detected below its background concentration. One boring was also completed as a monitoring well; no analytes were detected in the groundwater sample (IT, 1999a).

WC also collected two soil samples at depths ranging from 2.5 to 3 feet bgs and analyzed them for TPH, oil and grease, BTEX, and PAHs in 1996; no analytes were detected (IT, 1999a).

One sample was collected from Revetment 6 during the RI and analyzed for TPH. Toluene was detected in the soil sample. Lead was detected below its baseline concentration (IT, 1999a).

In 1999, soil samples were collected at three locations surrounding the revetment, and one sample was collected beneath the pavement. In addition, a sample was collected beneath the pavement at revetments with no previous detections in the composite sample. The samples were analyzed for TPH, PAHs, VOCs, metals and dioxins/furans. Dioxins were detected in three surface soil samples collected from the site. Metals, PAHs, UHE, and UHP also were detected in the surface soil samples (F-W, 2000).

Revetments 9, 11, 12, and 23 (unpaved revetments) – Releases

Revetments 9, 11, 12, and 23 were investigated by WCFS in 1996. Soil samples were collected from depths ranging from 0 to 6 inches bgs and 1 foot to 1.5 foot bgs; soil borings were also installed in two additional locations (WCFS, 1996). The soil samples were analyzed for TPH measured as diesel (TPH-D), TPH measured as gasoline (TPH-G), TPH measured as JP-4 (TPH-JP-4), TPH-motor oil, BTEX, PAHs, VOCs, metals, and oil and grease. Ten metals were detected above baseline concentrations. Lead was detected below background, with the exception of Revetment 12, where lead was detected above background. TPH, BTEX, and VOCs were not detected. Acenaphthene was detected above its baseline concentration at Revetment 9 at a depth of 6 inches bgs; it was not detected at 1.5 feet bgs. In 1996, eight temporary monitoring wells (TW), RVT-TW1 through RVT-TW8, were installed in soil borings at the unpaved revetments. Groundwater samples were collected and analyzed for TPH-D, TPH-G, TPH-JP-4, BTEX, and PAHs. Xylene was detected in the groundwater at Revetment 9, and ethylbenzene was detected at Revetment 12 (IT, 1999a).

RI activities were conducted at Revetment 11. Three samples were collected from Revetment 11 to obtain more accurate TPH results than previously reported. TPH-G and UHE were detected in the soil at Revetment 11 (IT, 1999a).

RI activities were conducted at Revetment 23. Samples were collected from the revetment to obtain more accurate TPH results than previously reported. One sample was collected at Revetment 23. TPH was not detected at this revetment. Five metals were detected at Revetment 23. Vanadium, copper, and zinc were detected at or above their baseline concentrations (IT, 1999a).

Revetment 10 - Releases

WC collected soil samples from three soil borings at Revetment 10 in 1987. One soil boring was located on the northwestern side of the firefighter training area, and the two remaining soil borings were located south and east of the training area. The samples were collected at depths ranging from 1 foot to 9 feet bgs and analyzed for TPH, PAHs, VOCs, and metals. Seven metals were detected at concentrations exceeding baseline concentrations, and the highest detection of TPH was detected at a depth of 1 foot bgs. PAHs were not detected (IT, 1999a).

In 1993, ESI completed four new soil borings (15 feet deep) and two shallow test pits (approximately 6 feet deep) and excavated around the concrete pad (one excavation was also completed at the center of the pad) to address subsurface soil contamination. Surface soil samples were also collected around the concrete pad, in the bermed area, and at the former ground level surface exposed during excavation of the test pits. Four monitoring wells also were installed in the four new soil borings (BP-MW-101 through 104) located around the concrete pad. The soil and groundwater samples were analyzed for VOCs, SVOCs, TPH, and lead. Toluene, anthracene, chrysene, bis(2-ethylhexyl)phthalate

(a common laboratory contaminant), and lead were detected in the surface soil samples. Lead was detected above its background concentration. Four PAHs were detected above their baseline concentrations. Ethylbenzene, toluene, xylene, and 1,3-dimethylbenzene were detected in subsurface samples. Methyl ethyl ketone and TPH were detected in the groundwater samples (IT, 1999a).

A PCB investigation was conducted at Revetment 10 during the RI. One soil sample was collected from outside the berm at a depth of 1 foot bgs, and one sample was collected at a depth of 1.5 feet bgs from beneath the concrete pad. PCBs were not detected in the samples collected from the firefighter training area.

Remediation

Revetments 6 and 7 - Remediation

In February 2002, during remediation activities at Revetments 6 and 7, contaminated soil was removed and disposed of offsite. The analytical results of the soil removal activities are provided in *Final Construction Report Building 41 Demolition and Soil Removal, Spoils Pile F Removal, and Revetments 6 and 7 Removal* (IT, 2003). After reviewing the analytical data from that event, the Army and regulatory agencies agreed that some additional samples are needed to determine whether the actions are complete. Therefore, the ROD/RAP evaluated this site as though the actions have not yet taken place.

Revetment 9 - Remediation

An interim removal action was conducted at Revetment 9 in 1999. Approximately 144 cubic yards of soil were removed to a depth of 1 foot bgs from Revetment 9, based on elevated concentrations of lead detected in samples collected in 1995 (IT, 2000a). Two confirmation samples and one duplicate were collected from the excavation. Lead was detected below its guidance level.

Revetment 10 - Remediation

An interim removal action was conducted at Revetment 10 in 1998. The soil beneath Revetment 10 was excavated and confirmation samples were collected from the initial excavation; the concrete pad and four monitoring wells, BP-MW-101 through BP-MW-104, were removed before excavation began. Approximately 2,400 cubic yards of soil were removed from the initial excavation to a depth ranging from 5 to 7 feet bgs; the center of the excavation was excavated to a depth of 7 feet bgs. An additional 75 cubic yards soil were removed from three contingency excavations conducted within the initial excavation in December 1998 (IT, 2000b).

Sixty-four confirmation samples were collected from within the excavation and at a few locations outside of the initial excavation. The confirmation samples were analyzed for TPH-E, TPH-P, BTEX, PAHs, and metals (CAM 17 and boron). Ten samples were also analyzed for PCBs, and 12 samples collected outside of the initial excavation were analyzed for dioxins and furans. UHE was detected above its guidance level in one sample located in the northern part of the initial excavation at a depth of 6 feet bgs. This area was overexcavated to a depth of 8 feet bgs, and confirmation samples were analyzed for TPH-E. TPH-E was detected below guidance levels. Nickel was detected above its guidance level in a sample located in the southern section of the initial excavation at a depth of 7 feet bgs. This area was overexcavated to a depth of 9 feet bgs, and one confirmation sample was collected directly below the previous sample location and analyzed for nickel. Nickel was detected

below the guidance level. Two dioxins were detected in one shallow soil sample collected on the northeastern side of the initial excavation. Soil was overexcavated to a depth of 2 feet bgs and extended 10 feet east of the initial excavation. Three dioxins and one furan were detected at a depth of 1 foot bgs in the confirmation sample collected following the overexcavation (IT, 2000b).

The FFS determined that no remedial action is necessary at Revetments 5, 8, 17, 20, 24, 27, and 28 (CH2M HILL, 2003a). Remedial actions are complete and require no further action at Revetments 9, 10, and 15. The ROD/RAP recommends no further action for Revetments 5, 8, 9, 10, 15, 17, 20, 24, 27, and 28 (U.S. Army, 2003). The ROD/RAP recommends excavation and offsite disposal for Revetments 6 and 7 (U.S. Army, 2003). The ROD/RAP recommends manage in-situ with monitoring and maintenance for Revetments 1, 2, 3, 4, 11, 12, 13, 14, 16, 21, 22, 23, 25, and 26 (U.S. Army, 2003).

4.2.3 Hazardous Substances Use and Storage, Release, and Remediation

4.2.3.1 Former Sewage Treatment Plant

Hazardous Substance Use and Storage

The types of hazardous substances stored at this site are not known.

Hazardous Substance Release

The RI investigated three features of the FSTP: the former sludge drying beds, monitoring well TP-MW-101, and the abandoned sanitary sewer lines, as discussed in the following paragraphs.

The lateral and vertical extent of contaminated soil was investigated at the sludge drying beds. Twelve soil borings were drilled in and around the sludge drying bed area (four within the former sludge beds and eight outside of the former sludge beds). One pothole was excavated southwest of the former sludge drying beds, where a soil boring was started. Samples from the soil borings were collected at three depth intervals: 1.5 to 2 feet bgs, 4.5 to 5.5 feet bgs, and 10 to 11.5 feet bgs. The pothole samples were also collected at three depth intervals ranging from 1 to 9 feet bgs. The soil boring and pothole samples were analyzed for metals, PCBs, VOCs, and pesticides. Samples from the soil boring located at the southern edge of the former sludge drying bed and the pothole sample were also analyzed for TPH-P, TPH-E, and PAHs. Metals, PCBs (Aroclor 1254), dichlorodiphenyltrichloroethane (DDT), and dichlorodiphenyldichloroethylene (DDE) were detected in the soil boring samples collected from around the former sludge drying beds at depths ranging from 1 to 6.5 feet bgs. One detection of DDE extended to a depth of 11.5 feet bgs. The pothole sample returned detections of PAHs and UHE. PAHs were detected above baseline concentrations at depths ranging from 3.5 to 4 feet bgs, and UHE was detected above the step-out criterion at a depth of 2 feet bgs in the pothole sample (IT, 1999a).

Monitoring well TP-MW-101, installed in 1990, was formerly located approximately 50 feet south of the former sludge drying beds and midway between the East Levee and Perimeter Road; it was removed during the 1998 interim removal action (IT, 2000b). The well was screened at depths ranging from 4.8 to 14.8 feet bgs and monitored groundwater within Bay Mud. Water level measurements by ESI (1993) indicate artesian conditions, and two seeps were reported in the area.

During the RI, two soil borings were drilled to the south and west of the monitoring well to assess soil conditions surrounding the well. The southernmost soil boring associated with the sludge drying bed and the pothole sample were also used in this analysis. One groundwater sample was also collected from the monitoring well to obtain up-to-date water quality data. The soil borings were analyzed for the same analytes identified for the sludge drying beds, and the groundwater sample was analyzed for BTEX, TPH-P, TPH-E, PAHs, VOCs, PCBs, pesticides, and metals (total and dissolved). UHE, PAHs, DDT, and DDE were detected in the soil borings drilled to the south and west of the monitoring well (IT, 1999a). As mentioned above, UHE was detected above its step-out criterion in the pothole sample, and it was detected in the other soil borings. The groundwater sample contained TPH-G, UHE, BTEX, VOCs, heptachlor, and 13 metals (IT, 2000a).

Sanitary and industrial waste line investigations and remediation at the FSTP are summarized in Section 4.4.9.

Hazardous Substance Remediation

Interim removal actions were conducted at the former FSTP in 1998 and 1999. The following paragraphs summarize the results of each removal action.

During the 1998 interim removal action, approximately 4,000 cubic yards of soil centered along the former sludge drying beds were removed to a depth ranging from 5 to 7 feet bgs. The southeastern corner of the excavation was removed to a depth of 10 feet bgs (IT, 2001a). Thirty-seven confirmation samples were collected and analyzed for TPH-E, PAHs, PCBs, pesticides, and metals (CAM 17 and boron). UHE, metals, and pesticides were detected in the confirmation samples above their guidance levels along the eastern side of the excavation, and a black sludge layer was noted along the eastern side of the excavation at a depth of 2.5 feet bgs. A sample was collected and contained mercury and silver above the removal guidance levels. Once the excavation was complete, exploratory trenching was done to determine the extent of the sludge layer. Lithologic logs of the trench walls showed the sludge layer to thin out toward the east and terminate approximately 15 feet along the trench from the excavation sidewall. A combination of sloping and backfilling was used following the confirmation sampling.

Sediment was also removed during this effort from the pump station sumps at Buildings 35 and 39 as well as at the entrance ditches to the three pump stations. Removal of sediment from the Building 41 sump occurred in January 1999.

During the 1999 removal action, approximately 140 cubic yards of soil were removed to an average depth of 4 feet bgs to address a black sludge layer (IT, 2000a). The layer was followed until it was no longer visible as it extended beyond the original anticipated boundaries for excavation. Four confirmation samples were collected and analyzed for TPH-E, metals, PAHs, pesticides, and PCBs at a depth of 3.5 to 4 feet bgs from the bottom of the excavation footprint. Pesticides (DDD, DDT, and dieldrin), silver, mercury, and TPH-D were detected above their guidance levels in one confirmation sample. The excavation was backfilled with onsite borrow material to ensure stability of the levee.

The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site (U.S. Army, 2003).

4.2.3.2 Building 35/39 Area

Hazardous Substance Use and Storage

The types of hazardous substances stored at this site are not known.

Hazardous Substance Release

One of the remedial investigations at Buildings 35 and 39 was intended to evaluate the potential impact from pesticides to sediment at the Building 35 pump station outfall. Sediment samples were collected at depths of 3 inches and 1.5 feet bgs at the Building 35 outfall in the outfall drainage ditch and analyzed for pesticides. Two pesticides (DDE and DDD) were detected in the outfall sediment samples. Both pesticides had estimated concentrations below the reporting limit at 0.3 foot bgs. At 1.5 feet bgs, the DDE concentration was at its reporting limit, and DDD was more than twice its reporting limit (IT, 1999a).

Sediment in the vicinity of the pump sumps and outfalls is potentially impacted with metals and pesticides. Pesticides, diesel, PCBs, PAHs, and metals are present in sediment at the Building 35 sump. Pesticides, PAHs, and metals are present in sediment at the outfall ditch. The extent of potential impact is unknown but potentially includes the perimeter ditch and outfall ditch sediment adjacent to the three pump stations (IT, 1999a).

Pesticide constituent detections in excess of the action goals were limited to one sample at a depth of 4.5 feet bgs taken from the sidewall of the excavation footprint. This sample is at the location of the discharge pipe.

Hazardous Substance Remediation

Petroleum issues at this site and remedial actions for petroleum conducted at the Building 35/39 Area are summarized in Section 4.2.1.

The ROD/RAP recommends excavation with offsite disposal as the remedy for this site (U.S. Army, 2003).

4.2.3.3 Building 82/87/92/94 Area

Hazardous Substance Use and Storage

Building 87 was used for storage of unopened packaged products (5 gallons or less), such as paint, oil, grease, antifreeze, and solvents. The area surrounding Building 87 contained horizontal dispensing racks that were used to hold 55-gallon drums of solvent and cleaning compounds. A metal CONEX container was located near Building 87 and contained unleaded gasoline in 5-gallon containers. The racks and drums were occasionally moved to various locations surrounding the building. A storage area (Storage Area 3) was located on the northeastern side of Building 94. The storage area consisted of five metal containers used to store maintenance-related fluids, such as fuel, paint, and solvents (IT, 2001a).

Hazardous Substance Release

RI activities were conducted at Building 82 to identify PCB contamination to the soil at the former transformer pad. Four soil samples were collected and analyzed for PCBs. PCBs were detected in all four soil samples; the highest concentration was found on the southeast side of the transformer pad. Step-out samples were collected to determine the extent of contamination. PCBs were not detected in the step-out samples.

RI activities were conducted at the Building 92/94 area to address the potential impacts to soil from PCBs. A total of 12 surface samples (three surface samples collected from each side of the transformer pad) resulted in detections of PCBs. Thus, three step-out samples were collected approximately 10 feet away from each sample location with PCB detections. PCBs were not detected in the step-out samples.

Petroleum issues at this site are described in Section 4.2.1. Storm drain investigations and remediation at Buildings 82/94 are summarized in Section 4.4.9.

Hazardous Substance Remediation

The PCB contamination was removed to non-detectable levels at Buildings 82/92/94. Petroleum issues at this site and remedial actions conducted at the Building 82/87/92/94 area are summarized in Section 4.2.1.5.

The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site (U.S. Army, 2003).

4.2.3.4 Building 84/90

Hazardous Substance Use and Storage

The activities associated with Buildings 84/90 (aircraft equipment repair, oil changing, jet and propeller engine repair and service, aircraft bodywork, painting and washing, and fuel testing) required the use and storage of hazardous substances. Hazardous substances used and wastes generated during these activities reportedly included stripping and degreasing solvents, batteries, petroleum, oils, lubricants, antifreeze, and paints. No records were available to document the quantities or specific types of substances stored. There is no documentation of hazardous substance disposal release at Buildings 84/90 (IT, 1999a).

Hazardous Substance Release

RI activities were conducted at Buildings 84 and 90 to assess potential impacts to the site from operations and potential PCB contamination from the transformers (IT, 1999a). One surface soil sample was collected near the awning on the north side of Building 84 to assess potential impacts near stained concrete and asphalt. The sample was analyzed for TPH-P, TPH-E, BTEX, VOCs, PAHs, and metals. Metals and PAHs were detected above their baseline concentrations. Four surface soil samples were also collected from the soil in the area believed to adjoin the former location of the transformer pad. These samples were analyzed for PCBs. No PCBs were detected at the former transformer pad (IT, 1999a).

Five soil borings were drilled at various locations around Building 90. Samples were collected at three depths in each boring and analyzed for TPH-P, TPH-E, BTEX, VOCs, PAHs, and metals. Results of the soil sampling revealed concentrations of PAHs below baseline concentrations and metals above baseline concentrations. UHE was also detected in one soil sample below the step-out criterion. Groundwater also was sampled from one of the soil borings drilled west of the building, adjacent to the edge of the wash racks. The groundwater sample was analyzed for TPH-P, TPH-E, BTEX, VOCs, PAHs, and lead. Lead was detected in the groundwater sample. Four surface soil samples were also collected at the Building 90 transformer pad and analyzed for PCBs. No PCBs were detected at the former transformer pad (IT, 1999a).

Hazardous Substance Remediation

Petroleum issues at Buildings 84/90 are summarized in Section 4.2.1. The FFS determined that no contaminants related to hazardous substances storage, release, or disposal at this site are present at concentrations that could pose a risk to future wetland receptors or that would require remedial action (CH2M HILL, 2003a). No remedial action is necessary at this site. The ROD/RAP recommends no further action for this site (U.S. Army, 20003).

4.2.3.5 Building 86

Hazardous Substance Use and Storage

A flammable materials locker and at least one recirculating solvent parts cleaner were located in Building 86. Substances used and waste generated at the hangar included stripping and degreasing solvents, oils, and paints. Waste material from activities at Building 86 were taken to a storage area located on the southwest corner of the building (Storage Area 2) by Army personnel. Storage Area 2 contained 55-gallon drums and smaller containers that store waste oils, waste fuel, and other maintenance-related fluids. The materials were stored within a metal container that rested on a gravel surface. Storage Area 1 was located near the northeast corner of Building 86 and was a drum storage area. Drums were placed horizontally on metal storage and dispensing racks (IT, 2001a).

Hazardous Substance Release

Petroleum issues at this site are described in Section 4.2.1. RI activities were conducted at Building 86 to address the contamination of TPH and other chemicals to the soil, PCB contamination at the transformer pad, and the potential to contaminate groundwater at monitoring well AM-MW-101 (IT, 1999). UHE, UHP, lead, and one PAH were detected in samples along the interior and exterior drains at Building 86. UHE, UHP, and lead were also detected in soil samples collected from the western corner of Building 86. PCBs were not detected at the transformer pad. Metals and UHE were detected in a groundwater sample collected from monitoring well AM-MW-101.

Storm drain investigations and remediation at Building 86 is summarized in Section 4.4.9.

Hazardous Substance Remediation

Petroleum issues at this site and remedial actions conducted at Building 86 are summarized in Section 4.2.1.6

The ROD/RAP recommends managed in-situ monitoring and maintenance as the remedy for this site (U.S. Army, 2003).

4.2.3.6 Perimeter Drainage Ditch (PDD)

Hazardous Substance Use and Storage

Hazardous substances were not stored at this site.

Hazardous Substance Release

WCFS (1996) collected 34 sediment samples from the perimeter drainage ditch. Analysis included TPH, oil and grease, PAHs, and metals. Selected samples were also analyzed for BTEX, PCBs, dioxin/furans, pesticides, and herbicides. Metals, PAHs, DDT (and its breakdown products DDE and DDD), and oil and grease were detected at concentrations in excess of baseline values (IT, 1999a).

The RI investigated the unlined portion of the PDD for PCBs and pesticides. Two samples were collected, one in the northeast corner of the Main Airfield Parcel to evaluate the potential impact from a suspected PCB spill and the second one along the southern section of the perimeter drainage ditch near the GSA Phase I Sale Area boundary to evaluate potential impact from GSA Lot 7, which was found to contain PCBs. No PCBs were detected in either sample. DDE and DDT were detected in both samples, though below their respective reporting limits. Metals and PAHs were also detected in ditch sediments. Statistical evaluations were conducted for metal and PAH data in ditch sediments with respect to soil and sediment baseline concentrations. Beryllium, cadmium, lead, nickel, and zinc were detected in ditch sediments above baseline concentrations. Boron exceeded its baseline concentration for desiccated Bay Mud (IT, 1999a).

Hazardous Substance Remediation

The 1998 interim removal actions (IT, 2000b) included dewatering of the ditch and sediment removal from the unlined portion of the PDD. An estimated 2,800 cubic yards of sediment and vegetation were removed from the 17,500-foot-long PDD channel, including the lined and unlined portions. Sediment and vegetation were also removed down to the concrete lining and approximately 2 feet up the sloped walls in the concrete-lined portions of the PDD. Confirmation samples were collected in the unlined portion of the ditch after approximately an 8-inch layer of sediment was removed on the sides and bottom. Samples were analyzed for TPH-E, TPH-P, PAHs, pesticides, PCBs, and metals. Dioxin analyses were also performed on five confirmation samples collected from the bottom of the excavation. In the unlined portion, one sidewall sample and one bottom sample were collected every 200 linear feet for 20 sidewall and 20 bottom samples at approximately 1 foot bgs. UHE, metals, and pesticides were detected at elevated levels in the confirmation samples (IT, 2001a).

UHE, nickel, DDE, and DDT were detected above their guidance levels. UHE was detected above its guidance level (682 mg/kg) at a concentration of 750 mg/kg in one sample collected from the southern section of the unlined PDD; benzo(b)fluoranthene was also detected at its maximum concentration at this location. Nickel, DDE, and DDT were detected above guidance levels in several locations. The maximum concentrations of DDE and DDT were detected in the northern section of the unlined PDD. Maximum concentrations of DDE and DDT were 1.1 and 8.4 mg/kg, respectively. Nickel was detected above its guidance level in the northern and southern sections of the unlined PDD. DDD was also detected in several confirmation samples; a guidance level was not provided for this constituent. The maximum concentration of DDD was detected in the northern section of the unlined PDD at a concentration of 0.7 mg/kg. Dioxins and furans were also detected in the northern section of the unlined PDD. Dioxins were detected in two PDD soil samples, and furan was detected in one of these samples (IT, 2000b).

Remedial Design Investigation Summary

During the remedial design investigation, two surface soil samples were collected from cracks located on the northeastern side of the lined PDD (Foster Wheeler [F-W], 2000). Surface soil samples from the cracks detected pesticides, herbicides, metals, and PAHs. These samples were collected in the lined portion of the PDD in the area of the pump stations. PAHs were detected in the southern sample. PCBs and TPH-E were not detected in either sample.

The banks of the PDD above the concrete lining within the proposed HWRP channel cut were excavated in December 2001/January 2002, during the Building 41 demolition and soil-removal activities (IT, 2003).

The ROD/RAP recommends excavation and offsite disposal for two areas within the unlined portions of the PDD and within the lined portion of the PDD within the HWRP proposed channel cut (US Army, 2003). The ROD/RAP recommends manage in-situ with monitoring and maintenance for the lined portions of this site outside the HWRP channel cut (US Army, 2003).

4.2.3.7 PDD Spoils Piles

Hazardous substances issues have been identified at the former locations of the PDD spoils piles. The text below is excerpted from previous studies, which summarize investigations and remediation activities for the PDD spoils piles. To provide a comprehensive understanding for each PDD spoils piles, Table 5-2 summarizes the findings for each individual PDD spoils pile.

The PDD spoils piles are a result of the periodic dredging. Materials/contamination that may have accumulated in the ditch may be present in the piles. Spoils Piles A-M are located on the Main Airfield Parcel. Spoils Pile N is not on the Main Airfield Parcel, and therefore, is not discussed.

Hazardous Substance Use and Storage

Hazardous substances were not stored at this site.

Hazardous Substance Release

Prior to the RI, 30 soil samples had been collected from the spoils piles along the PDD and analyzed for TPH-G, TPH-D, TPH-JP-4, oil and grease, PAHs, and metals; some samples were also analyzed for BTEX, PAHs, dioxins/furans, pesticides, and herbicides (IT, 1999a). Metals and PAHs were detected above baseline concentrations in the soil samples collected from the spoils piles. Oil and grease, chlordane, pesticides, methylene chloride, and SVOCs were also detected in the spoils piles.

Hazardous Substance Remediation

The 1998 interim removal actions included removal of soil from 12 of the 13 DD spoils piles (A through E and G through M) on the Main Airfield Parcel. Material from the 12 spoils piles were removed down to the approximate original grade and transported to an offsite Class II disposal facility. Confirmation samples were collected at locations within the 12 footprints of the former spoils piles. The soil samples were analyzed for TPH-E, PAHs, pesticides, PCBs, and metals (CAM 17 and boron). Samples were based on one sample from approximately every 50-foot-by-50-foot grid section (IT, 2000b).

Metals and pesticides were detected at all 12 spoils piles locations; UHE was detected in Spoils Piles B, H, and I; SVOCs were also detected in Spoils Piles I and J. DDE, DDT, lead, mercury, and silver were detected above guidance levels at Spoils Pile B. Benzo(a)pyrene, benzo(a)anthracene, DDE, and DDT were detected above guidance levels in Spoils Pile J. UHE and DDT were detected above guidance levels for Spoils Piles H and I. DDE was also detected above its guidance level at Spoils Pile H. DDE was detected above its guidance level at Spoils Piles C, E, D, G, and K (IT, 2000b).

During the 1999 interim removal actions, the footprints of seven spoils piles (B, C, E, H, I, J, and L), where the 1998 interim removal action took place, were excavated to a depth of 1.5 feet bgs, based on chemicals of interest identified from the 1998 interim removal action confirmation sample results. Approximately 1,550 cubic yards of soil was excavated. Confirmation samples were collected from the footprints of the spoils piles after their removal. Chemicals of interest were based on detections from the confirmation samples and are specific to each pile. Following is a summary of the site-specific actions (IT, 2000a):

- Spoils Pile B – Approximately 591 cubic yards of soil were removed from Spoils Pile B to a depth of 1.5 feet bgs to address contamination from lead, mercury, silver, DDE, and DDT. Four confirmation samples were collected from the bottom of the excavation and analyzed for the applicable contaminants of interest. Mercury and DDT were detected in all four samples. Silver and lead were detected in three samples. DDD, DDE, endrin aldehyde, and endrin ketone were also detected in one sample. The analytes were below guidance levels.
- Spoils Pile C – Approximately 17 cubic yards of soil were removed from Spoils Pile C to a depth of 1.5 feet bgs to address contamination from DDE. One confirmation sample was collected from the bottom of the excavation and analyzed for pesticides. DDD, DDE, and DDT were detected in the confirmation sample; however, concentrations were below guidance levels.
- Spoils Pile E – Approximately 261 cubic yards of soil were removed from two separate excavation areas along the footprint of Spoils Pile E to address contamination from DDE. The excavation extended to a depth of 1.5 feet bgs. One confirmation sample was collected from each excavation and analyzed for pesticides. DDE and DDT were detected in both confirmation samples; however, concentrations were below guidance levels.
- Spoils Pile H – Approximately 290 cubic yards of soil were removed from the Spoils Pile H to a depth of 1.5 feet bgs to address contamination from DDE, DDT, and UHE. Two confirmation samples and one duplicate were collected from the bottom of the excavation and analyzed for pesticides and TPH-E. TPH-D was detected in one sample and in the duplicate of the other sample, and DDE and DDT were detected in both confirmation samples. The concentrations of all detected constituents were below guidance levels.
- Spoils Pile I – Approximately 70 cubic yards of soil were removed from Spoils Pile I to a depth of 1.5 feet bgs to address contamination from UHE and DDT. One confirmation sample was collected and analyzed for pesticides and TPH-E. None of the analytes were detected.
- Spoils Pile J – Approximately 13 cubic yards of soil were removed from Spoils Pile J to a depth of 1.5 feet bgs to address contamination from benzo(a)pyrene, benzo(a)anthracene, DDE, and DDT. One confirmation sample and a duplicate were collected from the bottom of the excavation and analyzed for pesticides and PAHs. Three pesticides (DDD, DDE, and DDT) and four PAHs were detected below interim removal action guidance levels. DDT was detected in the duplicate sample above guidance levels; the concentration was estimated with a high bias.

- Spoils Pile L – Approximately 6 cubic yards of soil were removed from Spoils Pile L to a depth of 1.5 feet bgs to address nickel contamination. One confirmation sample was collected from the bottom of the excavation. Nickel was detected in the confirmation sample below its guidance level.

The spoils piles excavations were sloped following the 1999 interim removal actions.

Samples collected at Spoils Pile F in 1995 indicated metals, PAH, and DDT contamination. In January 2002, soil was removed from the Spoils Pile F Excavation Area, to depths ranging from one to two feet bgs to address residual contamination. The analytical results of the Spoils Pile F soil removal activities are provided in the *Draft Final Construction Report Building 41 Demolition and Soil Removal, Spoils Pile F Removal, and Revetments 6 & 7 Removal* report (IT, 2002). Because the Army and regulatory agencies are currently reviewing the analytical results obtained following the soil removal at Spoils Pile F, this site was evaluated in the ROD/RAP as though the actions have not yet taken place.

The ROD/RAP recommends no further action at PDD Spoils Pile H and E (US Army, 2003). The ROD/RAP recommends manage in-situ with monitoring and maintenance at PDD Spoils Piles A, B, C, D, G, I, J, K, L, and M (US Army, 2003). The ROD/RAP recommends excavation and offsite disposal for PDD spoils pile F (US Army, 2003).

4.2.3.8 Northwest Runway Area

Hazardous Substance Use and Storage

This site was originally identified as an area of potential concern because of geophysical survey anomalies that suggested buried objects might be present at suspected Landfill 23, located primarily in the GSA Phase II Sale Area (IT, 1998). Soil and groundwater investigations did not encounter debris that would indicate landfill activity. Chemicals were not stored in this area.

Hazardous Substance Release

Investigations began at this site in 1985. Soil samples were collected from three test pits and three excavation trenches located along the northwestern runway area. Metals, DDD, TPH, and bis(2-ethylhexyl)phthalate (a common laboratory contaminant) were detected in the soil samples. Scrap metal was discovered; however, no evidence of landfill activity was identified. Metals were detected below baseline concentrations.

Four groundwater monitoring wells (MW-PVC-1, -2, -3, and -4) were installed in August 1985 (IT, 2001a). They were sampled for pesticides, TPH, VOCs, SVOCs, and metals during nine sampling events conducted between October 1985 and September 1986. Thirty-six groundwater samples were collected. Five VOCs, one pesticide, and 12 SVOCs were detected sporadically in the groundwater samples.

In 1997, four direct-push soil samples were collected, and temporary monitoring wells (TW-001 through 004) were installed in the boreholes (IT, 2001a). The soil samples were collected at depths of 5, 10, and 15 feet bgs and analyzed for metals, VOCs, TPH-E, TPH-P, pesticides, and PAHs. Groundwater collected from the temporary wells was analyzed for metals, TPH-P, and VOCs. The wells also were analyzed for pesticides, TPH-E, PAHs, and general chemistry parameters when sufficient water volume was available. Metals detected

in groundwater collected from the temporary monitoring wells appeared to be associated with the freshwater/saline water transition zone at this site (IT, 2001a).

In January 2002, monitoring wells MW-PVC-1, -2, -3, and -4 were sampled. Following completion of the sampling in 2002, Wells -1, -2, and -3 were removed (USACE, 2002b). The results of the sampling confirmed that the groundwater beneath the HAAF Main Airfield Parcel does not have an adverse impact to saltwater aquatic life or human health due to past DoD activities (USACE, 2002d).

Hazardous Substance Remediation

The ROD/RAP did not identify any chemicals of concern and selected no further action as the remedy for this site (US Army, 2003).

4.2.3.9 High Marsh Area

Hazardous Substance Use and Storage

The High Marsh Area is that portion of the Coastal Salt Marsh dominated by pickleweed. The High Marsh Area extends from the northern to southern Main Airfield Parcel boundaries and east from the levee nearly to the shoreline of San Pablo Bay. The majority of the High Marsh Area is located on land owned by the State Lands Commission. The portion of the High Marsh Area within the land owned by the State Lands Commission is discussed in Section 4.3 of the EBS. The remainder of this section discusses only the portion of the High Marsh Area located within the Main Airfield Parcel. Drainage collected by the PDD that is pumped into the high marsh wetland area includes past operational spills. There is also agricultural drainage from offsite to the PDD (WCFS, 1996).

Hazardous Substance Release – Nonchannel Cut Area

The High Marsh Area was investigated by ESI in 1991 and 1992, USACE in 1994, WCFS in 1995, and IT in 1997 and 1998 (IT, 1999a). During these investigations, sediment samples were collected and analyzed for various constituents in the Nonchannel Cut Area. Various contaminants, including metals and pesticides, have been detected in samples collected in the Nonchannel Cut Area.

Hazardous Substance Release – Proposed HWRP Channel Cut Area

Samples were collected in the High Marsh by ESI in 1991 and 1992, USACE in 1994, and WCFS in 1995. In 1993, metals were detected above baseline concentration. Additionally, PAHs were detected above baseline concentrations at three locations within the proposed channel cut area. In 1995, metals were detected at all sampled locations within the proposed channel cut area of the High Marsh. PAHs were detected at one location, and 2 pesticides (chlordane and DDT) were detected above baseline concentrations at one location within the Proposed Channel Cut Area.

Hazardous Substance Remediation

No remediation has been conducted at the High Marsh. The ROD/RAP recommends excavation and offsite disposal for the Nonchannel Cut and Proposed HWRP Channel Cut Areas (US Army, 2003).

4.2.3.10 Boat Dock

Hazardous Substance Use and Storage

The Boat Dock (Nonchannel area) is located at the southeast corner of the Main Airfield Parcel within the CSM. When the base was active, the launch was maintained at the dock for rescue in the event of an emergency in San Pablo Bay. The Boat Dock had electrical power supplied by two transformers and one or more small, enclosed structures. A gasoline-powered winch was used to lower the launch down a steel track into the dredged channel and turning basin.

Hazardous Substance Release –Nonchannel Area

Two transformers were located on a concrete pad inside a fenced enclosure adjacent to the boat launch. IT investigated the transformer pad in 1997, and detected PCBs (Aroclor-1260 at 0.10 mg/kg) in a soil sample collected at the northeast corner of the transformer pad (IT, 1999a).

F-W investigated the former boat dock structure in 1999 as part of the remedial design investigation. Samples were collected around and beneath the deck structures (F-W, 2000). Metals and pesticides were detected in samples collected during this investigation. PAHs were also detected but are likely attributable to the creosote in pier pilings.

Hazardous Substance Release –Channel Area

During the investigations noted above, F-W collected a sediment sample in 2000 from the Boat Dock channel. The sample contained pesticides, herbicides, PAHs, TPH, VOCs, and metals. Due to the significant amount of sedimentation that occurred in the channel following abandonment of the boat dock in the channel area, it is not clear if the sample results characterize current conditions or possible historical impacts from the boat dock area. In December 2001, the Army collected additional sediment samples from the Channel Area. The objective of the sampling was to determine the extent of contamination found at the Boat Dock sufficient to determine the appropriate remedy. Sampling at the Channel Area indicated the presence of metals.

Hazardous Substance Remediation –Nonchannel Area

IT conducted interim removal actions at the Boat Dock in 1998. IT removed the transformer pad and excavated approximately 24 cubic yards of soil. After completion of confirmation sampling, soil from an on-site borrow area was used to backfill the excavation. Five confirmation samples were collected from the excavation (four from excavation sidewalls and one from the bottom of the excavation). There were no PCB detections in the confirmation samples. (IT, 1999a).

The ROD/RAP recommends excavation and offsite disposal for this area (US Army, 2003).

Hazardous Substance Remediation – Channel Area

No remedial actions have been conducted in the Boat Dock Channel Area.

The ROD/RAP recommends excavation and offsite disposal for this area (US Army, 2003).

4.2.3.11 Outfall Drainage Ditch

Hazardous Substance Use and Storage

The ODD is located on the CSM side of, and parallel to, the east perimeter levee. The ditch receives stormwater runoff and drainage from the Inboard Area sites and PDD. Historically,

the ODD ran from the northernmost portion of the Main Airfield Parcel south to the Historic ODD, which emptied into the Boat Dock Channel. The ODD receives water from the Airfield storm water collection system. The water is discharged to the ODD from the pump house area. When the south runway extension was constructed in 1953, the northern portion of the ditch was rerouted to San Pablo Bay at a point near the northern edge of the ELCDDA. Currently, the ODD runs from the northernmost portion of the Main Airfield Parcel to the northern edge of the East Levee Construction Debris Disposal Area. From this point, the ditch makes a 90-degree turn and runs to its discharge point to San Pablo Bay.

Hazardous Substance Release

The ODD was investigated by ESI in 1990 and 1991, USACE in 1994, WCFS in 1995, IT in 1997, 1998, and 1999, and USACE in January 2002. TPH, metals, PCBs, and pesticides have been detected in sediment samples collected from the ODD. Specifically, in 1994, studies detected metals, TRPH, and TPH-d above baseline concentrations in the Building 41 pump station outfall area within the channel cut area of the High Marsh.

In January 2002, the Army collected sediment samples from the ODD. The objective of the sampling was to investigate the extent of chemicals detected in the previous investigations at the outfalls, to address the downstream extent of contamination from the outfalls, and to characterize the portion of the ODD upstream of the outfalls sufficient to determine the appropriate remedy. Sampling at the ODD resulted in detections of metals, TPH, and pesticides.

Hazardous Substance Remediation

No remediation has been conducted in the ODD.

The ROD/RAP recommends excavation and offsite disposal for this site (US Army, 2003).

4.2.3.11 Historical Outfall Drainage Ditch

Hazardous Substance Use and Storage

The portion of the ODD now known as the Historic ODD runs from the southern edge of the ELCDDA southward to the northern edge of the boat dock area, where it joins the boat dock channel and runs to San Pablo Bay. Concrete building materials are visible along portions of the Historic ODD and were apparently used as riprap. Much of the Historic ODD has silted in with sediments throughout the years, although the channel is still visible.

Hazardous Substance Release

The Army in the Historic ODD collected two sediment samples during the 1995 investigation. Metals, including cadmium, cobalt, lead, and manganese, were present in the samples. The Army investigated the Historic ODD in December 2001. During the investigation, the Army collected soil and sediment samples at 250-foot intervals along the Historic ODD, in order to characterize the extent of contamination. Some metals and pesticides were detected.

Hazardous Substance Remediation

No remediation has been conducted in the Historic ODD.

The ROD/RAP recommends excavation and offsite disposal for this site (US Army, 2003).

4.2.3.12 Antenna Debris Disposal Area

Hazardous Substance Use and Storage

The Antenna Debris Disposal Area is located along the northern portion of the ODD. Apparent debris disposal occurred in two areas, one located east of the ODD and one to the west of the ODD. Visual inspection of the areas indicates the areas contain discarded materials from the former antenna facilities and building materials. The depth of portions of the west pile are at least 8.5 feet below ground surface, and the depth of the east pile is at least 2-3 feet below ground surface. Both areas are currently covered with a growth of native grasses, interspersed with some pickleweed, which is common to the rest of the marsh.

Hazardous Substance Release

The western Antenna Debris Disposal Area was investigated by WCFS in 1995, F-W in 1999, and USACE in December 2001/January 2002. During the 1995 and 1999 investigations, eight soil samples were collected in and near the western pile. One of the samples was collected at 2 to 3 ft bgs beneath the western pile. The results of these investigations indicate that lead and pesticides are common throughout the western pile. Only one of the samples was analyzed for PCBs; they were detected in the sample. No samples have been collected from the eastern Antenna Debris Disposal Area during the 1995 or 1999 investigations. In December 2001 and January 2002, the Army collected soil samples from the eastern area and additional samples from the western area. The objective of the sampling was to investigate the extent of chemicals detected in the previous investigations at the western area and to characterize the eastern area sufficient to determine the appropriate remedy. Sampling at the eastern and western areas resulted in detections of metals, pesticides, TPH, and PCBs.

Hazardous Substance Remediation

No remediation has been conducted at this site.

The ROD/RAP recommends excavation and offsite disposal for this site (US Army, 2003).

4.2.3.13 East Levee Construction Debris Disposal Area

Hazardous Substance Use and Storage

The ELCDDA is located on the eastern margin of the Main Airfield Parcel within the CSM and outboard of the east levee. It is bisected by the eastern boundary of the Main Airfield Parcel and lies primarily within land owned by the State Lands Commission. The portion of the ELCDDA within the State Lands Commission is discussed in Section 4.3 of the EBS. The remainder of this section discusses only the portion of the ELCDDA within the Main Airfield Parcel.

The ELCDDA was used from about 1961 to the early 1970s, primarily for the disposal of construction debris. A dirt road runs through the central portion of the ELCDDA. Pickleweed grows up to the edges of the road.

Hazardous Substance Release

Samples were collected from throughout the ELCDDA area by WCC in 1986, ESI in 1990, USACE and WCC in 1994, WCFS 1995, IT in 1997, and USACE in December 2001/January 2002. Only a portion of the samples collected in these investigations were collected on the portion of the ELCDDA within the Main Airfield Parcel.

Trench HT-13, dug by WC in 1986, was in the ELCDDA area located on the Main Airfield Parcel. The trench sample contained metals at concentrations below background.

One soil sample collected by ESI in 1990 was located within the ELCDDA on the property line between the Main Airfield Parcel and the land owned by the State Lands Commission. This sample detected metals (including beryllium, chromium, lead, and vanadium) at levels slightly above background.

Hazardous Substance Remediation

No remedial action is anticipated for the portion of the ELCDDA on the Main Airfield Parcel; however, remedial action is anticipated for the portion of the ELCDDA off the Main Airfield Parcel. For the portion of the ELCDDA outside the Main Airfield Parcel, the ROD/RAP recommends excavation and offsite disposal as the remedy (US Army, 2003).

4.2.3.14 Area 14

Hazardous Substance Use and Storage

Area 14 was a barren area identified in a 1941 aerial photograph. The area is located north of the boat dock, just east of the eat levee. Little is know about this area, although it may have been a fill, spoil, disposal, or demolition area. Concrete building materials are visible in this area near the levee and may have been used as riprap.

Hazardous Substance Release

The Army investigated area 14 in December 2001 and January 2002. During the investigation, the Army collected soil and sediment samples from Area 14 on a 100-foot grid. Sampling at Area 14 resulted in detections of metals, pesticides, TPH, and PAHs. No debris or rubble, other than rock and gravel used to support the runway extension and the road, was encountered.

Hazardous Substance Remediation

No remediation has been conducted at Area 14.

The ROD/RAP recommends excavation and offsite disposal as the remedy for this site (U.S. Army, 2003).

4.2.3.15 Archive Search Report Sites

Hazardous Substance Use and Storage-Testing Range (ASR Site #4)

The Archive Search Report identified an area labeled as the “Testing Area” based on an aerial photograph dated August 1946. The area is described as a “rectangle approximately 1,000 feet by 100 feet between the sewage treatment plant and the black powder magazine.” The Archive Search Report did not explain the basis for labeling the area as a “testing area;” however, the Army BRAC office has historical maps dated 16 May 1945 and 4 December 1952 that outline an area approximately 940 feet by 100 feet labeled “testing range.” Neither the BRAC office nor the Archive Search Report team was able to locate accounts on how the site was used. Because Hamilton was not a research and development base, it is not likely that testing of weapons occurred here. Based on the survey of additional maps dated 25 February 1959, 15 December 1963, and 22 November 1963 that depict a portion of the testing range called a “firing range,” the Army BRAC office concludes that the “testing range” may have been a small arms target practice area (U.S. Army, 2003).

Hazardous Substance Release- Testing Range

It is not known if hazardous substances have been released at this site. Through the ROD/RAP the Army has agreed to further evaluate and investigate this site.

Hazardous Substance Remediation- Testing Range

No remediation has been conducted at this site.

Hazardous Substance Use and Storage- Northwest Alleged Disposal Area (ASR Site #8)

In December of 2000, a local resident and former military facility inspector stated that during a routine inspection of Hamilton, in the mid-1980s, he was told various chemicals were improperly disposed of in an area near the north end of the runway (the alleged HTRW Disposal site) (U.S. Army, 2003).

Hazardous Substance Release- Northwest Alleged Disposal Area

Previous sampling in the area included the collection and analysis of three samples within the area in question. Additionally, one boring conducted by URS Group for USACE 2001-2002 was located within the boundaries of the alleged disposal area. No contamination or debris was reported from this work. The Army will conduct sampling in the area, and a Sampling and Analysis Plan is currently in review. For the purposes of future investigations, this area is being referred to as the Northwest Alleged Disposal Area (U.S. Army, 2003).

Hazardous Substance Remediation- Northwest Alleged Disposal Area

No remediation has been conducted at this site.

Hazardous Substance Use and Storage - Skeet Range (ASR Site #18)

A skeet range was identified in the ASR as ASR Site #18. The range was situated inboard at the corner where South Boundary Road meets East Boundary Road and west of what is now the south runway extension. It is visible on aerial photography dating up to 26 April 1943, but is not observable in photographs beginning in 1946.

Hazardous Substance Release - Skeet Range

There are no known releases of hazardous substances at this site. Contaminants of concern at a skeet range are lead and other metals from shot and PAHs associated with clay targets.

Hazardous Substance Remediation -Skeet Range

No remediation has been conducted at this site. Through the ROD/RAP the Army has agreed to further evaluate and investigate this site.

Hazardous Substance Use and Storage- Firing-in-Butt (ASR Site #19)

A firing-in-butt was identified in the ASR as ASR Site #19. The ASR accurately located the historical Firing-In Butt to have been in the vicinity of the runway and Revetment 25. However, the ASR incorrectly shows the Butt as being closer to the firing line than photos indicate and incorrectly states the date of its removal. There were three hardstands and a "butt" which is a target surrounded by barricade material. Historically, aircraft machine guns, on both sides of the aircraft, were fired into an earthen mound called a "butt" to check firing alignment. At HAAF the hardstands with connecting road still exist and are visible in 1960s aerial imagery. However, the target butt was removed in its entirety in 1947, the disposition of the barricade soil not known.

Hazardous Substance Release- Firing-in-Butt

It is not known if hazardous substances have been released at this site. Through the ROD/RAP, the Army has agreed to further evaluate and investigate this site.

Hazardous Substance Remediation- Firing-in-Butt

No remediation has been conducted at this site.

4.3 Adjacent or Surrounding Property

Adjacent properties include Landfill 26, Navy MTBE plumes, POL Hill, and the North Antenna Field. The currently available data indicate that these sites are not adversely impacting the Main Airfield Parcel. Stormwater runoff from these sites is handled, collected, and transported across the Main Airfield Parcel.

Title 27 requires protective measures to ensure structures within 1,000 feet of a landfill disposal site are not adversely impacted by potential migration of landfill gases. Some portion of the Main Airfield Parcel may be within 1,000 feet of Landfill 26.

4.3.1 Landfill 26

Landfill (LF) 26 is located in the northwest portion of HAAF near the northern extent of the runway. The military used the landfill as a refuse disposal area from the 1940s to the 1970s. There are no records of disposal at the landfill; however, visual and physical surveys verify primary contents include construction debris (wood, concrete, asphalt rubble), and also scrap metal, airplane parts, and buried culverts. Groundwater sampling at LF 26 has been conducted since 1985. The results of the sampling indicate groundwater contamination has not migrated beyond the boundaries of the landfill.

An engineered cap covers the landfill with clean fill on top and well-established vegetation. Chemical contamination of surface water from the landfill is not expected. The landfill is inspected annually for potential seepage areas. The landfill was most recently inspected in fourth quarter 2002. The inspection found no evidence of active seepage at the landfill. Areas of standing water observed at the landfill appear to be seasonal features fed by surface water flow from the southeast and uncontaminated drainage from the engineered cap above the liner.

In January 2002, USACE began installation of a landfill gas migration control trench located within the buffer zone adjacent to the Hamilton Meadows development. The trench was installed in an attempt to vent potential migrating landfill gases to the atmosphere, thereby dissipating the gases prior to migration to adjacent property. The first phase (also known as the northerly half of the trench), on the eastern side of the landfill, was installed in January and February 2002. The second and final phase of the trench was completed in July and August 2002. Construction of the trench generally consisted of several sections that were excavated to bedrock, backfilled with gravel, and fitted with perforated horizontal PVC piping and vertical risers. Concrete cutoff walls were installed to delineate the different sections (8 total).

4.3.2 POL Hill

POL Hill is 7.84 acres and is located within the upland portion of HAAF northeast of the General Services Administration Sale Area II and west of the Inboard Area. POL Hill served as the base fuel center from 1942 to sometime prior to 1986. This area served as the primary receiving and distribution point for aircraft fuel. Numerous aboveground and underground fuel storage tanks and associated fuel piping and distribution features were located in this area. The underground fuel storage tanks were located at the base of the hill between the hill and a strip of GSA property (about 200 feet wide) that separates POL Hill from the Inboard Area. Numerous investigations have confirmed that the underground storage tanks did not impact the groundwater. All of the impacted soil (TPH concentrations greater than 100 ppm) has been removed. An aboveground storage tank (AST-2) located on the higher elevations of POL Hill has contaminated groundwater in the eastern portion of POL Hill. The petroleum contamination in groundwater does not extend beyond the POL Hill parcel boundary and does not appear to be migrating. The Army prepared a Corrective Action Plan for approval by the RWQCB. The plan recommended monitored natural attenuation as the remedy for the groundwater plume (CH2M HILL, 2003b).

The only surface water feature at POL Hill is a drainage ditch that lies outside the northern boundary of the POL Hill area. The ditch originates east of the POL Hill area and drains westward under Aberdeen Road into an underground culvert that turns north near the end of the runway. This culvert daylight into the unlined PDD, which travels around the west and north sides of the runway and joins the lined PDD near Building 20.

4.3.3 North Antenna Field

The North Antenna Field covers approximately 260 acres and is located north of the CSM area. Military uses of the area included communications support, antennas, small arms training (ranges), and fire suppression training (burn pits). The site is drained by interior and perimeter drainage ditches. The interior ditches are reported to be connected to the PDD by a culvert; however, a broken floodgate currently closes the culvert. Currently, there are no outlet points for the drainage from the North Antenna Field. Stray shot and residual fragments of ammunition may be present in the Coastal Salt Marsh Area adjacent to the North Antenna Field.

This area will eventually become part of the wetland restoration project. However, this area is being evaluated under a separate program (Formerly Used Defense Sites) and will be transferred under a process separate from the Main Airfield Parcel.

4.3.4 Coastal Salt Marsh

4.3.4.1 East Levee Construction Debris Disposal Area - Burn Pit

The East Levee Construction Debris Disposal Area is located on the eastern margin of the Main Airfield Parcel within the Coastal Salt Marsh. This area is bisected by the Main Airfield Parcel boundary. The portions of this area within the Main Airfield Parcel are discussed in previous sections (Section 3.3.2 and Section 4.2.3.13). A burn pit is located at the eastern end of the East Levee Construction Debris Disposal Area but is outside the Main Airfield Parcel. The area of the burn pit extends out into San Pablo Bay and has a slightly higher elevation than most of the East Levee Construction Debris Disposal Area and the

Coastal Salt Marsh. The nature and quantity of any wastes burned at the site are not known, and no waste materials were evident at the surface or in soil samples collected at the site. Soil samples were collected and analyzed for a variety of constituents. TPH-D, TPH-G, SVOCs, VOCs, PCBs, pesticides, dioxins, and metals have been detected at trace concentrations in one or more soil samples from the site. In December 2001 and January 2002, the Army collected additional soil and sediment samples in the burn pit area and in portions of the ELCDDA adjacent to the Main Airfield Parcel. The objective of the sampling was to investigate the extent of known chemicals detected in the previous investigations at the burn pit and to characterize the extent of contamination at an isolated location on the ELCDDA sufficient to determine the appropriate remedy. Sampling at the ELCDDA indicated the presence of metals.

Remediation is planned at the ELCDDA. The ROD/RAP recommends excavation and offsite disposal for this site (US Army, 2003).

4.3.4.2 High Marsh

The High Marsh area is that portion of the Coastal Salt Marsh that is dominated by pickleweed. The area extends from the northern to southern Airfield Parcel boundaries and east from the ODD nearly to the shoreline. A portion of the High Marsh is located within the Main Airfield Parcel. This area is discussed in Section 4.2.3.9. The remaining portions of the High Marsh are located adjacent to the eastern edge of the Main Airfield Parcel. Various contaminants, including metals, TPH, PAHs, SVOCs, and pesticides, have been detected in samples collected in the High Marsh (both on the Airfield Parcel and on adjacent property).

In September 2001, the Army conducted a specific investigation to evaluate the soil within the Proposed HWRP Channel Cut Area. Samples were collected at 12 locations and three depths (1, 2, and 4 feet bgs). The samples were collected in a grid from the ODD toward the bay where the planned channel cut is anticipated. TPH, metals, PAHs, and SVOCs were detected in samples collected from the Proposed HWRP Channel Cut Area.

4.4 Disclosure of Non-CERCLA Issues

This section discloses the non-CERCLA environmental hazard and safety issues identified during the records review and/or visual site inspection. The Army does not view ordnance as a release that is actionable under CERCLA and therefore considers ordnance to be a non-CERCLA issue. DTSC does view ordnance as a CERCLA release and considers it to be a CERCLA issue.

4.4.1 Asbestos

The presence of asbestos-containing materials in buildings on the Main Airfield Parcel was identified in an asbestos survey conducted in Buildings 15, 26, 35, 39, 41, 82, 83, 84, 86, 87, 90, 92, and 94 by Occusafe in 1989. Table 4-7 presents the results of the Occusafe Asbestos Survey. During the CERFA site visit (ETC, 1994b), there was no evidence of asbestos-containing materials in Buildings 20 and 40. The Army has conducted a large-scale abatement of asbestos on the Main Airfield Parcel. All asbestos, non-friable and friable, or asbestos containing material (ACM) have been removed by the Army from the Property with the exception of the asbestos pipe covering remaining on a small segment of outfall

pipes that have been left in place within the levee at Buildings 35 and 39. The ACM on the Property does not currently pose a threat to human health or the environment. All friable asbestos that posed a risk to human health has been removed. If the Conservancy demolishes or removes Buildings 35 and 39, the Conservancy will address the asbestos pipe covering remaining on the small segment of outfall pipes that have been left in place within the levee at Building 35 and 39.

4.4.2 Lead-Based Paint

Documentation through 1995 confirms that no survey for the presence of a lead-based paint had been conducted in buildings associated with the Main Airfield Parcel at HAAF. Based on the Hamilton Army Airfield real property inventory, all the buildings on Main Airfield Parcel were constructed prior to 1978. For the purposes of this EBS, structures built before 1978 are considered to have the potential for the presence of lead-based paint (Table 4-8).

To address possible lead contamination due to lead-based paint at current and previously demolished building locations, the Hamilton Wetland Restoration Project will provide 3 feet of stable cover over the footprint of the building and to a distance of 6 feet beyond the building footprint. If this 3 feet of cover can not be achieved, the soil at these current and previously demolished building locations plus 6 feet beyond the building perimeter will be scraped to a depth of 6 inches and managed elsewhere on-site beneath 3 feet of stable cover. The building foundation and any concrete/asphalt/hard foundation surface adjacent to the building may remain. Standard lead abatement practices will be followed during construction activities.

TABLE 4-7
Asbestos Findings at the Main Airfield Parcel
Environmental Baseline Survey, Hamilton Army Airfield

Building	Built Prior to 1985	Survey Results	Building Status	Notes
Building 15	✓	Contained asbestos	Present	Duct insulation tested positive for asbestos and is considered non-friable. ^a All ACM abated 2002.
Building 16	✓	Not surveyed	Demolished	Building was not surveyed.
Building 20	✓	Not surveyed	Present	During the CERFA site visit, there was no evidence of asbestos-containing materials. ^b
Building 26	✓	Contained asbestos	Present	Floor tiles tested positive for asbestos and are considered non-friable. ^a All ACM abated 2002.
Building 35	✓	Contained asbestos	Present	Tar-like covering on pipes tested positive for asbestos and are considered non-friable. ^a ACM abated 2002 with exception noted above.
Building 38 (Building 53)	✓	Not surveyed	Present	Army inspected Building 38 in 2003. No ACM is evident at Building 38.
Building 39 (Building 59)	✓	Contained asbestos	Present	Tar-like covering on pipes tested positive for asbestos and are considered non-friable. ^a All ACM abated 2002 with exception noted above.

TABLE 4-7
Asbestos Findings at the Main Airfield Parcel
Environmental Baseline Survey, Hamilton Army Airfield

Building	Built Prior to 1985	Survey Results	Building Status	Notes
Building 40	✓	Not surveyed	Demolished	During the CERFA site visit, there was no evidence of asbestos-containing materials. ^b
Building 41	✓	Contained asbestos	Demolished	Duct insulation, tar paper under roofing, and tar-like material on pipes tested positive for asbestos. Tar-like material was considered non-friable, while the duct insulation and tar paper were considered moderately friable. ^a All ACM abated 2002.
Building 42	✓	Not surveyed	Demolished	Building was not surveyed.
Building 43	✓	Not surveyed	Demolished	Building was not surveyed.
Building 44	✓	Not surveyed	Demolished	Building was not surveyed.
Building 45	✓	Not surveyed	Demolished	Building was not surveyed.
Building 45A	✓	NA	Demolished	Building was not surveyed.
Building 46	✓	Not surveyed	Demolished	Building was not surveyed.
Building 47	✓	Not surveyed	Demolished	Building was not surveyed.
Building 48	✓	Not surveyed	Present	Army inspected Building 48; asbestos shingles and roofing shingles tested positive for ACM. All ACM abated 2002.
Building 49	✓	Not surveyed	Demolished	Building was not surveyed.
Building 51	✓	Not surveyed	Demolished	Building was not surveyed.
Building 53	✓	Not surveyed	Demolished	Building was not surveyed.
Building 54	✓	Not surveyed	Demolished	Building was not surveyed.
Building 55	✓	Not surveyed	Demolished	Building was not surveyed.
Building 56	✓	Not surveyed	Demolished	Building was not surveyed.
Building 57	✓	Not surveyed	Demolished	Building was not surveyed.
Building 58	✓	Not surveyed	Present	Building was not surveyed no suspect asbestos or ACM at the boat dock.
Building 59	✓	Not surveyed	Demolished	Building was not surveyed.
Building 60	✓	Not surveyed	Demolished	Building was not surveyed.
Building 61	✓	Not surveyed	Demolished	Building was not surveyed.
Building 63	✓	Not surveyed	Demolished	Building was not surveyed.
Building 65	✓	Not surveyed	Demolished	Building was not surveyed.
Building 82	✓	Contained asbestos	Present	Floor tiles tested positive for asbestos and are considered non-friable. ^a All ACM abated 2002.

TABLE 4-7
Asbestos Findings at the Main Airfield Parcel
Environmental Baseline Survey, Hamilton Army Airfield

Building	Built Prior to 1985	Survey Results	Building Status	Notes
Building 83	✓	Did not contain asbestos	Present	No suspect materials were found. ^a
Building 84	✓	Contained asbestos	Present	Floor tiles, transite roofing shingles, pipe fitting insulation, exhaust flue insulation, and hot water tank insulation all tested positive for asbestos. Tiles and shingles are considered non-friable, while insulation is friable. ^a All ACM abated 2002.
Building 86	✓	Contained asbestos	Demolished	Floor tile, exhaust flue tape, and pipe fitting insulation tested positive for asbestos. Floor tiles were considered non-friable, while exhaust flue and pipe fitting insulation were considered friable. ^a All building materials removed from HAAF during demolition.
Building 87	✓	Did not contain asbestos	Present	No materials tested positive for asbestos. ^a
Building 88	✓	Not surveyed	Demolished	Building was not surveyed.
Building 90	✓	Did not contain asbestos	Present	No materials tested positive for asbestos. ^a
Building 91	✓	NA	Demolished	Building was not surveyed, demolished in 1968.
Building 92	✓	Did not contain asbestos	Present	No materials tested positive for asbestos. ^a
Building 93	✓	Not surveyed	Demolished (but foundation still exists) ^b	Army inspected building foundation. No ACM apparent in foundation slab.
Building 94	✓	Did not contain asbestos	Present	No materials tested positive for asbestos. ^a

^a Information extracted from Occusafe, 1989

^b Information extracted from ETC, 1994b

TABLE 4-8
Lead-Based Paint Potential
Environmental Baseline Survey, Hamilton Army Airfield

Building	Built Prior to 1978	Building Status	Notes ^a
Building 15	✓	Present	Building was identified in the CERFA Report as having lead-based paint.
Building 16	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 20	✓	Present	Building was identified in the CERFA Report as

TABLE 4-8
 Lead-Based Paint Potential
Environmental Baseline Survey, Hamilton Army Airfield

Building	Built Prior to 1978	Building Status	Notes ^a
			having lead-based paint.
Building 26	✓	Present	Building was identified in the CERFA Report as having lead-based paint.
Building 35	✓	Present	Age of the building suggests potential for the presence of lead-based paint.
Building 38 (Building 53)	✓	Present	Age of the building suggests potential for the presence of lead-based paint.
Building 39 (Building 59)	✓	Present	Age of the building suggests potential for the presence of lead-based paint.
Building 40	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 41	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 42	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 43	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 44	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 45	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 45A	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 46	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 47	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 48	✓	Present	Age of the building suggests potential for the presence of lead-based paint.
Building 49	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 51	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 53	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 54	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 55	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 56	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 57	✓	Demolished	Age of the building suggests potential for the

TABLE 4-8
 Lead-Based Paint Potential
Environmental Baseline Survey, Hamilton Army Airfield

Building	Built Prior to 1978	Building Status	Notes ^a
			presence of lead-based paint.
Building 58	✓	Present	Age of the boat dock suggests potential for the presence of lead-based paint on metal structures.
Building 59	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 60	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 61	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 63	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 65	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 82	✓	Present	Age of the building suggests potential for the presence of lead-based paint.
Building 83	✓	Present	Age of the building suggests potential for the presence of lead-based paint.
Building 84	✓	Present	Building was identified in the CERFA Report as having lead-based paint.
Building 86	✓	Demolished	Building was identified in the CERFA Report as having lead-based paint.
Building 87	✓	Present	Building was identified in the CERFA Report as having lead-based paint.
Building 88	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint.
Building 90	✓	Present	Building was identified in the CERFA Report as having lead-based paint.
Building 91	✓	Demolished	Age of the building suggests potential for the presence of lead-based paint on asphalt parking areas outside former building footprint.
Building 92	✓	Present	Building was identified in the CERFA Report as having lead-based paint.
Building 93	✓	Demolished (but foundation still exists) ^b	Age of the building suggests potential for the presence of lead-based paint as floor striping.
Building 94	✓	Present	Building was identified in the CERFA Report as having lead-based paint.

^a ETC, 1994b

^b WC, 1995

4.4.3 PCBs

A survey of electrical transformers located in the Inboard Area and GSA Sale Parcel was conducted in 1986, at which time 169 transformers were inventoried and screened for PCBs (WC, 1987). More sampling was conducted during the Environmental Investigation, at which time 54 transformers and six switches were sampled (ESI, 1993). During the Environmental Investigation, two transformers located near the boat launch at the southeast corner of the runway could not be sampled because they were found to be overturned and empty. Soil samples collected in the vicinity of these transformers tested non-detect for PCBs.

In 1994, the Presidio of San Francisco requested information on transformers to update an inventory of transformers on the Inboard Area to ensure compliance with the Toxic Substances Control Act. A site visit was conducted to characterize electrical transformers present on the Inboard Area (Richmond, 1994). During the transformer investigation conducted in 1994, capacities and PCB concentrations were determined for the transformers at the Inboard Area.

The 1994 transformer investigation also determined whether additional evaluation was required for each transformer based on the following criteria (Richmond, 1994):

1. If a PCB has a concentration of 500 ppm or greater, remove the transformer.
2. If a PCB has a concentration of 50 ppm or greater, but less than 500 and the transformer is leaking, remove the transformer.
3. If a PCB has a concentration of 50 ppm or greater, but less than 500 and the transformer is not leaking, take no further action.
4. If a PCB has a concentration less than 50 ppm, whether the transformer is leaking or not, no further action is necessary.

Several transformers on the Main Airfield Parcel have been removed (Table 4-9). In 1995, RCI removed transformers A0 through A8, D4 through D9, G9, H7 through H9, and I1 through I3. Transformers D1 through D3 were removed by Navy Public Works in February of 1991. Transformers A9, B1, and B2 were removed by Cerrudo Services in 1999; transformer F2 was removed in 2001.

TABLE 4-9
Transformers Identified on the Main Airfield Parcel
Environmental Baseline Survey, Hamilton Army Airfield

Transformer	Location	Estimated Volume (gallons)	PCB Concentration (ppm)	Status	Date Transformer Removed
A0	Building 15	14	33 ^a	Removed	RCI, Sept./Oct., 1995 ^a
A1	Building 15	14	3 ^a	Removed	RCI, Sept./Oct., 1995 ^a
A2	Building 15	14	44 ^a	Removed	RCI, Sept./Oct., 1995 ^a
A3	Building 26	15	ND ^a	Removed	RCI, Sept./Oct., 1995 ^a
A4	Building 26	15	ND ^a	Removed	RCI, Sept./Oct., 1995 ^a

TABLE 4-9
Transformers Identified on the Main Airfield Parcel
Environmental Baseline Survey, Hamilton Army Airfield

Transformer	Location	Estimated Volume (gallons)	PCB Concentration (ppm)	Status	Date Transformer Removed
A5	Building 26	15	ND ^a	Removed	RCI, Sept./Oct., 1995 ^a
A6	Building 20	14	ND ^a	Removed	RCI, Sept./Oct., 1995 ^a
A7	Building 20	14	ND ^a	Removed	RCI, Sept./Oct., 1995 ^a
A8	Building 20	14	ND ^a	Removed	RCI, Sept./Oct., 1995 ^a
A9	Building 41	1 – 99 ^d	<2 ^d	Removed	Cerrudo Services, 1999 ^c
B1	Building 41	1 – 99 ^d	<2 ^d	Removed	Cerrudo Services, 1999 ^c
B2	Building 41	1 – 99 ^d	<2 ^d	Removed	Cerrudo Services, 1999 ^c
B3	Buildings 35/39	1 – 99 ^d	Non PCB-containing fluid	Active	Cerrudo Services changed out collant fluid in 1999.
B4	Buildings 35/39	1 – 99 ^d	Non PCB-containing fluid	Active	Cerrudo Services changed out collant fluid in 1999.
B5	Buildings 35/39	1 – 99 ^d	Non PCB-containing fluid	Active	Cerrudo Services changed out collant fluid in 1999.
B6	Buildings 35/39	1 – 99 ^d	Non PCB-containing fluid	Active	Cerrudo Services changed out collant fluid in 1999.
D1	Building 90	1 – 99 ^d	<5 ^d	Removed	Navy Public Works, February, 1991
D2	Building 90	1 – 99 ^d	<5 ^d	Removed	Navy Public Works, February, 1991
D3	Building 90	1 – 99 ^d	<5 ^d	Removed	Navy Public Works, February, 1991
D4	Building 84	35	6 ^a	Removed	RCI, Sept./Oct., 1995 ^a
D5	Building 84	37	7 ^a	Removed	RCI, Sept./Oct., 1995 ^a
D6	Building 84	38	6 ^a	Removed	RCI, Sept./Oct., 1995 ^a
D7	Building 94	35	6 ^a	Removed	RCI, Sept./Oct., 1995 ^a
D8	Building 94	35	4 ^a	Removed	RCI, Sept./Oct., 1995 ^a
D9	Building 94	35	4 ^a	Removed	RCI, Sept./Oct., 1995 ^a
E1	Building 82	1 – 99 ^d	6 ^d	Removed	1998
F2	Building 86	67 ^d	350 ^d	Removed	Cerrudo Services, 2001 ^c
G9	Building 92	116	ND ^a	Removed	RCI, December, 1995 ^a
H7	Boat Dock	0 ^a	NS ^a	Removed	RCI, Sept./Oct., 1995 ^a

TABLE 4-9
Transformers Identified on the Main Airfield Parcel
Environmental Baseline Survey, Hamilton Army Airfield

Transformer	Location	Estimated Volume (gallons)	PCB Concentration (ppm)	Status	Date Transformer Removed
H8	Boat Dock	0 ^a	NS ^a	Removed	RCI, Sept./Oct., 1995 ^a
I1	Aircraft Parking Apron (btwn bldg 86 and 140) Bldg 99	7	ND ^a	Removed	RCI, Sept./Oct., 1995 ^a
I2	Aircraft Parking Apron (btwn bldg 86 and 140) Bldg 99	15	ND ^a	Removed	RCI, Sept./Oct., 1995 ^a
I3	Aircraft Parking Apron (btwn bldg 86 and 140) Bldg 99	7	ND ^a	Removed	RCI, Sept./Oct., 1995 ^a
O-1	ONSFL-Booster Pump Station	NA	Not Known [*]	Removed	NA
J-1	North of the runway	Transformer is dry	Not Known [*]	Present	—
K-1	North of the runway	NA	Not Known [*]	Removed	NA
L-1	South of the runway	NA	Not Known [*]	Removed	NA
M-1	Perimeter Drainage Ditch	NA	Not Known [*]	Removed	NA
East Levee Transformer	East Levee	NA	Not Known ^e	Removed ^b	NA

^a RCI, 1996

^b IT, 1999a

^c HAAF Staff Interview, 2001 (Cerrudo Services, 2002)

^d ESI, 1993

^e Although PCB concentrations are not known, soil samples were collected beneath the transformers and analyzed for PCBs. No PCBs were detected at the North and South runway transformers (J-1, K-1, L-1.), the East Levee transformer, and the ONSFL booster pump station transformer (O-1). PCBs were detected in soil below their baseline concentrations at the PDD transformer (M-1).

NA Not available

NS Not sampled

ND Non-detect

ppm parts per million

In November 1989, Airfield Parcel security personnel at Building 20 discovered an abandoned 55-gallon drum in the northern corner of the airfield. The U.S. Coast Guard Pacific Strike Team sampled the contents of the drum and detected PCB at a concentration of 2,000 ppm. The drum was properly disposed of in the summer of 1990. Soil samples collected near the drum were not contaminated with PCBs. As a result, the site was

identified as requiring no further action in the *Environmental Investigation Technical Plan* (Earth Tech, Inc.; 1995, Jordan, 1990).

4.4.4 Radon

A radon survey has not been conducted on the HAAF Main Airfield Parcel. The CERFA Report indicates interviews with the Environmental Investigation contractor, a review of applicable environmental documents, and adjacent property radon survey results indicate that radon is not a concern at HAAF (ETC, 1994b). Test data and survey results for the adjacent Navy property (housing) indicated radon below USEPA recommended action levels. Information provided by U.S. Geologic Survey representatives indicate that radon is not found in the region because of the geology of the area. Therefore, the CERFA Report concluded radon is not considered to be an environmental concern at HAAF (ETC, 1994b).

4.4.5 Ordnance

A newspaper report suggested that buried unexploded ordnance were located in unspecified areas on the Main Airfield Parcel. Bullets (.50 and .45 caliber) and 40-mm cannon shells were allegedly dumped about 30 years ago. The Enhanced PA investigations suggested that HAAF also had a former bombing range (ETC, 1994b).

These claims are unsubstantiated, as there is no evidence of either unexploded ordnance issue in other Hamilton records. No bombing sites were identified in USEPA analysis of aerial photographs of the site from 1952, 1968, 1972, and 1987. The Environmental Investigation did not identify unexploded ordnance sites or bombing ranges, nor did the visual flyover conducted during the CERFA investigation. No documented reports exist that state that unexploded ordnance was discovered in adjacent farmlands as would be expected if the installation had a bombing range.

The Archive Search Report identified potential Ordnance and Explosives (OE) related features, including an aircraft harmonization range, a skeet range, black powder and demolition bombs storage magazines, firing-in-butt, and a "testing" range (which included a firing range). Of these features, only the demolition bombs storage magazine was identified as a potential source of OE contamination due to possible disposal of unserviceable bombs by burial. The demolition bombs storage magazine was demolished and the area was regraded and paved over during the extension of the runway circa 1953. The harmonization range was subsequently identified as an aircraft avionics shop. The other range facilities would have employed small arms which would not pose an explosive hazard. In conducting the archives search and the site inspection, no indications or evidence of OE contamination were found at these facilities.

4.4.6 Radionuclides

The Army Environmental Hygiene Agency completed a thorough review of Army records in regard to radiological materials. Telephone interviews were conducted with several representatives of the U.S. Air Force. No other records pertaining to the use, storage, or disposal of radiological materials at HAAF were identified (ETC, 1994b).

According to the *Base Realignment and Closure (BRAC) Historical Record Search to Identify any Residual Radioactive Material at Hamilton Army Airfield* (Medical Physics Center, 1994) two

concrete-capped galvanized cylinders were buried, in accordance with Atomic Energy Commission policy, at Hamilton near an earthen levee in 1963. With the assistance of the U.S. Air Force, the cylinders, confirmed to contain electron tubes and wave-guides, were located northeast of the runway overrun levee. The cylinders were taken offsite on 14 September 1988 and disposed of at a low-level radiological disposal facility in Barnwell, South Carolina. Soil and water samples were taken internally, externally, and adjacent to each culvert, and were tested for radioactivity. All soil samples confirmed no migration of radioactivity to the nearby environment. After excavation of the cylinders, soil samples were collected from the former disposal site and analyzed for gamma spectrometry and tritium. No contamination was detected. After backfilling the excavation to grade, Geiger measurements showed no activity (Weston, 1990).

The California Department of Health Services (DHS) reviewed documentation of the radiological history of HAAF. DHS concluded that the cylinders had been removed from the base and that no contamination had occurred. The DHS findings were documented in a memorandum to the Army dated March 17, 2003 (DHS, 2003).

The Army Environmental Hygiene Agency completed a thorough review of Army records in regard to radiological materials. Telephone interviews were conducted with several representatives of the U.S. Air Force. No other records pertaining to the use, storage, or disposal of radiological materials at HAAF were identified (ETC, 1994b).

4.4.7 Non-CERCLA Residual Inboard Area-Wide DDTs and PAHs

Several additional issues related to DDTs (DDT, and its breakdown products DDE and dichlorodiphenyldichloroethane [DDD]) and PAH contamination have been identified within the Inboard Area of the Main Airfield Parcel. These issues include PAHs in soil near the runway and residual Inboard Area-Wide DDTs. The Army has identified these issues as not being CERCLA releases, and therefore, does not address them in the comprehensive remedial investigation, interim removal actions, human health and ecological risk assessment, or the Focused Feasibility Study for the Inboard Area Sites. DTSC and RWQCB consider the DDT and PAH contamination to be subject to the California Health and Safety Code, which requires the ROD/RAP to be consistent with the National Contingency Plan. The Army has agreed with the regulatory agencies to address these issues in the ROD/RAP for the Main Airfield Parcel.

Issues related to the detection of pesticides at specific sites (such as the spoils piles) are addressed by the Army as CERCLA-related issues, and therefore, are discussed in previous sections of this EBS. The non-CERCLA issues (PAHs near the runway, Inboard-Area-Wide DDTs) are summarized below.

In 1999, the Army conducted a study to evaluate the potential for the presence of pesticides throughout the unpaved areas of the Main Airfield Parcel and the potential for PAHs to be located adjacent to the runway. This study and the results of the study are documented in the Remedial Design Investigation Final Data Report (F-W, 2000). During the study, the Army collected 23 samples throughout the Main Airfield Parcel and near the runway to evaluate the presence or absence of pesticides and DDTs.

The study showed that approximately 270 acres of grassland have residual concentrations of DDTs. The concentrations of total DDTs detected ranged from 0.0181 to 0.935 ppm. The

study also showed that soil along the margins (within 50 feet) of the southern end of the runway contains residual PAHs. The PAH detections are greater along the southern end of the runway, which was the normal landing area. The concentrations of PAHs detected ranged from 0.036 to 54.9 ppm. The residual DDTs and PAHs may pose a potential risk to future wetland receptors if the receptors, or their prey items, are exposed to existing site soil during the development and maturation of the wetland.

The ROD/RAP proposes remedial action for this area. Through the HWRP the Army Civil Works Program will establish performance criteria requiring 3 feet of cover over all site soils containing residual DDTs and/or PAHs in excess of the action goals. The Army Civil Works Program shall ensure, through both construction and implementation of its plan for monitoring and adaptive management, that the HWRP will achieve and maintain the performance criteria of 3 feet of stable cover or its equivalent.

4.4.8 General Services Administration and BRAC Soil Stockpiles

Approximately 97 soil stockpiles are currently staged in rows on the runway. In 1995 and 1996, the soil was generated by the environmental remediation of GSA and BRAC properties adjacent to the Main Airfield Parcel. Minor amounts of additional soil were generated in 1997 and 1998. The soil was stockpiled on the runway located on the Main Airfield Parcel. Soil with concentrations above hazardous waste thresholds (lead, PCB, VOCs, pesticides or herbicides) were not stockpiled on the runway and were shipped offsite for disposal. TPH- and PAH-contaminated soils from petroleum sites are not regulated by CERCLA.

The stockpiles on the runway were evaluated for reuse in levees, as excavation backfill, or as capping soil. A plan of randomly generated sampling locations and a statistical approach to the evaluation of the sample results was employed to characterize the stockpiles and determine which stockpiles were ready for reuse and which had unacceptable levels of TPH or PAHs; therefore, the stockpiles were not ready for immediate reuse. Based on the analysis of the sample results, some stockpiles were used in the NHP Levee, and other stockpiles were consolidated into piles of like chemical concentrations. Other piles were left in their original configuration. Additional samples were collected from a number of the consolidated stockpiles to characterize them after consolidation.

The stockpiles have been managed to prevent erosion and sediment transport by rainwater runoff. Each pile has been coated with a soil-cement (polymer) mixture to prevent erosion. Soil and rock berms and straw bales were placed around the stockpiles or at the perimeter of the airfield, taxiways, and former aircraft parking areas to manage and mitigate sediment in runoff from the airfield to the lower-lying grassland areas at the runway edges. The stockpiles were left in an "as-is" condition. The storm water erosion berms have been maintained and storm water sampling has been conducted since 1996.

The RWQCB will determine what additional actions (if any) may be required with respect to the management and reuse of the stockpiled soil. The Army will be responsible for conducting any additional actions required by the RWQCB.

4.4.9 Sanitary Sewer and Stormwater Issues

4.4.9.1 Sanitary Sewer

Between 1932 and 1941 sewage from the Hamilton base was pumped to San Pablo Bay through a 10-inch diameter underground pipeline. The pipeline emerged above ground on the bay side of the east perimeter levee, extended across the marsh, and discharged 600 feet from the shoreline edge of the marsh. In 1941 the Army constructed a sewage treatment plant (the FSTP) located just south of the storm water pump station area at the east levee. As Hamilton grew, new sewage lines from the airfield shops, administration, and housing areas were routed to the treatment plant. The first pipeline routed to the FSTP was constructed underground, parallel with a portion of the original line; then angled to the treatment plant across the south end of the runway. These original waste lines were abandoned and replaced with subsequent pipelines, routed near the southern and eastern legs of the PDD adjacent to the perimeter roadways.

Sewage from the AMSF area, which included buildings 86, 91, and 93 on the Main Airfield Parcel and waste from later buildings 82 and 84 was conveyed through a network of vitrified clay pipes flowing westward to the central force-main booster pumps located in the former GSA Phase I Sale Area. From this pumping point, all waste from the entire Hamilton facility was pumped to the FSTP. After treatment at the FSTP, gray-water was discharged through a 500-foot long, 15-inch diameter pipe to a channel, which flowed through the marsh to San Pablo Bay.

No information has been found regarding sewage plumbing at other buildings on the Main Airfield Parcel. Inspections of all the buildings remaining at HAAF indicate that waste facilities only existed at the buildings listed above and at the boat dock.

During the RI, sanitary sewer (SS) lines associated with the FSTP (SS-1 through SS-6) were investigated. The RI proposed to video-log the lines and sample sediments; however, this task could not be completed because the lines were filled with water. Therefore, five water samples were collected from inside the sanitary sewer lines and analyzed for TPH-P, TPH-E, BTEX, PAHs, PCBs, pesticides, metals, and coliform bacteria. The sampling detected metals, VOCs, one pesticide, and TPH, including UHE (IT, 1999a). Coliform bacteria were detected in the SS-1 water sample.

Storm Drains

The storm drain system at Hamilton is still in use. Storm water runoff from the paved surfaces at HAAF (runways, taxiways, and revetments) flows to low-lying soil areas at the sides of the pavement. Storm water collection boxes (inlets) and drainage system conduits (pipes), ranging in diameter from less than 12 inches to as large as 54 inches in diameter, are distributed in several general areas of the HAAF. The component lines in each network span various distances and lie at various depths below grade. One network drains the mid-airfield just northwest of the revetment area. Another network drains the revetment area itself, while a third drains the aircraft maintenance area to the southwest of the revetments. A portion of the drains in the AMSF convey water to discharge into the PDD located to the west of the central portion of the airfield (CH2M HILL, 2001). The balance of storm drains at the AMSF flow southeast and discharge directly to the southern leg of the PDD. The PDD

conveys storm water to the pump stations (Buildings 35 and 39) on the margin of San Pablo Bay.

A large network of storm water inlets and pipes drain surface runoff from the revetment area and adjacent low-lying areas directly into the north leg of the lined PDD. Further to the west the mid-airfield network of storm drains collects surface storm water from this area of the HAAF and conveys it north also to the north leg of the lined PDD. This network also receives some of the storm water from the newly developed housing areas of Hamilton. Storm water enters the PDD and flows east and then south to the pump stations at Buildings 35 and 39. A fourth, much smaller remnant network of storm drains formerly carried surface runoff from the west side of the airfield south to the drain system in what is now the Southgate development at Hamilton. Storm water is removed from much of the airfield by a network of storm drains in which runoff has deposited sediment.

Two storm water pumping facilities at HAAF are still operating. A series of drainage channels, levees, and two storm water pump stations (located on the east side of HAAF between Perimeter Road and the East Levee) remove runoff and groundwater seepage from HAAF and discharge the storm water into San Pablo Bay.

Drainage from surrounding properties onto the Main Airfield Parcel occurs at several locations. The drainage ditch located on the Main Airfield Parcel, outside the South Levee, is fed by surface runoff from the U.S. Navy housing unit and farmland located to the south. The Main Airfield Parcel is also subject to the same flooding that affects the state-owned tidal wetlands because of a 2,575-foot gap in the Northern Levee. During high tides, when Novato Creek backs up, the excess water flows into the Ignacio Reservoir. In the past, excess storm water would flow through siphons in the airfield's West Levee into the northern perimeter drainage ditch. However, the valves, which allow connection from Ignacio Reservoir to the HAAF, have been closed for many years.

During the RI, the Army investigated storm drain lines in the AMSF area and storm drain inlets that were a part of the airfield storm drain network. Some of the storm drain lines (designated SD-1 through SD-6 for the purposes of the RI) in the AMSF area were cleaned and video logged, and sediment samples were collected from the storm drain inlets associated with the airfield storm drain network.

Storm drain lines SD-3, SD-4, SD-6, and portions of SD-2 and SD-5 were cleaned and video logged during the RI. SD-1 and most of SD-2 could not be cleaned because they were flooded. The cleaning of SD-2 was also hindered by an obstruction located at the inlets near Building 86. Wastewater and sediments derived from the cleaning of the storm drain lines were disposed offsite.

Video logs were reviewed to identify and locate features with the potential for leaks. Three representative locations were selected for sampling to test potential impact to soil adjacent to the storm sewer lines. Three potholes were excavated in the AMSF area. The samples were located northeast of Building 86 (where a petroleum hydrocarbon odor was detected), southwest of Buildings 92 and 94 (adjacent to a sag observed at a junction of SD-4) and along a settled portion of SD-5 located between the apron and runway northeast of Building 86. Following sampling activities, the potholes were backfilled with previously removed material.

During the 1998 interim removal actions, ten soil borings were drilled along SD-1 to characterize chemical concentrations in the vicinity of the storm drain line at the AMSF; soil boring samples were collected because SD-1 could not be cleaned.

Results of the sampling conducted during the RI and 1998 interim removal action indicated that soil along SD-1 and north of Building 86 have had contaminant impacts. Metals, UHE, and pesticides were detected in sediment samples collected from the storm drain inlets located in the airfield storm drain network. Four PAHs also were detected in one of the storm drain inlets.

During the 1999 interim removal action, storm drain drop inlets in the AMSF area and airfield storm drain networks that were not investigated during the previous year's activities were cleaned. Approximately 33 cubic yards of sediment were removed from 52 storm drain drop inlets.

4.4.9.1 Main Airfield Parcel Storm Drain Inlets

Storm water drain inlets were investigated in two areas of the Main Airfield Parcel, both of which carry water to the northern perimeter drainage ditch. Area 1 consists of approximately 7,000 linear feet of pipe that drained runoff from the northwest portion of the runway. Area 2 consists of approximately 20,000 linear feet of pipe that drained runoff along the taxiways and concrete turnout pads in the Revetment Area northeast of the runway. The inlet structures are concrete boxes. Each box has an invert that is lower than the adjoining pipe run. This serves as a well or dropout where sediments accumulate to minimize sediment load within the pipe runs.

The only previous investigation performed on either area, analyzed soil and groundwater that surrounded the storm drains in Area 2, but not sediment within storm drains.

During the RI, sediment samples were collected from seven locations in Area 1 and nine locations in Area 2. Samples in Area 1 and Area 2 were analyzed for TPH-P, TPH-E, BTEX, metals, VOCs, and PAHs. Three samples collected southwest of the runway (Area 1) and six samples collected at inlets in the central and western portions of the revetment area (Area 2) were analyzed for PCBs and pesticides also (IT, 1999a).

Ten metals and four PAHs were detected in Area 1 storm drain sediments at concentrations in excess of baseline values. All four PAHs detected above baseline values were from a single inlet. DDT and DDE were also detected. Detection of UHE exceeded the step-out criterion at three locations; however, step-out investigations were not required at this site, since the investigation was restricted to the storm drain inlet structures (IT, 1999a).

Area 2 samples contained seven metals in concentrations that exceeded baseline values, as well as DDE and DDT. The six UHE detections were all less than the step-out criterion and lower than the Area 1 UHE detections (IT, 1999a).

During the 1999 interim removal action activities, storm drains in the airfield storm drain network were cleaned. Sediment was removed from drop inlets (the section in which sediment settles when water enters the storm drain). Water and sediment were pumped into a phase separator to remove the water from the sediment. The water was analyzed for TPH-purgeable, TPH-extractable, pesticides, PCBs, BTEX, VOCs, and metals. All detects were below the water screening levels (Saltwater Aquatic Protection guidance levels). The

water was then used for dust suppression on the runways. The sediment was allowed to dry for several days, but it had to be mixed with soil from the PDD spoils piles to reduce moisture before being shipped for disposal.

4.4.9.2 AMSF Storm Drain and Sewer Systems

ESI conducted an investigation of the storm drains in the AMSF area. Sediment samples were collected from four storm drain inlets and one outlet. Analyses for VOCs, SVOCs, and metals were performed. The samples contained five to 17 PAHs and six to nine metals at concentrations that exceeded baseline values (up to 46 times for lead). During remediation, two of the inlets were cleaned. Lead in the other two inlets exceeded baseline up to 28 times. Dibenzofuran and one VOC were detected in two inlet samples.

In 1994 and 1996, USACE and WCFS collected samples at 13 locations in the drainage ditch in and near the storm drain outfalls. Up to 10 metals and nine PAHs were detected in these samples at concentrations exceeding baseline values. Lead and zinc had the highest detected concentrations of any metal, exceeding baseline values 97 and 66 times, respectively. The PAH was present in the perimeter drainage ditch at 43 times its baseline value.

Storm drains within the AMSF area were also investigated during the RI. This storm drain system is approximately 12,000 linear feet in length and discharges southward toward the perimeter drainage ditch. Six of the individual storm drain lines consist of five or more inlets and branched pipeline systems. Storm drain lines were designated SD-1 through SD-6. SD-1 through SD-4 collect surface water runoff from the former industrial portion of the AMSF. SD-5 collects water from the main taxiway. Prior to the construction of the New Hamilton Partners levee, SD-6 collected water from the north end of the AMSF, and then drained southwest of the perimeter drainage ditch. The network on the other side of the NHP levee now blocks this drainage.

The objective of the RI was to clean and video log the storm drains. After analyzing the video logs for potential leaks, three areas were chosen for sampling to test potential impact on adjacent soil. Three potholes were excavated at various locations, including the paved apron northeast of Building 86 where a petroleum hydrocarbon odor was detected; at a junction in SD-4 southwest of Buildings 93 and 94 adjacent to a sag in the pipe; and at a junction in SD-4 between the apron and runway northeast of Building 86 along a settled portion of the line. Ten soil borings were also drilled along the storm drain line SD-1 to characterize chemical concentrations in soil in the vicinity of this storm drain. All samples were analyzed for TPH-P, TPH-E, BTEX, PAHs, VOCs, and metals.

Eight metals were detected in concentrations that exceeded soil baseline values in one or more of the soil samples. The highest concentration of nearly every metal detected occurred in the sample from 6 feet bgs in the pothole near Building 86. One sample collected at 10 feet bgs from a soil boring had nine PAHs above the sediment baseline value. Another sample collected at 10 feet bgs contained UHE at 19 mg/kg. BTEX and VOCs were not detected in any sample.

Two of the 10 soil borings contained analytes in excess of the removal guidance level. Nickel was detected at 285 mg/kg in a bottom sample, while PAHs were found in a middle sample above removal guidance levels. Detected PAHs include acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, phenanthrene, and pyrene.

During the 1999 interim removal action activities (IT, 2000a) storm drains in the AMSF storm drain network were cleaned. Sediment was removed from drop inlets (the section in which sediment settles when water enters the storm drain). Water and sediment were pumped into a phase separator to remove the water from the sediment. The water was analyzed for TPH-purgeable, TPH-extractable, pesticides, PCBs, BTEX, VOCs, and metals. All detects were below the water screening levels (Saltwater Aquatic Protection guidance levels). The water was then used for dust suppression on the runways. The sediment was allowed to dry for several days, but it had to be mixed with soil from the PDD spoils piles to reduce moisture before being shipped for disposal.

Water samples were taken from the sewer lines in five locations. Samples were collected from sewer line SS-4 near the Boat Dock, sewer line SS-3 near the eastern edge of the runway approach apron, sewer line SS-5 along the western edge of the south end of the runway, sewer line SS-1 lift station at Building 41, and sewer line SS-4 at the western end of the south perimeter drainage ditch, west-southwest of Building 82. Samples were analyzed for TPH-P, TPH-E, BTEX, PAHs, PCBs, pesticides, metals, VOCs, and coliform bacteria.

Five petroleum hydrocarbons, including UHE, six VOCs, one pesticide, and 15 metals, were detected in sanitary sewer line water samples. Coliforms were found in only the SS-1 lift station next to Building 84.

4.4.10 Waste Management

4.4.10.1 Solid Waste Management

No solid waste management activities are known to have occurred at the Main Airfield Parcel.

4.4.10.2 Mixed Waste

No information was obtained that would indicate that mixed waste was generated or disposed of at the Main Airfield Parcel.

4.4.11 RCRA Facilities/SWMUs

The Main Airfield Parcel has no existing environmental management plans and practices addressing RCRA Facilities/Solid Waste Management Units (SWMUs), permits, and program elements. The Main Airfield Parcel has no RCRA-permitted facilities or SWMUs.

CERFA Letter Report

5.1 Executive Summary

This letter report presents the updated results of the CERFA investigation for the Main Airfield Parcel of the HAAF. The BRAC Commission under Public Laws 100-526 and 101-510 selected HAAF for closure in 1988. Under CERFA (Public Law 102-426), federal agencies are required to expeditiously identify real property that can be immediately reused and redeveloped. Satisfying this objective requires the identification of real property where no hazardous substances or petroleum products regulated by the CERCLA were stored for 1 year or more, or were known to have been released or disposed.

Information in this letter report was obtained during the preparation of the EBS for the Main Airfield Parcel and was current as of September 2001. This information was used to divide the installation into the seven Environmental Condition of Property categories. These categories, with results of the categorization process, are presented in Table 5-1, DoD Environmental Condition Categories.

Areas of the facility with disclosure-related environmental or safety issues, including asbestos, lead-based paint, PCB, radon, unexploded ordnance (UXO), radionuclides, pesticides, and PAH issues, have also been identified within the BRAC Parcels.

This letter report contains a figure showing the categorization of the BRAC Parcels based on the seven Environmental Condition of Property categories listed in Table 5-1. This report should be read only in conjunction with the complete EBS report for this installation. The EBS report provides the relevant environmental history to substantiate the BRAC Parcel categorization. This report does not address other property transfer requirements that may be applicable under the National Environmental Policy Act, nor does it address natural resource considerations such as the threat to plant or animal life.

5.2 Summary of Findings

Property categorization factors are hazardous substances or conditions that, if present, may pose a threat to human health or the environment. These substances or conditions include, but are not limited to, hazardous substances as defined in CERCLA Section 101(14), and petroleum substances. The categorization factors can be classified into three general groups: Storage and Use; Release; and Disposal. In addition to property categorization factors, this document examines facility disclosure factors, also referred to as non-CERCLA issues. Facility disclosure factors are hazardous substances or petroleum substances that do not pose a threat to the wellbeing of the human community and environment if properly managed and maintained. They are not used in determining the Environmental Condition of Property category, but are considered in determining whether a BRAC Parcel is suitable for transfer or lease. These items include asbestos, lead-based paints, PCBs, radon, UXO, radionuclides, pesticides, and PAHs.

TABLE 5-1
DoD Environmental Condition Categories
Environmental Baseline Survey, Hamilton Army Airfield

Category	Definition	BRAC Parcel
BRAC Parcels in the following DoD categories are suitable for transfer.		
1	Areas where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas)	1, 28
2	Areas where only release or disposal of petroleum products has occurred	3, 4, 24, 25, 26, 27, 34, 37, 43, 44, 46, 48, 50, 52, 55, 56, 57
3	Areas where release, disposal, and/or migration of hazardous substances have occurred, but at concentrations that do not require a removal or remedial response	8, 29
4	Areas where release, disposal, and/or migration of hazardous substances have occurred, and all removal or remedial actions to protect human health and the environment have been taken	15, 18, 38, 39
BRAC Parcels in the following DoD categories are suitable for transfer only under a Finding of Suitability for Early Transfer (FOSET).		
5	Areas where release, disposal, and/or migration of hazardous substances have occurred, and removal or remedial actions are underway, but all required remedial actions have not yet been taken	6, 16, 35, 36
6	Areas where release, disposal, and/or migration of hazardous substances have occurred, but required actions have not yet been implemented	1 ^a , 2, 5, 7, 9, 10, 11, 12, 13, 14, 17, 19, 20, 21, 22, 23, 28 ^a , 30, 31, 32, 33, 40, 41, 42, 45, 47, 49, 51, 53, 54, 58, 59, 61
7	Areas that are not evaluated or require additional evaluation	60

^a The Army does not view the Inboard Area-Wide DDTs and PAHs adjacent to the runway as a release that is actionable under CERCLA, and therefore, considers the parcel to be a Category 1. DTSC does view the Inboard Area-Wide DDTs and PAHs adjacent to the runway as a CERCLA release and considers the parcel to be a Category 6. The ROD/RAP addresses this issue to everyone's satisfaction, and it is anticipated that the deferred CERCLA warranty is expected to be issued in the future for the whole Property.

The property classifications are illustrated in Figures 5-1 through 5-25 at the back of this section. The basis for the categorization process is presented in Table 5-2, CERFA Map Summary. This table provides a brief summary of the key findings for each BRAC Parcel.

5.2.1 CERFA Uncontaminated Parcels

CERFA (CERLA Section 120(h)) was enacted to facilitate the rapid return of uncontaminated properties identified during the BRAC process to local communities. "Uncontaminated property" (as amended by the FY97 Defense Authorization Act) refers to real property where no release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas). This definition includes BRAC Parcels that were placed into Category 1.

As presented in Table 5-1, the Main Airfield Parcel (excluding other BRAC parcels) and the Northwest Runway satisfy these CERFA requirements for uncontaminated BRAC Parcels.

DTSC's response to the Army's request for concurrence on uncontaminated property is documented in DTSC letters dated April 18, 1994; May 20, 1994; and February 15, 2001.

5.2.2 Early Transfer BRAC Parcels

This EBS discusses the environmental factors of concern that have been identified through previous investigations of the Main Airfield Parcel. This document finds that the proposed early transfer of the BRAC Parcels to the Conservancy prior to the completion of all remedial action, for the planned use (open space for wetland reestablishment), is consistent with the protection of human health and the environment and will not substantially delay necessary response action, following transfer to the Conservancy.

5.3 Disclosure Factors

As stated above, the disclosure factors are not used in categorizing the BRAC Parcels. They are, however, important in determining whether or not reuse of a BRAC Parcel would pose an adverse risk to human health or the environment. Therefore, these factors are important when considering whether the Property is suitable for transfer. Table 5-3 presents a summary of the presence (or absence) of these factors for the BRAC Parcels identified on the Property. In some cases, studies to assess disclosure factors have not been performed. For example, comprehensive lead-based paint studies have not been performed. However, assumptions can be made as to the likely presence of these substances based on the age of the buildings. The use of lead-based paint was discontinued in 1977; therefore, buildings constructed prior to 1978 are generally assumed to contain lead-based paint. Therefore, when the factor is assumed to occur, it is indicated in the table.

TABLE 5-2
CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
1(1/6) ^c	Main Airfield Parcel (Excluding other BRAC parcels)	570.38	1/6 ^c	<p>The Army Air Corps constructed Hamilton Army Airfield on reclaimed tidal mud flats in 1932. The site, previously known as Marin Meadows, had been used as ranch and farm land since the Mexican Land Grant. Military operations began in December 1932, first as a base for bombers and later as a base for transport and fighter aircraft. The base played a major role in World War II as a training field and staging area for Pacific operations. During the war, the base hospital served as an acute care and rehabilitation facility for thousands of war casualties a month.</p> <p>The base was renamed Hamilton Army Air Force Base in 1947, when it was transferred to the newly created U.S. Air Force (USAF). The USAF used the base primarily as a training and fighter installation until 1975. The USAF ended military operations at the base in 1976, and the DoD as part of the BRAC of 1988 declared the property surplus. In 1976, with permission from the USAF, the Army began aircraft operations at the airfield and its supporting facilities. In 1984, airfield property was officially transferred back to the U.S. Army and renamed Hamilton Army Airfield. The Army continued to use the airfield for Army Reserve aircraft operations until March 1994. Currently, Forces Command Headquarters at Fort McPherson, Georgia, manages the BRAC program for Hamilton. The Main Airfield Parcel is on the real property books of I Corps at Fort Lewis, Washington.</p> <p>Parcel 1 (1) is defined as the entire Main Airfield Parcel excluding the other BRAC parcels.</p>	IT, 1999a; IT, 2000a; IT, 2000b; IT, 2001a; IT, 2001b; U.S. Army, 2003	—

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
2(6) PR/SH R	Former Sewage Treatment Plant (including sanitary and industrial waste lines)	1.38	6	The FSTP is located at the eastern edge of the Inboard Sites parcel, close to Perimeter Road and the Perimeter Drainage Ditch, and immediately southwest of the Pump Station Area. The FSTP consisted of several buildings, a digester, and four sludge drying beds. The beds were unlined and contained within earthen berms. Sewage generated at HAAF was processed by primary and secondary treatment at the plant. Treated effluent water was discharged into San Pablo Bay via an outfall pipe. Beginning in 1986, sewage from the remaining operating areas of the HAAF was directed to the Novato Sanitation District. The FSTP buildings were demolished and the sludge, berms, and bed dikes were removed in 1987.	IT, 1999a; IT, 2000a; IT, 2000b; IT, 2001a; IT, 2001b; U.S. Army, 2003	In 1998, approximately 4,000 yd ³ of soil centered along the former sludge drying beds was removed. In 1999, approximately 140 yd ³ of soil was excavated to address a sludge layer identified in 1998. The risk assessment and FFS evaluations determined that DDTs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.
3(2) PS/PR	Building 20	0.03	2	Building 20 is located along the northern Perimeter Road near the Landfill 26 borrow area. The building was used to provide electricity for runway lighting, radar, or other activities. A transformer pad is adjacent to the east wall and a diesel UST was buried on the southwest side of the building. The transformers have been removed. During a 1996 UST/AST investigation conducted by IT an area of stained soil with a heavy hydrocarbon odor was observed about 10 feet west of the building.	IT, 1999a; IT, 2000a; IT, 2000b; IT, 2001a; IT, 2001b; U.S. Army, 2003	Excavation and confirmation sampling were conducted as part of the 1998 Interim Removal Actions. Approximately 150 yd ³ were removed at the former UST location. No contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.

TABLE 5-2
CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
4(2) PS/PR	Building 26	0.16	2	Building 26 is located along the northern Perimeter Road, approximately 500 feet southeast of Building 20. A transformer pad is located on the west side of the building; the transformers were removed. A diesel UST was formerly located at the south side of the transformer pad and a former AST was located inside the building. The UST excavation was backfilled.	IT, 1999a; IT, 2000a; IT, 2000b; IT, 2001a; IT, 2001b; U.S. Army, 2003	Potholes were excavated around the former UST location. No staining was identified near the former AST location and this area was not investigated further. The risk assessment and FFS evaluations determined that TPH-D is the only contaminant remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.
5(6) PS/PRH R	Building 35/39 Area	0.08	6	The Building 35/39 Area is located at the north end of the pump station near the northeast corner of the Inboard Sites parcel. Both buildings contain high-capacity pumps for the removal of water from the Airfield Parcel via the Perimeter Drainage Ditch. The water is discharged via outfall pipes into the outfall drainage ditch, located immediately outside the perimeter levee. The outfall drainage ditch flows to San Pablo Bay. Features in this area include Building 35, which contains a large pump, and former AST 6. AST 6 was located at the northeast corner of Building 35. Former AST 5 was located southeast of Building 39. Three active transformers and a generator shack are located midway between the two buildings and outfall pipes are located at each building to discharge water from the pumps through the levee into the outfall drainage ditch.	IT, 1999a; IT, 2000a; IT, 2000b; IT, 2001a; IT, 2001b; U.S. Army, 2003	Excavation activities were conducted near Building 39 in 1998. Approximately 332 yd ³ of soil were removed from the former AST 6 area in 1999. No contaminants related to petroleum storage, release or disposal at this site are present at concentrations that require remedial action. The risk assessment and FFS evaluations also determined that DDTs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends excavation with off site disposal as the remedy for this site to protect future wetland receptors. The ROD/RAP recommends manage in situ with monitoring and maintenance as the remedy for the balance of this site to protect future wetland receptors.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
6(5) PS/PR	Building 41 Area	0.81	5	The Building 41 Area is a former pump station in the southern portion of the PSA. Two former 1,100-gallon diesel USTs located on the northwestern side of Building 41 supplied fuel for the pumps at the building. Structures in and around Building 41 include four inoperable diesel powered pumps inside Building 41 and two former ASTs east of Building 41. Former Building 40 and three former transformers on a concrete pad located northeast of the Building were part of the Building 41 Area. An outfall pipe extends 80 feet southeast from Building 41, through the levee, to a discharge point in the outfall drainage ditch. The remedial actions, including building demolition, excavation, and confirmation sampling at this site are documented in the Final Construction Report Building 41 Demolition and Soil Removal, Spoils Pile F Removal, and Revetments 6 and 7 Removal (IT, 2003). After reviewing the analytical data from that event, it was agreed that some additional samples are needed to determine whether the actions are complete. Therefore, for the purposes of this report, this site is being evaluated as though the actions have not yet taken place.	IT, 1999a; IT, 2000a; IT, 2000b; IT, 2001a; IT, 2001b; U.S. Army, 2003	The USTs were removed in 1995. Approximately 250 yd ³ of soil were excavated west of Building 41 as part of the 1998 Interim Removal Actions. Additionally, approximately 450 yd ³ of soil were excavated east of Building 41 as part of the 1999 Interim Removal Actions. The risk assessment and FFS evaluations determined that THP-D and PAHs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends excavation and offsite disposal as the remedy for this site to protect future wetland receptors.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
7(6) PS/PRHS HR	Building 82/87/92/94 (including storm drains)	0.50	6	<p>Building 82 is a single-story structure south of former Building 86 and about 50 feet from Perimeter Road. Building 82 was built in the area of former Building 91; Building 91 was an air freight terminal. Building 82 historically was used for flight operations, aircraft rescue, and first aid. A transformer previously was located on a concrete pad northeast of Building 82. A propane tank is also located on the northeast corner of the building. Building 87 is immediately south of the aircraft parking lot and was used to store products (5 gallons or less) such as paint, oil and grease, antifreeze, and solvents. 55-gallon drums of solvent and cleaning compounds were stored on horizontal dispensing racks in the area around Building 87. A metal CONEX container was located northwest of Building 87, contained unleaded gasoline in 5-gallon containers. The racks and drums were occasionally moved to various locations surrounding the building. Buildings 92 and 94 are single-story structures located northwest of Building 82 and south of former Building 86.</p> <p>The buildings historically were used for aircraft maintenance and storage and to store supplies for aircraft rescue and offices. They are currently used to store records and sampling equipment. Three transformers previously were located on a concrete pad between Buildings 92 and 94. A storage area (Storage Area 3) was located on the southeastern side of Building 94. The storage area consisted of five metal containers used to store maintenance related fluids such as fuel, paint, and solvents. Curbing or other surface containment did not surround the area.</p>	IT, 1999a; IT, 2000a; IT, 2000b; IT, 2001a; IT, 2001b; U.S. Army, 2003	<p>During 1998 interim removal actions, 170 yd³ of soil were excavated at Building 82. Additional excavation of 317 yd³ was conducted in 1999 at Building 82. The Army conducted an additional soil and groundwater investigation at Building 82 in September 2002 (Cerrudo Services, 2002). Soil and groundwater samples were collected inside and outside of Building 82. TPH-D, TPH-G and TPH-MO were detected in the groundwater samples. BTEX compounds were not detected in soil or groundwater samples. The Army and SWRCB agreed that no further action is required at this site with respect to groundwater.</p> <p>In 1998, the transformer pad and switches at Building 92/94 were removed and approximately 125 yd³ of soil were excavated in the transformer pad area. There are no known petroleum releases from the Building 82/87/92/94 area. No contaminants related to petroleum storage, release or disposal at this site are present at concentrations that require remedial action. The risk assessment and FFS evaluations determined that metals (barium and beryllium) are the only constituents present at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.</p>

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
8(3) PS/SHH R	Building 84/90	1.1	3	<p>The Building 84/90 Area is at the southeastern end of the former Aircraft Maintenance and Storage Facility (AMSF) area, northwest of Perimeter Road and south of the taxiways. Building 84 was used for repair of aircraft electronics equipment. A fenced enclosure just northeast of Building 84 formerly contained a concrete slab and three transformers. The transformers were removed in 1995. Three electrical units of unknown use are located on the north exterior wall beneath an awning. Building 90 was used for aircraft maintenance activities. The activities conducted at the building included aircraft equipment repair, oil changing, jet and propeller engine repair and service, aircraft bodywork, painting and washing, and fuel testing. The southern end of the building is a small utility/electrical room and two wash racks adjoin the west side of the building. A small sump is on the southern side of the building. This sump was used as a receiving structure for a floor drain inside the southern shed of Building 90. A fence-enclosed transformer pad adjoined the south side of the building.</p> <p>The transformers were removed in 1991 (IT, 1999). Hazardous substances used and wastes generated during these activities reportedly included stripping and degreasing solvents, batteries, petroleum, oils, lubricants, antifreeze, and paints. No remedial action is needed at this site.</p>	IT, 1999a; IT, 2000a; IT, 2000b; IT, 2001a; IT, 2001b; U.S. Army, 2003	There are no known releases of petroleum substances at this site. No contaminants related to hazardous substances storage, release or disposal at this site are present at concentrations that could pose a risk to future wetland receptors or that would require remedial action. Remediation activities were not performed at Building 84/90. No contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
9(6) PS/PRHS /HR	Building 86 (including storm drains)	Included in Building 82/87/92/94	6	Building 86 was an aircraft maintenance hangar, located about 50 feet southeast of where the New Hamilton Partnership (NHP) levee is now located. A flammable materials locker and at least one recirculating solvent parts cleaner were located in Building 86. Substances used and waste generated at the hangar included stripping and degreasing solvents, oils, and paints. Waste material from activities at Building 86 was taken to a storage area located on the southwest corner of the building (Storage Area 2) by Army personnel. Storage Area 1 was located near the northeast corner of Building 86 and was used for drum storage. Drums were placed horizontally on metal storage and dispensing racks. Storage Area 2 consisted of 55-gallon drums and smaller containers that stored waste oils, waste fuel, and other maintenance related fluids. The materials were stored within a metal container that rested on a gravel surface. Building 86 was removed in 1998. A concrete slab on the west, north, and east sides adjoins the remaining building pad.	IT, 1999a; IT, 2000a; IT, 2000b; IT, 2001a; IT, 2001b; U.S. Army, 2003	Previous investigations collected sediment samples from five storm drains located west and northeast of Building 86. During the RI, soil borings were collected from an area adjacent to the storm drains inside Building 86; an exterior boring was made along the drain located southeast of the building; soil samples were collected from the western corner of the building and from a storm drain (SD-1) located on the western side of the building; and surface soil samples were collected from beneath the concrete around the former transformer. In 1998, a storm drain investigation was conducted at Building 86. Soil borings were drilled along SD-1 to the south of the building. No contaminants related to petroleum storage, release or disposal at this site are present at concentrations that require remedial action. The risk assessment and FFS evaluations determined that metals and PAHs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in –situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
10(6) HR	PDD	9.8	6	The PDD is a drainage channel that was constructed to convey surface water runoff to pump stations for lifting and discharge into the outfall drainage ditch and San Pablo Bay. The PDD encompasses all of the BRAC property, except for the western margin. The PDD also conveys water from portions of the GSA properties and from privately owned agricultural lands adjoining the airfield. Additionally, there is an open drainage ditch at the base of Reservoir Hill in the GSA Phase I Sale Area that connects to the north end of the PDD by an underground storm drain pipe. The northern section of PDD is unlined from the western property boundary to the confluence with the 54-inch storm drain line.	IT, 2000; IT, 2001a; IT, 1999a; WCFS, 1996; U.S. Army, 2003	The 1998 Interim Removal Actions consisted of dewatering and sediment removal from the PDD (lined and unlined portions). Confirmation samples were collected in the unlined portion of the ditch. During the remedial design investigation, two surface soil samples were collected from cracks located on the northeastern side of the concrete-line PDD. The risk assessment and FFS evaluations determined that beryllium and DDTs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends excavation with offsite disposal as the remedy for the northern end of the unlined perimeter drainage ditch to protect future wetland receptors. The ROD/RAP recommends excavation with offsite disposal as the remedy for the lined perimeter drainage ditch within the proposed channel cut area to protect future wetland receptors. The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for the lined perimeter drainage ditch outside of the proposed channel cut area to protect future wetland receptors.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
11(6) HR	PDD Spoils Pile A	0.07	6	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations, later designated stockpiles A through M. The spoil piles were identified based on previous investigation maps, review of aerial photographs, and field reconnaissance.	WCFS, 1996; IT, 1999a; IT, 1999b; IT, 2000b; IT, 2001a; U.S. Army, 2003	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations. During the 1998 Interim Removal Actions, soil was removed from the footprint of the pile down to the approximate original grade. The risk assessment and FFS evaluations determined that beryllium, zinc, DDTs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.
12(6) HR	PDD Spoils Pile B	1.1	6	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled on base in 13 separate locations, later designated stockpiles A through M. The spoil piles were identified based on previous investigation maps, review of aerial photographs, and field reconnaissance.	WCFS, 1996; IT, 1999a; IT, 1999b; IT, 2000b; IT, 2001a; U.S. Army, 2003	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled on base in 13 separate locations. During the 1998 Interim Removal Actions, soil was removed from the footprint of the pile down to the approximate original grade. During the 1999 Interim Removal Actions, approximately 591 yd ³ of soil were removed. The risk assessment and FFS evaluations determined that cadmium, copper, mercury, silver, zinc and DDT are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
13(6) HR	PDD Spoils Pile C	0.19	6	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations, later designated stockpiles A through M. The spoil piles were identified based on previous investigation maps, review of aerial photographs, and field reconnaissance.	WCFS, 1996; IT, 1999a; IT, 1999b; IT, 2000b; IT, 2001a; U.S. Army, 2003	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations. During the 1998 Interim Removal Actions, soil was removed from the footprint of the pile down to the approximate original grade. During the 1999 Interim Removal Actions, approximately 17 yd ³ of soil were removed. The risk assessment and FFS evaluations determined that DDTs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ with monitoring and maintenance as a remedy for this site to protect future wetland receptors.
14(6) HR	PDD Spoils Pile D	0.12	6	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations, later designated stockpiles A through M. The spoil piles were identified based on previous investigation maps, review of aerial photographs, and field reconnaissance.	WCFS, 1996; IT, 1999a; IT, 1999b; IT, 2000b; IT, 2001a; U.S. Army, 2003	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations. During the 1998 Interim Removal Actions, soil was removed from the footprint of the pile down to the approximate original grade. The risk assessment and FFS evaluations determined that DDTs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
15(4) HR	PDD Spoils Pile E	0.26	4	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations, later designated stockpiles A through M. The spoil piles were identified based on previous investigation maps, review of aerial photographs, and field reconnaissance.	WCFS, 1996; IT, 1999a; IT, 1999b; IT, 2000b; IT, 2001a; U.S. Army, 2003	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations. During the 1998 Interim Removal Actions, soil was removed from the footprint of the pile down to the approximate original grade. During the 1999 Interim Removal Actions, two separate excavations were conducted and approximately 261 yd ³ of soil were removed. No contaminants related to hazardous substances storage, release or disposal at this site are present at concentrations that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
16(5) HR	PDD Spoils Pile F	0.23	5	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations, later designated stockpiles A through M. The spoil piles were identified based on previous investigation maps, review of aerial photographs, and field reconnaissance.	WCFS, 1996; IT, 1999a; IT, 1999b; IT, 2000b; IT, 2001a; U.S. Army, 2003	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations. In 1995, soil samples were collected from the spoils piles. Approximately 18,125 square feet of soil will be removed to a depth of one foot from areas around each of the pile locations. Samples will be collected to determine if contamination is present. The risk assessment and FFS evaluations determined that metals, PAHs, and DDTs are the only contaminants remaining at this site that could pose a potential risk to humans from marsh recreation and future wetland receptors. The Army conducted excavation and confirmation sampling in January 2002 and, based on the analytical results, have determined further sampling is needed. Therefore, for the purposes of this report, this site is being evaluated as though the actions have not yet taken place. The ROD/RAP recommends excavation with offsite disposal as the remedy for this site to protect future wetland receptors.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
17(6) HR	PDD Spoils Pile G	0.1	6	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations, later designated stockpiles A through M. The spoil piles were identified based on previous investigation maps, review of aerial photographs, and field reconnaissance.	WCFS, 1996; IT, 1999a; IT, 1999b; IT, 2000b; IT, 2001a; U.S. Army, 2003	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations. During the 1998 Interim Removal Actions, soil was removed from the footprint of the pile down to the approximate original grade. The risk assessment and FFS evaluations determined that DDTs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.
18(4) HR	PDD Spoils Pile H	0.17	4	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations, later designated stockpiles A through M. The spoil piles were identified based on previous investigation maps, review of aerial photographs, and field reconnaissance. Remedial actions at this site are complete.	WCFS, 1996; IT, 1999a; IT, 1999b; IT, 2000b; IT, 2001a; U.S. Army, 2003	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations. During the 1998 Interim Removal Actions, soil was removed from the footprint of the pile down to the approximate original grade. During the 1999 Interim Removal Actions, approximately 290 yd ³ of soil were removed. No contaminants related to hazardous substances storage, release or disposal at this site are present at concentrations that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
19(6) HR	PDD Spoils Pile I	0.08	6	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations, later designated stockpiles A through M. The spoil piles were identified based on previous investigation maps, review of aerial photographs, and field reconnaissance. Remedial actions at this site are complete.	WCFS, 1996; IT, 1999a; IT, 1999b; IT, 2000b; IT, 2001a; U.S. Army, 2003	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations. During the 1998 Interim Removal Actions, soil was removed from the footprint of the pile down to the approximate original grade. During the 1999 Interim Removal Actions, approximately 70 yd ³ of soil. The risk assessment and FFS evaluations determined that beryllium and DDTs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.
20(6) HR	PDD Spoils Pile J	0.04	6	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations, later designated stockpiles A through M. The spoil piles were identified based on previous investigation maps, review of aerial photographs, and field reconnaissance.	WCFS, 1996; IT, 1999a; IT, 1999b; IT, 2000b; IT, 2001a; U.S. Army, 2003	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations. During the 1998 Interim Removal Actions, soil was removed from the footprint of the pile down to the approximate original grade. During the 1999 Interim Removal Actions, approximately 13 yd ³ of soil were removed. The risk assessment and FFS evaluations determined that DDTs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
21(6) HR	PDD Spoils Pile K	0.03	6	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations, later designated stockpiles A through M. The spoil piles were identified based on previous investigation maps, review of aerial photographs, and field reconnaissance.	WCFS, 1996; IT, 1999a; IT, 1999b; IT, 2000b; IT, 2001a; U.S. Army, 2003	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations. During the 1998 Interim Removal Actions, soil was removed from the footprint of the pile down to the approximate original grade. The risk assessment and FFS evaluations determined that DDTs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.
22(6) HR	PDD Spoils Pile L	0.07	6	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations, later designated stockpiles A through M. The spoil piles were identified based on previous investigation maps, review of aerial photographs, and field reconnaissance.	WCFS, 1996; IT, 1999a; IT, 1999b; IT, 2000b; IT, 2001a; U.S. Army, 2003	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations. During the 1998 Interim Removal Actions, soil was removed from the footprint of the pile down to the approximate original grade. During the 1999 Interim Removal Actions, approximately 6 yd ³ of soil were removed. The risk assessment and FFS evaluations determined that barium, cobalt, lead, zinc and DDTs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.

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 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
23(6) HR	PDD Spoils Pile M	0.12	6	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations, later designated stockpiles A through M. The spoil piles were identified based on previous investigation maps, review of aerial photographs, and field reconnaissance.	WCFS, 1996; IT, 1999a; IT, 1999b; IT, 2000b; IT, 2001a; U.S. Army, 2003	During the course of military operations at the airfield, the PDD was periodically dredged to remove vegetative matter and sediment. The dredged material was stockpiled onbase in 13 separate locations. During the 1998 Interim Removal Actions, soil was removed from the footprint of the pile down to the approximate original grade. The risk assessment and FFS evaluations determined that DDTs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.
24(2) PS/PR	East Levee Generator Pad	0.08	2	The East Levee Generator Pad is midway between the FSTP and the south end of the runway. A transformer pad and a generator pad were formerly adjacent to each other at a former AST site.	IT, 1999a; IT, 2000b; U.S. Army, 2003	Excavation and confirmation sampling were performed during 1998 interim removal activities. Approximately 380 yd ³ of soil were removed to address TPH and lead and PAHs associated with TPH. The excavation was backfilled. No contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
25(2) PS/PR	ONSFL-54-inch Drain Line Segment	0.13	2	<p>The onshore fuel line (ONSFL) was used to transport aviation gasoline and, later, JP-4 liquid fuels from the Offshore Fuel System to several locations around the airfield until 1975. The fuel line included an offshore portion, between the unloading terminal in the Bay and the booster pump station just inside the east levee, and the onshore portion that extended from the booster pump station to the airfield hangars. For purposes of evaluation during several investigations, the ONSFL was divided into three sections: 54-inch Drain Line Segment (former 6-inch diameter fuel pipeline that ran under the northwestern end of the runway via a 54-inch diameter storm drainage culvert), Hangar Segment (Southeast trending parallel fuel pipelines formerly located in the grassy area between the runway and hangars), and Northern Segment – (former 6-inch diameter fuel line along the northern perimeter of the Inboard Sites parcel).</p> <p>The fuel lines were removed in 1995 except for the portion from the PDD to the levee, which was removed in 1998. The fuel line was capped on the Inboard side of the levee at the Northern edge of the Property; however, the portion of the fuel line from the inboard side of the levee to the Bay still remains. A board-mounted transformer was located at the booster pump station in the northeastern corner of the BRAC property.</p>	IT, 1999a; IT, 2000b; U.S. Army, 2003	The fuel lines were removed in 1995 except for the portion from the PDD to the levee that was removed in 1998. The fuel line was capped on the Inboard side of the east perimeter levee at the Northern edge of the Property. The portion of the fuel line from the inboard side of the levee to the bay still remains but was cleaned and plugged with concrete at both ends in 1995. Soil samples were collected following removal of the fuel lines. The risk assessment, FFS and ROD/RAP evaluations determined that TPH-gasoline is the only contaminant remaining at this site that could pose a potential risk to future wetland receptors.. The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.

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 CERFA Map Summary
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BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
26(2) PS/PR	ONSFL-Hangar Segment	14.6	2	<p>The ONSFL was used to transport aviation gasoline and, later, JP-4 liquid fuels from the Offshore Fuel System to several locations around the airfield until 1975. The fuel line included an offshore portion; between the unloading terminal in the Bay and the booster pump station just inside the east levee, and the onshore portion, which extended from the booster pump station to the airfield hangars. For purposes of evaluation during several investigations, the ONSFL was divided into three sections: 54-inch Drain Line Segment (former 6-inch diameter fuel pipeline that ran under the northwestern end of the runway via a 54-inch diameter storm drainage culvert), Hangar Segment (Southeast trending parallel fuel pipelines formerly located in the grassy area between the runway and hangars), and Northern Segment – (former 6-inch diameter fuel line along the northern perimeter of the Inboard Sites parcel).</p> <p>The fuel lines were removed in 1995 except for the portion from the PDD to the levee, which was removed in 1998. The fuel line was capped on the Inboard side of the levee at the Northern edge of the Property; however, the portion of the fuel line from the inboard side of the levee to the Bay still remains. A board-mounted transformer was located at the booster pump station in the northeastern corner of the BRAC property. Remedial actions at this site are complete.</p>	IT, 1999a; IT, 2000b; U.S. Army, 2003	The fuel lines were removed in 1995 except for the portion from the PDD to the levee that was removed in 1998. The fuel line was capped on the Inboard side of the levee at the Northern edge of the Property; however, the portion of the fuel line from the inboard side of the levee to the Bay still remains. Soil samples were collected following removal of the fuel lines. The risk assessment, FFS and ROD/RAP evaluations determined that TPH and PAHs are the only contaminants remaining at this site that could pose a potential risk to future wetland receptors.. The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.

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 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
27(2) PS/PR	ONSFL-Northern Segment	4.4	2	<p>The onshore fuel line (ONSFL) was used to transport aviation gasoline and, later, JP-4 liquid fuels from the Offshore Fuel System to several locations around the airfield until 1975. The fuel line included an offshore portion; between the unloading terminal in the Bay and the booster pump station just inside the east levee, and the onshore portion, which extended from the booster pump station to the airfield hangars. For purposes of evaluation during several investigations, the ONSFL was divided into three sections: 54-inch Drain Line Segment (former 6-inch diameter fuel pipeline that ran under the northwestern end of the runway via a 54-inch diameter storm drainage culvert), Hangar Segment (Southeast trending parallel fuel pipelines formerly located in the grassy area between the runway and hangars), and Northern Segment – (former 6-inch diameter fuel line along the northern perimeter of the Inboard Sites parcel).</p> <p>The fuel lines were removed in 1995 except for the portion from the PDD to the levee, which was removed in 1998. The fuel line was capped on the Inboard side of the levee at the Northern edge of the Property; however, the portion of the fuel line from the inboard side of the levee to the Bay still remains. A board-mounted transformer was located at the booster pump station in the northeastern corner of the BRAC property. Remedial actions at this site are complete.</p>	IT, 1999a; IT, 2000b; U.S. Army, 2003	<p>The fuel lines were removed in 1995 except for the portion from the PDD to the levee that was removed in 1998. The fuel line was capped on the Inboard side of the levee at the Northern edge of the Property; however, the portion of the fuel line from the inboard side of the levee to the Bay still remains. Soil samples were collected following removal of the fuel lines. The risk assessment, FFS and ROD/RAP evaluations determined that TPH is the only contaminant remaining at this site that could pose a potential risk to future wetland receptors.</p> <p>The ROD/RAP recommends manage in-situ with monitoring and maintenance as the remedy for this site to protect future wetland receptors.</p>

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BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
28(1/6) ^c	Northwest Runway Area	1.2	1/6 ^c	The Northwest Runway Area located primarily within the BRAC property was investigated initially as part of the GSA Phase II Sale Area. The site is at the extreme northern end of the BRAC property, along the southeastern slope of the northern perimeter levee, between Ignacio Reservoir Marsh and an alkali marsh. This site was originally identified as an area of potential concern because of geophysical survey anomalies that suggested buried objects might be present at suspected Landfill 23.	IT, 1998; IT, 2001a; U.S. Army, 2003	This site was originally identified, as an area of potential concern, because of geophysical survey anomalies that suggested buried objects might be present. Soil investigations did not encounter debris that would indicate any landfill activity. Investigations began at this site in 1985 and soil samples were collected. In 1997, four direct-push soil samples were collected. The ROD/RAP evaluations determined that no constituents are present at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends no further action as the remedy for this site.
29(3) PS/HS	Tarmac east of Outparcel A-5	0.2	3	The tarmac east of Outparcel A-5 is a taxiway connecting the former AMSF with the northwest portion of the runway. The tarmac is located northwest of former Building 86 and adjoins and includes a portion of the NHP levee constructed at the boundary between the GSA and BRAC properties. No remedial action is necessary at this site.	IT, 1999a; U.S. Army, 2003	Potholes were excavated during the RI. No contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.
30(6) PS/PR/ HS/HR	Revetment 1	0.73	6	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	IT, 1999a; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS evaluations determined that barium, cadmium, lead and PAHs are the only contaminants at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors.

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BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
31(6) PS/PR/ HS/HR	Revetment 2	0.73	6	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	ESI, 1993; IT, 1999a; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS evaluations determined that cadmium and lead are the only contaminants at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors.
32(6) PS/PR/ HS/HR	Revetment 3	0.18	6	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	ESI, 1993; IT, 1999a; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS evaluations determined that barium, copper and manganese are the only contaminants at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors.
33(6) PS/PR/ HS/HR	Revetment 4	0.73	6	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10 which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	ESI, 1993; IT, 1999a; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS evaluations determined that cadmium and lead are the only contaminants at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors.
34(2) PS/PR	Revetment 5	0.18	2	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts. No remedial action is necessary at this site.	IT, 1999b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. No contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.

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BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
35(5) PS/PR/ HS/HR	Revetment 6	2.2	5	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	IT, 1999b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS evaluations determined that TPH-G and PAHs are the only contaminants at this site that could pose a potential risk to future wetland receptors. The Army conducted excavation and confirmation sampling in January 2002 and, based on the analytical results, have determined further sampling is needed. Therefore, for the purposes of this report, this site is being evaluated as though the actions have not yet taken place. The ROD/RAP recommends excavation with offsite disposal as the remedy for this site to protect future wetland receptors.
36(5) PS/PR/ HS/HR	Revetment 7	0.73	5	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts. Remedial action, including excavation, at this site is underway.	IT, 1999b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS evaluations determined that TPH and lead are the only contaminants at this site that could pose a potential risk to future wetland receptors. The Army conducted excavation and confirmation sampling in January 2002 and, based on the analytical results, have determined further sampling is needed. Therefore, for the purposes of this report, this site is being evaluated as though the actions have not yet taken place. The ROD/RAP recommends excavation with offsite disposal as the remedy for this site to protect future wetland receptors.

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BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
37(2) PS/PR	Revetment 8	0.18	2	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts. No remedial action is necessary at this site.	IT, 1999b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. No contaminants were detected in this sample. No contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.
38(4) PS/SH R	Revetment 9	0.73	4	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. Revetment 9 is one of four unpaved revetments. Remedial actions at this site are complete.	IT, 1999b; IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1996. During the 1999 RI approximately 144 yd ³ of soil were excavated. No contaminants related to hazardous substances storage, release or disposal at this site are present at concentrations that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.
39(4) PSPR/HS HR	Revetment 10	0.43	4	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts. Remedial actions at this site are complete.	IT, 1999b; IT, 2000a; IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1987 and 1993. Approximately 2,427 yd ³ of soil were excavated during 1998 interim removal actions. The area was excavated further and confirmation samples were collected. No contaminants related to hazardous substances storage, release or disposal at this site are present at concentrations that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.

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BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
40(6) PS/PR/HS /HR	Revetment 11	0.73	6	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. Revetment 11 is one of four unpaved revetments.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1999. The risk assessment and FFS evaluations determined that copper is the only contaminant at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors.
41(6) HS/HR	Revetment 12	0.73	6	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. Revetment 12 is one of four unpaved revetments.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1996. The risk assessment and FFS evaluations determined that copper is the only contaminant at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors. The recommended alternative provides the option to excavate material if this site is found to be in an area where scour may occur in the future wetland.
42(6) PS/PR/HS /HR	Revetment 13	0.73	6	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS evaluations determined that PAH, cadmium and lead are the only contaminants at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors.

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BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
43(2) PS/PR	Revetment 14	0.18	2	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS determined that TPH is the only contaminant at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors.
44(2) PS/PR	Revetment 15	0.73	2	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. No contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.
45(6) PSPR/HS /HR	Revetment 16	0.18	6	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS evaluations determined that barium is the only contaminant at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors.
46(2) PS/PR	Revetment 17	0.18	2	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts. No remedial action is necessary at this site.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. No contaminants were detected in this sample. No contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.

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BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
47(6) PS/PR/ HS/HR	Revetment 19	0.73	6	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS evaluations determined that barium, copper, cadmium, lead, TPH and PAHs are the only contaminants at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors.
48(2) PS/PR	Revetment 20	0.73	2	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts. No remedial actions are necessary at this site.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. No contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.
49(6) PS/PR/HS /HR	Revetment 21	0.18	6	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS evaluations determined that copper, vanadium, and TPH are the only contaminants at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors.

TABLE 5-2
CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
50(2) PS/PR	Revetment 22	0.18	2	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS evaluations determined that TPH is the only contaminant at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors.
51(6) HS/HR	Revetment 23	0.73	6	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. Revetment 23 is one of four unpaved revetments.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1996 and 1999. The risk assessment and FFS evaluations determined that copper is the only contaminant at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors. The recommended alternative provides the option to excavate material if this site is found to be in an area where scour may occur in the future wetland
52(2) PS/PR	Revetment 24	0.18	2	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts. No remedial action is necessary at this site.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. No contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
53(6) PS/PR/HS /HR	Revetment 25	0.18	6	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS evaluations determined that barium and TPH-D are the only contaminants at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors.
54(6) PS/PR/HS /HR	Revetment 26	0.73	6	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. The risk assessment and FFS evaluations determined that barium, boron, manganese and TPH are the only contaminants at this site that could pose a potential risk to future wetland receptors. The ROD/RAP recommends manage in-situ monitoring and maintenance as the remedy for this site to protect future wetland receptors.
55(2) PS/PR	Revetment 27	0.73	2	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts. No remedial action is necessary at this site.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and 1999. No contaminants were detected in this sample except for the VOC, butanone, at an estimated concentration of 2 ppb. No contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.
56(2) PS/PR	Revetment 28	0.18	2	The revetments were historically used for aircraft staging and refueling prior to 1974, except for Revetments 6 and 10, which were used as an engine test pad and firefighter training area respectively. Each turnout is nearly encircled by an earthen berm approximately 1 foot high. A thin layer of sediment, grass, and weeds now occurs on many of the turnouts. No remedial action is necessary at this site.	IT, 2000b; U.S. Army, 2003	Soil samples were collected in 1993 and during the RI. No contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
57(2) PS/PR	Revetment 18/Building 15	0.21	2	Building 15 formerly contained a generator that provided electrical power for airfield activities, such as runway lighting. A concrete transformer pad is adjacent to the west side of the building. A former 120-gallon AST was located northwest of Building 15. The AST stored diesel fuel for the generator inside the building. Three transformers were also formerly located on soil adjacent to the concrete pad located west of Building 15; they were removed in 1995. No remedial action is necessary at this site.	IT, 2000b; IT, 1999a; F-W, 2000; U.S. Army, 2003	An interim removal action was conducted at Building 15 in 1998. Approximately 170 yd ³ of soil were removed near the former AST. No contaminants are present at levels that could pose a risk to future wetland receptors or that would require remedial action. The ROD/RAP recommends no further action for this site.
58(6)	Coastal Salt Marsh Sites High Marsh (Nonchannel Cut Area)	6.7	6	The High Marsh is that portion of the Coastal Salt Marsh dominated by pickleweed. The High Marsh extends from the northern to southern Main BRAC property boundaries and east from the levee nearly to the shoreline of San Pablo Bay. The majority of the High Marsh is located on land owned by the State Lands Commission. Drainage collected by the PDD that is pumped into the high marsh wetland area include past operational spills. Any contaminants that remain in the discharge water could potentially impact the High Marsh in the event the ODD overflows. There is also agricultural drainage from offsite to the PDD.	USACE, 2001a; U.S. Army, 2003	No remediation has been conducted in the High Marsh. Samples were collected in the High Marsh by ESI in 1993, USACE in 1994, WCFS in 1996, IT in 1999, and USACE 2002. These samples detected metals at concentrations slightly above background

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
	High Marsh Proposed Channel Cut Area			The High Marsh is that portion of the Coastal Salt Marsh dominated by pickleweed. The High Marsh extends from the northern to southern Main BRAC property boundaries and east from the levee nearly to the shoreline of San Pablo Bay. The majority of the High Marsh is located on land owned by the State Lands Commission. Drainage collected by the PDD that is pumped into the high marsh wetland area include past operational spills. There is also agricultural drainage from offsite to the PDD. This site has been identified as the location of the future channel cut; therefore, contamination at depth will not remain once the wetland design is complete.	USACE, 2001a; U.S. Army, 2003	No remediation has been conducted in the High Marsh Channel Cut. Samples were collected in the High Marsh by ESI in 1993, USACE in 1994, WCFS in 1996, and USACE in 2001. In 1993, metals were detected above baseline concentration ^b . Additionally, PAHs were detected above baseline concentrations ^b at three sites within the channel cut area. In 1996, metals were detected at all sampled locations within the channel cut area of the High Marsh. PAHs were detected at one location, and 2 pesticides (chlordane and DDT) were detected above baseline concentrations ^b at one location within the channel cut area. In September 2001, the Army conducted a specific investigation to evaluate the soil within the Proposed Channel Cut Area. Samples were collected at 12 locations and three depths (1, 2, and 4 feet bgs). The samples were collected in a grid from the ODD toward the bay where the planned channel cut is anticipated. TPH, metals, PAHs, and SVOCs were detected in samples collected from the Proposed Channel Cut Area. The ROD/RAP recommends excavation and offsite disposal as the remedy for this site to protect future wetland receptors.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
	Outfall Drainage Ditch			The outfall drainage ditch (ODD) is located on the CSM side of, and parallel to, the east perimeter levee. The ditch receives storm water runoff and drainage from the Inboard Area sites and PDD. Historically, the ODD ran along the bay side of the east perimeter levee from the outfalls at Buildings 35, and 39; which discharge water from the Main BRAC property and PDD; to the boat dock channel. The ODD also received storm water discharge from the outfall at Building 41. When the runway extension was constructed, the northern portion of the ditch was rerouted to San Pablo Bay at a point near the northern edge of the ELCDDA. Currently, the ODD runs from the pump houses to the northern edge of the East Levee Construction Debris Disposal Area. From this point, the ditch makes a 90-degree turn and runs to its discharge point to San Pablo Bay. The ODD is approximately 3 to 4 feet deep and 6 to 10 feet wide.	USACE, 2001a; U.S. Army, 2003	No remediation has been conducted in the ODD. ESI in 1993, USACE in 1994, WCFS in 1996, and IT in 1998 investigated the ODD. TPH, metals, PCBs and DDTs have been detected in sediment samples collected from the ODD. Specifically, in 1994, studies detected metals, TRPH, and TPH-d above baseline concentrations ^b in the Building 41 pump station outfall area within the channel cut area of the High Marsh. In January 2002, the Army collected sediment samples from the ODD. The objective of the sampling was to investigate the extent of chemicals detected in the previous investigations at the outfalls, to address the downstream extent of contamination from the outfalls, and to characterize the portion of the ODD upstream of the outfalls sufficient to determine the appropriate remedy. Sampling at the ODD resulted in detections of metals, TPH, and DDTs. The ROD/RAP recommends excavation and offsite disposal as the remedy for this site to protect future wetland receptors.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
	Historical ODD			<p>The portion of the ODD now known as the Historic ODD runs from the western edge of the ELCDDA southward to the northern edge of the runway extension road. Concrete, brick, and asphalt building materials are visible along portions of the Historic ODD and were apparently used as riprap. Much of the Historic ODD has silted in with sediments throughout the years, although the channel is still visible.</p> <p>I like "historical". Ed prefers "historic". We have used "historic" in the past. We should keep it and be consistent. See the red language at right that uses "historic"</p>	USACE, 2001; U.S. Army, 2003	The Army investigated the Historic ODD in December 2001. During the investigation, the Army collected soil and sediment samples at 250-foot intervals along the Historic ODD, in order to characterize the extent of contamination. Some metals and DDTs were detected. The ROD/RAP recommends excavation and offsite disposal as the remedy for this site to protect future wetland receptors.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
	Antenna Debris Disposal Area			The Antenna Debris Area is located along the northern portion of the ODD. The area consists of two piles, one located east of the ODD and one to the west of the ODD. Visual inspection of the piles indicates the piles contain discarded materials from the former antenna facilities and building materials. The depth of portions of the west pile are at least 8.5 feet below ground surface, and the depth of portions of the east pile is at least 2-3 feet below ground surface. Both piles are currently covered with a growth of native grasses (not pickleweed, which is common to the High Marsh plain).	USACE, 2001a; U.S. Army, 2003	No remediation has been conducted in the Antenna Debris Area. WCFS in 1995, IT in 1998, and F-W in 1999 investigated the western Antenna Debris pile. During these investigations, soil samples were collected in and near the western pile. The results of these investigations indicate that lead and DDTs are common throughout the western pile. Only one of the samples was analyzed for PCBs and PCBs were detected in the sample. In December 2001 and January 2002, the Army collected soil samples from the eastern area and additional samples from the western area. The objective of the sampling was to investigate the extent of chemicals detected in the previous investigations at the western area and to characterize the eastern area sufficient to determine the appropriate remedy. Sampling at the eastern and western areas resulted in detections of metals, DDTs, TPH, and PCBs. The ROD/RAP recommends excavation and offsite disposal as the remedy for this site to protect future wetland receptors.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
	East Levee Construction Debris Disposal Area			The ELCDDA is located on the eastern margin of the Main Airfield Parcel within the CSM and outboard of the east levee. It is bisected by the eastern boundary of the Main Airfield Parcel and lies primarily within land owned by the State Lands Commission. The ELCDDA was used from about 1961 onward, primarily for the disposal of construction debris. A dirt road lies along the northern edge of the ELCDDA. Pickleweed grows up to the edges of the road. No remedial action has been conducted at the East Levee Construction Debris Disposal Area.	USACE, 2001a; U.S. Army, 2003	No remediation has been conducted at the East Levee Construction Debris Disposal Area. Samples were collected from throughout the ELCDDA area by WCC in 1987, ESI in 1993, USACE and WCC in 1994, WCFS 1996, and IT in 1999. A few of the samples collected in these investigations were obtained from the portion of the ELCDDA within the Main Airfield Parcel. Trench HT-13 dug by WC in 1986 was located in the ELCDDA area located on the Main BRAC property. The trench sample contained metals at concentrations below background. One soil sample collected by ESI in 1990 was located within the ELCDDA on the property line between the Main Airfield Parcel and the land owned by the SLC. This sample detected metals (including beryllium, chromium, lead, and vanadium) at levels slightly above background. The ROD/ recommends excavation and offsite disposal as the remedy for this site to protect future wetland receptors.
	Area 14			Area 14 was a barren area identified in a 1941 aerial photograph. The area is located north of the boat dock, just east of the east levee. Figure 3-22 represents site features and sampling history in Area 14. Little is know about this area, although it may have been a fill, spoil, disposal, or demolition area. Concrete building materials are visible in this area near the levee and may have been used as rip rap.	USACE, 2001a; U.S. Army, 2003	The Army investigated area 14 in December 2001 and January 2002. During the investigation, the Army collected soil and sediment samples from Area 14 on a 100-foot grid. The objective of the sampling was to characterize the portions of Area 14 that were not covered with the construction of the runway overrun. Sampling at Area 14 resulted in detections of metals, DDTs, TPH, and PAHs. No debris or rubble, other than rock and gravel used to support the runway extension and the road, was encountered. The ROD/RAP recommends excavation and offsite disposal as the remedy for this site to protect future wetland receptors.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
	Boat Dock Channel Area			The Channel Area extends west from San Pablo Bay to the launch ramp at the boat dock where it bends and continues to extend south to agricultural land. This portion of the Channel Area received agricultural runoff and storm water from the Airfield. Aerial photographs suggest that maintenance of the channel and turnaround areas for the dock were discontinued during the 1960s. Since maintenance has stopped, the original contours of the channel leading from the dock to the Bay have changed dramatically due to the deposition of silt from San Pablo Bay. Historical photos indicate the original channel was more than 100 feet wide. The historical depth of the channel was dredged from 6 to 8 feet below sea level. The turnaround area could accommodate boats up to 40 feet in length. Currently, the existing channel is approximately 15 feet wide. The turnaround area is virtually non-existent and is covered with a dense growth of pickleweed. The channel in this area receives runoff from the Los Galinas Water District gray water spraying operation.	USACE, 2001a; U.S. Army, 2003	No remediation has taken place in the Channel Area. F-W investigated the Channel Area in 2000. During this investigation, a sediment sample was collected from the boat dock channel. The sample contained pesticides, herbicides, PAHs, TPH, VOCs, and metals. Due to the significant amount of sedimentation that occurred in the channel following the abandonment of the boat dock in the Channel Area, it is not clear if the sample results characterize current conditions or possible historical impacts from the boat dock area. In December 2001, the Army collected additional sediment samples from the Channel Area. The objective of the sampling was to determine the extent of contamination found at the Boat Dock sufficient to determine the appropriate remedy. Sampling at the Channel Area indicated the presence of metals. The ROD/RAP recommends excavation and offsite disposal as the remedy for this site to protect future wetland receptors.
60(7) HR	ASR Sites		7		U.S. Army, 2003	

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
	Testing Range	1.5		The ASR team identified an area they refer to as the "Testing Area" based on an aerial photograph dated August 1946. They describe an area as a "rectangle approximately 1,000 feet by 100 feet between the sewage treatment plant and the black powder magazine". The team did not explain how they came to define the area as a "testing area;" however, the BRAC office has historical maps dated 16 May 1945 and 4 December 1952 that outline an area approximately 940 feet by 100 feet labeled "testing range". It is likely that the team consulted the 1945 and 1952 maps. Neither the BRAC office nor the ASR team were able to locate accounts on if/how the site was used. Given that Hamilton was not a research and development base, it is not likely that testing of weapons occurred here. Based on the survey of additional maps dated 25 February 1959, 15 December 1963 and 22 November 1963 that depict a portion of the testing range called a "firing range", the BRAC office concludes that the "testing range" may have been a small arms target practice area.		Because information and data available for this site is still undergoing review, decisions regarding the need for remedial action and the evaluation of alternatives for this site have not been made. However, the Army, DTSC, and the RWQCB agreed to complete the study/investigation activities listed in the ROD/RAP in accordance with the schedule also provided in the ROD/RAP. Should remedial action be required at the Archive Search Report sites, the action goals included in the ROD/RAP would apply and the RWQCB site cleanup requirements will identify the procedure for completion of remedial activities.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
	Northwest Alleged Disposal Area	4.5		In December of 2000, a local resident and former military facility inspector stated that during a routine inspection of Hamilton, in the mid-1980s, he was told various chemicals were improperly disposed of in an area near the north end of the runway. For the purposes of further investigation, this area is being referred to as the Northwest Alleged Disposal Area (NWADA).		<p>Previous sampling in the area included the collection and analysis of three samples within the area in question. Additionally, one boring conducted by URS Group for USACE S.F. 2001-2002 was located within the boundaries of the NWADA. No contamination or debris were reported from this work.</p> <p>Because information and data available for this site is still undergoing review, decisions regarding the need for remedial action and the evaluation of alternatives for this site have not been made. However, the Army, DTSC, and the RWQCB agreed to complete the study/investigation activities listed in the ROD/RAP in accordance with the schedule also provided in the ROD/RAP. Should remedial action be required at the Archive Search Report sites, the action goals included in the ROD/RAP would apply and the RWQCB site cleanup requirements will identify the procedure for completion of remedial activities.</p>

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
	Skeet Range	1.7		A skeet range was identified in the ASR as ASR Site #18. The range was situated inboard at the corner where South Boundary Road meets East Boundary Road and west of what is now the south runway extension. It is visible on aerial photography dating up to 26 April 1943, but is not observable in photographs beginning in 1946. Contaminants of concern at a skeet range are lead and other metals from shot and PAHs associated with clay targets.		Because information and data available for this site is still undergoing review, decisions regarding the need for remedial action and the evaluation of alternatives for this site have not been made. However, the Army, DTSC, and the RWQCB agreed to complete the study/investigation activities listed in the ROD/RAP in accordance with the schedule also provided in the ROD/RAP. Should remedial action be required at the Archive Search Report sites, the action goals included in the ROD/RAP would apply and the RWQCB site cleanup requirements will identify the procedure for completion of remedial activities.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
	Firing-In-Butt	1.8		<p>A firing-in-butt was identified in the ASR as ASR Site #19. The ASR accurately located the historical Firing-In Butt to have been in the vicinity of the runway and Revetment 25. However, the ASR incorrectly shows the Butt as being closer to the firing line than photos indicate and incorrectly states the date of its removal. There were three hardstands and a "butt", which is a target surrounded by barricade material. Aircraft machine guns, on both sides of the aircraft, were fired into the earthen mound called a "butt" to check firing alignment. The hardstands with connecting road still exist and are visible in 1960s aerial imagery. The target butt was removed in its entirety in 1947, the disposition of the barricade soil not known.</p> <p>The site is considered to be a negligible explosives safety risk and no explosive related action is necessary. The report goes on to say that because the aircraft were firmly fixed, there is low probability that rounds strayed from the intended target.</p>		<p>Because information and data available for this site is still undergoing review, decisions regarding the need for remedial action and the evaluation of alternatives for this site have not been made. However, the Army, DTSC, and the RWQCB agreed to complete the study/investigation activities listed in the ROD/RAP in accordance with the schedule also provided in the ROD/RAP. Should remedial action be required at the Archive Search Report sites, the action goals included in the ROD/RAP would apply and the RWQCB site cleanup requirements will identify the procedure for completion of remedial activities.</p>
61(6) PS/PR/ HS/HR	Former Revetments	1.28 (8 former revetments)	6	<p>In addition to the 28 revetments, the Archive Search Report identified 8 former revetments in the Main Airfield Parcel. Five of these were paved over during the construction of the aircraft maintenance area, two became dirt roads, and the surrounding grass has revegetated one. These 8 former revetments have not been investigated.</p>	USACE, 2003	These 8 former revetments have not been investigated.

TABLE 5-2
 CERFA Map Summary
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Location	Parcel Size (acre)	DoD Category	Basis (Including Source of Evidence and Reference)	EBS Source of Evidence	Remediation or Mitigation
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Note:

Action Goals - The action goals are based primarily on site-specific ambient concentrations, in combination with RWQCB-developed numbers for San Francisco Bay Ambient sediments and NOAA effects-range low sediment concentrations as defined in the ROD/RAP.

^b Baseline Concentration – the cumulative concentration of an analyte present in soil due to both natural occurrence and anthropogenic activities that are unrelated to activities conducted at a site. Used throughout RI to represent background concentrations for metals and PAHs.

^c The Army does not view the Inboard Area-Wide DDTs and PAHs adjacent to the runway as a release that is actionable under CERCLA, and therefore, considers the parcel to be a Category 1. DTSC does view the Inboard Area-Wide DDTs and PAHs adjacent to the runway as a CERCLA release and considers the parcel to be a Category 6. The ROD/RAP addresses this issue to everyone's satisfaction, and it is anticipated that the deferred CERCLA warranty is expected to be issued in the future for the whole Property.

TABLE 5-3
 Summary of Disclosure Factors
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Site Name	DoD Category	Building Name	Asbestos	Lead-Based Paint	PCB	Radon	UXO	Radio-nuclides
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	—	—	—	—	—	—	—
2	Former Sewage Treatment Plant (including sanitary and industrial waste lines)	6	Building 42	P	P	—	—	—	—
			Building 43	P	P	—	—	—	—
			Building 44	P	P	—	—	—	—
			Building 45	P	P	—	—	—	—
			Building 45A	P	P	—	—	—	—
3	Building 20	2	Building 20	—	✓	✓	—	—	—
4	Building 26	2	Building 26	✓	✓	✓	—	—	—
5	Building 35/39	6 (Building 35) 4 (Building 39)	Building 35	✓	P	✓	—	—	—
			Building 39	✓	P	✓	—	—	—
6	Building 41 Area	5	Building 41	✓	P	✓	—	—	—
			Building 40	—	P	—	—	—	—
7	Building 82/87/92/94 Area (including storm drains)	6	Building 82	✓	P	✓	—	—	—
			Building 87	—	✓	—	—	—	—
			Building 92	—	✓	✓	—	—	—
			Building 94	—	✓	✓	—	—	—
8	Building 84/90 Area	3	Building 84	✓	✓	✓	—	—	—
			Building 90	—	✓	✓	—	—	—
9	Building 86 (including storm drains)	6	Building 86	✓	✓	✓	—	—	—
10	PDD-Unlined and Lined Portions	6	NA	—	—	✓	—	—	—
11	PDD Spoils Pile A	6	NA	—	—	—	—	—	—

TABLE 5-3
 Summary of Disclosure Factors
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Site Name	DoD Category	Building Name	Asbestos	Lead-Based Paint	PCB	Radon	UXO	Radio-nuclides
12	PDD Spoils Pile B	6	NA	—	—	—	—	—	—
13	PDD Spoils Pile C	6	NA	—	—	—	—	—	—
14	PDD Spoils Pile D	6	NA	—	—	—	—	—	—
15	PDD Spoils Pile E	4	NA	—	—	—	—	—	—
16	PDD Spoils Pile F	5	NA	—	—	—	—	—	—
17	PDD Spoils Pile G	6	NA	—	—	—	—	—	—
18	PDD Spoils Pile H	4	NA	—	—	—	—	—	—
19	PDD Spoils Pile I	6	NA	—	—	—	—	—	—
20	PDD Spoils Pile J	6	NA	—	—	—	—	—	—
21	PDD Spoils Pile K	6	NA	—	—	—	—	—	—
22	PDD Spoils Pile L	6	NA	—	—	—	—	—	—
23	PDD Spoils Pile M	6	NA	—	—	—	—	—	—
24	East Levee Generator Pad	2	NA	—	—	✓	—	—	—
25	ONSFL- 54-Inch Drain Line Segment	2	NA	—	—	—	—	—	—
26	ONSFL- Hangar Segment	2	NA	—	—	—	—	—	—
27	ONSFL- Northern Segment	2	NA	—	—	✓	—	—	—
28	Northwest Runway Area	1/6 ^a	NA	—	—	✓	—	—	—
29	Tarmac East of Outparcel A-5	2	NA	—	—	—	—	—	—
30	Revetment 1	6	NA	—	—	—	—	—	—
31	Revetment 2	6	NA	—	—	—	—	—	—
32	Revetment 3	6	NA	—	—	—	—	—	—
33	Revetment 4	6	NA	—	—	—	—	—	—
34	Revetment 5	2	NA	—	—	—	—	—	—
35	Revetment 6	5	NA	—	—	—	—	—	—
36	Revetment 7	5	NA	—	—	—	—	—	—
37	Revetment 8	2	NA	—	—	—	—	—	—
38	Revetment 9	4	NA	—	—	—	—	—	—

TABLE 5-3
 Summary of Disclosure Factors
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Site Name	DoD Category	Building Name	Asbestos	Lead-Based Paint	PCB	Radon	UXO	Radio-nuclides
39	Revetment 10	4	NA	—	—	—	—	—	—
40	Revetment 11	6	NA	—	—	—	—	—	—
41	Revetment 12	6	NA	—	—	—	—	—	—
42	Revetment 13	6	NA	—	—	—	—	—	—
43	Revetment 14	2	NA	—	—	—	—	—	—
44	Revetment 15	2	NA	—	—	—	—	—	—
45	Revetment 16	6	NA	—	—	—	—	—	—
46	Revetment 17	2	NA	—	—	—	—	—	—
47	Revetment 19	6	NA	—	—	—	—	—	—
48	Revetment 20	2	NA	—	—	—	—	—	—
49	Revetment 21	6	NA	—	—	—	—	—	—
50	Revetment 22	2	NA	—	—	—	—	—	—
51	Revetment 23	6	NA	—	—	—	—	—	—
52	Revetment 24	2	NA	—	—	—	—	—	—
53	Revetment 25	6	NA	—	—	—	—	—	—
54	Revetment 26	6	NA	—	—	—	—	—	—
55	Revetment 27	2	NA	—	—	—	—	—	—
56	Revetment 28	2	NA	—	—	—	—	—	—
57	Revetment 18/ Building 15	2	NA	—	—	—	—	—	—
			Building 15	✓	✓	✓	—	—	—
58	Coastal Salt Marsh Sites								
	High Marsh (Nonchannel Cut)	6	NA	—	—	—	—	—	—
	High Marsh Channel Cut	6	NA	—	—	—	—	—	—
	Outfall Drainage Ditch	6	NA	—	—	—	—	—	—
	Historic ODD	6	NA	—	—	—	—	—	—
	Antenna Debris Disposal Area	6	NA	—	—	—	—	—	—
	East Levee Construction Debris Disposal Area	6	NA	—	—	—	—	—	—
	Area 14	6	NA	—	—	—	—	—	—

TABLE 5-3
 Summary of Disclosure Factors
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Site Name	DoD Category	Building Name	Asbestos	Lead-Based Paint	PCB	Radon	UXO	Radio-nuclides
59	Boat Dock								
	Boat Dock (Nonchannel Area)	6	Building 57	P	P	✓	—	—	—
			Building 60	P	P	✓	—	—	—
	Boat Dock Channel Area	6	NA	—	—	—	—	—	—
60	ASR Sites								
	Testing Range	7	NA	—	—	—	—	—	—
	Northwest Alleged Disposal Area	7	NA	—	—	—	—	—	—
	Skeet Range	7	NA	—	—	—	—	—	—
	Firing-In-Butt	7	NA	—	—	—	—	—	—
61	Former Revetments	6	NA	—	—	—	—	—	—
Miscellaneous Buildings on the Main Airfield Parcel									
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 16	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 38	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 40	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 42	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 43	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 44	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 45	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 45A	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 46	P	P	—	—	—	—

TABLE 5-3
 Summary of Disclosure Factors
Environmental Baseline Survey, Hamilton Army Airfield

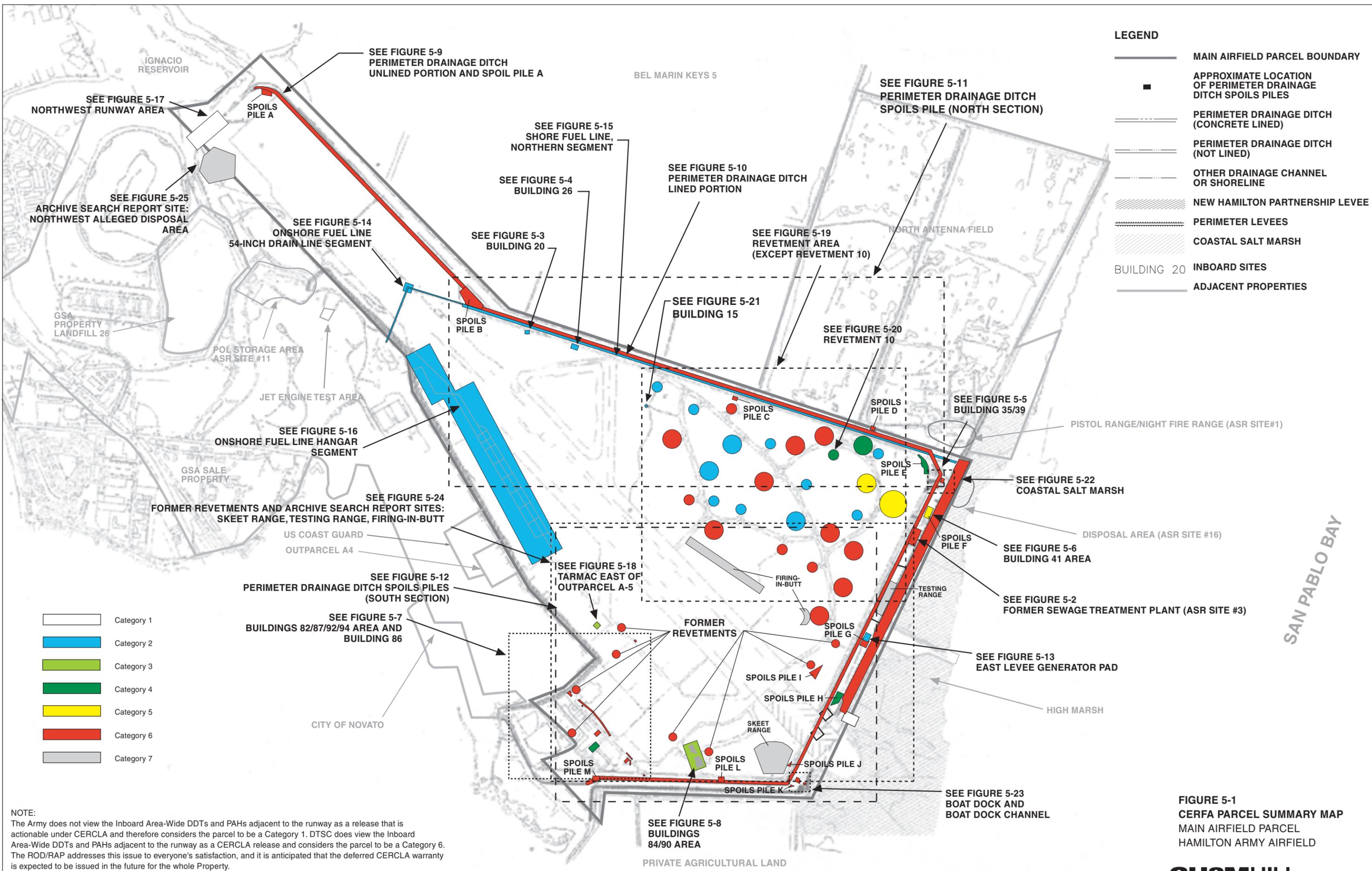
BRAC Parcel	Site Name	DoD Category	Building Name	Asbestos	Lead-Based Paint	PCB	Radon	UXO	Radio-nuclides
	parcels)								
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 47	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 48	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 49	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 51	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 53	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 54	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 55	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 56	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 57	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 58	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 59	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 60	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 61	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 63	P	P	—	—	—	—

TABLE 5-3
 Summary of Disclosure Factors
Environmental Baseline Survey, Hamilton Army Airfield

BRAC Parcel	Site Name	DoD Category	Building Name	Asbestos	Lead-Based Paint	PCB	Radon	UXO	Radio-nuclides
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 65	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 83	—	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 88	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 91	P	P	—	—	—	—
1	Main Airfield Parcel (excluding other BRAC parcels)	1/6 ^a	Building 93	P	P	—	—	—	—

✓ Material is, or has been, present
 NA Not Applicable
 P Presence is likely, or was likely; prior to building demolition
 Radionuclides are not present at HAAF.
 Radon is not present at HAAF.
 UXO has not been identified at HAAF.

a The Army does not view the Inboard Area-Wide DDTs and PAHs adjacent to the runway as a release that is actionable under CERCLA, and therefore, considers the parcel to be a Category 1. DTSC does view the Inboard Area-Wide DDTs and PAHs adjacent to the runway as a CERCLA release and considers the parcel to be a Category 6. The ROD/RAP addresses this issue to everyone's satisfaction, and it is anticipated that the deferred CERCLA warranty is expected to be issued in the future for the whole Property.



- LEGEND**
- MAIN AIRFIELD PARCEL BOUNDARY
 - APPROXIMATE LOCATION OF PERIMETER DRAINAGE DITCH SPOILS PILES
 - PERIMETER DRAINAGE DITCH (CONCRETE LINED)
 - PERIMETER DRAINAGE DITCH (NOT LINED)
 - OTHER DRAINAGE CHANNEL OR SHORELINE
 - ▨ NEW HAMILTON PARTNERSHIP LEVEE
 - ▨ PERIMETER LEVEES
 - ▨ COASTAL SALT MARSH
 - BUILDING 20
 - INBOARD SITES
 - ADJACENT PROPERTIES

- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Category 6
- Category 7

NOTE:
 The Army does not view the Inboard Area-Wide DDTs and PAHs adjacent to the runway as a release that is actionable under CERCLA and therefore considers the parcel to be a Category 1. DTSC does view the Inboard Area-Wide DDTs and PAHs adjacent to the runway as a CERCLA release and considers the parcel to be a Category 6. The ROD/RAP addresses this issue to everyone's satisfaction, and it is anticipated that the deferred CERCLA warranty is expected to be issued in the future for the whole Property.

FIGURE 5-1
CERFA PARCEL SUMMARY MAP
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



TD-SD-1

1998 EXCAVATED TO 5 TO 7 FEET BGS (1998 INTERIM REMOVAL ACTION)

FORMER SEWAGE TREATMENT PLANT

PERIMETER DRAINAGE DITCH

EXCAVATED TO AN AVERAGE DEPTH OF 4 FEET BGS

EXCAVATED TO 10 FEET BGS

FORMER DIGESTER

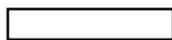


FORMER SEWAGE PUMP STATION

2(6) PR/HS/HR

APPROXIMATE SCALE

0 30 60 FEET

-  Category 1
-  Category 2
-  Category 3
-  Category 4
-  Category 5
-  Category 6
-  Category 7

Key to Parcel Labels

DOD Category

2 (2) PS/PR

Parcel Number

Designations Where:

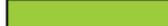
- PS= Petroleum Storage
- PR= Petroleum Release/Disposal
- HS= Hazardous Storage
- HR= Hazardous Release/Disposal

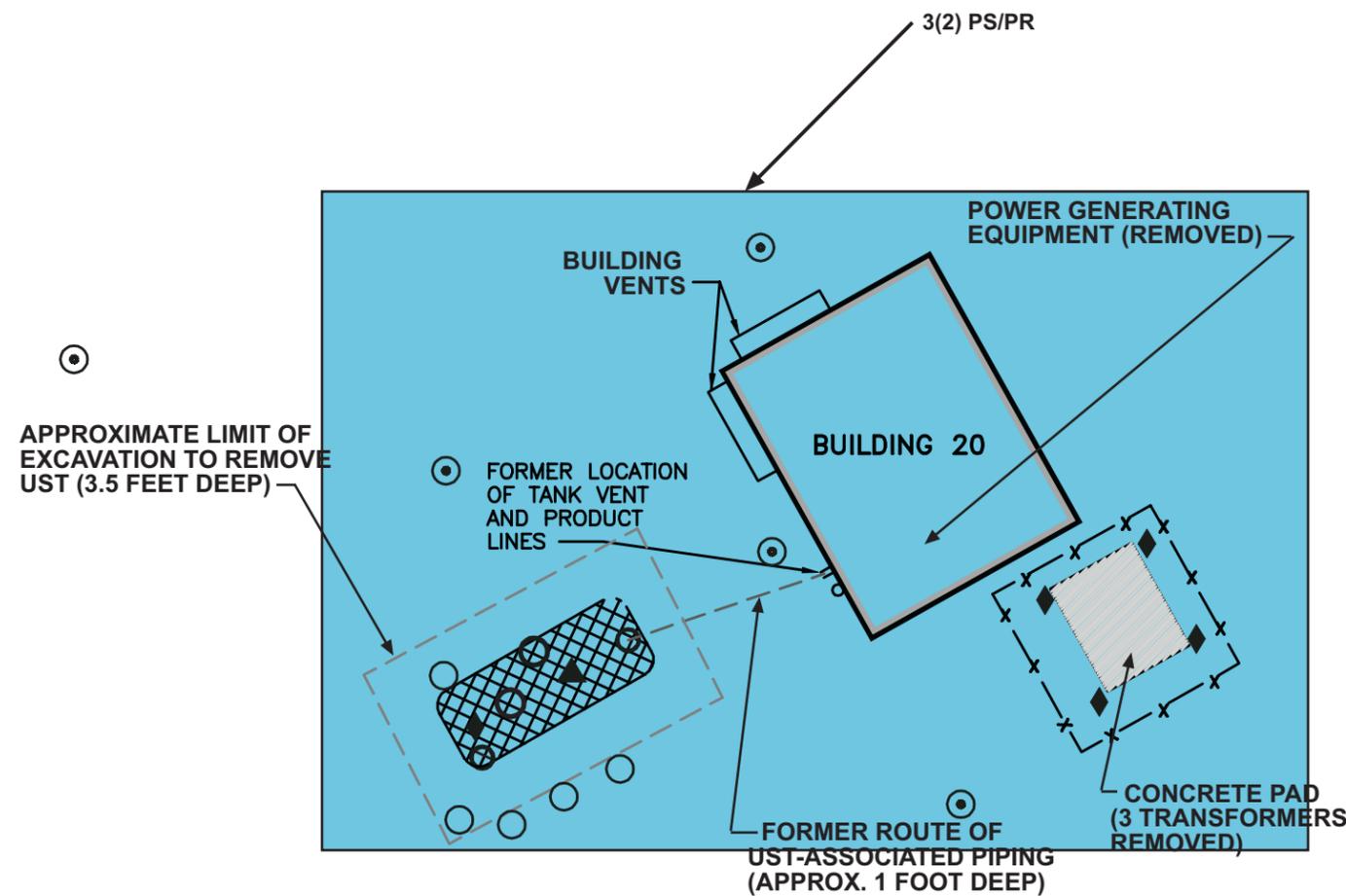
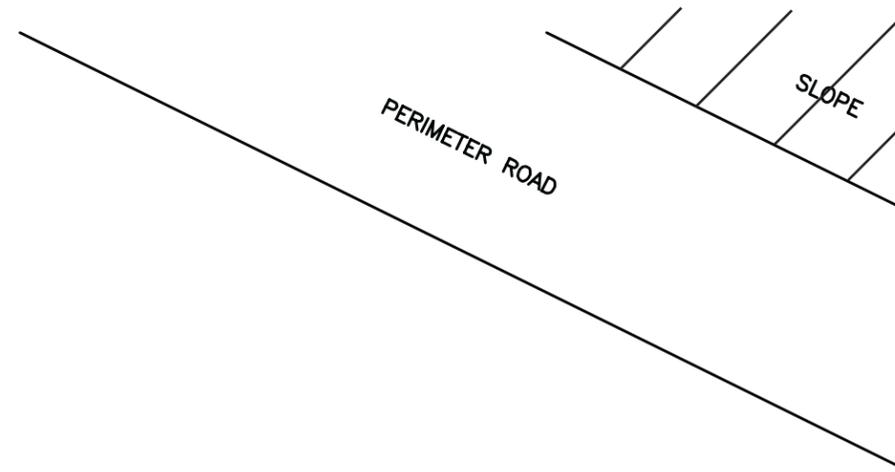
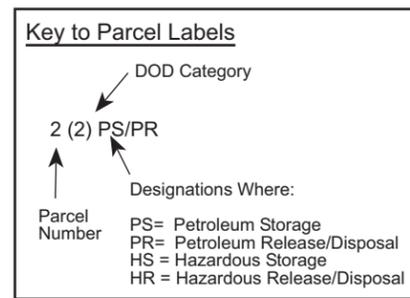
LEGEND

-  APPROXIMATE BOUNDARY OF 1999 INTERIM REMOVAL ACTION
-  APPROXIMATE BOUNDARY OF 1998 INTERIM REMOVAL ACTION
-  INTERIM REMOVAL ACTION
-  CONFIRMATION SOIL SAMPLE
-  SOIL BORING
-  SURFACE SAMPLE
-  FORMER BUILDING SITE
-  MONITORING WELL
-  POTHOLE SOIL SAMPLE

FIGURE 5-2 CERFA PARCEL MAP FORMER SEWAGE TREATMENT PLANT MAIN AIRFIELD PARCEL HAMILTON ARMY AIRFIELD



-  Category 1
-  Category 2
-  Category 3
-  Category 4
-  Category 5
-  Category 6
-  Category 7

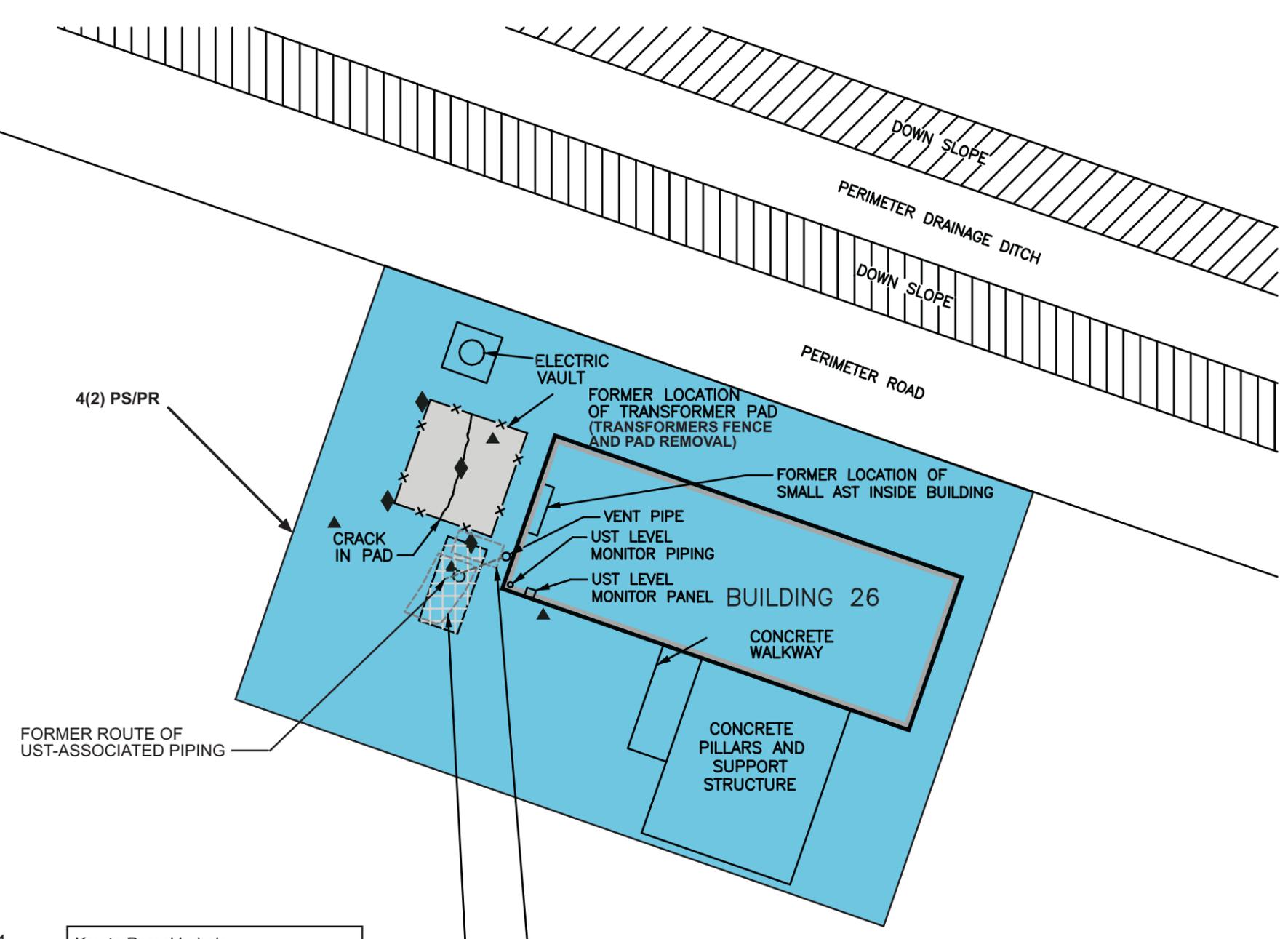


LEGEND

- X--X- FENCE
-  FORMER TANK LOCATION
-  CONFIRMATION SOIL SAMPLE
-  SURFACE-SOIL SAMPLE
-  EXCAVATION GROUNDWATER SAMPLE
-  POTHOLE SOIL SAMPLE
-  SOIL BORING LOCATION

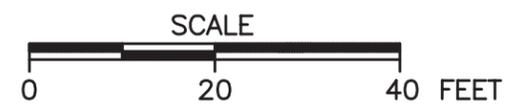


FIGURE 5-3
CERFA PARCEL MAP BUILDING 20
MAIN AIRFIELD PARCEL
HAMILTON ARMY AIRFIELD

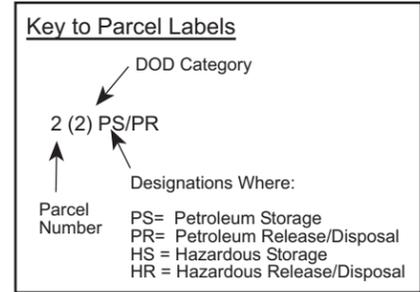


LEGEND

-  APPROXIMATE FORMER LOCATION OF UNDERGROUND STORAGE TANK (UST) REMOVED DURING PREVIOUS INVESTIGATION (AREA FOUND SETTLED AND UNCOMPACTED)
-  APPROXIMATE LIMITS OF EXPLORATORY EXCAVATION
-  FENCE
-  POTHOLE SOIL SAMPLE LOCATION
-  SURFACE-SOIL SAMPLE LOCATION
-  CONFIRMATION SOIL SAMPLE



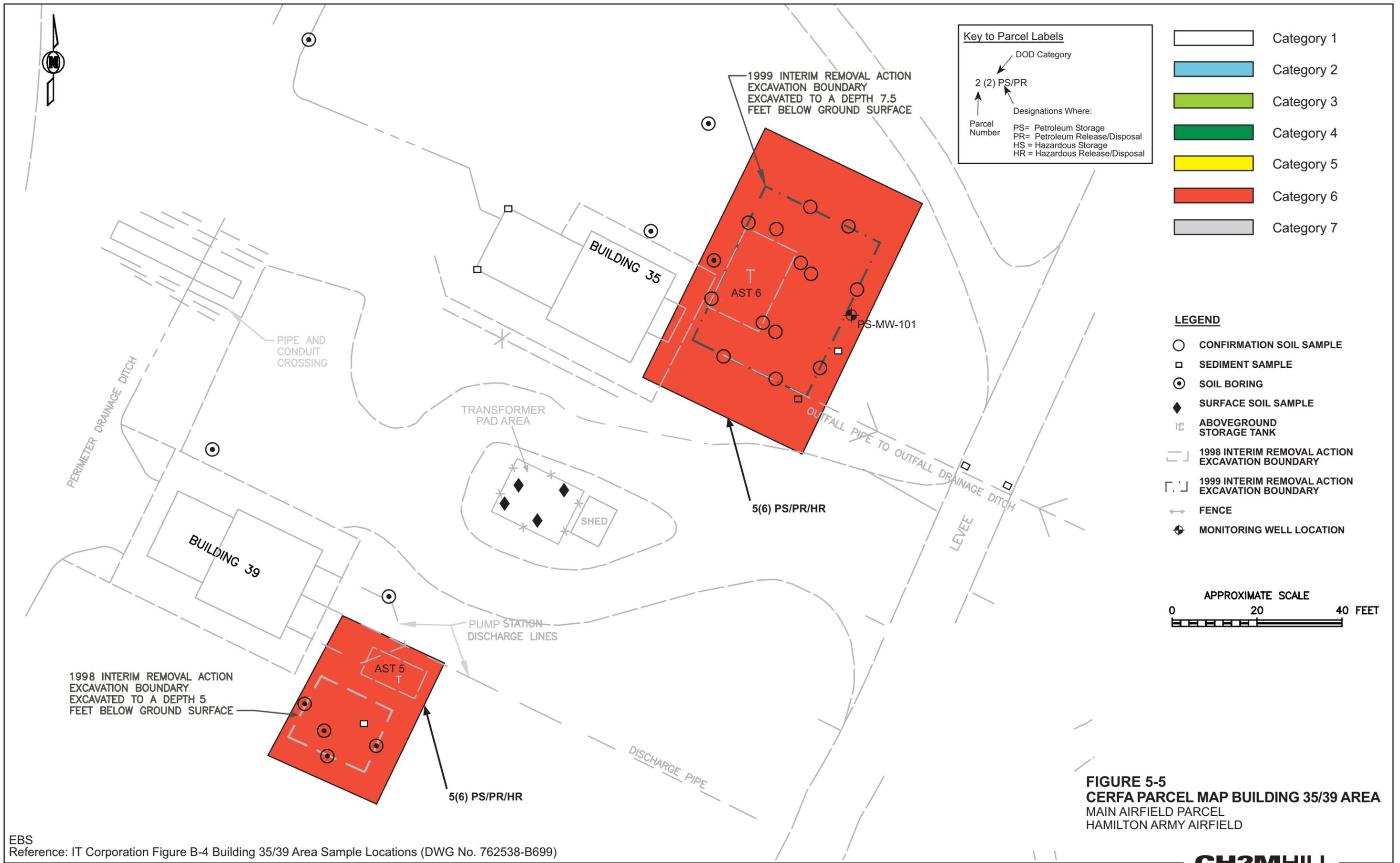
-  Category 1
-  Category 2
-  Category 3
-  Category 4
-  Category 5
-  Category 6
-  Category 7



APPROXIMATE LIMIT OF EXCAVATION TO TRACE AND REMOVE UST-ASSOCIATED PIPING (2.5 FEET DEEP) PIPE END FOUND UNCAPPED

APPROXIMATE LIMIT OF EXCAVATION TO CONFIRM REMOVAL OF UST (BELOW EMPLACED GRAVEL FILL TO 10 FEET MAXIMUM DEPTH)

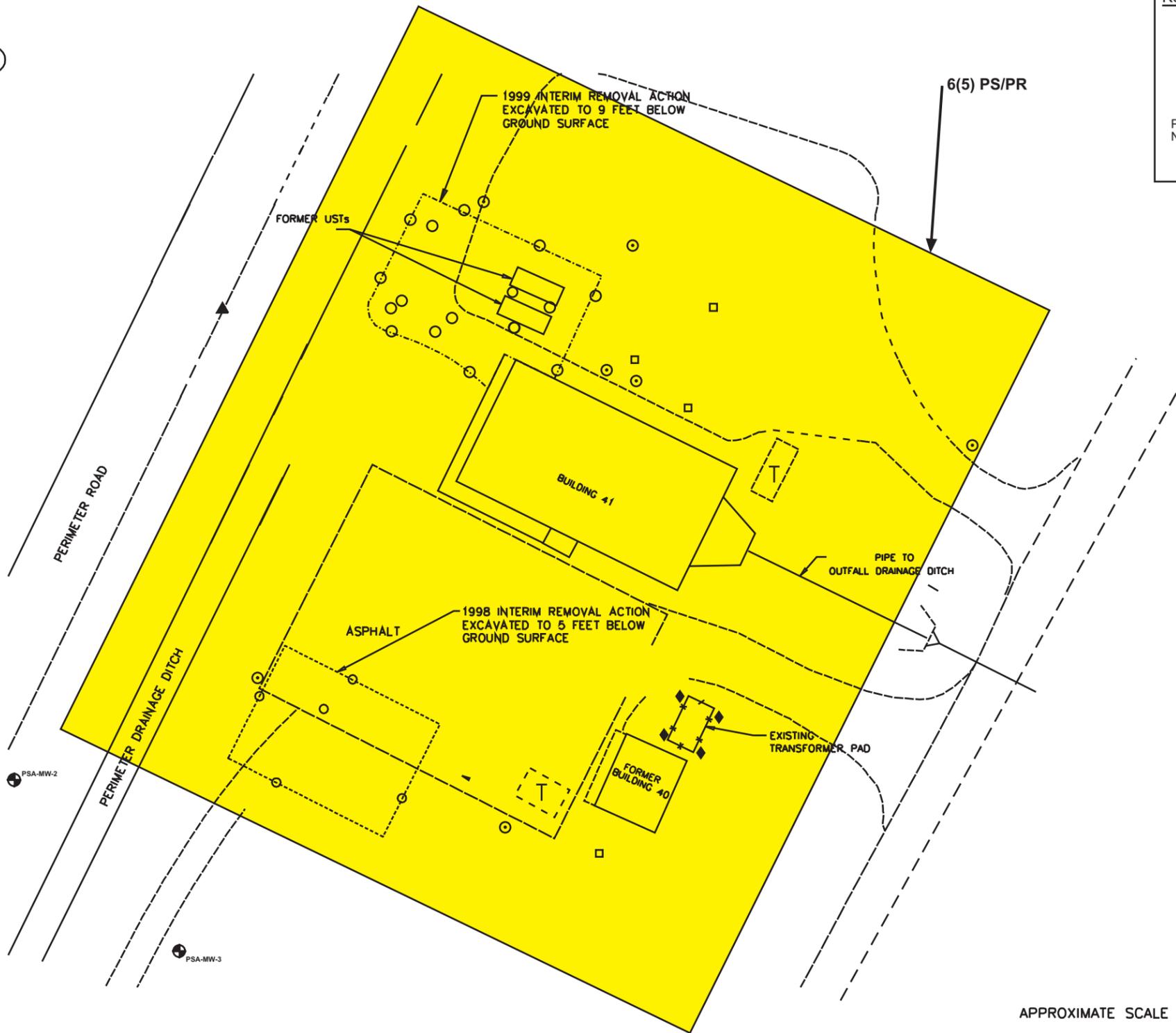
FIGURE 5-4
CERFA PARCEL MAP BUILDING 26
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



EBS
 Reference: IT Corporation Figure B-4 Building 35/39 Area Sample Locations (DWG No. 762538-B699)

Hamilton EBS E042003003SAC FIGURE 5_5_APR2003.FH9 6-1-2003 sbm

CH2MHILL



Key to Parcel Labels

DOD Category

2 (2) PS/PR

Parcel Number

Designations Where:

- PS= Petroleum Storage
- PR= Petroleum Release/Disposal
- HS = Hazardous Storage
- HR = Hazardous Release/Disposal

- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Category 6
- Category 7

- LEGEND**
- SOIL BORING
 - CONFIRMATION SOIL SAMPLE
 - SEDIMENT SOIL SAMPLE
 - SURFACE SOIL SAMPLE
 - POTHOLE SOIL SAMPLE
 - T ABOVEGROUND STORAGE TANK (AST)
 - MONITORING WELL LOCATION
 - FENCE
 - INTERIM REMOVAL ACTIONS EXCAVATION BOUNDARY

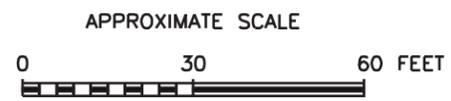


FIGURE 5-6
CERFA PARCEL MAP AND SAMPLE LOCATIONS
BUILDING 41 AREA
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Category 6
- Category 7

LEGEND

- SURFACE SOIL SAMPLE
 - SOIL BORING
 - CONFIRMATION SOIL SAMPLE
 - POT HOLE SOIL SAMPLE
 - MONITORING WELL
 - 1999 INTERIM REMOVAL ACTION EXCAVATION
 - 1998 INTERIM REMOVAL ACTION EXCAVATION
 - FENCE
- SB-UST41-03 **SAMPLE LOCATION**

Key to Parcel Labels

DOD Category

2 (2) PS/PR

Parcel Number

Designations Where:

- PS= Petroleum Storage
- PR= Petroleum Release/Disposal
- HS = Hazardous Storage
- HR = Hazardous Release/Disposal

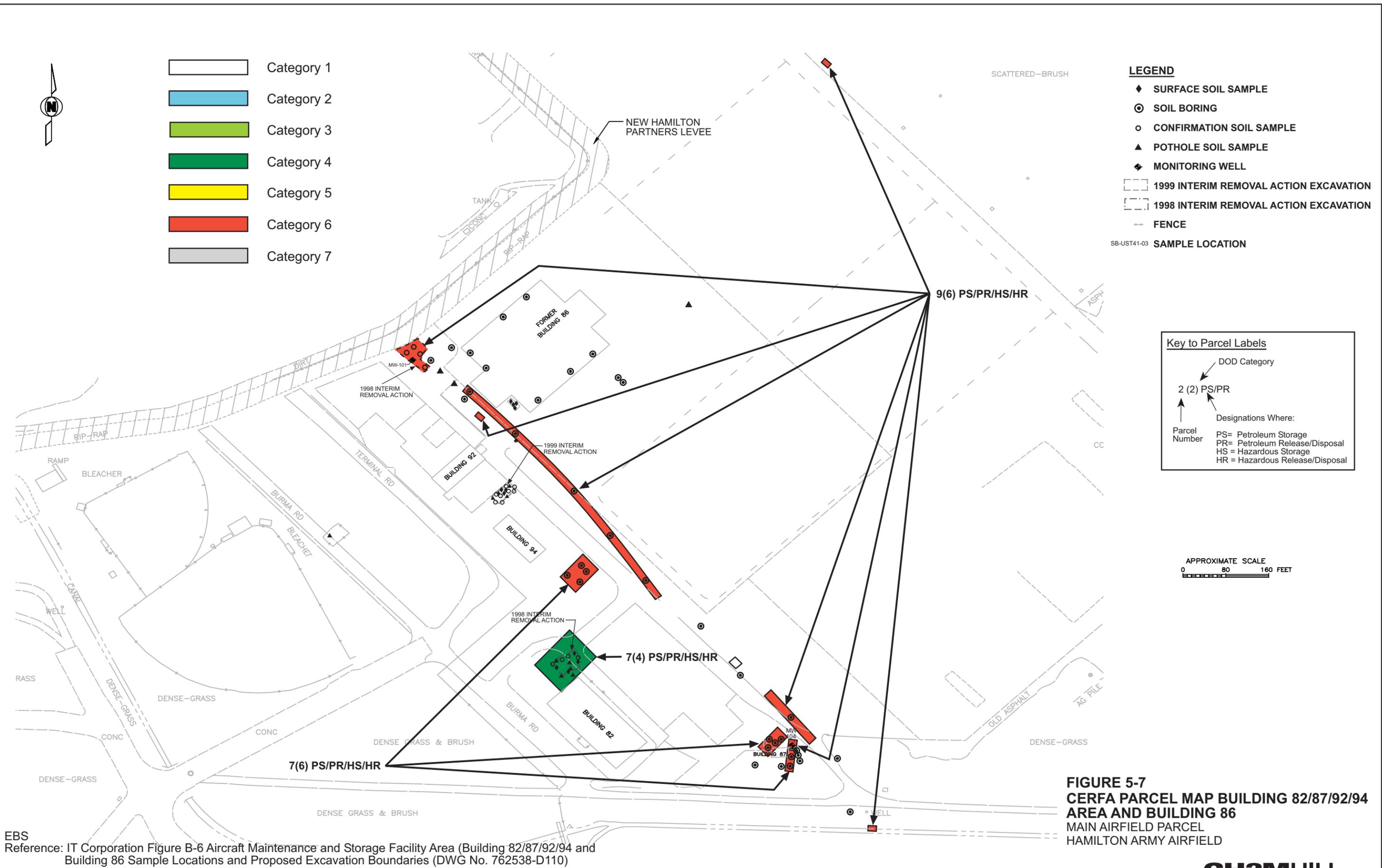
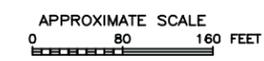


FIGURE 5-7
CERFA PARCEL MAP BUILDING 82/87/92/94
AREA AND BUILDING 86
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

EBS
 Reference: IT Corporation Figure B-6 Aircraft Maintenance and Storage Facility Area (Building 82/87/92/94 and Building 86 Sample Locations and Proposed Excavation Boundaries (DWG No. 762538-D110)





FIGURE 5-8
CERFA PARCEL MAP BUILDING 84/90
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

EBS
 Reference: IT Corporation Figure 5-9 Soil and Groundwater Sample Results Building 84 and 90
 Area Aircraft Maintenance and Storage Facility (DWG No. 762538-B185)



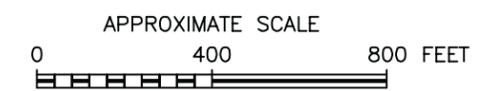
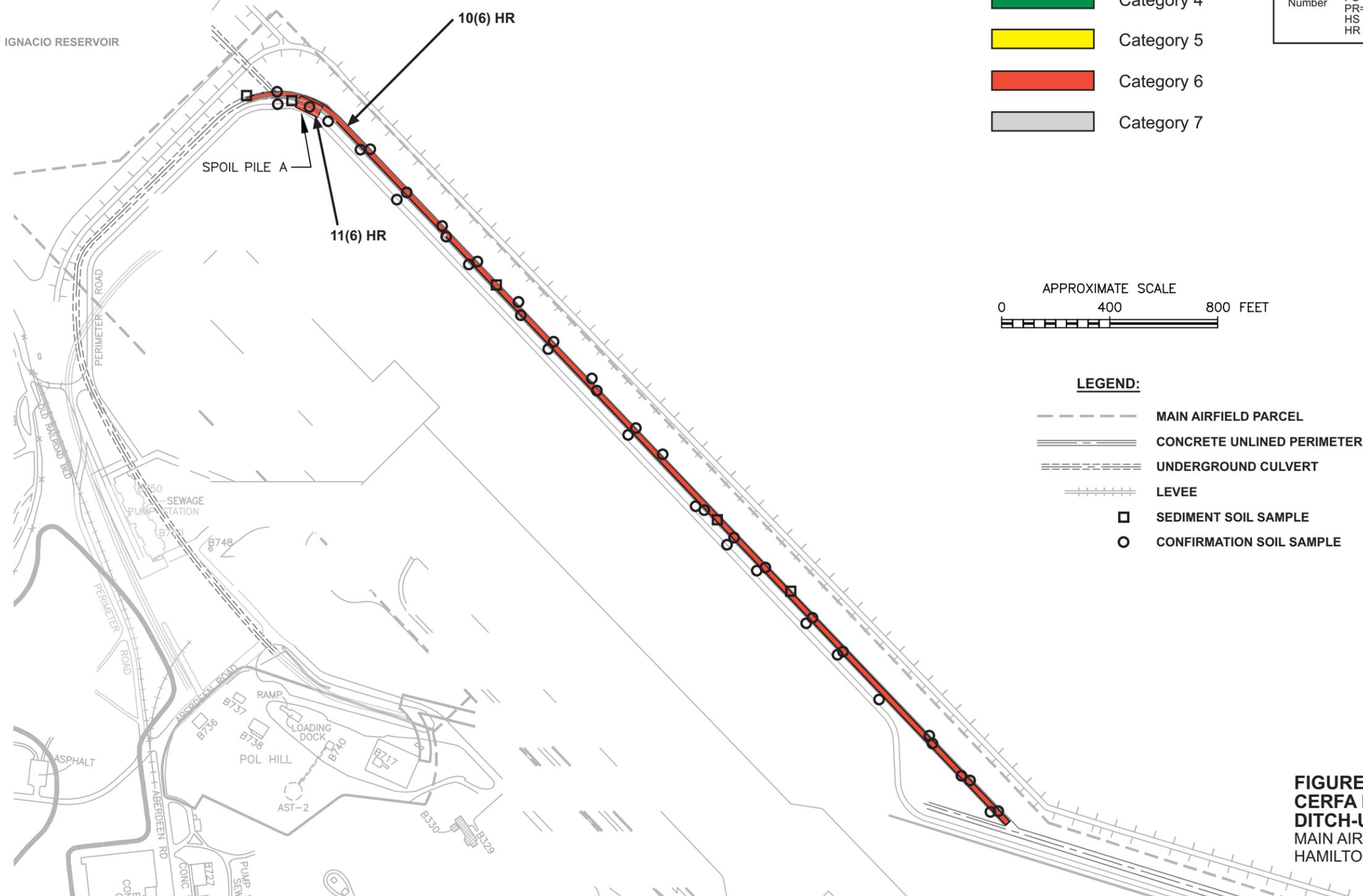
IGNACIO RESERVOIR

- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Category 6
- Category 7

Key to Parcel Labels

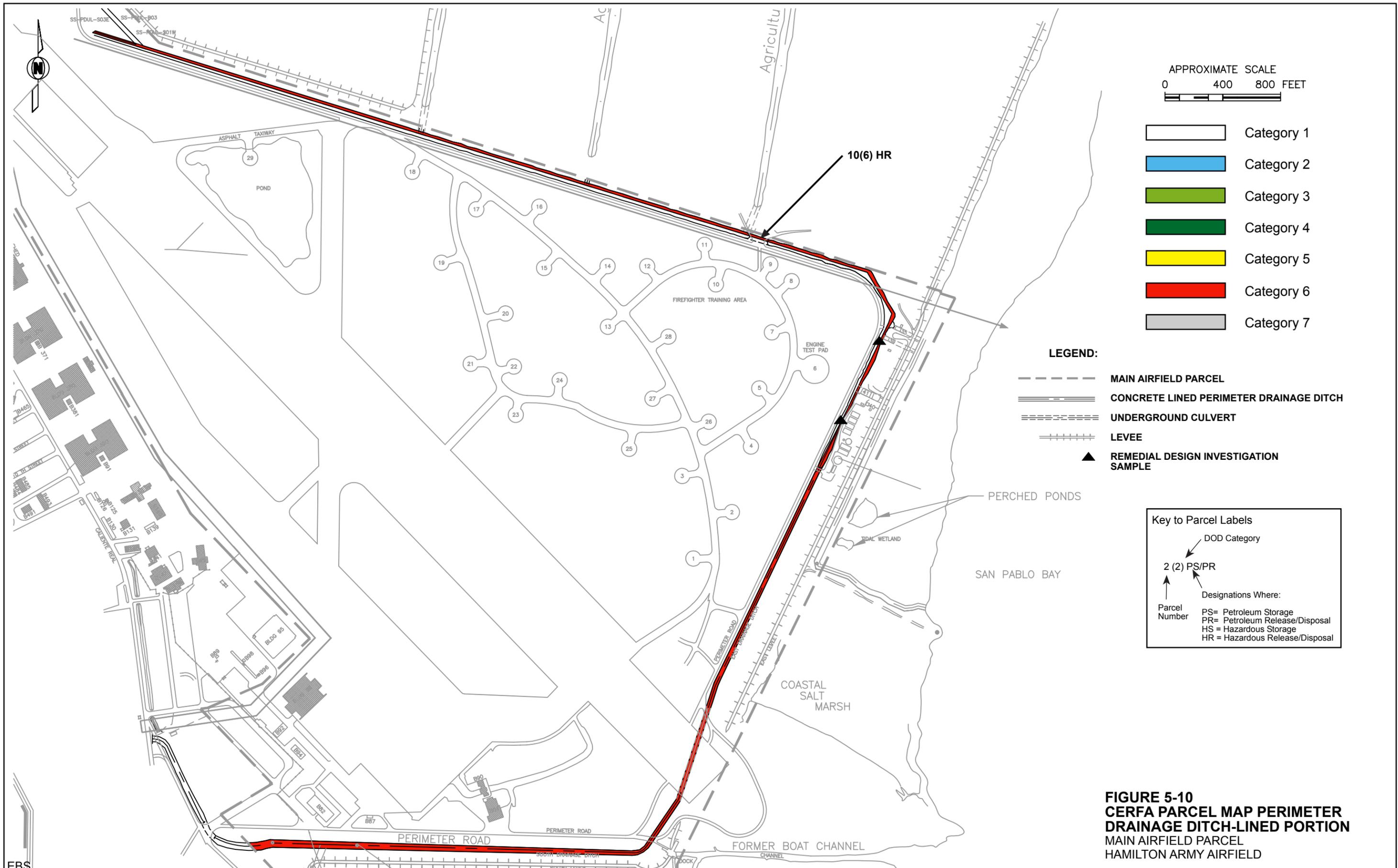
↑ DOD Category
2 (2) PS/PR
↑ Parcel Number

Designations Where:
PS= Petroleum Storage
PR= Petroleum Release/Disposal
HS = Hazardous Storage
HR = Hazardous Release/Disposal



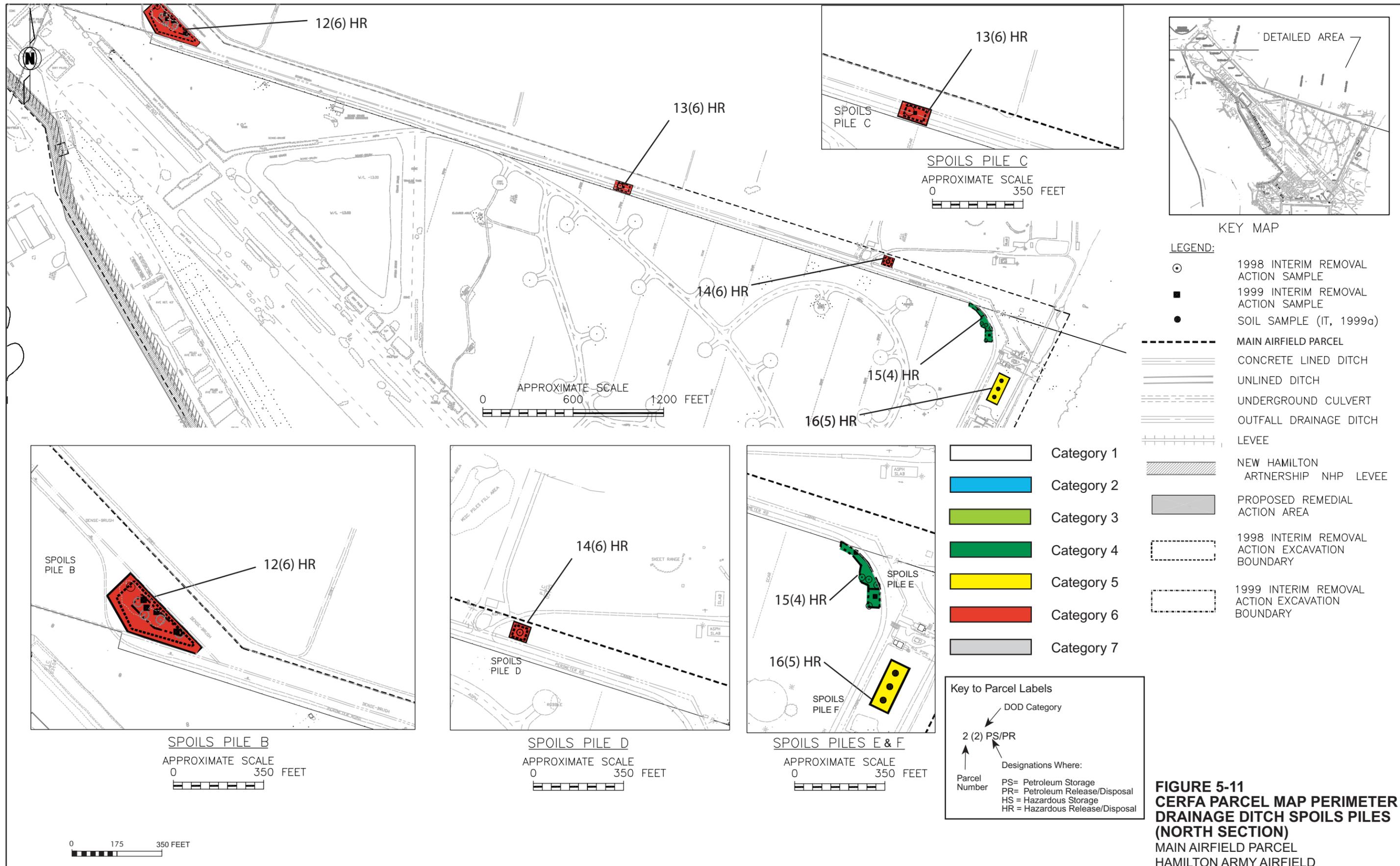
- LEGEND:**
- MAIN AIRFIELD PARCEL
 - ==== CONCRETE UNLINED PERIMETER DRAINAGE DITCH
 - ===== UNDERGROUND CULVERT
 - +++++ LEVEE
 - SEDIMENT SOIL SAMPLE
 - CONFIRMATION SOIL SAMPLE

**FIGURE 5-9
CERFA PARCEL MAP PERIMETER DRAINAGE
DITCH-UNLINED PORTION AND SPOIL PILE A
MAIN AIRFIELD PARCEL
HAMILTON ARMY AIRFIELD**



EBS Reference: IT Corporation (IT) Figure B-8 Perimeter Drainage Ditch--Unlined Portion and Spoils Pile A Sample Locations and Proposed Excavation Boundaries (DWG No. 762538-B690)

FIGURE 5-10
CERFA PARCEL MAP PERIMETER DRAINAGE DITCH-LINED PORTION
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



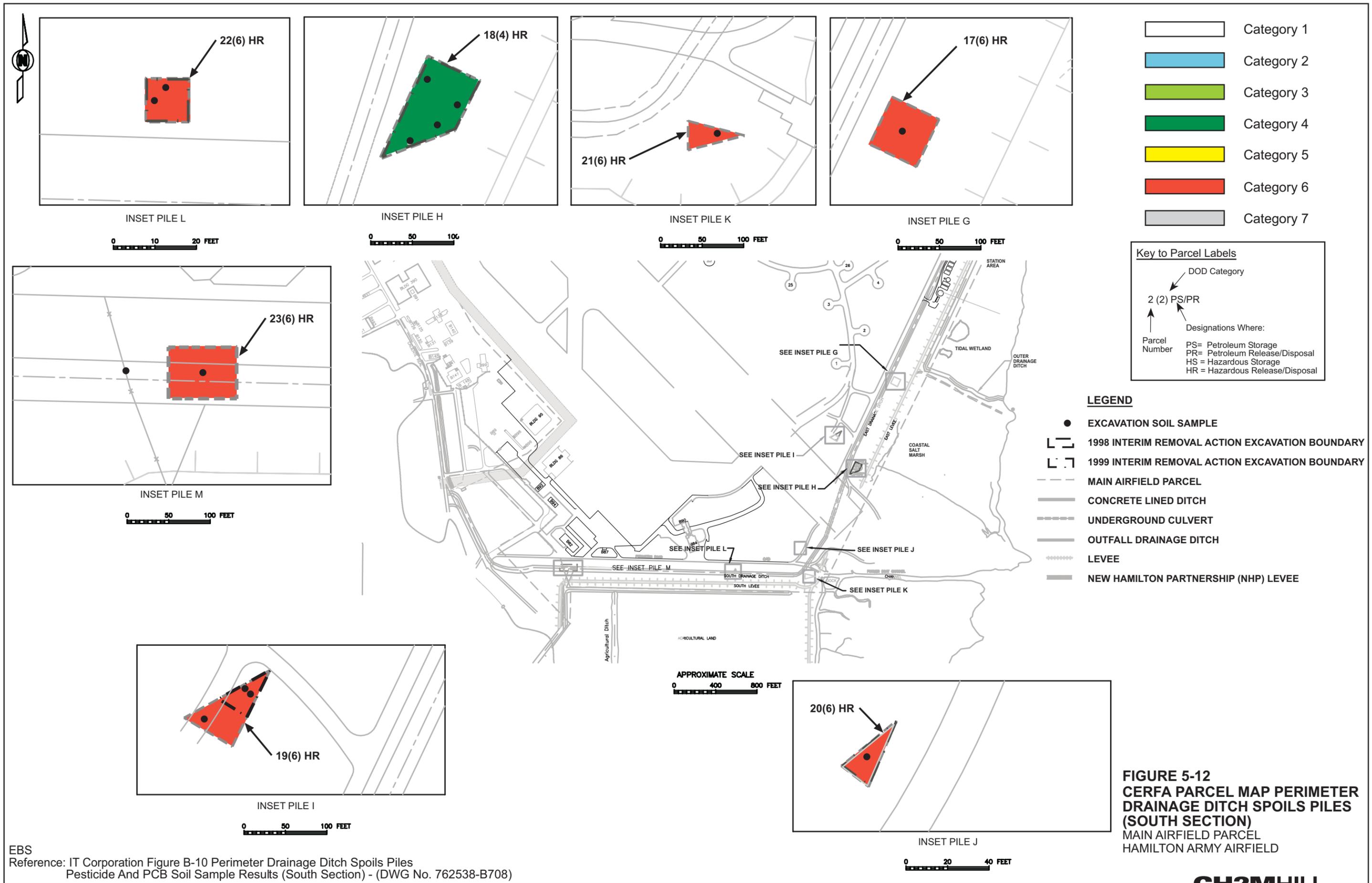
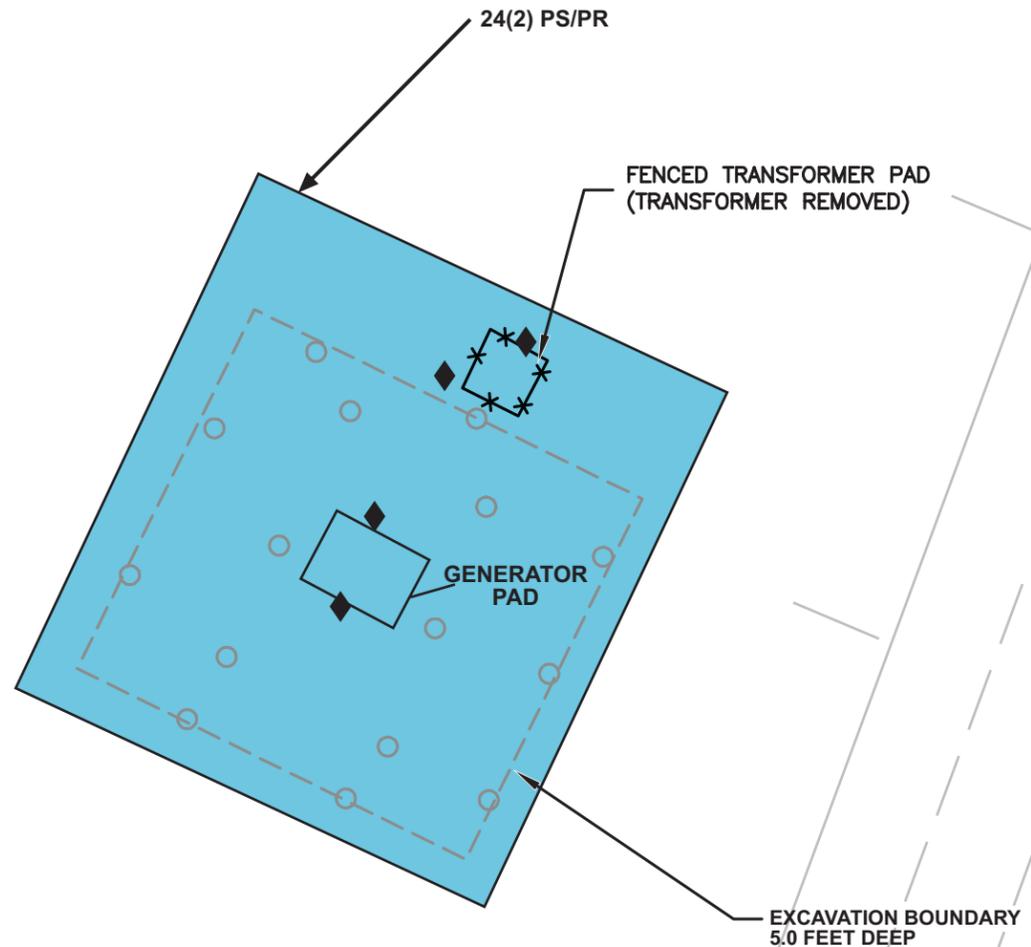


FIGURE 5-12
CERFA PARCEL MAP PERIMETER
DRAINAGE DITCH SPOILS PILES
(SOUTH SECTION)
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



PERIMETER DRAINAGE DITCH



- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Category 6
- Category 7

Key to Parcel Labels

DOD Category

2 (2) PS/PR

Parcel Number

Designations Where:

- PS= Petroleum Storage
- PR= Petroleum Release/Disposal
- HS = Hazardous Storage
- HR = Hazardous Release/Disposal

LEGEND:

- - - 1998 INTERIM REMOVAL ACTION EXCAVATION BOUNDARY (IT, 1999c)
- CONFIRMATION SOIL SAMPLE
- ◆ SURFACE SOIL SAMPLE
- *-* FENCE

APPROXIMATE SCALE

0 20 40 FEET

FIGURE 5-13
CERFA PARCEL MAP EAST LEVEE
GENERATOR PAD
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



Key to Parcel Labels

DOD Category

2 (2) PS/PR

Parcel Number

Designations Where:
 PS= Petroleum Storage
 PR= Petroleum Release/Disposal
 HS = Hazardous Storage
 HR = Hazardous Release/Disposal

- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Category 6
- Category 7

APPROXIMATE LOCATION OF CONCRETE VAULT

25(2) PS/PR

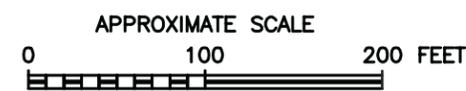
LIMIT OF LEVEE EASEMENT

DISCHARGE END OF 54-INCH STORM DRAIN

NHP LEVEE EASEMENT

NHP LEVEE FOOTPRINT

FORMER POL AREA



LEGEND

- SOIL SAMPLE LOCATION
- SECTION OF 54-INCH STORM DRAIN REMOVED FOR LEVEE CONSTRUCTION

FIGURE 5-14
CERFA PARCEL MAP ONSHORE FUEL LINE
54-INCH DRAIN LINE SEGMENT
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

Key to Parcel Labels

↑ Parcel Number
 ↓ DOD Category
 2 (2) PS/PR

Designations Where:
 PS= Petroleum Storage
 PR= Petroleum Release/Disposal
 HS = Hazardous Storage
 HR = Hazardous Release/Disposal

	Category 1
	Category 2
	Category 3
	Category 4
	Category 5
	Category 6
	Category 7



INSET



- LEGEND:**
- ▲ POTHOLE SOIL SAMPLE
 - - - MAIN AIRFIELD PARCEL
 - ==== PERIMETER DRAINAGE DITCH
 - SAMPLE LOCATION
 - ==== PERIMETER LEVEES
 - FORMER LOCATION OF FUEL LINE

FIGURE 5-15
CERFA PARCEL MAP ON SHORE FUEL
LINE, NORTHERN SEGMENT
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD





Key to Parcel Labels

DOD Category

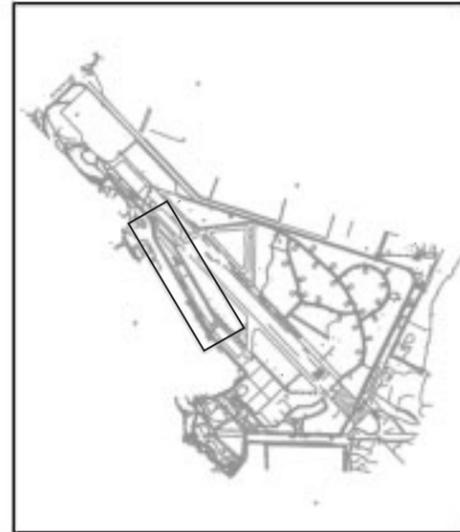
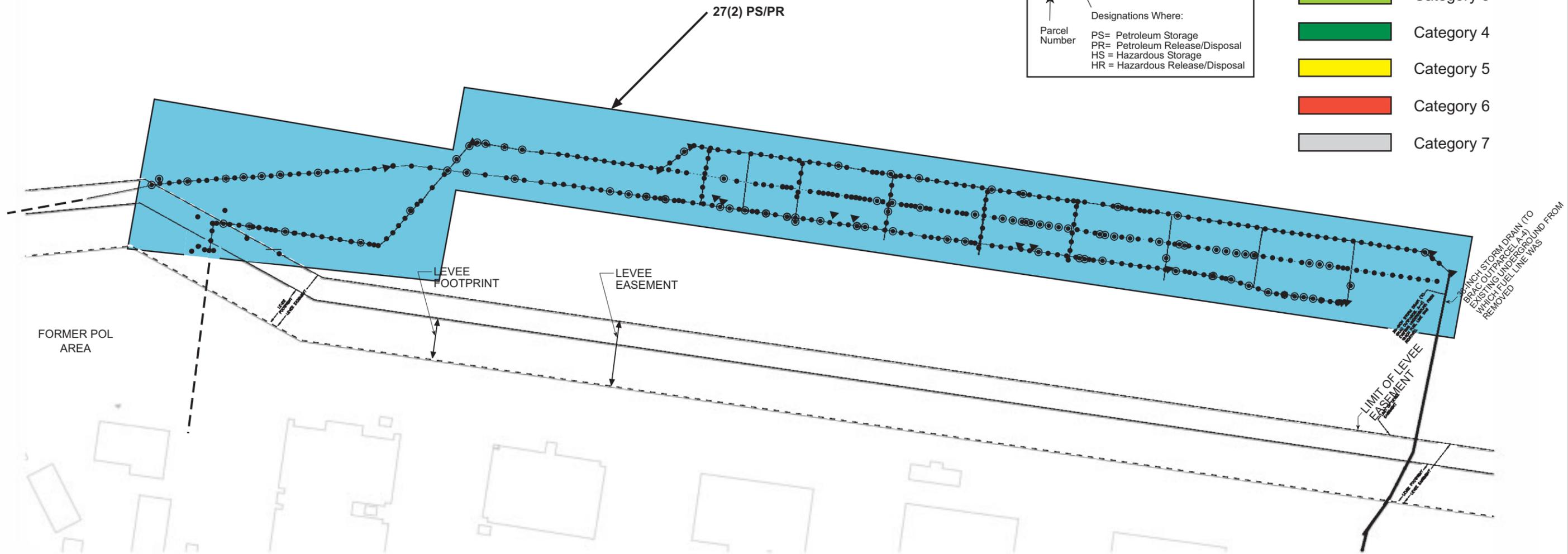
2 (2) PS/PR

Parcel Number

Designations Where:

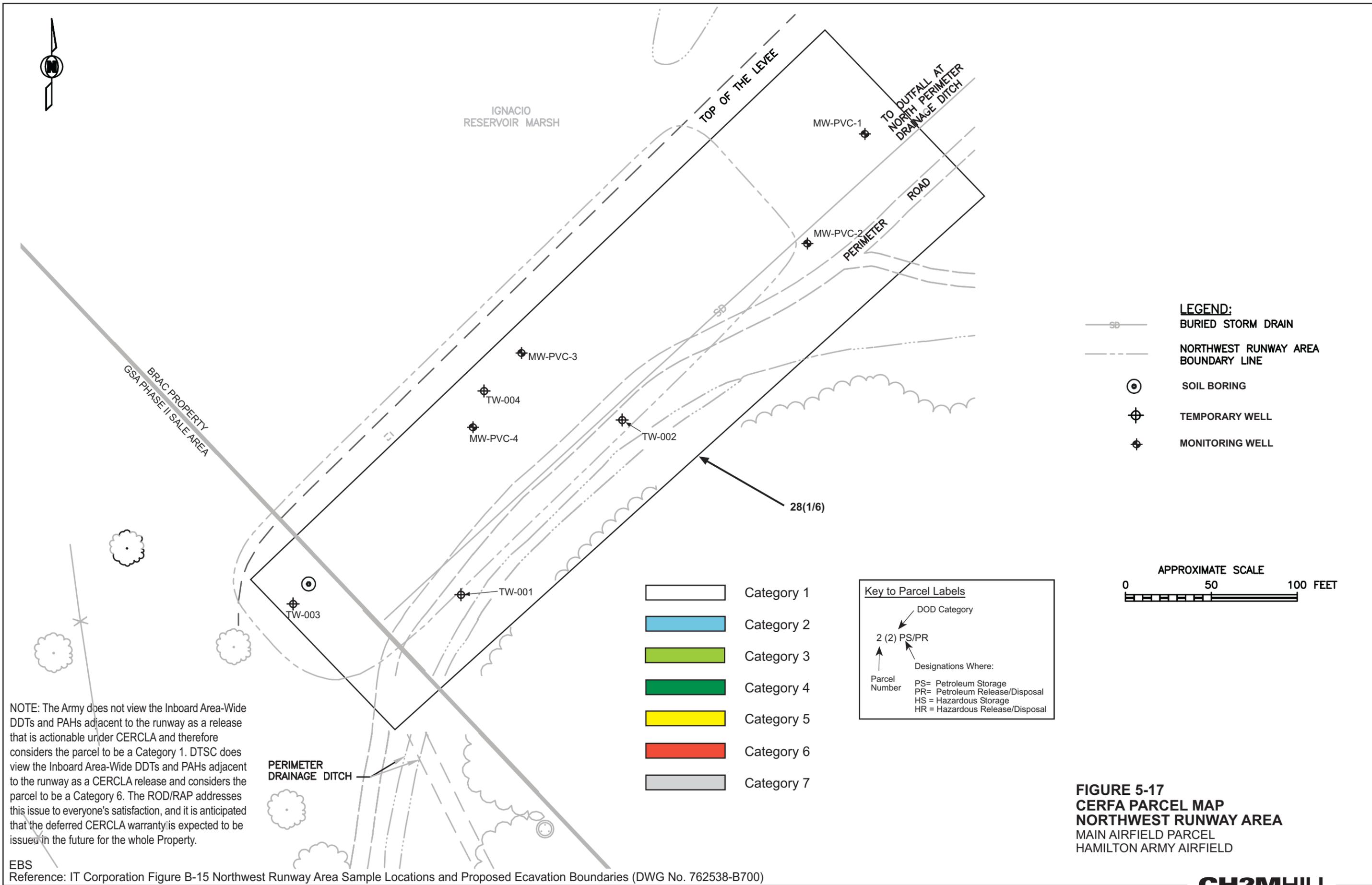
- PS= Petroleum Storage
- PR= Petroleum Release/Disposal
- HS = Hazardous Storage
- HR = Hazardous Release/Disposal

	Category 1
	Category 2
	Category 3
	Category 4
	Category 5
	Category 6
	Category 7



- LEGEND**
- CONFIRMED SAMPLE
 - ⊙ FIELD SCREEN SAMPLE WITH PNA CONFIRMATION SAMPLE
 - ▲ SOIL SAMPLE LOCATIONS
 - BOUNDARY BETWEEN LEVEE FOOTPRINT AND EASEMENT
 - - - LEVEE EASEMENT

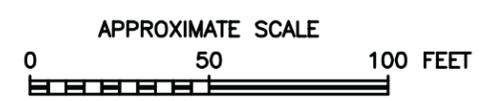
FIGURE 5-16
CERFA PARCEL MAP ONSHORE FUEL LINE HANGAR SEGMENT
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



NOTE: The Army does not view the Inboard Area-Wide DDTs and PAHs adjacent to the runway as a release that is actionable under CERCLA and therefore considers the parcel to be a Category 1. DTSC does view the Inboard Area-Wide DDTs and PAHs adjacent to the runway as a CERCLA release and considers the parcel to be a Category 6. The ROD/RAP addresses this issue to everyone's satisfaction, and it is anticipated that the deferred CERCLA warranty is expected to be issued in the future for the whole Property.

EBS
Reference: IT Corporation Figure B-15 Northwest Runway Area Sample Locations and Proposed Ecvation Boundaries (DWG No. 762538-B700)

- LEGEND:**
- SB — BURIED STORM DRAIN
 - - - NORTHWEST RUNWAY AREA BOUNDARY LINE
 - ⊙ SOIL BORING
 - ⊕ TEMPORARY WELL
 - ⊛ MONITORING WELL



- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Category 6
- Category 7

Key to Parcel Labels

2 (2) PS/PR

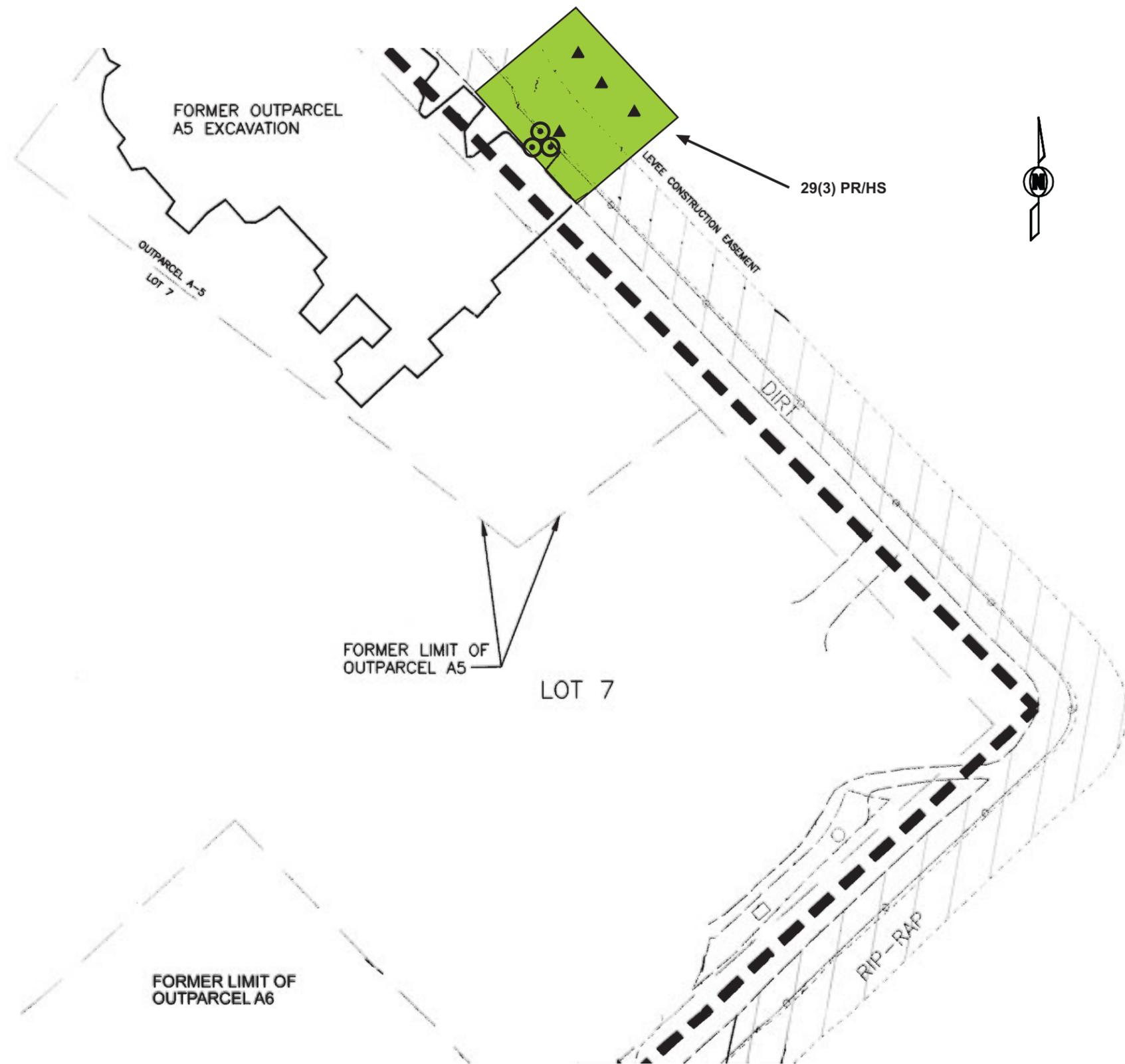
↑ Parcel Number

↘ DOD Category

Designations Where:

- PS= Petroleum Storage
- PR= Petroleum Release/Disposal
- HS = Hazardous Storage
- HR = Hazardous Release/Disposal

FIGURE 5-17
CERFA PARCEL MAP
NORTHWEST RUNWAY AREA
MAIN AIRFIELD PARCEL
HAMILTON ARMY AIRFIELD



- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Category 6
- Category 7

Key to Parcel Labels

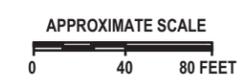
DOD Category

2 (2) PS/PR

Parcel Number

Designations Where:

- PS= Petroleum Storage
- PR= Petroleum Release/Disposal
- HS = Hazardous Storage
- HR = Hazardous Release/Disposal



- LEGEND**
- MAIN AIRFIELD PARCEL BOUNDARY
 - SOIL BORING
 - POT HOLE SOIL SAMPLE

FIGURE 5-18
CERFA PARCEL MAP
TARMAC EAST OF OUTPARCEL A-5
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

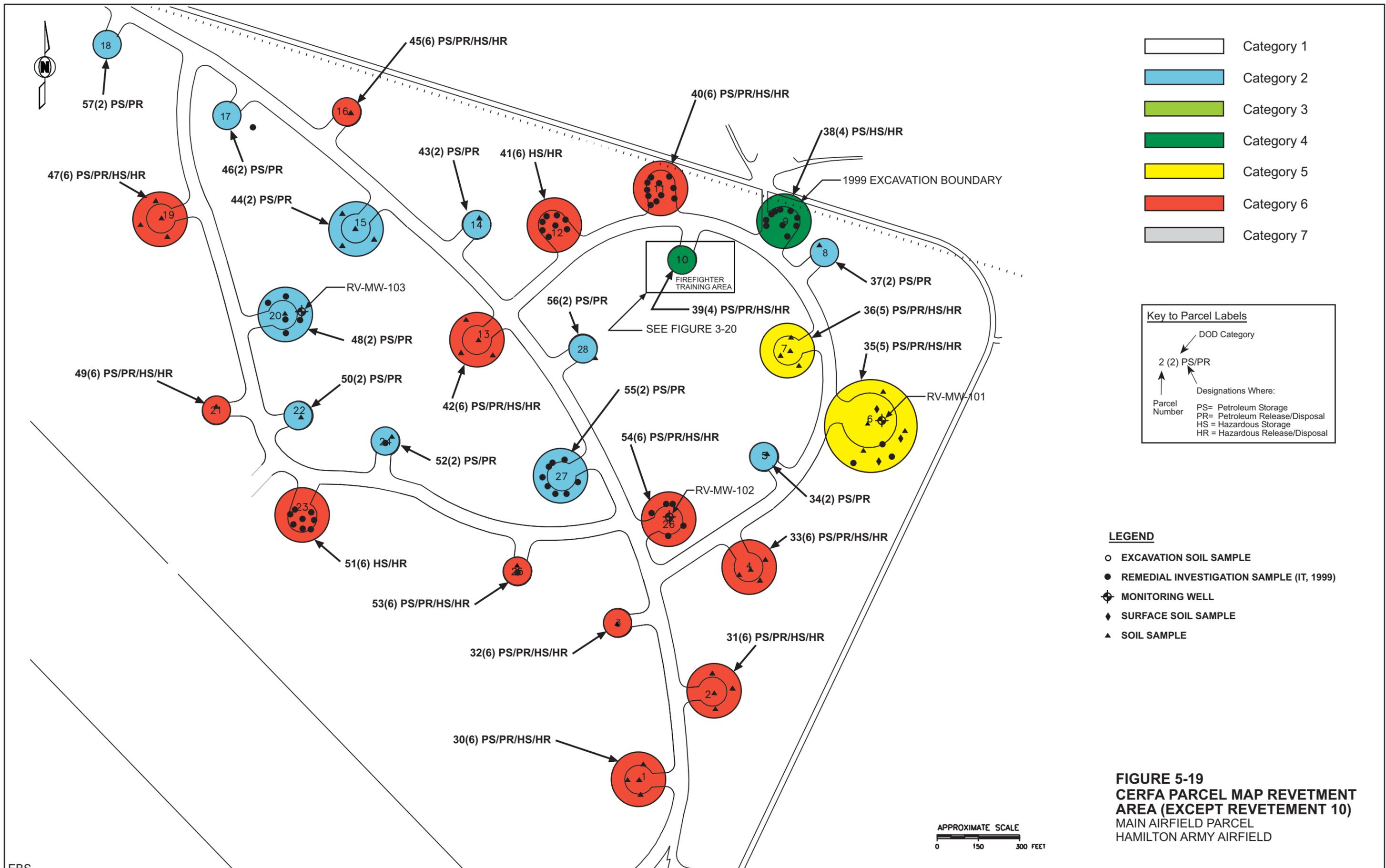
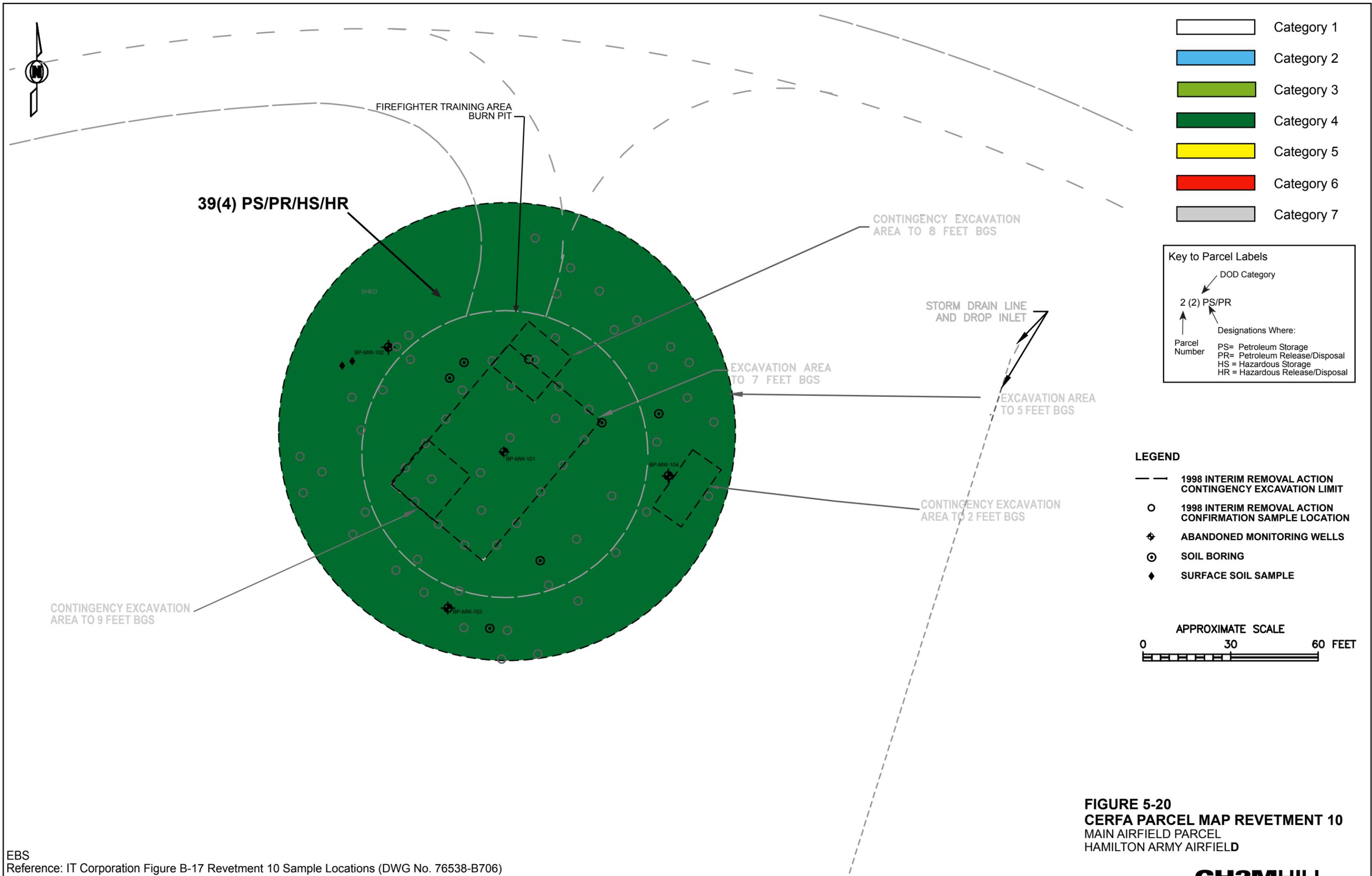


FIGURE 5-19
CERFA PARCEL MAP REVETMENT
AREA (EXCEPT REVETEMENT 10)
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Category 6
- Category 7

Key to Parcel Labels

2 (2) PS/PR

↑ Parcel Number

↘ DOD Category

Designations Where:

- PS= Petroleum Storage
- PR= Petroleum Release/Disposal
- HS = Hazardous Storage
- HR = Hazardous Release/Disposal

- LEGEND**
- 1998 INTERIM REMOVAL ACTION CONTINGENCY EXCAVATION LIMIT
 - 1998 INTERIM REMOVAL ACTION CONFIRMATION SAMPLE LOCATION
 - ⊕ ABANDONED MONITORING WELLS
 - ⊙ SOIL BORING
 - ◆ SURFACE SOIL SAMPLE

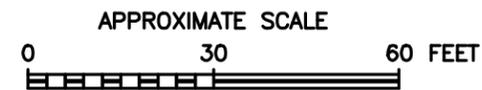
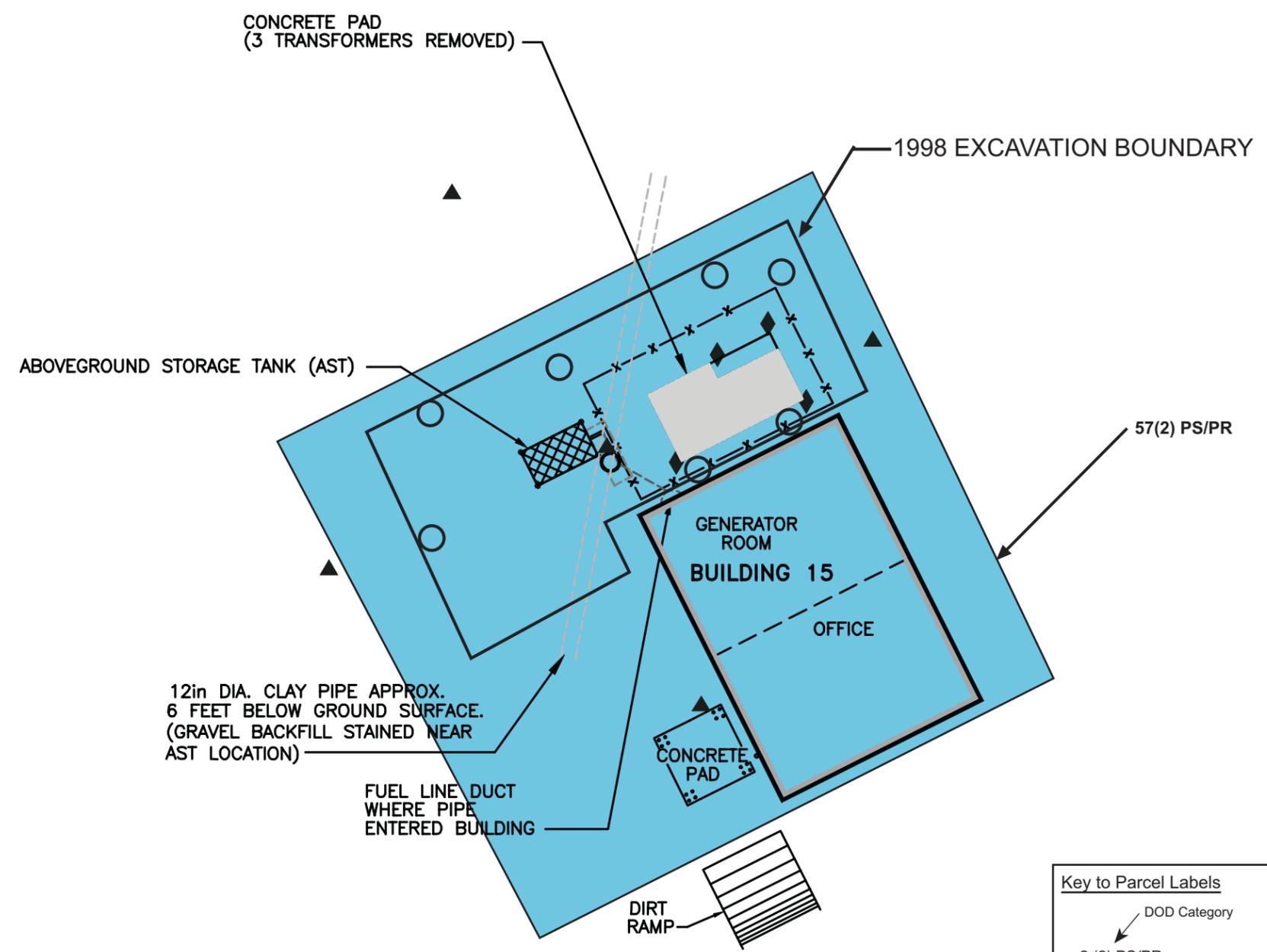


FIGURE 5-20
CERFA PARCEL MAP REVETMENT 10
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Category 6
- Category 7

LEGEND

- FORMER LOCATION OF 120 GALLON DIESEL ABOVEGROUND STORAGE TANK (AST)
- AREA OF SHALLOW TRENCH TO REMOVE PIPING
- PIPING ASSOCIATED WITH AST (REMOVED)
- FENCE
- CONFIRMATION SOIL SAMPLE
- SURFACE SOIL SAMPLE
- POTHOLE SOIL SAMPLE

Key to Parcel Labels

DOD Category

2 (2) PS/PR

Parcel Number

Designations Where:

- PS= Petroleum Storage
- PR= Petroleum Release/Disposal
- HS = Hazardous Storage
- HR = Hazardous Release/Disposal

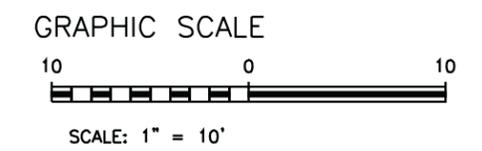
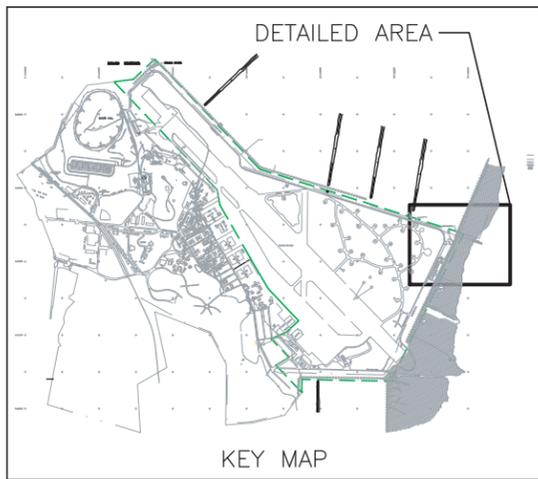


FIGURE 5-21
CERFA PARCEL MAP BUILDING 15
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Category 6
- Category 7

Key to Parcel Labels

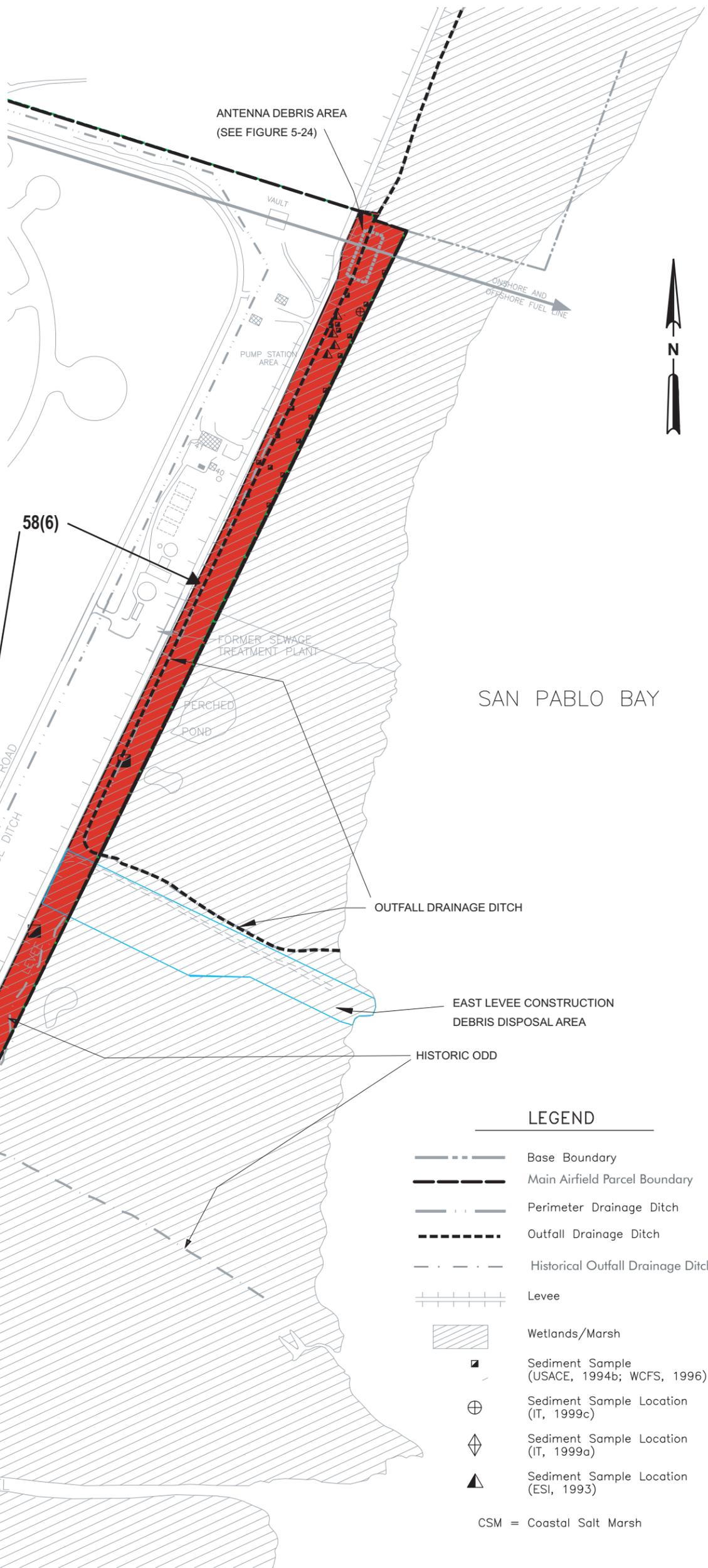
DOD Category

2 (2) PS/PR

Parcel Number

Designations Where:

PS= Petroleum Storage
 PR= Petroleum Release/Disposal
 HS = Hazardous Storage
 HR = Hazardous Release/Disposal



SAN PABLO BAY

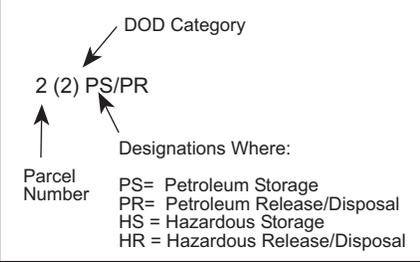
LEGEND

- Base Boundary
 - Main Airfield Parcel Boundary
 - Perimeter Drainage Ditch
 - Outfall Drainage Ditch
 - Historical Outfall Drainage Ditch
 - Levee
 - Wetlands/Marsh
 - Sediment Sample (USACE, 1994b; WCFS, 1996)
 - Sediment Sample Location (IT, 1999c)
 - Sediment Sample Location (IT, 1999a)
 - Sediment Sample Location (ESI, 1993)
- CSM = Coastal Salt Marsh

0 175 350 FEET

**FIGURE 5-22
 CERFA PARCEL MAP COASTAL
 SALT MARSH SITES
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD**

Key to Parcel Labels



- MAIN AIRFIELD PARCEL BOUNDARY
- ○ ○ PIERS AND BARRIERS
- × × × FENCE
- ▲ POTHOLE SOIL SAMPLE
- ◆ SURFACE SOIL SAMPLE

- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Category 6
- Category 7

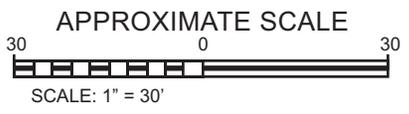
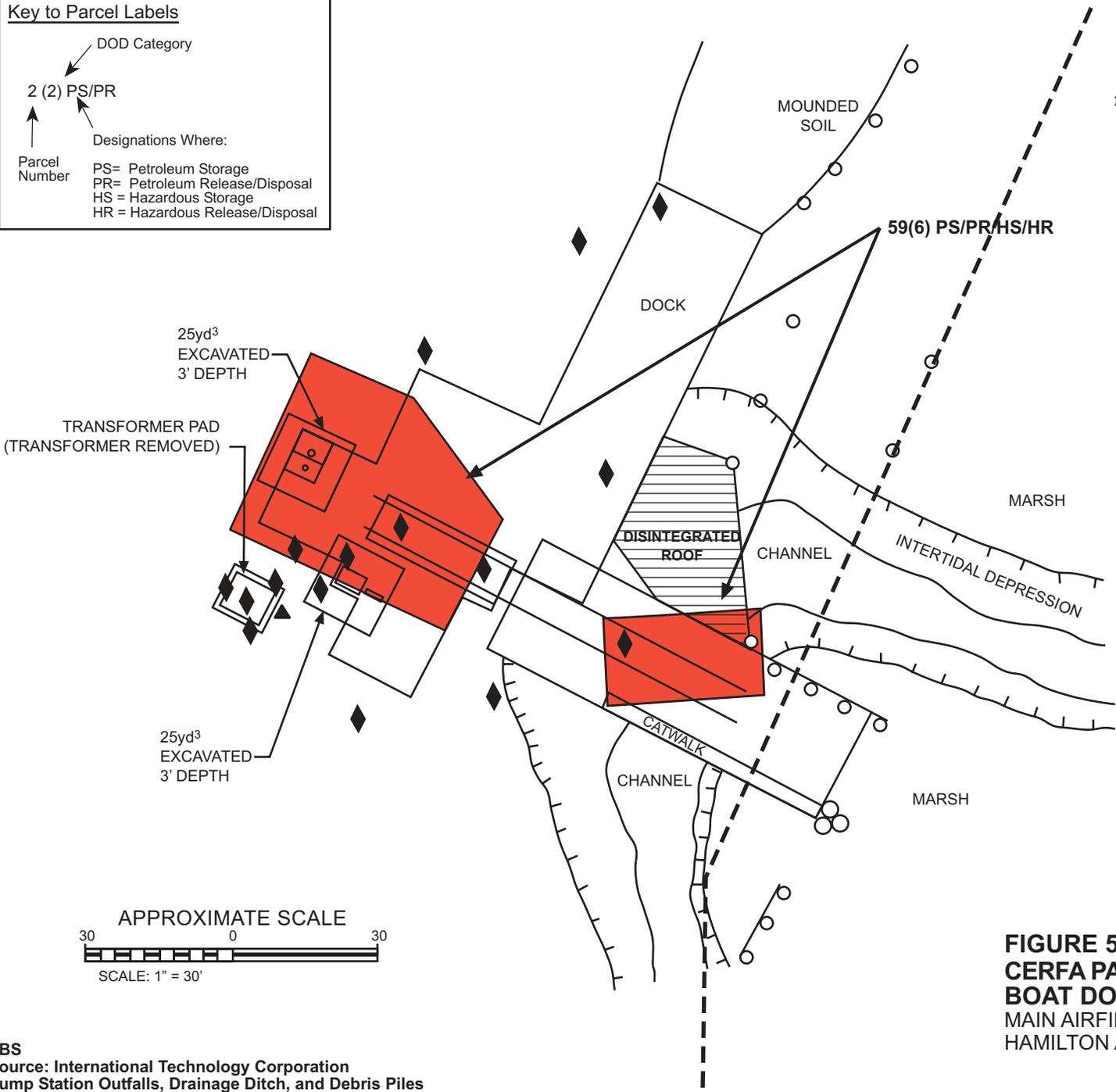
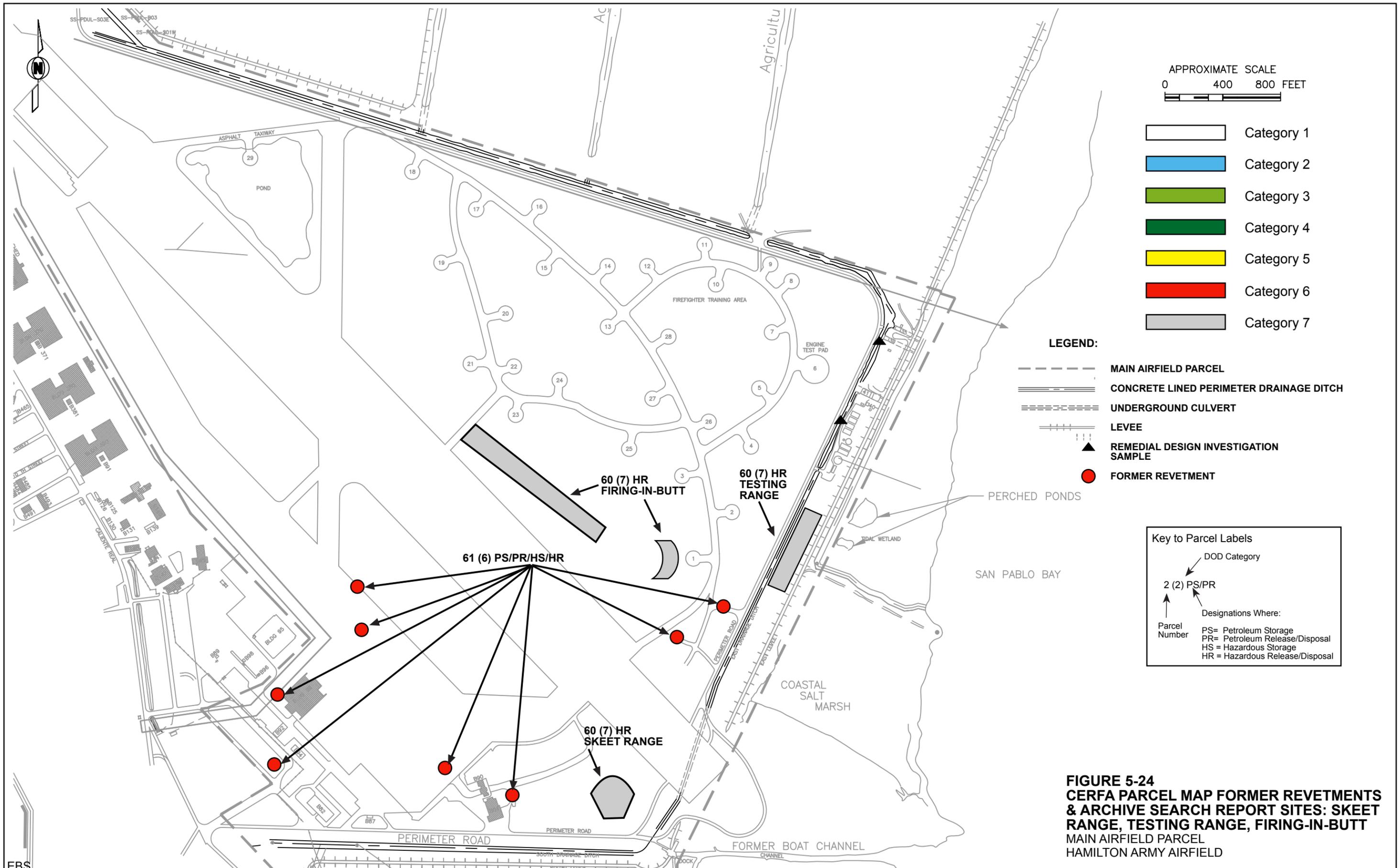


FIGURE 5-23
CERFA PARCEL MAP BOAT DOCK AND
BOAT DOCK CHANNEL
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD

EBS
 Source: International Technology Corporation
 Pump Station Outfalls, Drainage Ditch, and Debris Piles



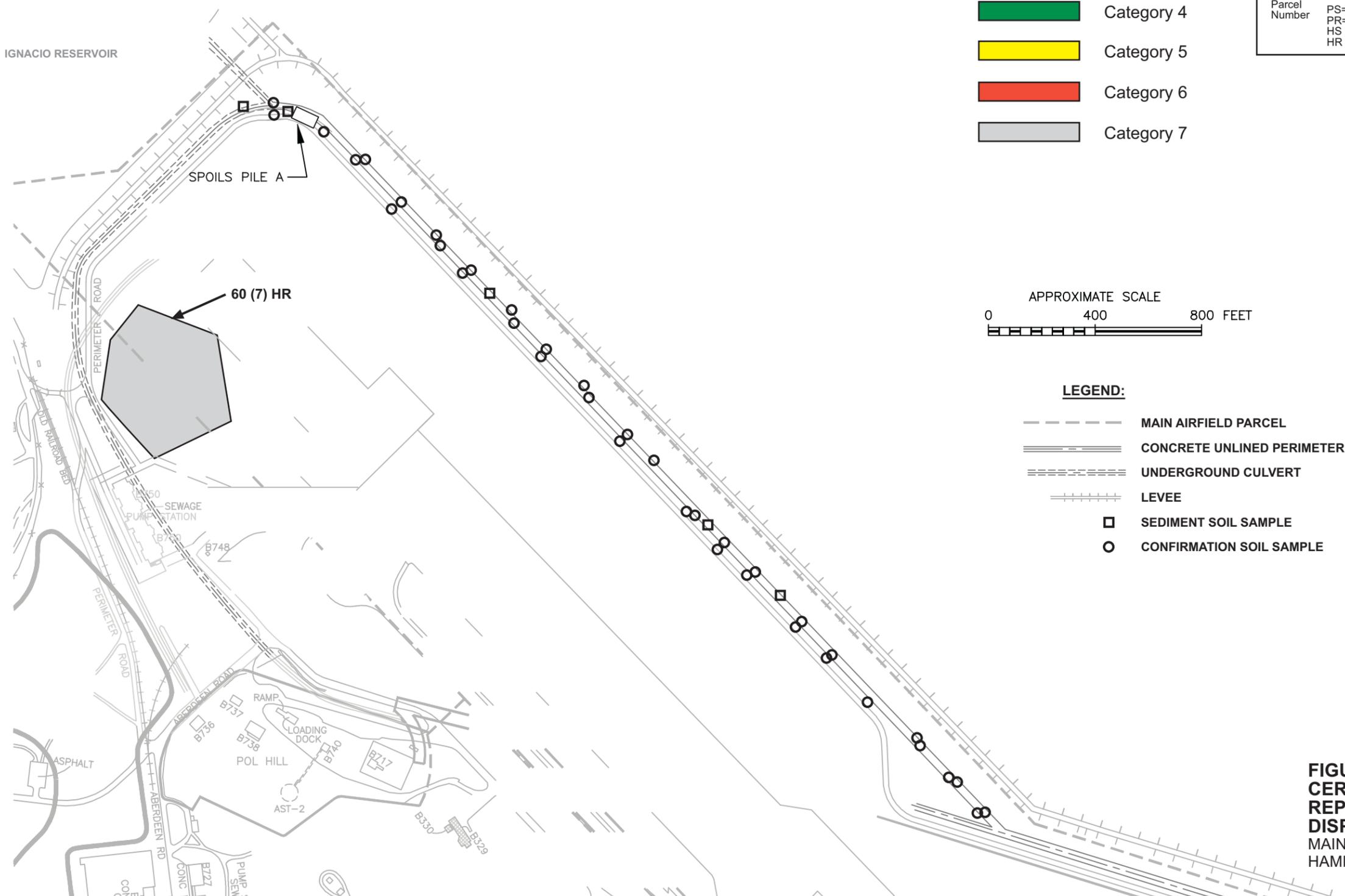


**FIGURE 5-24
 CERFA PARCEL MAP FORMER REVETMENTS
 & ARCHIVE SEARCH REPORT SITES: SKEET
 RANGE, TESTING RANGE, FIRING-IN-BUTT
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD**

EBS
 Reference: IT Corporation (IT) Figure B-8 Perimeter Drainage Ditch--Unlined Portion and Spoils Pile A Sample Locations and Proposed Excavation Boundaries (DWG No. 762538-B690)



IGNACIO RESERVOIR



- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Category 6
- Category 7

Key to Parcel Labels

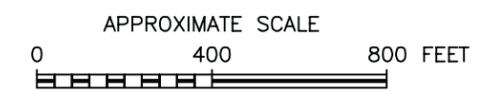
2 (2) PS/PR

↑ Parcel Number

↑ DOD Category

↑ Designations Where:

PS= Petroleum Storage
 PR= Petroleum Release/Disposal
 HS = Hazardous Storage
 HR = Hazardous Release/Disposal



- LEGEND:**
- MAIN AIRFIELD PARCEL
 - CONCRETE UNLINED PERIMETER DRAINAGE DITCH
 - UNDERGROUND CULVERT
 - LEVEE
 - SEDIMENT SOIL SAMPLE
 - CONFIRMATION SOIL SAMPLE

FIGURE 5-25
CERFA PARCEL MAP ARCHIVE SEARCH
REPORT SITE: NORTHWEST ALLEGED
DISPOSAL AREA
 MAIN AIRFIELD PARCEL
 HAMILTON ARMY AIRFIELD



SECTION 6

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APPENDIX A

List of Documents Reviewed

APPENDIX A

List of Documents Reviewed

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APPENDIX B

Summary of VISTA Report

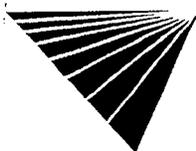
Custom

PROPERTY INFORMATION	CLIENT INFORMATION
Project Name/Ref #: Hamilton Army A State Access AND Hang* Novato, CA Latitude/Longitude: (38.059588, 122.515293)	Karen Parker 2485 Natomas Park Drive #600 Sacramento, CA 95833

Site Distribution Summary			within 4 miles
Agency / Database - Type of Records			
A) Databases searched to 4 miles:			
US EPA	NPL	National Priority List	0
US EPA	CORRACTS	RCRA Corrective Actions	1
US EPA	RCRA-TSD	RCRA permitted treatment, storage, disposal facilities	0
STATE	SPL	State equivalent priority list	0
STATE	SCL	State equivalent CERCLIS list	4
US EPA	CERCLIS/ NFRAP	Sites under review by US EPA	4
STATE/ REG/CO	LUST	Leaking Underground Storage Tanks	63
STATE/ REG/CO	SWLF	Solid waste landfills, incinerators, or transfer stations	4
STATE/ CO	UST	Registered underground storage tanks	53
STATE	AST	Registered aboveground storage tanks	4
US EPA	GNRTR	RCRA registered small or large generators of hazardous waste	54
US EPA/ STATE	SPILLS	ERNS and state spills lists	19

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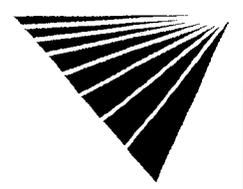
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Report ID: 561401901

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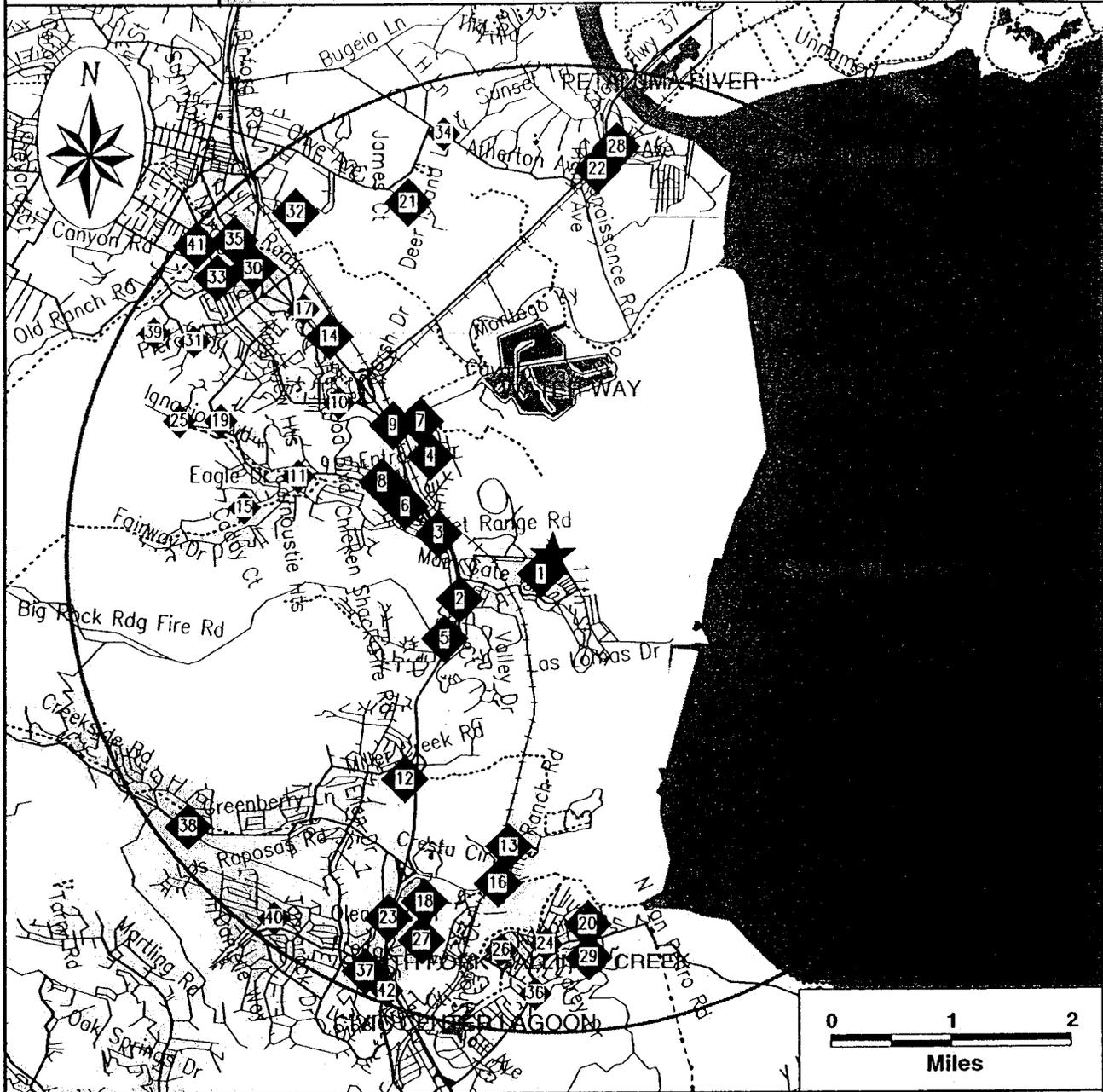
Date of Report: September 19, 2000

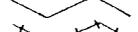
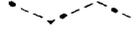
Page #1



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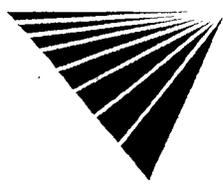
Map of Sites within 4 miles



<p>Subject Site</p> 	<p>Category: A</p> <p>Single Sites </p> <p>Multiple Sites </p>
 Highways and Major Roads  Roads  Railroads  Rivers or Water Bodies  Utilities	<p>Categories correspond to database searches described in the Site Distribution Summary, beginning on Page #1.</p>

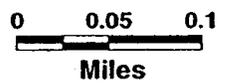
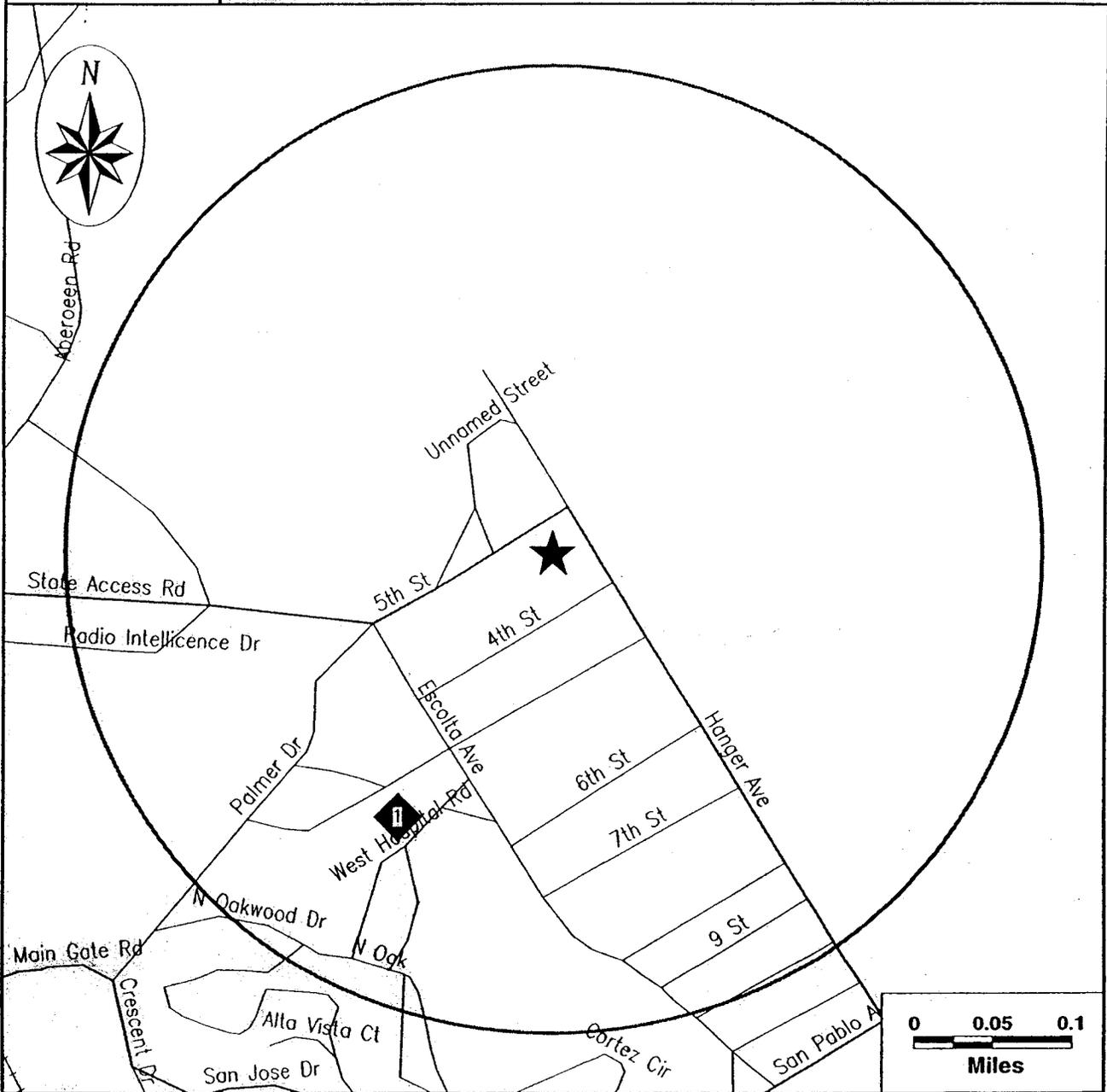
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Custom

Map of Sites within 1/4 miles

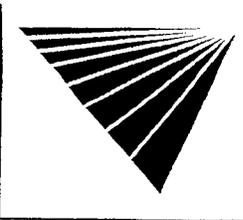


<p>Subject Site</p> 	<p>Category: A</p> <p>Single Sites </p> <p>Multiple Sites </p>
	<p>Categories correspond to database searches described in the Site Distribution Summary, beginning on Page #1.</p>

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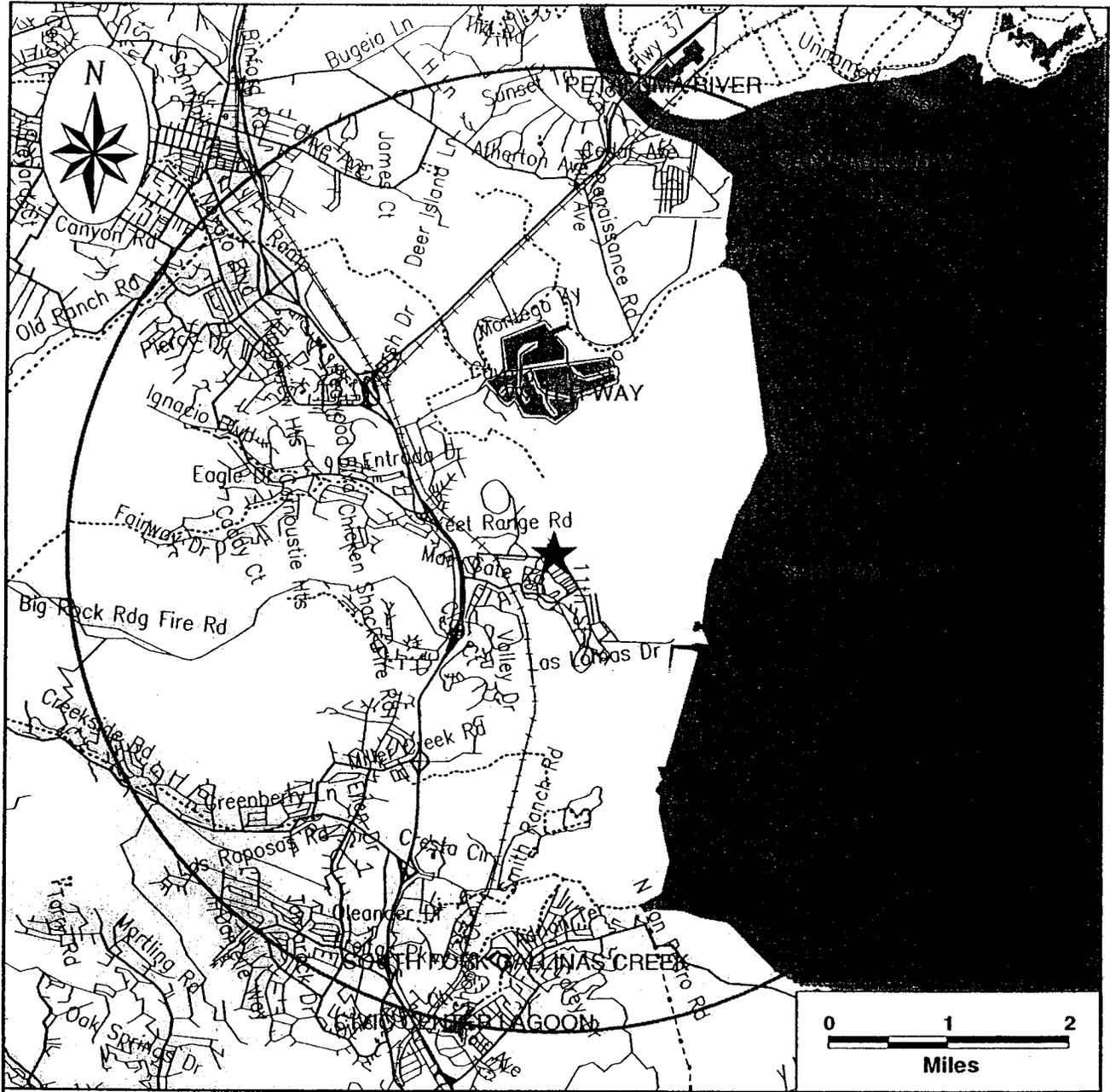
Report ID: 561401901

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Custom

Street Map



Subject Site



Highways and Major Roads

Roads

Railroads

Rivers or Water Bodies

Utilities

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Report ID: 561401901

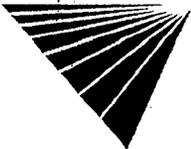
Date of Report: September 19, 2000

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Custom

SITE INVENTORY

MAP ID	PROPERTY AND THE ADJACENT AREA (within 4 miles)	VISTA ID DISTANCE DIRECTION	A											
			NPL	CORRACTIS	ISD	SPL	SCL	CERGLIS/NFRAP	LUST	SWIF	UST	AST	GNRIR	SPLIS
1	USAF HAMILTON AFB HAMILTON FLD NOVATO, CA 94949	185569 0.14 MI SW						X						
1	HAMILTON AFB LANDFILL #26 24 MI N OF GOLDEN GATE BR OFF SAN PA NOVATO, CA 94949	3890641 0.14 MI SW								X				
1	HAMILTON AFB NOVATO, CA 94949	8556332 0.14 MI SW												X
2	MORRISON IMPORTS 5498 REDWOOD HWY NOVATO, CA 94949	64608898 0.78 MI W						X						
2	CAL TRANS MATERIALS LAB DIST 4 5440 REDWOOD HWY NOVATO, CA 94949	73734 0.82 MI SW											X	
3	SUPER 7 5778 REDWOOD HWY NOVATO, CA 94949	932585 0.78 MI W						X						
3	CHEVRON 5810 REDWOOD NOVATO, CA 94949	932586 0.91 MI W						X						
3	SHELL STATION #204-3646-0107 5821 REDWOOD HWY NOVATO, CA 94949	377242 0.91 MI W											X	
3	COUNTRY CLUB SHELL 5821 NAVE NOVATO, CA 94949	1595141 0.94 MI W						X		X				
3	FRANKS DRY CLEANERS 526 ALAMEDA DEL PRADO NOVATO, CA 94949	159092 0.96 MI W											X	
4	GCX CORPORATION 32 PAMARON WAY NOVATO, CA 94949	8589868 1.05 MI NW												X
4	COMPUTER CNETER 5 COMMERCIAL NOVATO, CA 94949	4022814 1.13 MI NW									X			
4	WESTAMEICA 5 COMMERCIAL BLVD NOVATO, CA 94949	64601284 1.13 MI NW						X						



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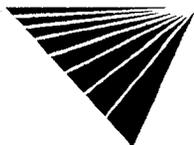
Report ID: 561401901

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MAP ID	PROPERTY AND THE ADJACENT AREA (within 4 miles)	VISTA ID DISTANCE DIRECTION	A												
			NPL	CORRACTS	TSD	SPL	SCL	CERCUS/NFRAP	IUST	SWIF	UST	AST	GNRIR	SPILLS	
4	PACIFIC COLORS 31 G COMMERCIAL BLVD NOVATO, CA 94949	3196151 1.13 MI NW												X	
4	ESSEX POLYTECH INC 15-17 COMMERCIAL BLVD NOVATO, CA 94949	142690 1.13 MI NW													X
4	14 COMMERCIAL BLVD. 14 COMMERCIAL BLVD. NOVATO, CA 94949	3867335 1.14 MI NW													X
4	BORSTING LABORATORIES INC 14 COMMERCIAL BLVD SUITE #105 NOVATO, CA 94949	54497 1.14 MI NW												X	
4	MARIN HUMANE SOCIETY 171 BEL MARIN KEYS NOVATO, CA 94949	1243591 1.16 MI NW							X		X				
4	LOGO PARIS 35 LEVERONI CT NOVATO, CA 94949	248534 1.20 MI NW													X
4	INDUSTRIAL DEVICES CORP 73 DIGITAL DR NOVATO, CA 94949	3194590 1.22 MI NW													X
4	MILLIGEN BIOSEARCH 81 DIGITAL DRIVE NOVATO, CA 94949	275625 1.22 MI NW												X	
4	COCA COLA NOVATO 265 BEL MARIN KEYS BLVD NOVATO, CA 94949	92296 1.23 MI NW							X					X	
4	UNKNOWN 46 DIGITAL NOVATO, CA 94949	8575686 1.23 MI NW													X
4	NORTH BAY DISTRIBUTION FACILIT 265 BEL MARIN KEYS NOVATO, CA 94949	3192596 1.23 MI NW									X				
4	WESCO LABORATORIES 14 GALLI DR SUITE A NOVATO, CA 94949	463997 1.24 MI NW												X	
4	COMPLETE AUTO BODY 14 GALLI DR SUITE 11 NOVATO, CA 94949	96481 1.24 MI NW												X	
4	COMMAIR MECHANICAL SERVICES CO 20 GALLI DR SUITE E NOVATO, CA 94949	1268833 1.25 MI NW												X	
4	KEN POTTER DATSUN REPAIR 19 R DIGITAL DR NOVATO, CA 94949	226639 1.25 MI NW						X							



An 'X' meets search criteria; a dot exceeds search criteria.

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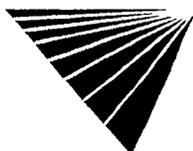
Report ID: 561401901

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MAP ID	PROPERTY AND THE ADJACENT AREA (within 4 miles)	VISTA ID DISTANCE DIRECTION	A												
			NPL	CORRAGIS	TSD	SPL	SCL	CERCLIS/NERAP	LUST	SWIF	UST	AST	GNRIR	SPILLS	
4	TRANSTECH ENTERPRISES 19 DIGITAL DRIVE SUITE M NOVATO, CA 94949	1600789 1.25 MI NW												X	
4	COOPER BROS INC 15 G DIGITAL DR NOVATO, CA 94949	101479 1.25 MI NW													X
4	GORDON GRAPHICS 15 DIGITAL DR NOVATO, CA 94949	3194589 1.25 MI NW													X
4	PACE LABORATORIES INC 11 DIGITAL DRIVE NOVATO, CA 94949	316338 1.25 MI NW													X
4	TEGAL CORPORATION 11 DIGITAL DR NOVATO, CA 94949	419016 1.25 MI NW													X
4	HARRIS DIGITAL TELEPHONE SYS 300 BEL MARIN KEYS BLVD NOVATO, CA 94949	188325 1.26 MI NW													X
4	EUROPEAN PERFORMANCE 32 GALLI DR STE 6 AND 7 NOVATO, CA 94949	6509112 1.28 MI NW													X
4	TILE WEST, INC. 11 HAMILTON NOVATO, CA 94949	1221002 1.32 MI NW							X		X				
4	UNKNOWN 19 HAMILTON DR NOVATO, CA 94949	2238960 1.34 MI NW													X
4	ROCK ISLAND FOODS 32A HAMILTON DR NOVATO, CA 94949	358119 1.35 MI NW													X
4	DALES CARRIAGE WORKS 32D HAMILTON DR NOVATO, CA 94949	112396 1.35 MI NW													X
4	JACKSON INDUSTRIES INC 49 HAMILTON DR NOVATO, CA 94949	213787 1.39 MI NW													X
4	ROB'S AUTO BODY PAINT 74H HAMILTON DRIVE NOVATO, CA 94949	357540 1.43 MI NW													X
4	EXCELSIOR AUTO 86F HAMILTON DR NOVATO, CA 94949	3196945 1.45 MI NW													X
5	PACIFIC BELL C/O ALLEN UUC135 350 ALAMEDA DEL PRADO NOVATO, CA 94949	316107 1.09 MI SW													X



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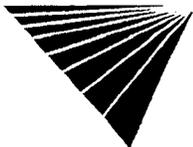
Report ID: 561401901

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MAP ID	PROPERTY AND THE ADJACENT AREA (within 4 miles)	VISTA ID DISTANCE DIRECTION	A											
			NPL	CORRACIS	TSD	SPL	SCL	CERCLIS/NFRAP	LUST	SWLF	UST	AST	GMRTR	SPILLES
5	PACIFIC BELL (WC-135) 350 ALAMEDA DEL PRADO NOVATO, CA 94949	1251981 1.09 MI SW									X			
6	CAR CARE CENTER 400 ENFRENTE NOVATO, CA 94949	4824653 1.17 MI W						X						
6	SHELL MINI MART 401 ENERENTE NOVATO, CA 94949	1261908 1.17 MI W								X				
6	SP OPER 401 ENFRENTE NOVATO, CA 94949	1260768 1.22 MI W								X				
6	SERVICE STATION UNOCAL 375 IGNACIO NOVATO, CA 94949	4030114 1.26 MI W								X				
6	JACK AND GREGS MOBIL 375 IGNACIO BLVD NOVATO, CA 94949	213354 1.26 MI W										X	X	
6	UNOCAL 375 IGNACIO BLVD NOVATO, CA 94949	6848516 1.26 MI W						X						
6	NOVATO FIRE STATION #5 319 ENFRENTE NOVATO, CA 94947	5354434 1.28 MI W						X						
7	SUN-FLEX CO INC 20 PIMENTER CT NOVATO, CA 94947	405597 1.45 MI NW											X	
7	CHEMICAL DEVICES INC. #20 A PIMENTAL COURT NOVATO, CA 94947	78832 1.45 MI NW												X
7	OMNIGLOW CORP. 20-C PIMENTEL CT. NOVATO, CA 94949	4244408 1.46 MI NW				X							X	
7	CALIFORNIA SERVICE CENTER 13 PIMENTEL CT NOVATO, CA 94949	73403 1.47 MI NW											X	
7	396 BEL MARIN KEYS BLVD NOVATO, CA 94949	8571502 1.54 MI NW												X
7	ARA-TEX SERVICES 396 BEL MARIN KEYES NOVATO, CA 94947	4019802 1.55 MI NW								X				
7	IGNACIO TREATMENT PLANT 445 BEL MARIN KEYS NOVATO, CA 94949	1223393 1.56 MI NW								X				



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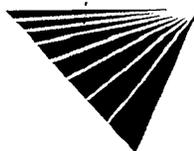
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MAP ID	PROPERTY AND THE ADJACENT AREA (within 4 miles)	VISTA ID DISTANCE DIRECTION	A												
			NPL	CORRACIS	TSD	SPL	SCL	GERCUI/NERAP	IUST	SWIF	UST	AST	GNRIR	SPILLS	
8	PACIFIC BELL 405 ENTRADA DRIVE NOVATO, CA 94949	315327 1.47 MI W												X	
8	EXXON SERVICE STATION #7-92529 490 IGNACIO NOVATO, CA 94949	1223022 1.50 MI W							X		X				
9	MARIN PRODUCTS COMPANY INC 55 FROSTY LN NOVATO, CA 94947	12639674 1.64 MI NW							X						
9	MARIN PRODUCTS COMPANY INC 55 FROSTY LN IGNACIO, CA	5354675 1.65 MI NW							X						
9	MARIN PRODUCTS CO. INC. 55 FROSTY NOVATO, CA 94949	1219286 1.65 MI NW									X				
10	NOVATO FIRE STATION #2 999 NOVATO NOVATO, CA 94947	5356458 2.12 MI NW							X						
11	PACIFIC GAS ELECTRIC 980 IGNACIO BLVD NOVATO, CA 94949	2132423 2.16 MI W													X
12	CHEVRON #6922 100 MARINOOD SAN RAFAEL, CA 94903	1252444 2.19 MI SW							X		X				
12	UNOCAL 101 MARINWOOD AVE SAN RAFAEL, CA 94903	1176317 2.20 MI SW							X						
12	UNOCAL SERVICE STATION 101 MARINWOOD SAN RAFAEL, CA 94903	4034705 2.20 MI SW									X				
12	UNION OIL SS#4712 101 MARINWOOD SAN RAFAEL, CA 94903	1227682 2.20 MI SW									X				
13	LYLE REED STRIPING INC MARIN CO AIRPORT 379 SMITH RANCH RD SAN RAFAEL, CA 94903	11635231 2.38 MI S												X	
13	MCINNIS GOLF COURSE 350 SMITH RANCH RD SAN RAFAEL, CA 94903	5357895 2.50 MI S							X						
14	SHELL 125 VINTAGE WY NOVATO, CA 94945	64600355 2.46 MI NW							X						
14	TARGET STORE 200 VINTAGE WAY NOVATO, CA 94945	8598342 2.62 MI NW													X



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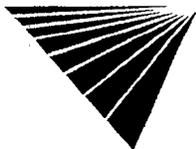
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MAP ID	PROPERTY AND THE ADJACENT AREA (within 4 miles)	VISTA ID DISTANCE DIRECTION	A											
			NPL	GORRAGTS	TSD	SPL	SCL	GERGLIS/NERAP	JUST	SWLE	UST	AST	GNRIR	SPILLS
15	MARIN GOLF COUNTRY CLUB 500 COUNTRY CLUB NOVATO, CA 94949	4023143 2.55 MI W									X			
16	LAS GALLINAS VALLEY 300 SMITH RANCH RD SAN RAFAEL, CA 94903	1596149 2.67 MI S						X						
16	LAS GALLINAS VLY SANITARY DIST 300 SMITH RANCH SAN RAFAEL, CA 94903	238756 2.67 MI S								X	X		X	
16	SMITH RANCH ROAD LANDFILL (CLOSED) 280 SMITH RANCH ROAD SAN RAFAEL, CA 94903	1588206 2.78 MI S							X					
16	SMITH RANCH AIRPORT GAS SMITH RANCH RD. SAN RAFAEL, CA 94903	64507085 2.78 MI S									X			
16	CAPTAINS COVE SMITH RANCH RD GALLINA CREEK SAN RAFAEL, CA 94901	69362 2.86 MI S					X							
16	CAPTAINS COVE HOUSING DEVELOPMENT SMITH RANCH ROAD GALLINAS CREEK SAN RAFAEL, CA 94903	1593652 2.86 MI S				X			X					
17	COSTCO NO 141 300 VINTAGE WY NOVATO, CA 94945	5719433 2.86 MI NW											X	
18	ST. VINCENT'S SCHOOL 4900 REDWOOD HIGHWAY, SAN RAFAEL SAN RAFAEL, CA	6832077 2.90 MI SW							X					
18	UNKNOWN 53 WHARF CIRCLE SAN RAFAEL, CA 94903	2235617 2.98 MI S												X
18	MCLACHLIN PROPERTY 40 PAUL DR SAN RAFAEL, CA 94903	12640009 3.02 MI SW						X						
18	NORTHGATE AUTO BODY 40 PAUL DRIVE SAN RAFAEL, CA 94903	300612 3.02 MI SW											X	
18	MCLACHLIN PROPERTY 40 PAUL DR SAN RAFAEL, CA 94903	5431997 3.02 MI SW						X						
18	MULTI-TENANT WAREHOUSE 128 CARLOS SAN RAFAEL, CA 94903	4023449 3.04 MI SW								X				
18	JANET WILLIAMS TRUST 128 CARLOS DR SAN RAFAEL, CA 94903	3781274 3.04 MI SW						X						



An 'X' meets search criteria; a dot exceeds search criteria.

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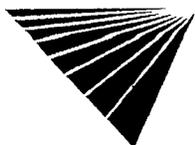
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MAP ID	PROPERTY AND THE ADJACENT AREA (within 4 miles)	VISTA ID DISTANCE DIRECTION	A											
			NPL	CORRACTS	TSD	SPL	SGL	GERGLIS/NFRAP	LUST	SWIF	UST	AST	GNRTR	SPILLS
18	RICH ELECTRIC 110 CARLOS DR SAN RAFAEL, CA 94903	12639574 3.05 MI SW							X					
18	RICH ELECTRIC 110 CARLOS DR SAN RAFAEL, CA 94903	3981960 3.05 MI SW							X					
18	MARINER DISTRIBUTING COMPANY 79 MITCHELL SAN RAFAEL, CA 94903	4035106 3.07 MI SW									X			
18	CHEVRON 69 MITCHELL BLVD SAN RAFAEL, CA 94903	932635 3.07 MI SW							X					
18	PARAGRAPHS 131 MITCHELL BLVD SAN RAFAEL, CA 94903	319298 3.07 MI SW											X	
18	MEGACYCLE CAMS 90 MITCHELL BLVD SAN RAFAEL, CA 94903	3199850 3.07 MI SW											X	
18	ACME ALARM CO. INC. 128 MITCHELL SAN RAFAEL, CA 94903	3199851 3.09 MI SW							X		X			
18	MARINER DISTRIBUTING 110 PAUL DRIVE SAN RAFAEL, CA 94903	64604808 3.12 MI SW							X					
18	MARINER DISTRIBUTING 110 PAUL DR SAN RAFAEL, CA 94903	3200814 3.12 MI SW							X					
18	PACIFIC BELL 135 PAUL DR SAN RAFAEL, CA 94903	314892 3.14 MI SW											X	
18	MONTEREY IMPORT COMPANY 158 PAUL SAN RAFAEL, CA 94903	7433857 3.15 MI SW							X					
18	MONTEREY IMPORT COMPANY 158 PAUL DR SAN RAFAEL, CA 94903	4988530 3.15 MI SW							X					
18	BAY HISTOLOGY SERV INC 92 MARK DR SAN RAFAEL, CA 94903	40145 3.16 MI SW											X	
18	PACIFIC BELL 23 MARK DR SAN RAFAEL, CA 94903	315106 3.17 MI SW							X		X		X	
19	1644 MERRITT DRIVE NOVATO, CA 94949	11634838 2.93 MI W												X



An 'X' meets search criteria; a dot exceeds search criteria.

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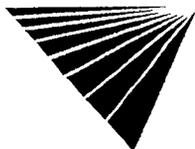
Report ID: 561401901

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MAP ID	PROPERTY AND THE ADJACENT AREA (within 4 miles)	VISTA ID DISTANCE DIRECTION	A											
			NPL	CORRACTS	TSD	SPL	SCL	CERCLIS/NERAP	EUST	SWIF	UST	AST	GNRTR	SPILLS
20	MCPHAIL PUMP STATION 1580 VENDOLA SAN RAFAEL, CA 94903	1597088 3.05 MI S							X					
20	UNKNOWN 1050 ADRIAN WAY SAN RAFAEL, CA 94903	2124886 3.14 MI S												X
21	C.R. FEDRICK INC. (YARD) 320 DEER ISLAND NOVATO, CA 94945	4024442 3.11 MI NW									X			
21	CR FEDRICK INC 320 DEER ISLAND LN NOVATO, CA 94945	1257978 3.13 MI NW						X						
22	HOUSE OF DANIELS 12 HARBOR NOVATO, CA 94945	4012790 3.17 MI N								X				
22	HOUSE OF DANIELS 12 HARBOR DR NOVATO, CA 94947	1219205 3.17 MI N						X						
23	FIREMANS FUND INSURANCE CO 1600 LOS GAMOS SAN RAFAEL, CA 94903	151888 3.24 MI SW								X				
23	MARIN TECHNOLOGY SENTER 1600 LOS GAMOS DR SAN RAFAEL, CA 94903	64598764 3.24 MI SW						X						
23	MARIN TECHNOLOGY CENTER 1600 LOS GAMOS SAN RAFAEL, CA 94903	11647598 3.24 MI SW								X				
23	FAIRCHILD CAMERA INSTRUMENT 4300 REDWOOD HWY SAN RAFAEL, CA 94903	147438 3.34 MI SW	X			X	X					X	X	
23	FAIRCHILD SEMICONDUCTOR 4300 REDWOOD RD SAN RAFAEL, CA 94903	64595947 3.34 MI SW						X						
23	TESTA PLUMBING, INC 4244 REDWOOD SAN RAFAEL, CA 94903	3201517 3.37 MI SW						X		X				
23	MARIN DIRT BUSTERS 4140 REDWOOD HWY SAN RAFAEL, CA 94903	258238 3.45 MI SW											X	
24	ADRIAN PUMP STATION 605 ADRIAN SAN RAFAEL, CA 94903	1591827 3.24 MI S						X						
25	INDIAN VALLEY COLLEGES 1800 IGNACIO NOVATO, CA 94949	1231611 3.25 MI W						X		X				



An 'X' meets search criteria; a dot exceeds search criteria.

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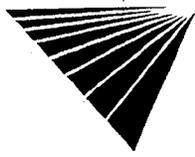
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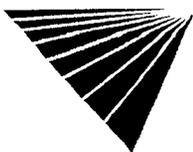
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MAP ID	PROPERTY AND THE ADJACENT AREA (within 4 miles)	VISTA ID DISTANCE DIRECTION	A											
			NPL	GORRACTS	TSD	SPL	SGL	CERGUS/NERAP	LUST	SWLF	UST	AST	GNRIR	SPILES
26	SANTA VENETIA PUMP STATION #3 79 VENDOLA (NEXT TO) SAN RAFAEL, CA 94903	4045432 3.32 MI S										X		
27	PACIFIC BELL W3053 7 PROFESSIONAL PARKWAY SAN RAFAEL, CA	12714231 3.36 MI SW										X		
27	PACIFIC BELL 7 PROFESSIONAL SAN RAFAEL, CA	7433922 3.36 MI SW							X					
27	PACIFIC BELL 7 PROFESSIONAL CENTER PARKWAY SAN RAFAEL, CA 94903	315506 3.43 MI SW							X		X		X	
28	KELLEHER LUMBER 10 GRANDVIEW NOVATO, CA 94945	4028487 3.37 MI N										X		
28	KELLEHER CORP 10 GRANDVIEW DR NOVATO, CA 94945	1262573 3.37 MI N							X					
28	SOUTHERN PACIFIC BLACK POINT BRIDGE UNKNOWN GRANDVIEW HARBOR NOVATO, CA 94945	64597642 3.37 MI N							X					
28	SOUTHERN PACIFIC BLACK POINT B UNKNOWN GRANDVIEW HARBOR NOVATO, CA 94947	64545241 3.37 MI N							X					
29	PACIFIC BELL W3084 2000 BAYHILLS SAN RAFAEL, CA 94903	12714047 3.37 MI S										X		
29	PACIFIC BELL 2000 BAYHILLS DRIVE SAN RAFAEL, CA 94903	315049 3.37 MI S										X		X
30	IGNACIO SERV 5778 REDWOOD NOVATO, CA 94949	4039423 3.40 MI NW										X		
30	COUNTRY CLUBSHELL 5821 REDWOOD NOVATO, CA 94949	1215140 3.41 MI NW										X		
31	CHEVRON USA INC 22 ROWLAND NOVATO, CA 94947	4040682 3.42 MI NW										X		
32	GENERAL TELEPHONE 501 DAVIDSON NOVATO, CA 94945	3194862 3.48 MI NW										X		
32	GTE NOVATO PLANT YARD 501 DAVIDSON ST NOVATO, CA 94945	182333 3.48 MI NW							X					



MAP ID	PROPERTY AND THE ADJACENT AREA (within 4 miles)	VISTA ID DISTANCE DIRECTION	A											
			NPL	CORRACTIS	TSD	SPL	SCL	GERCLIS/NFRAP	LUST	SWLF	UST	AST	GNRIR	SPIUS
32	NOVATO TREATMENT PLANT 500 DAVIDSON NOVATO, CA 94945	1223392 3.49 MI NW									X			
32	NOVATO SANITARY DISTRICT 500 DAVIDSON STREET NOVATO, CA 94945	302715 3.49 MI NW						X						
32	NOVATO CITY CORPORATION YARD 550 DAVIDSON STREET NOVATO, CA 94945	302709 3.60 MI NW					X							
32	CITY OF NOVATO/MAINTENANCE DIV 550 DAVIDSON ST. NOVATO, CA 94945	1252603 3.60 MI NW										X		
33	NOVATO SERVICE STATION SHELL 1390 S NOVATO NOVATO, CA 94947	1176434 3.49 MI NW						X		X				
33	SEVEN TO SEVEN CLEANERS 1400 1432 NOVATO BLVD S NOVATO, CA 94947	62430533 3.58 MI NW												X
33	MOBIL 1400 NOVATO NOVATO, CA 94947	932609 3.58 MI NW						X						
33	NOVATO PROPERTIES 1432 S NOVATO BLVD NOVATO, CA 94947	5264393 3.65 MI NW											X	
34	NOVATO FIRE DISTRICT TRAINING 450 ATHERTON NOVATO, CA 94945	1240592 3.56 MI N								X				
35	NAVATO FORD 6995 REDWOOD BLVD NOVATO, CA 94945	1215657 3.58 MI NW						X		X			X	
35	CIAMPI DISTRIBUTING 90 HILL RD NOVATO, CA 94947	1229156 3.61 MI NW						X						
35	CIAMPI DISTRIBUTING COMPANY 90 HILL NOVATO, CA 94947	4012816 3.61 MI NW								X				
35	CLOUDBURST CAR WASH 6981 REDWOOD NOVATO, CA 94945	88863 3.64 MI NW						X		X				
35	NOVATO FIRE PROTECTION DIST 7025 REDWOOD BLVD NOVATO, CA 94947	5356963 3.75 MI NW						X						
35	UNKNOWN 14 LAUREN AVE NOVATO, CA 94947	8582302 3.79 MI NW												X



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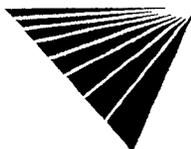
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MAP ID	PROPERTY AND THE ADJACENT AREA (within 4 miles)	VISTA ID DISTANCE DIRECTION	A														
			NPL	CORRACTS	ISD	SPL	SCL	GERCHIS/NFRAP	LUST	SWLF	JUST	AST	GNRIR	SPILLS			
35	MAC'S CLOTHING 7049 REDWOOD BLVD NOVATO, CA 94945	8591517 3.82 MI NW															X
36	SANTA VENETIA SERVICE 296 N SAN PEDRO SAN RAFAEL, CA 94903	3202990 3.67 MI S											X				
37	GATEWAY GAS 1005 NORTHGATE SAN RAFAEL, CA 94903	11647650 3.72 MI SW											X				
37	ARTS AUTO CARE 1005 NORTHGATE SAN RAFAEL, CA 94903	4036181 3.72 MI SW							X		X						
37	ART'S AUTO CARE 1005 NORTHGATE DR SAN RAFAEL, CA 94903	7858048 3.72 MI SW							X								
37	HOLIDAY INN 1010 NORTHGATE DR SAN RAFAEL, CA 94901	7291742 3.72 MI SW															X
37	NORTHGATE SHELL 950 DEL PRESIDIO SAN RAFAEL, CA 94903	377355 3.75 MI SW							X		X						
37	93553 CHEVRON 949 DEL PRESIDIO SAN RAFAEL, CA 94903	932624 3.75 MI SW							X		X						
37	EXXON SERVICE STATION 7-7067 930 DEL PRESIDIO SAN RAFAEL, CA 94903	1583911 3.76 MI SW							X		X						
37	UNOCAL 929 DEL PRESIDIO BLVD SAN RAFAEL, CA 94903	12639603 3.76 MI SW							X								
37	UNION OIL SS# 4774 929 DEL PRESIDIO SAN RAFAEL, CA 94903	1253585 3.76 MI SW										X					
37	UNOCAL 929 DEL PRESIDIO BLVD SAN RAFAEL, CA 94903	2745802 3.76 MI SW							X								
37	UNOCAL #4774 921 DEL PRESIDIO BLVD SAN RAFAEL, CA 94903	12714069 3.77 MI SW										X					
37	PAUL O SATHER RADIOLOGY OFFICE 750 LAS GALLINAS NO 101 SAN RAFAEL, CA 94903	3198457 3.79 MI SW															X
37	PACIFIC BELL 820 LAS GALLINAS AVENUE SAN RAFAEL, CA 94903	315567 3.80 MI SW															X



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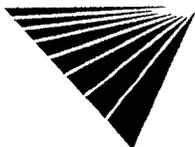
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MAP ID	PROPERTY AND THE ADJACENT AREA (within 4 miles)	VISTA ID DISTANCE DIRECTION	A												
			NPL	CORRAGIS	TSD	SPL	SCL	GERGIS/NFRAP	LUST	SWIF	UST	AST	GNRIR	SPILLS	
37	EXPRESSLY PORTRAITS INC 5600 NORTHGATE MALL SAN RAFAEL, CA 94903	4062708 3.89 MI SW												X	
37	NORTHGATE MALL 5800 NORTHGATE MALL SAN RAFAEL, CA 94903	300623 3.89 MI SW													X
37	RITE AID CORP NO 5958 1500 NORTHGATE MALL SAN RAFAEL, CA 94903	5356395 3.89 MI SW													X
37	SEARS ROEBUCK CO 9000 NORTHGATE SAN RAFAEL, CA 94903	1601171 3.99 MI SW													X
37	JIFFY LUBE #1590 9000 NORTHGATE MALL SAN RAFAEL, CA 94903	7240597 3.99 MI SW											X		
38	NUNES PROPERTY 1475 LUCAS VALLEY RD SAN RAFAEL, CA 94903	64596848 3.73 MI SW						X							
38	EXXON SERVICE STATION NO 7-3015 1500 LUCAS VALLEY RD/MT LASSEN SAN RAFAEL, CA 94903	1268004 3.77 MI SW													X
39	VAILLANCOURT PAINTING 1 JACKSON COURT NOVATO, CA 94947	12705909 3.75 MI NW													X
40	CAVALERI COLLINGWOODS AUTOM 625 DEL GANADO SAN RAFAEL, CA 94903	4024196 3.80 MI SW									X				
41	1521 HILL ROAD TULELAKE, CA 96134	10824617 3.89 MI NW						X							
41	GTE CALIFORNIA INC 1500 NOVATO BLVD NOVATO, CA 94947	64596591 3.89 MI NW						X							
42	KERNS WALKER CLEANERS 412 GALLINS AVE SAN RAFAEL, CA 94903	227291 3.89 MI SW													X



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APPENDIX C

Real Estate Map—HAAF 1948

Appendix C: Real Estate Map—HAAF 1948 will not be provided electronically. This appendix can be found in the hardcopy of the Final Environmental Baseline Survey Main Airfield Parcel Hamilton Army Airfield.

APPENDIX D

Response to Comments

APPENDIX D

Response to Comments

The Army, DTSC, and RWQCB have been working together to resolve any comments or issues related to this document as they arose. Therefore, there is no formal response to comments.