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NTC ORLANDO
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SITE SCREENING PLAN GROUPS 1 THROUGH 5 STUDY AREAS WITH TRANSMITTAL

NTC ORLANDO FL

9/1/1995

ABB ENVIRONMENTAL SERVICES, INC.

SITE SCREENING PLAN
GROUPS I THROUGH V STUDY AREAS
AND MISCELLANEOUS ADDITIONAL SITES

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

UNIT IDENTIFICATION CODE: N65928
CONTRACT NO. N62467-89-D-0317/107

SEPTEMBER 1995

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

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

November 14, 1995

Mr. Wayne Hansel
Code 18B7
Southern Division
Naval Facilities Engineering Command
P.O. Box 190010
North Charleston, South Carolina 29419-0068

RE: Final Screening Plan Groups I through V Study Areas and Missing Additional Sites; Addendum 1, NTC Orlando.

Dear Mr. Hansel:

I have completed the technical review of the subject document, dated October, 1995 (received October 30, 1995). I cannot accept the document as final since our comments on the draft document were not addressed. Specifically:

1. Figure 5 should indicate the locations of the existing monitoring wells from Study Area 3 (e.g., Old-03-01; Old-03-04), and should also delineate the location of the expected motor pool area.

2. The certification page was not signed nor sealed by a professional geologist.

If I can be of any further assistance with this matter, please contact me at (904) 921-9989.

Sincerely,

John W. Mitchell
Remedial Project Manager

cc: William Drawdy, Navy, SouthDiv
LCDR Catherine Ballinger, NTC Orlando
Nancy Rodriquez, USEPA Region 4
Bill Bostwick, FDEP Central District
Jim Manning, ABB, Jacksonville
Patricia Kingcade, OGC/Trustee File

TJB TB JJC JJC ESN ESN

SITE SCREENING PLAN
GROUPS I THROUGH V STUDY AREAS
AND MISCELLANEOUS ADDITIONAL SITES

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Unit Identification Code: N65928

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

Prepared by:

ABB Environmental Services, Inc.
2590 Executive Center Circle, East
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Prepared for:

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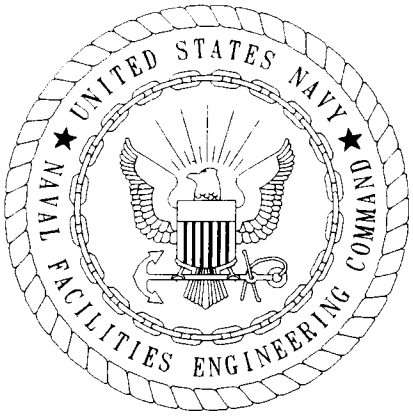
Barbara Nwokike, Code 1873, Engineer-in-Charge

Groups I and II issued August 1994; revised February 1995 and March 1995 (Final)

Group III issued March 1995; revised August 1995 (Final)

Groups IV and V issued September 1995 (Final)



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

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

DATE: September 5, 1995

NAME AND TITLE OF CERTIFYING OFFICIAL: Jim Manning
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Mark Salvetti
Project Technical Lead

(DFAR 252.227-7036)

FOREWORD

To meet its mission objectives, the U.S. Navy performs a variety of operations, some requiring the use, handling, storage, or disposal of hazardous materials. Through accidental spills and leaks and conventional methods of past disposal, hazardous materials may have entered the environment in ways unacceptable by today's standards. With growing knowledge of the long-term effects of hazardous materials on the environment, the Department of Defense (DOD) initiated various programs to investigate and remediate conditions related to suspected past releases of hazardous materials at their facilities.

One of these programs is the Base Realignment and Closure (BRAC) Cleanup Program. This program complies with the Base Closure and Realignment Act of 1988 (Public Law (P.L.) 100-526, 102 Statute 2623) and the Defense Base Closure and Realignment Act of 1990 (P.L. 101-510, 104 Statute 1808), which require the DOD to observe pertinent environmental legal provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the 1992 Community Environmental Response Facilitation Act (CERFA); Executive Order 12580; and the statutory provisions of the Defense Environmental Restoration Program (DERP), the National Environmental Policy Act (NEPA), and any other applicable statutes that protect natural and cultural resources.

CERCLA requirements, in conjunction with corrective action requirements under Subtitle C of the Resource Conservation and Recovery Act (RCRA), govern most environmental restoration activities. Requirements under Subtitles C, D, and I, of RCRA, as well as the Toxic Substances Control Act (TSCA), the Clean Water Act (CWA), the Clean Air Act (CAA), the Safe Drinking Water Act (SDWA), and other statutes, govern most environmental mission or operational-related and closure-related compliance activities. These compliance laws may also be applicable or relevant and appropriate requirements (ARARs) for selecting and implementing remedial actions under CERCLA. NEPA requirements govern the Environmental Impact Analysis and Environmental Impact Statement preparation for the disposal and reuse of BRAC installations.

The BRAC program centers on a single goal: expediting and improving environmental response actions to facilitate the disposal and reuse of a BRAC installation, while protecting human health and the environment.

The Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM); the USEPA; and the Florida Department of Environmental Protection (FDEP) collectively coordinate the cleanup activities through the BRAC Cleanup Team. This team approach is intended to foster partnering, accelerate the environmental cleanup process, and expedite timely, cost-effective, and environmentally responsible disposal and reuse decisions.

Questions regarding the BRAC program at NTC, Orlando should be addressed to the SOUTHNAVFACENGCOM BRAC Environmental Coordinator, Mr. Wayne Hansel, Code 18B7, at (407) 646-5294 or SOUTHNAVFACENGCOM Engineer-in-Charge (EIC), Ms. Barbara Nwokike, Code 1873, at (803) 743-0566.

EXECUTIVE SUMMARY

ABB Environmental Services, Inc. (ABB-ES), under contract to the Southern Division, Naval Facilities Engineering Command, has prepared this Site Screening Plan (SSP) to conduct investigations at Naval Training Center (NTC), Orlando, Florida, under Base Realignment and Closure (BRAC) 1993. To ensure proper conduct of work, ABB-ES has also developed a Project Operations Plan (POP) (ABB-ES, 1994a). The POP, a companion document to this SSP, has been designed to incorporate the requirements of a Quality Assurance Project Plan (QAPP), Health and Safety Plan (HASP), and the elements of a Field Sampling Plan (FSP) related to sampling equipment, procedures, and sample handling and analysis. The POP provides much of the general information and procedures needed to conduct applicable field efforts at NTC, Orlando.

This SSP establishes the background, rationale, and plans for site investigations at assigned study areas at NTC, Orlando. The SSP also includes the following FSP elements, which are not specifically included in the POP: site background, sampling objectives, and sample location and frequency. The ABB-ES scope of services is based on Priority Zones for NTC, Orlando property transfer as defined by representatives of NTC, Orlando. Site screening study areas are typically locations designated Red, Yellow, or Grey in the Environmental Baseline Survey (EBS) (ABB-ES, 1994b) for reasons other than the presence of aboveground or underground storage tanks (ASTs or USTs), damaged friable asbestos, or lead paint. These concerns will be addressed as separate tasks. Site screening locations may also be areas designated by the BRAC Cleanup Team (BCT). Grey areas have been determined to require further evaluation prior to the determination of a Finding of Suitability to Lease (FOSL) or a Finding of Suitability to Transfer (FOST). Red areas are properties where a release of hazardous substances has occurred, but required response actions have not yet been implemented. The Red areas in this SSP require collection of additional data prior to selection of an interim action or implementation of a Remedial Investigation and Feasibility Study (RI/FS).

Site screening study areas have been placed in five groups, and will be investigated based on priority zones. Site screening technical approaches will be developed separately for each group. As the workplan for each group is finalized, this SSP will be amended with the appropriate addendum. Addenda will also be issued to include workplans for new sites, or for additional work at existing study areas.

The purpose of this site screening is to assess the presence of environmental contamination and to determine whether further investigations of the study areas are warranted. It is expected that many sites contain little or no contamination, and that the results of this screening will lead to an FOSL or FOST. It is also possible that additional soil or groundwater sampling, the implementation of a removal action or interim action, or a recommendation for an RI/FS may be necessary. Changes in status (i.e., from nontransferable to transferable) must be approved by the BCT.

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
ACM	asbestos-containing material
ALK	alkalinity
ARAR	applicable or relevant and appropriate requirement
ASTs	aboveground storage tanks
AWQC	Ambient Water Quality Criteria
BEC	BRAC Environmental Coordinator
BEQ	Bachelor Enlisted Quarters
BCP	BRAC Cleanup Plan
BCT	BRAC Cleanup Team
BHC	benzene hexachloride
bls	below land surface
BOQ	Bachelor Officers Quarters
BRAC	Base Realignment and Closure
Btu/hr	British unit per hour
CAA	Clean Air Act
CERFA	Community Environmental Response Facilitation Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIH	Certified Industrial Hygienist
CLP TCL	Contract Laboratory Program target compound list
CLP TAL	Contract Laboratory Program target analyte list
COC	chain of custody
CWA	Clean Water Act
°F	degrees Fahrenheit
DDD	4,4'- Dichlorodiphenyldichloroethane
DDE	4,4'- Dichlorodiphenyldichloroethene
DERP	Defense Environmental Restoration Program
DNAPL	dense non-aqueous phase liquid
DOD	Department of Defense
DON	Department of Navy
DPDO	Defense Property Disposal Office
DQOs	data quality objectives
DRMO	Defense Reutilization and Marketing Office
DWTP	domestic wastewater treatment plant
EBS	Environmental Baseline Survey
EIC	Engineer-in-Charge
EP	extraction procedure
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	flame ionization detector
FOL	Field Operations Leader
FOSL	Finding of Suitability to Lease
FOST	Finding of Suitability to Transfer
FS	Feasibility Study
FSP	Field Sampling Plan

GC	gas chromatogram
gpd	gallons per day
GPR	ground-penetrating radar
GPS	global positioning system
HASP	Health and Safety Plan
HSA	hollow-stem auger
IAS	Initial Assessment Study
IDW	investigation-derived wastes
IR	Installation Restoration
MCL	maximum contaminant level
MEK	methyl ethyl ketone (or 2-butanone)
mgd	million gallons per day
msl	mean sea level
MS/MSD	matrix spike and matrix spike duplicate
NACIP	Naval Assessment and Control of Installation Pollutants
NEPA	National Environmental Policy Act
NTC	Naval Training Center
OHM	oil or hazardous materials
OSWER	Office of Solid Waste and Emergency Response
OVA	organic vapor analyzer
PCBs	polychlorinated biphenyls
pCi/ℓ	picocuries per liter
PCE	perchloroethylene (or tetrachloroethene)
PL	Public Law
POP	Project Operations Plan
ppm	parts per million
PRE	Preliminary Risk Evaluation
PVC	polyvinyl chloride
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RBC	risk-based concentrations
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RTC	Recruit Training Command
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SIM	selective ion monitoring
SOUTHNAV-FACENGCOM	Southern Division, Naval Facilities Engineering Command

SSP	Site Screening Plan
SVOCs	semivolatile organic compounds
TAL	Target Analyte List
TC	terrain conductivity
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
TDS	total dissolved solids
™	Trademark
TOC	total organic carbon
TOM	Task Order Manager
TPH	total petroleum hydrocarbons
TSCA	Toxic Substances Control Act
TSS	total suspended solids
UIC	Unit Identification Code
UNF	unnumbered facility
USCS	Unified Soil Classification System
USEPA	U.S. Environmental Protection Agency
USTs	underground storage tanks
UXO	unexploded ordnance
VOCs	volatile organic compounds
WWTP	wastewater treatment plant

1.0 INTRODUCTION

1.1 PURPOSE. The Naval Training Center (NTC), Orlando is located in Orlando, Florida, and encompasses 2,072 acres. NTC, Orlando consists of four discrete facilities: Main Base, Area "C," Herndon Annex, and McCoy Annex (Figures 1-1 and 1-2). NTC, Orlando provides recruit training of enlisted personnel and advanced or specialized training for officer and enlisted personnel of the regular Navy and Naval Reserve. In 1993, a bipartisan commission appointed by the President and confirmed by the Senate recommended the closure of NTC, Orlando in accordance with the Defense Base Closure and Realignment Act of 1990.

ABB Environmental Services, Inc. (ABB-ES), has prepared an Environmental Baseline Survey (EBS) (ABB-ES, 1994b) for NTC, Orlando. The EBS determines the suitability of installation properties for a Finding of Suitability to Lease (FOSL) or a Finding of Suitability to Transfer (FOST). Color codes are used to designate site status. Properties not eligible for a FOST (but possibly eligible for a FOSL on a case-by-case basis) are coded as follows:

Red, areas where storage, release, disposal, and/or migration of hazardous substances or petroleum has occurred, but required response actions have not been implemented;

Yellow, areas where storage, release, disposal, and/or migration of hazardous substances or petroleum has occurred, removal and/or remedial actions are underway, but all required response actions have not yet been taken; and

Grey, areas that are unevaluated or require additional evaluation.

This Site Screening Plan (SSP) establishes the background, rationale, and plans for site investigations at assigned study areas at NTC, Orlando. Study areas were grouped based on the priority zones for property transfer identified by representatives from NTC, Orlando (Table 1-1). Study areas typically consist of Red, Yellow, or Grey properties identified in the EBS (ABB-ES, 1994b). Additional study areas may also be designated by the BRAC Cleanup Team (BCT).

The purpose of this site screening is to either confirm that the sites are suitable for immediate transfer or determine data needs for any additional investigations that may be required.

Figure 1-3 illustrates the process developed to evaluate the suitability for transfer of NTC, Orlando properties. Site screening is primarily intended to address Grey sites by applying investigative techniques appropriate for evaluating potential concerns. In virtually all cases, this includes the collection of soil and groundwater samples for laboratory analyses.

Analytical results will be compared to appropriate Federal- and State-promulgated standards or guidelines, as discussed in Section 3.8. If no contaminants are detected, or if all detected compounds are at concentrations below action levels, the properties will be recommended for an FOSL or an FOST. If concentrations are above action levels, or if compounds are detected with no set action levels, a

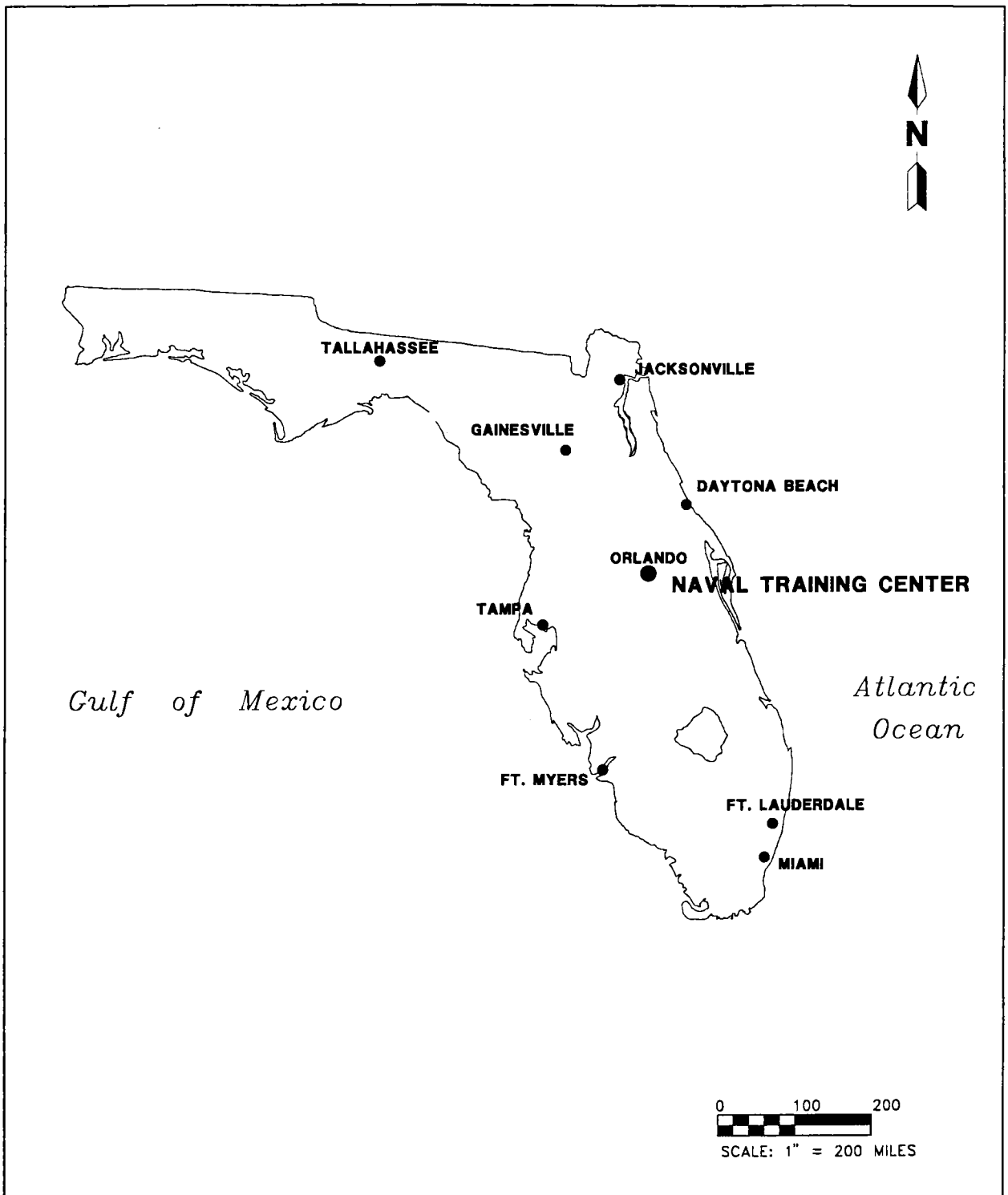

FIGURE 1-1
FACILITY LOCATION

ORLANDO/NAVFLA/GLC-WDW/02-14-95

SITE SCREENING PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

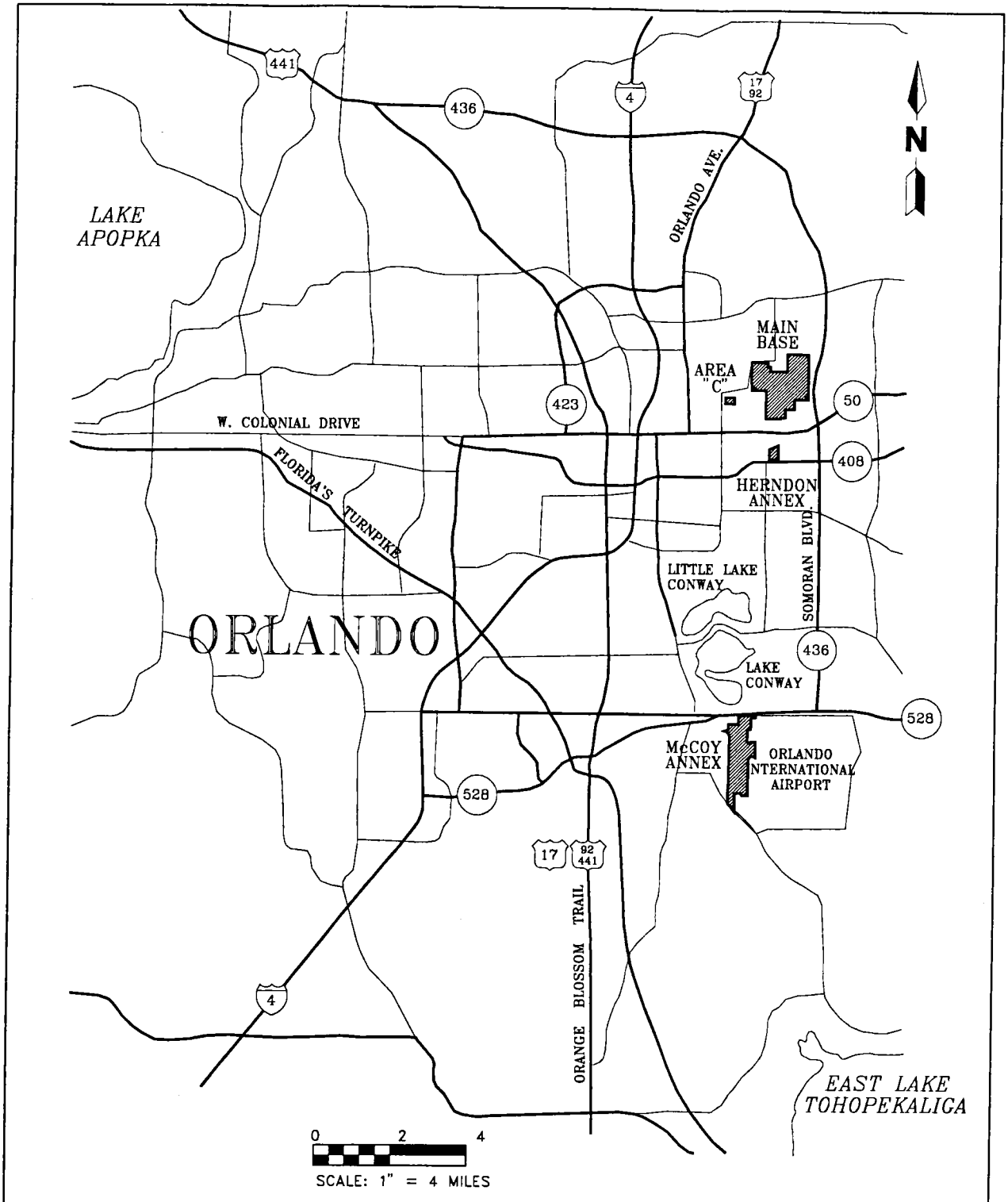

FIGURE 1-2
SITE LOCATION

ORLANDO/FIG1-1/GLC-WDW/02-14-95

SITE SCREENING PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Table 1-1
Priority Zones for Base Transfer

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Priority Zone	Boundaries
1	Naval Hospital Area, bounded by the base boundary on the west and north, Grove Avenue and the golf course on the east, and Lake Baldwin on the south.
2	Herndon Annex
3A	Training Administration Area, bounded by the base boundary on the north, Grace Hopper Avenue on the east, Holland Street on the south, and Decatur Avenue on the west.
3B	Brass Anchor Area, bounded by Lake Baldwin on the north, the golf course on the east, Iwo Jima Street on the south, and Leahy Avenue on the west.
3C	Service School Command, bounded by the base boundary on the north, Lake Baldwin on the east, Holland Street on the south, and Grace Hopper Avenue on the west.
3D	Lake Baldwin and Lake Susannah
3E	Main Base Golf Course
4	Recruit Training Command (RTC) West, bounded by the base boundary on the north, south, and west, and Decatur Avenue on the east.
5	McCoy Annex Housing, bounded on the north and west by the base boundary, on the south by Eighth Street, and on the east by an irregular boundary defined by 3rd Street, Binnacle Way, Barber Drive, the railroad, the central swamp areas, and Seven Seas Drive.
6	McCoy Annex, all property north of Eighth Street not designated as housing.
7	McCoy Annex, all property south of Eighth Street
8	Area "C"
9	Nuclear School Complex, bounded by the Main Base boundary on the west and south, by Holland Street on the north, and by Leahy Avenue, Iwo Jima Street, and the golf course on the east.

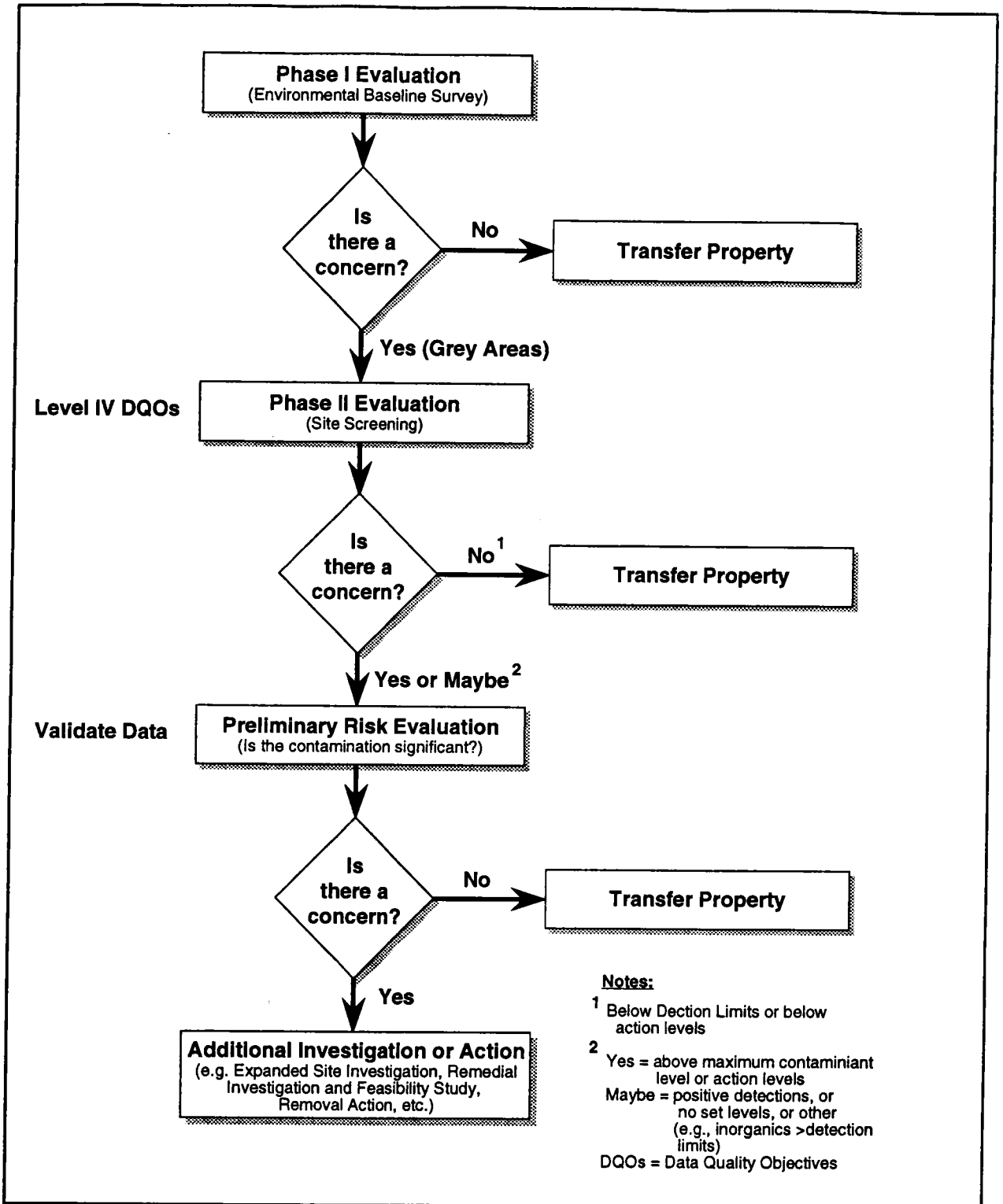

FIGURE 1-3

STUDY AREA REVIEW PROCESS, BASE REALIGNMENT AND CLOSURE

SITE SCREENING PLAN

NAVAL TRAINING CENTER ORLANDO, FLORIDA

Preliminary Risk Evaluation (PRE) will be performed (see Section 3.9). Based on the results of the PRE, one of the following recommendations will be made for each site:

- recommend the study area for an FOSL or FOST,
- initiate an immediate removal or interim action, or
- include in a Remedial Investigation and Feasibility Study (RI/FS).

It is possible that circumstances may require collection of additional data to support selection of an interim action or RI/FS.

1.2 OVERVIEW OF DOCUMENT. The planning documents to support site screening at NTC, Orlando consist of the following:

- SSP;
- Volume I, Project Operations Plan (POP; ABB-ES, 1994a); and
- Volume II, POP, Health and Safety Plan (ABB-ES, 1994a).

Together these documents establish the background, rationale, and plans for site investigations. The SSP outlines the site-specific scope of work for each study area and includes the following:

Chapter 1.0,	Introduction;
Chapter 2.0,	Facility Background and Physical Setting;
Chapter 3.0,	Site Investigation Tasks;
Chapter 4.0,	Study Area Field Investigations;
Chapter 5.0,	Personnel Requirements;
Chapter 6.0,	Project Schedule;
Appendix A,	Health and Safety Plan Addendum;
Appendix B,	Site Screening Study Area Locations;
Appendix C,	Deep Volatile Organic Aromatic (VOA) Plume Characterization Study and Additional Surface Soil Sampling at Herndon Annex

Site screening study areas have been placed in five groups, and will be investigated based on the priority zones shown in Table 1-1. Site screening technical approaches will be developed separately for each group. As the workplan for each group is finalized, this SSP will be amended with the appropriate addendum. The location of each study area is shown in Appendix B. A listing of the study areas by group is included as Table 1-2.

The POP has been designed to incorporate the requirements of a Quality Assurance Project Plan (QAPP), Health and Safety Plan (HASP), and the elements of a Field Sampling Plan (FSP) related to sampling equipment, procedures, and sample handling and analysis. The POP provides much of the general information and procedures needed to conduct field programs at NTC, Orlando.

Table 1-2
Site Screening Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Study Area	Buildings
	Site Screening Group I
1	Alleged Hospital Landfill, (UNF-12)
	Building 3126
2	Facility 6001 Herndon Annex
3	Hazardous Materials Storage Area (Buildings 73, 2816, and 2817)
4	Rusk Chapel (Buildings 250 and 251)
5	Former Motor Boat Rental and Maintenance Area (UNF-13)
6	Lake Baldwin
7	Lake Susannah
8	Main Base Golf Course Area (Building 2134 and Old Wastewater Treatment Plant Lagoons [UNF 15])
9	Former Pesticide Building (UNF-14)
10	Yard Waste Disposal Area (IAS Site 4)
	Site Screening Group II
11	Cold Storage Warehouse (Area "C"), Building 148
12	DRMO Warehouse (Area "C"), Building 1063
	DRMO Warehouse (Area "C"), Building 1069
13	NTC Laundry Facility (Area "C"), Building 1100
14	Disposal/Salvage/Scrap Building, Building 1102
15	Deleted (to be handled under Task Management Plan)
	Site Screening Group III
16	Maintenance Yard, Building 7168
	Army Motor Maintenance, Building 7171
	Army Battery Shop, Building 7172
17	Training Material Storage, Building 7178
	Maintenance Office, Building 7190
	Inert Storage Warehouse, Building 7191
	General Warehouse, Building 7193
18	Housing Office, Building 7182

See notes at end of table.

Table 1-2 (Continued)
Site Screening Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Study Area	Buildings
	Site Screening Group III (Continued)
19	Auto Hobby Shop, Building 7184
20	Storage, Building 7187
21	Maintenance Shop, Building 7203
22	Old Golf Course, UNF-1
23	Old Football Field, UNF-2
24	Northwest Swamp, UNF-4
	Southeast Swamp, UNF-5
25	Former WWTP - McCoy Annex
26	Camp Bath House, Building 7351
	Camp Laundry, Building 7352
	Family Camp Office, Building 7357
	Family Camp, Building 7358
	Site Screening Group IV
27	Visitor's Pass Office, Building 111
	Security Building, Building 2010
	Armory/Hurricane Storage Locker, Building 2073
28	Bowling/Arts & Crafts Center, Building 114
29	Grounds Maintenance, Building 127
30	Automotive Hobby Shop, Building 129
	Paint Shop Materials Storage, Building 131
	Custodial Contractor, Building 2262
31	Nuclear Power Field "A" School, Building 354
32	BEQ/Heating Plant, Building 358
33	Administration Building, Building 2001
	NTC Headquarters, Building 2002
	Defence Finance Accounting Office, Building 2003
	Administration Building, Building 2004
34	NTC Supply, Building 2024

See notes at end of table.

Table 1-2 (Continued)
Site Screening Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Study Area	Buildings
	Site Screening Group V
35	Auto Maintenance Facility, Building 2078
	Auto Maintenance Facility Storage, Building 2079
36	Public Works Lumber Storage, Building 2121
	Public Works Shops, Building 2122
37	Flammable Hazardous Materials Storage, Building 2414
38	Recreational Services Equipment and Football Field, Building 4001
39	Loading Platform, Building 4060
	Loading Platform, Building 4067
	Irrigation Well, Building 15109
	Open Area (west of Nuclear Power School), UNF-10
40	Softball Field, Building 21022
	Softball Field, Building 21023
	Bottle Landfill, UNF-6
41	Open Area, UNF-8
42	Maintenance Shop, Building 2055

Notes: UNF = unnumbered facility (assigned to locations without facility numbers for the Environmental Baseline Survey [EBS]).
IAS = Initial Assessment Study (C.C. Johnson, 1985).
DRMO = Defense Reutilization Marketing Office
BEQ = Bachelor Enlisted Quarters

2.0 FACILITY BACKGROUND AND PHYSICAL SETTING

NTC, Orlando consists of four discrete facilities located in the city of Orlando, Orange County, Florida. The four facilities are the Main Base, Area "C," Herndon Annex, and McCoy Annex (Figure 1-2). The operational history of the four facilities dates back to 1940, and includes operations by the Army Air Corps and the Air Force. The Air Force ceased operations at the Main Base, Area "C," and Herndon Annex in 1968. The property was officially commissioned as the Naval Training Center Orlando in July 1968. The Navy acquired McCoy Annex from the Air Force in 1973. A more detailed installation history can be found in the POP, Volume I, Section 1.3, Facility Background (ABB-ES, 1994a).

The Main Base is the largest of the four facilities. It is comprised mainly of operational and training facilities. The Main Base occupies 1,095 acres approximately 3 miles east of Interstate 4 and just north of State Road 50 (Figure 1-2). It is surrounded by urban development, including single and multi-family housing, schools, and commercial buildings. Herndon Airport is approximately 1.5 miles south of the Main Base. There are no industrial facilities adjacent to the Main Base, with the exception of automotive repair facilities along Bennett Road on the southwest property line.

Area "C" occupies 46 acres and is located approximately 1 mile west of the Main Base off Maguire Boulevard (Figure 1-2). Area "C" serves as a supply center for NTC, Orlando, and includes a dry cleaner and the Defense Reutilization and Marketing Office (DRMO). It is surrounded by urban development, including single and multi-family residential developments to the north and south, Lake Druid to the west, and an office park to the east. There are no industrial facilities adjacent to Area "C."

Herndon Annex occupies 54 acres approximately 1.5 miles south of the Main Base (Figure 1-2). It is located within the confines of the general aviation Herndon Public Airport and on the fringe of a major residential area. Herndon Annex provides research, design, development, testing, evaluation, procurement, fabrication, maintenance, and logistical support for naval training devices and equipment. The Herndon Annex currently includes a computer center, flight-training building, uniform supply warehouse, and office buildings.

McCoy Annex occupies 877 acres and is located 12 miles south of the Main Base. It serves primarily as a housing and community support activity for NTC, Orlando. The Beeline Expressway forms the northern boundary. The Orlando International Airport is directly east of the McCoy Annex. The western boundary of the McCoy Annex is flanked by industrially zoned property. The zoning allows heavy industry and aviation-related development. The property north of the Beeline Expressway and within 0.75 mile of the McCoy Annex is used primarily by businesses directly related to the airport, such as rental agencies, hotels, and restaurants. Adjacent to the southern boundary are undeveloped woodlands (C.C. Johnson, 1985).

NTC, Orlando is situated in central Orange County, Florida, part of the Atlantic Coastal Plain physiographic province as defined by Meinzer (1923). The climate of Orange County is subtropical, with an average annual temperature of about 72 degrees Fahrenheit (°F). Orange County receives an average of 52 inches of rainfall each year. More than 50 percent of this precipitation is received from

June through September, during thunderstorms that occur an average of 83 days per year (Lichtler and others, 1968).

Most of the city of Orlando, as well as the NTC, Orlando facilities, are considered to be in the highland topographic region of the county, where elevations are generally greater than 105 feet above mean sea level (msl), but range from 50 feet to 225 feet above msl. The topography of this region is characterized by closed depressions and sinkhole lakes, which commonly facilitate groundwater recharge (Lichtler and others, 1968). The topography in the immediate area of Orlando is generally flat, with elevations ranging from approximately 65 feet to 125 feet above msl. The lakes in the area are prone to flooding. Regional drainage is poorly developed, but generally flows toward the south. All surface waters in the vicinity of NTC, Orlando are classified by the State of Florida as Class III waters suitable for fish and wildlife propagation and water contact sports (Department of Navy (DON), 1992). Further details can be found in the POP, Volume I, Section 1.4, Environmental Setting (ABB-ES, 1994a).

3.0 SITE INVESTIGATION TASK

This chapter of the SSP describes the general tasks necessary to undertake and complete the site screening scope of work as set forth in Chapter 4.0. The tasks proceed from planning, through field and laboratory work, data evaluation and preliminary risk assessment, to report preparation.

3.1 PROJECT PLANNING. The site screening work begins with project planning, and planning continues throughout the project, as adjustments are made in response to actual conditions encountered.

3.1.1 Preparation of Project Plans ABB-ES has prepared project plans necessary to perform the site screening described herein. The initial planning document is this SSP, which describes the field program and site-specific activities and tasks that will be conducted for the site screening at NTC, Orlando study areas.

The principal planning document is the POP (ABB-ES, 1994a), which incorporates the Sampling and Analysis Plan (SAP) and the HASP. The SAP includes the QAPP and elements of the FSP. The POP presents detailed descriptions and discussions of the following elements:

- project organization and responsibilities,
- quality assurance (QA) objectives and measurements,
- general sampling procedures,
- sample handling and custody procedures,
- equipment calibration and preventive maintenance,
- analytical procedures,
- data management,
- internal quality control (QC),
- QA activities,
- problem prevention,
- data assessment procedures,
- corrective actions,
- reports, and
- site-specific HASPs.

3.1.2 Meetings and Site Visits ABB-ES will meet periodically onsite with representatives from Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM); NTC, Orlando personnel; U.S. Environmental Protection Agency (USEPA); and the Florida Department of Environmental Protection (FDEP) to ensure that the investigations proceed on schedule and in accordance with project objectives. ABB-ES will support SOUTHNAVFACENGCOM and NTC, Orlando in quarterly Restoration Advisory Board briefings.

3.2 DATA REVIEW. ABB-ES has reviewed and will continue to review relevant information on the installation and the assigned study areas to understand site conditions, identify data gaps, and provide a more focused investigation.

3.3 DATA QUALITY OBJECTIVES (DQOs). Establishing DQOs is necessary to determine the level of detail required for site investigation activities. Data generated during the field and laboratory tasks will be used to characterize study area conditions and to perform PREs. These data will also be used to scope further investigations or to support FOSL or FOST decisions. Because PREs will establish the suitability for transfer for the assigned study areas, soil, sediment, surface water, and groundwater samples will be analyzed in accordance with USEPA Level IV DQOs. Field screening data resulting from passive soil gas surveys and immunoassay testing for polychlorinated biphenyls (PCBs) in soils will be in accordance with USEPA Level II DQOs. The various DQO levels are described in detail in the POP, Volume I, Section 3.2, Data Quality Objectives (ABB-ES, 1994a).

3.4 LABORATORY DATA VALIDATION. The laboratory Level IV deliverables will be initially subjected to ABB-ES QA/QC review. If it is determined that a PRE is required, one set of samples from each sample delivery group associated with the study area in question will be validated in accordance with procedures set forth in the POP, Volume I, Section 8.2, Validation (ABB-ES, 1994a).

If necessary (as in the event an RI/FS is required), the remaining data packages can be validated at a later date.

3.5 FIELD INVESTIGATIONS. Fieldwork will be conducted in accordance with the procedures specifically identified in the POP, Volume I, Section 4.0, Field Program Procedures and Requirements (ABB-ES, 1994a). Study area-specific conditions, plans, and rationale are presented in Chapter 4.0 of this SSP. The tasks necessary to undertake and complete the field investigation program are described in the following subsections.

3.5.1 Aerial Photograph Evaluation An aerial photograph survey will be performed, consisting of obtaining, evaluating, analyzing, and interpreting available historical and recent aerial photographs to establish the historical development of each study area, identify the precise location of the study area, and determine the processes that may have occurred in the area. This survey will be performed prior to the initiation of fieldwork to help focus subsequent activities in the field.

3.5.2 Preliminary Activities ABB-ES will perform the following tasks necessary to help ensure a successful mobilization and initiation of field activities.

3.5.2.1 Subcontractor Coordination Upon receipt of notice to proceed, ABB-ES will contact all appropriate subcontractors to finalize any remaining contractual matters and plan mobilization and related activities associated with fieldwork for each study area. Coordination activities include scheduling, staffing, and procurement of all personnel, materials, equipment, and supplies required to complete the proposed work. Proposed subcontracted services will include drilling, laboratory analyses, passive soil gas surveying, and marine magnetometer surveying.

3.5.2.2 **Permitting, Authorization, and Site Access** In conjunction with subcontractor scheduling, ABB-ES will ensure that the necessary authorization and approval is secured for all personnel scheduled for field activities. The Base Realignment and Closure (BRAC) Environmental Coordinator (BEC) at NTC, Orlando will be contacted to arrange authorization of the appropriate subcontractor identification passes for both ABB-ES and subcontractor personnel. Such passes will permit authorized personnel to enter specified areas on the NTC, Orlando facility for the purpose of completing approved fieldwork. In addition, ABB-ES will ensure that all necessary permits (e.g., monitoring well installation permits) have been obtained prior to mobilization for fieldwork.

3.5.2.3 **Utility Identification and Location** Prior to mobilization for fieldwork, ABB-ES will coordinate with NTC, Orlando personnel to identify and locate at each study area all underground utilities, other underground structures, and overhead utilities that may obstruct field activities. Upon mobilization to the field, ABB-ES will work with base personnel to mark each utility for future reference to minimize the risk of jeopardizing the health and safety of field personnel or the integrity of the utility. Identification and location of utilities may include referring to blueprints and using electronic equipment in the field for physical location of utility lines. NTC, Orlando will assume final responsibility for the location and identification of utilities or other subsurface structures.

3.5.3 **Mobilization** Mobilization will consist of field personnel orientation and equipment mobilization and will take place prior to the initiation of field investigation activities. A field team orientation meeting will be held with ABB-ES personnel to familiarize onsite personnel with the site history; health and safety requirements; NTC, Orlando security requirements; and field procedures as outlined in this SSP and the POP. Equipment mobilization will include the transportation and setup of the following equipment:

- geophysical surveying equipment and other materials and supplies,
- health and safety and decontamination equipment, and
- sampling equipment.

The field office will be equipped with a radio communications base station and a telephone. Field personnel will be provided with a mobile hand-held radio to facilitate onsite communications. The field office will also function as a field laboratory and central storage area for field equipment and supplies.

3.5.4 **Site-Specific Field Investigation Tasks** The plans and rationale for field investigations, including analytical requirements, are described in Chapter 4.0 of this SSP. Performing those investigations will involve combinations of the following tasks:

- geophysical surveying,
- soil borings,
- soil sampling,
- soil characterization,
- soil gas surveying,
- field screening analysis,
- monitoring well installation,
- groundwater sampling,
- surface water and sediment sampling,
- wastewater and sludge sampling,

- land surveying, and
- investigation-derived waste (IDW) management.

These tasks will be performed in accordance with the methods as outlined in Sections 4.1 through 4.10 of the POP (ABB-ES, 1994a), with additional information as follows.

Proposed geophysical survey techniques will include magnetometer and terrain conductivity surveys followed by ground-penetrating radar (GPR) surveys to confirm anomalies identified by the other techniques. Marine magnetometry surveys will be conducted in Lake Susannah and possibly in Lake Baldwin (see Section 4.6). Global Positioning System (GPS) equipment will be used to support all geophysical survey activities (e.g., locating transect lines and anomalies).

Standard level and rod techniques will be used by ABB-ES to determine relative elevations of monitoring wells.

Immunoassay field screening methods may be used to evaluate the presence of PCBs, total petroleum hydrocarbons (TPHs), or other contaminants, as appropriate.

Passive soil gas surveying methods have been determined to be the most appropriate for the objectives of the SSP and site conditions. Active soil gas methods may be applied to specific study areas.

In cases where a study area is adjacent to a surface water body, a reconnaissance of the shoreline will be performed to search for seepage of leachate.

Soil borings will be advanced and monitoring wells installed using hollow-stem auger (HSA) drilling and split-spoon sampling techniques. Augers will have a minimum inside diameter of 6.25 inches when installing 2-inch nominal diameter monitoring wells. Shallow soil borings may also be completed manually (for example, via hand auger) in situations where monitoring well installation is not required. Soil samples will be collected continuously and logged using the Unified Soil Classification System (USCS). One or two subsurface soil samples from each boring will be submitted for laboratory analysis. The frequency is dependent on the study area in question, as described in Chapter 4.0. The sample depth interval will be based on soil gas or geophysical survey results, flame ionization detector (FID) readings, and visual observations during sample collection. If no apparent contamination is indicated by these criteria, the soil sample will be collected from the split-spoon interval at the water table. Soil intended for volatile organic compound (VOC) analyses will be immediately collected from the sampler. Soil intended for other types of analyses will be placed in a glass or stainless-steel mixing bowl and thoroughly mixed using a stainless-steel mixing spoon. Once the sample has been thoroughly mixed, sample material will then be placed in the appropriate containers.

Monitoring wells will be installed into the surficial aquifer, to a depth of approximately 15 feet, with 10 feet of slotted polyvinyl chloride (PVC) screen. The screen will be set to intersect the water table in most instances, although wells may be screened below the water table if contaminants of concern are more dense than water. Monitoring wells will be flush-mounted with protective steel casing at ground surface. All wells are considered temporary pending the results of site screening, and will be installed with a concrete pad measuring 2 feet by 2 feet by 3 inches thick.

For monitoring well installations that may pass through confining layers (i.e., into the Hawthorn or upper Floridan), an outer casing will be installed prior to well installation to prevent cross contamination of deeper aquifers. In the installation of the outer casing, either mud rotary or the air percussion casing advance technique (or equivalent) may be used instead of HSA. Mud rotary drilling is discussed in the POP, Subsection 4.4.6, Exploratory Drilling (ABB-ES, 1994a).

The air percussion casing advance technique is a reverse circulation technique that removes cuttings through the annulus of the casing, thereby minimizing IDW and contact with overlying contaminated strata. The technique features a reamer that swings around an eccentric shaft on the pilot bit. In the open position, the reamer drills a hole slightly larger than the outside diameter of the casing. The casing is permitted to advance behind the drill bit, preventing the hole from collapsing. Cuttings are eliminated through the casing annulus and contained at the surface. When the desired depth is reached, the reamer is closed by reversing the direction of rotation. In closed position, the reamer may be retracted inside the casing.

The primary advantage of this technique is the ability to case off a part of the surficial aquifer to prevent cross contamination into the lower part of the aquifer. This is accomplished by starting the hole at ground surface with a sufficiently large casing to accommodate a second casing (or multiple casings, if necessary). When the appropriate depth has been achieved, the pilot bit is removed and PVC Schedule 40 casing is installed inside the steel casing to the depth of the hole. The steel casing is retracted, and the PVC casing is grouted in place with neat cement grout (with 5 percent bentonite powder by volume). The grout is left to cure for a minimum of 24 hours, then a smaller diameter pilot bit is advanced through the grout at the base of the PVC casing to the desired depth of the well. The tools are removed and the well is installed as described in the POP, Paragraph 4.4.6.3, Monitoring Well Installation (ABB-ES, 1994a).

The technique is similar for deeper drilling through a second aquifer, except that the hole must be cased off not only at the base of the upper aquifer but also at the base of the second aquifer. In this case, the borehole would start with a larger diameter, sleeve down to an intermediate diameter at the top of the second aquifer, and be completed into the deep aquifer where the well screen is installed as described in the POP, Paragraph 4.4.6.3, Monitoring Well Installation (ABB-ES, 1994a).

Advantages of the air percussion casing advance technique include:

- greater depths can be achieved than with HSA,
- less IDW is generated,
- better monitoring wells can be installed due to less disturbance to the formation outside the sand pack,
- critical layers can be cased off preventing cross contamination,
- continuous sampling (cuttings only) can take place with no loss in production, and

- problems encountered in artesian conditions with running sands, which can cause significant delays with other drilling methods, can be reduced or avoided.

The disadvantages of the technique are:

- there is greater initial cost and higher mobilization fees,
- it is less suitable for installing shallow wells,
- it is less versatile, and
- *in situ* soil samples (split spoon, etc.) cannot be collected economically.

All IDW generated during investigations in areas likely to be contaminated (for example, in areas identified by soil gas surveys) will be containerized and managed in accordance with the procedures presented in the POP, Volume I, Section 4.10, Control and Disposal of IDW (ABB-ES, 1994a).

All soil IDW from above the water table generated during soil boring completion and well installation in areas with no prior evidence of contamination will be field screened to determine appropriate disposal methods. Soil IDW will be screened for VOCs using a hand-held FID. Any sample with total VOCs above background (ambient air) concentrations will be containerized and handled as IDW in accordance with procedures presented in the POP (ABB-ES, 1994a). Soil with total VOCs below background concentrations will be disposed onsite in accordance with prescribed procedures.

All liquid IDW generated during field activities (including well development and purge water, drilling fluids, and decontamination fluids) will be containerized and managed in accordance with the procedures presented in the POP (ABB-ES, 1994a).

3.5.5 General Background Data A Background Sampling Plan has been prepared to establish rationale and define sampling locations for collection of base-wide background samples. Background sampling of surface and subsurface soil and groundwater is expected to occur during or shortly after the Group I field efforts. Analytical results will be reviewed and used to establish a background data set for NTC, Orlando.

3.6 ANALYTICAL PROGRAM. The analytical program for each study area is designed to identify contaminants that are expected to be encountered, based on what is known or inferred about study area conditions and operations. Expected contaminants include petroleum hydrocarbons, VOCs, semivolatile organic compounds (SVOCs), inorganic compounds, pesticides, PCBs, herbicides, and radionuclides. Analytical procedures such as selection of parameters, laboratory and method certification, laboratory QC programs, and holding times are provided in the POP, Volume I, Section 7.0, Analytical Procedures (ABB-ES, 1994a). All laboratory analyses will be conducted in accordance with USEPA Level IV DQOs. Detection limits for compounds regulated under the Florida Drinking Water Regulations (Chapter 62-550 of the Florida Administrative Code [FAC]) will be at or below the maximum contaminant level (MCL).

3.6.1 Analytical Parameters The analytical program is designed to support the site screening DQOs. Analytical data will be used to verify the presence and concentrations of environmental contamination to judge the suitability of an FOSL or FOST, or to determine whether further investigations are warranted. The selected analyses are based on study area-specific considerations. The study areas and specific analyses are discussed by media in Chapter 4.0 of this SSP.

3.6.2 Quality Assurance and Quality Control All environmental sampling and analyses will be conducted in accordance with the requirements of the POP (ABB-ES, 1994a).

Duplicate samples will be collected and analyzed for 10 percent of all samples. Trip blanks will provide a basis for assessing the potential for contaminating samples with VOCs during sample collection or shipment, and will accompany all samples to be analyzed for VOCs. To address the potential for cross contamination, rinsate blanks will be collected at a rate of one per day from equipment used in sampling all media. The rinsate blanks will be analyzed for the parameters of the respective samples collected with the equipment. Five percent matrix spike and matrix spike duplicates (MS/MSD) will be analyzed to characterize matrix effects on the basis of one per method per matrix. Detailed collection procedures and frequency of additional QC samples (such as field blanks and preservative blanks) are provided in the POP, Volume I, Chapter 9.0, Internal Quality Control (ABB-ES, 1994a).

Samples will be handled and conveyed to the subcontractor laboratory in accordance with specified chain-of-custody (COC) procedures. Sample management procedures including sample container and preservation requirements, COC program protocol and records, and sample tracking and shipping are described in the POP, Volume I, Chapter 5.0, Sample Handling and Custody Procedures (ABB-ES, 1994a).

While analyses are being conducted, the subcontractor laboratory QA Coordinator will provide the ABB-ES QA Manager with documentation specified in the POP. The subcontractor laboratory will supply copies of all corrective actions to ABB-ES for approval. The subcontractor laboratory provides operational control of the laboratory; however, the ABB-ES QA Manager retains ultimate responsibility for data quality.

3.7 DATA MANAGEMENT. Data generated as part of the site screening will be managed in accordance with the applicable data-management procedures as discussed in the POP, Volume I, Section 8.5, Data Management (ABB-ES, 1994a). The data will include field data and the results of laboratory chemical analyses of environmental samples.

3.8 DATA EVALUATION. ABB-ES will evaluate data generated as part of the site screening to determine whether they meet site screening DQOs. Evaluation of the data for each study area will be the basis for verifying whether environmental contamination exists and whether further investigations are warranted.

Medium-specific maximum detected concentrations will be compared to medium-specific background data, if available. Analytes that exceed background concentrations will be considered potentially site related and will require further evaluation.

Concentrations of compounds that exceed background will be compared to appropriate Federal- and State-promulgated standards or guidelines. If no contaminants are detected, or if all detected compounds are at concentrations below action levels, the properties will be recommended for an FOSL or an FOST. If concentrations are above action levels, or if compounds are detected with no set action levels, a PRE will be performed.

3.9 PRELIMINARY RISK EVALUATION (PRE). A PRE will be used (when appropriate) to evaluate the potential pathways of contaminant migration and potential risks to human and ecological receptors. The PRE will include a preliminary human health evaluation and a preliminary environmental evaluation.

The human health PRE will be conducted to evaluate risks associated with potential exposure to environmental media by comparison of maximum medium-specific concentrations to appropriate Federal- and State-promulgated standards or guidelines, or risk-based concentrations (RBCs) available from USEPA Region III (USEPA Region III Risk-Based Concentration Table, Second Quarter 1994). Other applicable guidance and standards that may be used in the human health PRE include: USEPA Drinking Water Regulations (USEPA, 1993), Florida Drinking Water Regulations (Chapter 62-550, FAC), Florida Groundwater Guidance Concentrations (FDEP, 1994), Florida Surface Water Quality Standards (Chapter 62-302, FAC), Florida Petroleum Contamination Site Cleanup Criteria published in the Florida Underground Petroleum Environmental Response Rule (Chapter 62-770, FAC), Florida Soil Cleanup Goals (FDEP Memorandum dated July 5, 1994), and Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (Office of Solid Waste and Emergency Response [OSWER] Directive 9355, 4-02; USEPA, 1989).

The environmental PRE will be conducted to evaluate if any natural resources could be affected by site contamination. The environmental PREs will consist of a qualitative ecological characterization and a comparison of maximum medium-specific concentrations to available ecological standards, benchmarks, criteria, and guidance values.

The ecological characterization will qualitatively characterize the ecological communities associated with NTC, Orlando, including terrestrial, wetland, and aquatic habitats. Ecological receptors in the vicinity of the individual study areas that could potentially be exposed to contaminated environmental media will be identified. Major site-specific exposure pathways will be evaluated, and possible signs and symptoms of stress on biological receptors at the site will be observed. Required information will be obtained from a limited field ecological program and from literature sources. The field program will include a qualitative walkover survey to confirm ecological habitat types, flora, and fauna at and in the vicinity of each study area. Particular emphasis will be placed on identifying sensitive ecological receptors and assessing the potential occurrence of rare, threatened, or endangered species at the installation. The U.S. Fish and Wildlife Service, Florida Natural Heritage Program, and any regional authorities will be contacted regarding the presence of State or federally-listed rare and endangered species at NTC, Orlando.

Applicable guidance that may be used in the ecological PRE includes: USEPA Ambient Water Quality Criteria (AWQC), USEPA Sediment Quality Guidelines, and other available sediment criteria and guidelines. Because no State or Federal guidance

values exist for surface soil, limited effects concentration information from eco-toxicological literature may be included in the environmental PREs.

The purpose of these risk evaluations is to provide a qualitative assessment of the potential risks to human and ecological receptors and the suitability for transfer of the study area. Based on the results of the PRE, one of the following recommendations will be made for each site:

- recommend the study area for an FOSL or FOST,
- initiate an immediate removal or interim action, or
- include in an RI/FS.

It is possible that circumstances may require collection of additional data to support selection of an interim action or RI/FS.

ABB-ES will prioritize those sites recommended for an RI/FS based upon their actual or potential threat to human health and/or the environment.

3.10 SITE SCREENING REPORT. After acquiring and evaluating the field screening and laboratory data and performing the PRE (if appropriate), ABB-ES will prepare a Site Screening Report for each group of study areas. The report will describe the field methods employed and will present, summarize, and evaluate the relevant background information and the field and laboratory data. For each study area, the Site Screening Report will address the following specific subjects:

- study area background and history;
- scope of exploration and sampling program;
- hydrogeologic setting and conditions;
- results of sampling and analysis;
- preliminary assessment of contaminant distribution, fate, and migration;
- preliminary assessment of potential exposure mechanisms and receptors;
- preliminary human health and environmental risk evaluation; and
- recommendations.

4.0 STUDY AREA FIELD INVESTIGATIONS

The purpose of this site screening program is to either confirm that specific study areas (Table 1-2) are suitable for an FOSL or an FOST or to determine the data needs for any additional investigations that may be required. The study area evaluation process is summarized on Figure 1-3. The field investigation program is designed to gather sufficient physical and chemical data to support such decisions.

Group I study areas. The following is a summary, by study area, of the proposed field investigation objectives and methods, including estimated numbers of samples and analytes for each location. Background information on specific study area conditions was derived primarily from information contained in the EBS (ABB-ES, 1994b) and BRAC Cleanup Plan (BCP; ABB-ES, 1994c). The complete analytical program for Group I study areas is summarized in Table 4-1. Details of field methods to be used during this site screening program are included in the POP, Sections 4.4 through 4.6 (ABB-ES, 1994a).

4.1 STUDY AREA 1, BUILDING 3126 AND ALLEGED NAVAL HOSPITAL LANDFILL (UNNUMBERED FACILITY [UNF]-12)

Study Area 1 consists of Building 3126 and the alleged former Hospital Landfill (UNF-12).

4.1.1 Background and Conditions

Building 3126. Building 3126 is a civilian Bachelor Enlisted Quarters (BEQ) and is a one-story building constructed of cinder blocks with a gabled roof covered by felt shingles. It is located on Comfort Avenue near the corner of Raymond Street (Figure 4-1).

The property has been owned and operated by the U.S. Navy since taking command of base operations in 1968. The building was constructed in 1943 and has been serving as barracks and administrative facilities. According to file records and aerial photographs of the area, the building was constructed on undeveloped land. No modifications or improvements have been made to the structure since it was built.

A greenish stain was observed on the ground on the north side of the mechanical room. The stain covered a 10 foot by 4 foot area to a depth of 2 inches. There was no living vegetation within the area of the stain (ABB-ES, 1994b).

UNF-12. Area UNF-12 is the former Hospital Landfill, located on the northeast part of the Main Base. This landfill is northwest of the Navy Hospital and is bisected by Mercy Avenue (Figure 4-2). The area currently is an open grassy lawn with scattered trees.

From the 1950's to late 1970's, Air Force medical buildings occupied the north shore area of Lake Baldwin. According to local residents, the Air Force buildings were dismantled in the late 1970's. Building parts and construction debris were reportedly disposed in deep trenches in the area.

The duration of disposal operations was not disclosed. Only building materials such as roofing, wood siding, flooring, and support beams were reportedly

Table 4-1
Analytical Program Summary, Group I Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	Quant	CLP TCL VOCs [1]	CLP TCL SVOCs [2]	CLP TAL Inorganics	Cyanide	Pesticides/ PCBs [3]	Herbicides	Endothall [4]	TPH	Radionuclides [5]	TSS, TDS, ALK, HARD
Soil and Sediment Samples											
Study Area 1											
UNF-12											
Subsurface	4	4	4	4	0	4/4	0	0	0	0	0
Bldg 3126											
Surface	1	1	1	1	0	1/1	0	0	0	0	0
Subsurface	1	1	1	1	0	1/1	0	0	0	0	0
Study Area 2											
Bldg 6001											
Sludge [6]	1	1	1	1	0	1/1	0	0	0	0	0
Subsurface	3	3	3	3	0	3/3	0	0	0	0	0
Herndon Annex											
Subsurface	5	5	0	0	0	0	0	0	0	0	0
Study Area 3											
Bldgs 73, 2816 and 2817	4	4	4	4	0	4/4	0	0	0	0	0
Surface	4	4	4	4	0	4/4	0	0	0	0	0
Subsurface											
Study Area 4											
Bldgs 250 and 251	4	0	4	4	0	0/4	0	0	4	0	0
Surface											
Study Area 5											
UNF-13											
Subsurface	4	4	4	4	0	4/4	0	0	0	0	0

See notes at end of table.

Table 4-1 (Continued)
Analytical Program Summary, Group I Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	Quant	CLP TCL VOCs [1]	CLP TCL SVOCs [2]	CLP TAL Inorganics	Cyanide	Pesticides/ PCBs [3]	Herbicides	Endothall [4]	TPH	Radionuclides [5]	TSS, TDS, ALK, HARD
Soil and Sediment Samples (Continued)											
Study Area 6											
Lake Baldwin											
Sediment [7]	27	27	27	27	27	27/27	27	0	3	0	0
Study Area 7											
Lake Susannah											
Sediment [7]	15	15	15	15	15	15/15	15	0	3	0	0
Study Area 8											
Bldg 2134											
Surface	8	8	8	8	0	8/8	8	0	0	0	0
Subsurface	4	4	4	4	0	4/4	4	0	0	0	0
UNF-15											
Subsurface	6	6	6	6	0	6/6	6	0	0	0	0
Study Area 9											
UNF-14											
Surface	4	4	4	4	0	4/4	4	4	0	0	0
Subsurface	1	1	1	1	0	1/1	1	1	0	0	0
Study Area 10											
IAS Site 4											
Subsurface	1	1	1	1	0	1/1	0	0	0	0	0
TOTALS FOR SOIL	**97**	**93**	**92**	**92**	**42**	**88/92**	**65**	**5**	**10**	**0**	**0**

See notes at end of table.

Table 4-1 (Continued)
Analytical Program Summary, Group I Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	Quant	CLP TCL VOCs [1]	CLP TCL SVOCs [2]	CLP TAL Inorganics	Cyanide	Pesticides/ PCBs [3]	Herbicides	Endothall [4]	TPH	Radionuclides [5]	TSS, TDS, ALK, HARD
Water Samples											
Study Area 1											
UNF-12 Groundwater	4	4	4	4	0	4/4	0	0	0	0	1-TSS Only
Bldg 3126	0	0	0	0	0	0	0	0	0	0	0
Study Area 2											
Bldg 6001 Wastewater	1	1	1	1	0	1/1	0	0	0	0	0
Groundwater	3	3	3	3	0	3/3	0	0	0	0	1-TSS Only
Herndon Annex											
Groundwater	5	5	0	0	0	0	0	0	0	0	0
Study Area 3											
Bldgs 73, 2816 and 2817 Groundwater	4	4	4	4	0	4/4	0	0	0	0	1-TSS Only
Study Area 4											
Bldgs 250 and 251	0	0	0	0	0	0	0	0	0	0	0
Study Area 5											
UNF-13 Groundwater	4	4	4	4	0	4/4	0	0	0	0	1-TSS Only
Study Area 6											
Lake Baldwin Surface Water	9	9	9	9	9	9/9	9	0	3	0	9

See notes at end of table.

Table 4-1 (Continued)
Analytical Program Summary, Group I Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	Quant	CLP TCL VOCs [1]	CLP TCL SVOCs [2]	CLP TAL Inorganics	Cyanide	Pesticides/ PCBs [3]	Herbicides	Endothall [4]	TPH	Radionuclides [5]	TSS, TDS, ALK, HARD
Water Samples (Continued)											
Study Area 7											
Lake Susannah											
Surface Water	5	5	5	5	5	5/5	5	0	3	0	5
Study Area 8											
Bldg 2134											
Groundwater	4	4	4	4	0	4/4	4	0	0	0	1-TSS Only
UNF-15											
Groundwater	6	6	6	6	0	6/6	6	0	0	6	1-TSS Only
Study Area 9											
UNF-14											
Groundwater	4	4	4	4	0	4/4	4	4	0	0	1-TSS Only
Study Area 10											
IAS Site 4											
Groundwater	1	1	1	1	0	1/1	0	0	0	0	0
TOTALS FOR WATER	**50**	**50**	**45**	**45**	**14**	**45/45**	**28**	**4**	**6**	**6**	**14** **7-TSS Only**
Soil											
QC Samples (quantity estimated)											
Trip	10	10	0	0	0	0	0	0	0	0	0
Rinsate	10	10	7	7	0	7	7	0	7	0	0
Duplicate	6	6	6	6	0	6	5	1	1	0	0

See notes at end of table.

Table 4-1 (Continued)
Analytical Program Summary, Group I Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	Quant	CLP TCL VOCs [1]	CLP TCL SVOCs [2]	CLP TAL Inorganics	Cyanide	Pesticides/ PCBs [3]	Herbicides	Endothall [4]	TPH	Radionuclides [5]	TSS, TDS, ALK, HARD
Soil (Continued)											
QC Samples (quantity estimated)											
Matrix Spike	4	4	4	4	3	4	3	1	3	0	0
Matrix Spike Duplicate	4	4	4	4	3	4	3	1	3	0	0
Sediment											
QC Samples (quantity estimated)											
Trip	2	2	0	0	0	0	0	0	0	0	0
Rinsate [7]	2	2	2	2	2	2	2	0	2	0	0
Duplicate [7]	5	5	5	5	5	5	5	0	1	0	0
Matrix Spike	3	3	3	3	3	3	3	0	1	0	0
Matrix Spike Duplicate	3	3	3	3	3	3	3	0	1	0	0
Groundwater											
QC Samples (Quantity Estimated)											
Trip	8	8	0	0	0	0	0	0	0	0	0
Rinsate	8	8	5	5	0	5	5	1	0	1	0
Duplicate	4	4	4	4	0	4	3	1	0	1	0
Matrix Spike	3	3	3	3	0	3	2	1	0	0	0
Matrix Spike Duplicate	3	3	3	3	0	3	2	1	0	0	0

See notes at end of table.

Table 4-1 (Continued)
Analytical Program Summary, Group I Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	Quant	CLP TCL VOCs [1]	CLP TCL SVOCs [2]	CLP TAL Inorganics	Cyanide	Pesticides/ PCBs [3]	Herbicides	Endothall [4]	TPH	Radio-nuclides [5]	TSS, TDS, ALK, HARD
Surface Water											
QC Samples (quantity estimated)											
Trip	1	1	0	0	0	0	0	0	0	0	0
Rinsate	1	1	1	1	1	1	1	0	1	0	0
Duplicate	2	2	2	2	2	2	2	0	2	0	0
Matrix Spike	1	1	1	1	1	1	1	0	1	0	0
Matrix Spike Duplicate	1	1	1	1	1	1	1	0	1	0	0

[1] Volatile organic compound (VOC) analysis for groundwater and associated quality control (QC) samples will be low level Contract Laboratory Program (CLP) method to attain detection limits below Florida maximum contaminant levels (MCLs).
[2] Semivolatile organic compound (SVOC) analysis for groundwater and associated QC samples will include U.S. Environmental Protection Agency (USEPA) Method 8310 for benzo(a)pyrene and selective ion monitoring (SIM) for bis(2-ethylhexyl)phthalate, pentachlorophenol, and hexachlorobenzene to attain detection limits below Florida MCLs for these compounds.
[3] Polychlorinated biphenyl (PCB) analysis for groundwater and associated QC samples will be performed to obtain detection limits below the Florida MCL (0.5 micrograms per liter [$\mu g/\ell$]).
[4] Endothall analysis by USEPA Method 548.
[5] Radionuclides analysis includes gross alpha, gross beta (USEPA Method 9310), and a gamma scan (USEPA Method 101.1).
[6] Sludge sample also submitted for full Toxicity Characteristic Leachate Procedure (TCLP) analysis.
[7] Sediment samples also analyzed for total organic carbon (TOC).

Notes: Quant = quantity.
TCL = target compound list.
TAL = target analyte list.
TPH = total petroleum hydrocarbons.
TSS = total suspended solids.
TDS = total dissolved solids.
ALK = alkalinity.
HARD = hardness.
UNF = unnumbered facility.
Bldg = building.
IAS = Initial Assessment Study.

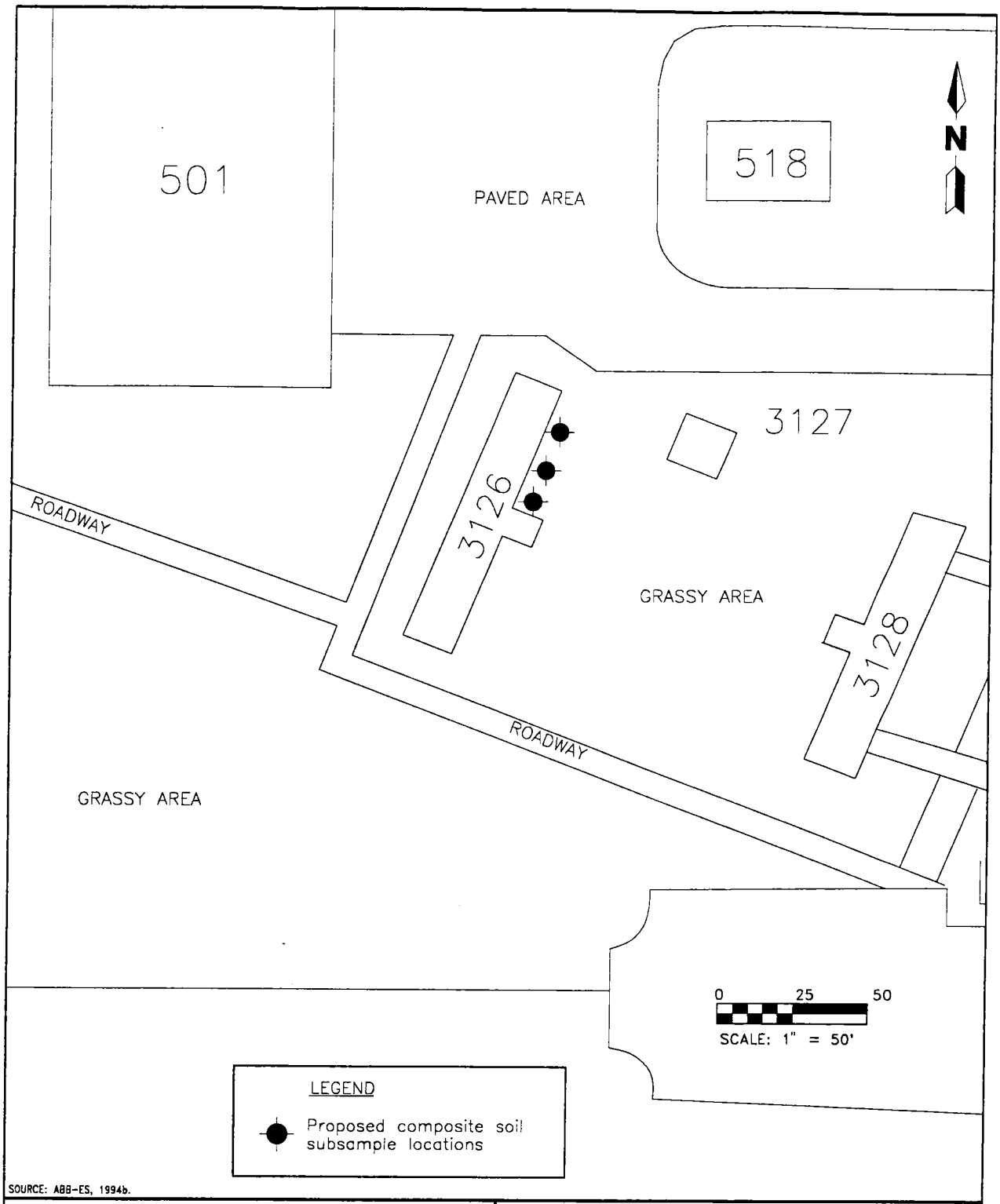

FIGURE 4-1
PROPOSED SOIL SAMPLE LOCATIONS AT BUILDING 3126, CIVILIAN BEQ, STUDY AREA 1, GROUP I STUDY AREAS

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SITE SCREENING PLAN

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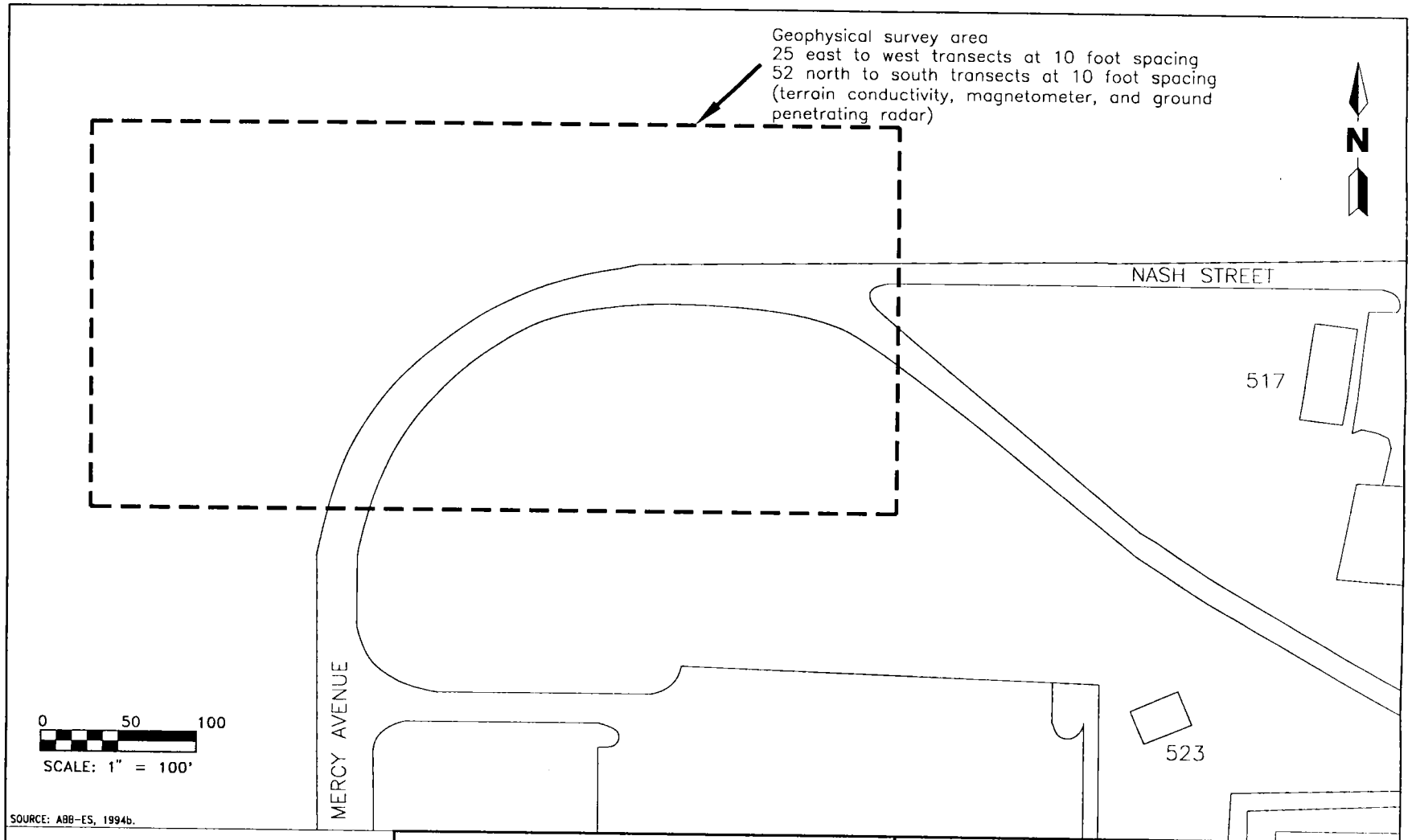

FIGURE 4-2
PROPOSED GEOPHYSICAL SURVEY AREA AT UNF-12, ALLEGED HOSPITAL LANDFILL, STUDY AREA 1, GROUP I STUDY AREAS

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SITE SCREENING PLAN

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landfilled. A level grassy field currently exists in the area. Prior to the landfill, the area was undeveloped land. In the early 1980's, the Navy Hospital and associated medical buildings were constructed in the vicinity. These buildings currently exist to the east of UNF-12.

No documented landfilling operations were identified in NTC, Orlando records and no known sampling or investigation has occurred to date regarding this disposal activity. Due to the age of the buildings that were dismantled and placed into the landfill, it is likely that lead-based paint is present in the landfill. Asbestos-containing material from demolished buildings may also have been disposed at this location.

Stormwater drainage flows from the site toward stormwater collection drains that discharge to Lake Baldwin.

4.1.2 Rationale and Plans for Site Screening

Building 3126. The objective of the site screening investigation at Building 3126 is to determine if chemical contaminants are present in the stained area identified during the EBS (ABB-ES, 1994b), and to determine if contamination has migrated below the surface.

Objective: to determine what chemical contaminants are associated with the stained area

Methods:
- surface soil sampling
- subsurface soil sampling

Upon confirming the location of the stained area as identified in the EBS (ABB-ES, 1994b), two composite soil samples will be collected using a hand auger. One sample will be a composite from three locations, and will be collected from the surface down to the visible extent of the stain. The second sample will be a composite collected from the same three locations, but from the interval 1 to 2 feet below the surface. Proposed sample locations are shown on Figure 4-1, with final locations to be determined in the field. The samples will be submitted for full suite Contract Laboratory Program (CLP) target compound list (TCL) and target analyte list (TAL) laboratory analyses in accordance with USEPA Level IV DQOs. Samples for volatile analyses will be grab samples from one of the three soil subsample locations. After collection of the volatile sample, the remaining soil will be composited for the additional analyses.

Upon characterization of the stain, the need for a removal action or additional sampling will be evaluated.

UNF-12. The objectives of the site screening program at UNF-12 are to confirm the presence and location of the alleged landfill and determine what chemical contaminants, if any, are associated with the landfill. Investigative objectives are listed below along with methods proposed to achieve them. The proposed geophysical survey area is shown on Figure 4-2, with final locations to be determined in the field.

Objective: to confirm the presence and location of the landfill

Methods:
- aerial photograph evaluation
- geophysical surveys (magnetometer, GPR, and terrain conductivity [TC])

The rationale for determining the presence of the landfill is based on the questionable source of information regarding its existence. However, a preliminary review of aerial photographs indicates that some sort of surficial disturbance existed in the area reportedly identified as the landfill. More detailed evaluation of the photographs should identify the target area for geophysical surveys. The surveys should delineate any buried disposal areas, locate ferrous objects, and may identify the presence of contaminant plumes.

The geophysical survey program will be conducted in two phases: an initial magnetometer and TC survey, followed by a confirmatory GPR survey focused on anomalies identified by the magnetometer and TC. The area of investigation is estimated to be approximately 520 feet by 250 feet and magnetometer and TC readings will be collected at stations every 10 feet within this area. GPR transects, also with 10-foot spacings, will be conducted along north to south and east to west transects (estimated 25 east to west lines and 52 north to south lines). A GPS survey of key transect lines, magnetic anomalies, and other relevant features will be conducted so that geophysical survey areas may be mapped. The results of the geophysical survey will be used to focus the next phase of investigation in this study area.

Objective: to determine what chemical contaminants may be associated with the landfill

Methods:
- passive soil gas survey
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Upon delineating the disturbed area thought to be landfilled, a passive soil gas survey will be conducted to identify any areas with elevated concentrations of VOCs in the subsurface soil and to focus the investigation to a smaller area for confirmatory soil and groundwater sampling. Soil gas sampling locations will be established to coincide with magnetometer and TC stations, although a 50-foot sampling grid is proposed for the soil gas survey. Proposed sample locations are shown on Figure 4-3.

After determining the boundaries of the landfill, three soil borings will be advanced around the perimeter of the landfill, with monitoring well installations in each boring. After determination of groundwater flow direction, a fourth boring and well will be installed in an area hydraulically downgradient of the landfill. Representative boring and well locations are shown on Figure 4-3. Actual locations will be determined after evaluation of geophysical and soil gas results and groundwater flow direction. Four soil samples (one from each boring) and four groundwater samples (one from each well) will be submitted for CLP TCL VOCs, SVOCs, pesticides, and PCBs and CLP TAL inorganics (full suite CLP TCL and TAL) laboratory analysis in accordance with USEPA Level IV DQOs. One groundwater sample will also be submitted for total suspended solids (TSS) determination to aid in the evaluation of inorganic data and the effectiveness of the groundwater sampling technique.

4.2 STUDY AREA 2, HERNDON ANNEX, FACILITY 6001. Study Area 2 consists of Facility 6001 at the Herndon Annex.

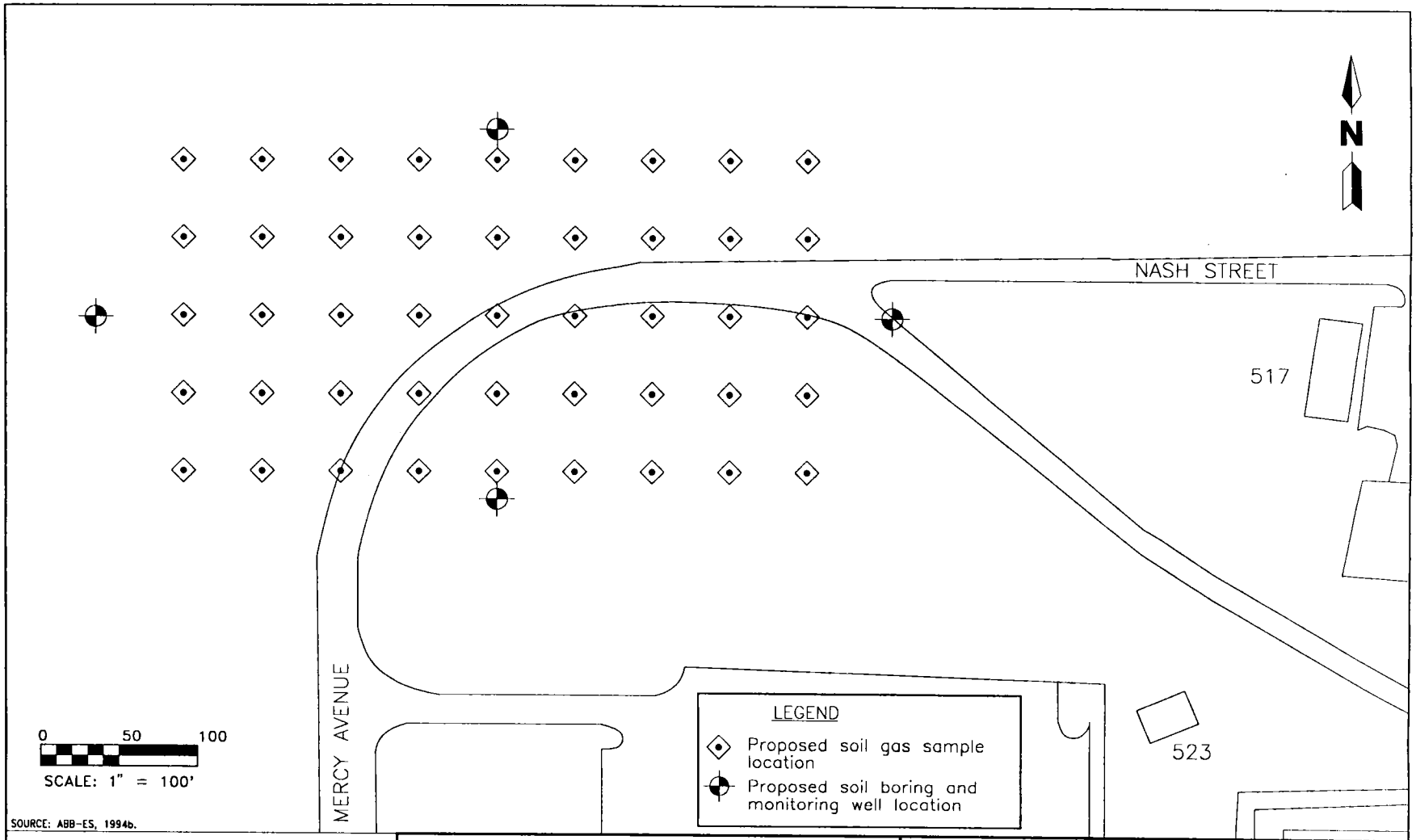

FIGURE 4-3
PROPOSED SOIL GAS SURVEY, SOIL BORING, AND MONITORING WELL LOCATIONS AT UNF-12, ALLEGED HOSPITAL LANDFILL, STUDY AREA 1, GROUP I STUDY AREAS

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4.2.1 Background and Conditions

Facility 6001. Facility 6001 is an abandoned septic tank and drain field located in a grassy field north of Building 602 at the Herndon Annex (Figure 4-4). The septic tank was installed in 1970 and has been abandoned for an unknown number of years.

Records indicate the sewer line to the septic tank has been capped and abandoned. While active, the septic system received domestic sewage from surrounding Herndon Annex buildings. Prior to 1970, the land was scattered grasslands, trees, bare soil, and circular pads for aircraft.

The septic tank area has a 20-foot-diameter circle depression from the surrounding terrain. Visible from the surface is a hole with concrete pieces, and an underground chamber with fluid inside. The fluid is assumed to be stormwater. A ditch flowing west to east carries stormwater run-off to a larger canal to the east.

The nearby Building 606 was constructed in 1973 as an assembly plant for communication trailers. Printed circuit boards were reportedly fabricated in the building. A part of Building 606 was also devoted to a machine shop for the construction of models and other support items for the flight simulators in Building 610. The machine shop included baths for metals treatment, and there are reports that spent chemicals (including paint thinner and metals treatment solutions) were diluted and discharged to the sanitary sewer (ABB-ES, 1994b).

A sanitary sewer system currently serves the Herndon Annex. Waste flows to the City of Orlando Iron Bridge Regional Water Pollution Control Facility. Unless further review of facility drawings indicates otherwise, it is assumed that Building 606 formerly discharged to Facility 6001.

The Herndon Annex includes five circular pads that were formerly used by the Air Force to park aircraft. The northern part of the Herndon Annex also includes an L-shaped paved area that was reportedly an airship landing area. Adjacent and to the west of this paved area are two building foundations, each approximately 50 feet wide and 250 feet long. Review of aerial photographs revealed the presence of a third building west of the two remaining foundations. These three buildings are believed to have been demolished in the 1950's. All of these features are shown on Figure 4-4 (ABB-ES, 1994b).

4.2.2 Rationale and Plans for Site Screening

Facility 6001. The objectives of the site screening investigation at Facility 6001 are to: determine if chemical contaminants are present in the septic tank, locate the associated leach field, and determine if chemical contaminants are present in the adjacent soil and groundwater.

Objective: to determine the exact location and orientation of the septic tank, leach field, and associated piping, and to confirm that Building 606 had been connected to the septic tank

Methods: • review sanitary sewer system blueprints

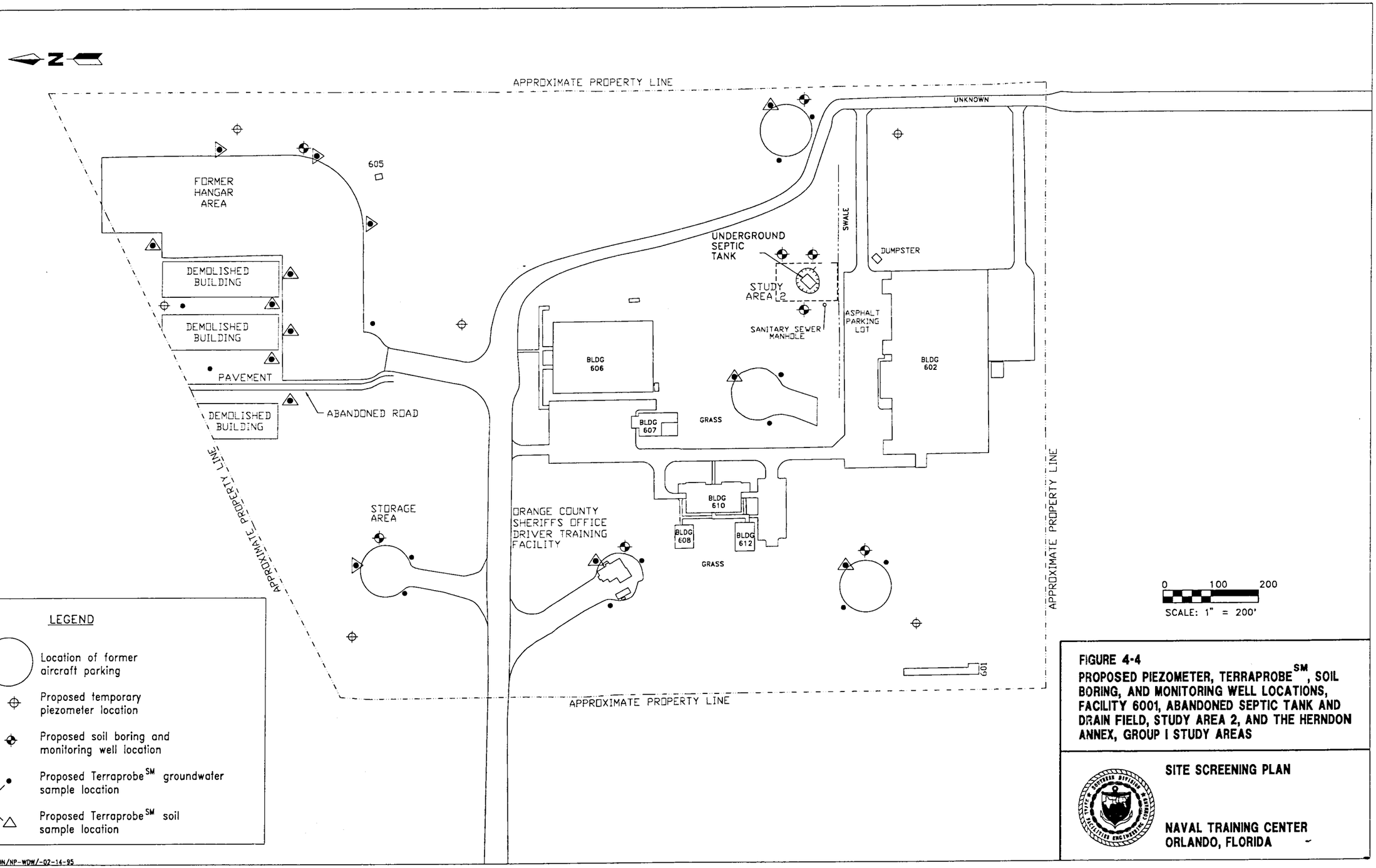

FIGURE 4-4
PROPOSED PIEZOMETER, TERRAPROBE SM, SOIL BORING, AND MONITORING WELL LOCATIONS, FACILITY 6001, ABANDONED SEPTIC TANK AND DRAIN FIELD, STUDY AREA 2, AND THE HERNDON ANNEX, GROUP I STUDY AREAS

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- use tile probe to confirm location of tank

Once the tank location has been confirmed and an access point identified, samples of the tank contents (aqueous and solid) will be collected.

Objective: to determine the presence of any chemical contaminants in the septic tank

Methods:
- wastewater sampling
- sludge sampling

One sludge and one wastewater sample will be collected from the tank and submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. The sludge sample will also be submitted for full suite Toxicity Characteristic Leachate Procedure (TCLP) analysis.

Objective: to determine if chemical contaminants are present in the soil and groundwater adjacent to the septic tank and leach field

Methods:
- piezometer installation
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Six temporary piezometers will be installed using a hand auger or hand-held power auger. Piezometers will be constructed of 1½-inch slotted PVC screen. Approximate piezometer locations are shown on Figure 4-4. After determination of the groundwater flow direction, three soil borings will be completed around the perimeter of the septic tank and leach field, with monitoring well installations in each boring. One boring will be hydraulically upgradient of the septic system, and two will be downgradient. Three soil samples (one from each boring) and three groundwater samples (one from each well) will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. One groundwater sample will also be submitted for TSS determination to aid in the evaluation of inorganic data and the effectiveness of the groundwater sampling technique.

Chlorinated solvent contamination may exist at the Herndon Annex from aircraft maintenance operations conducted by the Air Force between 1940 and 1968.

Objective: to determine if chlorinated solvents are present in the vicinity of the aircraft parking areas and the former Air Force structures

Methods:
- TerraProbe℠ subsurface soil sampling
- TerraProbe℠ groundwater sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

A TerraProbe℠ subsurface investigation will be conducted at the former aircraft parking areas and in the vicinity of the former airship landing area and associated structures. TerraProbe℠ sampling will be terminated at the water table, after collection of a groundwater sample.

Three groundwater samples and one subsurface soil sample will be collected around the perimeter of each of the five aircraft parking areas. The soil sample will be collected at the water table. Two of the groundwater samples and the soil sample will be collected hydraulically downgradient of each of the aircraft pads. The third groundwater sample will be collected from an upgradient location. Proposed locations are shown on Figure 4-4. Soil and groundwater will be screened for chlorinated solvents using a field gas chromatogram (GC). The sample from each parking area with the highest field GC concentrations will be sent to the ABB-ES Wakefield, Massachusetts, laboratory for confirmatory screening analyses via USEPA Method 8010.

Thirteen groundwater samples and 10 subsurface soil samples will be collected around the perimeter of the L-shaped area and in the vicinity of the former Air Force structures. Proposed locations are shown on Figure 4-4. Soil and groundwater will be screened for chlorinated solvents using a field GC. Up to four samples with the highest field GC concentrations will be sent to the ABB-ES Wakefield, Massachusetts, laboratory for confirmatory screening analyses via USEPA Method 8010.

Following review of TerraProbe℠ results, one soil boring will be completed adjacent to each of four aircraft parking areas and the L-shaped landing area, with a monitoring well installed in each boring. No boring or well will be installed adjacent to the aircraft parking area northwest of Study Area 2, due to the proximity of the three wells proposed for Study Area 2. Five subsurface soil samples (one from each boring) and five groundwater samples (one from each well) will be submitted for CLP TCL VOC laboratory analyses in accordance with USEPA Level IV DQOs. Proposed well locations are shown on Figure 4-4. Actual well locations will be dependent on groundwater flow direction and the results of the TerraProbe℠ investigation.

4.3 STUDY AREA 3, HAZARDOUS MATERIALS STORAGE AREA. Study Area 3 consists of a Hazardous Materials Storage Area: Buildings 73, 2816, and 2817.

4.3.1 Background and Conditions

Building 73. Building 73 is a containment facility located west of the intersection of Farragut Avenue and Dahlgren Street in the northwestern part of the Main Base (Figure 4-5). To the west is a paved area containing two quonset huts (Buildings 2816 and 2817). Building 73 is a shallow concrete secondary containment unit with an aluminum roof (15 feet by 25 feet), enclosed by a chain-link fence.

Aerial photographs reveal that the field was once virtually cleared of vegetation and developed with several buildings. Photographs from the 1960's clearly show the presence of Matador missiles on the field as well as associated vehicles and structures. The buildings had been removed by the late 1970's and the field is now grassed over with the exception of Building 73. The property has been used for its current purpose since the early 1980's.

The unit is used as a storage facility for paints, solvents, inks, dyes, stains, etc. that are used by the Office of the First Lieutenant in Building 2817. No drains were identified, nor were indications of releases or spills from stored containers observed. The concrete retention wall is intact with no cracks or

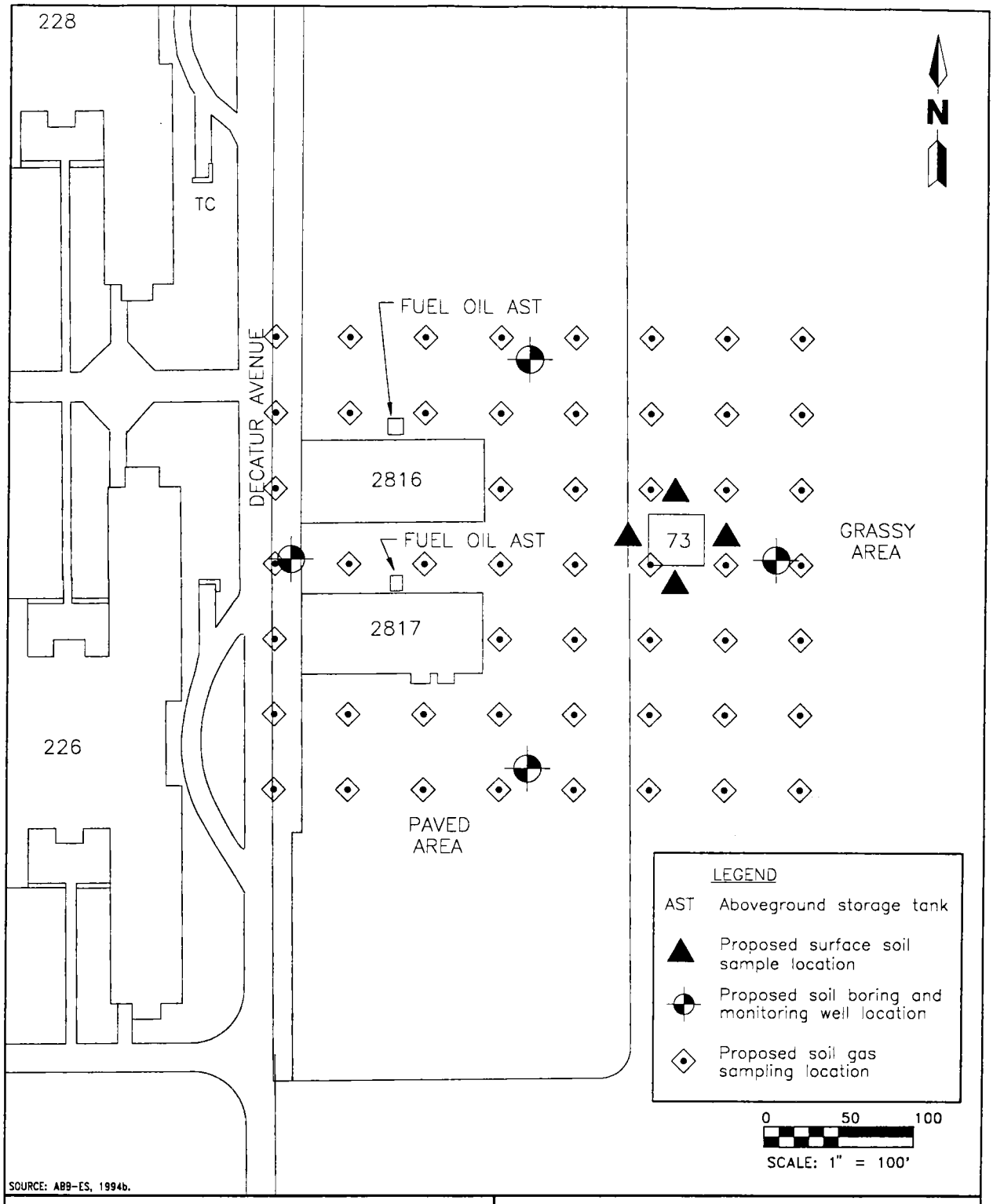

FIGURE 4-5
PROPOSED SOIL GAS SURVEY, SURFACE SOIL SAMPLE, SOIL BORING, AND MONITORING WELL LOCATIONS AT BUILDINGS 73, 2816, AND 2817, HAZARDOUS MATERIALS STORAGE AREAS, STUDY AREA 3, GROUP I STUDY AREAS
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damage evident. Facility personnel stated that a release never occurred within or from the storage unit.

Stormwater drainage flows from the site toward diversion ditches and stormwater collection drains that discharge to Lake Baldwin.

Building 2816. Building 2816 is a storage building located west of Farragut Avenue and Building 73 in the northwest part of the Main Base (Figure 4-5). The building is a quonset hut-type structure with steel-frame joints and a corrugated sheet-metal exterior, and an area of approximately 6,500 square feet. The structure was built in 1954 when the base was occupied by the Air Force. The building is one of 10 similar facilities that was used by the Missile Training Command, but its specific original function is unknown. Aerial photographs reveal that the Tactical Air Command conducted Matador missile training operations in and around the area of this building from 1961 until 1965.

Upon occupation by the Navy in 1967, the building was used for making and storing signs and nameplates. Painting booths were also located here.

In 1994, Building 2816 was renovated into a hazardous materials storage area for temporary storage of hazardous materials prior to offsite disposal by a private contractor.

A 265-gallon aboveground fuel oil storage tank is located on the north side of the building but is currently out of service. It was constructed in 1966 with asphalted steel and iron pipe. There were no visible signs of spills or leakage. It is not known if the aboveground storage tank (AST) still contains fuel oil.

Stormwater drainage flows from the site toward stormwater collection drains that discharge to Lake Baldwin (ABB-ES, 1994b).

Building 2817. Building 2817 is located west of Farragut Avenue and Building 73 in the northwest part of the Main Base (Figure 4-5). It is a 6,500-square-foot quonset hut erected in 1954 when the base was occupied by the Air Force. The building is one of 10 similar facilities that was used by the missile training Command for the maintenance, storage, and overhaul of flight simulator trainers. Aerial photographs reveal that the Tactical Air Command conducted Matador missile training operations in and around the area of this building from 1961 until 1965. Furthermore, the missiles were test fired (but not launched), causing severe topsoil erosion on adjacent property to the west.

Prior to 1984, the building was used to store out-of-commission airplanes for flight deck training. The building is currently used to house the offices and shops for the First Lieutenant, which include carpentry, electrical repair, flag making, engraving, and silk screening.

There is an AST with a 500-gallon capacity to the north of the building, which was once used to feed the boiler. The tank and visible lines and the surrounding soil appear to be in good condition. During an interview, a former base employee alleged that a septic tank was in use for much of the earlier history of these quonset huts; however, no evidence of a septic tank was apparent. The same employee also stated that solvents used in the maintenance of the flight simulators were often open-dumped in the area. An estimate of the types and quantity of solvent was not available.

Stormwater drainage flows from the site toward stormwater collection drains and from there the flow is directed eastward to Lake Baldwin (ABB-ES, 1994b).

4.3.2 Rationale and Plans for Site Screening The objectives of the site screening program at the Hazardous Materials Storage Area are to confirm the locations of the Matador missile test cells, identify associated fueling and maintenance activities, and determine what chemical contaminants, if any, are associated with current and former activities in this study area. Investigative objectives are listed below along with methods proposed to achieve them.

Objective: to confirm the locations of the Matador missile test cells and support activities and confirm the presence and location of the alleged septic tank

Methods:
- aerial photograph evaluation
- sanitary sewer system blueprint review
- background information review

The initial review of aerial photographs clearly indicated the former locations of the missile test cells in the area west of Study Area 3 near the alleged South Grinder Landfill. All fueling activities are also believed to have occurred west of Study Area 3. The impact of Matador missile activities will be investigated during the planned RI/FS for the Grinder Landfill.

Sanitary sewer blueprints and other background information will be reviewed to determine if a septic system was once used in the area and, if so, determine the approximate location. The results of this investigation will be considered when locating the passive soil gas points and the proposed monitoring wells at Study Area 3 (see below).

Another objective of screening activities in this area is to evaluate the potential contamination associated with materials stored in Buildings 73, 2816, and 2817 and associated activities. Proposed sample locations are shown on Figure 4-5, with final locations to be determined in the field.

Objective: to determine what chemical contaminants are associated with the Hazardous Materials Storage Area

Methods:
- passive soil gas survey
- subsurface soil sampling
- surface soil sampling
- monitoring well installation
- groundwater sampling

A passive soil gas survey will be conducted to identify any areas with elevated concentrations of VOCs in the subsurface soil and to focus the investigation for confirmatory soil and groundwater sampling. Soil gas sampling locations will be established on a 50-foot sampling grid. Proposed sample locations are shown on Figure 4-5.

Four surface soil samples will be collected to evaluate allegations of solvent disposal. Actual locations will be established after review of aerial photographs, background information, and the results of the soil gas survey.

Samples will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

Three soil borings will be completed around the perimeter of the study area, with monitoring well installations in each boring. After determination of groundwater flow direction, a fourth boring and well will be installed hydraulically downgradient of the study area. Representative boring and well locations are shown on Figure 4-5. Actual locations will be determined after further records review, completion of the soil gas survey, and determination of groundwater flow direction. Four subsurface soil samples (one from each boring) and four groundwater samples (one from each well) will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. One groundwater sample will also be submitted for TSS determination to aid in the evaluation of inorganic data and the effectiveness of the groundwater sampling technique.

4.4 STUDY AREA 4, RUSK MEMORIAL CHAPEL AND ANNEX. Study Area 4 consists of the Rusk Memorial Chapel (Building 250) and Annex (Building 251).

4.4.1 Background and Conditions The Rusk Memorial Chapel (Building 250) and Annex (Building 251) are located at the corner of Farragut Avenue and Blue Ridge Street in the northwest part of the Main Base (Figure 1-3). An aerial photograph from 1965 reveals the property was undeveloped prior to the construction of the Rusk Memorial Chapel and Annex in 1969. The Recruit Training Center of NTC, Orlando has used Building 250 for religious educational programs and church services since it was built. The Annex is used for offices and classrooms and is joined to the chapel by a covered walkway (Building 8). Building 250 is an 18,200-square-foot building constructed of concrete masonry unit walls, with some areas having brick siding, and a steep pitched roof. Building 251 is a 3,978-square-foot building constructed of cinder-block walls with brick siding and a flat tar-and-gravel roof.

An uncovered mechanical room is located between Buildings 250 and 251. The room contains two air conditioning units and a transformer set on concrete pads. The area around the pads is covered in crushed stone. Soil staining was observed on the concrete pads and the crushed stone in the vicinity of the air conditioners.

There is a diesel fuel underground storage tank (UST) with a 2,500-gallon capacity on the property that is currently in service. A 500-gallon capacity AST containing propane is also located on the property, but is associated with Building 245.

A review of the NTC, Orlando file material revealed that a spill of an unknown quantity of a fluid containing PCBs occurred in the mid 1980's from a transformer located in the uncovered mechanical room between Buildings 250 and 251 (Figure 4-6). Reportedly, cleanup procedures were conducted that reduced the PCB contaminant level in the soil to approximately 68 parts per million (ppm). The specific cleanup procedures are currently unknown, as is the exact location of the impacted area (ABB-ES, 1994b).

4.4.2 Rationale and Plans for Site Screening The objectives of the site screening program at Study Area 4 are to evaluate cleanup activities conducted in the mid-1980's at the location of a transformer leak near Building 250, and

determine what chemical contaminants, if any, remain at the transformer site following remedial activities. Investigative objectives are listed below along with methods proposed to achieve them.

Objective: to determine what specific remedial activities were completed by the Department of Public Works following the transformer leak in the mid-1980's

Methods: • background information review

All available information concerning the response actions (including soil removal, sampling, and analyses) will be reviewed to better define the spill location. Additional soil samples will be collected to confirm the location of the release and quantify the level of PCBs remaining in the soil.

Objective: to evaluate the effectiveness of the previous remedial activities and to characterize the potential residual chemical contamination

Methods: • subsurface soil sampling
• field screening analyses (PCBs)

A soil boring will be advanced on each side of the concrete transformer pad using a hand auger or a hand-held power auger to a maximum depth of 5 feet. Proposed sample locations are shown on Figure 4-6, with final locations to be determined by further records review and field conditions. Soil samples will be collected at 1-foot-depth intervals and screened for PCBs by immunoassay in accordance with USEPA Method 4020. An estimated 20 samples will be field screened.

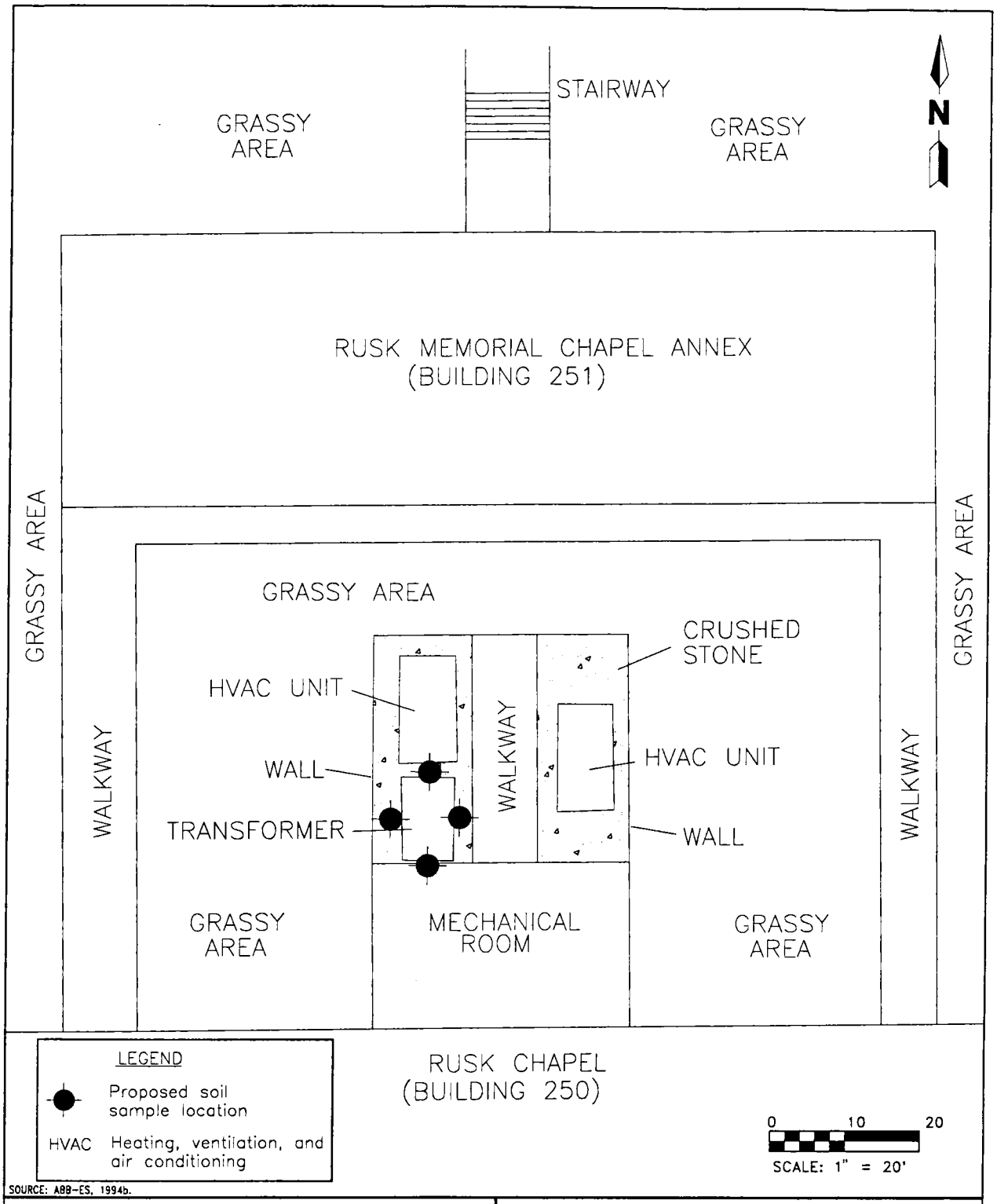
Soil will be screened qualitatively, using test kits calibrated for detection of 1 ppm total PCBs. Soil samples that exceed 1 ppm PCBs will then be screened using test kits calibrated for detection of 10 ppm PCBs. Once a soil sample from a boring location exceeds 10 ppm PCBs, the boring will be terminated and a new boring will be begun on an adjacent side of the transformer pad. After the four sides of the pad have been investigated in this manner, additional soil samples will be collected from the borings where soil conditions exceeded 10 ppm PCBs. At this stage, the test kits will be used semi-quantitatively, with the highest PCB levels at each location identified based on test kit photometer readings.

Up to four samples with the highest PCB field screening results will be submitted for laboratory analyses for constituents associated with transformer oils. These include TPHs and CLP SVOCs and PCBs and TAL inorganics in accordance with USEPA Level IV DQOs.

The investigations described above are designed to locate the presence and depth of soil contaminated by the reported release of transformer fluid. This information will be used to determine the need for and the scope of any removal actions.

4.5 STUDY AREA 5, BUILDING UNF-13. Study Area 5 consists of the area once occupied by Building S-2604, the former motorboat rental and maintenance facility.

4.5.1 Background and Conditions. The property identified as UNF-13 is an approximately 2-acre grassy area bounded by stormwater outfalls to the north and



SOURCE: ABB-ES, 1994b.

FIGURE 4-6
PROPOSED SOIL SAMPLE LOCATIONS AT BUILDINGS 250 AND 251, RUSK MEMORIAL CHAPEL, STUDY AREA 4, GROUP I STUDY AREAS

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south, Lake Baldwin to the east, and Leahy Avenue to the west (Figure 4-7). An aerial photographic and charting services control station is also located at the southern end of the property.Aerial photographs and retired personnel reports reveal that a motorboat rental and maintenance facility (Building S-2604) was located at the site from 1962 to 1983. A 1964 Air Force sewer map shows a 1,500-gallon septic tank and leach field that was associated with this building. Based on aerial photographs dated 1981 through 1984, the building was demolished in the early 1980's, but the status of the septic tank is unknown.

The UNF-13 property serves as a recreational area for Lake Baldwin. The land is level, grass-covered, and contains some picnic tables and ornamental trees. Boat dock 2605 extends over Lake Baldwin to the northeast (ABB-ES, 1994b).

4.5.2 Rationale and Plans for Site Screening

UNF-13. The objectives of the site screening program at UNF-13 are to confirm the presence and location of the former motorboat rental and maintenance facility and the septic tank and leach field, and determine what chemical contaminants, if any, are associated with the former motorboat facility and septic system. Investigative objectives are listed below along with methods proposed to achieve them. Proposed sampling locations and survey areas are shown on Figures 4-7 and 4-8, with final locations to be determined in the field.

Objective: to confirm the presence and location of former buildings and septic systems

Methods:
- aerial photograph evaluation
- geophysical surveys (magnetometer, GPR, and TC)

More detailed evaluation of the aerial photographs should identify the target areas for geophysical surveys. The surveys should delineate any subsurface features (septic tank, distribution boxes, etc.) or groundwater contaminant plumes associated with the septic system. The geophysical surveys will be conducted in two phases: a magnetometer and TC survey consisting of readings at stations established every 10 feet in the target areas and a followup GPR survey with transect lines also spaced on a 10-foot grid. An estimated 40 east to west transects and 25 north to south transects will be used for the geophysical survey. A GPS survey of key transect lines, magnetic anomalies, and other relevant features will be conducted so that geophysical survey areas may be mapped. Upon delineating subsurface anomalies, sampling and analytical activities will be completed in target areas.

Objective: to determine what chemical contaminants may be associated with the motorboat facility and septic system

Methods:
- passive soil gas survey
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

A passive soil gas survey will be conducted to identify any areas with elevated concentrations of VOCs in the subsurface and to focus the investigation for confirmatory soil and groundwater sampling. Soil gas sampling points will coincide with magnetometer and TC stations, although sampling will be conducted

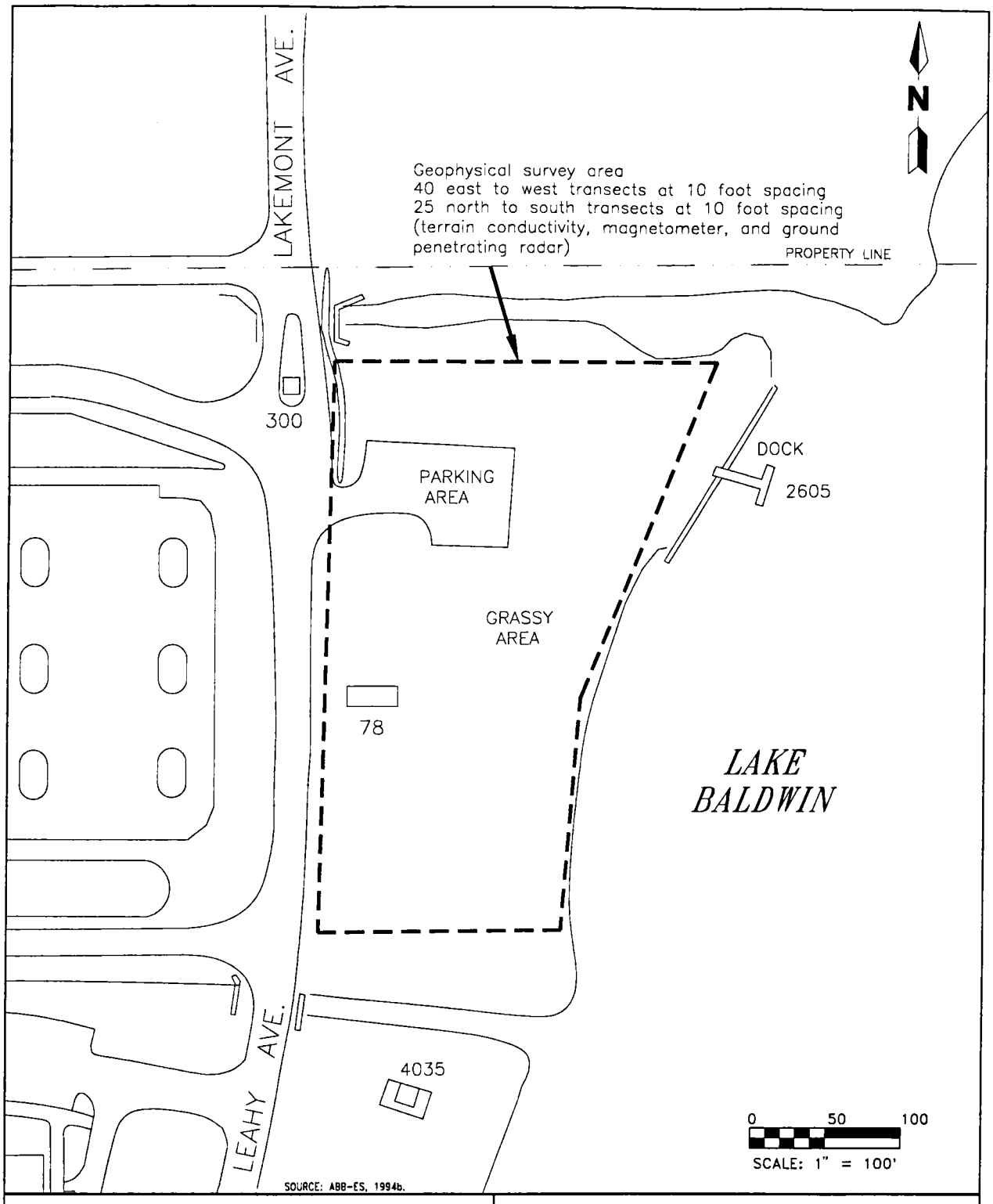

FIGURE 4-7
PROPOSED GEOPHYSICAL SURVEY AREA AT UNF-13, FORMER MOTORBOAT RENTAL AND MAINTENANCE AREA, STUDY AREA 5, GROUP I STUDY AREAS
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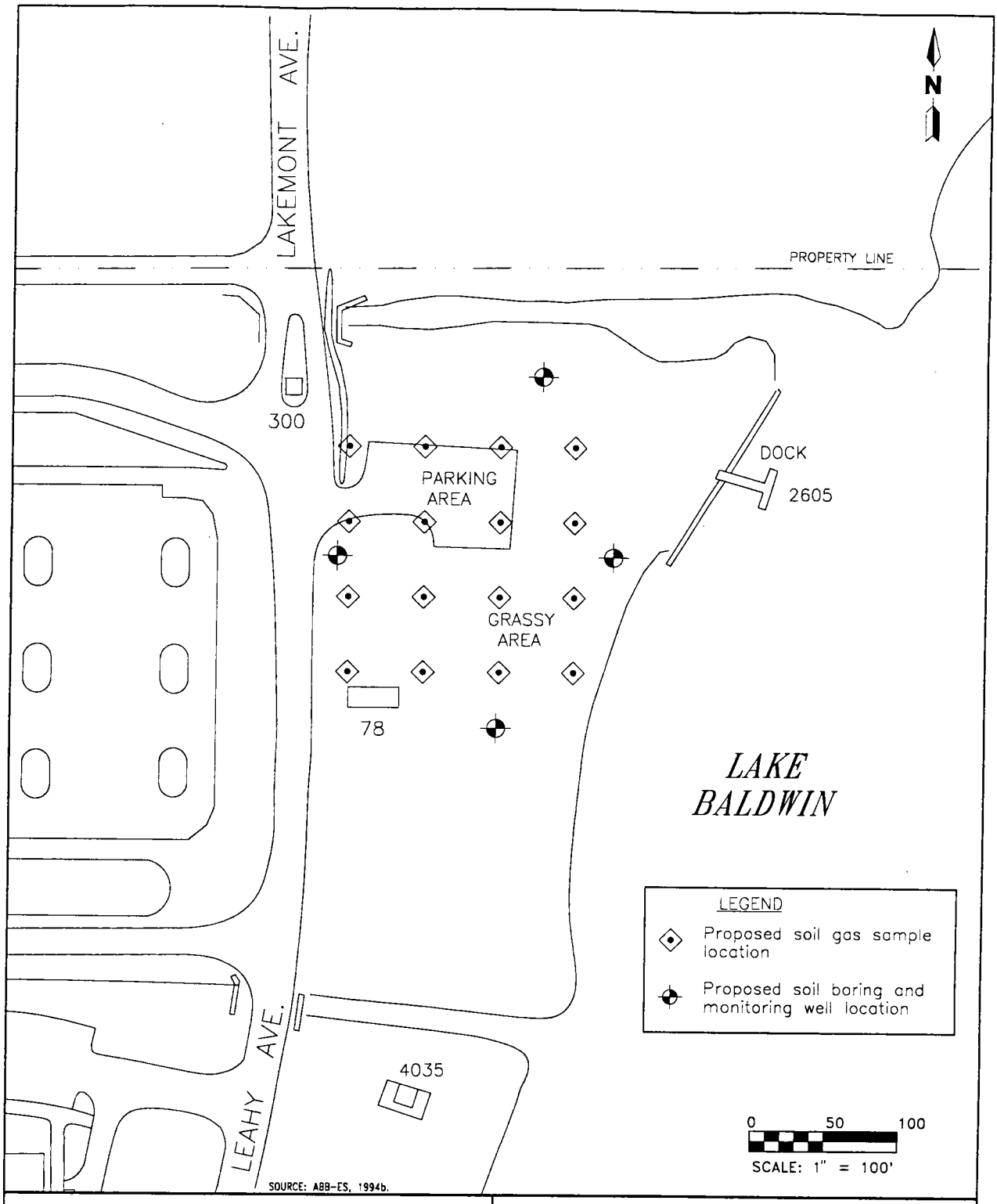

FIGURE 4-8
PROPOSED SOIL GAS SURVEY, SOIL BORING, AND MONITORING WELL LOCATIONS AT UNF-13, FORMER MOTORBOAT RENTAL AND MAINTENANCE AREA,STUDT AREA 5, GROUP I STUDY AREAS
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on a 50-foot spacing interval in target areas as identified by geophysical methods.

Three soil borings will be completed around the perimeter of the targeted area (based on the results of the geophysical and soil gas surveys), with monitoring well installations in each boring. After determination of groundwater flow direction, a fourth boring and well will be installed hydraulically downgradient of the study area. Representative boring and well locations are shown on Figure 4-8. Actual locations will be determined after further records review, completion of the soil gas survey, and determination of groundwater flow direction. Four soil samples (one from each boring) and four groundwater samples (one from each well) will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. One groundwater sample will also be submitted for TSS determination to aid in the evaluation of inorganic data and the effectiveness of the groundwater sampling technique.

4.6 STUDY AREA 6, LAKE BALDWIN.

4.6.1 Background and Conditions Lake Baldwin is a 196-acre, circular, freshwater lake, located almost entirely within the Main Base (Figure 4-9). The City of Winter Park's Bicentennial Park occupies the northwest bank. The lake is a Class III surface water used for recreational boating and fishing. The lake is classified as lacustrine, limnetic, unconsolidated bottom, and permanently flooded (Cowardin and others, 1979). Numerous outfalls and stormwater drainage ditches discharge to the lake. The overflow outfall is located on the eastern side of the lake. The overflow eventually flows to the Little Econolockhatchee River. A natural area with mature cypress trees and native vegetation is located along the eastern shore. Lake Baldwin's maximum depth is 25 feet, with an average depth of 14 feet. The bottom of the lake has little vegetation, and is covered with a layer of sludge and silt. Native birds such as seagulls, egrets, and herons can be observed at the lake.

Lake Baldwin historically had rich underwater aquatic vegetation. An attempt to control the weeds, mainly hydrilla, was made in the early 1970's by applying an herbicide (Hydout). In 1975, through the University of Florida, 2,000 weed-eating grass carp (white arnut) were released to the lake. The carp were effective in eradicating the Hydrilla to the point that virtually no vegetation remains.

During the 1950's through 1968, an Air Force photographic laboratory reportedly disposed of its spent solutions into the storm sewer that flowed into Lake Baldwin on the southwest shore. Numerous hazardous chemicals including silver and cyanide are suspected to have been released into the lake. Sampling conducted during the verification study (Geraghty & Miller, 1986) found levels of phenols and the pesticide alpha-benzene hexachloride (BHC) at the detection limit in the surface water. Two sediment samples were submitted for Extraction Procedure (EP) toxicity metals and cyanide analyses. Sediment results were below detection limits for these inorganics.

The Air Force maintained a skeet shooting range on the north shore of Lake Baldwin at the location of the current hospital helipad (Building 504). Based on review of aerial photographs and Air Force records, the range was in use from at least 1964 through 1978. All firing was in a southwesterly direction over Lake Baldwin (ABB-ES, 1994b).

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PROPERTY LINE

ALLEGED FORMER SKEET RANGE

PROPERTY LINE

UNF-13

BLDG. 4045

FIREFIGHTER TRAINING RUNOFF

LAKE BALDWIN

LAKE OVERFLOW

ALLEGED FORMER PHOTOCHEMICAL DISCHARGE AREA

EXISTING BOAT RAMP

FORMER PESTICIDE BUILDING

LEGEND

Proposed surface water sample location

Proposed sediment sample location

SOURCE: ABB-ES, 1944b.

0 250 500

SCALE: 1" = 500'

FIGURE 4-9
PROPOSED SURFACE WATER AND SEDIMENT SAMPLE LOCATIONS AT LAKE BALDWIN, STUDY AREA 6, GROUP I STUDY AREAS

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During a visit to the Main Base by ABB-ES personnel in March 1994, a sorbent boom was observed stretched across an outfall to Lake Baldwin on the western shore, south of Building 4045. This boom was allegedly in place to collect petroleum discharged with stormwater runoff from the firefighter training facility (Building 200). At the time of the visit, the boom was clean and no evidence of petroleum was observed in the vicinity.

4.6.2 Rationale and Plans for Site Screening The objective of the site screening program at Lake Baldwin is to identify the presence of chemical contaminants, if any, in the lake sediment and surface water. If evidence of drum disposal (currently anecdotal) is found in Lake Susannah (via a marine magnetometer survey), a marine magnetometer survey will also be conducted in Lake Baldwin. Investigative objectives are listed below along with methods proposed to achieve them. Proposed sampling locations and survey areas are shown on Figure 4-9, with final locations to be determined in the field.

Objective: to determine the presence of metallic debris within the lake (if necessary)

Method: • marine magnetometer survey

Reports exist of the disposal of an unknown number of drums in Lake Susannah (Study Area 7), but not in Lake Baldwin. These reports will be investigated via a marine magnetometer survey of Lake Susannah. If drum disposal is confirmed for Lake Susannah, the possibility of drum disposal in Lake Baldwin also exists. If so, a marine magnetometer survey of Lake Baldwin will then be conducted by towing a magnetometer across the lake by boat. Parallel transect lines will be completed across the lake at 25-foot spacings, with readings taken at 25-foot intervals. Transect lines will be established through the use of a GPS. The results of the magnetometer survey will be used to focus field sampling activities.

Objective: to identify chemical contaminants that may have been introduced to the lake from various sources

Methods: • surface water sampling
• sediment sampling

A total of 27 sediment and 9 surface water samples will be collected in Lake Baldwin. Proposed sampling locations are shown on Figure 4-9, with final sample locations to be determined in the field. Sediment samples will be collected in clusters of three at the following six locations: the former photochemical discharge location, the stormwater discharge point from the firefighter training facility, adjacent to the former motorboat rental and maintenance area (UNF-13), the lake outfall on the eastern edge, opposite the former pesticide building (UNF-14) on the southeastern shore, and the current motorboat rental area on the southern shore of the lake. One sediment sample (in each cluster of three) will be collected near-shore, close to the potential source, and the remaining two will be collected farther out in the lake along a transect roughly perpendicular to the shore at the potential source. These two samples will be collected from the upper layer of unconsolidated organic material on the lake bottom. One surface water sample will be collected in the vicinity of each sediment cluster, approximately 1 foot above the lake bottom.

Five sediment samples and one surface water sample will be collected from the area off shore (southwest) of the helipad (former skeet range). Two sediment samples will be collected along an arc at a distance of 200 feet from the helipad, and three sediment samples will be collected along an arc at a distance of 400 feet from the helipad (Figure 4-9).

The remaining four sediment samples and two surface water samples will be collected in the vicinity of anomalies detected by the marine magnetometer survey. If no survey is conducted, or if no anomalies are detected, these samples will be collected from locations equally spaced around the center of the lake.

Sediment and surface water samples will be analyzed for full suite CLP TCL and TAL, herbicides, and cyanide in accordance with USEPA Level IV DQOs. All sediment samples will also be submitted for total organic carbon (TOC) analyses and all surface water samples will also be submitted for total dissolved solids (TDS), TSS, alkalinity, and hardness analyses. These surface water and sediment parameters are necessary for evaluation of the ecological condition of the lake. Sediment and water from the firefighter training outfall, UNF-13, and the current motorboat rental area will also be analyzed for TPH.

4.7 STUDY AREA 7, LAKE SUSANNAH.

4.7.1 Background and Conditions Lake Susannah is a naturally formed freshwater lake located on the southeast part of the Main Base (Figure 4-10). Approximately 75 acres in size, the lake is used by military personnel and the public for recreational uses including fishing, sailing, and water skiing. The north and west shores abut the Main Base with 60 of the 75 acres owned by the government. The southern part of Lake Susannah is not owned by the government and has private residential houses adjoining it. The lake receives stormwater run-off from much of the southern end of the Main Base, and is not far from the motor pool, automotive hobby shop, and pest control buildings. A dam (Structure 4039) is located in the northeast corner of the lake and serves to control lake overflow. Comprised of ditches, weirs, and gates, the dam directs lake overflow to a channel that circles the adjacent golf course. Since the early 1970's, the lake has had chemical treatment for aquatic weed control (ABB-ES, 1994b).

At one time, drums were allegedly dumped into Lake Susannah (ABB-ES, 1994c).

4.7.2 Rationale and Plans for Site Screening The objectives of the site screening program at Lake Susannah are to determine if metallic debris is present in the lake and to identify the presence of chemical contaminants, if any, in the lake sediment and surface water. Investigative objectives are listed below along with methods proposed to achieve them. Proposed sampling and survey areas are shown on Figure 4-10, with final locations to be determined in the field.

Objective: to determine the presence of metallic debris within the lake

Method: • marine magnetometer survey

A marine magnetometer survey of Lake Susannah will be conducted by towing a magnetometer across the lake by boat. Parallel transect lines will be completed across the lake at 25-foot spacings, with readings taken at 25-foot intervals. Transect lines will be established through the use of GPS. The results of the

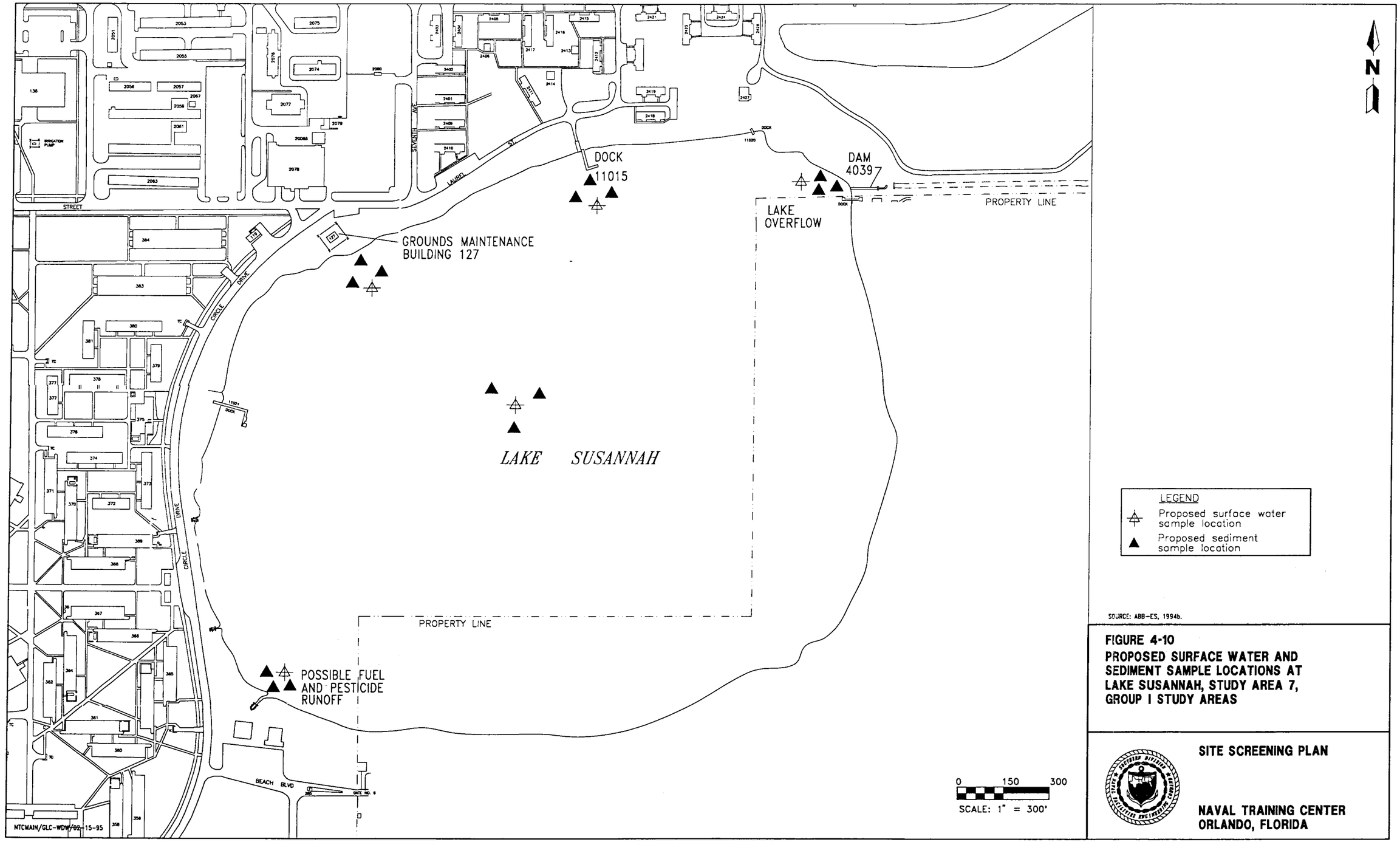

FIGURE 4-10
PROPOSED SURFACE WATER AND SEDIMENT SAMPLE LOCATIONS AT LAKE SUSANNAH, STUDY AREA 7, GROUP I STUDY AREAS

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geophysical survey may be used to focus the sampling investigation in this study area.

Objective: to identify chemical contaminants that may have been introduced to the lake from various sources

Methods:
- surface water sampling
- sediment sampling

A total of 15 sediment and 5 surface water samples will be collected in Lake Susannah. Sediment samples will be collected in clusters of three at the following four locations: the outfall on the southwest corner of the lake that receives runoff from the Automobile Hobby Shop (Buildings 129 and 131), the Pest Control Building (Building 139), and Bulk Fuel Storage (Building 2273); opposite the Grounds Maintenance Building (Building 127); Dock 11015; and Dam 4039 in the northeast corner of the lake. The samples in each cluster will be collected along a traverse roughly perpendicular to the potential source areas described above. One surface water sample will be collected in the vicinity of each sediment cluster, approximately 1 foot above the lake bottom.

The remaining three sediment samples and one surface water sample will be collected in the vicinity of anomalies detected by the marine magnetometer survey. If no anomalies are detected, these samples will be collected from locations equally spaced around the center of the lake.

Sediment and surface water samples will be analyzed for full suite CLP TCL and TAL herbicides, and cyanide in accordance with USEPA Level IV DQOs. All sediment samples will also be submitted for TOC analyses and all surface water samples will also be submitted for TDS, TSS, alkalinity, and hardness determinations. Sediment and water samples from the stormwater outfall, Building 127, and Dock 11015 will also be analyzed for TPH.

4.8 STUDY AREA 8, GOLF COURSE AREA. Study Area 8 consists of the Greens Keeper Storage Area (Building 2134 and nearby storage facilities) and the Old Wastewater Treatment Plant (WWTP) lagoons (UNF-15).

4.8.1 Background and Conditions

Building 2134 and Vicinity. This 800-square-foot building was built in 1943 and is located on Trident Lane, at the southern end of the golf course, east of Lake Baldwin (Figure 1-3). The building is currently used for storage and routine maintenance of golf course greens keeper's equipment. Prior to construction of the golf course, the building was used for storage of undetermined materials.

There are several storage facilities located near Building 2134, along the cul-de-sac at the end of Trident Lane (Figure 4-11). These facilities include a small shed containing acrylic latex paint and athletic field chalk, two aluminum mobile structures used for storage of pesticides and paints, two herbicide storage lockers, two metal storage lockers containing gas cans and motor oil, one steel building for general storage, and a roof-covered concrete slab enclosure for equipment and seed storage. During the EBS petroleum and pesticide odors were noted around Building 2134 and some of the storage facilities and oil stains were

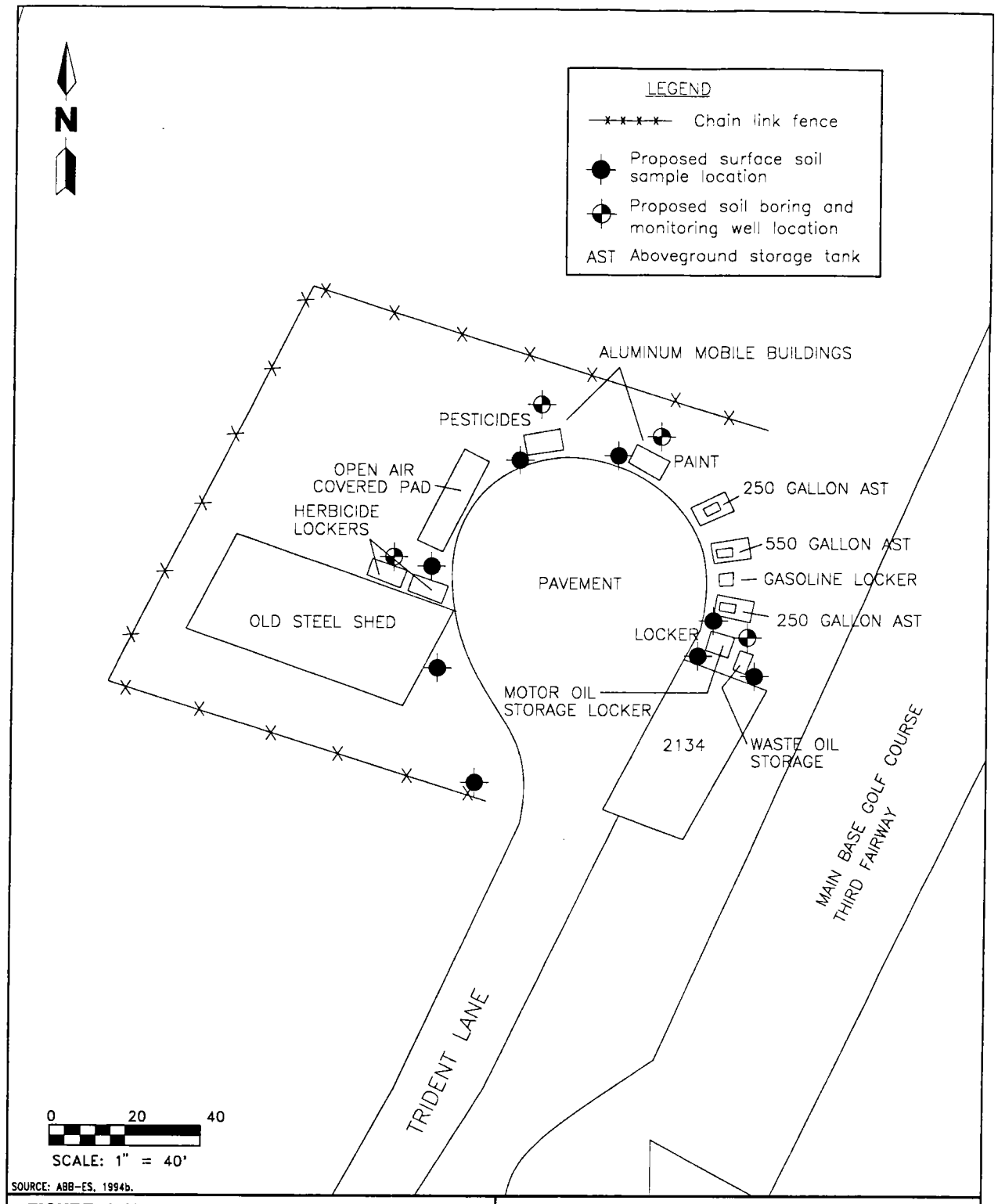

FIGURE 4-11
PROPOSED SURFACE SOIL, SOIL BORING, AND MONITORING WELL LOCATIONS AT BUILDING 2134, GREENS KEEPER STORAGE AREA, STUDY AREA 8, GROUP I STUDY AREAS
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noted on the floor and walls of Building 2134 and around a small motor oil storage pad. Stressed vegetation was noted around the old steel storage building, reportedly from herbicide application and runoff from equipment rinsing.

There are currently two ASTs located along the cul-de-sac: a 550-gallon diesel tank and a 250-gallon unleaded gasoline tank. Both tanks have concrete secondary containment structures. A 200-gallon diesel AST has been removed from service in this area (ABB-ES, 1994b).

Former WWTP Lagoons (UNF-15). A WWTP operated on the golf course in the vicinity of the current 12th and 13th holes from the 1940's to 1976 (Figure 4-12). The 200,000-gallon per day (gpd) plant used two wastewater evaporation and percolation lagoons during operation. The WWTP served the hospital area. In 1977 and 1978, the WWTP was demolished and the lagoons were reportedly filled with sludge from the WWTP along with yard wastes, empty unmarked 1-gallon containers, building demolition debris, and a large stainless steel mixing tank from the Air Force Photographic Squadron. The estimated fill quantity is 18,000 cubic yards (ABB-ES, 1994b). The filled areas have since been landscaped during the construction of the golf course.

4.8.2 Rationale and Plans for Site Screening The objectives of the site screening program at the Golf Course Area are to confirm the presence and location of the former WWTP lagoons, and to evaluate the possible presence of chemical contaminants as the result of pesticide and herbicide disposal and activities at the Greens Keeper Storage Area and the WWTP. Investigative objectives are listed below along with methods proposed to achieve them. Proposed sampling locations and survey areas are shown on Figures 4-11, 4-12, and Figure 4-13 with final locations to be determined in the field.

BUILDING 2134

Objective: to identify chemical contaminants that may have resulted from spills or disposal of residues from oils or hazardous materials used in golf course maintenance activities

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Eight surface soil samples will be collected using a hand auger from locations around Building 2134 and the nearby storage facilities. Samples will be collected preferentially from stained areas or areas of stressed vegetation. Four soil borings will be completed among the storage facilities, with monitoring well installations in each boring. One boring will be located adjacent to each of the following: the herbicide storage locker, the pesticide storage area, the paint storage area, and the motor oil storage locker. Eight surface soil samples, four subsurface soil samples (one from each boring), and four groundwater samples (one from each well) will be submitted for full suite CLP TCL and TAL and herbicide laboratory analyses in accordance with USEPA Level IV DQOs. One groundwater sample will also be submitted for TSS determination to aid in the evaluation of inorganic data and the effectiveness of the groundwater sampling technique.

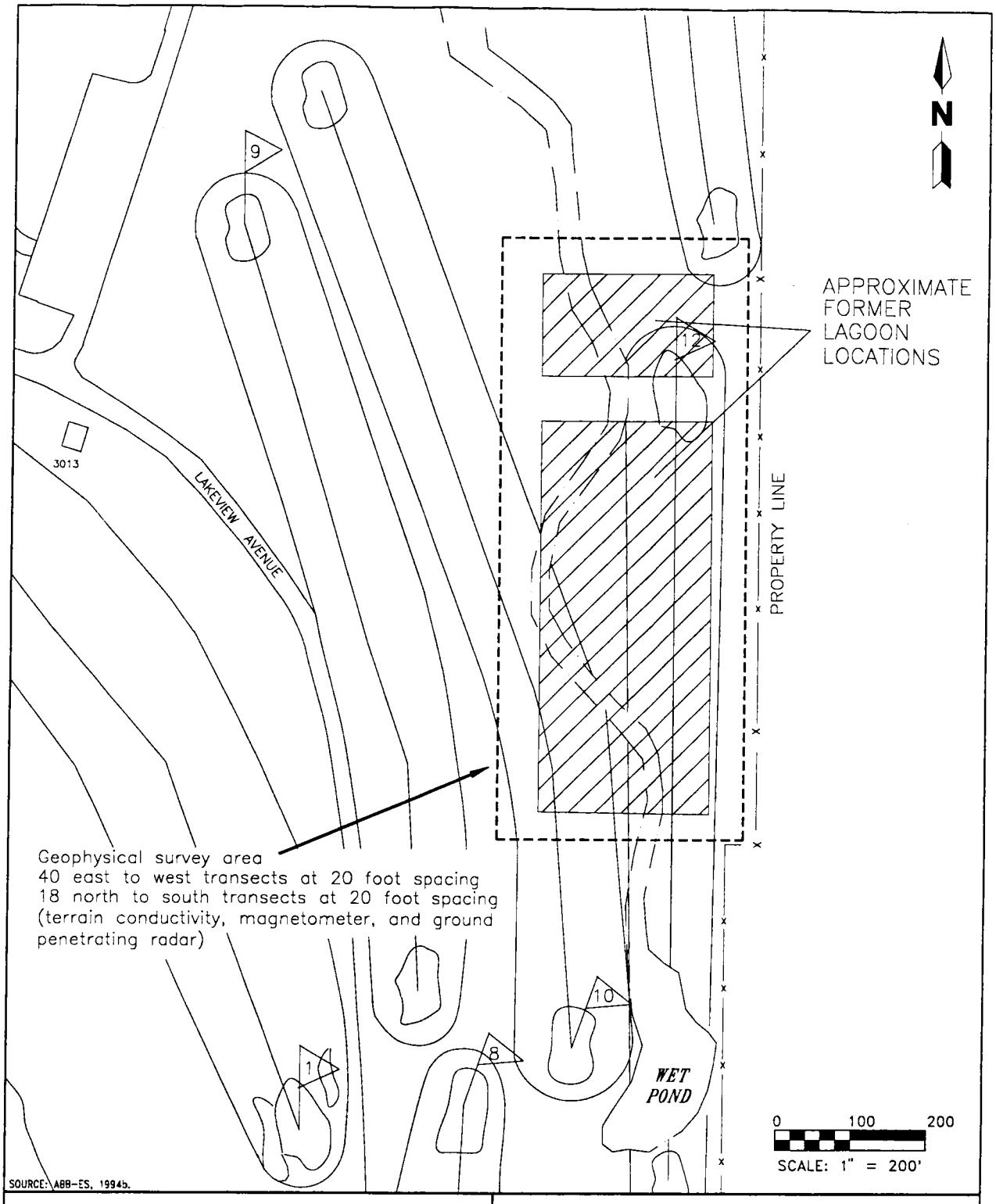

FIGURE 4-12
PROPOSED GEOPHYSICAL SURVEY AREA AT UNF-15, FORMER WASTEWATER TREATMENT PLANT LAGOONS, STUDY AREA 8, GROUP I STUDY AREAS
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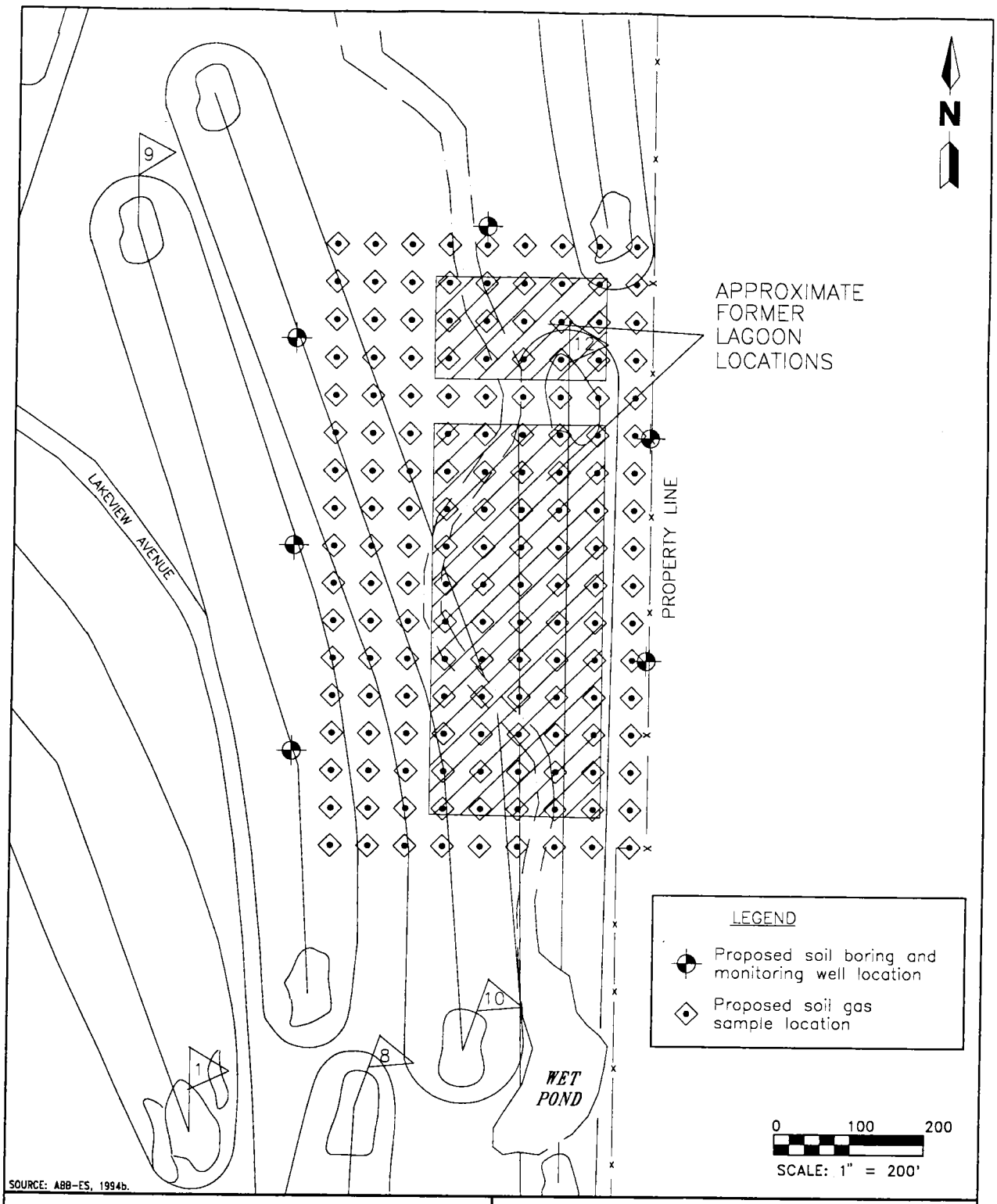

FIGURE 4-13
PROPOSED SOIL GAS SURVEY, SOIL BORING, AND MONITORING WELL LOCATIONS AT UNF-15, FORMER WASTEWATER TREATMENT PLANT LOGOONS, STUDY AREA 8, GROUP I STUDY AREAS
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Former WWTP Lagoons

Objective: to confirm the locations of the former WWTP lagoons

Methods:
- aerial photograph survey
- geophysical surveys (magnetometer, TC, and GPR)

More detailed evaluation of the photographs should identify the target areas for geophysical surveys. The geophysical surveys will be conducted in two phases: a magnetometer and TC survey consisting of readings at stations established every 20 feet in the target area and a follow up GPR survey with transect lines also spaced in a 20-foot grid. The GPR survey will include readings in both directions along the transect lines. An estimated 40 east to west transects and 18 north to south transects will be used to evaluate the assumed 800 feet by 350 feet study area for the geophysical survey. A GPS survey of key transect lines, magnetic anomalies, and other relevant features will be conducted so that geophysical survey areas may be mapped. Upon delineating subsurface anomalies, sampling and analytical activities will be completed in target areas.

Objective: to identify chemical and radiological contaminants that may be associated with the former WWTP lagoons

Methods:
- passive soil gas survey
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Upon delineating the former lagoons, a passive soil gas survey will be conducted to identify any areas with elevated concentrations of VOCs in the subsurface soil and to focus the investigation to a smaller area for confirmatory soil and groundwater sampling. Soil gas sampling locations will be established to coincide with magnetometer and TC stations, although a 50-foot sampling grid is proposed for the soil gas survey.

Three soil borings will be completed around the perimeter of the targeted area (based on the results of the geophysical and soil gas surveys), with monitoring well installations in each boring. After determination of groundwater flow direction, three additional borings and wells will be installed hydraulically downgradient of the study area. Representative boring and well locations are shown on Figure 4-13. Actual locations will be determined after further records review, completion of the soil gas survey, and determination of groundwater flow direction. Six soil samples (one from each boring) and six groundwater samples (one from each well) will be submitted for full suite CLP TCL and TAL and herbicide laboratory analyses in accordance with USEPA Level IV DQOs. Because the verification study (Geraghty & Miller, 1986) identified elevated radionuclides in groundwater near two landfills that allegedly received medical waste, groundwater samples from the vicinity of the former hospital WWTP lagoons will be submitted for gross alpha, gross beta, and gamma radiation scans. One groundwater sample will also be submitted for TSS determination to aid in the evaluation of inorganic data and the effectiveness of the groundwater sampling technique.

4.9 STUDY AREA 9, FORMER PESTICIDE AND HERBICIDE STORAGE BUILDING (UNF-14).

Study Area 9 consists of the former pesticide and herbicide storage building (UNF-14).

4.9.1 Background and Conditions Facility UNF-14 is a former pesticide and herbicide storage building that was located on the golf course on Trident Lane near the southeastern shore of Lake Baldwin (Figures 1-3 and 4-14). The U.S. Air Force used the building from the early 1950's to 1969, and the U.S. Navy used it from 1969 to 1972. The building was demolished in 1981, but records do not reveal its use from 1972 to 1981. The 480-square-foot building was a concrete-block structure with a wood-framed roof.

Facility UNF-14 was used to store and mix pesticides and herbicides and to clean all application equipment for all pest control activities at the Main Base. Reportedly, operations consisted of mixing the pesticides and herbicides in containers on the ground. During these operations, spills are likely to have occurred. Estimated quantities of spilled material are reported to be 1,000 to 4,000 gallons. In addition, rinse water used to clean application equipment and empty containers was discharged to a drain inside the building that was connected to a gravel sump. Typical annual quantities of pesticides and herbicides used (based on 1970 data) included approximately 62,000 gallons of liquid material and 43,000 pounds of dry material. Chemicals reportedly used included Baygon, Diazinon, Chlordane, Dieldrin, Malathion, 2,4-D, anticoagulants, mineral oils, arsenic, Pyrethrum, Paraquat, Kepone, Endothall, Diuron, Naled, Monuron, Dchlorvos, Hydrothol, and Dimethoate.

Reportedly, approximately 300 gallons of pesticides and herbicides were in the building when it was demolished in 1981. Three monitoring wells were installed around the building during the verification study conducted by Geraghty & Miller in 1986. Analytical results for groundwater samples from these wells indicated the presence of ethylbenzene, phenol, 2-chlorophenol, 2,4-dichlorophenol, and Chlordane in the northernmost well (ABB-ES, 1994b).

4.9.2 Rationale and Plans for Site Screening The objectives of the site screening program at UNF-14 (Initial Assessment Study [IAS] Site 8) are to confirm the location of the former pesticide and herbicide storage building, specifically the location of a gravel-filled sump, and to evaluate the possible presence of chemical contaminants as the result of disposal of pesticide and herbicide residues. Investigative objectives are listed below along with methods proposed to achieve them. Proposed sample and survey locations are shown on Figures 4-14 and 4-15, with final sample locations to be determined in the field.

Objective: to confirm the location of the former building (specifically the sump structure) and, possibly, the presence of a groundwater contaminant plume

Methods:
- aerial photograph evaluation
- geophysical surveys (magnetometer, GPR, and TC)

Following review of the available aerial photographs, geophysical survey techniques will be used to locate the former building foundation, specifically the gravel-filled sump structure, and possibly to delineate any groundwater plume emanating from this source. The geophysical surveys will be conducted in two phases: a magnetometer and TC survey consisting of readings at stations

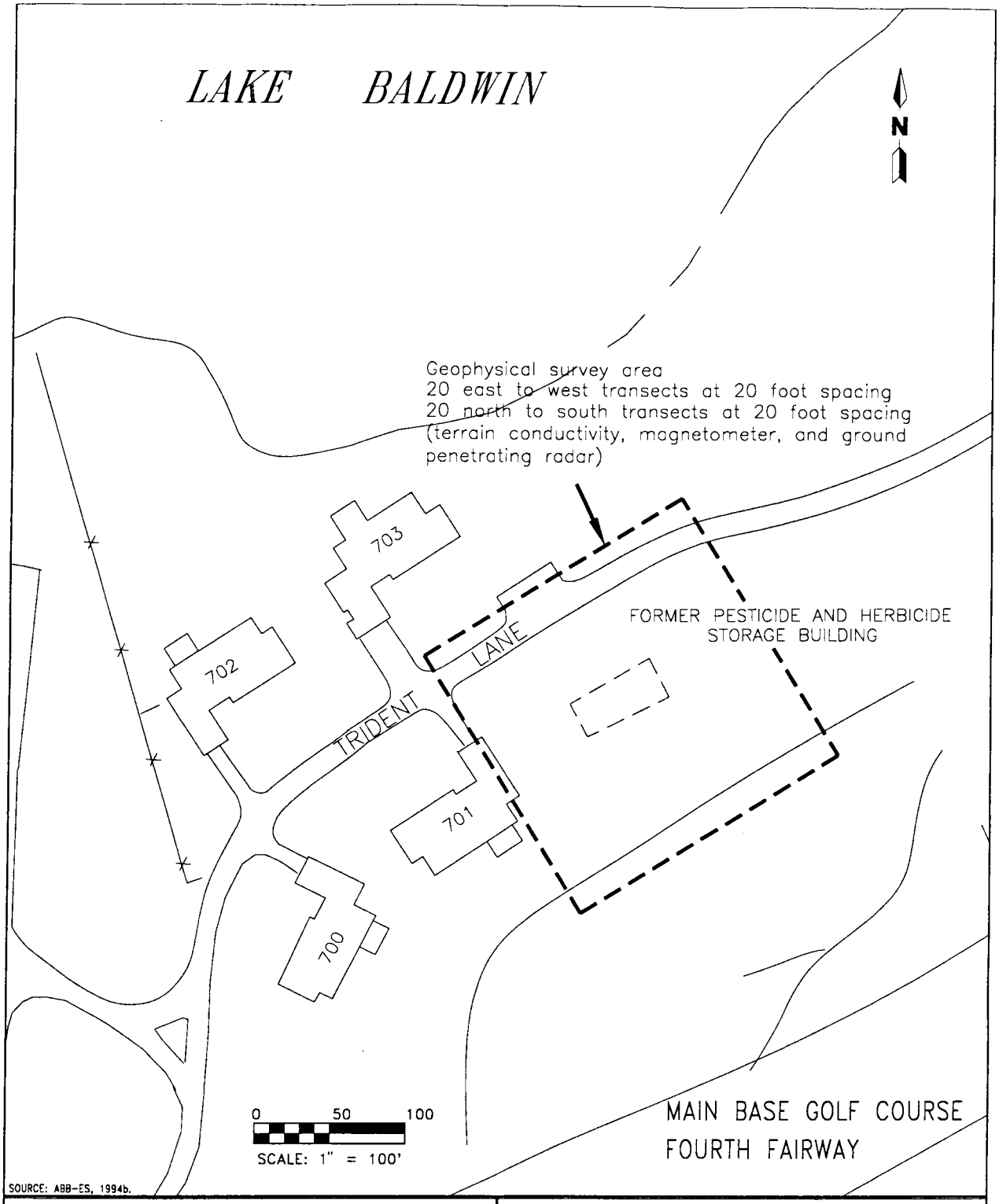

FIGURE 4-14
PROPOSED GEOPHYSICAL SURVEY AREA AT UNF-14, FORMER PESTICIDE/ HERBICIDE STORAGE BUILDING, STUDY AREA 9 GROUP I STUDY AREAS
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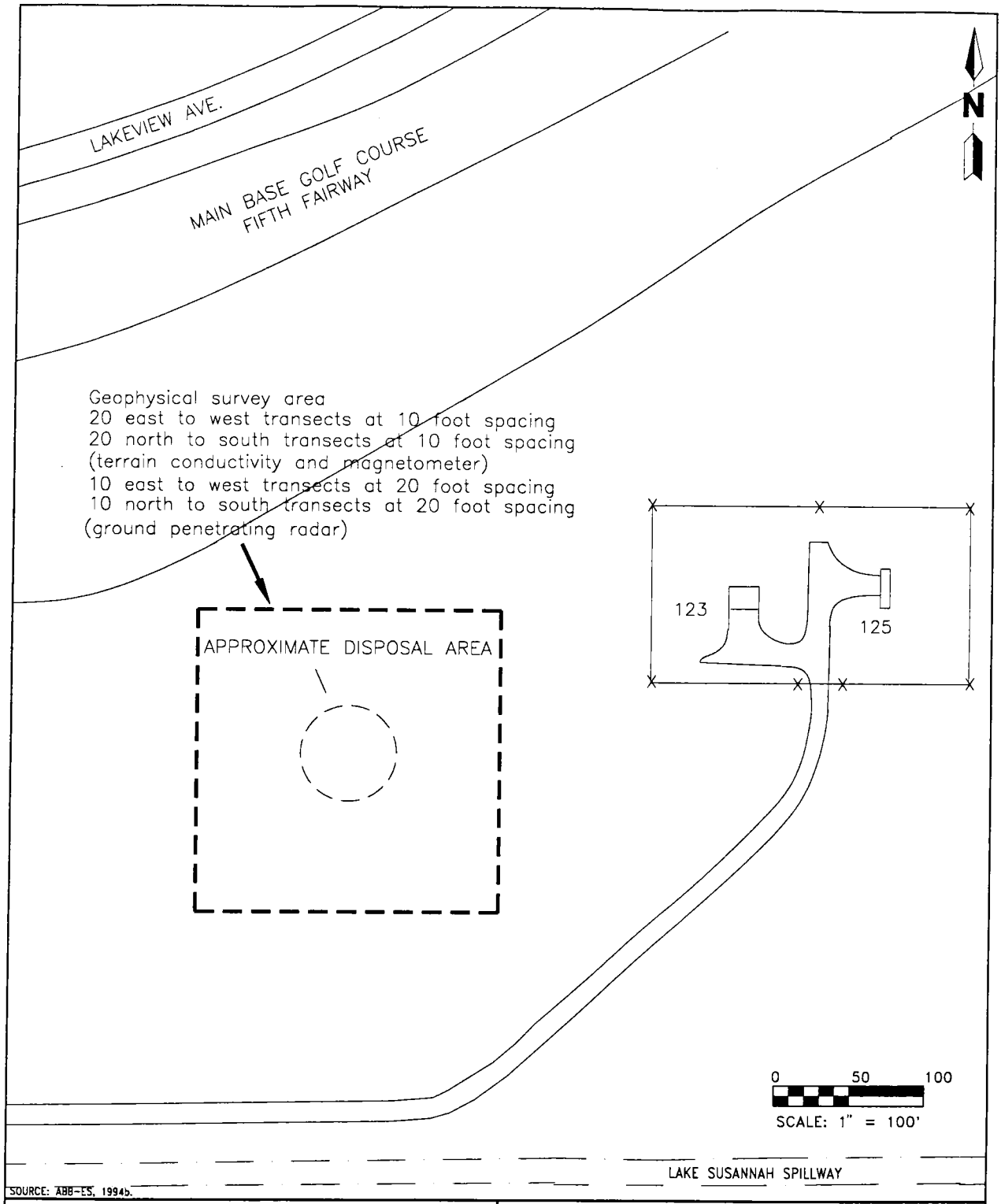

FIGURE 4-16
PROPOSED GEOPHYSICAL SURVEY AREA, IAS SITE 4, ALLEGED YARD WASTE DISPOSAL AREA, STUDY AREA 10, GROUP I STUDY AREAS
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resulting from the disposal of materials other than yard waste. The proposed investigation for Study Area 10 is designed to confirm reports that only yard waste was buried at this location. Additional investigations may be necessary if the presence of metallic objects or VOCs are detected. Investigative objectives are listed below along with methods proposed to achieve them. Proposed sample locations and survey areas are shown on Figures 4-16 and 4-17, with final locations to be determined in the field.

Objective: to delineate the extent of the disposal area and, possibly, the presence of a groundwater contaminant plume

Methods:
- aerial photograph evaluation
- geophysical surveys (magnetometer, GPR, and TC)

Following review of the available aerial photographs, geophysical survey techniques will be used to delineate the extent of potential subsurface disposal or disturbed soil. The results of the geophysical surveys will be used to focus field sampling efforts. The geophysical surveys will be conducted in two phases: a magnetometer and TC survey consisting of readings at stations established every 10 feet in the target area, and a follow-up GPR survey with transect lines spaced on a 20-foot grid. The GPR survey will include readings in both directions along the transect lines. An estimated 20 east to west transects and 20 north to south transects for TC and magnetometer will be used to evaluate the assumed 200-foot by 200-foot study area. The GPR survey is expected to require 10 east to west and 10 north to south transects. A GPS survey of key transect lines, magnetic anomalies, and other relevant features will be conducted so that geophysical survey areas may be mapped.

Objective: to determine if chemical contaminants may be present in the study area

Methods:
- passive soil gas survey
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Upon delineating the limits of disturbed soil, a passive soil gas survey will be conducted to identify any areas with elevated concentrations of VOCs in the subsurface soil or groundwater. Soil gas sampling locations will be established to coincide with magnetometer and TC stations, although a 50-foot sampling grid is proposed for the soil gas survey.

One soil boring will be completed adjacent to the area of disturbed soil, with a monitoring well installed in the boring. The boring location will be based on geophysical anomalies or elevated VOCs, as identified in the soil gas survey. In the absence of geophysical anomalies or VOCs, the boring will be located hydraulically downgradient of the study area, based on local topography. One groundwater and one subsurface soil sample will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. One groundwater sample will also be submitted for TSS determination to aid in the evaluation of inorganic data and the effectiveness of the groundwater sampling technique.

Based on the nature of the material reportedly disposed at this study area (yard waste), geophysical investigations, the soil gas survey, and the single

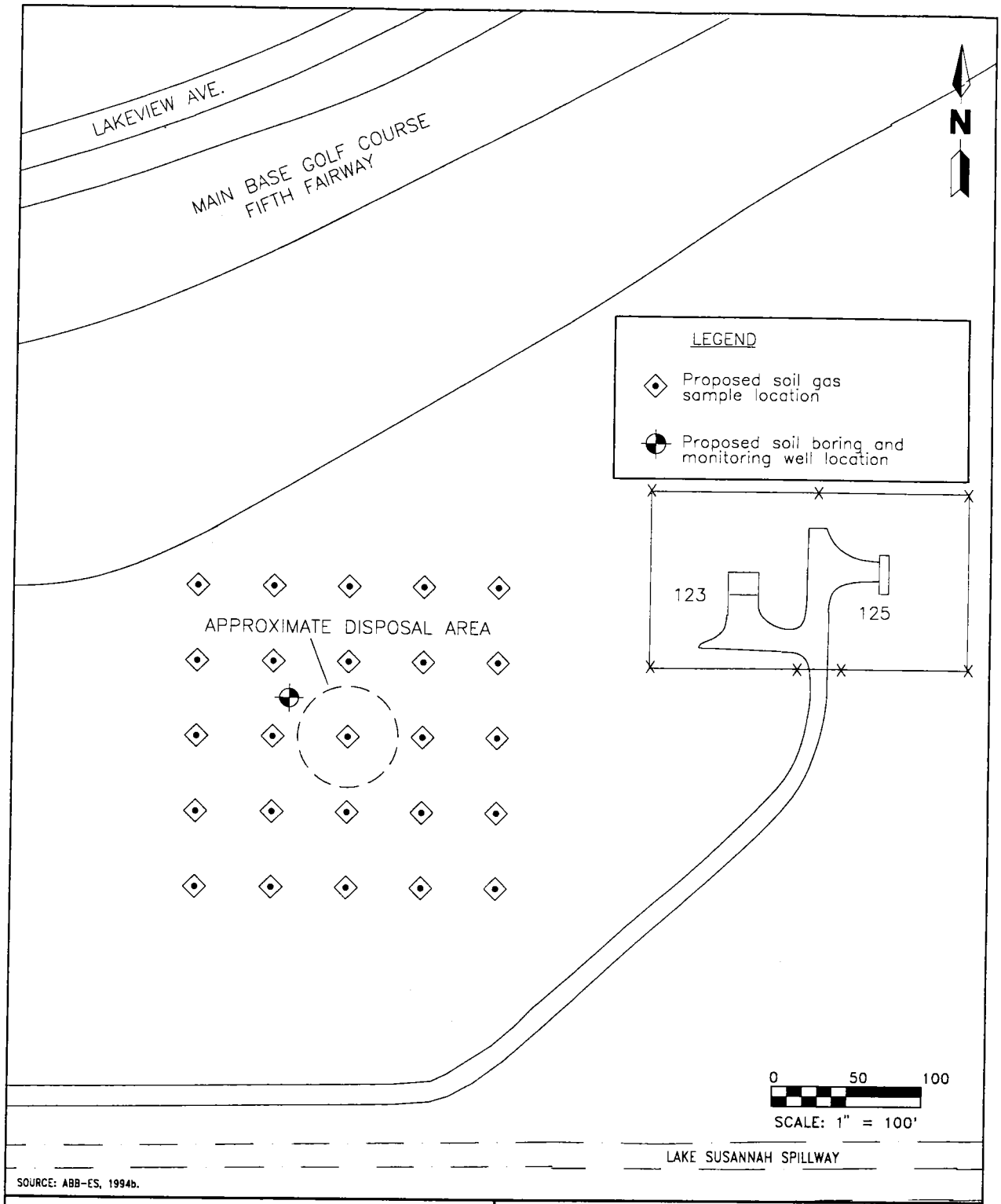

FIGURE 4-17
PROPOSED SOIL GAS SURVEY, SOIL BORING, AND MONITORING WELL LOCATIONS, IAS SITE 4, ALLEGED YARD WASTE DISPOSAL AREA, STUDY AREA 10, GROUP I STUDY AREAS
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monitoring well are expected to be adequate to demonstrate the absence of contamination. Additional investigations may be required after evaluation of data collected during this field program.

Group II Study Areas

The purpose of this site screening program is to either confirm that Group II Study Areas (Table 1-2) are suitable for a FOSL or a FOST or to determine the data needs for any additional investigations that may be required to make a determination regarding transferability. The field investigation program is designed to gather sufficient physical and chemical data to support such decisions.

The following is a summary, by study area, of the proposed field investigation objectives and methods, including estimated numbers of samples and analytes for each location. Background information on specific study area conditions was derived primarily from information contained in the EBS (ABB-ES, 1994b) and BRAC Cleanup Plan (ABB-ES, 1994c). The complete analytical program is summarized in Table 4-2. Details of the field screening methods to be used during this site screening program are included in the POP, Sections 4.1 through 4.10 (ABB-ES, 1994a).

4.11 STUDY AREA 11, AREA "C," BUILDING 148.

4.11.1 Background and Conditions Building 148 is the Cold Storage Warehouse for galley operations at NTC, Orlando. The facility is located at the end of Seabee Street, in the western part of "Area C" (Figure B-2, Appendix B). It is a one-story, concrete block structure with a flat roof. The 7,000-square-foot concrete slab floor is supported by poured concrete footings to create floor-level loading docks. The building is adjoined by asphalt pavement to the west and south. The building was constructed in 1942 by the Air Force on previously undeveloped land. Lake Druid is approximately 200 feet north of the facility. A brush-covered slope extends north from the building towards the lake.

At the time of the EBS (ABB-ES, 1994b), the facility stored and distributed all of the frozen or chilled food used by the galleys at NTC, Orlando. The building has served as a cold storage facility since 1969. From 1942 to 1969, the facility was used by the Air Force for supply storage of paints, oils, and photographic supplies.

There are floor drains in the lavatories and cold bay storage areas and a grease trap structure remains on the west side of the building. The history of use for the drains and trap is not known. The drains and trap are believed to be connected to the base-wide sanitary sewer system.

An emergency generator system was located next to the northeast corner of the building (Figure 4-18). The system included a pad-mounted generator unit, and a 100 gallon AST containing fuel oil. Currently, the emergency generator system has been removed, leaving only the concrete pad.

Two potential areas of environmental concern are associated with this facility. A small area of oil-stained soil and stressed vegetation was observed at the north and south ends of the generator pad. The source and extent of the oil

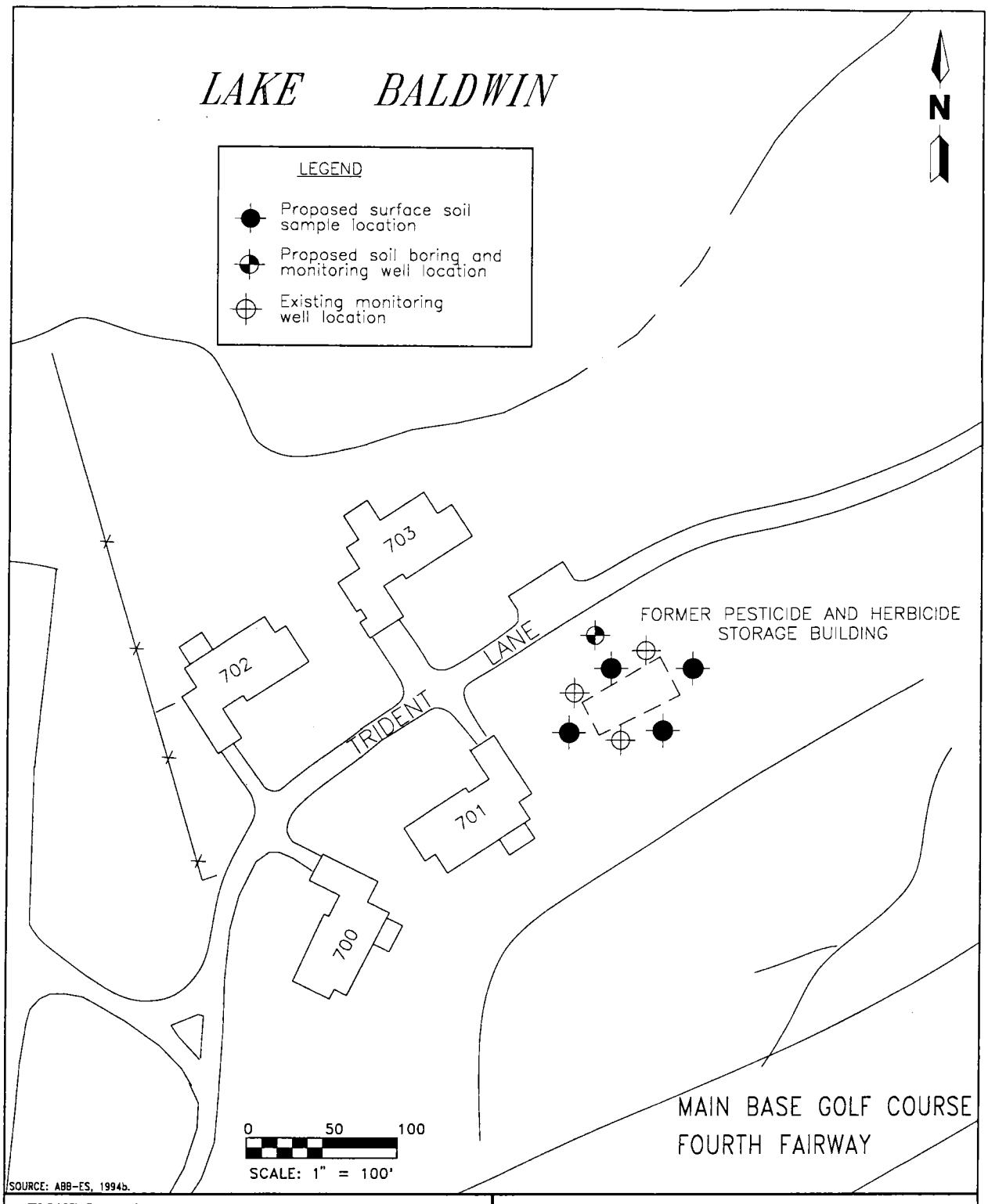

FIGURE 4-15
PROPOSED SURFACE SOIL SAMPLE AND EXISTING MONITORING WELL LOCATIONS AT UNF-14, FORMER PESTICIDE AND HERBICIDE STORAGE BUILDING, STUDY AREA 9, GROUP I STUDY AREAS

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established every 10 feet in the target area and a follow-up GPR survey with transect lines also spaced on a 10-foot grid. The GPR survey will include readings in both directions along the transect lines. An estimated 20 east to west transects and 20 north to south transects will be used to evaluate the assumed 200-foot by 200-foot study area for the geophysical survey. A GPS survey of key transect lines, magnetic anomalies, and other relevant features will be conducted so that geophysical survey areas may be mapped. Upon delineating subsurface anomalies, sampling and analytical activities will be completed in target areas.

The results of the geophysical surveys will be used to focus field sampling efforts.

Objective: to determine if chemical contaminants may be present in the study area

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Based on the results of the aerial photograph evaluation and geophysical surveys, four surface soil sampling locations will be identified in the vicinity of the sump structure or other likely disposal areas. Surface soil samples will be collected using hand augers or power-assisted augers. Three existing monitoring wells will be evaluated for their integrity, and if they are determined to be sound, they will be reconditioned (redeveloped) and sampled. Because the three existing wells are believed to be screened below the water table, a new well will be installed hydraulically downgradient (based on water levels in the existing wells) and as close as possible to the dry well location. Four groundwater and five soil samples (the four surface soil samples and one soil sample from the new well) will be submitted for full suite CLP TCL and TAL and herbicide laboratory analyses in accordance with USEPA Level IV DQOs. Groundwater and soil samples will also be submitted for Endothall analysis. Endothall was used at the former pesticide building and is regulated by the Florida Drinking Water Regulations. One groundwater sample will also be submitted for TSS determination to aid in the evaluation of inorganic data and the effectiveness of the groundwater sampling technique.

4.10 STUDY AREA 10, INITIAL ASSESSMENT STUDY (IAS) SITE 4, YARD WASTE DISPOSAL AREA.

Study Area 10 consists of the alleged Yard Waste Disposal Area.

4.10.1 Background and Conditions

IAS Site 4 is an alleged yard waste disposal area located on the golf course approximately 200 feet southwest of Magazine No. 123 in the southeastern part of the Main Base (Figures 1-3 and 4-16). The disposal area is a pit 30 feet in diameter by 8 or 9 feet deep where yard wastes, including tree limbs and grass clippings, were placed. The site was used from 1968 to 1969 and then covered with top soil. Approximately 6,400 cubic feet of yard waste were disposed at this location. Reportedly, no hazardous materials were buried in this disposal area (C.C. Johnson, 1985).

4.10.2 Rationale and Plans for Site Screening

The objectives of the site screening program at IAS Site 4 are to confirm the location of the Yard Waste Disposal Area and to evaluate the possible presence of chemical contaminants

Table 4-2
Analytical Program Summary, Group II Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Locations/Media	CLP TCL VOCs [1]	CLP TCL SVOCs [2]	CLP TAL Inorganics	CLP Pesticides/PCBs [3]	TPH	TSS
Soil and Sediment Samples						
Study Area 11						
Bldg 148						
Surface	2	2	2	2	0	0
Subsurface	1	1	1	1	0	0
Study Area 12						
Bldgs 1063 and 1069						
Subsurface	9	9	9	9	9	0
Sediment/Sludge	1	1	1	1	1	0
Study Area 13						
Bldgs 1100 and 1101						
Sludge	4	4	4	0	4	0
Subsurface	12	12	12	12	12	0
Sediment	4	4	4	4	4	0
Study Area 14						
Bldg 1102						
Subsurface	12	12	12	12	12	0
TOTALS FOR SOIL	**45**	**45**	**45**	**41**	**42**	**0**

See notes at end of table.

Table 4-2 (Continued)
Analytical Program Summary
Group II Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Locations/Media	CLP TCL VOCs [1]	CLP TCL SVOCs [2]	CLP TAL Inorganics	CLP Pesticides/PCBs [3]	TPH	TSS
Study Area 12						
Bldgs 1063 and 1069						
Groundwater	5	5	5	5	5	5
Study Area 13						
Bldgs 1100 and 1001						
Groundwater	12	12	12	12	12	12
Study Area 14						
Bldg 1102						
Groundwater	4	4	4	4	4	4
TOTALS FOR WATER	**21**	**21**	**21**	**21**	**21**	**21**
Soil and Sediment[4]						
QC Samples (Quantity Estimated)						
Trip	**15**	**0**	**0**	**0**	**0**	**0**
Rinsate	**15**	**15**	**15**	**15**	**15**	**0**
Duplicate	**5**	**5**	**5**	**5**	**5**	**0**
Matrix Spike	**3**	**3**	**3**	**3**	**3**	**0**
Matrix Spike Duplicate	**3**	**3**	**3**	**3**	**3**	**0**

See notes at end of table.

Table 4-2 (Continued)
Analytical Program Summary
Group II Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Locations/Media	CLP TCL VOCs [1]	CLP TCL SVOCs [2]	CLP TAL Inorganics	CLP Pesticides/PCBs [3]	TPH	TSS
QC Samples (Cont.)						
QC Samples (Quantity Estimated)						
Trip	10	0	0	0	0	0
Rinsate	10	10	10	10	10	10
Duplicate	3	3	3	3	3	3
Matrix Spike	2	2	2	2	2	0
Matrix Spike Duplicate	2	2	2	2	2	0

[1] Volatile organic compound (VOC) analysis for groundwater and associated quality control (QC) samples will be low level Contract Laboratory Program (CLP) methods to attain detection limits below Florida maximum contaminant levels (MCLs).
[2] Semivolatile organic compound (SVOC) analysis for groundwater and associated QC samples will include U.S. Environmental Protection Agency (USEPA) Method 8310 for benzo(a)pyrene and selective ion monitoring (SIM) for bis(2-ethylhexyl)phthalate, pentachlorophenol, and hexachlorobenzene to attain detection limits below Florida MCLs for these compounds.
[3] Polychlorinated biphenyl (PCB) analysis for groundwater and associated QC samples will be performed to obtain detection limits below the Florida MCL (0.5 micrograms per liter [$\mu g/\ell$]).
[4] Quantity assumes a 15-day drilling and soil sampling program.
[5] Quantity assumes a 10-day groundwater sampling program.

Notes: TCL = target compound list.
TAL = target analyte list.
TPH = total petroleum hydrocarbons by USEPA Method 9071/418.1.
TSS = total suspended solids by USEPA Method 160.2.
Bldg = building.

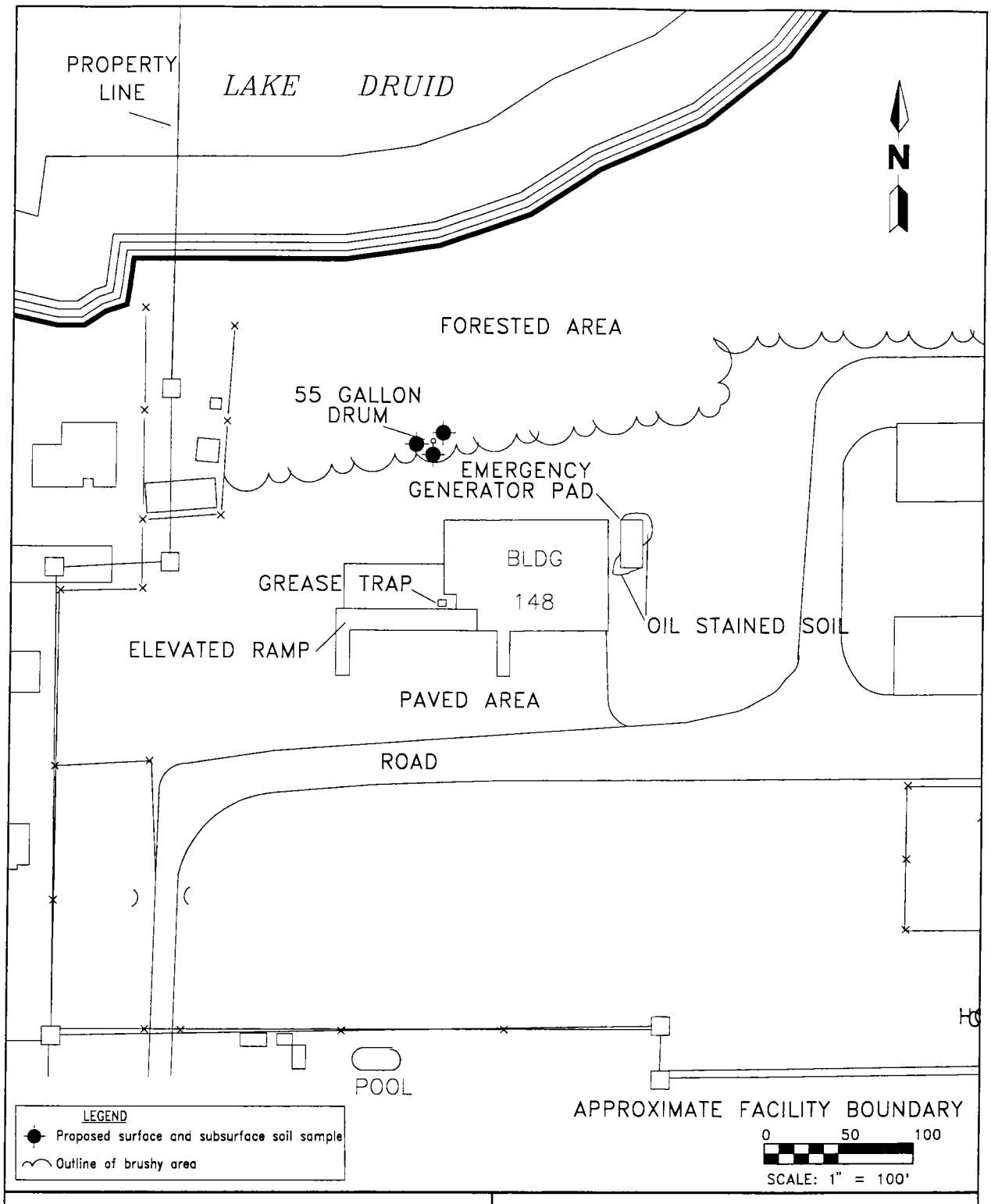

FIGURE 4-18
PROPOSED SOIL SAMPLE LOCATIONS
BUILDING 148, COLD STORAGE WAREHOUSE
AREA 'C', STUDY AREA 11,
GROUP II STUDY AREAS

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contamination has not been confirmed, although the source is likely a release from the AST. Potential impacts from releases associated with the generator system will be addressed in the Tank Management Plan (ABB-ES, 1994d).

The second area of concern is an abandoned drum containing dried paint residue, laying on its side in the brush directly north of the northwest corner of the building. The potential of a release from the drum has not been evaluated.

4.11.2 Rationale and Plans for Site Screening The objective of the screening activity in Study Area 11 is to evaluate what chemical contaminants, if any, are associated with releases from the partially filled paint drum.

Objective: to evaluate the potential impact to surface and subsurface soil associated with the drum area identified in the EBS (ABB-ES, 1994b) in the vicinity of Building 148

Method:
- surface soil sampling
- subsurface soil sampling

A maximum of three soil samples will be collected via hand auger from this area. Two of the three samples will be from surface (0 to 1 foot interval) soil. Proposed soil sampling locations are shown on Figure 4-18, although actual locations will be determined in the field. One surface soil sample will be collected adjacent to the drum of dried paint. A second surface soil sample will be collected only if there is visual or field-screening evidence (FID) of contamination in the first sample collected. The second sample location will be biased to a surface runoff pathway (towards Lake Druid).

The third sample from this area will only be collected if there is visual or field-screening evidence of contamination at the first sample location. The subsurface soil sample will be collected from that surface soil sample location closest to the drum to evaluate the vertical extent of contamination. A subsurface soil sample will be collected for analysis from the interval that indicates the bottom zone of contamination (within the vadose zone). This interval will be determined through field screening instruments (FID or OVA) and visual observations at the time of sampling. If contamination appears to be only surficial, then the subsurface soil sample will be collected from the interval directly underlying the surface contamination (1 to 2 feet).

The soil samples collected near the drum will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

4.12 STUDY AREA 12, AREA "C," BUILDINGS 1063 AND 1069.

4.12.1 Background and Conditions Buildings 1063 and 1069 are the DRMO Warehouse and Salvage Yard, and the truck scales next to the warehouse, respectively. These buildings are located on Port Hueneme Avenue, in the northeastern part of Area "C" (Figure B-2, Appendix B). The warehouse building was originally constructed in the early 1940's. Site use has reportedly remained consistent (i.e., salvage, scrap, and disposal yard) throughout its history. Based on review of aerial photographs, the original structure occupied approximately one-half the footprint of the current structure. The current warehouse (Figure 4-19), which is constructed of sheet metal walls and roof (i.e., a "Butler" building) on concrete

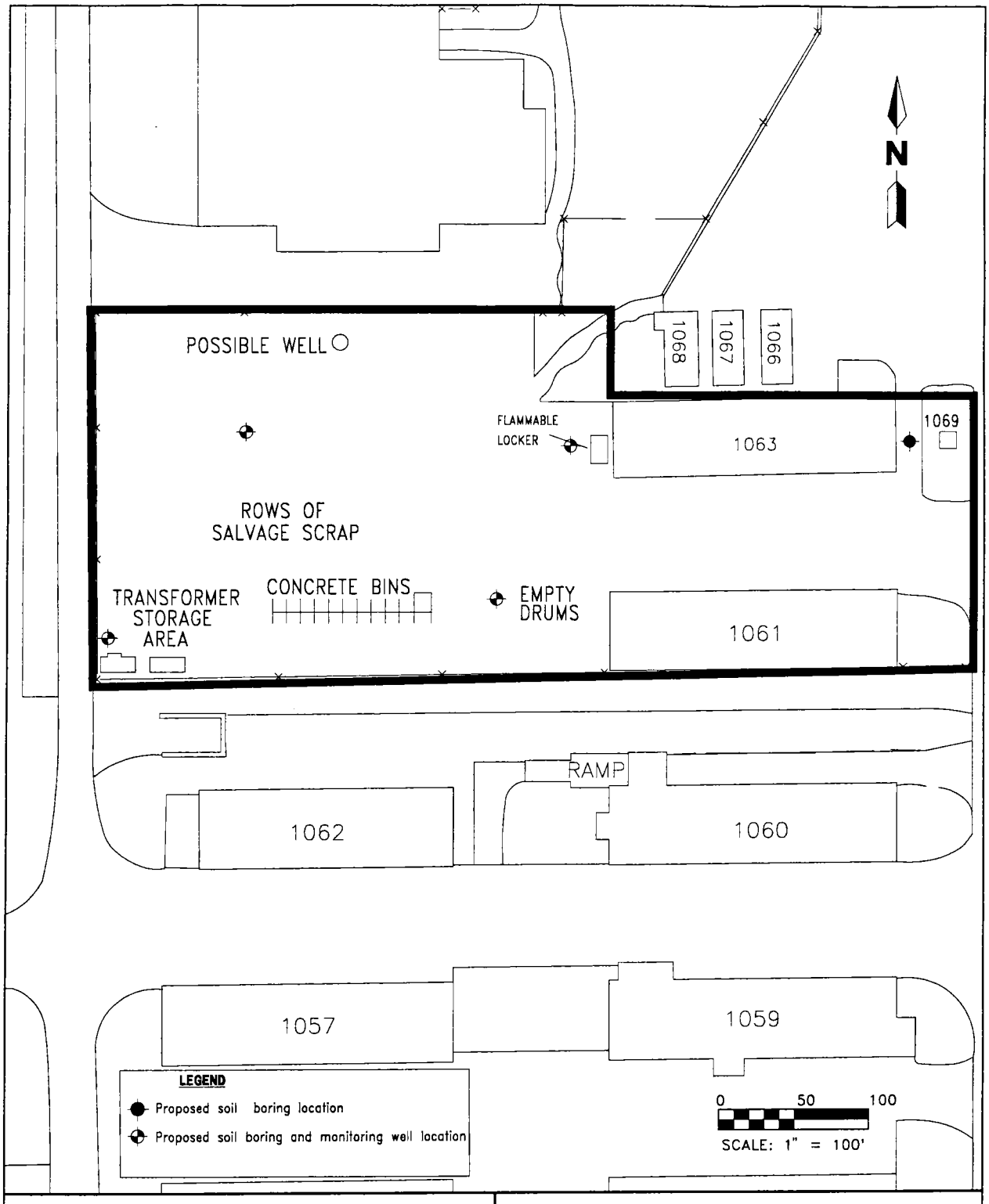

FIGURE 4-19
PROPOSED SOIL BORING, AND MONITORING WELL LOCATIONS, BUILDINGS 1063 AND 1069, DRMO WAREHOUSE AND SCALES, AREA 'C', STUDY AREA 12, GROUP II STUDY AREAS
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slab, was added to, or replaced, the original warehouse in 1962. The warehouse (Building 1063) has 9,600 square feet of floor space and steel racks for storing salvage materials. There is a flammables storage locker on the western side of the building. To the east of the building is a truck scale (Building 1069), consisting of a concrete slab on a weighing mechanism. The paved salvage yard, located west of the warehouse (Figure 4-19), is occupied by rows of salvage scrap materials, concrete storage bins, and a drum storage area. There is also a transformer carcass storage area in the southwest corner of the study area.

Salvage scrap items are also stored in this area, including desks, wheels, vehicles, transformers, and fencing. It is not known how long this area has been paved.

Historical records indicate this area was used to store small quantities (1 to 5 gallons) of hazardous waste between 1959 and 1985. These wastes were stored in the southwest corner of the salvage lot and included the following: paints, insecticides, asbestos, solvents including TCE and methyl ethyl ketone (MEK), ammonium hydroxide, sodium sulfide, and mercury.

Several potential areas of environmental concern were identified during the EBS (ABB-ES, 1994b). The first issue concerns past and present waste storage and handling practices in this study area. Thirty-four electrical transformers and an undetermined number of drums were stored in the southwestern corner of the storage lot at the time of the EBS. The transformers present at the time of the EBS were reported to contain less than 2 inches of oil and most were labeled as "Certified < 50 ppm PCB". The contents of the drums, if any, is unclear at this time. Historical records indicated that hazardous waste has been stored in the southwest corner of the lot for many years. There is also a record of an unquantified chemical spill in the salvage staging area on the north side of the warehouse building.

The second potential area of concern is the identification of what may be a former drywell or supply well. This well is located in the northern section of the storage lot (Figure 4-19) and consists of an 8-inch diameter, 16-inch high metal casing, with the lid welded shut. No other information was available. Due to the reported storage of hazardous wastes and equipment containing hazardous materials onsite, the potential exists for introduction of contaminants to the subsurface directly, via a dry well.

A 265-gallon fuel oil AST was formerly located near the northeast corner of the warehouse. No documentation of potential environmental impact from the tank has been identified. Potential impacts from releases related to the use or removal of the AST will be addressed in the Task Management Plan (ABB-ES, 1994d.)

The truck scale represents another potential source of contamination, because of the potential leakage or spills associated with underground hydraulic lines or from other lubricating oils.

4.12.2 Rationale and Plans for Site Screening The objectives of screening activities in Study Area 12 are to evaluate what chemical contaminants, if any, are associated with releases to the environment due to current or past waste storage and handling operations in the yard, as well as maintenance and use of the truck scales, and to determine the appropriate abandonment procedure for the well structure.

Objective: to evaluate if current salvage operations may have contributed to contamination of environmental media, and to focus intrusive investigative activities

Methods: • site walkover

Drums currently stored in the salvage yard will be reviewed for labels, contents, and integrity. This information will be recorded, but no drum sampling will be conducted. Similarly, the transformers stored in the southwest corner of the yard will be observed for PCB labels and evidence of leaks or spills. Any such evidence will be recorded and evaluated during subsequent screening activities, but no transformer fluid sampling will be conducted as part of this investigation. Any evidence of spills or leaks from equipment currently stored in the salvage yard will be noted on a sketch plan and evaluated during the intrusive sampling events.

Objective: to evaluate if past salvage operations and other area uses have resulted in contamination of environmental media, and to focus intrusive investigative activities

Methods:
- historical records review
- soil boring and monitoring well installation
- groundwater sampling

To focus sampling activities and gain more insight into the potential contaminants of concern for this study area, ABB-ES will conduct a review of existing records to determine if more information is available on the alleged chemical spills in the salvage yard. If records can be located that pinpoint spill locations, a soil boring will be completed and a soil sample will be taken in each spill area, as described below.

To evaluate if past and/or current waste handling practices have impacted soil in this study area, four soil borings will be advanced by drill rig in the storage area, with a monitoring well installation in each boring. If chemical spill locations have been identified by records review, borings will be preferentially located in spill areas. The borings will be sampled continuously with split-spoon devices so that soil can be screened with an FID and described. Borings will be completed at depths sufficient to enable installation of a well screen that intercepts the shallow water table (estimated at less than 10 feet below ground surface). Representative boring and well locations are shown on Figure 4-19. Actual locations will be determined in the field based on physical conditions. Final locations will be reviewed with the Technical Leader prior to completion.

Eight soil samples (two from each well boring) and four groundwater samples (one from each well) will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. The soil samples from each boring will be submitted from (1) the interval directly below asphalt, and (2) where FID screening or visual observations indicate the presence of contaminants. If no field observations indicate the presence of contamination, the second soil sample will be collected from the interval directly above the water table. All groundwater samples will also be submitted for TSS determination to aid in the evaluation of inorganic data and the effectiveness of the groundwater development and sampling technique.

Objective: to determine the status of the abandoned (dry) well

Method:
- historical documents review
- groundwater sampling or sediment and sludge sampling
- determination of appropriate well abandonment procedure

Current information suggests that the reported well structure is most likely a former water supply well. ABB-ES will review available documents concerning the installation, construction, or abandonment of the well. If documents indicate the structure is a water well and the well was properly sealed, no further actions are warranted. If documents are not located to substantiate proper abandonment of the well, however, ABB-ES will open the well and clear the well of obstructions (e.g., pumps, riser, electric wire, and sump). Prior to opening the well, an evaluation of organic vapor buildup at the well head will be made. The well will then be sounded with a 200-foot electronic water level meter to determine the total well depth and depth to water. If documentation of total well depth can be located, the well will be gauged for water depth only so that an appropriate sampling method can be determined. If depth to water is less than 50-foot, a bailer or submersible pump will be used. If depth to water exceeds 50-foot, a submersible pump will be used. The well will be purged and developed (if necessary) and an aqueous sample will be collected. The well casing will be resecured while a determination of the appropriate abandonment procedure is made.

The groundwater sample collected from this well will be analyzed for full suite CLP, TCL, TAL, and TSS laboratory analyses, in accordance with USEPA Level IV DQOs.

If the well is determined to be a dry well, it will be examined for inverts and outlets, and a sediment sample will be collected from the bottom of the well and submitted for TPH and full suite CLP TCL and TAL analyses in accordance with USEPA Level IV DQOs. The sampling method will be dependant on the depth of the well and the thickness of the sediment. Following sampling, the well casing will be resecured while a determination of the appropriate abandonment procedure can be made.

Objective: to evaluate the potential impact to environmental media from standard use and maintenance of the truck scales

Method:
- shallow soil boring

Truck scales require regular maintenance and lubrication, which involves replacement of hydraulic fluids and application of lubricating oils. To determine whether routine use and maintenance of the truck scales has resulted in the release of contaminants to the environment, one soil boring will be manually completed at a location adjacent to, and likely downgradient from, the scales. The boring will be terminated at the water table, and subsurface soil samples will be collected continuously using a discrete sample collection device. The samples will be field screened with an FID, and a sample from the interval displaying the highest organic vapor concentration will be submitted to the laboratory for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. In the absence of any headspace readings, the deepest sample above the water table will be submitted for analysis.

4.13 STUDY AREA 13, AREA "C," BUILDINGS 1100 AND 1101.

4.13.1 Background and Conditions Buildings 1100 and 1101 are located in the northeastern corner of Area "C" at Port Hueneme Avenue and Davisville Street (Figure B-2, Appendix B). Building 1101 (Figure 4-20) was a boiler house that was demolished sometime after 1962. There was some concern that asbestos containing material (ACM) had been buried along with demolition debris in the foundation grave, but the report was found to be inaccurate.

Building 1100 (Figure 4-20), constructed in 1943, is a single-story wood-framed structure that has always been used as an industrial laundry and dry-cleaning facility, serving the entire military base. The building occupies 54,916 square feet. The surrounding property is paved asphalt, except for small areas east and west of the building that are landscaped and grass covered. The paved areas around the perimeter of the building include roads and parking lots. Prior to construction of the facility in 1943, the land was undeveloped.

Eight air emission sources at the facility are covered by three air permits and include dry cleaning machines, clothes dryers, and boilers. The laundry facility uses various detergents, bleaches, starches, perchloroethylene (PCE or [tetrachloroethene]), and naphtha.

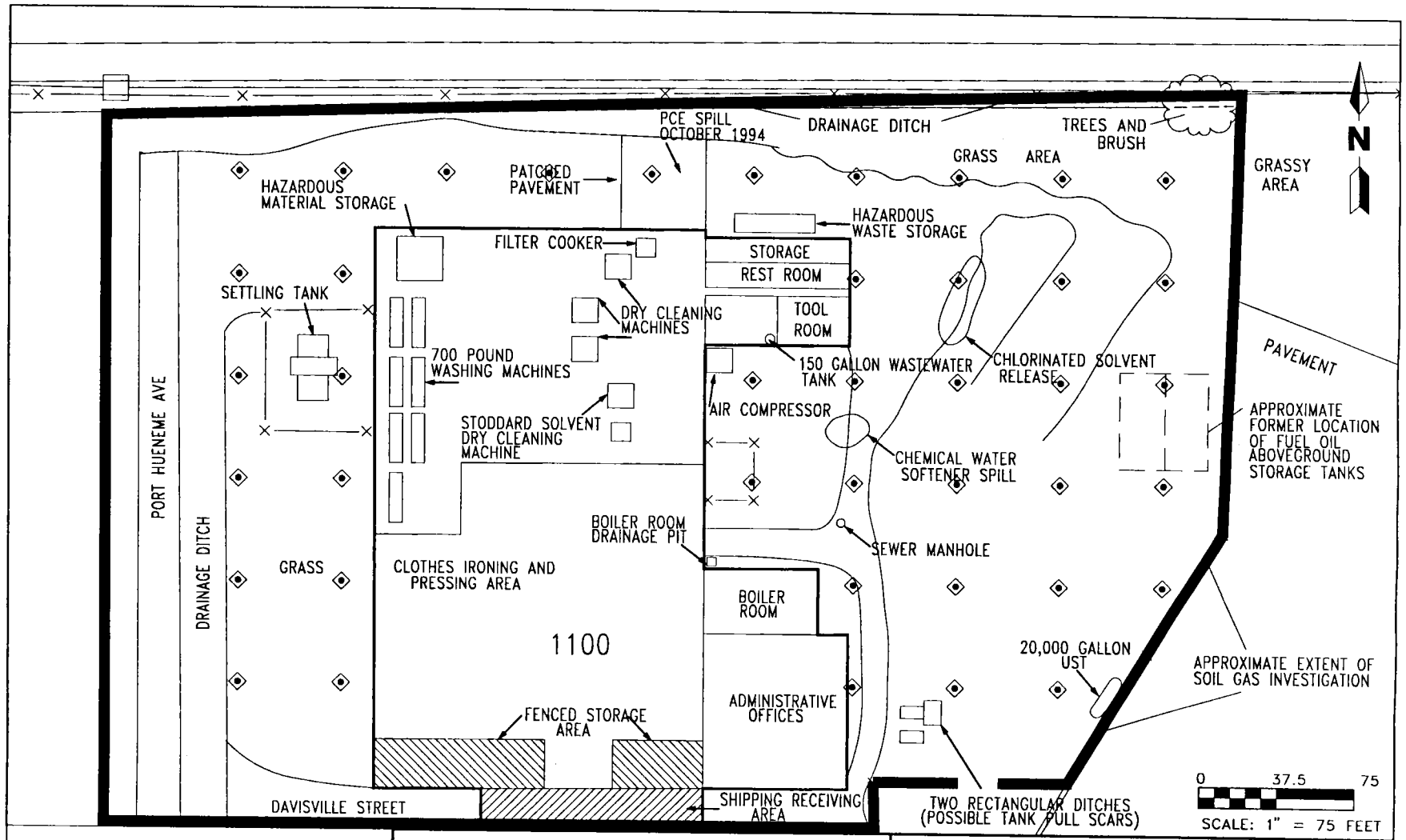
Reportedly, hazardous wastes generated and materials used in the dry cleaning process have been poorly managed. At the time of the survey, there were many containers in the building, ranging in volume from ½ to 55 gallons that were open and not labeled. The facility has received a Notice of Violation and a citation from FDEP for unlabeled and unmanifested waste.

Wastewater from the laundry machines discharges to the sanitary sewer through badly deteriorated drainage trenches in the floor. The floor trenches discharge to a single pipe that is connected to a settling and surge tank. Due to the volume of water discharged in this area, a 30,000-gallon surge tank was installed in the mid-1960's. Sludge is removed from this tank annually and disposed through the Defense Reutilization and Marketing Office (DRMO). Waste filters from the dry cleaning machines are also generated at the facility. PCE is separated from the water and filters by heating the assembly in a pressure cooker. Currently, the filters are disposed through the DRMO and the solvent is recycled. In the past, the filters were disposed in the North Grinder Landfill.

Documented discharges of water contaminated with chlorinated solvents have occurred on the property. Discharges of water from the washing machines to Lake Druid have also been documented.

Wastewater from the boiler operations is currently being discharged to an unlined outside pit. A PVC pipe also enters this pit, although its origin is unknown.

Numerous environmental concerns were noted in the EBS (ABB-ES, 1994b), the most urgent being the poor management of hazardous material and hazardous waste. Several incidences of chemical release were also noted in the EBS survey. A review of reference materials indicated a release of 20 gallons of PCE occurred northeast of Building 1100. Additionally, there was a reported spill of



LEGEND

⊡ Proposed soil gas sample

PCE = Perchloroethylene (tetrachloroethene)

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FIGURE 4-20
PROPOSED SOIL GAS SURVEY LOCATIONS, BUILDING 1100, AREA 'C', STUDY AREA 13, GROUP II STUDY AREAS

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contaminated water to the west of Building 1100. Actual quantities of chemical waste released at the property are unknown. During the EBS, a spill of approximately 3 pounds of amber-colored material was observed to the east of the building. Additional spills that were noted during the survey included a minor leak from one of the building's transformers, etching of the concrete floor in the boiler room due to leaking descaler along with petroleum staining, and significant spills of wastewater and dry cleaning solvent in the compressor room. A spill of approximately 55 gallons of PCE reportedly occurred on pavement along the north side of Building 1100 in October, 1994.

Additional areas of concern beyond the scope of this plan that were noted in the EBS included large quantities of friable asbestos, a 20,000-gallon fuel oil tank, a leaking 150-gallon AST that contains corrosive wastewater, and 30,000-gallon surge and settling tank for machine wastewater located to the west of the building. Aerial photographs suggest additional ASTs and USTs have been removed from this study area. Review of engineering drawings indicates there were, at one time, several water supply wells and possible deep drainage wells located near the laundry. Additional information on the location of these wells, their connection to the laundry, and their current disposition is being sought. The asbestos and storage tank issues will be addressed in the appropriate management plans.

4.13.2 Rationale and Plans for Site Screening The objectives of screening activities in this area are to evaluate what chemical contaminants, if any, are associated with releases to the environment due to current or past chemical storage and handling operations and wastewater disposal practices.

Objective: to evaluate subsurface debris disposal and to aid in clearing utilities for the subsurface investigations

Methods:
- review aerial photographs and documents available for this area
- geophysical surveys (GPR and magnetometer)

A more detailed evaluation of the aerial photographs is recommended to identify the target areas for geophysical surveys. The surveys should identify ferrous objects or other subsurface anomalies, such as buried pipes, and possibly filled areas.

The geophysical survey program will be conducted in two phases: an initial magnetometer survey, followed by a confirmatory GPR survey focused on anomalies identified by the magnetometer. The general area to be included in the surveys is shown on Figure 4-20. If there is too much ferrous material at the ground surface, the magnetometer survey will be suspended. The results of the geophysical survey will be used to focus the next phase of investigation in this study area.

Objective: to evaluate if current and/or past waste handling practices have impacted environmental media

Method:
- passive soil gas survey
- shallow soil boring and soil sampling survey
- soil boring and monitoring well installation
- groundwater sampling
- sediment sampling

To evaluate if past and/or current waste handing practices have impacted soil or groundwater in this study area, ABB-ES proposes to conduct a passive soil gas survey to identify any areas with elevated subsurface concentrations of VOCs or SVOCs and focus the investigation for confirmatory soil and groundwater sampling. Soil gas sampling locations will be established in a 50-foot sampling grid, although structures and utilities in the area may alter the exact soil gas sampling points. Proposed sampling locations are shown on Figure 4-20.

A shallow soil boring investigation will be conducted in the laundry area. An estimated 30 to 40 locations will be included in the survey, with bias towards locations in the identified spill areas, UST areas, and areas identified in the soil gas survey as warranting further investigation.

The shallow borings will be manually advanced to the water table (estimated depth of 4 feet). Soil samples will be collected continuously using a discrete sampling device at each location for characterization and field screening analysis. Soil collected by this technique will be described and screened for total VOCs using a hand held organic vapor meter (FID) so that a preliminary determination of vertical contaminant distribution can be made. Depth to water measurements obtained during the shallow soil survey will be used to make a preliminary determination of shallow groundwater flow direction.

After reviewing results of the soil gas survey, and screening results from the shallow soil survey, four to six soil boring pairs will be advanced in the study area, with monitoring well installations in each boring. One well in each pair will be installed to intercept the water table, and the second well will be installed at the base of the upper (shallow) aquifer to evaluate the potential presence of dense non-aqueous phase liquid (DNAPL). At each location, the deep boring will be completed first. Soil will be sampled continuously using a split-spoon sampling device. The soil will be screened with an FID and described. One of the borings and wells will be installed west of the study area, toward Lake Druid (presumably hydraulically downgradient of the study area). Other borings and wells will be preferentially placed in areas of concern identified by the soil gas and shallow soil boring surveys. Representative boring and well locations are shown on Figure 4-21. Actual locations will be selected in the field and reviewed with the Technical Leader prior to completion.

Any split spoon indicating evidence of contamination will be sampled for field screening analysis on a GC. In the absence of visual or FID evidence of contamination, at least one sample every 6 feet will be GC screened. One soil sample will be collected from each deep boring for laboratory analysis. The soil sample selected for laboratory analysis will be collected from the interval with the highest VOC concentration, as determined by field GC, or where screening with FID or visual observation indicates the presence of contaminants.

Following completion of the deep boring at the base of the upper (shallow) aquifer, a monitoring well will be installed with a 10-foot screen at the base of the aquifer. Once each deep well is installed, a shallow boring will be advanced nearby (within 10 feet). One soil sample will be collected for laboratory analysis from the shallow boring. The soil sample will be collected from the interval where FID screening or visual observation indicates the presence of contaminants. If no field observations indicate the presence of contamination, the soil sample will be collected from the interval directly above the water

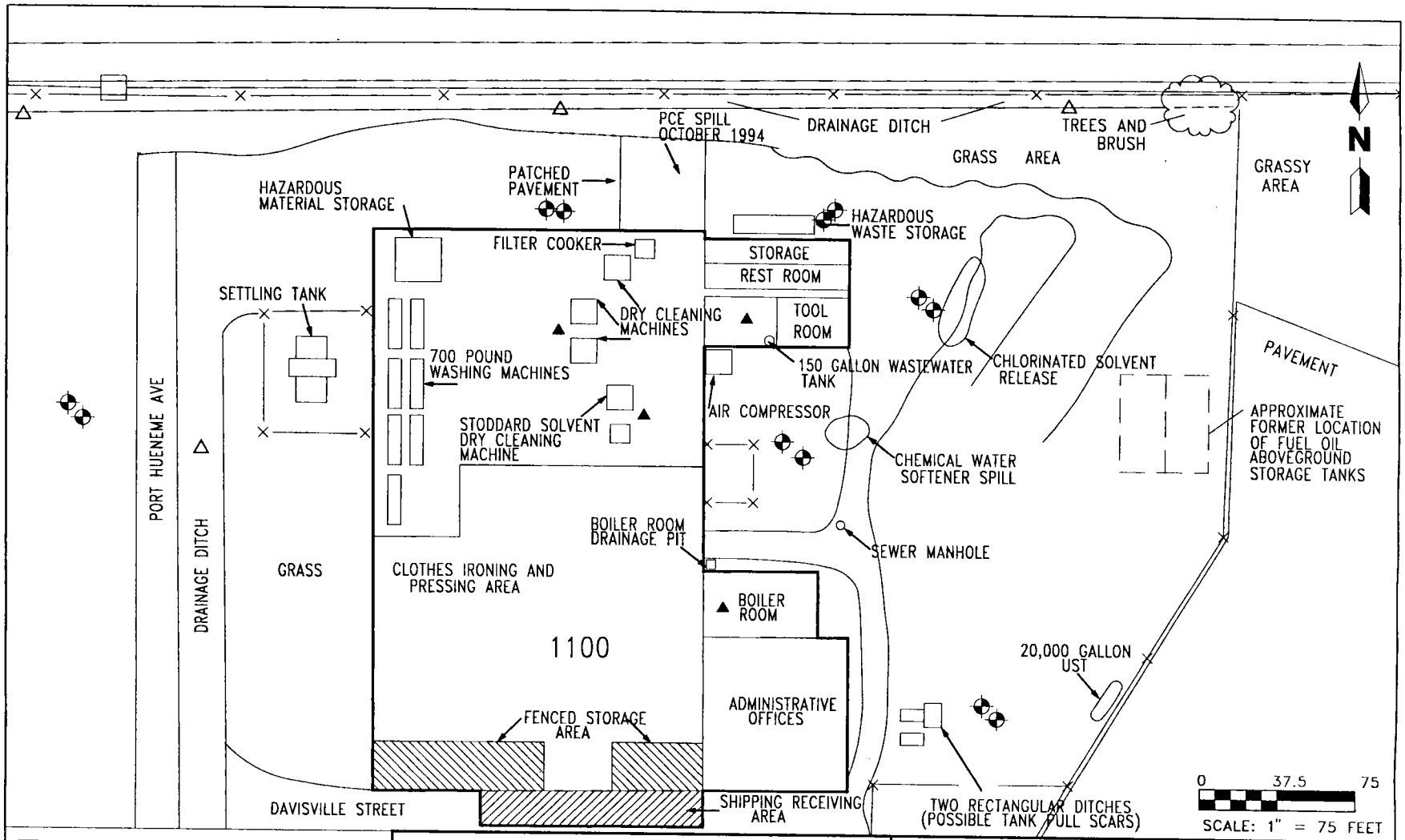

FIGURE 4-21
PROPOSED SOIL, SEDIMENT AND SLUDGE SAMPLE, SOIL BORING AND MONITORING WELL LOCATIONS, BUILDING 1100, AREA 'C', STUDY AREA 13, GROUP II STUDY AREAS

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table. The shallow borings will be completed at depths sufficient to enable the installation of a well with screen set to intercept the water table.

Up to 12 soil samples (one from each boring) and a maximum of 12 groundwater samples (one from each well) will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. All groundwater samples will also be submitted for TSS determination to aid in the evaluation of inorganic data and the effectiveness of well development and groundwater sampling techniques.

Based on historical records of wastewater discharge to open drainage swales that adjoin the laundry area and drain to Lake Druid, the potential exists for impact to soil or sediment in these swales. There is no evidence that these features exist as perennial drainage features. Four sediment or soil samples will be collected at the approximate locations shown on Figure 4-21. Samples will be collected by hand from a depth of approximately 6 to 12 inches below the surface. Samples will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

Objective: to evaluate the potential impact to environmental media from sludge in wastewater drains and trenches inside Building 1100.

Methods: • sludge sampling

Up to four sludge samples will be collected from various floor grate locations inside the laundry. The sample equipment used will depend on the depth of the grates and the accessibility of the sludge. Actual locations will be selected in the field. These samples will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with Level IV DQOs.

4.14 STUDY AREA 14, AREA "C," BUILDING 1102.

4.14.1 Background and Conditions Building 1102 is the disposal, salvage, and scrap building associated with the DRMO operations. The facility is located off Marvin Shields Avenue in the northeast part of Area "C" (Figure B-2, Appendix B). The facility includes a rectangular, one-story corrugated steel building (3,840 square feet) constructed on a concrete slab with a gabled roof. The surrounding salvage yard is currently asphalt paved (Figure 4-22). The building was originally constructed in 1969. Prior to that time, the area between the base laundry (to the northwest) and the current structure was used as a scrap and salvage yard. Equipment and materials currently stored at this location include office furniture, mattresses, refrigerators, and dry-cleaning equipment.

A documented release of three gallons of PCE from scrap dry-cleaning equipment occurred in 1989. Remediation included the removal and disposal of approximately 20 drums of contaminated soil and asphalt. However, the exact location of the release was not indicated. Environmental concerns in this study area include confirmation of the adequacy of the removal action, as well as the potential impact from undocumented releases of oil or hazardous materials in the scrap yard.

4.14.2 Rationale and Plans for Site Screening The objective of the screening activity in this area is to determine what chemical contamination, if any, remains

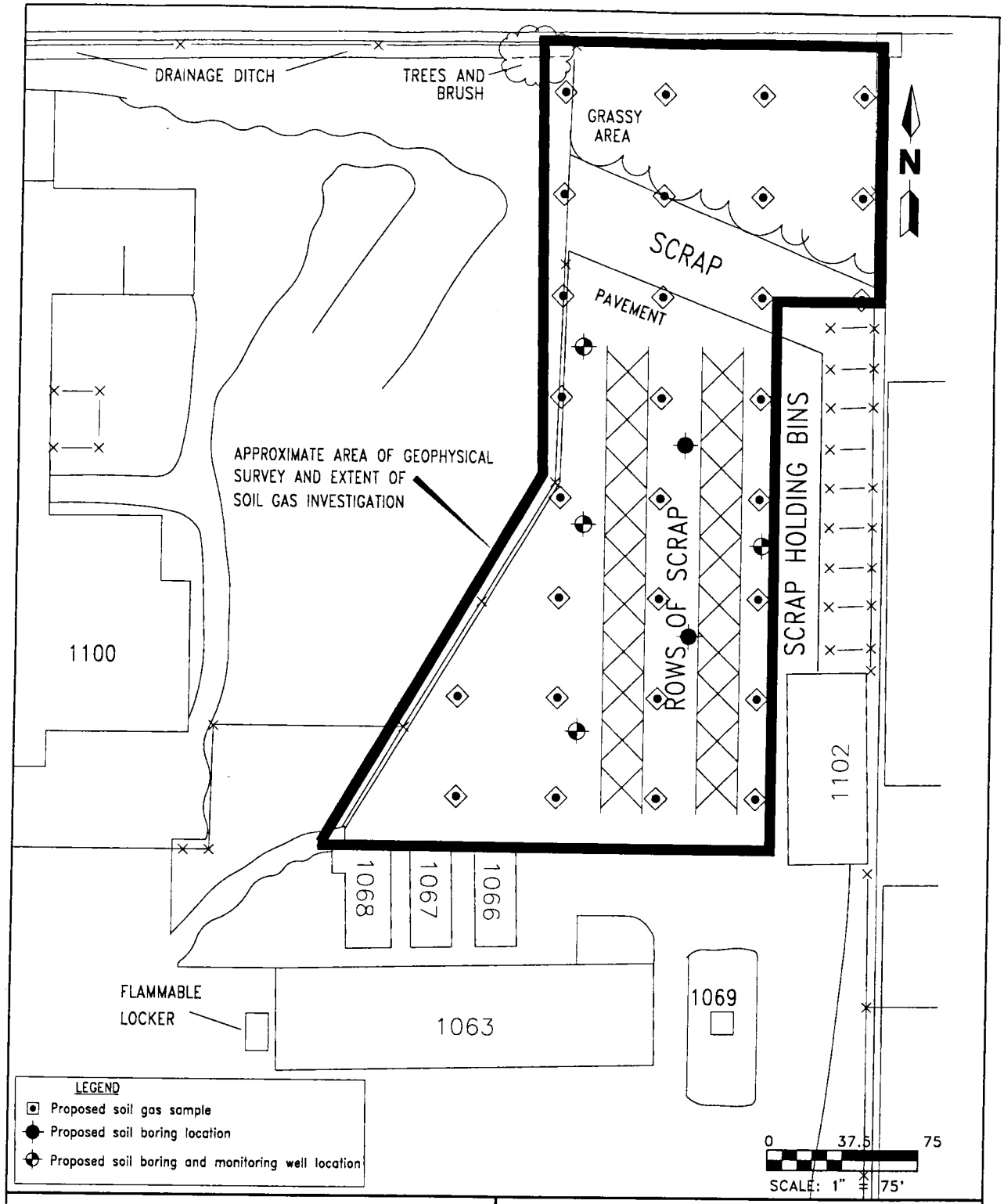

FIGURE 4-22
PROPOSED SOIL GAS SURVEY, SOIL BORING, AND MONITORING WELL LOCATIONS, BUILDING 1102, DISPOSAL, SALVAGE, AND SCRAP BUILDING, AREA 'C', STUDY AREA 14, GRUOP II STUDY AREAS

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following remediation of a PCE spill as well as to evaluate the potential impact of past site use on environmental media.

Objective: to evaluate subsurface scrap disposal and to aid in clearing utilities for the subsurface investigations

Methods:
- review aerial photographs and documents available for this area
- geophysical surveys (GPR and magnetometer)

A more detailed evaluation of the aerial photographs is recommended to identify the target areas for geophysical surveys. The surveys should identify ferrous objects or other subsurface anomalies, such as buried pipes, and possibly filled areas.

The geophysical survey program will be conducted in two phases: an initial magnetometer survey, followed by a confirmatory GPR survey focused on anomalies identified by the magnetometer. If there is too much ferrous material at the ground surface, the magnetometer survey will be eliminated, and the GPR survey will be more systematic, covering the entire study area. The approximate boundaries of the survey area are shown on Figure 4-22. The results of the geophysical survey will be used to focus the next phase of investigation in this study area.

Objective: to evaluate if current and/or past salvage and waste handling practices have impacted environmental media and if remediation of the PCE spill was adequate

Method:
- passive soil gas survey
- shallow soil boring and soil sampling
- soil boring and monitoring well installation
- groundwater sampling

To evaluate if past and/or current waste handling practices have impacted soil or groundwater in this study area, ABB-ES proposes to conduct a passive soil gas survey to identify any areas with elevated subsurface concentrations of VOCs and SVOCs and focus the investigation for confirmatory soil and groundwater sampling. Soil gas sampling locations will be established on a 50-foot sampling grid, although structures and utilities in the area may alter the exact soil gas sampling points. The approximate boundaries of the survey area are shown on Figure 4-22.

A shallow subsurface soil screening survey will be conducted in the scrap yard area. An estimated 20 locations will be included in the survey, with bias towards locations in the PCE removal action area (if it can be identified, possibly by the location of patched asphalt) and areas identified in the soil gas and geophysical surveys as warranting further investigation.

The shallow borings will be manually advanced to the water table (estimated total depth of 4 feet). Soil samples will be collected continuously using a discrete sampling device at each location for characterization and field screening analysis. Soil collected by this technique will be screened for total VOCs using a hand held organic vapor meter (FID) so that a preliminary determination of vertical contaminant distribution can be made. Depth to water measurements

obtained during the shallow soil survey will be used to make a preliminary determination of shallow groundwater flow direction.

After reviewing results of the soil gas survey and screening results from the shallow soil survey, six soil borings will be advanced in the study area, with monitoring well installations in up to four of the borings. Borings and wells will be preferentially placed in areas of concern identified by the soil gas and shallow soil surveys, with the two extra borings to be completed in the vicinity of the PCE spill. Representative boring and monitoring well locations are shown on Figure 4-22. Actual locations will be proposed by the field team and reviewed with the Technical Leader prior to completion. Borings will be completed and well screens installed to intercept the water table (estimated total depth of 10 feet).

Two soil samples will be collected from each boring for laboratory analyses. The soil samples selected for laboratory analysis will be collected from (1) the interval directly below pavement or at the ground surface, and (2) an interval where screening with field instruments or visual observation indicates the presence of contaminants. If no field observations indicate the presence of contamination, the second soil sample will be collected from the interval directly overlying the water table.

Up to 12 soil samples (2 from each boring) and a maximum of 4 groundwater samples (1 from each well) will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. All groundwater samples will also be submitted for TSS determination to aid in the evaluation of inorganic data and the effectiveness of well development and groundwater sampling techniques.

4.15 STUDY AREA 15, AREA "C", BUILDING 1053. Although this building was initially included on the list of sites for screening, subsequent evaluation indicates that the area of environmental concern at this location is related to confirmation of remedial actions at a diesel spill site. Consequently, the study area has been transferred for evaluation under the Tank Management Plan (ABB-ES, 1994d.)

The purpose of this site screening program is to either confirm that Group III Study Areas (Figure B-3, Appendix B) are suitable for a FOSL or a FOST and/or to determine the data needs for any additional investigations that may be required. The field investigation program is designed to gather sufficient physical and chemical data to support such decisions.

The following is a summary, by study area, of the proposed field investigation objectives and methods, including estimated numbers of samples and analytes for each location. Background information on specific study area conditions was derived primarily from information contained in the EBS (ABB-ES, 1994b) and BRAC Cleanup Plan (ABB-ES, 1994c). The complete analytical program is summarized in Table 4-3. Details of the field screening methods to be used during this site screening program are included in the POP, Sections 4.8 through 4.12 (ABB-ES, 1994a).

4.16 STUDY AREA 16, MOTOR POOL COMPOUND, BUILDINGS 7168, 7169, 7170, 7171, AND 7172 AND FORMER BUILDING 7175.

4.16.1 Background and Conditions The Motor Pool Compound, which was established in 1952, has provided vehicle maintenance and repair for assigned vehicles since its construction. The compound is located on Binnacle Way near the intersection with Avenue C (Figure B-3, Appendix B, and Figure 4-23). Based on a review of a 1943 aerial photograph, the property was undeveloped prior to the establishment of the Motor Pool. The Navy, through an Interservice Support Agreement, has allowed the Army to use the Motor Pool Compound for support of an Army Reserve unit since February 1975. Vehicle maintenance is performed on combat vehicles and heavy transports.

The property line is defined as the tree line on the north, Avenue C curb on the east, Binnacle Way curb on the south, and the private parking area on the west.

Most of the facilities included in this compound were constructed upon reactivation of the base in 1952. A summary of the buildings included in the Motor Pool Compound is provided in the following table and are shown on Figure 4-23.

Building No.	Construction Date	Original Use	Current Use
7168	1966	Maintenance Shop	Vacant
7169	1960	Supply Shed and Equipment Base	Tire Storage
7170	1952	Oil and Grease Storage and Maintenance	Administration
7171	1952	Maintenance Shop	Maintenance Shop
7172	1952	Maintenance and Administration	Administration and Equipment Storage (including Batteries)
7175	1952	Fuel Dispensing	Moved or Demolished

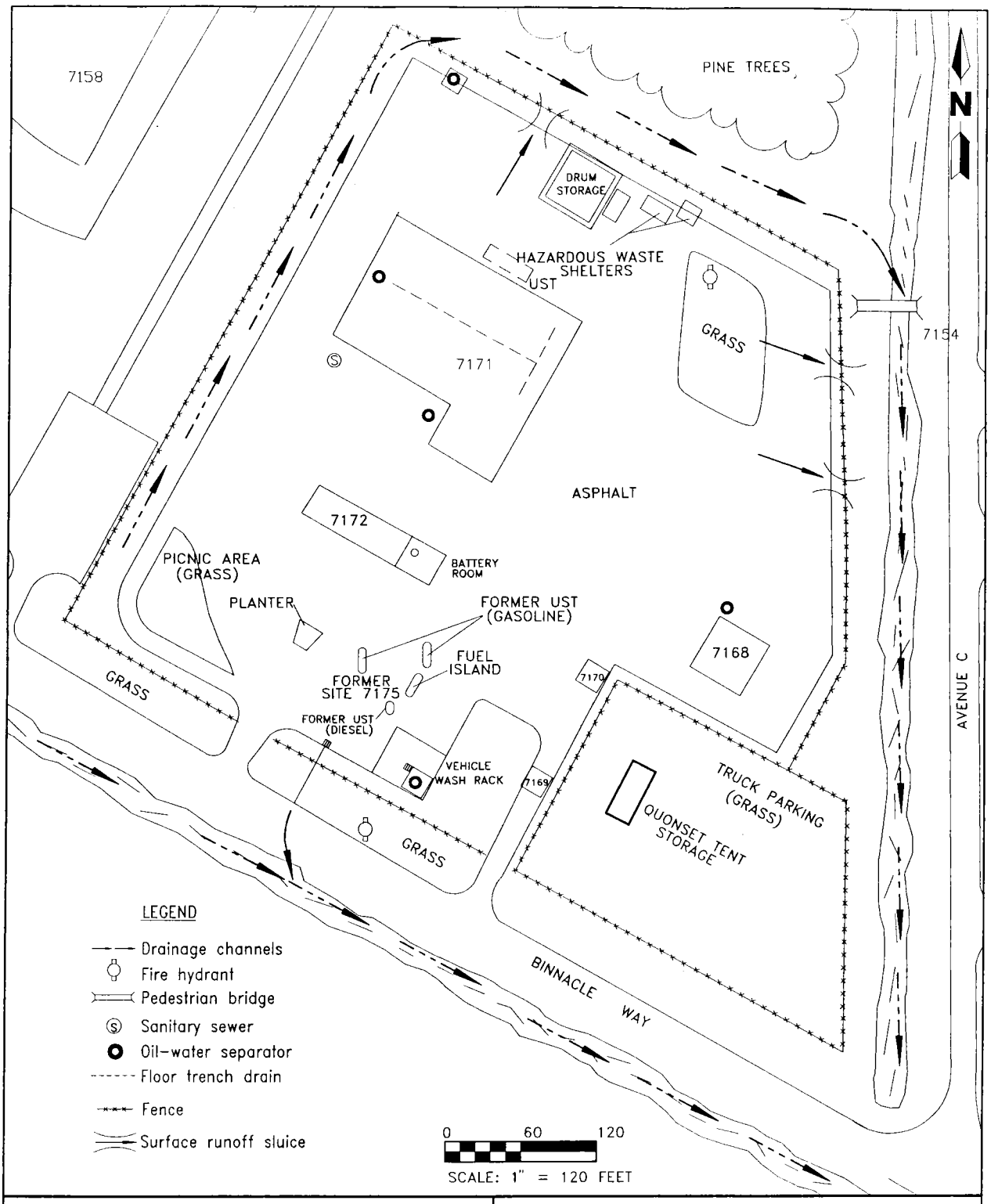

FIGURE 4-23
MCCOY ANNEX, BUILDINGS 7168, 7171, 7172, AND FORMER 7175, US ARMY MOTOR POOL COMPOUND, STUDY AREA 16, GROUP III STUDY AREAS

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Table 4-3
Analytical Program Summary
Group III Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/ TCL VOCs [1]	CLP/ TCL SVOCs [2]	CLP/TAL Inorganics	Pesti-cides/ PCBs [3]	Herbi-cides	TPH	Nitroaro-matics[4]	Radio-nuclides [5]	TSS, TDS, ALK, HARD	pH	TOC
Soil and Sediment Samples											
Study Area 16											
Bldgs 7168, 7171, and 7172 and Former 7175	7	7	7	0/9	-	7	-	-	-	-	-
Surface Soil	12	12	16	-	-	12	-	-	-	4	-
Subsurface Soil	4	4	4	0/4	-	4	-	-	-	-	4
Sediment											
Study Area 17											
Bldgs 7178, 7190, 7191, and 7193											
Surface Soil	4	4	4	4/4	-	4	-	-	-	-	-
Subsurface Soil	28	28	28	28/28	-	28	-	-	-	-	-
Sediment and Grit	6+2	6+2	6+2	6+2/6+2	-	6+2	-	-	-	-	4
Study Area 18											
Bldg 7182											
Surface Soil	5	5	5	5/5	3	-	-	-	-	3	-
Subsurface Soil	7	7	7	7/7	-	-	-	-	-	2	-
Sediment	-	-	-	-	-	-	-	-	-	-	-
Study Area 19											
Bldg 7184											
Surface Soil	1	1	1	0/0	-	1	-	-	-	-	-
Subsurface Soil	4	4	4	2/2	-	2	-	-	-	-	-
Sediment	-	-	-	-	-	-	-	-	-	-	-
Study Area 20											
Bldg 7187											
Surface Soil	2	2	2	2/2	2	2	-	-	-	-	-
Subsurface Soil	4	4	4	4/4	2	-	-	-	-	-	-

See notes at end of table.

Table 4-3 (Continued)
Analytical Program Summary
Group III Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/ TCL VOCs [1]	CLP/ TCL SVOCs [2]	CLP/TAL Inorganics	Pesti-cides/ PCBs [3]	Herbi-cides	TPH	Nitroaro-matics[4]	Radio-nuclides [5]	TSS, TDS, ALK, HARD	pH	TOC
Study Area 21											
Bldg 7203											
Surface Soil	6	6	6	6/6	6	6	-	-	-	-	-
Subsurface Soil	3	3	3	3/3	3	3	-	-	-	-	-
Study Area 22											
UNF-1											
Subsurface Soil	1	1	1	1/1	1	-	1	-	-	-	-
Sediment	2	2	2	2/2	2	-	2	-	-	-	2
Study Area 23											
UNF-2											
Surface Soil	1	1	1	-	-	1	-	-	-	-	-
Subsurface Soil	7	7	7	-	-	7	-	-	-	-	-
Study Area 24											
UNF-4 and UNF-5											
Subsurface Soil	5	5	5	5/5	-	-	-	-	-	-	-
Study Area 25											
Former DWTP											
Subsurface Soil	12	12	12	12/12	-	-	-	-	-	-	-
Study Area 26											
Bldgs 7351, 7352, 7357, 7358											
Subsurface Soil	6	6	6	6/6	-	-	-	-	-	-	-
Soil Totals	114	114	118	86/95	19	73	1	0	0	9	0
Sediment Totals	12	12	12	8/12	2	10	2	0	0	0	10

See notes at end of table.

Table 4-3 (Continued)
Analytical Program Summary
Group III Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/ TCL VOCs [1]	CLP/ TCL SVOCs [2]	CLP/TAL Inorganics	Pesti-cides/ PCBs [3]	Herbi-cides	TPH	Nitroaro-matics[4]	Radio-nuclides [5]	TSS, TDS, ALK, HARD	pH	TOC
WATER SAMPLES											
Study Area 16											
Bldgs 7168, 7171, and 7172 and Former 7175	4	4	4	0/4	-	4	-	-	4 (ALK)	-	-
Surface Water	5	5	5	-	-	5	-	-	5 (TSS)	1	-
Groundwater											
Study Area 17											
Bldgs 7178, 7190, 7191, and 7193											
Surface Water	4	4	4	4/4	-	4	-	-	4 (ALK)	-	-
Groundwater	6	6	6	6/6	-	6	-	-	6 (TSS)	-	-
Study Area 18											
Bldg 7182											
Groundwater	4	4	4	4/4	4	-	-	-	4 (TSS)	-	-
Study Area 19											
Bldg 7184											
Groundwater	4	4	4	2/2	-	-	-	-	4 (TSS)	-	-
Study Area 20											
Bldg 7187											
Groundwater	1	1	1	1/1	1	-	-	-	1 (TSS)	-	-
Study Area 21											
Bldg 7203											
Groundwater	2	2	2	2/2	2	2	-	-	2 (TSS)	-	-

See notes at end of table.

Table 4-3 (Continued)
Analytical Program Summary
Group III Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/ TCL VOCs [1]	CLP/ TCL SVOCs [2]	CLP/TAL Inorganics	Pesti-cides/ PCBs [3]	Herbi-cides	TPH	Nitroaro-matics[4]	Radio-nuclides [5]	TSS, TDS, ALK, HARD	pH	TOC
Soil and Sediment Samples											
Study Area 22											
UNF-1											
Surface Water	2	2	2	2/2	2	-	2	2	2 (ALK)	-	-
Groundwater	1	1	1	1/1	1	-	1	1	1 (TSS)	-	-
Study Area 23											
UNF-2											
Groundwater	2	2	2	-	-	2	-	-	2 (TSS)	-	-
Study Area 24											
UNF-4, UNF-5											
Groundwater	5	5	5	5/5	-	-	-	-	5 (TSS)	-	-
Study Area 25											
Bldg 7350 (Former DWTP)											
Groundwater	3	3	3	3/3	-	-	-	-	3 (TSS)	-	-
Study Area 26											
Bldgs 7351, 7352, 7357, 7358											
Groundwater	4	4	4	4/4	-	-	-	4	4 (TSS)	-	-
Surface Water Totals	10	10	10	6/10	1	8	2	2	10 (Alk)	0	0
Groundwater Totals	37	37	37	28/28	8	15	1	5	37 (TSS)	1	0

See notes at end of table.

Table 4-3 (Continued)
Analytical Program Summary
Group III Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/ TCL VOCs [1]	CLP/ TCL SVOCs [2]	CLP/TAL Inorganics	Pesti-cides/ PCBs [3]	Herbi-cides	TPH	Nitroaro-matics[4]	Radio-nuclides [5]	TSS, TDS, ALK, HARD	pH	TOC
QC SAMPLES (QUANTITY ESTIMATED) [6]											
Soil											
Trip (Aqueous)	11	0	0	0	0	0	0	0	0	0	0
Rinsate (Aqueous)	11	11	11	9/10	4	5	1	0	0	0	0
Duplicate	12	12	12	9/10	2	8	1	0	0	1	0
Matrix Spike	6	6	6	5/5	1	4	1	0	0	0	0
Matrix Spike Duplicate	6	6	6	5/5	1	4	1	0	0	0	0
Sediment											
Trip (Aqueous)	3	0	0	0/0	0	0	0	0	0	0	0
Rinsate (Aqueous)	3	3	3	2/3	1	2	1	0	0		0
Duplicate	2	2	2	1/2	1	1	1	0	0	0	1
Matrix Spike	1	1	1	1/1	1	1	1	0	0	0	0
Matrix Spike Duplicate	1	1	1	1/1	1	1	1	0	0	0	0
Groundwater											
Trip	20	0	0	0/0	0	0	0	0	0	0	0
Rinsate	20	20	20	16/16	5	6	1	4	0	0	0
Duplicate	4	4	4	3/3	1	2	1	1	4 (TSS)	1	0
Matrix Spike	2	2	2	2/2	1	1	1	1	0	0	0
Matrix Spike Duplicate	2	2	2	2/2	1	1	1	1	0	0	0

See notes at end of table.

Table 4-3 (Continued)
Analytical Program Summary
Group III Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/ TCL VOCs [1]	CLP/ TCL SVOCs [2]	CLP/TAL Inorganics	Pesti-cides/ PCBs [3]	Herbi-cides	TPH	Nitroaro-matics[4]	Radio-nuclides [5]	TSS, TDS, ALK, HARD	pH	TOC
Surface Water											
Trip	3	0	0	0/0	0	0	0	0	0	0	0
Rinsate	3	3	3	2/2	1	2	1	1	0	0	0
Duplicate	1	1	1	1/1	1	1	1	1	1 (ALK)	0	0
Matrix Spike	1	1	1	1/1	1	1	1	1	0	0	0
Matrix Spike Duplicate	1	1	1	1/1	1	1	1	1	0	0	0

[1] Volatile organic compound (VOC) analyses for groundwater and associated quality control (QC) samples will be low level Contract Laboratory Program (CLP) method to attain detection limits below Florida maximum contaminant levels (MCLs).

[2] Semivolatile organic compound (SVOC) analyses for groundwater and associated QC samples will include U.S. Environmental Protection Agency (USEPA) Method 8310 for benzo(a)pyrene and selective ion monitoring (SIM) for bis (2-ethylhexyl)phthalate, pentachlorophenol, and hexachlorobenzene to attain detection limits below Florida MCLs for these compounds.

[3] Polychlorinated biphenyl (PCB) analyses for groundwater and associated QC samples will be performed to obtain detection limits below the Florida MCL (0.5 micrograms per liter).

[4] Nitroaromatics analysis by USEPA Method 8330.

[5] Radionuclides analysis includes gross alpha and gross beta (USEPA Method 9310).

[6] Quantities assume a 20-day groundwater sampling program, an 11-day drilling and soil sampling program, and a 3-day surface water and sediment sampling program.

Notes: CLP = Contract Laboratory Program.
VOC = volatile organic compound.
SVOC = semivolatile organic compound.
TCL = target compound list.
TAL = target analyte list.
PCB = polychlorinated biphenyl.
TPH = total petroleum hydrocarbons.
TSS = total suspended solids.
ALK = alkalinity.
TDS = total dissolved solids.
HARD = hardness.
TOC = total organic carbon.
bldg = building.
UNF = unnumbered facility.
DWTP = domestic wastewater treatment plant.

The compound is currently 90 percent hard surfaced, although the majority of the compound was unpaved in 1952. It is unknown when the pavement was added.

No significant stained soil was observed on the property during a site visit in October 1994. Stressed vegetation was noted in a truck parking area in the southeast corner of the Motor Pool Compound. There is a Quonset-type tent in this area that is used for storage of paints, penetrants, and thinners. A pole-mounted transformer is located adjacent to the tent. There was visual evidence of staining and stressed vegetation near the base of the pole. A trailer-mounted diesel AST associated with a truck equipped with a generator was located in the northeastern corner of the truck parking area. Stained soil was observed beneath the AST. This area was reportedly vacant land until it was enclosed with a fence and used for vehicle parking in 1990 by the Florida National Guard.

Two free-standing hazardous materials storage buildings and a drum storage shelter with secondary containment are located along the northern side of the Compound. These structures are at least partially located on pavement.

The drum storage area is protected by a shelter with wood supports and a metal roof. The area is secured with a 6-foot-high chain link fence and a secondary containment berm. The containment area has no outfall or oil-water separator. Site personnel indicate that the containment area is bailed out after heavy rains. During the survey the drum storage area was dry and contained approximately 20 to 30, 55-gallon drums labeled as various solvents, lubricating oils, liquid soap, 50-weight motor oil, and steam cleaner fuel.

The other two storage buildings, located adjacent to the drum storage area, appear to have been used for storage of oil or hazardous materials in the past. One structure was labeled for flammables storage and the other displayed evidence of paint storage and spillage.

In addition, there are several cargo box-size storage containers located near Buildings 7170 and 7169 which are believed to contain surplus materials and supplies such as tires, and possibly, oils and paints. These containers are all located on pavement.

A vehicle wash rack with an oil-water separator associated with it is located in the southeast corner of the fenced Motor Pool Compound.

Building 7168. Building 7168, which was constructed in 1966, is a 2,700-square-foot automotive maintenance shop located in the central section of the Motor Pool Compound. The building is a metal pre-fabricated structure on a concrete slab with a roof supported by steel beams. An exhaust system vented to the outside is located in the concrete floor. There are two floor drains located inside the building and what appears to be an oil-water separator located outside the northwest corner of the building. Located on the northeast side of the facility are a restroom, small tool storage area, and an office. The facility is currently vacant.

Building 7169. Building 7169 was constructed in 1960 as a supply shed and equipment base, but is currently listed as the Tire Storage Shop. The building is an 800-square-foot, pre-fabricated metal structure on a concrete slab with a roof supported by steel beams.

Building 7170. Building 7170 was constructed in 1952 as a grease and oil storage shed and by 1972 was listed as an automotive maintenance shop. The facility is constructed of masonry walls with a built up roof on a concrete slab foundation and occupies 507 square feet.

Building 7171. Building 7171, which was constructed in 1952, is a 20,471-square-foot vehicle repair building. The facility is a two-story concrete block structure built on a concrete slab with wood rafters and a built-up roof housing high-bay maintenance facilities, shops, storage areas, and office space. An exhaust system vented to the outside is located in the maintenance bay floors.

An active 5,000-gallon UST containing diesel oil, located on the north side of the building, is used to fuel a single boiler in the building. The boiler operates under Florida Department of Environmental Protection Air Permit A048-202036. This UST will be evaluated in accordance with the schedule and procedures outlined in the NTC, Orlando Tank Management Plan (ABB-ES, 1994d).

Five lifts are located in the maintenance bays. All lifts have reportedly been inoperable for at least 9 years. Although the lifts were reportedly drained of oil, this information was not confirmed.

A paint booth, which includes a water curtain, is located on the northeast corner of the building. Old paint stains were noted in the paint booth. Minor oil stains were noted in a mechanical room.

A french drain is located in the main maintenance bay that drains to an oil-water separator on the northwest side of the building and then to an oil-water separator on the north fence line. A second oil-water separator associated with Building 7171 is tied to the sanitary sewer.

Building 7172. Building 7172 was constructed in 1952 as an automotive maintenance and administration building. The building is presently used by two Army Reserve Units. The western end of the building is used by the 138th Aviation Company Motor Pool for the storage of tools and equipment. The eastern end of the building is used by the 81st Army Reserve Command for administration and equipment storage. The 2,520-square-foot building is constructed of concrete block walls on a concrete slab floor with a built up roof.

One of the rooms of the building is used to store lead acid batteries for military vehicles. The rubber matting on the floor was badly deteriorated and numerous stains were noted on the floor. Fifteen 5-gallon containers of sulfuric acid were stored in this room. In addition, 16 used batteries stored on wooden pallets on the asphalt pavement were noted on the outside of the northeast corner of the building. Staining was observed on the pavement around the pallets. The pallets and batteries had been removed by October 1994. A single floor drain was observed in the middle of the battery room floor. There is a partially open excavation extending from the east side of the building, adjacent to the battery room. It appears that part of the sewer pipe may have been removed, possibly due to deterioration of the pipe from battery acid waste.

A steam heating sump was located in the northwest corner of the battery room. The steam return pump was inoperable, allowing the steam condensate to overflow onto the floor.

Building 7175. Building 7175, which was constructed in 1952, consisted of a three-pump fueling island and a small building to monitor dispensed fuel. The building was moved to another location (Building 7244) in the early 1980's (ABB-ES, 1994b). One gasoline UST (7,800-gallon capacity) and one diesel UST (1,000-gallon capacity) were removed from this location in November 1990. The remaining 7,800-gallon gasoline UST and pump island were removed in the last quarter of 1993 to complete the demolition and removal of the facility. At that time, four monitoring wells were installed around the perimeter of the tank graves (see Figure 4-23). Reportedly, free product was encountered in at least one of the wells. This UST closure was proposed to be evaluated in accordance with the schedule and procedures outlined in the NTC, Orlando Tank Management Plan (ABB-ES, 1994d). However, because of proximity to other possible contaminant sources and the potential for contaminant mixing, additional investigation and remediation of the tank-related contamination will be deferred until results of the screening activities are available.

4.16.2 Rationale and Plans for Site Screening The objective of site screening at Study Area 16 is to determine if chemical contaminants are present in environmental media as the result of releases of oils or hazardous materials associated with vehicle storage, refueling, and maintenance activities. Several activities will be conducted to evaluate overall impact (i.e., non-point source related), whereas others are targeted for specific areas of concern.

Objective: to determine what chemical contaminants may be associated with current and former activities in this study area, and which environmental media may be impacted.

Methods:
- passive soil gas survey
- surface soil sampling
- surface water and sediment sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

A passive soil gas survey will be conducted across the entire study area to identify areas with elevated concentrations of VOCs or SVOCs in subsurface soil or groundwater, and to focus the subsequent field investigation locations. Soil gas sampling locations will be established on a 60-foot sampling grid, as shown on Figure 4-24. Approximately 80 points will be sampled and analyzed. These analyses will meet USEPA Level II DQOs.

Following review of the soil gas results, up to six soil borings (with a minimum of four) will be advanced in the study area, with monitoring well installations in up to four of the borings (with a minimum of two wells). Preliminary boring and well locations are shown on Figure 4-25; actual boring locations will be determined in the field following review of soil gas data and utility clearance. Locations will be proposed by the field team and approved by the Technical Leader prior to completion. Borings will be terminated at the water table and wells will be installed so that the screened interval intercepts the water table (anticipated total well depth is 15 feet below land surface [bls]). Each boring will be sampled continuously, using 2-foot-long split-spoon sampling devices below the surface interval and stainless-steel hand augers for the surface interval. (Alternatively, the borings may be completed entirely by hand if the water table is very shallow and the borehole remains open.)

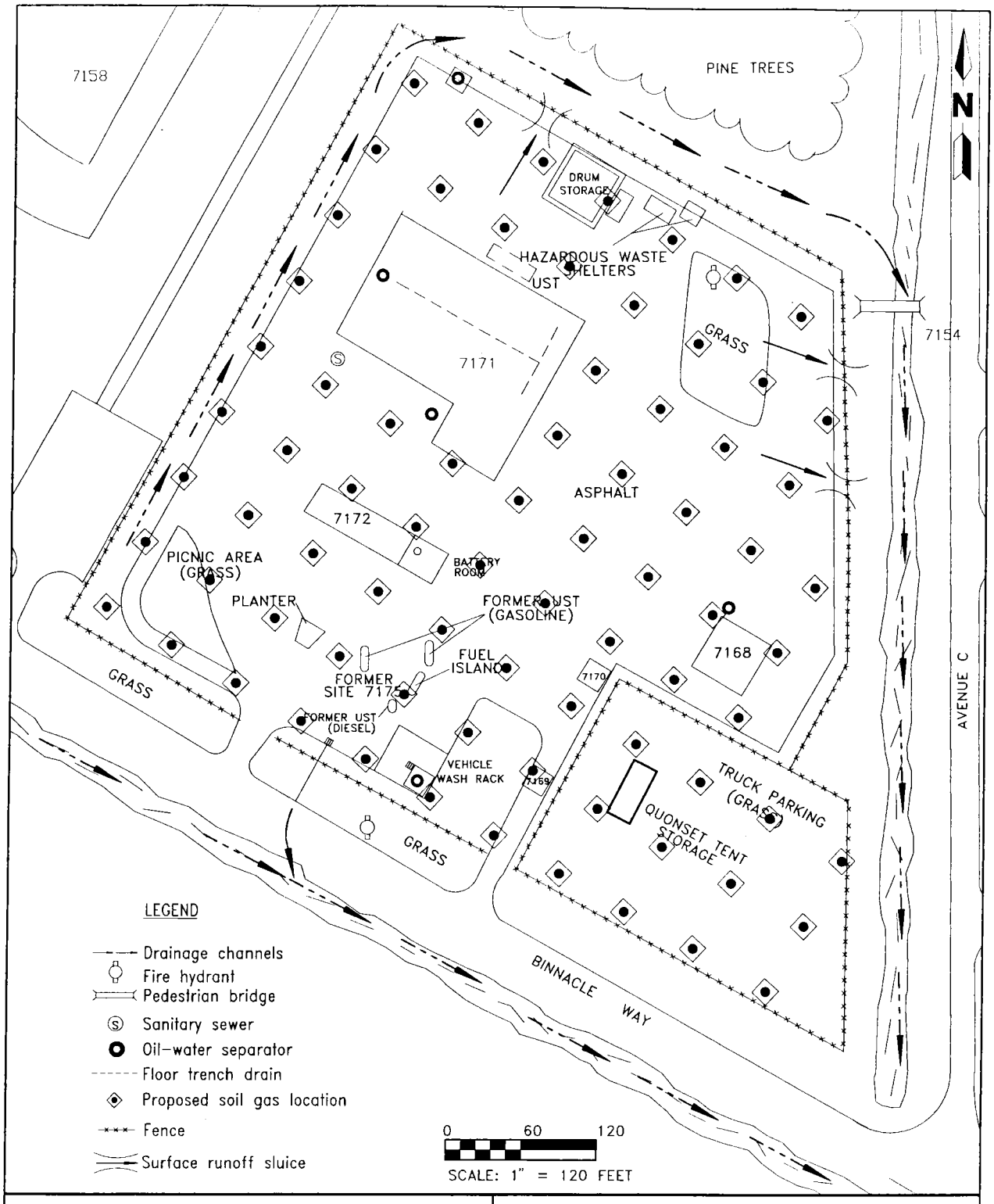

FIGURE 4-24
PROPOSED SOIL GAS LOCATIONS, MCCOY ANNEX, BUILDINGS 7168, 7171, 7172, AND FORMER 7175, US ARMY MOTOR POOL COMPOUND, STUDY AREA 16, GROUP III STUDY AREAS

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SITE SCREENING PLAN

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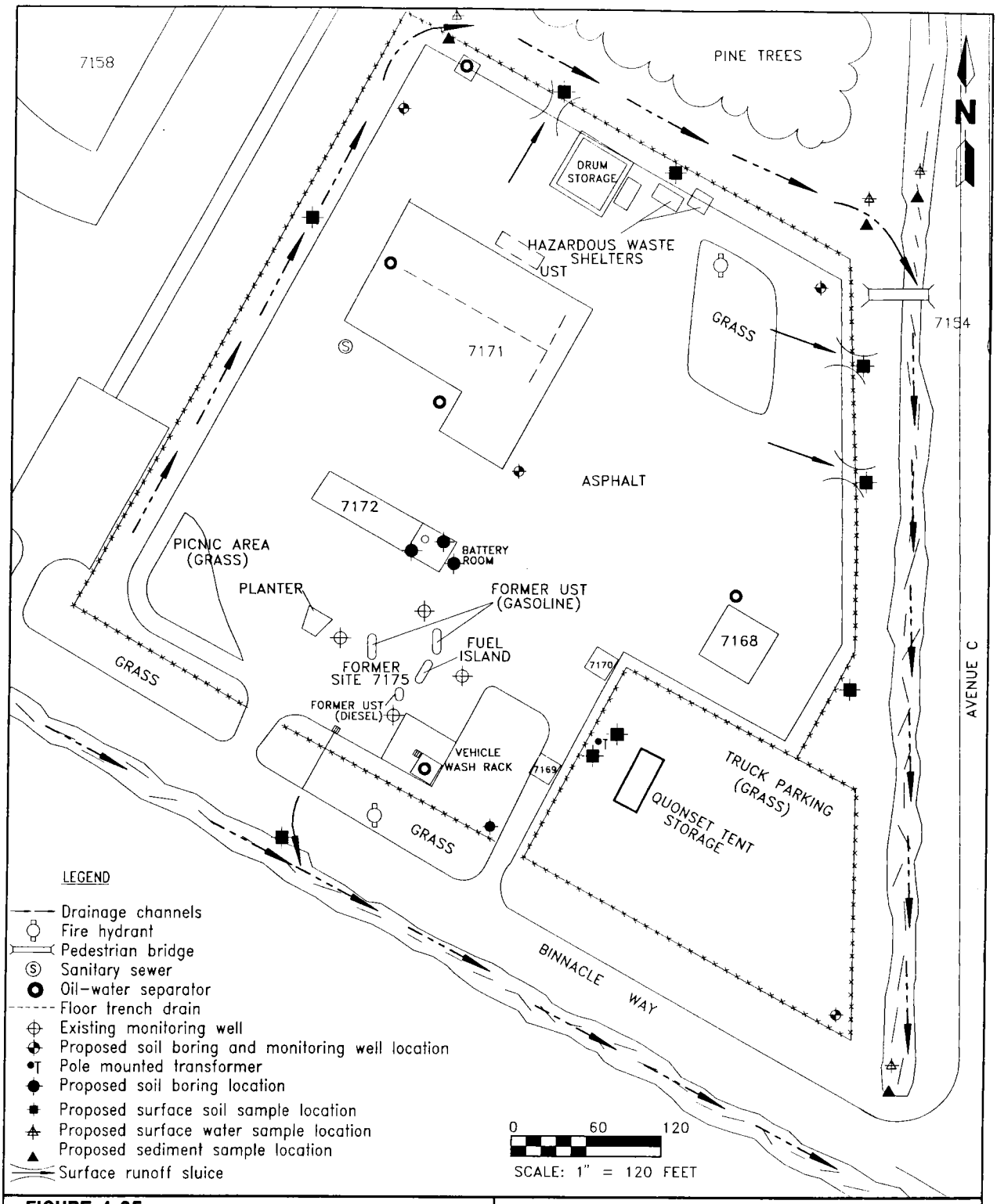

FIGURE 4-25
PROPOSED SOIL BORING, MONITORING WELL, SURFACE SOIL, SEDIMENT, AND SURFACE WATER SAMPLING LOCATIONS, MCCOY ANNEX BUILDINGS 7168, 7171, 7172, AND FORMER 7175, US ARMY MOTOR POOL COMPOUND, STUDY AREA 16, GROUP III STUDY AREAS

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SITE SCREENING PLAN

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Two soil samples will be submitted for laboratory analyses from each boring; one submittal will be from the first sample interval (0 to 2 feet, with 0 representing the land surface or the top of soil below pavement) in each boring and the second submittal will be from an interval where FID screening or visual observation indicates the presence of contaminants. If no field observations indicate the presence of contamination, the second submittal will be from the interval directly above the water table. Up to 12 soil samples (2 from each boring) and up to 4 groundwater samples (1 from each new well) will be submitted for TPH CLP VOC, SVOC, and TAL laboratory analyses in accordance with USEPA Level IV DQOs. All groundwater samples will also be submitted for TSS determination to aid in the evaluation of inorganics data and the effectiveness of well development and groundwater sampling techniques.

If free phase petroleum is encountered in any of the monitoring wells, the product thickness will be measured using an oil-water interface probe, and a groundwater sample will be collected from below the interface by lowering the sampling tubing approximately 1 foot below the bottom of the product layer.

Seven surface soil samples will be collected near the fenced perimeter at visible surface runoff points, as shown on Figure 4-25. Actual sampling locations will be determined in the field. Samples will be preferentially collected from areas of visibly stained soil or stressed vegetation, as close as possible to the point where runoff exits pavement. One surface soil sample (0 to 1 foot depth) will be collected by hand, using either stainless-steel augers or spoons, from each sample location. Samples will be submitted for TPH and CLP VOC, SVOC, PCB and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

Four surface water and sediment sample pairs will be collected from locations within the drainage ditches that border the study area and, therefore, potentially receive direct discharge or surface runoff from the compound. Sample locations are proposed for points in the channels above where a change in flow velocity occurs (e.g., where a secondary channel enters a primary channel). These locations are shown on Figure 4-25. Surface water and sediment samples will be submitted for TPH and CLP VOC, SVOC, PCB, and TAL laboratory analyses in accordance with USEPA Level IV DQOs. Surface water samples only will also be submitted for laboratory analyses of alkalinity and sediment samples will be submitted for TOC analyses.

Building 7172. Several specific field activities will be conducted at Building 7172 to investigate the potential release of acids and metals from the battery storage room.

Objective: to determine the presence of contamination associated with battery acid waste that may have been released from the battery storage area.

Methods:
- subsurface soil sampling
- groundwater sampling

Two cores will be drilled through the concrete floor of the battery storage room to enable sampling of the soil directly beneath the slab. The cores (minimum 4 inch diameter) will be cut with a concrete coring machine. The cored holes will be opened in areas where there is visual evidence of concrete degradation or as close as practical to the floor drain located in the center of the room. One

sample will be collected from each of the core holes from a depth of up to 1 foot beneath the bottom of concrete. Samples will be collected using stainless steel spoons, trowels, or augers. One soil boring will be completed by hand auger in the open excavation adjoining the battery room. Two samples will be collected from the excavation: one sample will be composited over the 0 to 2 foot interval (0 representing the floor of the excavation) and a second sample will be composited from the interval directly above the water table. All four soil samples from this area will be submitted for laboratory analyses of pH and CLP TAL inorganics only, in accordance with USEPA Level IV DQOs.

A groundwater sample from an existing monitoring well (labeled "B"), which was installed during the tank removal efforts at former Building 7175, will be collected and submitted for pH, TSS, TPH, and CLP VOC, SVOC, and TAL laboratory analyses in accordance with USEPA Level IV DQOs. If free phase petroleum is encountered in this monitoring well, the product thickness will be measured using an oil-water interface probe, and a groundwater sample will be collected from below the interface by lowering the sampling tubing approximately 1 foot below the product.

Truck Parking Area. Stained soil was observed beneath a pole-mounted electrical transformer within the truck parking area (Figure 4-25). Surface soil sampling will be conducted to evaluate the possible presence of PCBs in the stained soil.

Objective: to determine the nature of stained soil beneath a pole-mounted electrical transformer.

Method: • surface soil sampling

Up to four surface soil samples will be collected from visibly stained areas beneath the pole-mounted transformer. One composite sample (0 to 1 foot depth) will be collected by hand from each location, using either stainless-steel augers or spoons. These samples will be field screened for the presence of PCBs by immunoassay technique, in accordance with USEPA Method 4020. Based on the field screening results, up to two samples will be submitted for confirmatory laboratory analyses of CLP PCBs only in accordance with USEPA Level IV DQOs. If there are positive field screening results from any of the sample locations, then at least one of the two samples submitted for laboratory analysis will be from a location with a positive PCB result. If there are no positive field screening results, then one sample only will be submitted to the laboratory to confirm the absence of PCBs.

4.17 STUDY AREA 17, DEFENSE PROPERTY DISPOSAL OFFICE, TRAINING MATERIAL STORAGE (BUILDING 7178), MAINTENANCE OFFICE (BUILDING 7190), INERT STORAGE WAREHOUSE (BUILDING 7191), AND GENERAL WAREHOUSE (7193).

4.17.1 Background and Conditions Buildings 7178, 7191, and 7193 are part of a complex, including three adjoining open areas collectively known as the Defense Property Disposal Office (DPDO) for the NTC, Orlando, McCoy Annex. The complex, which is located in the northwest quadrant of the intersection of Ammons Road and Avenue C (Figure B-3, Appendix B, and Figure 4-26), is adjoined by Building 7189 Medical Records Storage Warehouse on the southeast, by a fenced grassy area being used as a motor pool parking area to the south and southwest, by military housing to the west and northwest beyond a drainage ditch, and Buildings 7182 (Housing

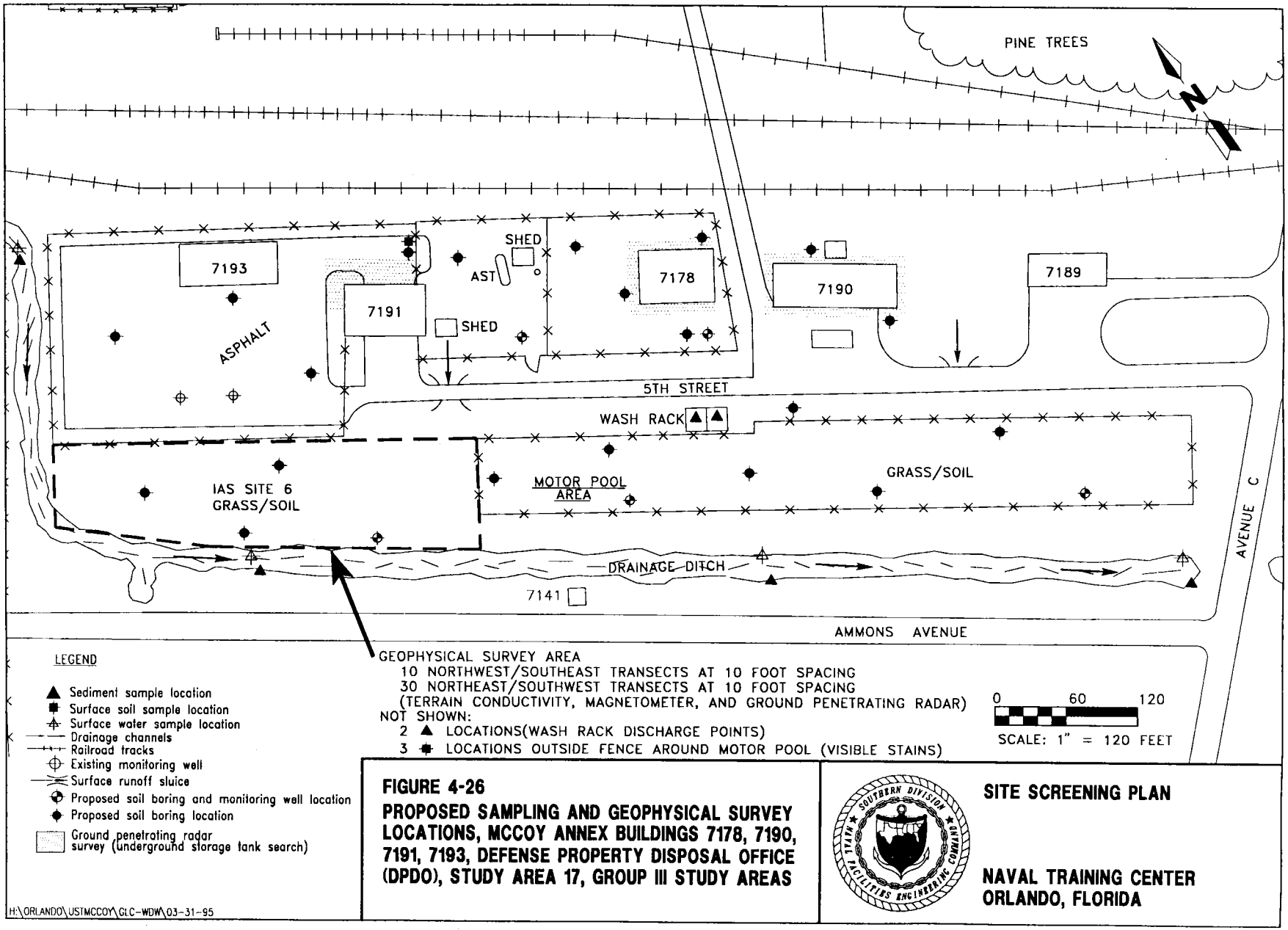

FIGURE 4-26

PROPOSED SAMPLING AND GEOPHYSICAL SURVEY LOCATIONS, MCCOY ANNEX BUILDINGS 7178, 7190, 7191, 7193, DEFENSE PROPERTY DISPOSAL OFFICE (DPDO), STUDY AREA 17, GROUP III STUDY AREAS

SITE SCREENING PLAN

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Office), 7195 (Pest Control Building), and 7187/7188 (Warehouses) to the north and northeast beyond a triple set of railroad tracks. For the purposes of the investigation of this study area, the northern boundary is considered to be the southernmost of the three rails and the southern boundary is considered to be the drainage ditch paralleling Ammons Avenue (Figure 4-26).

The IAS (C.C. Johnson, 1985) indicates that a 110-gallon UST and a 250-gallon AST were located within the DPDO area (building associations were unspecified). The IAS also states that out of service electrical transformers may have been stored in this area as part of DPDO operations. In addition, there is the possibility that during the cleanup activities associated with IAS Site 6 (south of Buildings 7191 and 7193), 55-gallon drums of unknown waste may have been stored at this area. The following buildings and open areas are included in the study area, because of their alleged past use for storage of various equipment and materials being handled by the DPDO.

Building 7178. This building was constructed in 1965 as the Training Material Storage building, and is currently used for the storage of furniture and carpet squares. The 3,312-square-foot building is constructed of concrete block walls on a concrete slab foundation with a peaked roof and gables that are galvanized metal over wood frame. The building is surrounded by badly deteriorated asphalt on the north, west, and south sides. The paved area is completely surrounded by a fence.

A framed shed, divided into four compartments, has been added to the northwest wall of the building. A flammable materials sign was noted in this area indicating that the area was used for the storage of flammable and/or hazardous material. There was evidence of former drum storage in this area as well.

The remnants of a small building foundation were observed in the northwest corner of the paved lot. The use of this former structure is unknown.

Aerial photographs from the 1960's indicate what appear to be numerous 55-gallon drums stacked or piled throughout the area immediately surrounding Building 7178.

Reportedly, a 110-gallon aboveground heating oil tank has been removed from Building 7178 (ABB-ES, 1994b). An excavation was observed on the northeast side of the building, near the corner with the shed, which may indicate the location of a former UST. Feeder pipes leading to a boiler were still visible exiting the wall in this area during an October 1994 site visit.

Building 7190. Building 7190, which was constructed in 1952, is an administrative building housing the 165th ADA Maintenance Office (Army). The area appears to have been undeveloped prior to 1952. The building is located directly south of the southeast-northwest railroad track at the McCoy Annex. The 3,000-square-foot building is a cinderblock structure with a flat roof. Currently, only light automotive maintenance occurs at this building.

Base records show that the building was equipped with a 550-gallon underground fuel oil storage tank at the time of construction. The tank is reported to have been removed in March 1993. Although the former location of the tank is unknown, a metal plate covering an excavation northeast of the building is suspected to be the location. The disposition of this UST will be evaluated in accordance with

the schedule and procedures outlined in the NTC, Orlando Tank Management Plan (ABB-ES, 1994d).

Included on the property list for Building 7190 is the Motor Pool and Contractor Storage Area, located across Fifth Street and south of Building 7190 (Figure 4-26). This area, which is unpaved and surrounded by a locked fence, appears to have been used for vehicle and materials storage for many years, based on aerial photograph review. The fenced lot is separated from Ammons Avenue by a drainage ditch.

During the EBS (ABB-ES, 1994b), several 55-gallon drums of waste fuel, oil, and ethylene glycol were observed on wooden pallets along the northern fence of the motor pool area. There was no secondary containment or placards present designating the area for waste storage.

Hazardous materials were also observed stored within the fenced motor pool area during an October 1994 site visit. These included paints, oils, anti-freeze, and automotive fluids that were stored in flammable storage cabinets or on pallets.

An open, two-bay vehicle wash rack is located outside the fenced area and adjoining 5th Street, across from the entrance drive to Building 7178. Property records appear to have incorrectly reported that the wash rack had been demolished. The drain in the eastern wash bay was observed to be stopped up, with standing water covering a wooden pallet, and the drain in the western bay was covered with dried paint. The discharge points for the drains in these wash racks have not been determined.

Building 7191. Building 7191, which was constructed in 1955, is currently used for furniture storage. The 3,072-square-foot building is constructed of concrete block walls on a concrete slab foundation with a flat, wood-frame, built-up roof.

A 110-gallon UST storing heating oil was located at the facility, but was reportedly removed at an unknown time. There is visual evidence suggesting that a UST may still be present along the rear (northeast) side of the building. There is also evidence of former storage of drums in the paved area on the northeast side of the building.

An adjacent area of concern is the fenced, grassy lot between Buildings 7178 and 7191. This lot is currently used by a grounds maintenance contractor to store, maintain, and fuel yard maintenance equipment. Heavily stained areas were noted around a 55-gallon drum of multi-grade oil and a two-compartment 500-gallon AST used for the storage of gasoline and diesel fuel. Stains were also noted in several isolated areas used for intermittent parking of maintenance equipment.

Building 7193. Building 7193, which was constructed in 1959, is currently used for general storage. The 3,320-square-foot building has a concrete slab floor with metal frame walls, a metal frame, and a peaked roof covered with metal siding (i.e., a Butler building).

There is an asphalt-paved lot on three sides of the building. The pavement is marked with numbered bays and was apparently used for storage of materials being handled by the DPDO. The pavement is enclosed by fence on all sides.

Two monitoring wells, installed during the Verification Study (Geraghty & Miller, 1986) are located within the paved area, near the southwestern fence line (Figure 4-26). These wells were installed as part of the investigation of IAS Site 6, the open grassy field south of the fenced lot at Building 7193, where there were allegedly buried drums and disposal of unspecified wastes. Trace amounts of methylene chloride were detected in each well, which Geraghty & Miller attributed to laboratory artifacts. However, it appears that the location of IAS Site 6 was misinterpreted by Geraghty & Miller, and the wells should have been located farther south in the grassy field.

IAS Site 6 is a formerly fenced area south of the present fence surrounding Buildings 7191 and 7193. Prior to the Verification Study, 73 leaking 55-gallon drums present during the IAS were removed. Additional drums had been placed in this area within a week or two of the EBS (ABB-ES, 1994b). Some of the drums in this area were crushed in place with the arm of a backhoe. In March 1994, 15 to 20 intact drums, some with and without labels, and a 1-gallon can of dried paint material were stored in this area. Some new soil staining was noted in this area. These drums were removed by the time of an October 1994 site visit. During cleanup activities associated with this area, some of the 55-gallon drums are known to have been stored in Building 7193. There is the possibility that Buildings 7178 and 7191 were used for the same purpose.

4.17.2 Rationale and Plans for Site Screening The objective of site screening at Study Area 17 is to determine if chemical contaminants are present in environmental media as the result of releases of oils or hazardous materials associated with past equipment and materials storage practices and current maintenance activities. Several activities will be conducted to evaluate overall impact (i.e., non-point source related), whereas others are targeted for specific areas of concern.

Building 7178. The objectives of site screening at Building 7178 are to confirm the possible presence of an abandoned UST near the building and to determine what chemical contaminants may have been released due to current or former activities at the site.

Objective: to confirm the possible presence of an abandoned UST near the building.

Method:
- geophysical survey (GPR only)

A GPR reconnaissance survey will be conducted along the three paved sides of the building to determine the possible presence of an abandoned UST. The location of any anomalies will be noted on a site sketch map and the results provided to the Tank Management Group for incorporation into the Tank Management Plan (ABB-ES, 1994d).

Objective: to determine the presence of chemical contaminants potentially released during former site activities (surplus equipment and materials storage).

Methods:
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Four soil borings will be completed in the area surrounding the building. A monitoring well will be installed near one of the borings. Preliminary boring and well locations are shown on Figure 4-26; actual locations will be determined in the field based on evidence of former equipment storage or deteriorated pavement. The monitoring well will be installed in a location determined to be downgradient of suspected source areas (based on topography), or in the vicinity of a boring that showed evidence (visual or FID) of soil contamination. Locations will be proposed by the field team and approved by the Technical Leader prior to completion. Borings will be terminated at the water table and the well will be installed so that the screened interval intercepts the water table (anticipated total well depth is 15 feet bls). All borings will be completed prior to well installation. This approach is recommended due to the numerous drums believed to be visible in this area on aerial photographs. Soil in the vicinity of Building 7178 can be characterized with field instruments prior to well installation.

One soil sample will be submitted for laboratory analysis from each boring; the selected sample will be from an interval where FID screening or visual observations indicates the presence of contaminants. If no field observations indicate the presence of contamination, the submittal will be from the interval directly above the water table. Four soil samples (one from each boring) and one groundwater sample will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. The groundwater sample will also be submitted for TSS determination to aid in the evaluation of inorganics data and the effectiveness of well development. These analytical results will meet USEPA Level IV DQOs.

Building 7190. The objectives of site screening are to confirm the removal of a UST from this site, and to determine what chemical contaminants, if any, are associated with current and former activities at this building and in the Motor Pool and Contractor Storage Areas, located across Fifth Street.

Objective: to confirm the removal of an abandoned UST near the building.

Method: • geophysical survey (GPR only)

A GPR reconnaissance survey will be conducted around the perimeter of the building, as shown on Figure 4-26, to confirm the removal of the abandoned UST. The location of any anomalies will be noted on a site sketch map and the results delivered to the Tank Management Group for incorporation into the Tank Management Plan (ABB-ES, 1994d).

Objective: to determine the presence of chemical contaminants potentially released during current and former site activities (vehicle maintenance).

Method: • subsurface soil sampling

Two soil borings will be completed in the area surrounding the building. Preliminary boring locations are shown on Figure 4-26; actual locations will be determined in the field based on evidence of the former UST and utility clearance. Locations will be proposed by the field team and approved by the Technical Leader prior to completion. Each boring will be sampled continuously and terminated at the water table, using 2-foot-long split-spoon sampling devices below the surface

interval and stainless-steel hand augers for the surface interval. (Alternatively, the borings may be completed entirely by hand if the water table is very shallow and the borehole remains open). The borings will be grouted after completion.

One soil sample will be submitted for laboratory analysis from each boring; the selected sample will be from an interval where FID screening or visual observation indicates the presence of contaminants. If no field observations indicate the presence of contamination, the submittal will be from the interval directly above the water table. Two soil samples (one from each boring) will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

Motor Pool and Contractor Storage Area. The objective of site screening in this area is to determine if chemical contaminants are present in environmental media as the result of releases of oils or hazardous materials associated with past and present equipment and materials storage practices.

Objective: assess any contamination resulting from past uses of the site.

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Due to possible runoff outside the motor pool area, three surface soil samples will be collected along the drainage ditch located southwest of the fenced motor pool area. Locations will be selected by the field team based on soil staining and surface water runoff patterns.

An additional eight soil borings, with monitoring wells installed in two of the borings, will be advanced to the water table in the adjacent motor pool area. A subsurface soil sample will be collected from each boring and water samples will be collected from the two wells. All samples will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. All groundwater samples will also be submitted for TSS determination to aid in the evaluation of inorganics data and the effectiveness of well development and groundwater sampling techniques.

Vehicle Wash Rack. The objectives of site screening activities at this location are to determine the discharge points for the wash rack drains, and to determine what, if any, chemical contamination may be present in or released from this structure as the result of past use practices.

Objective: to assess potential contamination that may have been introduced to the wash rack.

Method:
- sediment and grit sampling

Following evacuation of any standing water located in the wash rack drains, one sediment or grit sample will be collected from each drain. The method of sample collection will be determined in the field, based on drain access, depth to sampling point, etc. Both sediment samples will be submitted for TPH and full

suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

Objective: to determine the discharge point(s) for drains in the vehicle wash rack bays and, if possible, determine what contaminants, if any, may have been discharged to the environment from the drains.

Methods:
- engineering records review
- smoke or dye tracer tests
- sediment and surface soil sampling

To identify potential locations where contaminants introduced to the wash rack drains may have discharged to the environment, a review of existing engineering drawings will be completed. Following completion of the sediment sampling task, the drains will be cleared of physical obstructions and tracer tests, using smoke or dye, will be completed on both drains to determine their connection and discharge points.

If it is determined that the drain discharges are not connected to the base's sanitary sewer system, a sample will be collected at the discharge points (either a sediment sample from the drainage pipe at its outfall or a surface soil sample from below the outfall). Both samples will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

Building 7191. The objectives of site screening at and around Building 7191 are to determine the presence and location of any abandoned USTs, and to determine the presence of any chemical contaminants in the soil.

Objective: to confirm the removal of an abandoned UST near the building.

Methods:
- geophysical survey (GPR only)

A GPR reconnaissance survey will be conducted around the perimeter of the building, as shown on Figure 4-26, to confirm the removal of an abandoned UST. The location of any anomalies will be noted on a site sketch map and the results provided to the Tank Management Group for incorporation into the Tank Management Plan (ABB-ES, 1994d).

Objective: to determine if chemical contaminants are present in the soil and groundwater at and around Building 7191.

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

A surface soil sample will be collected near the northeast side of the site at the rear of Building 7191 to assess the level of contaminants associated with runoff. One soil boring will also be completed at this location, along with two additional borings in the grassy lot east of Building 7191. Locations of borings in the grassy lot will be determined in the field based on visible staining or surface water drainage patterns. A monitoring well will be installed in the southernmost boring (based on expected groundwater flow direction). Three soil samples (one from each boring) and one groundwater sample will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA

Level IV DQOs. The groundwater sample will also be submitted for TSS determination to aid in the evaluation of inorganics data and the effectiveness of well development and groundwater sampling techniques.

Building 7193. The objective of the site screening at Building 7193 is to locate any abandoned USTs in the area to the southwest of the building, and determine the presence and extent of any releases of wastes previously stored onsite.

Objective: to determine the presence of any abandoned USTs within the study area.

Method:
- geophysical surveys (GPR, magnetometer, and TC)

A geophysical survey, using GPR, magnetometer, and TC, of the field (IAS Site 6) southwest of Building 7193 will be conducted. The geophysical survey program will be conducted in two phases: an initial magnetometer and TC survey, followed by a confirmatory GPR survey focused on anomalies identified by the magnetometer and TC. The area of investigation is estimated to be approximately 100 feet by 300 feet. Magnetometer and TC readings will be collected at stations every 10 feet within this area. GPR transects, also on 10-foot spacings, will be conducted along north to south and east to west transects. A GPS survey of key transect lines, magnetic anomalies, and other relevant features will be conducted so that geophysical survey areas may be mapped. The results of the geophysical survey will be used to focus the next phase of investigation in this study area.

Objective: evaluate the possible presence of contaminants released from waste materials stored onsite or leaked from potential USTs located onsite.

Methods:
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Three soil borings will be completed in the paved area surrounding Building 7193. Proposed boring locations are shown on Figure 4-26; actual locations will be determined in the field with bias towards areas of deteriorated pavement or drum storage (eg., drum ring imprints in the asphalt). Soil borings may be completed by hand.

One soil sample from each boring will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

One of the two existing monitoring wells will be redeveloped and sampled for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. The groundwater sample will also be submitted for TSS determination to aid in the evaluation of inorganics data and the effectiveness of well development and groundwater sampling techniques.

Four soil borings will be advanced at IAS Site 6, with one completed as a monitoring well. Locations will be chosen after evaluation of geophysical data and will be approved by the Technical Leader. Two soil samples will be collected from each boring; one from the surface (0 to 1 foot) interval and one from the interval immediately above the water table or where visual observation or FID screening suggest contamination. Eight soil samples and one groundwater sample

will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

Objective: to determine if past or current site activities have impacted surface water and sediment at the study area.

Methods:
- sediment sampling
- surface water sampling

Four surface water and sediment sample pairs will be collected from locations within the drainage ditches that border the study area and, therefore, potentially receive direct discharge or surface runoff from the compound. Sampling points include upstream and downstream locations, and locations opposite the motor pool area and IAS Site 6. These locations are shown on Figure 4-26. Surface water and sediment samples will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. Surface water samples only will also be submitted for laboratory analyses of alkalinity and sediment samples will be submitted for TOC analyses.

4.18 STUDY AREA 18, HOUSING OFFICE (BUILDING 7182).

4.18.1 Background and Conditions

Building 7182. Building 7182, which was built in 1952, is a 14,450-square-foot one-story cinderblock structure located off Binnacle Way (Figure B-3, Appendix B, and Figure 4-27). The building currently contains the administrative offices of the Housing Office as well as storage space for paints and solvents, roofing materials, lawn supplies, and a wood shop with an external sawdust collection system.

A review of a 1947 aerial photograph and base records indicates that the building was constructed on undeveloped land in 1952 as maintenance shops and storage space for the Air Force. The building was occupied by the Naval Construction Battalion in 1973 until May 1993, when the Housing Office took possession.

The paved lot surrounding the building includes a large fenced enclosure for trailer and recreational vehicle (RV) storage, an open-air gas cylinder storage area, a paint storage building (Building 7179) previously used for battery storage and charging, and a bermed, open-air hazardous material storage area containing several unmarked rusted drums, drums of latex paint waste, lubricating oils, and other paints. A break was noted on the northeast side of the berm. The gas cylinder storage area contained rusty tanks of acetylene, propane, and oxygen (some with "empty labels"). Two unmarked drums were observed on pallets outside the secondary containment area of the hazardous material storage area. Several stains of absorbent material and a fresh spill of latex paint were identified just outside the storage area. Numerous appliances and equipment such as refrigerators, hot water heaters, and transformers were also identified in the paved lot.

The building has an Air Emissions Permit (A048-202036), which expires December 30, 1996, for a No. 2 diesel fuel boiler permitted for a maximum of 1.0 million

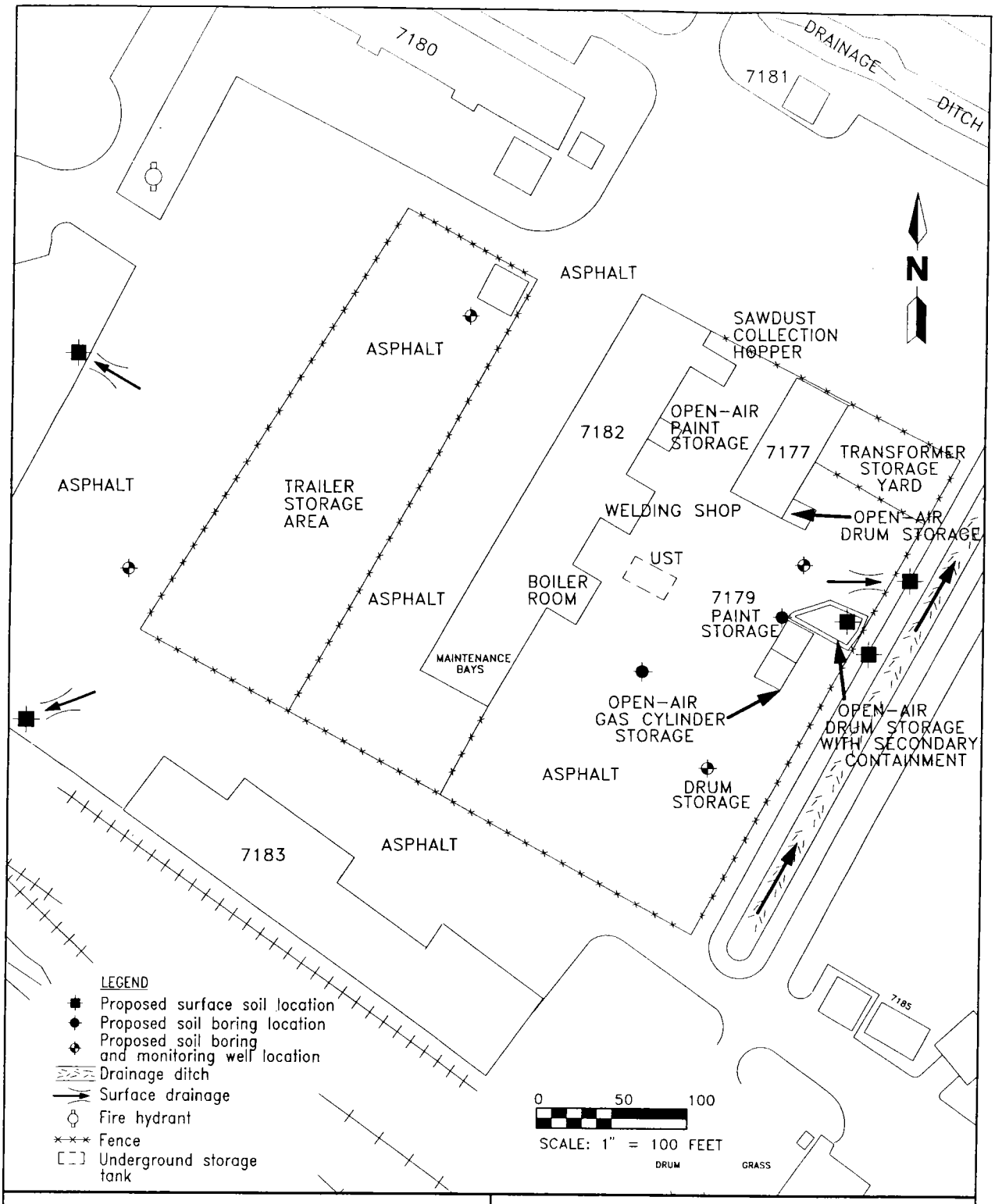

FIGURE 4-27
PROPOSED SURFACE SOIL, SOIL BORING, AND MONITORING WELL LOCATIONS, MCCOY ANNEX BUILDINGS 7182, 7179, HOUSING OFFICE, STUDY AREA 18, GROUP III STUDY AREAS

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British Thermal Units (Btu/hr). An active 1,000-gallon steel UST is the source of diesel fuel for the boiler. The tank, which was installed in 1952, has no documented leak detection system or secondary containment.

4.18.2 Rationale and Plans for Site Screening The objectives of site screening at Study Area 18 are to determine what, if any, chemical contaminants may have been released due to present or former activities at the study area.

Objective: to determine what chemical contaminants may be associated with present and former activities at the Housing Office.

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Five surface soil samples will be collected at runoff points around the study area (Figure 4-27). One will be collected from the runoff area north of the hazardous storage area. Another will be collected from inside the berm around the hazardous storage area. The third sample will be collected in the runoff area opposite the break in the berm on the northeast side. These three samples will be submitted for laboratory analyses of pH and herbicides, and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. The fourth and fifth samples will be collected at runoff areas identified northwest and southwest of Building 7182. These two surface soil samples will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

Six soil borings, with monitoring well installations in four of the borings, will be completed in the study area. One boring will be located next to Building 7179 opposite the drain visibly exiting the wall of the building in the northeast corner. Two soil samples will be collected from this boring; one from the surface interval below the pavement and one from the interval immediately above the water table or where visual observation or FID screening suggest contamination. Three of the remaining borings and two of the monitoring wells will be installed in the paved lot southeast of Building 7182. Wells are proposed for areas where drum rings were observed on the pavement. Monitoring wells will be installed in the fifth and sixth borings, proposed for the paved area near the trailer storage area (Figure 4-27).

Seven soil samples (including two from the boring next to Building 7179) and four groundwater samples (one from each well) will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. The soil samples collected from the boring in the vicinity of Building 7179 will also be submitted for pH analysis.

4.19 STUDY AREA 19, AUTOMOTIVE HOBBY SHOP (BUILDING 7184).

4.19.1 Background and Conditions

Building 7184. Building 7184, which was built in 1965, is a 9,100 square foot automobile maintenance and repair facility located off Binnacle Way in the central part of the McCoy Annex (Figure B-3, Appendix B, and Figure 4-28). The structure, which includes 11 service bays, air compressors, hydraulic lifts, and an office, is a concrete block and aluminum building with a pitched aluminum roof.

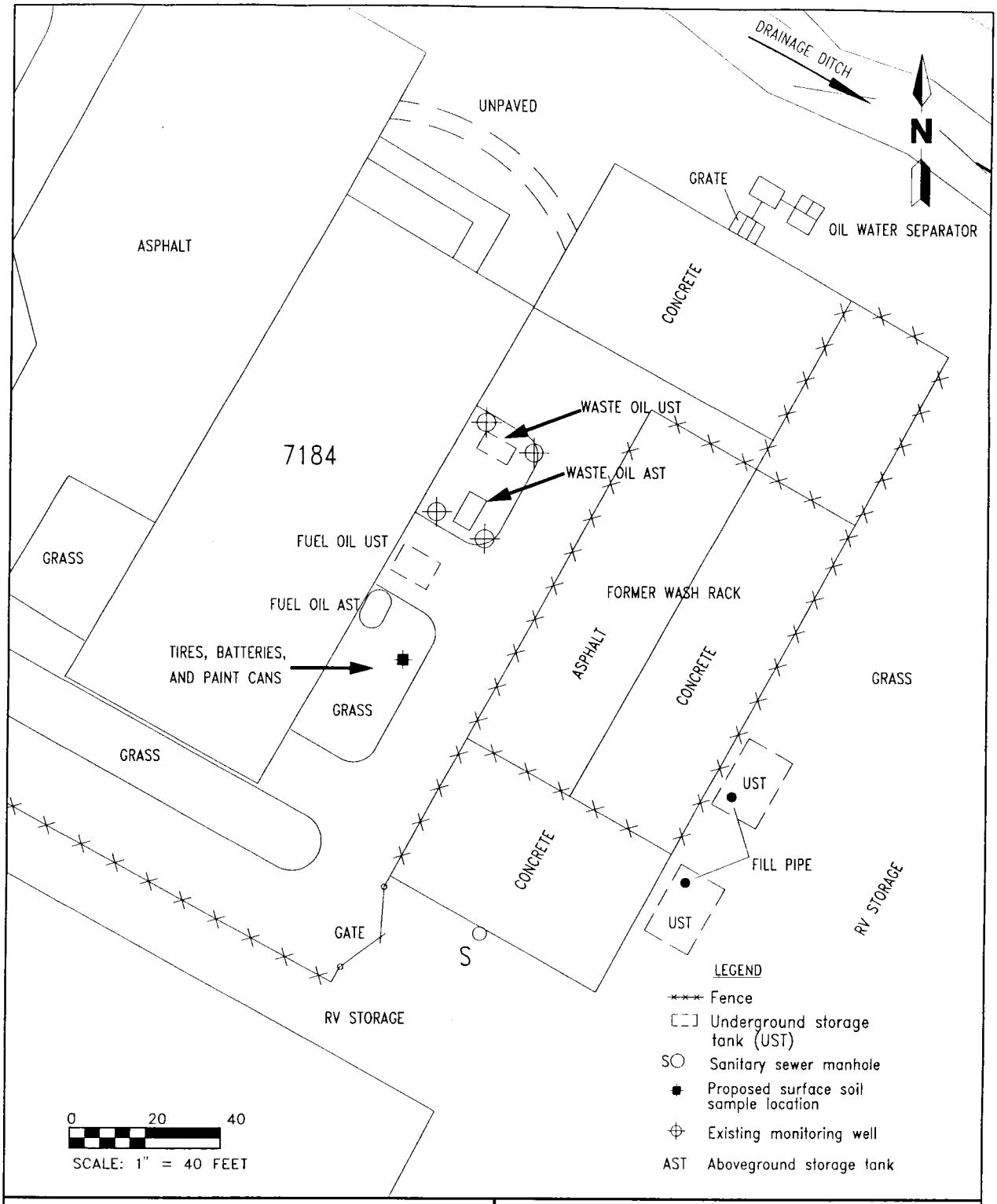

FIGURE 4-28
PROPOSED SOIL SAMPLE AND MONITORING WELL LOCATIONS, MCCOY ANNEX BUILDING 7184, AUTOMOTIVE HOBBY SHOP AND RV STORAGE AREA, STUDY AREA 19, GROUP III STUDY AREAS

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A former wash rack is located adjacent to the east side of the building. RVs are stored in a fenced grassy field east and south of the study area. Based on the review of a 1949 aerial photograph, the area was undeveloped prior to the construction of the McCoy Annex. A section of the building was a wood shop prior to being converted to the Automotive Hobby Shop in the 1970's.

The following storage tanks were identified at the facility during the EBS (ABB-ES, 1994b):

- a 5,000-gallon diesel fuel UST,
- a 500-gallon diesel fuel AST,
- a 750-gallon waste oil UST, and
- a 300-gallon waste oil AST.

All four storage tanks appeared to be in service during an October 1994 site visit. Four compliance wells were identified around both the 750-gallon waste oil UST and the 300-gallon waste oil AST. No compliance wells were identified around the 5,000-gallon UST or the 500-gallon AST. Black stains were observed around the ASTs and on the containment berm of the waste oil AST. Oil soaked absorbent granules were present within the bermed area. During the mid 1970's, approximately 90 cubic feet of contaminated soil from spillage and overflow around the 300-gallon AST were excavated and removed. The tank was later moved to a concrete pad.

Two additional USTs of unknown use were identified southeast of the former wash rack during the October 1994 site visit (Figure 4-28). All ASTs and USTs will be addressed in the NTC, Orlando Tank Management Plan (ABB-ES, 1994d).

The Automotive Hobby Shop has a 350-gallon oil-water separator, which is cleaned out periodically by a contractor. The discharge point of the oil-water separator was not indicated in the EBS (ABB-ES, 1994b). Interior floor drains identified in the building and a slot drain identified along the outside edge of the bay doors are connected to the sewage distribution system.

Numerous discarded tires, batteries, and paint cans were observed piled on the grassy area in front of the fuel oil AST.

A wooded area consisting of planted pine trees is located adjacent to the RV storage area (Figure 4-29). Review of aerial photographs from the 1960's showed what may have been areas of disturbed soil and no pine trees. The October 1994 site visit identified shallow depressions in the northwest corner of the wooded area that may have once been trenches. Pieces of discarded machinery and an empty and rusted open-head 55-gallon drum were found scattered on the edge of the wooded area along the dirt path.

4.19.2 Rationale and Plans for Site Screening The site screening objectives are to investigate the wooded area adjacent to the site for possible prior landfill activities and associated contaminant releases, and to determine what if any contamination has resulted from the automotive hobby shop operations.

Objective: to determine possible presence of landfilling in the wooded area.

Method: • geophysical surveys (magnetometer, GPR, and TC)

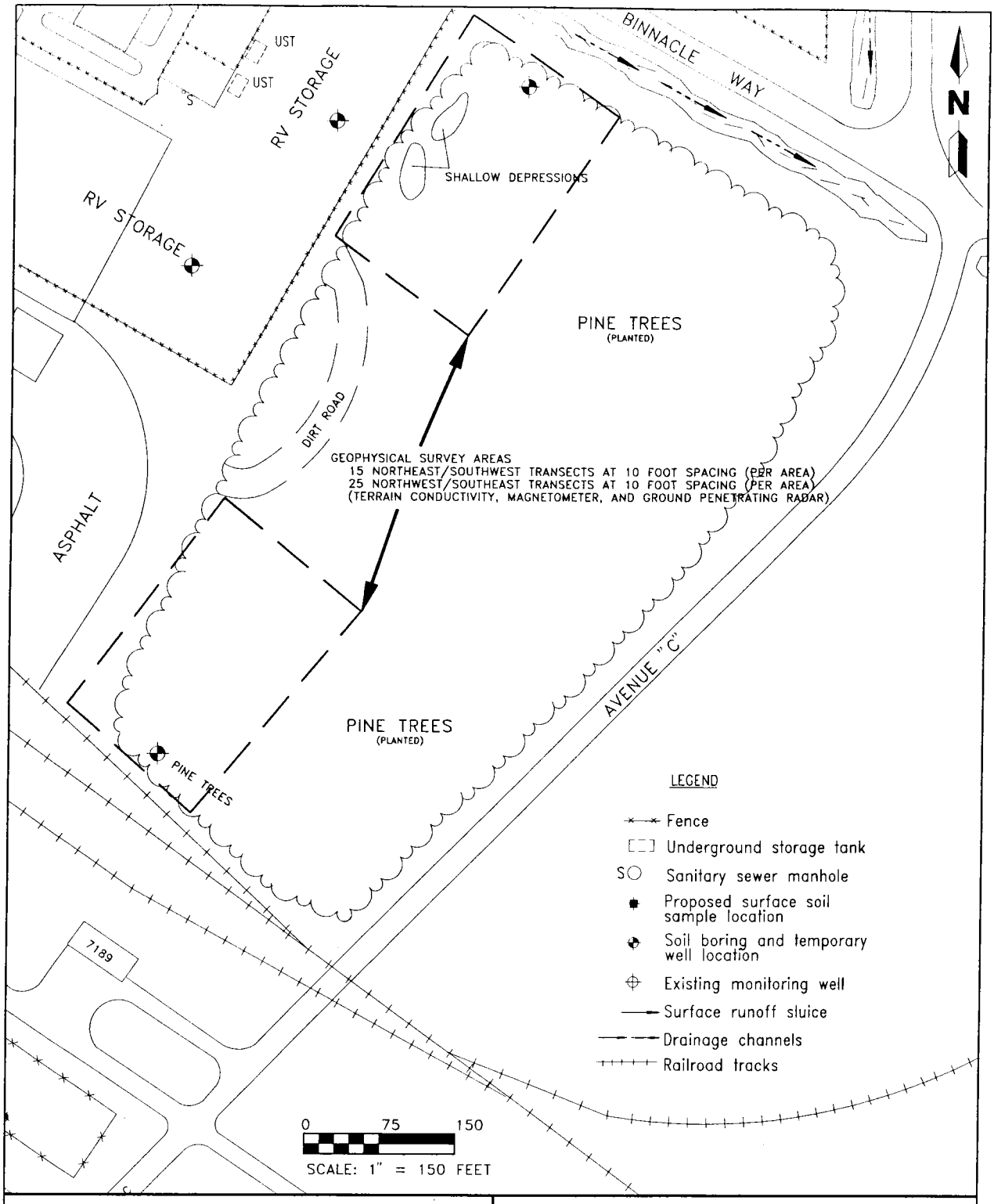

FIGURE 4-29
PROPOSED GEOPHYSICAL SURVEY AREAS AND SOIL BORING AND MONITORING WELL LOCATIONS, WOODED AREA NEAR RV STORAGE, MCCOY ANNEX, STUDY AREA 19, GROUP III STUDY AREAS

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The geophysical survey program will be conducted in two phases: an initial magnetometer and TC survey, followed by a confirmatory GPR survey focused on anomalies identified by the magnetometer and TC. This initial investigation will concentrate on the area near the shallow depressions and the edge of the wooded area most accessible from the dirt road. If necessary, areas of heavy brush will be cleared prior to the survey. The area of investigation is estimated to be approximately 75,000 square feet. The GPR transects will be conducted over an area estimated to be 37,500 square feet, assuming anomalies will be identified over half of the area surveyed by magnetometer and TC.

Objective: to determine what chemical contaminants, if any, are associated with past landfilling activity, and current or past activities at the automotive hobby shop.

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

One surface soil sample (0 to 1 foot) will be collected from the grassy area where the discarded tires, batteries, and paint cans were observed. The sample location will be biased towards areas of soil staining. Soil samples will be submitted for TPH and CLP VOC, SVOC, and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

Two soil borings with temporary monitoring wells installed in the borings will be completed in the wooded area. Locations will be based on the results of the geophysical survey, and will be approved by the Technical Leader. If no geophysical anomalies are detected, the monitoring wells will be located in the areas shown on Figure 4-29.

The temporary wells will be installed by advancing the HSA 2 to 3 feet below the water table. Slotted 2-inch PVC well screen will be lowered into the auger, and the auger removed. Groundwater can then be sampled from inside the well screen using a low-flow technique. When groundwater sampling is complete, the well screen will be withdrawn and the boring grouted. The well material will be decontaminated in accordance with the POP, Section 4.3, Decontamination (ABB-ES, 1994a) and reused at the next temporary well location or discarded.

Two soil samples (one from each boring) and two groundwater samples (one from each well) will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

An additional two soil borings will be completed as conventional monitoring wells in the RV storage area. Two soil samples (one from each boring) and two groundwater samples (one from each well) will be submitted for TPH and CLP VOCs, SVOCs, and TAL laboratory analyses in accordance with USEPA Level IV DQOs. All four groundwater samples will also be submitted for TSS determination to aid in the evaluation of inorganics data and the effectiveness of well development and groundwater sampling techniques.

4.20 STUDY AREA 20, WAREHOUSE STORAGE (BUILDING 7187).

4.20.1 Background and Conditions

Building 7187. Building 7187, which was built in 1952, is a 9,100-square-foot cinderblock and mortar structure located on Fifth Street (Figure B-3, Appendix B, and Figure 4-30). The building is currently used by the U.S. Marine Corps to store recently purchased office equipment, and by the fire department to store miscellaneous fire-fighting equipment. Originally the building was used as a meat storage and processing facility. Prior to construction of Building 7187, the site was undeveloped land, based on a review of a 1947 aerial photograph.

An abandoned steel pesticide storage shed is located outside the facility. Old dry and rusted 5-gallon buckets were observed in the storage shed. Parts of the steel floor of the shed have rusted through.

An inactive 550-gallon diesel fuel UST, which was installed in 1952, was observed on the property. No compliance wells were observed around the tank. Petroleum odors were detected in the vicinity of the tank. The boiler attached to the building is abandoned and no longer functional.

No areas of stained soil or concrete were observed during the survey. No visual evidence of stressed vegetation was noted on the property.

4.20.2 Rationale and Plans for Site Screening The objectives of the site screening are to determine what, if any, chemical contaminants may have been released during pesticide storage and mixing activities conducted at the study area. Sample locations are shown on Figure 4-30.

Objective: determine what chemical contaminants may have been released during current or former activities at the study area.

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Two surface soil samples will be collected from each end of Building 7187. The samples will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

Three soil borings will be completed around Building 7187. Two will be located between the loading platform and the railroad spur. Arrangements will be made to attempt to move the pesticide shed. The third boring will be located beneath the current location of the shed, and will be completed as a monitoring well. If the shed cannot be moved, the third boring will be located on the southwest side of the shed facing the railroad tracks. Two soil samples will be collected from this boring; one from the surface (0 to 1 foot) interval and one from the interval immediately above the water table or where visual or FID screening suggests contamination.

Four soil samples collected from beneath the shed and one groundwater sample will be submitted for full suite CLP TCL, TAL, and herbicide laboratory analyses in accordance with USEPA Level IV DQOs.

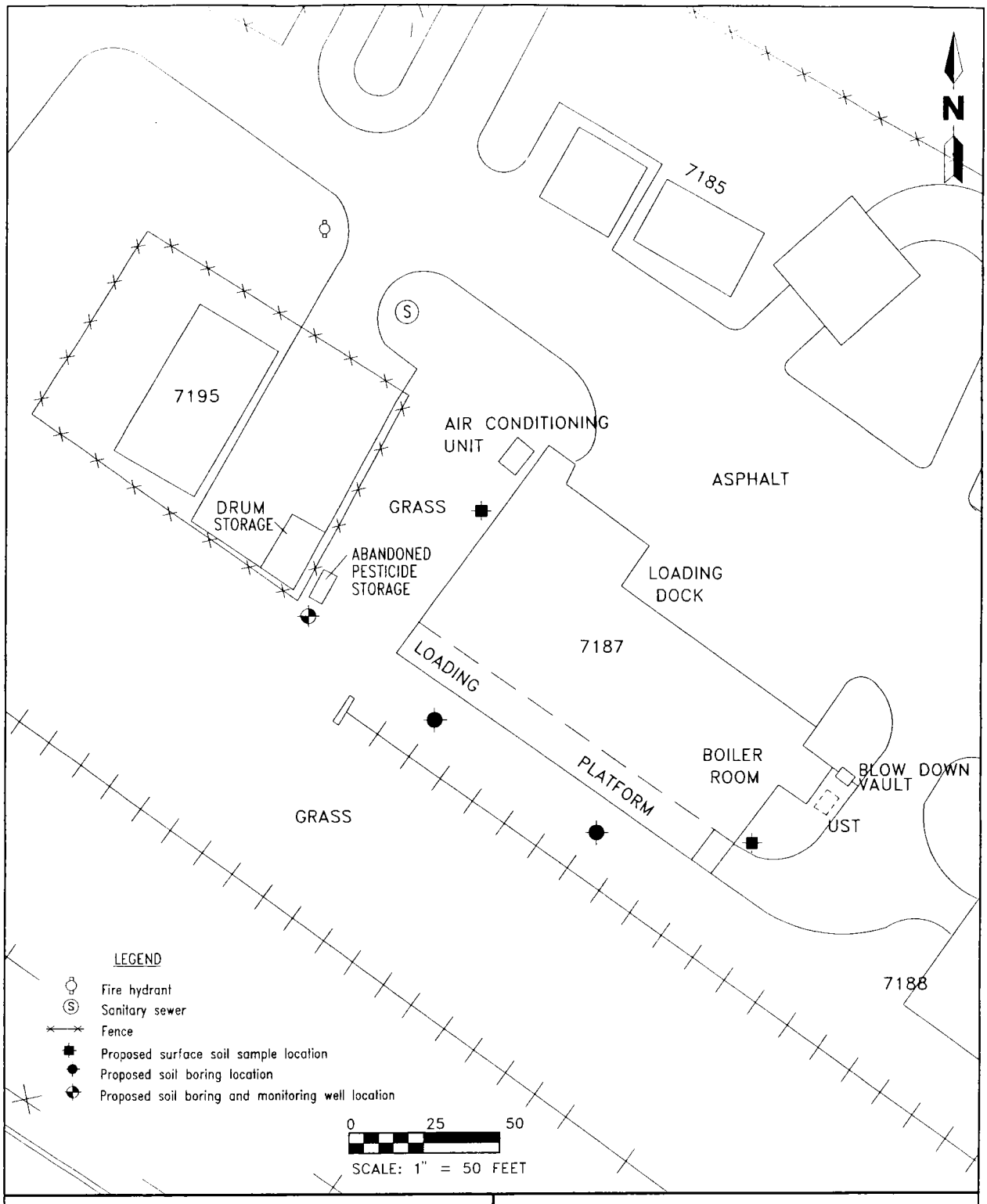

FIGURE 4-30
PROPOSED SURFACE SOIL SAMPLE, SOIL BORING AND MONITORING WELL LOCATIONS, MCCOY ANNEX BUILDING 7187, (WAREHOUSE STORAGE) STUDY AREA 20, GROUP III STUDY AREAS

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4.21 STUDY AREA 21, MAINTENANCE SHOP (BUILDING 7203).

4.21.1 Background and Conditions

Building 7203. Building 7203, which was constructed in 1955, is a 3,200 square foot concrete block structure with a gabled roof. The facility is located on Third Street in the northern part of the Naval Training Center, McCoy Annex (Figure B-3, Appendix B, and Figure 4-31). The building is currently used for maintenance and storage of equipment such as lawn mowers, tractors, and other grounds maintenance equipment. Associated with the building is a flammable storage shed located at the northwestern corner of the property. The shed contains paint and 5-gallon gasoline containers. In addition, an empty shed is located on the northeastern corner of the property. Records indicate that after construction, Building 7203 was used for storing medical supplies. The building was used to store pesticides for the golf course for an unknown period prior to 1981.

A 500-gallon UST (installed in 1955) used for storing heating fuel is located on the western side of the property. The tank supplies an oil heater, which according to facility personnel has not worked in several years. However, facility representatives indicated that Public Works checks and fills the tank on a monthly basis. Stained soil, stressed vegetation, and noticeable odor were noted around the fill cap to the UST. No compliance wells were observed around the tank.

A 275-gallon UST (installed in 1975) used for storing diesel fuel for an emergency generator is located on the northeastern corner of the property adjacent to the empty storage shed. In 1993, the tank leaked and the secondary containment system was unable to hold the entire spill. During the survey, residual diesel fuel and oil absorbent was noted in the basin. During the EBS (ABB-ES, 1994b) 10 drums of contaminated soil from the cleanup were staged on pallets on the eastern fence line. These drums had been removed by the October 1994 site visit. It is not known if confirmatory soil sampling has been conducted. The excavation has not been backfilled. One compliance well is located near the tank.

Several drums and buckets containing small quantities of used motor oil from lawn mowers were staged to the east of the building during the EBS. Facility personnel indicated that the used oil is taken to the Annex Automotive Hobby Facility (Building 7184) on a weekly basis.

Two possible spoil piles were observed against the northwest corner of Building 7203 and against the west side of the fenced area during the October 1994 site visit.

Potential contamination from the USTs and ASTs at Study Area 21 will be addressed in the NTC, Orlando Tank Management Plan (ABB-ES, 1994d).

4.21.2 Rationale and Plans for Site Screening The objective for site screening at Study Area 21 is to determine the potential presence of contamination associated with past and current use.

Objective: to determine the extent of potential contamination from past and current use.

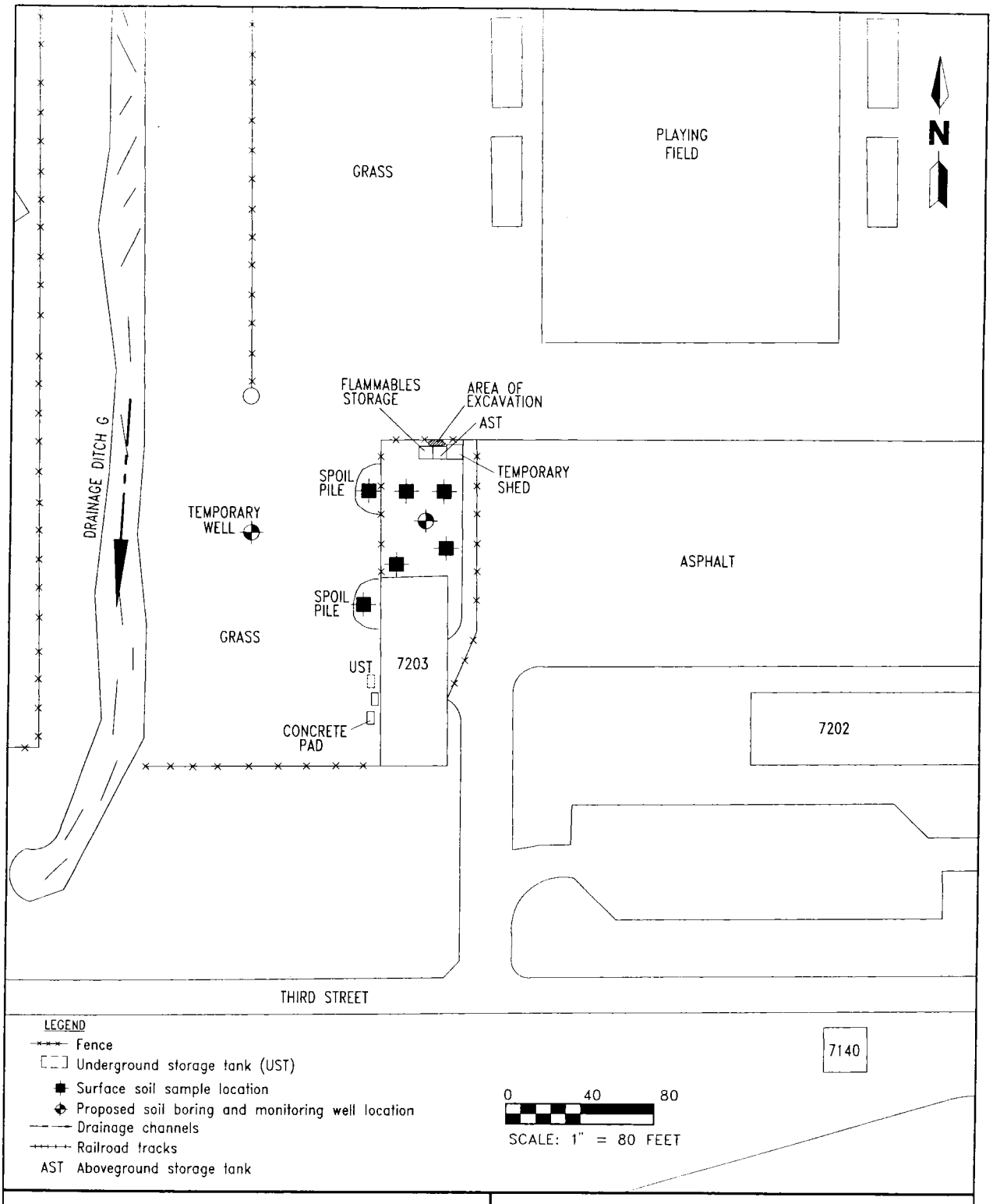

FIGURE 4-31
PROPOSED SURFACE SOIL, SOIL BORING AND MONITORING WELL LOCATIONS, MCCOY ANNEX BUILDING 7203, MAINTENANCE SHOP, STUDY AREA 21, GROUP III STUDY AREAS

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Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Four surface soil samples will be collected from within the fenced area, and one soil sample will be collected from each of the two possible spoil piles. One soil boring with monitoring well will be installed in the middle of the fenced area. Two soil samples will be collected from this boring; one from the surface (0 to 1 foot) interval and one from the interval immediately above the water table or where visual or FID screening suggests contamination. Eight soil samples and one groundwater sample will be submitted for TPH and full suite CLP TCL, TAL, and herbicide laboratory analyses in accordance with USEPA Level IV DQOs.

One soil boring with a temporary monitoring well installed in the boring will be completed between Study Area 21 and the drainage ditch to the west. The well installation procedure will be identical to that described for Study Area 19. One soil sample and one groundwater sample will be submitted for TPH and full suite CLP TCL, TAL, and herbicide laboratory analyses in accordance with USEPA Level IV DQOs.

4.22 STUDY AREA 22 FORMER GOLF COURSE (UNF-1).

Activities for Study Area 22 are on hold pending resolution of unexploded ordnance (UXO) survey results. No work will proceed at Study Area 22 until authorized by the Task Order Manager (TOM) and project technical staff.

4.22.1 Background and Conditions

UNF-1. UNF-1 is located on Daetwyler Drive, near the northern McCoy Annex boundary (Figure B-3, Appendix B, and Figure 4-32). This 30-acre facility, which consists of an open grassy field with scattered trees separated by Daetwyler Drive, has a chain-link fence on the west, north, and east borders. Drainage Ditch F flows along the southern border. The site currently serves no function and has no structures existing on it.

The study area was undeveloped prior to 1947, based on aerial photograph information. Aerial photographs from 1965 through 1971 and engineering drawings indicate that the area was part of the golf course. The golf course was no longer visible in aerial photographs taken in 1975, which corresponds with construction of the new golf course at the southern end of McCoy Annex (Figure B-3, Appendix B). Two ponds and at least one surface drainage feature are present in the study area; a small pond, identified as Lake Stanley on engineering drawings of the golf course, is located just east of Daetwyler Drive and a second pond (Lake Chose), with a surface drainage feature extending northeastward from it, is located on the west side of Daetwyler Drive. These surface water bodies are believed to have served as water traps and/or provided drainage control while the golf course was active. Lake Stanley was reportedly much larger, and located at the bottom of a shallow depression. Unconfirmed reports from facility personnel indicate that engines, bomb shells, and spent ordnance were dumped in Lake Stanley during 1945 and 1946. No documentation regarding the disposal of these materials was available. No evidence of this activity was apparent on the limited number of aerial photographs available from this period. UXO and geophysical surveys are

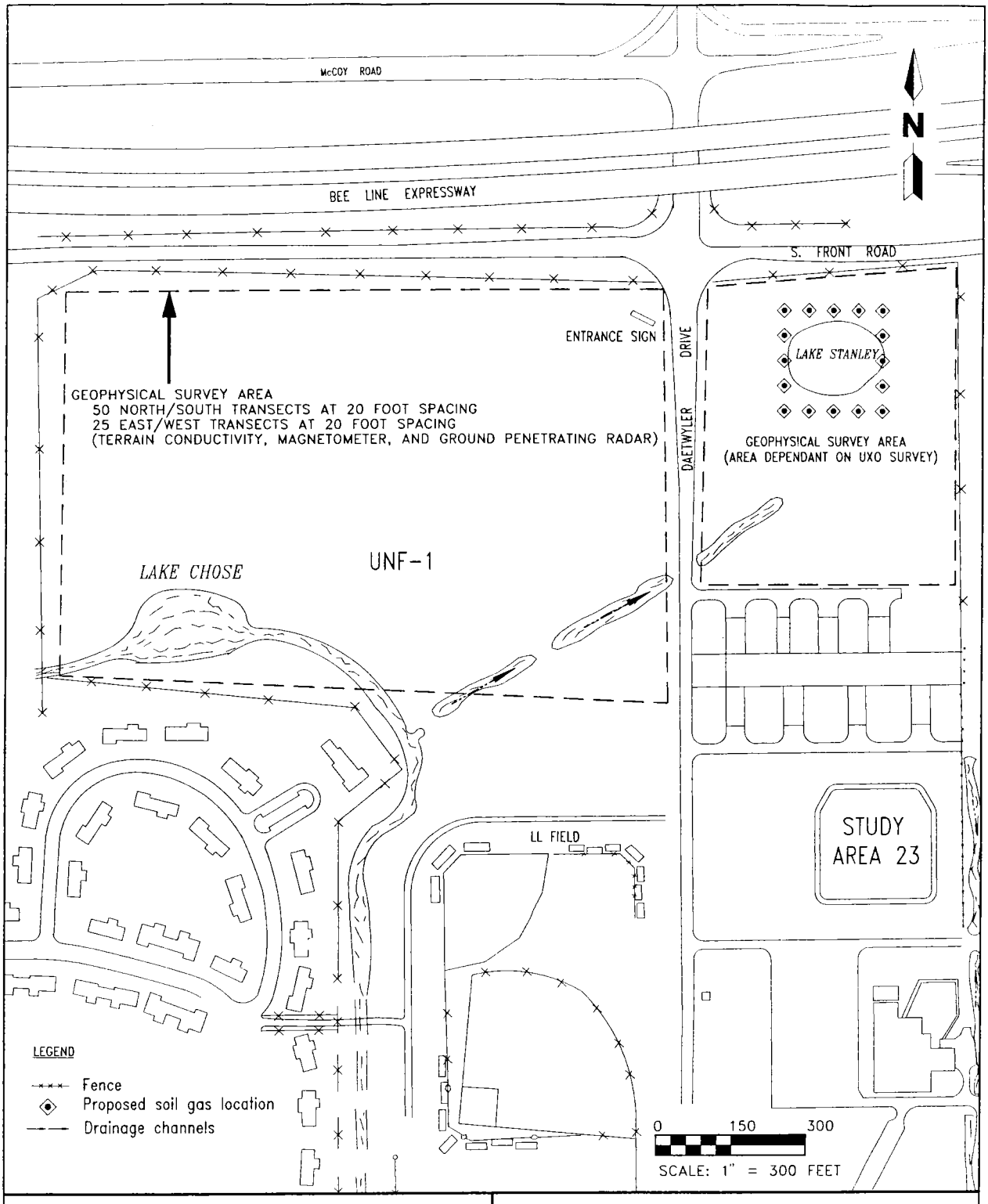

FIGURE 4-32
PROPOSED GEOPHYSICAL SURVEY AREAS AND SOIL GAS LOCATIONS, MCCOY ANNEX UNF-1, FORMER GOLF COURSE, STUDY AREA 22, GROUP III STUDY AREAS

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currently being conducted in this area, under subcontract to ABB-ES, to confirm the dumping allegations.

4.22.2 Rationale and Plans for Site Screening The primary objective of site screening in Study Area 22 is to confirm reports that Lake Stanley was used as a burial site for potentially hazardous materials. Upon confirmation of burial activities, site screening will involve investigations to determine what contamination may have resulted from disposal activities.

Objective: to confirm reports of landfilling and disposal of potential contaminants in and around Lake Stanley.

Methods:
- review records and previous geophysical survey results
- perform additional geophysical surveys

Preliminary evaluation of the UXO geophysical survey centered on Lake Stanley identified 45 subsurface anomalies, many of which were near the edges of the survey area. The geophysical survey will be expanded to extend to the property line north and east of the lake, Daetwyler Drive to the west, and the paved area to the south. A geophysical survey will also be conducted over the 500,000 square foot are west of Daetwyler Drive. The geophysical survey will be conducted in two phases: a magnetometer and TC survey consisting of readings at stations established every 20 feet, and a follow up GPR survey with transect lines also spaced in a 20-foot grid.

Objective: to determine the extent and type of contaminants in Lake Stanley.

Methods:
- surface water sampling
- sediment sampling

Two pairs of surface water and sediment samples will be collected from Lake Stanley and submitted for full suite CLP TCL, TAL, herbicides, and explosives laboratory analyses in accordance with USEPA Level IV DQOs. In addition, the sediment samples will be analyzed for TOC and the surface water samples for alkalinity. Based on the preliminary results of the UXO survey, sampling locations will require UXO clearance.

Objective: to determine the type and extent of contaminants that may be associated with past landfilling activities.

Methods:
- passive soil gas survey
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

A passive soil gas survey of the area adjacent to Lake Stanley will be conducted to identify any areas with elevated concentrations of VOCs in the subsurface and to focus the investigation for confirmatory soil and groundwater sampling. The soil gas survey will be conducted over a 200-by 200 foot area with a 50-foot offset. This area may be expanded after review of geophysical survey results. Each soil gas point will require UXO clearance prior to insertion of the soil gas collector.

If the geophysical and passive gas surveys indicate the need for further investigation, piezometers will be installed at the site to determine the direction of groundwater flow (Figure 4-33). One soil boring will be completed as a monitoring well installed downgradient and as close to the source as possible. One soil sample and one groundwater sample will be submitted for full suite CLP TCL, TAL, herbicide, and explosives laboratory analyses in accordance with USEPA Level IV DQOs. Groundwater samples will also be submitted for gross alpha gross beta analyses and a gamma scan. Each piezometer and monitoring well location will require UXO clearance prior to installation.

4.23 STUDY AREA 23, FORMER OFFICERS' SWIMMING POOL COMPLEX (UNF-2).

4.23.1 Background and Conditions

UNF-2. UNF-2 is a 7-acre parcel bounded by Daetwyler Drive to the west, the Annex property fence line to the east, and asphalt parking lots to the north and south (Figure B-3, Appendix B, and Figure 4-34). The parcel was formerly occupied by the Officers' Poolhouse (Building 7119) and Swimming Pool (Building 7120) and a football field (Figure 4-34). Based on a review of available background information and aerial photographs from 1947 to 1990, the officers' poolhouse and swimming pool were constructed in the 1950's and were demolished in the 1980's. Prior to the construction of the poolhouse and the swimming pool the site was undeveloped.

A 7-foot-high, raised earthen area covered with grass now exists on the site. The earthen area and mound probably covers the construction debris from the demolition of the pool house and the swimming pool. A metal fill pipe for a fuel oil UST extends from the top of the mound. This UST will be addressed in the NTC, Orlando Tank Management Plan (ABB-ES, 1994d). A 12-inch diameter metal drain pipe extends from the base of the earthen area to the adjacent drainage ditch, on the eastern edge of the mound.

4.23.2 Rationale and Plans for Site Screening The objectives of site screening at Study Area 23 are to confirm onsite landfilling of demolition debris, and determine what, if any, chemical contaminants may be present as the result of demolition debris or former site use activities.

Objective: to determine what chemical contaminants may be present in the mounded area as the result of former site use.

Methods:
- passive soil gas survey
- surface soil sampling

A passive soil gas survey will be conducted to identify any areas with elevated concentrations of VOCs and SVOCs and to focus the investigation to a smaller area for confirmatory soil and groundwater sampling. The soil gas survey will cover a 300-foot by 300-foot area with 50-foot spacing on the top of the mound. In addition two additional rows spaced 10 feet apart will be surveyed around the perimeter of the mound. The spacing of these surveys will also be 50 feet (Figure 4-34).

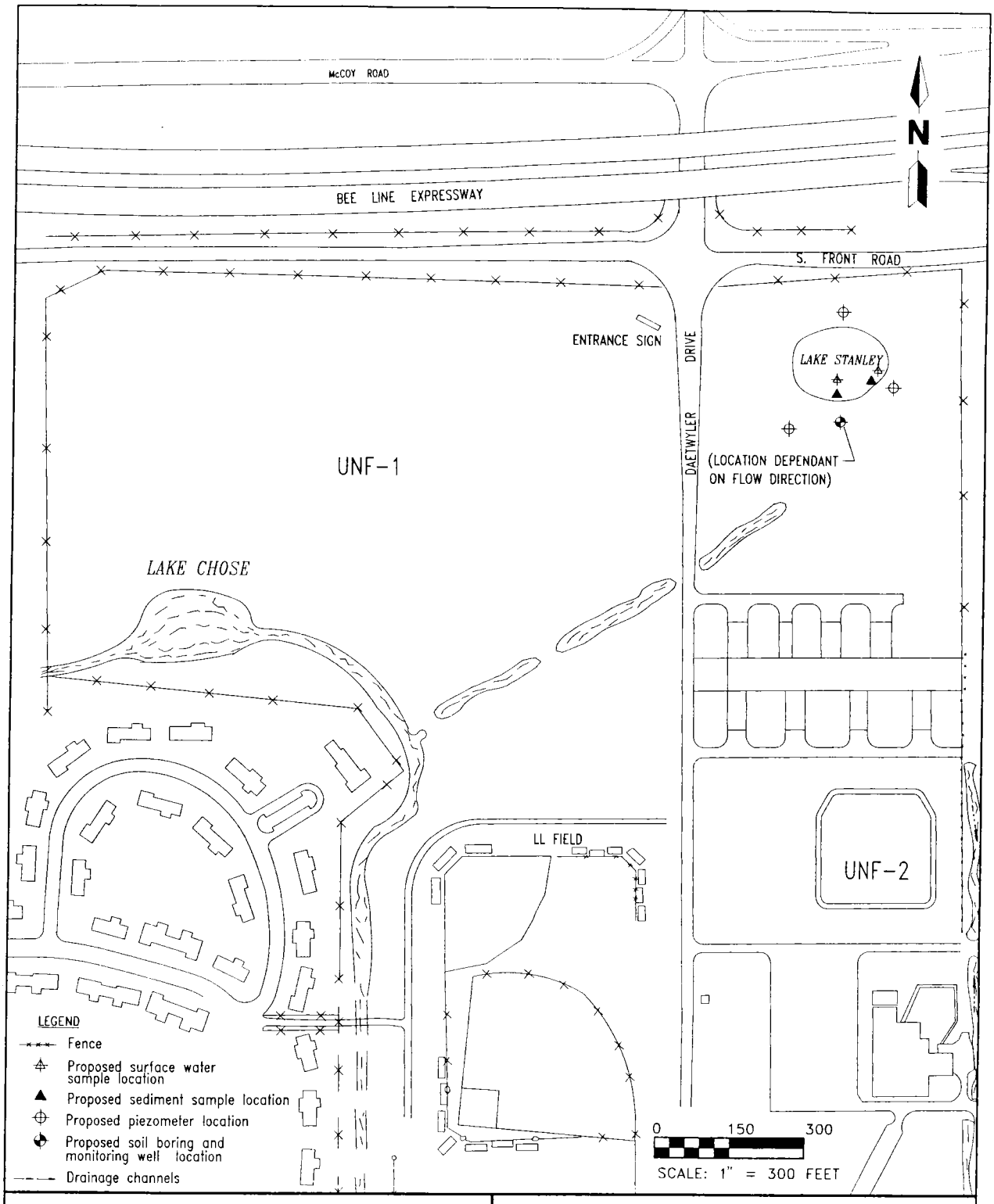

FIGURE 4-33
PROPOSED SURFACE WATER AND SEDIMENT, PIEZOMETER, AND SOIL BORING AND MONITORING WELL LOCATIONS, MCCOY ANNEX UNF-1, FORMER GOLF COURSE, STUDY AREA 22, GROUP III STUDY AREAS
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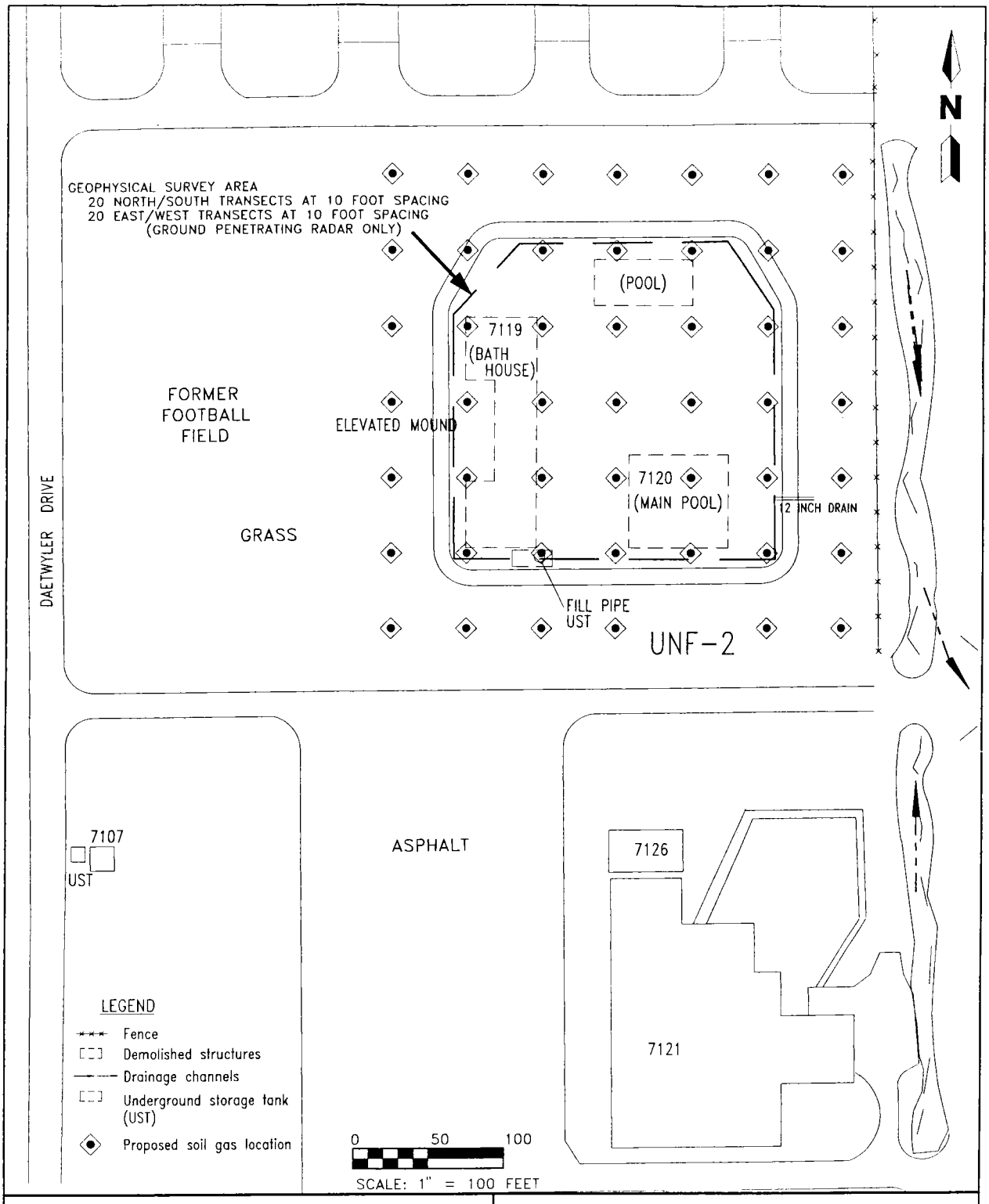

FIGURE 4-34
PROPOSED GEOPHYSICAL SURVEY AREAS AND SOIL GAS LOCATIONS, MCCOY ANNEX UNF-2, FORMER SWIMMING POOL COMPLEX, FACILITIES 7119 AND 7120, STUDY AREA 23, GROUP III STUDY AREAS

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One surface soil sample will be collected from beneath the drain pipe on the east side of the mound (Figure 4-35). This soil sample will be submitted for TPH and CLP VOC, SVOC, and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

Objective: to delineate the extent of landfilling of demolition debris and to confirm soil gas results.

Methods:
- geophysical survey (GPR only)
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

If soil gas survey results indicate the presence of contaminants, a geophysical survey will be conducted to locate former structures and to help locate proposed soil borings and monitoring well (Figure 4-34). Three soil borings, one with a monitoring well installed, will be completed in the mounded area (Figure 4-35). The borings will be installed to the groundwater table. Two soil samples will be collected from each boring; one from within the rubble and one from the interval immediately above the water table.

An additional soil boring with monitoring well will be installed near the exposed drain. Only one soil sample will be collected from this boring. Seven soil and two groundwater samples will be submitted for TPH and CLP VOC, SVOC, and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

4.24 STUDY AREA 24, NORTHWEST SWAMP (UNF-4) AND SOUTHEAST SWAMP (UNF-5).

4.24.1 Background and Conditions

UNF-4. UNF-4 is a 25-acre undeveloped, forested swamp area. The swamp is bounded by Ammons Avenue to the northeast, Avenue C to the southeast, residential houses to the northwest and south, and a playground to the west (Figure B-3, Appendix B, and Figure 4-36). The area is designated as wetland types PF01C, PF06F, and PEM1A (ABB-ES, 1994b).

The entire area is a drainage basin that receives runoff from several parts of the Annex. Three major drainage ditches flow through the area (Figure 4-36). Ditches "M" and "N" join Ditch "L", which flows across the northern edge of the property. Ditch "L" eventually crosses under Ammons Avenue to the north and merges with Ditch "K".

Although most of the area appears to have been undisturbed (with the exception of ditching) throughout the operational history of the Annex, aerial photographs from 1968 and 1971 show the northeastern quadrant (near the intersection of Ammons Avenue and Avenue C) as an open area. A conversation with a long-time NTC, Orlando employee revealed that a trench-and-fill landfill was located in this area (ABB-ES, 1995). Visual inspection of this area indicated that the area has been planted with pine trees and that there are scattered mounds of asphalt, concrete, and other construction debris present within the planted area. The source and extent of this debris are not known.

UNF-5. UNF-5 is a 38-acre area consisting of forested wetlands to the north, planted areas to the southwest, and a vehicle storage area (boats, trailers, and

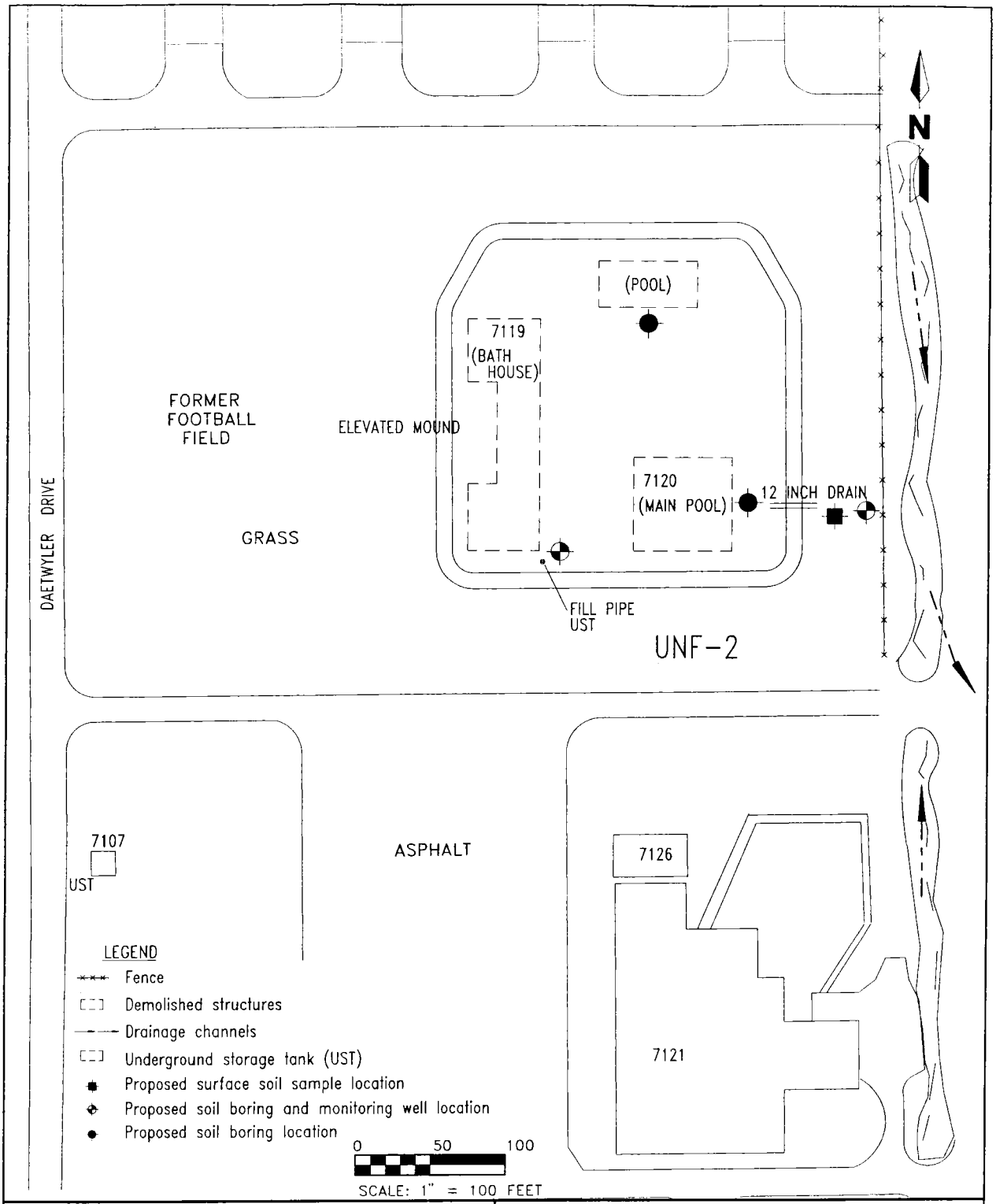

FIGURE 4-35
PROPOSED SURFACE SOIL AND SOIL BORING AND MONITORING WELL LOCATIONS, MCCOY ANNEX UNF-2, FORMER SWIMMING POOL COMPLEX, FACILITIES 7119 AND 7120, STUDY AREA 23, GROUP III STUDY AREAS

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SITE SCREENING PLAN

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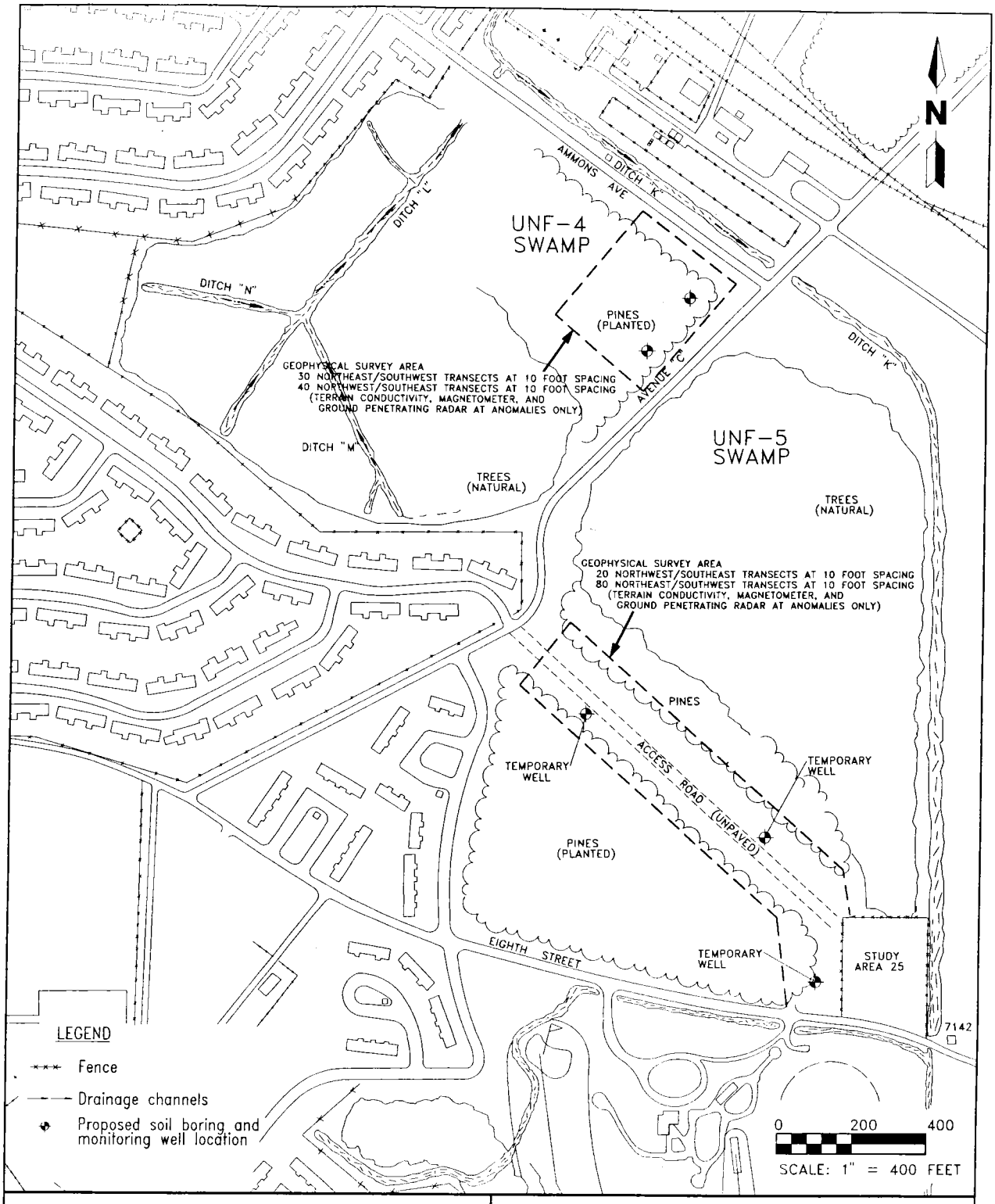

FIGURE 4-36
PROPOSED GEOPHYSICAL SURVEY AREAS AND SOIL BORING WELL LOCATIONS, MCCOY ANNEX UNF-4, (NORTHWEST SWAMP) AND UNF-5 (SOUTHEAST SWAMP), STUDY AREA 24, GROUP III STUDY AREAS

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SITE SCREENING PLAN

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automobiles) to the southeast (Figure 4-36). UNF-5 is bordered by Avenue C to the northwest, by drainage ditch "K" to the northeast and east, by Eighth Street and a fenced vehicle storage area (Study Area 25, the former domestic wastewater treatment plant) to the south, and by a residential area to the west.

Stormwater runoff, which is received from adjoining properties, collects in the northern wetland area. Overflow from the wetland enters drainage ditch "K".

4.24.2 Rationale and Plans for Site Screening The objective of site screening for Study Area 24 is to determine the nature of disposal activities in the area of planted pines, and to determine if contamination has resulted from disposal activities bordering the swamps.

Objective: to determine what types and how extensive disposal activities may have been on the site.

Methods:
- review existing records
- geophysical surveys (magnetometer, TC, and GPR)

All available records from 1949 to 1965 will be reviewed to determine the extent of disposal activities that occurred along the margins of both swampy areas. Initial magnetometer and TC surveys of the suspected landfill area at UNF-4 will be conducted. The geophysical surveys will be conducted in two phases: a magnetometer and TC survey consisting of readings at stations established every 10 feet in the target area, and a follow-up GPR survey at the anomalies identified by magnetometer and TC. A GPS survey of key transect lines, magnetic anomalies, and other relevant features will be conducted so that geophysical survey areas may be mapped. The initial survey near UNF-4 will be approximately 12,000 square feet. A similarly sized survey will be conducted near UNF-5 only if the review of records suggests possible landfilling activities.

Objective: determine what contaminants, if any, are associated with anomalies found during geophysical surveys.

Methods:
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Monitoring wells will only be installed if geophysical anomalies are identified at UNF-4 and UNF-5. Following any indication of anomalies at UNF-4, two soil borings will be completed within the survey area, with monitoring wells installed in each. At UNF-5 the presence of geophysical anomalies will be further investigated by the installation of three soil borings along the access road, with temporary monitoring wells (as described in Subsection 4.19.2) installed in each. Boring locations will be approved by the Technical Leader. Up to five soil samples (one from each boring) and five groundwater samples (one from each well) will be collected and submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

4.25 STUDY AREA 25, FORMER DOMESTIC WASTEWATER TREATMENT PLANT (DWTP).

4.25.1 Background and Conditions The former DWTP was located in the southeastern part of McCoy Annex, north of Eighth Street and adjacent to the current eastern

property line (Figure B-3, Appendix B and Figure 4-37). When the plant was shut down in 1987, it had a capacity of 1.35 million gallons per day (mgd) and had been in operation since the 1940's. The facility included a settling basin, 4 trickling filters, 12 sludge beds, and 2 hyacinth ponds. The plant was demolished in 1987 and the area now consists of a grassy field used for vehicle storage. At the time of demolition no known hazardous materials were onsite.

4.25.2 Rationale and Plans for Site Screening The objective of site screening is to determine the location of any remaining parts of the DWTP and to determine what, in any, contaminants are associated with its prior operations. It is assumed that at some point during its operation that the plant was used in an industrial capacity and the associated sludge may have been contaminated.

The locations of the former hyacinth ponds and settling basin are heavily overgrown. If necessary, arrangements will be made to have these areas cleared.

Objective: determine location of ponds and drying beds.

Method: • geophysical survey (GPR only)

A GPR survey will be conducted on the western side of the study area to attempt to locate the edge of the former hyacinth pond and the sludge drying beds.

Transect lines will be spaced on a 10-foot grid. An estimated 25 north to south transects and 40 east to west transects are estimated to evaluate the 250-foot by 400-foot area.

Objective: determine what contaminants, if any, are associated with past operation of the DWTP.

Methods:
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Nine soil borings will be completed at Study Area 25, with a monitoring well installed in three of the borings (Figure 4-37). The three monitoring wells will be located in the following locations: one well at the former settling basin in the northeast corner of the study area, one well at the former hyacinth pond in the southeast corner, and one well at the location of the former sludge drying beds. Of the remaining six borings, three will be at the former location of the hyacinth pond along the western edge of the study area, one will be at the former hyacinth pond in the southeast corner, and two will be at the former sludge beds.

Two soil samples will be collected from each sludge bed boring; one from the depth of the sludge bed (based on GPR or visual evidence) and one from the interval immediately above the water table or where visual or FID screening suggests contamination. One soil sample will be collected from each of the remaining six borings. A total of 12 soil samples and 3 groundwater samples (1 from each well) will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

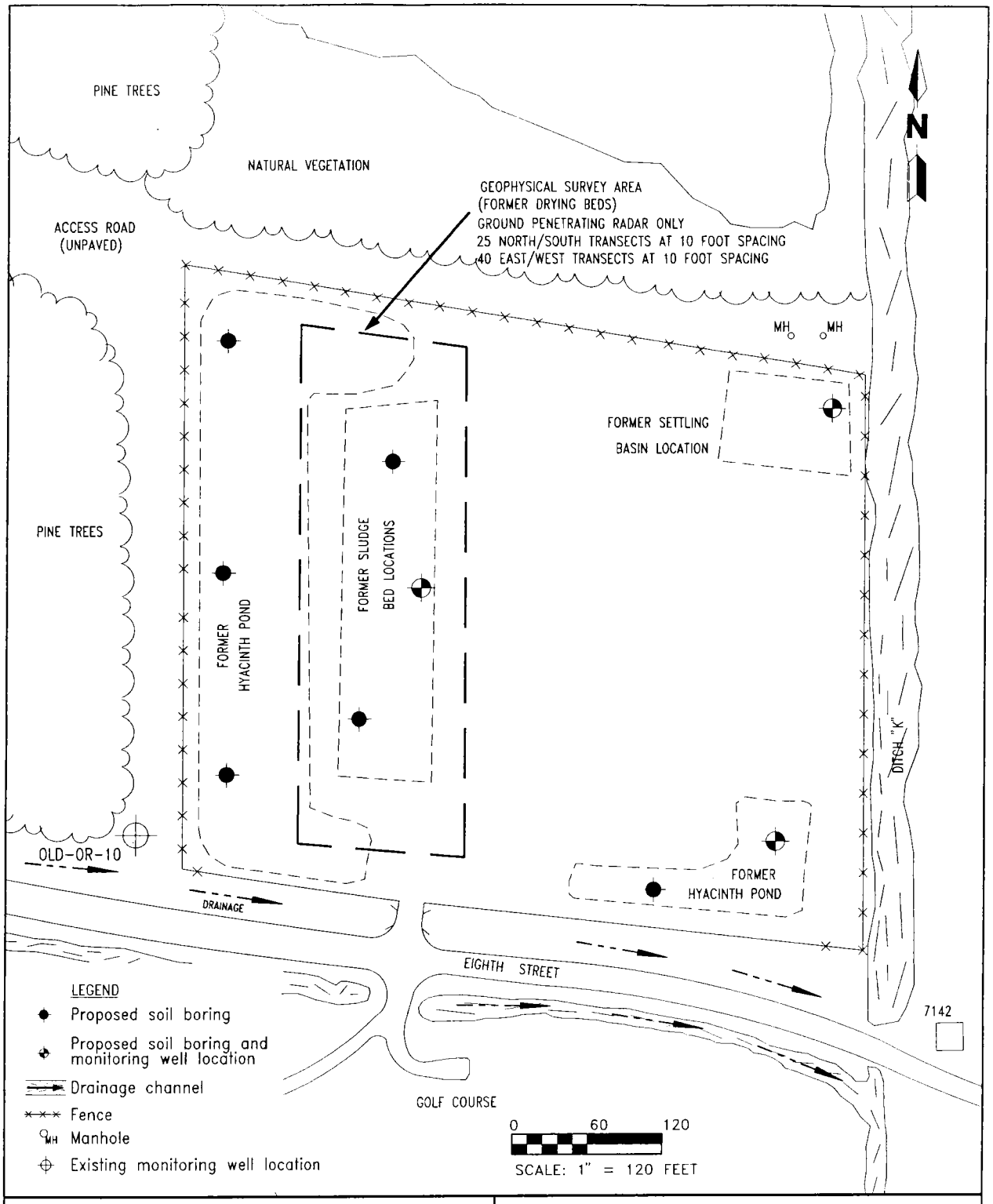

FIGURE 4-37
PROPOSED GEOPHYSICAL SURVEY AREA AND SOIL BORING/MONITORING WELL LOCATIONS, MCCOY ANNEX, FORMER DOMESTIC WASTEWATER TREATMENT PLANT (DWTP), STUDY AREA 25, GROUP III STUDY AREAS

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SITE SCREENING PLAN

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4.26 STUDY AREA 26, FAMILY CAMP (FORMER AIRSTRIP). Study Area 26 includes the following buildings: Camp Bath House (RV Park) (Building 7351), Camp Laundry (Building 7352), Family Camp Office (Building 7357), and Family Camp (7358).

4.26.1 Background and Conditions Buildings 7351, 7352, 7357, and 7358 are located in an area that is presently used as a family campground (Figure B-3, Appendix B, and Figure 4-38). The exact date of the initial use of the area as a campground is unknown. Based on information obtained from aerial photographs and retired military personnel, the present camp is located on an old grassy airstrip that had also been used for equipment and vehicle maintenance. In addition, the camp at one time included quonset huts used for administrative and maintenance purposes.

In a 1965 aerial photograph, the northeast leg (Family Camp Road) contained a number of parallel parking strips occupied by what appeared to be camping trailers. The central part of the study area contained what appeared to be an office trailer and a variety of small structures and/or large pieces of equipment. The northwest leg and the central part of the southwest leg of the study area contained what appeared to be 55-gallon drums. A cleared area was also visible north of the study area, southwest of Eighth Street. Numerous vehicles appeared to be parked in this area.

Aerial photographs from 1969 and 1971 revealed that the office trailer and small buildings and/or equipment identified in the 1965 photograph were replaced by a row of quonset huts. No 55-gallon drums were identified in either photograph. The camper parking area was unchanged.

In a 1975 aerial photograph, 55-gallon drums appear to be scattered in an area southwest of the quonset huts. In addition, a 5-acre compound was noted at the western end of the southwest leg of the airstrip. The interior of the compound was organized into parallel rows of stacked material. At least one of the rows appeared to contain 55-gallon drums. A quonset hut appeared to be located on the northeast side of the compound. Storage and/or maintenance activities also appear in the 1969 and 1975 photographs.

In a 1984 aerial photograph, only the camper parking area remained. A toilet and shower trailer (Building 7351) was added in 1983. A major renovation of the Family Camp Area took place in 1984 with the addition of 24 hook-up spaces and the replacement of the toilet and shower trailer (Building 7351) with a permanent bath house. The camping area underwent a final renovation in 1987, when a sewage pump station and additional camping spaces were added.

Building 7351. Building 7351, which was constructed in 1966, is a 900-square-foot concrete block wall structure on a concrete slab with a flat built-up roof. The facility, which is used by camp guests as a bathhouse, is located on Family Camp Road in the Family Camp Area located at the southern end of the Naval Training Center, McCoy Annex.

One 250-gallon AST, which supplies the building with propane for heating water, is located behind the building.

Building 7352. Building 7352, which was constructed in 1980, is a 536-square-foot metal frame building with metal siding and roof. The facility, which is used by

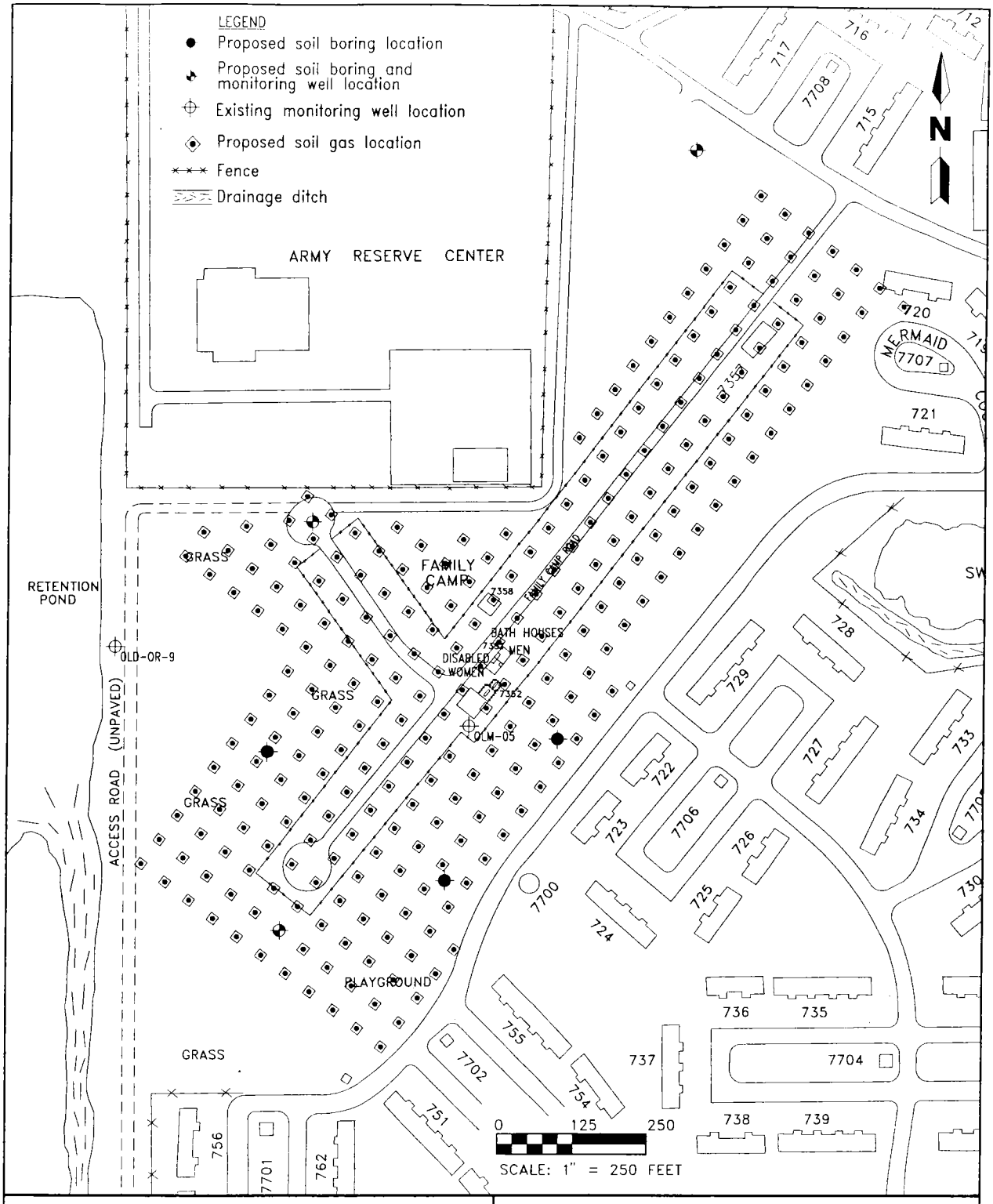

FIGURE 4-38
PROPOSED SOIL GAS AND SOIL BORING/ MONITORING WELL LOCATIONS, MCCOY ANNEX BUILDINGS 7351, 7352, 7357, AND 7358, FAMILY CAMP AREA, STUDY AREA 26, GROUP III STUDY AREAS

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SITE SCREENING PLAN

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camp guests to wash their laundry, is located on Family Camp Road in the Family Camp Area.

One 1,000-gallon AST supplies the building with propane for heating water.

A monitoring well (OLM-5), installed during the Verification Study (Geraghty & Miller, 1986), is located south of the building. Groundwater samples from this well were analyzed for VOCs, SVOCs, pesticides, PCBs, and priority pollutant metals. The Verification Study reported elevated levels of gross alpha (22 +/- 10 pico Curies per liter [pCi/L]) and gross beta (30 +/- 7 pCi/L) radiation.

Building 7357. Building 7352, which was constructed in 1983, is a 240-square-foot wood frame structure on a concrete slab with wooden siding and peaked roof covered with asphalt shingles. The facility, which is used as a campground administrative building, is located on Family Camp Road in the Family Camp Area.

One 500-gallon AST containing propane for sale is located north of the building across Family Camp Road.

Building 7358. The facility, which was constructed in 1983, is a picnic pavilion used for group picnics. The facility consists of a slightly peaked metal roof supported by metal poles set in a concrete slab. The facility is located on Family Camp Road in the Family Camp Area.

4.26.2 Rationale and Plans for Site Screening The objective of site screening for Study Area 26 is to determine what chemical contaminants, if any, are associated with current or former uses of the site.

Objective: to determine if any chemical contaminants are present from current or past use of the study area.

Method:
- passive soil gas survey

A passive soil gas survey will be conducted to identify any areas with elevated concentrations of VOCs and SVOCs and to focus the investigation to a smaller area for confirmatory soil and groundwater sampling. The soil gas survey will be conducted over a total area of 525,000 square feet, with collectors placed every 50 feet (Figure 4-38). Confirmatory soil and groundwater sampling will be focused on contaminated areas identified by the survey.

Objective: confirm the presence of chemical contaminants in the subsurface soil and groundwater.

Methods:
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Up to six soil borings will be completed in areas with elevated soil gas results, with three completed as monitoring wells. One boring and monitoring well is proposed for the vehicle parking area near Eighth Street identified in the 1965 aerial photograph. However, the final location of this and all other borings will be determined after review of soil gas results. Final locations will be proposed by the field team and approved by the Technical Leader. Six soil samples (one from each boring) and four groundwater samples (one from each new well, plus

OLM-5) will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. Each groundwater sample will also be submitted for gross alpha and gross beta radiation tests, and for TSS determination to aid in the evaluation of inorganics data and the effectiveness of well development and groundwater sampling techniques.

The purpose of this site screening program is to either confirm that Group IV Study Areas (Table 1-2 and Figure B-4, Appendix B) are suitable for a FOSL or a FOST or to determine the data needs for any additional investigations that may be required. The field investigation program is designed to gather sufficient physical and chemical data to support such decisions.

The following is a summary, by study area, of the proposed field investigation objectives and methods, including estimated numbers of samples and analytes for each location. Historical information on specific study area conditions was derived primarily from information contained in the EBS (ABB-ES, 1994b) and BRAC Cleanup Plan (ABB-ES, 1994c). The complete analytical program is summarized in Table 4-4. Details of the field methods, except as noted, to be used during this site screening program are included in the POP, Sections 4.8 through 4.12 (ABB-ES, 1994a).

Table 4-4
Analytical Program Summary
Group IV Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/TCL VOCs [1]	CLP/TCL SVOCs [2]	CLP/TAL Inorganics	Filtered CLP/TAL Inorganics	Pesticides/ PCBs [3]	Herbicides	TPH	TSS
SOIL AND SEDIMENT SAMPLES								
Study Area 27								
Bldgs 111, 2010, and 2073								
Surface Soil	3	3	3	--	3/3	--	--	--
Subsurface Soil	4	4	4	--	4/4	--	--	--
Sediment/Soil	4	4	4	--	4/4	--	--	--
Study Area 29								
Bldg 127								
Surface Soil	8	8	8	--	8/8	--	8	--
Subsurface Soil	2	2	2	--	2/2	--	2	--
Study Area 30								
Bldgs 129, 131, and 2662								
Surface Soil	12*	12*	12*	--	12/12*	6*	--	--
Subsurface Soil	8*	8*	8*	--	8/8*	6*	8*	--
Study Area 32								
Bldgs 358 and 359								
Subsurface Soil	6	6	6	--	6/6	--	3	--
Study Area 33								
Bldgs 2001, 2002, 2003, and 2004								
Surface Soil	7	7	7	--	7/7	--	5	--
Subsurface Soil	3	3	3	--	3/3	--	--	--
TOTALS FOR SOIL	53*	53*	53*	0	53/53*	12*	26*	0
TOTALS FOR SEDIMENT/SOIL	4	4	4	0	4/4	0	0	0

See notes at end of table

Table 4-4 (Continued)
Analytical Program Summary
Group IV Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/TCL VOCs [1]	CLP/TCL SVOCs [2]	CLP/TAL Inorganics	Filtered CLP/TAL Inorganics	Pesticides/ PCBs [3]	Herbicides	TPH	TSS
WATER SAMPLES								
Study Area 27								
Bldgs 111, 2010, and 2073								
Groundwater	3	3	3	3	3/3	--	--	3
Study Area 28								
Bldg 114								
Groundwater	2	2	2	2	0/2	--	--	2
Study Area 29								
Bldg 127								
Groundwater	2	2	2	--	2/2	--	2	2
Study Area 30								
Bldgs 120, 131, and 2262								
Groundwater	9*	9*	9*	--	9/9*	6*	9*	9*
Study Area 32								
Bldgs 358 and 359								
Groundwater	3	3	3	--	3/3	--	3	3
Study Area 33								
Bldgs 2001, 2002, 2003, and 2004								
Groundwater	3	3	3	3	3/3	--	3	3
TOTALS FOR GROUNDWATER	22	22	22	8	20/22	6	13	22

See notes at end of table

Table 4-4 (Continued)
Analytical Program Summary
Group IV Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/TCL VOCs [1]	CLP/TCL SVOCs [2]	CLP/TAL Inorganics	Filtered CLP/TAL Inorganics	Pesticides/ PCBs [3]	Herbicides	TPH	TSS
QC SAMPLES (QUANTITY ESTIMATED) [4]								
Soil								
Trip (Aqueous)	6	0	0	0	0/0	0	0	0
Rinsate (Aqueous)	6	6	6	0	6/6	2	2	0
Duplicate	7	7	7	0	6/7	2	2	0
Matrix Spike	4	4	4	0	3/4	1	1	0
Matrix Spike Duplicate	4	4	4	0	3/4	1	1	0
Sediment/Soil								
Trip (Aqueous)	1	0	0	0	0/0	0	0	0
Rinsate (Aqueous)	1	1	1	0	1/1	0	0	0
Duplicate	1	1	1	0	1/1	0	0	0
Matrix Spike	1	1	1	0	1/1	0	0	0
Matrix Spike Duplicate	1	1	1	0	1/1	0	0	0
Groundwater								
Trip	11	0	0	0	0/0	0	0	0
Rinsate (or Filter Blank)	11	11	11	4	11/11	3	7	0
Duplicate	3	3	3	1	3/3	1	2	0

See notes at end of table

Table 4-4 (Continued)
Analytical Program Summary
Group IV Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/TCL VOCs [1]	CLP/TCL SVOCs [2]	CLP/TAL Inorganics	Filtered CLP/TAL Inorganics	Pesticides/ PCBs [3]	Herbicides	TPH	TSS
SOIL AND SEDIMENT SAMPLES								
Groundwater (Continued)								
Matrix Spike	2	2	2	1	2/2	1	1	0
Matrix Spike Duplicate	2	2	2	1	2/2	1	1	0

[1] Volatile organic compound (VOC) analysis for groundwater and associated quality control (QC) samples will be low level Contract Laboratory Program (CLP) method to attain detection limits below Florida maximum contaminant levels (MCLs).

[2] Semivolatile organic compound (SVOC) analysis for groundwater and associated QC samples will include U.S. Environmental Protection Agency (USEPA) Method 8310 for benzo(a)pyrene and selective ion monitoring (SIM) for bis (2-ethylhexyl)phthalate, pentachlorophenol, and hexachlorobenzene to attain detection limits below Florida MCLs for these compounds.

[3] Polychlorinated biphenyl (PCB) analysis for groundwater and associated QC samples will be performed to obtain detection limits below the Florida MCL (0.5 microgram per liter).

[4] Quantities assume an 11-day groundwater sampling program, a 6-day drilling and soil sampling program, and a 1-day sediment sampling program.

* Number of samples is maximum possible; actual number dependent on soil gas and geophysical survey results. Refer to appropriate screening plan section for details.

Notes:
CLP = contract laboratory program.
TCL = target compound list.
VOC = volatile organic compound.
SVOC = semivolatile organic compound.
TAL = target analyte list .
PCB = polychlorinated biphenyl.
TPH = total petroleum hydrocarbons.
TSS = total suspended solids.
BLDG = building.
QC = quality control.

4.27 STUDY AREA 27, MAIN BASE - BUILDING 111, BUILDING 2010, AND BUILDING 2073.

The focus of the site screening investigation in Study Area 27 is on the area surrounding Buildings 111, 2010, and 2073, particularly the retention pond between Buildings 111 and 2073. There is a history of use and storage of chemicals in and around Buildings 2010 and 2073, along with allegations of dumping of liquid residual wastes (paint residues and cleaning solutions) into the retention pond.

4.27.1 Background and Conditions

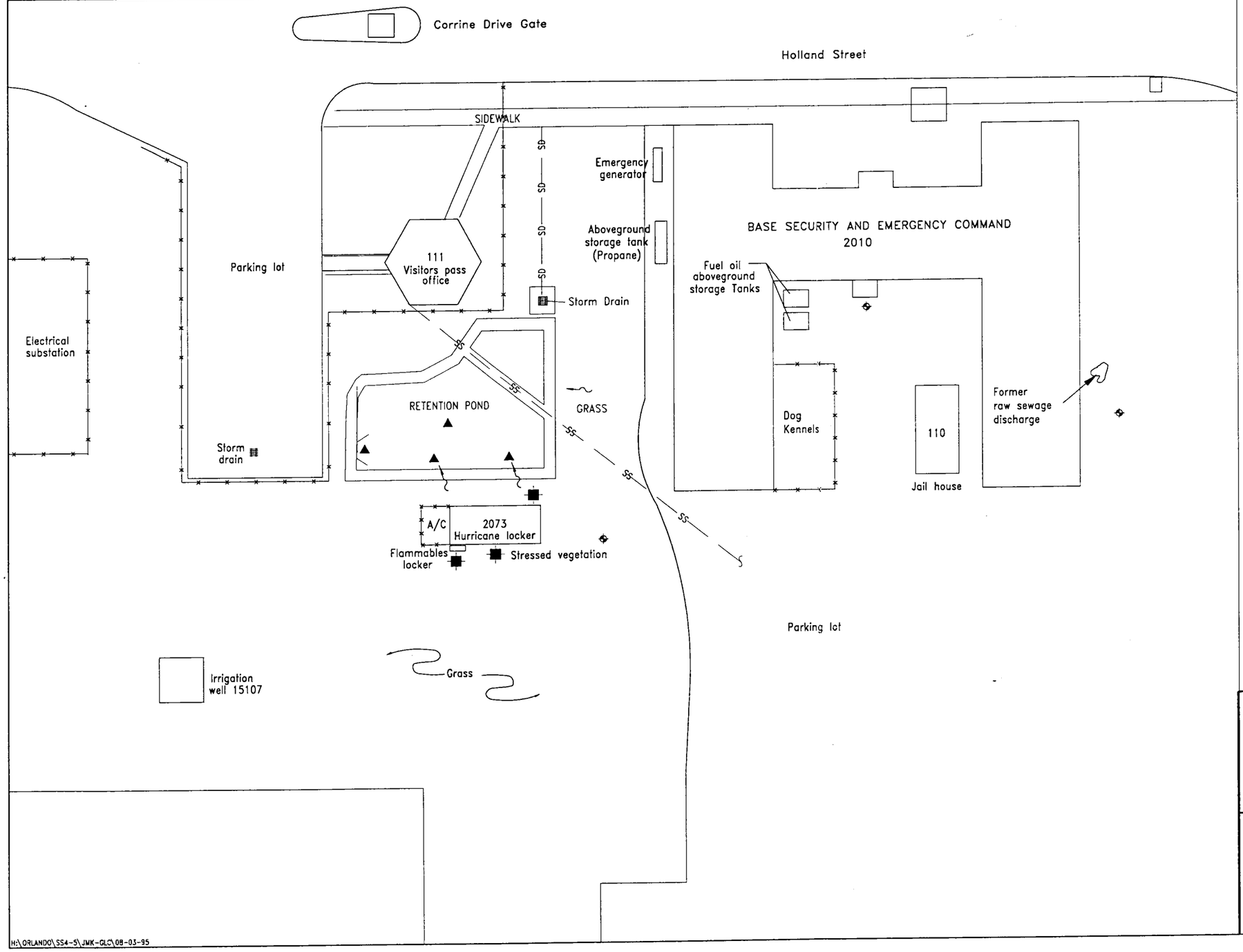
Building 111. Building 111, located at the Corrine Drive Gate entrance of the Main Base (Figure 4-39) is currently used as the Visitor's Pass Office. It is a single-story, octagonal, wooden structure, constructed in 1985, with a fenced parking lot. In 1945 the site was occupied by Building 2046, the Baggage Check Room, and a citrus grove, which extended to the south and west. The adjoining area to the south and west is currently occupied by an electrical substation, irrigation well 15107, and an enclosed dog training area.

Storm water drainage, including parking lot runoff, flows from the site into a retention pond (approximately 5 feet below grade) directly south of the building; from there flow is directed to an outfall at Lake Baldwin. At the time of the EBS, there was evidence of cleaning solvent and paint product disposal in the retention pond (ABB-ES, 1994b).

Building 2010. Building 2010, located at the corner of Holland and Grace Hopper Streets at Main Base, currently functions as the administrative headquarters for Naval Training Center Security, the Base Emergency Command Center, Weapons Storage, and Police Dog Kennels. It is a 12,148-square foot (ft^2) wooden framed, cinder block structure with a pitched roof. From 1945 to an unknown date, Building 2010 served as the Registration Building. Prior to that date, the site was undeveloped. Two 300-gallon steel ASTs are located near the building; both ASTs contained No. 2 fuel oil and lacked secondary containment at the time of the most recent site visit by ABB-ES (May 1995). In addition, there is a 250-gallon AST containing liquid propane gas which supplies an emergency generator unit near the northwest corner of the building. Reportedly, the building has an abandoned UST of unknown capacity (ABB-ES, 1994b); however, ABB-ES found no visual evidence of the tank at the time of the most recent site visit (May 1995).

Cleaning compounds (such as acetone and disinfecting solutions), petroleum-based products, and insecticides were noted to have been used and stored in the building during the EBS (ABB-ES, 1994b). No spills of these products are known to have occurred. Staining of unknown origin was noted during the most recent site visit (May 1995) on a concrete pad outside an exterior doorway on the south side of the building. Detectable hydrocarbon odors and oil stains were observed in the boiler room during the EBS. During the EBS, interior drains connected to the sewage distribution system were identified throughout the facility (ABB-ES, 1994b). Curbs and gutters direct stormwater to the retention pond located west of the building; from there the flow is directed east to the outfall at Lake Baldwin.

The discharge of raw sewage to the ground surface outside the eastern exterior wall of Building 2010 was noted as a recurring problem (ABB-ES, 1994b). The problem has reportedly been corrected, and ABB-ES found no visual evidence of the discharge at the time of the most recent site visit (May 1995).



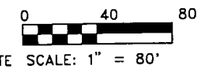


FIGURE 4-39
PROPOSED SURFACE SOIL, SOIL BORING, AND MONITORING WELL LOCATIONS BUILDINGS 111, 2073, AND 2010 MAIN BASE, STUDY AREA 27, GROUP IV STUDY AREAS

SITE SCREENING PLAN

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Building 2073. Building 2073 (Armory/Hurricane Storage Locker) is located south of the Corrine Drive Gate, near Building 111. It is currently used by the security command as a storage area for uniforms, hurricane gear, gun cleaning supplies (no solvents), and general cleaning supplies. It is a one-story, rectangular, concrete block structure, with a shingled gable roof that was constructed in 1943 as a latrine. Prior to Navy occupation, the Air Force used the building for storage of ammunition.

A flammable storage locker is currently located on the south side of the building. There is evidence of minor stress to vegetation surrounding the locker. At the time of the EBS, there was a strong odor of pine cleaner on the ground of the northern side of the building where mop buckets of cleaning solution are routinely emptied. In this area the grass was absent, though it is not known if this was due to erosion or to harmful constituents in the waste water. A second area of stressed or absent vegetation was noted during the most recent site visit (May 1995) on the south side of the building, east of the storage locker.

A stormwater retention pond adjoins Building 2073 to the north. The EBS noted that wastewater from mop buckets and painting equipment was routinely washed into the retention pond (ABB-ES, 1994b).

4.27.2 Rationale and Plans for Site Screening The objective of site screening at Study Area 27 is to evaluate if chemical contaminants are present in environmental media as the result of releases of oil or hazardous materials (OHM) that have been stored or used onsite. Proposed sample locations are shown on Figure 4-39.

Objective: to evaluate what chemicals may be present in environmental media due to past disposal and storage of OHM

Method:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Three surface soil samples (0 to 1 foot) will be collected near Building 2073, one adjacent to the flammable storage locker (southwest corner), one in the area of stressed vegetation (southeast side of the building), and one in the area of stressed vegetation adjacent to the outside water tap (northeast corner). The samples will be submitted for CLP TCL VOC, SVOC, pesticides and PCBs, and CLP TAL inorganic (full suite CLP TCL and TAL) laboratory analyses in accordance with USEPA Level IV DQOs.

Three soil borings, with a temporary monitoring well installed in each, will be completed across the study area. Based on the location of Study Area 27 relative to Lakes Baldwin and Susannah, groundwater flow is likely to the east. One boring will be installed off the east end of Building 2073 (downgradient of doorway); one boring will be installed near the doorway on the interior courtyard of Building 2010 (evidence of staining on the door step); and one boring will be installed near the southeast corner of Building 2010 (presumed downgradient of the study area). Borings will be sampled continuously, using a 2-foot long split-spoon sampling device below the surface interval and a stainless steel hand auger for the surface interval. One soil sample will be submitted for laboratory analysis from each boring from an interval where visual evidence or FID screening

results suggest contamination; in the absence of evidence of contamination, the sample interval directly above the water table will be submitted. A surface soil sample will also be collected from the boring near the doorway in the courtyard of Building 2010. The four soil samples will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

Temporary wells will be installed in each boring by advancing the HSA 2 to 3 feet below the water table. Slotted 2-inch diameter PVC well screen will be lowered into the auger, and the auger will be retracted. A groundwater sample will be collected from inside each well screen using the low-flow technique. When groundwater sampling is complete, the well screen will be withdrawn and the boring grouted. The well material will be decontaminated in accordance with the POP, Section 4.3, Decontamination (ABB-ES, 1994a) and reused at the next temporary well location or discarded. The three groundwater samples will be submitted for full suite CLP TCL and TAL inorganic (filtered and unfiltered) analyses in accordance with USEPA Level IV DQOs, as well as TSS determination. The filtered samples and TSS data will aid in the evaluation of inorganic results, as groundwater resampling cannot be readily performed due to the use of temporary wells.

Objectives: to assess the impact, if any, of cleaning solution and paint disposal on the retention pond

Method: • sediment and/or soil sampling

Four biased sediment and/or soil samples will be collected from the retention pond to evaluate what, if any, contamination has resulted from the disposal of cleaning and painting materials or other chemicals into the pond. The pond does not appear to often contain water; therefore, no water samples will be collected. One sediment and/or soil sample will be collected at the stormwater influent location at the west side of the retention pond, one sample will be collected at two locations where surface water drains into the retention pond, and one sample will be collected from the center of the pond. The four samples will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

4.28 STUDY AREA 28, MAIN BASE - BUILDING 114. Site screening activities at Study Area 28 (Figure 4-40) are focused on the current disposal of waste generated during the silk screening process at Building 114, the bowling alley and arts and crafts hobby shop. Historic waste disposal practices associated with the drafting building, formerly located on this site, are also of concern.

4.28.1 Background and Conditions

Building 114. Building 114 is located on Grace Hopper Avenue, north of Langley Street on the Main Base. Current operations include a bowling alley, snack bar, T-shirt shop, and an arts and crafts hobby shop. It is a 25,965-ft^2, single-story structure built on a raised concrete slab and constructed of concrete block walls with a flat tar-and-gravel roof. Recreational activities include bowling, silk screening, ceramics, and other arts and crafts.

Aerial photographs indicate that, prior to the construction of the bowling alley in 1971, the site was occupied by two smaller structures, Buildings 2019 (Director of Training Office) and 2021 (Drafting Shop). (Refer to Figure 4-40 for

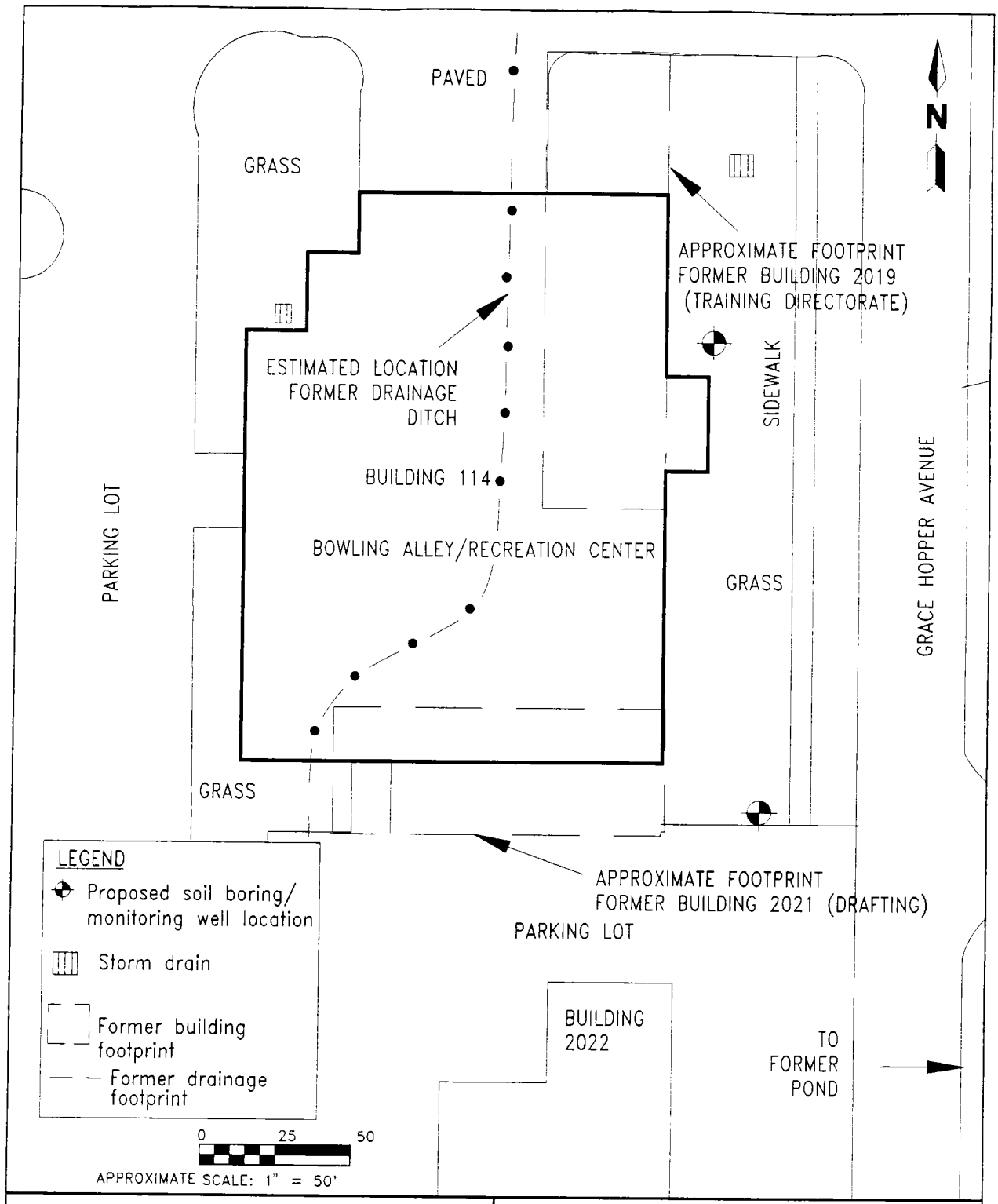

FIGURE 4-40
PROPOSED SOIL BORING AND MONITORING WELL LOCATIONS BUILDING 114 BOWLING ALLEY AND RECREATION CENTER MAIN BASE, STUDY AREA 28, GROUP IV STUDY AREAS

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approximate locations of these former buildings). According to site plans prior to demolition of the old buildings, an open ditch traversed the site in a north-south direction. This open ditch ran along the back (west side) of the former buildings and may have received waste from the drafting department including solvents, base neutral compounds, inorganics, and PCBs. The ditch was filled at the time of construction of Building 114. Adjacent to the site are Buildings 2018, the Director of Training Office; 2022, formerly the Civilian Mess; and 128, which was previously a pond.

During the EBS (ABB-ES, 1994b), strong solvent odors were detected in the silk screening room, located in the south end of the building. Silk screening products are rinsed in a Safety Kleen solvent washer and drip-dried over the concrete floor. Areas of staining were observed on the floor of the silk screening room. Various hazardous substances, all in small volume containers, were stored within the building. A 50-gallon steel reclamation bin used to store cooking oil and grease generated by the snack bar was located on the western side of the building. The contents of the bin were removed as needed by a private contractor. No areas of staining or leakage were noted beneath the bin. Interior floor drains, connected to the sanitary sewage system, were noted in the lavatories, janitor closet, and kitchen area. Stormwater drainage from the site flows toward storm water collection drains within Basin 29; from there the flow is directed eastward to the outfall at Lake Susannah (ABB-ES, 1994b).

4.28.2 Rationale and Plans for Site Screening The objective of site screening at Study Area 28 is to evaluate what, if any, contamination has resulted due to past or current activities, such as silk screening or drafting, at the site. Proposed sample locations are shown on Figure 4-40.

Objectives: to evaluate what, if any, chemical contamination has resulted from past or current site activities

Methods:
- monitoring well installation
- groundwater sampling

The presumed direction of groundwater flow in this study area is to the east, toward Lake Susannah. Two soil borings will be completed in downgradient locations, with a temporary monitoring well installed in each boring. No soil samples will be collected from the borings, although the soil will be described. Temporary wells will be installed according to the procedure described in Subsection 4.27.2.

Groundwater samples will be collected from both wells using the low-flow technique. Two groundwater samples (one from each well) will be submitted for laboratory analysis of CLP TAL inorganics (filtered and unfiltered), TCL VOCs and SVOCs, and PCBs, in accordance with USEPA Level IV DQOs, as well as TSS determination. The filtered samples and TSS data will aid in the evaluation of inorganic results, as groundwater resampling cannot be readily performed due to the use of temporary wells.

4.29 STUDY AREA 29, MAIN BASE - BUILDING 127. Storage and use of OHM, along with improper waste storage (unlabeled drums in open area with no secondary containment) at the grounds maintenance shop is the focus of activities in Study Area 29 (Figure 4-41).

4.29.1 Background and Conditions

Building 127. Building 127, located on the Main Base between Langley Street to the north and Lake Susannah to the south, currently serves as a storage facility for grounds maintenance equipment. The 713 square foot, one-story building is constructed of concrete block walls with brick facing (Figure 4-41). There are two flammable storage lockers located adjacent to the northwest side of the building. There is an open-sided aluminum-roofed shed in the middle of the site where lawn mowers, tractors, and trailers are stored. The entire property is enclosed by an 8-foot high chain link fence.

The building was built in 1975 and originally served as a sail loft. In 1988 it was converted to its present function. From 1945 to an unknown date the site was also occupied by Building 2444, the enlisted men's bath house.

This site is used for the storage of gasoline and motor oil for the maintenance equipment. During the EBS (ABB-ES, 1994b), stained soil and stressed vegetation were observed at the base of one of the flammable storage lockers. The affected area was approximately 2 feet in diameter, but its depth was undetermined. No other stains were observed. Several used 55-gallon drums are located along the eastern fence line. Most of the drums are open and empty, although some are closed and appear to contain uncharacterized material. The drums were reported to have been placed there approximately 12 years ago and are in fair condition.

Surface water runoff from the site flows south, directly into Lake Susannah. Several distinct runoff pathways are visible at the site. Vegetation in these areas appeared stressed or was absent, although the cause of the stress could be physical rather than chemical.

One surface water and three sediment samples were collected from Lake Susannah, directly offshore from Building 127, during an earlier round of site screening investigation. These locations are shown on Figure 4-41. Preliminary review of these results indicates detectable concentrations of 4,4'- dichlorodiphenyldichloroethane (4,4'-DDD), 4,4'- dichlorodiphenyldichloroethylene (4,4'-DDE), chlordane, and various phthalates. These results will be evaluated in the Group I Site Screening Report and in conjunction with sampling results from Study Area 29.

4.29.2 Rationale and Plans for Site Screening The objective of site screening at Study Area 29 is to evaluate what, if any, contamination has resulted due to storage and use of OHM at the site, including the materials stored in 55-gallon drums. Proposed sample locations are shown on Figure 4-41.

Objectives: to evaluate what, if any, chemical contamination has resulted from past or current site activities

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

A total of eight surface (0 to 1 foot) soil samples will be collected from areas likely to have been impacted by onsite activities. Two will be collected near the flammable storage lockers to assess the observed stained area; three will be collected from the drum storage area; and three will be collected from surface

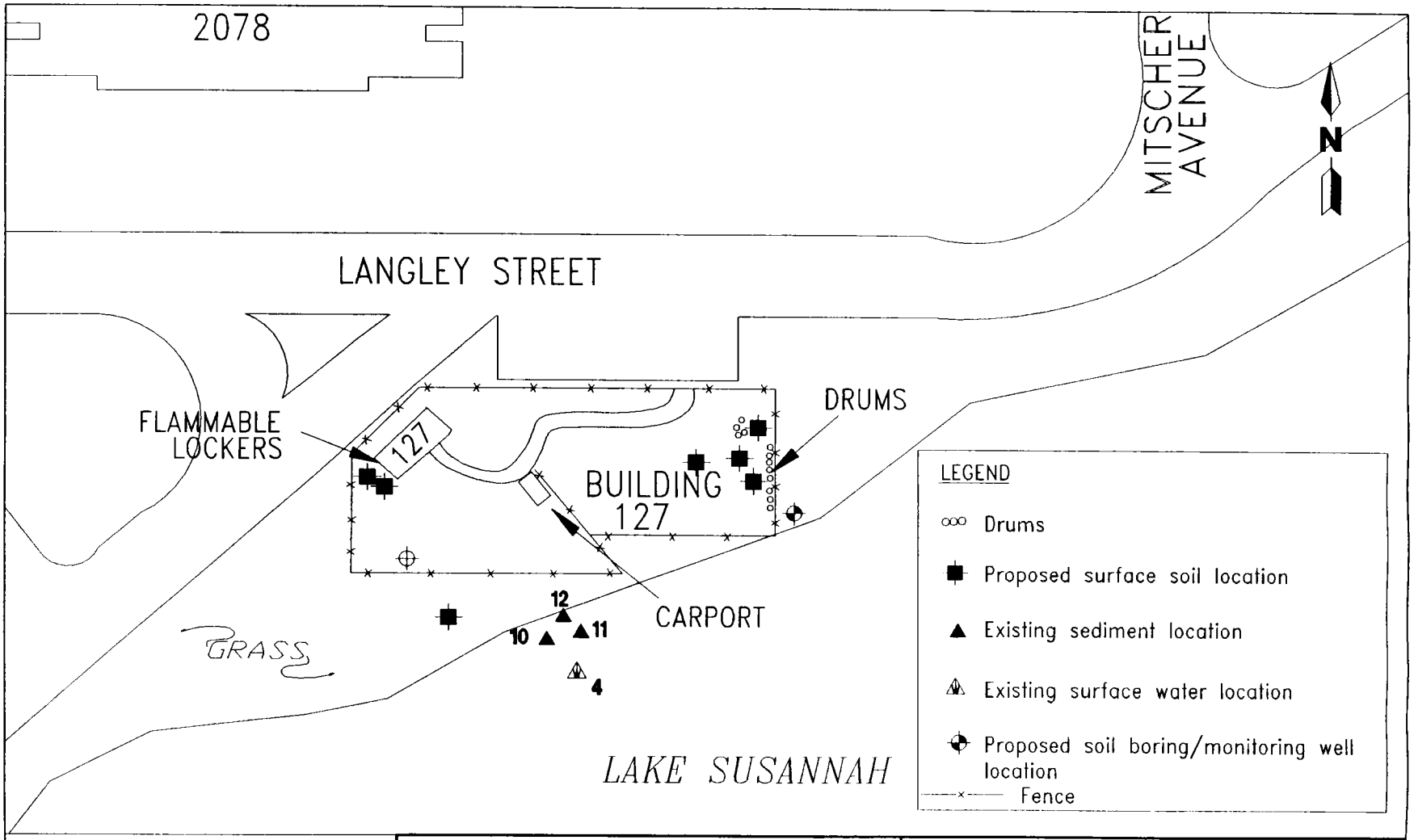

FIGURE 4-41
PROPOSED SURFACE SOIL, SOIL BORING, AND MONITORING WELL LOCATIONS BUILDING 127, GROUNDS MAINTENANCE MAIN BASE, STUDY AREA 29, GROUP IV STUDY AREAS

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runoff points, one inside the fence near the drums, and two just outside the fence. These samples will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. All surface soil samples will be collected preferentially from stained or distressed areas. An attempt will be made to have the drums removed from the study area prior to sampling so that samples can be obtained from soil that would have been beneath the drums. If the drums cannot be removed prior to sampling, then the three samples in this area will be collected from stained spots near the drums.

Two soil borings will be completed along the downgradient side of the study area, with a conventional monitoring well (as described in Subsection 3.5.4) installed in each. One of the borings will be outside the fence, near the drum storage area and the other boring will be near the gate, south of Building 127 and downgradient of the flammable storage lockers and presumably, the area of highest use of OHM. Each boring will be sampled continuously, using a 2-foot long split-spoon sampling device below the surface interval and a stainless steel hand auger for the surface interval. (Alternatively, the borings may be completed entirely by hand if the water table is very shallow and the borehole remains open.) One soil sample will be submitted for laboratory analysis from each of the borings; either the sample interval directly above the water table or the interval in which there is visual or FID screening evidence suggesting contamination. Two subsurface soil samples will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

One groundwater sample will be collected from each of the two monitoring wells using the low-flow technique. Two groundwater samples will be submitted for TPH and full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs. The groundwater samples will also be submitted for TSS determination, to aid in evaluation of inorganics data.

4.30 STUDY AREA 30, MAIN BASE - BUILDING 129, BUILDING 131, BUILDING 139, AND BUILDING 2262. Site screening activities at Study Area 30 are focused on the use of OHM associated with the auto hobby shop and paint storage building, the use and possible improper disposal of cleaning solutions generated by a contractor janitorial service, and past use, storage, and disposal of OHM associated with former land use in and adjoining the study area including motor pool vehicle storage and maintenance, gasoline filling station, pest control, railroads, and a fuel farm.

4.30.1 Background and Conditions Study Area 30 includes the auto hobby shop (Building 129), the paint storage building (Building 131), and offices for a contractor janitorial service (Building 2262). Refer to Figure B-4, Appendix B. The study area is bounded to the south by the base boundary fence and a paved recreational path that generally follows the former railroad and utility right-of-way. The northern boundary of this study area coincides roughly with the south end of Rickover Circle. The western boundary of the study area is the open field directly west of Building 2262. The eastern boundary coincides with the parking lot just east of the east end of Building 129. Other structures are currently located within these physical bounds (for example, the car wash [Building 133]; and the current pesticide mixing facility [Building 139]); however, these structures are not targeted for site screening activities, as they are listed as Blue in the EBS (ABB-ES, 1994b). The following is a description of the buildings included in the study area.

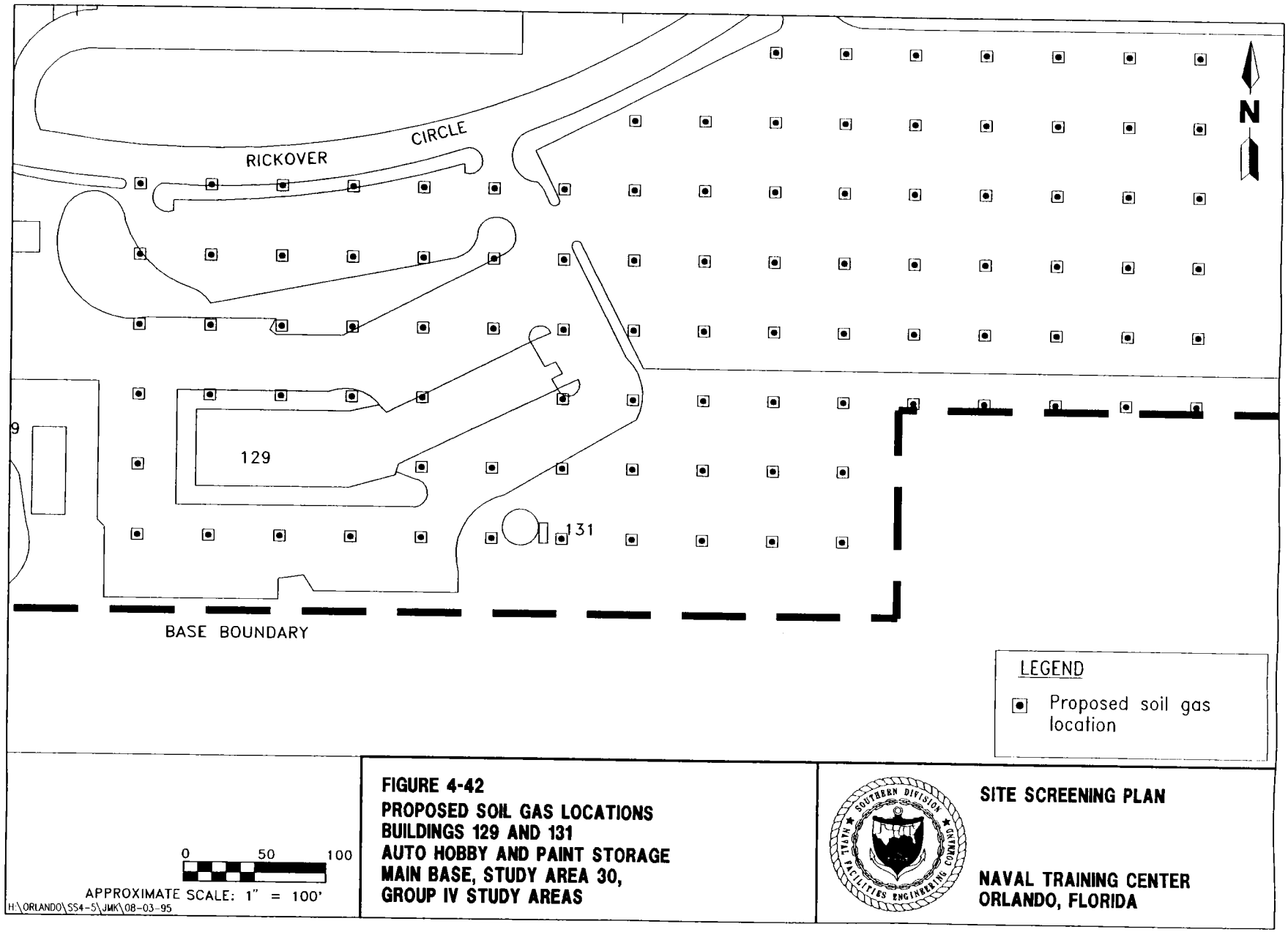
Building 129. Building 129 is an automotive repair facility (the auto hobby shop) located on Rickover Circle adjacent to the southern boundary of the Main Base (Figure 4-42). The 17,700-ft^2 building was constructed in 1976 of concrete block with a flat tar and gravel roof. The site was largely undeveloped prior to 1976, with the exception of the former railroad tracks which bordered the study area to the south. It is currently used by military personnel to perform repair, maintenance, paint, and body work on personal vehicles and to store surplus vehicles or parts in outside storage enclosures.

Waste oil from vehicles is stored in a 500-gallon UST located on the southern side of the building. Four monitoring wells were installed around this tank in 1989. A contractor empties the UST as needed. According to the EBS (ABB-ES, 1994b), there is a 225-gallon antifreeze and water separator located near the southeast corner of the building that is used for disposal of spent antifreeze. An offsite contractor recycles the antifreeze. According to site plans for Building 129, this separator was originally designed as a sand and water separator. Another separator unit was shown onsite plans near the northeast corner of the building; a patch in the pavement running from the building to a sanitary sewer manhole near the building at this location suggests that this unit may have been removed.

Two open air storage areas enclosed by chain link fence are located south of the building along the base fence line. These areas are used for storage of motorcycles, spare parts, and other vehicle-related items. Staining was evident on the pavement within the enclosures; some stressed vegetation was observed in the grassy strip between the rear of the storage units and the base fence. A second dumpster may have been located in an unpaved area between the two storage units, based on visual evidence of debris and stained soil.

Building 131. Building 131 is located south of Building 129 on previously undeveloped land. Since its construction in 1976, the round concrete block building has been used to store various types of paints, thinners, and sealants. Outside the building, an oily stain was observed during the EBS (ABB-ES, 1994b) under the base of a 300-gallon AST containing diesel fuel. Potential impact resulting from releases associated with this tank will be addressed under the NTC, Orlando, Tank Management Plan (ABB-ES, 1994d). Additional staining and small pieces of debris were noted on soil between the northwest side of the building and pavement. It is believed that a small dumpster unit was formerly located in this unpaved area; at the time of the most recent site visit, the dumpster had been moved to the adjoining pavement. No other staining or evidence of release was noted outside the building.

Building 2262. Building 2262 is a custodial building located on Rickover Circle in the southern part of the Main Base, just north of Lake Gear. The 2,400 square foot concrete block and gabled roof structure was constructed in 1943 on undeveloped land for use as an administration and supply building. Since 1990 the building has housed a janitorial contractor for the rehabilitation center, and stores various cleaning supplies. Prior to 1990, and most probably pre-1982 the building was used by the pest control facility and by a petroleum supply company. Past uses may have included storage of pesticides or petroleum products. The site is bounded by a paved parking lot to the west and east, with a small stormwater retention basin located just east of the building along Rickover Circle.


RICKOVER CIRCLE
N
129
131
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BASE BOUNDARY
LEGEND
Proposed soil gas location
0 50 100
APPROXIMATE SCALE: 1" = 100'
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FIGURE 4-42
PROPOSED SOIL GAS LOCATIONS
BUILDINGS 129 AND 131
AUTO HOBBY AND PAINT STORAGE
MAIN BASE, STUDY AREA 30,
GROUP IV STUDY AREAS
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A 265-gallon AST containing fuel oil was associated with the building at one time, but was removed prior to the EBS. Cleaning chemicals appeared to have been spilled in various locations in the building; however, no odors were noted. Wastewater generated from janitorial activities is apparently disposed of in an exterior, unmarked, uncovered 4" pipe located in a grassy area northeast of the building. A 1964 wastewater system map shows a sewer connection at approximately this location, but it could not be confirmed that the unmarked pipe discharges to the sewer. Vegetation around the exterior drain was yellowed.

Aerial photographs indicate that a motor pool was located directly east of the building until 1962, with a railroad section house to the south, and the coal storage yard was located 1,500 feet to the west. Associated with the motor pool was a gas station with grease racks, located east of Building 2262.

Evidence of possible landfilling was noted in aerial photographs (pre-1962) of the area west of the building. This area is at least partially under the parking lot. Surface runoff from this area is directed to an outfall at Lake Gear.

4.30.2 Rationale and Plans for Site Screening The objective of site screening at Study Area 30 is to evaluate if chemical contaminants have been released during past or current site use.

Objective: to evaluate what chemical contaminants may have been released during past and current uses of the site and identify target areas for additional sampling and analysis

Method:
- soil gas survey

The first step in the site screening will be to conduct a soil gas survey across the area surrounding the auto hobby shop to identify areas with elevated concentrations of VOCs or SVOCs in subsurface soil or groundwater, and to focus subsequent field investigation locations. The survey will cover an area of approximately 700 by 300 feet with a grid spacing of 50 feet, as shown on Figure 4-42. Approximately 105 points will be sampled and analyzed in accordance with USEPA Level II DQOs. Following review of the results of the soil gas survey, soil borings and monitoring wells will be completed across the site, as described below.

Objective: to evaluate the potential for buried debris in the former disturbed area located west of Building 2262

Method:
- geophysical survey (GPR, magnetometer, and time domain metal detector)

A geophysical survey will be conducted in two phases: an initial magnetometer and time domain metal detector survey, followed by a confirmatory GPR survey focused on anomalies identified by the magnetometer and metal detector. The area of investigation is estimated to be approximately 150 feet by 300 feet (Figure 4-43). The parking lot will be cleared of vehicles for the duration of the geophysical work to minimize the interference from metal objects at the surface. Grid nodes will be occupied every 10 to 20 feet in the survey area. Where necessary, the grid will be closed down to 5 to 10 feet, as conditions warrant.

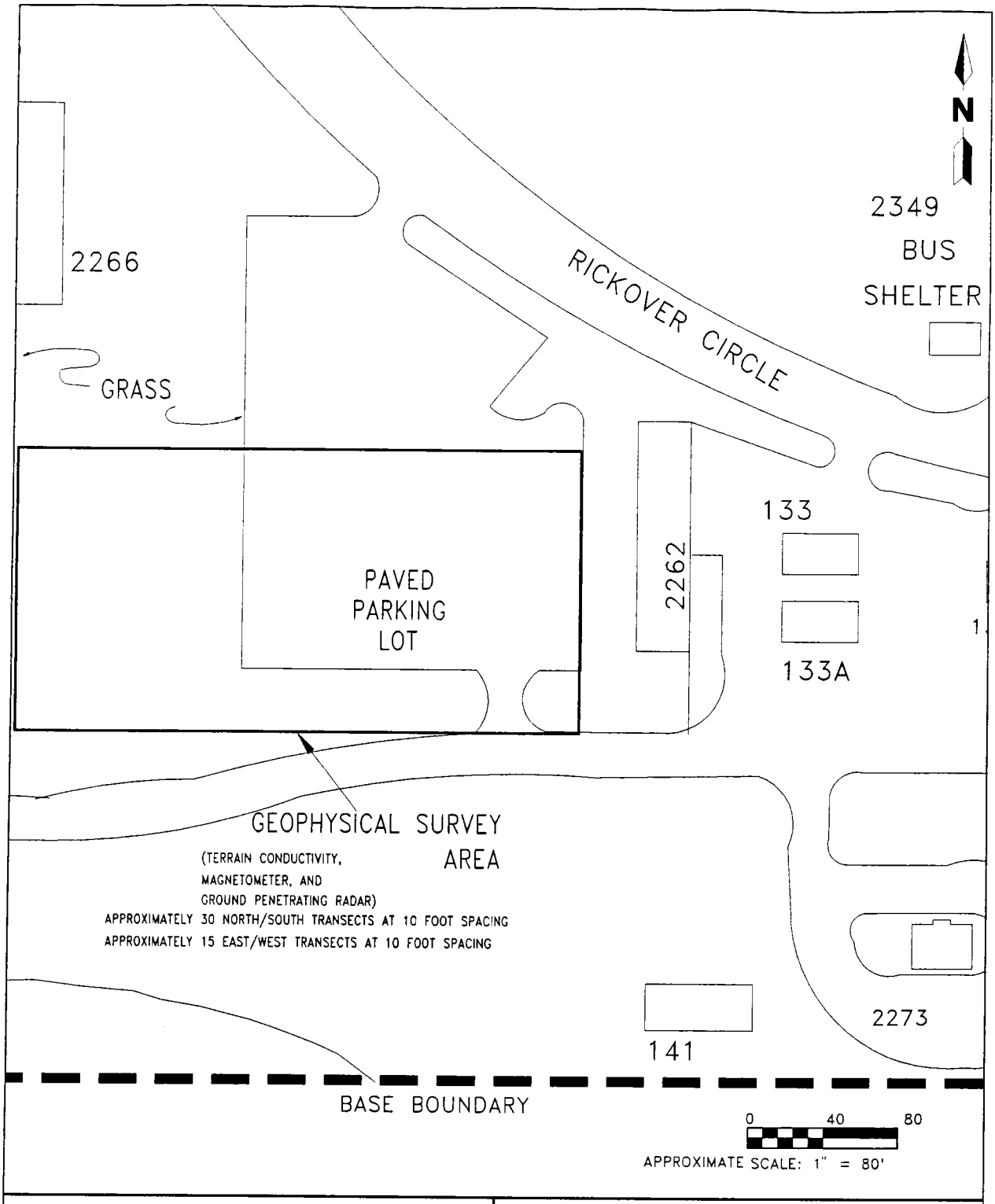

FIGURE 4-43
PROPOSED GEOPHYSICAL SURVEY AREA
BUILDING 2662, JANITORIAL SERVICES
MAIN BASE, STUDY AREA 30,
GROUP IV STUDY AREAS

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Objective: to evaluate what chemical contaminants may have been released during past and current uses of the site and evaluate possible anomalies identified by soil gas or geophysical survey results

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Following review of the soil gas and geophysical survey results, a soil and groundwater sampling program will be initiated at Study Area 30. Some of the sample points are based on visual evidence of potential contamination; others will be located in areas identified by soil gas and geophysics. The following is a summary of the sampling program. Proposed sample locations are shown on Figure 4-44.

Surface Soil. Up to 12 surface soil (0 to 1 foot) samples will be collected in areas of potential concern as follows. Two samples will be collected in the former dumpster location northwest of Building 131; two samples will be collected from the area behind (south) of the vehicle storage bays near Building 129; one sample will be collected from the former dumpster location between the storage bays; two samples will be collected from stressed or stained areas within the retention pond between Buildings 2262 and 129; and one sample will be collected from the unpaved area adjacent to the southwest corner of Building 129. Based on the results of soil gas and geophysical surveys, up to four additional surface soil sample locations may be established. These locations are not shown on Figure 4-44 and will be determined in the field by the Technical Leader in consultation with the field team. All surface soil samples will be submitted for full suite CLP TAL and TCL laboratory analysis in accordance with USEPA Level IV DQOs. In addition, the two samples from the retention pond and any additional samples collected in the vicinity of Building 2262 will also be submitted for laboratory analysis of herbicides in accordance with USEPA Level IV DQOs.

Soil Borings and/or Monitoring Wells. Up to eight soil borings will be completed across the study area, with a monitoring well installed in each boring. Boring and/or well locations are summarized as follows.

One boring and/or well will be completed near the exposed pipe off the northeast corner of Building 2262; one will be completed southeast of Building 2262 (likely downgradient); one will be completed north of Rickover Circle, in the vicinity of the former motor pool; one will be completed in the paved parking area northeast of Building 129; and one will be completed southeast of Building 139, near the vehicle storage bays. Up to 3 additional borings and monitoring wells may be installed in potential areas of concern based on review of the soil gas and geophysical survey results. These locations are not shown on Figure 4-44 and will be determined in the field by the Technical Leader in consultation with the field team.

Each boring will be sampled continuously, using a 2-foot long split-spoon sampling device below the surface interval and a stainless steel hand auger for the surface interval. (Alternatively, the borings may be completed entirely by hand if the water table is very shallow and the borehole remains open.) One soil sample will be submitted for laboratory analysis from each of the borings; either the sample interval directly above the water table or the interval in which there is visual

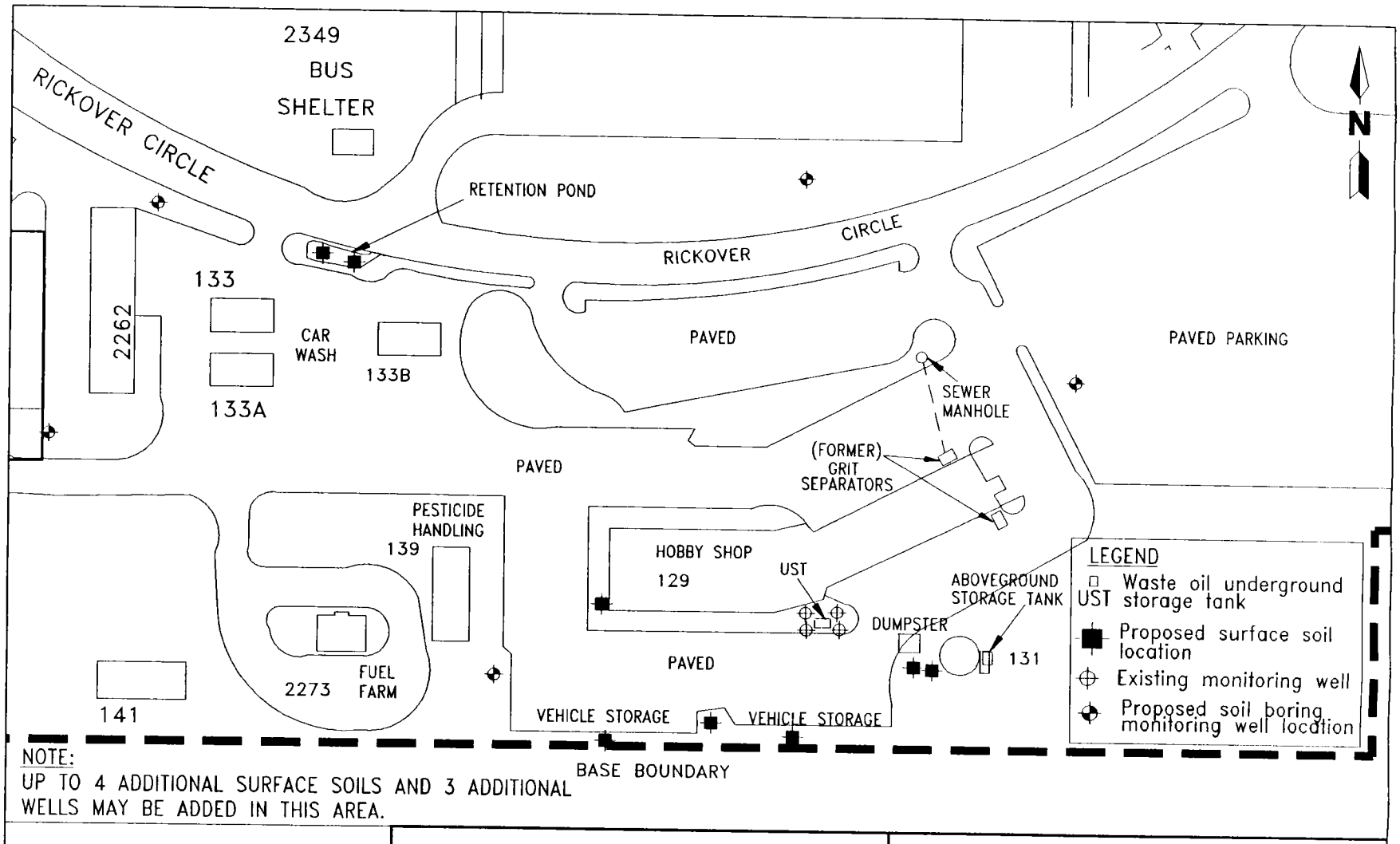

FIGURE 4-44 BUILDINGS 129, 131, AND 2262 PROPOSED SURFACE SOIL, SOIL BORING AND MONITORING WELL LOCATIONS HOBBY SHOP PAINT STORAGE, AND JANITORIAL SERVICES MAIN BASE, STUDY AREA 30, GROUP IV STUDY AREAS

SITE SCREENING PLAN

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or FID screening evidence suggesting contamination. One groundwater sample will be collected from each new monitoring well using the low-flow technique. In addition, groundwater from one of the four existing wells associated with the waste oil tank at Building 129 will be sampled. All soil (up to eight) and groundwater (up to nine) samples will be submitted for TPH and full suite CLP TAL and TCL laboratory analysis in accordance with USEPA Level IV DQOs. All soil and groundwater samples (up to six for each medium) collected in the vicinity of Building 2262 and Building 139 will be submitted for laboratory analysis of herbicides, in accordance with USEPA Level IV DQOs. All groundwater samples will also be submitted for laboratory analysis of TSS.

4.31 STUDY AREA 31, MAIN BASE - BUILDING 354. The focus of site screening investigations in this study area is on the possible presence of an oil and water separator system and UST.

4.31.1 Background and Conditions

Building 354. Building 354, constructed in 1980, is an applied instruction facility for the Nuclear Power School. It is located east of Grace Hopper Avenue at the intersection with Maguire Boulevard, on the Main Base (Figure 4-45). The building is two-story brick exterior face over concrete masonry and contains approximately 120 rooms with 106,648 square feet of floor space. Prior to construction of Building 354, the site was occupied by buildings numbered in the 2200s (2202-2207 and 2220-2221). These buildings served as barracks and lavatories, and were demolished prior to the construction of Building 354.

The facility is currently used to train machinist mates, electrician mates, and electronic technicians. The building has classrooms and laboratories for hands-on training. The majority of laboratories in the facility are dry labs except for the lube oil and air compressor laboratories (wet labs) located on the first floor near the south end of the building. The lube oil laboratory provides hands-on instruction in maintenance of oil purifiers. Lube oil is pumped from two large storage tanks located in the lab into the oil purifiers. After training is completed, the oil is pumped back into the storage tank. All the oil purifiers have bilges underneath to catch any spills that occur. According to building personnel, all bilges in the building empty into an oil and water separator. The oil and water separator is located adjacent to the southeast side of the building. The same setup reportedly exists in the air compressor lab. Construction drawings indicate a separate 550-gallon oil storage tank associated with the separator. The tank is presumably located under a gravel pad surroundedby four guard posts, located adjacent to the sidewalk near the southeast corner of the building. No vent pipe or fill port was located during the most recent site visit (May 1995).

The facility also reportedly has a 3,000-gallon underground storage tank associated with the property, which has no secondary containment. No record confirming the existence of this tank was found at the base Public Works department and there were no obvious visual signs of the tank during the most recent site visit (May 1995). A gas regulator was observed adjacent to the boiler room (separate structure east of the building), suggesting that perhaps the boiler is gas-fired instead of oil-fired.

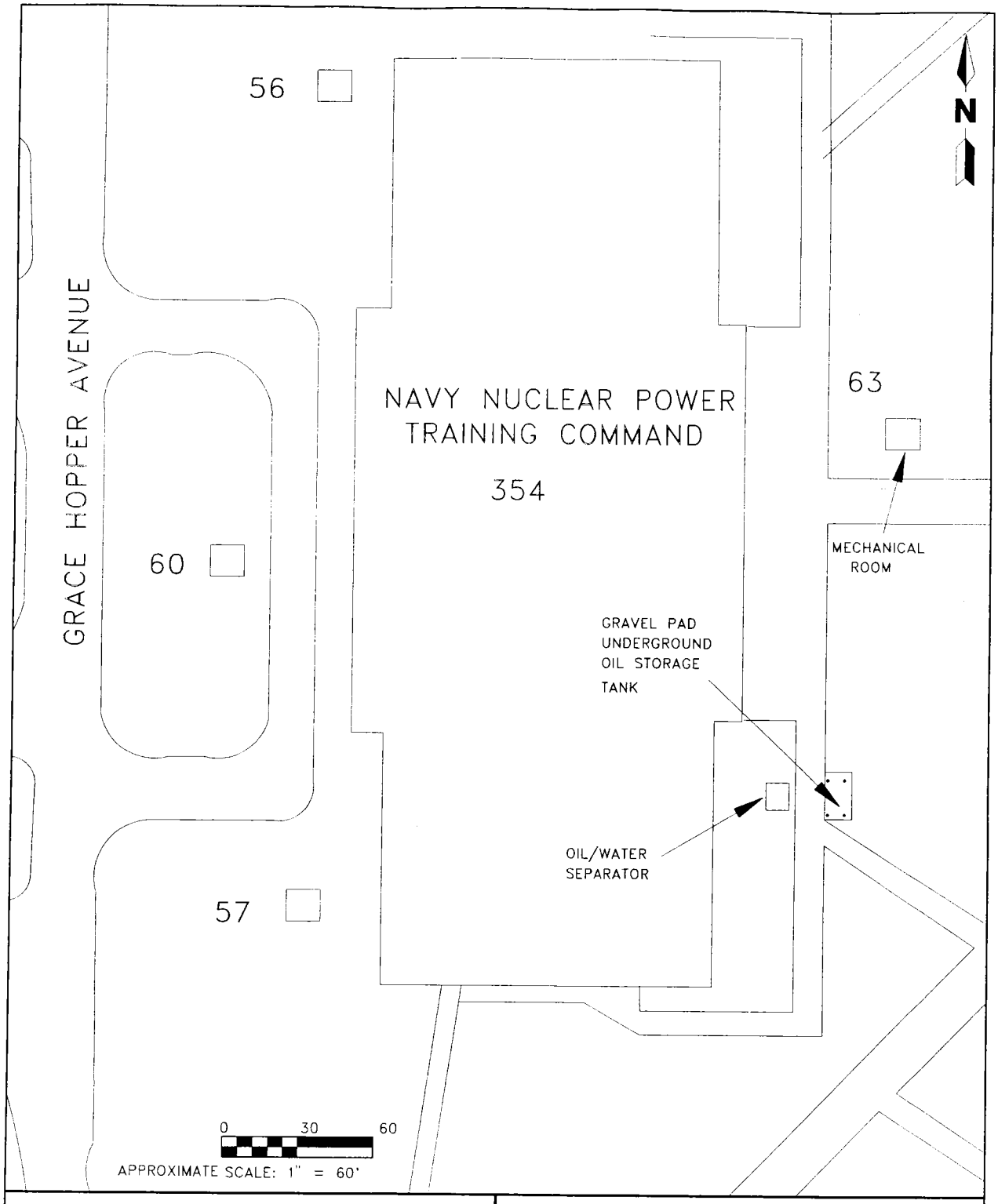

FIGURE 4-45
BUILDING 354, NUCLEAR POWER SCHOOL
MAIN BASE, STUDY AREA 31,
GROUP IV STUDY AREAS

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4.31.2 Rationale and Plans for Site Screening Based on the additional information obtained during the May 1995 site visit, no additional site screening investigation tasks are required. The presence of the UST and the oil and water separator, along with potential impacts resulting from their use, will be addressed in the NTC, Orlando, Tank Management Plan (ABB-ES, 1994d).

4.32 STUDY AREA 32, MAIN BASE - BUILDINGS 358 AND 359. Buildings 358 and 359 were constructed in the general vicinity of the former Motor Pool Compound at Main Base. The focus of site screening in this area is on impacts resulting from prior use and disposal of OHM associated with the Motor Pool.

4.32.1 Background and Conditions

Building 358. Building 358 is a three-story barracks constructed of cinder block with brick veneer siding and a flat roof. The 29,066-ft^2 building, constructed in 1974, is located north of Rickover Circle on the Main Base (Figure B-4, Appendix B), and houses 140 Navy personnel who are attending the Nuclear School. Building 358 is adjoined by Building 359 to the east; these two barracks are the southeasternmost pair in a group of barracks associated with the Nuclear School.

Building 352, the Civilian Mess, is located east of the building. A 15,000-gallon fuel oil UST is associated with the Mess (Figure 4-46).

Prior to construction of the building, the site was wooded. Formerly adjacent to the site (to the east) was the Army Air Corps' Motor Pool (UNF-11; Figure B-4, Appendix B) where paints, solvents, and petroleum products were allegedly stored and dumped on the ground. In addition, a 3,000-gallon UST containing diesel fuel is located on the site. Potential impacts resulting from this tank will be evaluated under the NTC, Orlando, Tank Management Plan (ABB-ES, 1994d).

Building 359. Building 359 is a three-story barracks of the same construction as Building 358. According to construction drawings, the two buildings share a fuel oil UST, located west of Building 358. The area between Building 359 and Rickover Circle is grass-covered with an irregular, hummocky surface.

4.32.2 Rationale and Plans for Site Screening The site screening objectives for Study Area 32 are to evaluate the potential impacts to environmental media resulting from activities at the former Motor Pool Compound, including alleged waste burial.

Objective: to evaluate if former site use and potential waste disposal practices have impacted the site

Methods:
- soil gas survey
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

The first step in the site screening will be to conduct a soil gas survey across the area between Building 358 and UNF-11 to identify areas with elevated concentrations of VOCs or SVOCs in subsurface soil or groundwater, and to focus subsequent field investigation locations. The survey will cover an area of approximately 400 feet by 350 feet with a grid spacing of 50 feet, as shown on

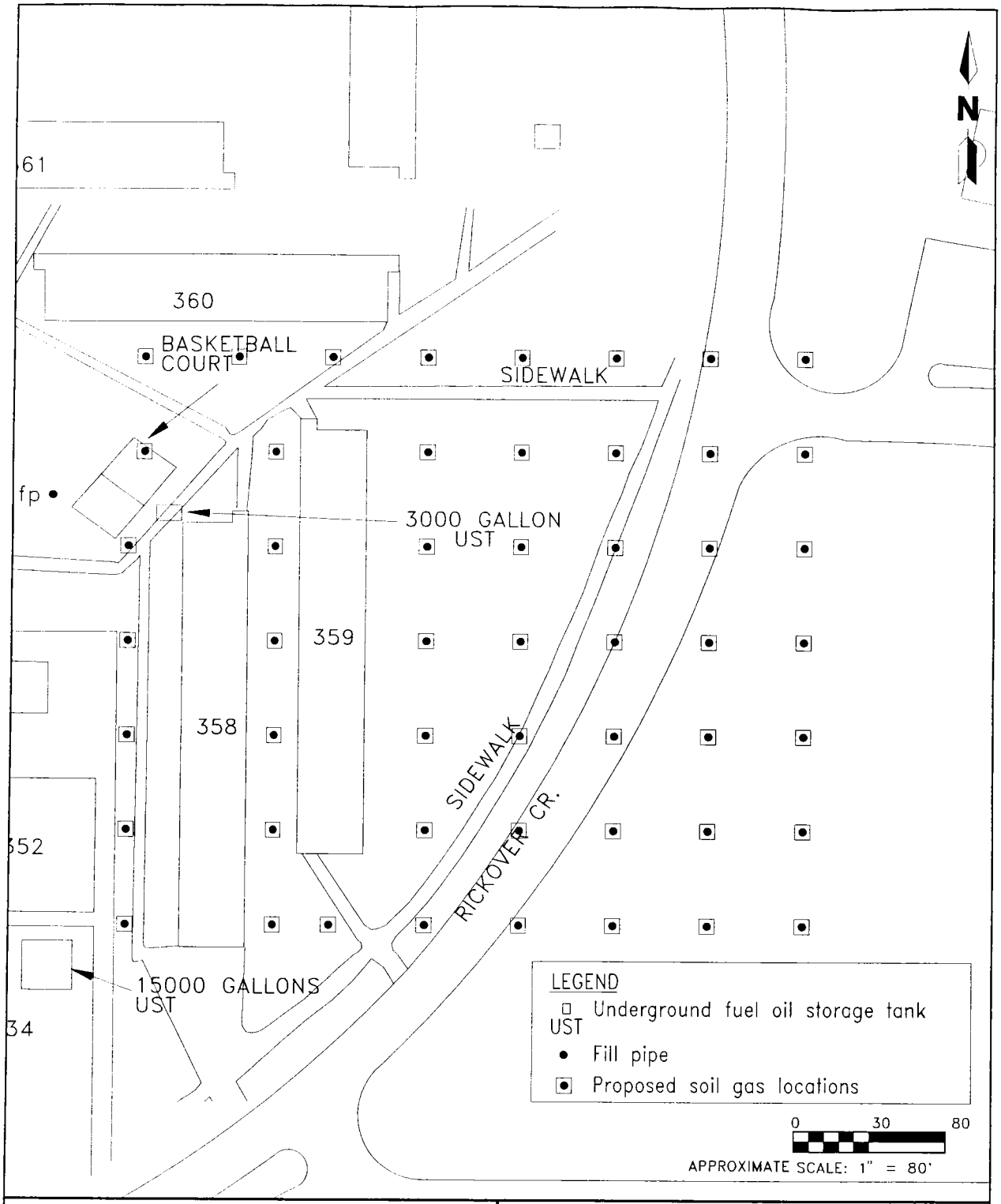

FIGURE 4-46
PROPOSED SOIL GAS LOCATIONS
BUILDINGS 358 AND 359, BACHELOR'S QUARTERS
MAIN BASE, STUDY AREA 32,
GROUP IV STUDY AREAS

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Figure 4-46. Approximately 100 points will be sampled and analyzed in accordance with USEPA Level II DQOs. Following review of the results of the soil gas survey, soil borings and monitoring wells will be completed across the site, as described below.

Three soil borings will be completed in this study area, with a conventional monitoring well installed in each boring. Proposed boring and/or well locations are shown on Figure 4-47; these locations are presumably upgradient (westernmost) and downgradient of the study area. Based upon the soil gas survey results, the locations of these wells may be shifted to evaluate areas of concern. Final well locations will be determined in the field by the Technical Leader in consultation with the field team.

Each boring will be sampled continuously, using a 2-foot long split-spoon sampling device below the surface interval and a stainless steel hand auger for the surface interval. (Alternatively, the borings may be completed entirely by hand if the water table is very shallow and the borehole remains open.) Two soil samples will be submitted for laboratory analyses from each of the borings; one sample will be submitted from the surface interval (0 to 1 foot) of each boring, and the second sample will be submitted from either the interval directly above the water table or the interval in which there is visual or FID screening evidence suggesting contamination. Six soil samples will be submitted for full suite CLP TAL and TCL laboratory analyses in accordance with USEPA Level IV DQOs. Three subsurface soil samples will also be submitted for TPH analysis, in accordance with USEPA Level IV DQOs.

One groundwater sample will be collected from each of the monitoring wells using the low-flow technique. Three groundwater samples will be submitted for TPH and full suite CLP TAL and TCL laboratory analysis in accordance with USEPA Level IV DQOs. The groundwater samples will also be submitted for determination of TSS to aid in evaluation of inorganics data.

4.33 STUDY AREA 33, MAIN BASE - BUILDING 2001, BUILDING 2002, BUILDING 2003, AND BUILDING 2004. The primary focus of site screening activities at Study Area 33 (Figure 4-48) is on the shallow sumps outside each of the four buildings and impacts from various areas of stained soil observed at this study area.

4.33.1 Background and Conditions The buildings included in Study Area 33 are located at the four corners of the block bounded by Iwo Jima Street (north), John Paul Jones Avenue (east), Kitty Hawk Street (south), and Grace Hopper Avenue (west) in the center of Main Base. These four buildings are of similar construction and design (between 8,200-ft^2 and 8,300-ft^2, single story, concrete block on slab). They were constructed circa 1945 and served originally as Base Headquarters. These buildings currently serve as Command Headquarters. According to site plans showing the base layout in 1942, a small pond was formerly located south of this complex, at the current location of Building 128 (Figure B-4, Appendix B). This feature was no longer shown on base maps from 1944. Each of the buildings has its own boiler and air conditioning system: each of these systems consists of a fuel oil supply stored in ASTs, an air condenser unit on concrete slab, and a 15-inch diameter, 3-foot deep condensate drain located outside the buildings (Figure 4-48). All potential impacts associated with the ASTs will be evaluated under the NTC, Orlando, Tank Management Plan (ABB-ES, 1994d). The condensate drains had been described in the EBS as possible drywells

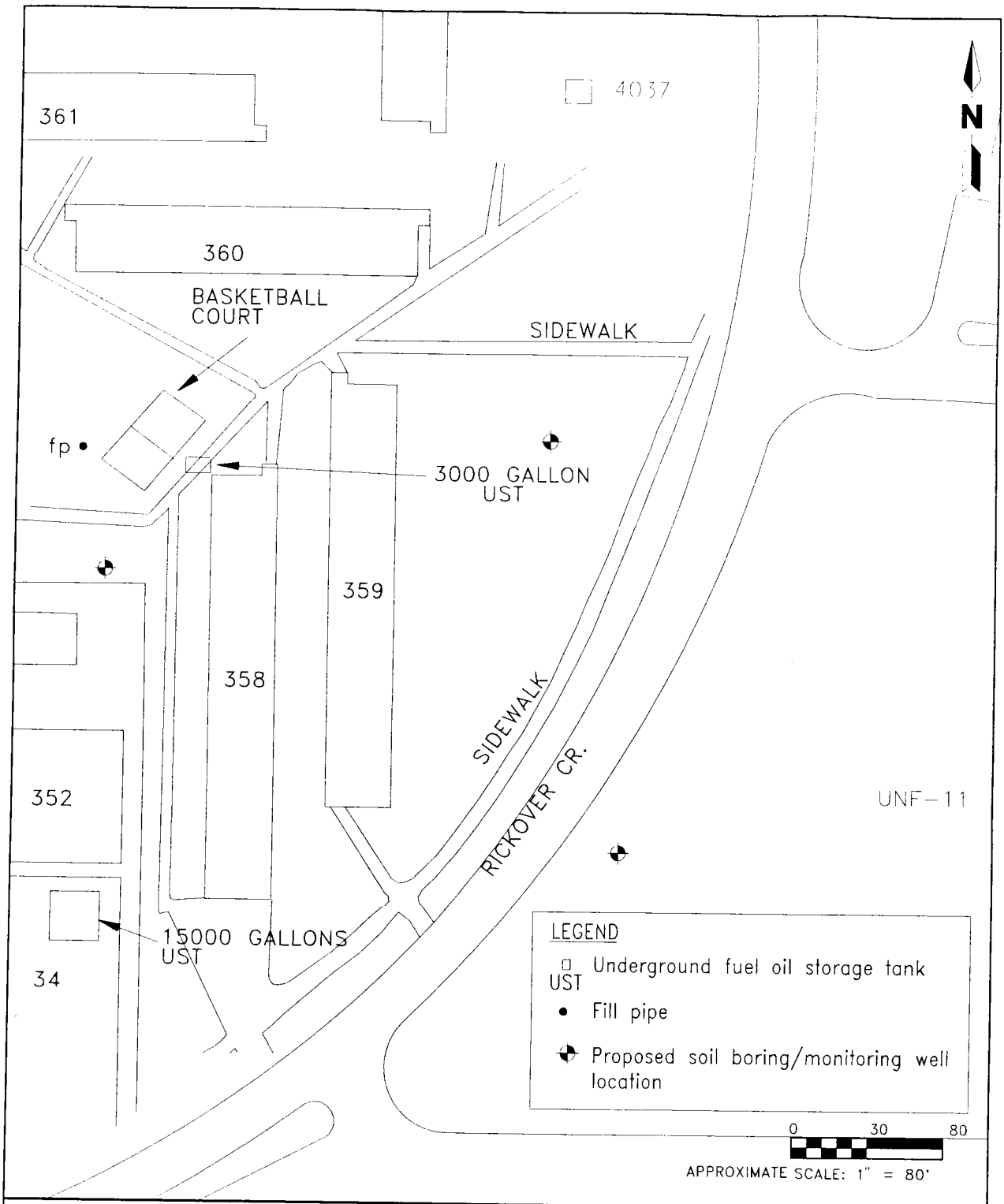

FIGURE 4-47
PROPOSED WELL LOCATIONS
BUILDINGS 358 AND 359, BACHELOR'S QUARTERS
MAIN BASE, STUDY AREA 32,
GROUP IV STUDY AREAS

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(ABB-ES, 1994b). These drains were evaluated during the most recent site visit (May 1995). All four pits (one at each building) were found to have a pipe entering from the general direction of the mechanical rooms. From a review of as-built drawings, it appears that the drains originally received condensate from the air conditioning evaporators located in each building. The drains at Buildings 2001, 2002, and 2004 contained water at the time of the most recent visit (May 1995). The drain at Building 2003 was dry and had been filled with soil. The following are additional details for each of the buildings included in this study area.

Building 2001. This building is located at the southwest corner of the quadrangle, at the intersection of Kitty Hawk Street and Grace Hopper Avenue. It currently houses administrative offices for base command. There are two 300-gallon fuel oil ASTs located adjacent to the mechanical room. Dark stains were observed on the pavement beneath the tanks. The condensate drain appeared to be functioning at the time of the most recent site visit (May 1995). Building 2088, constructed circa 1945 as a latrine, is located near the air conditioning units (Figure 4-48).

An area of stained soil, northeast of the building, in a wooded area, was reported in the EBS (ABB-ES, 1994b). This area was observed during the most recent site visit (May 1995), and no evidence of significant staining was found. A small area of barren soil was detected in the approximate location indicated in the EBS. However, it is unclear whether the lack of vegetation is the result of chemical stress or physical stress of pedestrian traffic through this area.

Building 2002. Building 2002 is located at the corner of Kitty Hawk Street and John Paul Jones Avenue. It currently serves as NTC, Orlando, Command Headquarters. A 500-gallon AST stores diesel fuel for the building's boiler. The concrete pad under a motor adjacent to the furnace was observed to be stained by petroleum product. A flammable materials locker, containing several containers of paints and varnishes, was located adjacent to the building at the time of the EBS (Figure 4-48). The locker has subsequently been moved from the area, but stressed vegetation is present adjacent to the building, in the approximate former location of the locker.

Building 2003. Building 2003 is located on the corner of Iwo Jima Street and John Paul Jones Avenue. It was constructed as an office building that, since 1988, has housed the Defense Finance Accounting Service, the Navy Relief Program, Command Evaluation, and the Equal Employment Opportunity Office. The building was constructed in 1945 of concrete block with a shingled roof and has an area of 8,200-ft^2. Prior to 1988 the building was used as a storage area for NTC supplies. Two ASTs containing No. 2 fuel oil have secondary containment and were in good condition.

Building 2004. Building 2004 is located on the corner of Grace Hopper Avenue and Iwo Jima Street. The 8,200-ft^2 concrete block with gabled roof structure has been used as administrative offices since its construction in 1945. Currently the

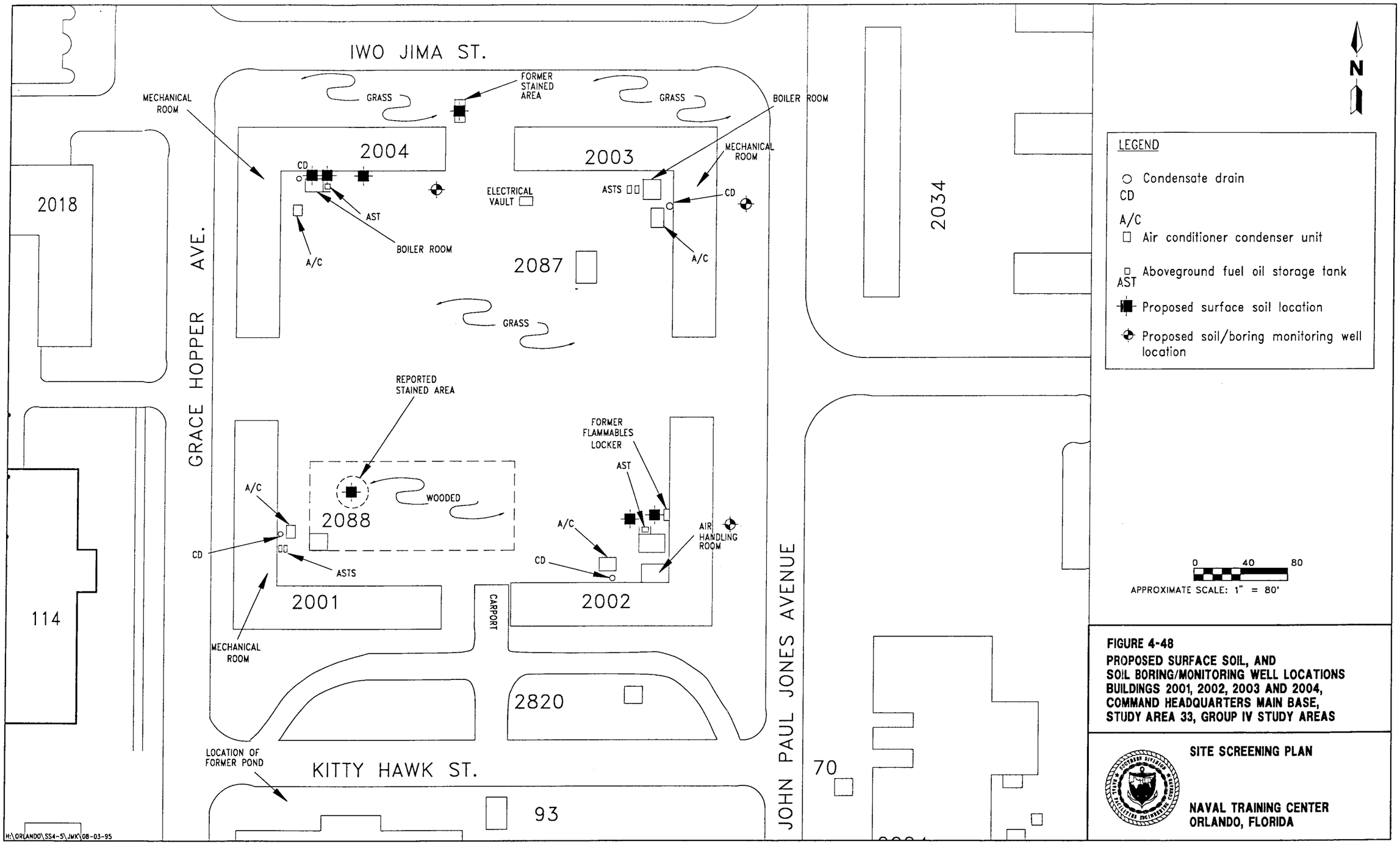

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FIGURE 4-48
PROPOSED SURFACE SOIL, AND SOIL BORING/MONITORING WELL LOCATIONS BUILDINGS 2001, 2002, 2003 AND 2004, COMMAND HEADQUARTERS MAIN BASE, STUDY AREA 33, GROUP IV STUDY AREAS

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building is occupied by a travel service operated by a contractor and base administrative service offices. The building has a 500-gallon AST that contains diesel fuel. The tank has secondary containment; oil stains under the tank were noted during the EBS.

At the time of the most recent site visit (May 1995), the condensate drain, located between the building and an adjacent boiler shed, contained an unidentified milky substance that had crested the opening and spilled onto the ground. The drain appeared to be clogged and water was leaking and pooling around the piping next to the drain. Overflow from the drain follows a drainage channel that parallels the south wall of the east wing of the building (Figure 4-48).

A minimal stained area was noted during the EBS at the east end of the building and was attributed to vehicles parking on the grassy area. This staining was not apparent during the most recent site visit. Another area of stained soil was identified beneath a small pipe exiting the north side of the boiler room, near the condensate drain.

4.33.2 Rationale and Plans for Site Screening The objective of site screening at Study Area 33 is to confirm that the drains have only been used for disposal of air conditioner condensate and to assess soil and water contamination that may have resulted from past or current operations at the site. Proposed sample locations are shown on Figure 4-48.

Building 2001. The condensate drain at this location appears to be functioning properly; therefore, no drain sampling is proposed. The objective of site screening at this building is to confirm the reported stained soil area in the woods near the former latrine (Building 2088).

Objective: to evaluate what, if any, contamination is associated with the stained area

Method: • surface soil sampling

One surface soil (0 to 1 foot) sample will be collected from the stained (bare soil) area northeast of Building 2088. The sample will be submitted for TPH and full suite CLP TCL and TAL laboratory analysis in accordance with USEPA Level IV DQOs.

Building 2002. The objective of site screening at this building is to evaluate what contamination may be associated with the former flammable storage locker. The drain appears to be functioning properly at this location; therefore, no drain sampling is proposed.

Objective: to evaluate what, if any, contamination is associated with the area near the former flammable storage locker

Method: • surface soil sampling

Two surface soil samples will be collected from the area near the former location of the flammable storage locker; one from the stressed vegetation adjacent to the building and one from the depressed area near the picnic table which appears to receive surface runoff. Both samples will be submitted for full suite CLP TCL and TAL laboratory analyses in accordance with USEPA Level IV DQOs.

Building 2004. The site screening objective at Building 2004 is to assess potential contamination associated with stains behind the boiler room and to evaluate the extent of contamination possibly present at the stained area east of the building.

Objective: to evaluate what, if any, contamination is associated with the stained areas near the boiler house and on the east side of the building and the open drainage swale

Method:
- surface soil sampling

A total of four surface soil samples will be collected from the following areas: one from beneath the pipe at the boiler house, one from the stained area east of the building, and two from along the drainage swale. All four samples will be submitted for TPH and full suite CLP TCL and TAL laboratory analysis in accordance with USEPA Level IV DQOs.

Objective: to evaluate what, if any, contaminants may have impacted groundwater at Study Area 33

Method:
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Three soil borings will be completed at locations across this study area, with a temporary monitoring well (as described in Subsection 4.27.2) installed in each boring. Proposed boring and/or well locations are shown on Figure 4-48; these locations are presumably downgradient of potential areas of concern. Final well locations will be determined in the field by the field team in consultation with the Technical Leader.

Each boring will be sampled continuously, using a 2-foot long split-spoon sampling device below the surface interval and a stainless steel hand auger for the surface interval. (Alternatively, the borings may be completed entirely by hand if the water table is very shallow and the borehole remains open.) One soil sample will be submitted for laboratory analysis from each of the borings; the sample will be submitted from either the interval directly above the water table or the interval in which there is visual or FID screening evidence suggesting contamination. Three soil samples (one from each boring) will be submitted for full suite CLP TAL and TCL laboratory analyses in accordance with USEPA Level IV DQOs.

One groundwater sample will be collected from each of the monitoring wells using the low-flow technique. Three groundwater samples will be submitted for full suite CLP TAL (filtered and unfiltered) and TCL laboratory analyses in accordance with USEPA Level IV DQOs, as well as TSS determination. The filtered samples and TSS data will aid in the evaluation of inorganic results, as groundwater resampling cannot be readily performed due to the use of temporary wells.

4.34 STUDY AREA 34, MAIN BASE - BUILDING 2024. The focus of site screening activities at Study Area 34 is on the function and status of the abandoned well located on the east side of the building.

4.34.1 Background and Conditions

Building 2024. Building 2024 is a 26,134-ft^2 office building located on John Paul Jones Avenue, east of its intersection with Kitty Hawk Street, in the central part of the Main Base (Figure 4-49). It currently houses the administrative group for NTC Orlando Supply. The building is a two-story cinder block structure with a slightly gabled tar and gravel roof. It was constructed circa 1945 and originally housed Regional Operations. A gasoline filling station (Building 2033) was formerly located on the adjoining property to the south (corner of John Paul Jones Avenue and Langley Street), which is currently a parking lot.

A water supply well (not currently operational) is located on the eastern side of the building (Figure 4-49). According to construction drawings for remodeling of Building 2024, the well was installed in the early 1960s to supply water for a new air conditioning system. Well specifications listed on the drawings indicate that the well was to be capable of yielding 200 gallons per minute over a 24-hour pump test. No as-built drawings were located to indicate the actual construction details for the well. Other construction drawings related to redesign of the air conditioning systems suggest that a 4-inch diameter drainage well was also installed near the east side of the building. Possible evidence that this well was installed is the presence of a vent pipe on the side of the building, along with a soil-filled 4-inch diameter pipe set nearly flush with the ground surface. Other drawings indicate a connection to the sanitary sewer system on the east side of the building. It is unclear which, if either, of these options was completed for handling waste water from the air conditioning system.

4.34.2 Rationale and Plans for Site Screening Based on review of additional information during the May 1995 site visit, no additional site screening investigation is required. The water supply well, along with the drainage well, if it exists, should be abandoned in accordance with the procedures identified and agreed to by the BCT.

The purpose of this site screening program is to confirm that Group V Study Areas (listed in Table 1-2, and shown on Figure B-4 in Appendix B) are suitable for a FOSL or a FOST or to determine the data needs for any additional investigations that may be required in these study areas. The field investigation program is designed to gather sufficient physical and chemical data to support such decisions.

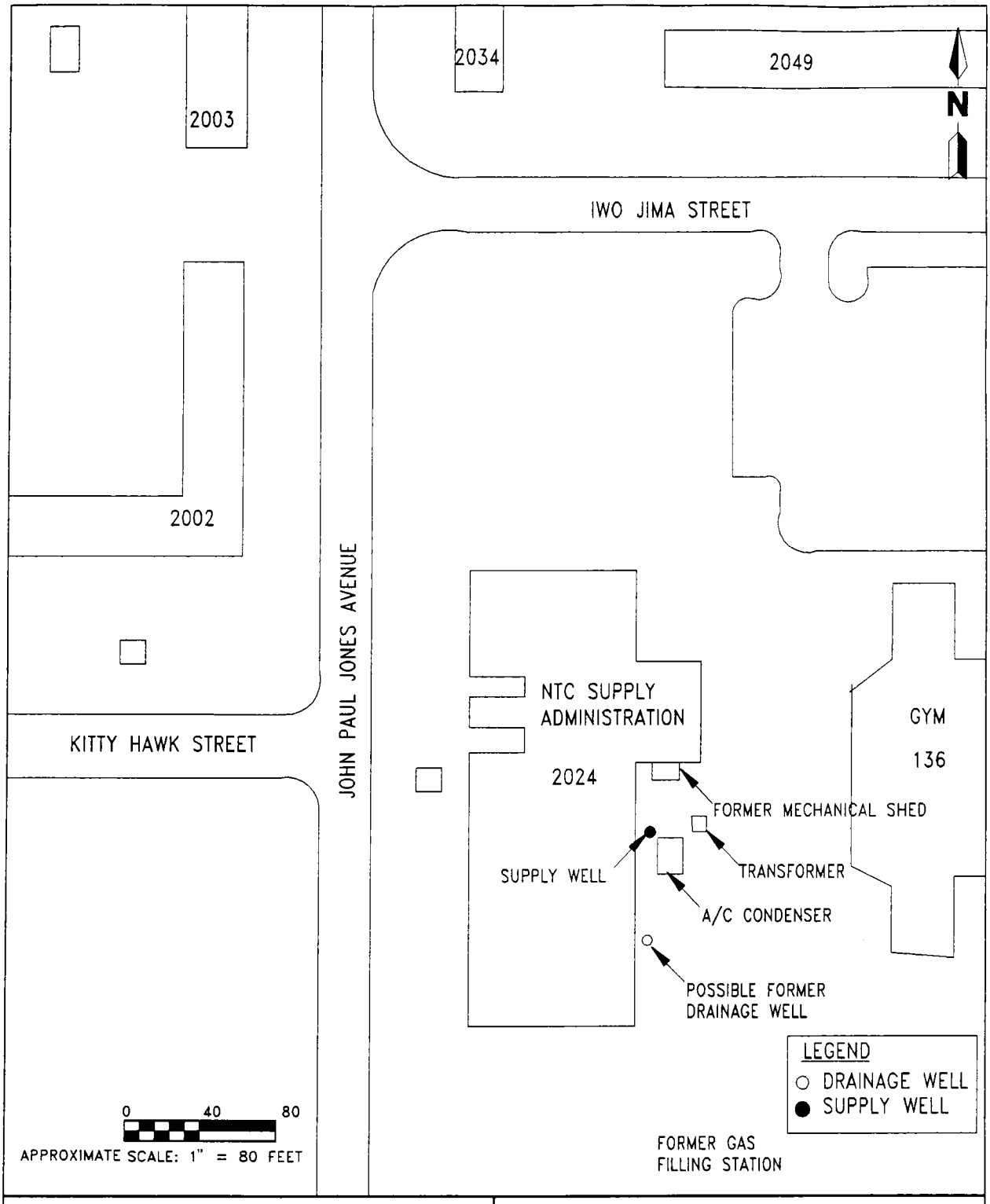

FIGURE 4-49
BUILDING 2024, SUPPLY ADMINISTRATION BUILDING
MAIN BASE, STUDY AREA 34,
GROUP IV STUDY AREAS

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The following is a summary, by study area, of the proposed field investigation objectives and methods, including estimated numbers of samples and analytes for each location. Background information on specific study area conditions was derived primarily from information contained in the EBS (ABB-ES, 1994b) and BRAC Cleanup Plan (ABB-ES, 1994c). The complete analytical program is summarized in Table 4-5. Details of the field methods, except as noted, to be used during this site screening program are included in the POP, Sections 4.8 through 4.12 (ABB-ES, 1994a).

In order to evaluate base-wide and site-specific groundwater flow patterns in the shallow aquifer, a synoptic water level survey will be conducted after all groundwater sampling has been completed. This survey will consist of measuring the depth to water below the reference point in selected monitoring wells in all study areas at Main Base, Herndon Annex, Area "C," and McCoy Annex. The actual number of wells gauged at each study area will depend on the size of the study area, its proximity to other study areas, condition of and accessibility to the wells in the study area, and the complexity of the local topography. A list of wells to be included in the survey will be developed by the field team and the technical lead prior to commencement of the survey. These measurements will be used to calculate water level elevations and prepare base-wide potentiometric maps for the shallow surficial aquifer.

In order to develop potentiometric surface plans for the shallow aquifer, the water level survey data will be converted to water table elevations. Coordinate and elevation data will be required for all monitoring wells in which water levels were gauged. Land surveying services will be contracted to provide monitoring well elevations and coordinates. The coordinates will be rounded to the closest 1.0 foot and referenced to the State Plane Coordinate System for Florida, East Zone (0901). Elevations for the ground surface, top of well riser, and top of outer protective casing will be measured to the nearest 0.01 foot at each well. These elevations will be referenced to the National Geodetic Vertical Datum of 1929, if available, or an existing local (base) datum.

The tabulated water level data will be converted to elevation data and then plotted on base maps so that groundwater flow directions and gradients may be evaluated.

4.35 STUDY AREA 35, MAIN BASE - BUILDINGS 2078 AND 2079. The focus of site screening investigation activities in Study Area 35 is the current and historic use, storage, and disposal of OHM at this location. This area has been the site of vehicle maintenance activities for many years. Specifically, the investigation focuses on potential impacts from past discharging to the ground of wastewater from a paint booth, unknown waste handling and storage practices at Building 2079, an apparent release onto pavement from a drum storage area inside Building 2078, and stains on soil adjacent to the flammable locker near the northwestern corner of the study area.

4.35.1 Background and Conditions Building 2079 is within, and Building 2078 forms part of the fenced perimeter of the Automobile Maintenance Facility at Main Base. Just north of the fenced perimeter is a fueling operation (Building 2080). One UST was removed from service in 1980 and three USTs were pulled from this location in 1987. Contaminated soil was removed from the tank grave following the 1987

Table 4-5
Analytical Program Summary
Group V Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/TCL VOCs [1]	CLP/TCL SVOCs [2]	CLP/TAL Inorganics	Filtered CLP TAL Inorganics	Pesticides/ PCBs [3]	Herbi-cides	TPH	Nitroaro-matics[4]	Radio-nuclides [5]	TSS	pH
SOIL SAMPLES											
Study Area 35											
Bldgs 2078 and 2079											
Surface Soil	10	10	10	--	0/10	--	10	--	--	--	--
Subsurface Soil	14*	14*	14*	--	0/14*	--	14*	--	--	--	2
Study Area 36											
Bldgs 2121 and 2122											
Surface Soil	3	3	3	--	3/3	--	3	--	--	--	--
Subsurface Soil	10*	10*	10*	--	10*/10*	--	10*	--	--	--	--
Study Area 37											
Bldg 2414											
Subsurface Soil	2	2	2	--	2/2	--	2	--	--	--	--
Study Area 38											
Bldg 4001											
Subsurface Soil	2	2	2	--	2/2	2	2	--	--	--	--
Study Area 39											
Bldgs 4060, 4067, 15109, and UNF-10											
Surface Soil	4	4	4	--	4/2	2	4	2	--	--	--
Subsurface Soil	8*	8*	8*	--	8*/8*	--	8*	8*	--	--	--

See notes at end of table

Table 4-5 (Continued)
Analytical Program Summary
Group V Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/TCL VOCs [1]	CLP/TCL SVOCs [2]	CLP/TAL Inorganics	Filtered CLP TAL Inorganics	Pesticides/ PCBs [3]	Herbi-cides	TPH	Nitroaro-matics[4]	Radio-nuclides [5]	TSS	pH
SOIL SAMPLES (Cont.)											
Study Area 40											
Bldgs 21022, 21023, and UNF-6											
Subsurface Soil	8	8	8	--	8/8	--	8	8	--	--	--
Study Area 41											
UNF-6											
Surface Soil	--	--	--	--	--/1	--	--	--	--	--	--
Wipe Sample	--	--	--	--	--/1	--	--	--	--	--	--
Study Area 42											
Bldg 2055											
Surface Soil	3	3	3	--	--/--	--	3	--	--	--	--
Subsurface Soil	6	6	6	--	6/6	--	6	--	--	--	--
TOTALS FOR SOIL	**70***	**70***	**70***	**0**	**43*/67***	**4**	**70***	**18***	**0**	**0**	**2**
TOTALS FOR SURFACE WIPE	**0**	**0**	**0**	**0**	**0/1**	**0**	**0**	**0**	**0**	**0**	**0**
WATER SAMPLES											
Study Area 35											
Bldgs 2078 and 2079											
Groundwater	7*	7*	7*	--	--/7*	--	7*	--	--	7*	--
Study Area 36											
Bldgs 2121 and 2122											
Groundwater	5*	5*	5*	1	5*/5*	--	5*	--	--	5*	--

See notes at end of table

Table 4-5 (Continued)
Analytical Program Summary
Group V Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/TCL VOCs [1]	CLP/TCL SVOCs [2]	CLP/TAL Inorganics	Filtered CLP TAL Inorganics	Pesticides/ PCBs [3]	Herbi-cides	TPH	Nitroaro-matics[4]	Radio-nuclides [5]	TSS	pH
WATER SAMPLES (Cont.)											
Study Area 37											
Bldg 2414											
Groundwater	2*	2*	2*	2*	2*/2*	--	2*	--	--	2*	--
Study Area 38											
Bldg 4001											
Groundwater	1	1	1	1	1/1	1	1	--	--	1	--
Study Area 39											
Bldgs 4060, 4067, 15109, and UNF-10											
Groundwater	4*	4*	4*	--	4*/4*	1	4*	4*	4*	4*	--
Study Area 40											
Bldgs 21022, 21023, and UNF-6											--
Groundwater	4	4	4	--	4/4	--	4	4	4	4	--
Study Area 42											
Bldg 2055											
Groundwater	3 [7]	3	3	3	3/3	--	3	--	--	3	--
TOTALS FOR GROUNDWATER	**26***	**26***	**26***	**7**	**19*/26***	**2**	**26***	**8***	**8***	**26***	**0**

See notes at end of table

Table 4-5 (Continued)
Analytical Program Summary
Group V Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/TCL VOCs [1]	CLP/TCL SVOCs [2]	CLP/TAL Inorganics	Filtered CLP TAL Inorganics	Pesticides/ PCBs [3]	Herbi-cides	TPH	Nitroaro-matics[4]	Radio-nuclides [5]	TSS	pH
QC SAMPLES (QUANTITY ESTIMATED) [6]											
Soil											
Trip (Aqueous)	7	0	0	0	0/0	0	0	0	0	0	0
Rinsate (Aqueous)	7	7	7	0	6/7	2	7	0	0	0	0
Duplicate	7	7	7	0	5/7	1	7	2	0	0	0
Matrix Spike	4	4	4	0	3/4	1	4	1	0	0	0
Matrix Spike Duplicate	4	4	4	0	3/4	1	4	1	0	0	0
Surface Wipe											
Trip (Aqueous)	0	0	0	0	0/0	0	0	0	0	0	0
Rinsate (Aqueous)	0	0	0	0	0/0	0	0	0	0	0	0
Duplicate	0	0	0	0	0/1	0	0	0	0	0	0
Matrix Spike	0	0	0	0	0/1	0	0	0	0	0	0
Matrix Spike Duplicate	0	0	0	0	0/1	0	0	0	0	0	0
Groundwater											
Trip	13	0	0	0	0/0	0	0	0	0	0	0
Rinsate	13	13	13	4	10/13	2	13	4	4	0	0
Duplicate	3	3	3	1	2/3	1	3	1	1	3	0

See notes at end of table

Table 4-5 (Continued)
Analytical Program Summary (Continued)
Group V Study Areas

Site Screening Plan
Naval Training Center, Orlando
Orlando, Florida

Sample Identification	CLP/TCL VOCs [1]	CLP/TCL SVOCs [2]	CLP/TAL Inorganics	Filtered CLP TAL Inorganics	Pesticides/ PCBs [3]	Herbi-cides	TPH	Nitroaro-matics[4]	Radio-nuclides [5]	TSS	pH
QC SAMPLES (QUANTITY ESTIMATED) (Cont.) [6]											
Groundwater (Cont.)											
Matrix Spike	2	2	2	1	2/2	1	2	1	1	0	0
Matrix Spike Duplicate	2	2	2	1	2/2	1	2	1	1	0	0

[1] Volatile organic compound (VOC) analysis for groundwater and associated quality control (QC) samples will be low level Contract Laboratory Program (CLP) method to attain detection limits below Florida maximum contaminant levels (MCLs).

[2] Semivolatile organic compound (SVOC) analysis for groundwater and associated QC samples will include U.S. Environmental Protection Agency (USEPA) Method 8310 for benzo(a)pyrene and selective ion monitoring (SIM) for bis (2-ethylhexyl)phthalate, pentachlorophenol, and hexachlorobenzene to attain detection limits below Florida MCLs for these compounds.

[3] Polychlorinated biphenyl (PCB) analysis for groundwater and associated QC samples will be performed to obtain detection limits below the Florida MCL (0.5 micrograms per liter).

[4] Nitroaromatics analysis by USEPA Method 8330.

[5] Radionuclides analysis includes gross alpha and gross beta (USEPA Method 9310).

[6] Quantities assume a 13-day groundwater sampling program, and a 7-day drilling and soil sampling program.

[7] Trichlorofluoromethane (R-11), dichlorodifluoromethane (R-12), and chlorodifluoromethane (R-22) will be added to the CLP method list for VOCs for this location only.

* Number of samples is maximum possible; actual number dependant on soil gas and geophysical survey results. Refer to appropriate screening plan section for details.

Notes:
CLP = contract laboratory program.
TCL = target compound list.
VOC = volatile organic compound.
SVOC = semivolatile organic compound.
TAL = target analyte list .
PCB = polychlorinated biphenyl.
TSS = total suspended solids.
Bldg = building.
TPH = total petroleum hydrocarbons.
QC = quality control.
UNF = unnumbered facility.

removal. Because a sheen was observed on the water table, five monitoring wells were installed around the perimeter of the tank grave. Quarterly monitoring of these wells detected low concentrations (below applicable regulatory guidelines) of several organic and inorganic compounds typical of petroleum releases in some of the wells (ABB-ES, 1994b). Results from subsequent monitoring rounds indicated concentrations were dissipating. The monitoring wells appear to be intact. This location is likely upgradient of Study Area 35.

Building 2078. Building 2078, the Automobile Maintenance Facility, is a 32,292-ft^2 structure constructed on a concrete slab-on-grade with concrete masonry unit walls and an "aircraft hangar" style roof that was built in 1943. It is located at the corner of Langley Street and Leahy Avenue, just north of Lake Susannah (Figure 4-50). From 1943 to 1947, the United States Army Air Corps used the building as an aircraft hangar and planning room as part of Bomber Command Synthetic Operations. Other facilities included in Synthetic Operations located on or adjacent to the site in 1945 were a training auditorium (2077), administration buildings (2074 through 2076), a latrine (2079), and the link trainer (2084). The link trainer building, located east of Buildings 2078 and 2079 in what is now a paved parking area, was demolished between the years of 1954 and 1961. From 1947 to 1968, the United States Air Force utilized Building 2078 as part of their Navigational Training Center. The Navy maintained a motor vehicle pool on the property from 1968 to 1983. Since 1983, the Navy has contracted D&D Management Services to conduct all operations for the vehicle maintenance facility.

Currently, a two-story office and storage area occupies the southwest corner of the facility. A single-level lounge area is located along the west side of the building. This area is currently occupied by office and equipment storage facilities for BRAC Navy personnel and contractors. The remainder of the building (the former hangar) is occupied by vehicle maintenance equipment and offices. These include a brake shop, spare parts storage areas, hydraulic lifts, and a paint booth. An hydraulic lift apparatus is located adjacent to the northeast corner of Building 2078. The lifts are located in deep pits (estimated to be 8 to 10 feet below grade) with soil floors. These lifts are accessible through removable grates in the pavement. One of the lifts (the northwesternmost) inside the building has a dirt floor; all others are concrete-floored at this time.

The area north and east of the building is currently paved and is used for storage of out-of-service vehicles and vehicles awaiting transfer to other military bases. It is not clear how long this area has been paved. A loading platform is located at the southeast corner of the fenced compound (Figure 4-50). Several depressions in the pavement appear to serve as surface runoff conduits directing flow into the adjoining drainage swales. There were two flammable storage lockers located near the northwestern corner of the study area at the time of the most recent site visit (May 1995). There was evidence of staining on surface soil located just beyond the fenced perimeter of the site in the vicinity of these lockers.

Results of the EBS (ABB-ES, 1994b) identified several areas of potential concern. One of these was a possible release of an unidentified quantity of an unknown substance from a diked drum storage area (inside the north wall of the hangar) through or under the exterior wall of the building to the asphalt outside. The asphalt in this area appears to be intact. At the time of the EBS (ABB-ES, 1994b), a drum each of petroleum naphtha, mixed solvents, and chlorinated solvents were stored in the building.

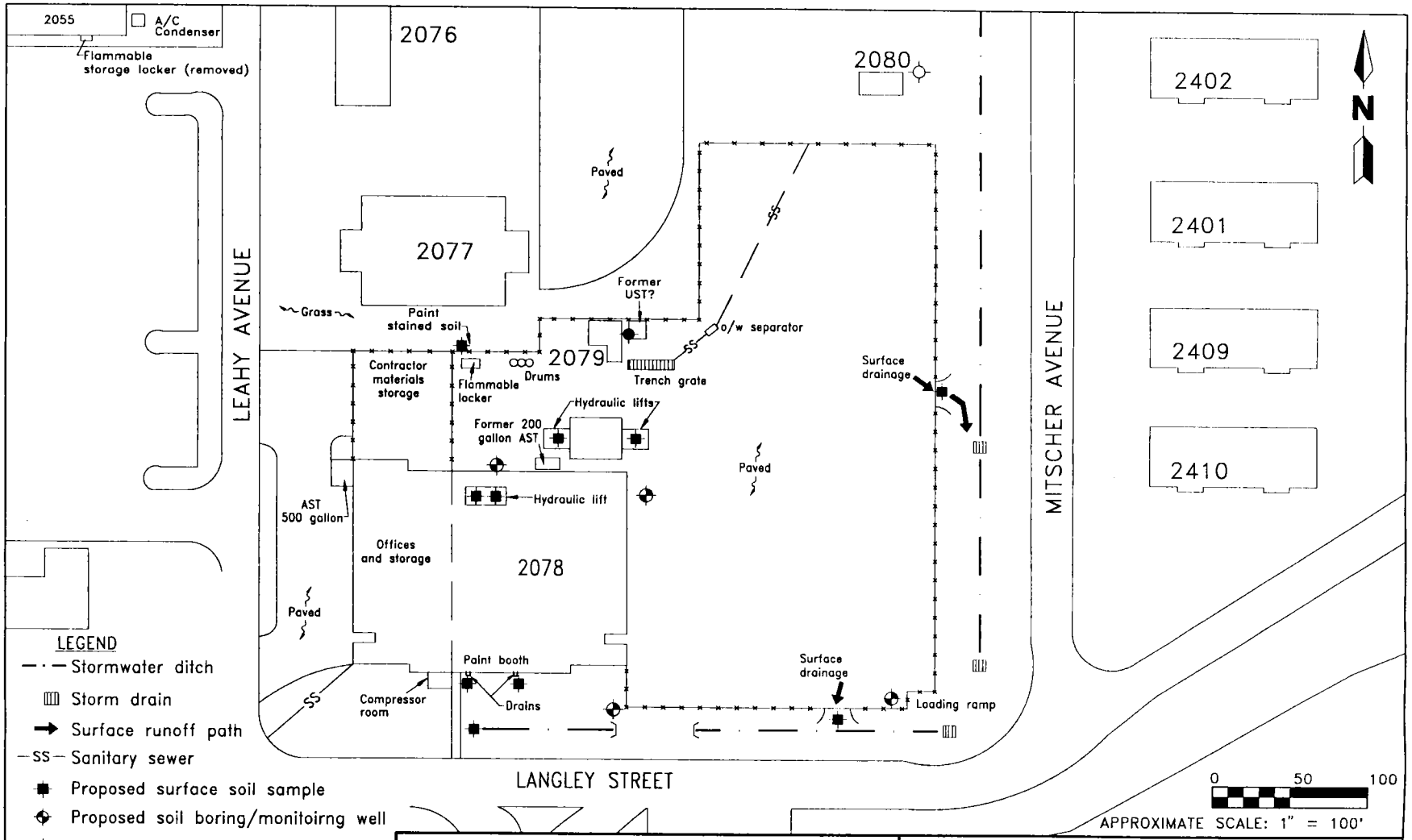

FIGURE 4-50
PROPOSED SURFACE SOIL, SOIL BORING AND MONITORING WELL LOCATIONS BUILDINGS 2078, AND 2079 VEHICLE MAINTENANCE FACILITY MAIN BASE, STUDY AREA 35, GROUP V STUDY AREAS

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In the same general area, oil stains were observed around a 200-gallon aboveground waste oil storage tank located on the north side of the building. At the time of the last site visit (May 1995), no tank was present at this location. The 500-gallon No. 2 fuel oil storage tank adjacent to the northwest corner of the building has a secondary containment structure. Stains were observed inside the secondary containment area, and the drain valve was open at the time of the EBS (ABB-ES, 1994b). The valve opens onto an unpaved drainage swale that empties to the storm drain system. A 500-gallon UST has reportedly been removed from the site. It is unclear if this tank was associated with Building 2078 or Building 2079.

A 1957 engineering drawing of the building indicates two large drainage control pits inside the northwest and northeast corners of the hangar as well as two dry wells located outside the building at about the same locations. There is no visual evidence of these features today.

The paint booth was added to the facility in 1955. A drain pipe in the paint booth, which is no longer in use, leads to a locked valve on the exterior wall of the building (Figure 4-50). In the past, wastewater was allowed to drain outside and flow to Lake Susannah.

Building 2079. Building 2079, located off Leahy Avenue north of Building 2078, was built in 1943. The building occupies 495 square feet and is constructed on a concrete slab floor with cinder block and wood frame walls with a pitched, asphalted shingle roof. The building does not have interior floor drains. Although the facility was originally constructed as a latrine, engineering drawings indicate that by 1949 the building was being used to store tires and by 1955 it was being used for battery and paint storage. The building was expanded, likely in the 1950s. The facility was used in conjunction with operations at the Auto Maintenance Facility (Building 2078) from 1968 to the mid-1980s. During this time, the building was a storage facility for used motor oil, waste mineral spirits, and spent car batteries awaiting transport offsite by a Navy contractor for disposal. The following materials were being stored in the building at the time of the EBS (ABB-ES, 1994b): two 55-gallon drums labeled "asbestos-containing material", two 55-gallon drums not labeled and the contents unknown, twelve 5-gallon buckets of perchloroethene, and three 5-gallon buckets of isopropyl alcohol.

An oil and water separator is located near the northeast corner of the building (Figure 4-50). The separator is connected to a trench drain adjacent to Building 2079, and underflow drains to the sanitary sewer. At the time of the last Site visit (May 1995), the separator appeared to be clogged and was not draining properly.

Engineering drawings indicate what may have been a UST located adjacent to the northeast corner of the building. (This structure was numbered 20068 on the drawing.) This may have been the tank listed as removed from Building 2078 (ABB-ES, 1994b).

4.35.2 Rationale and Plans for Site Screening The objectives of site screening at this Study Area are to evaluate the extent of chemical contamination that may have resulted from routine maintenance operations, evaluate the extent of spills

of stored petroleum products, paints, and solvents, and to assess the impact of battery, solvent, paint, and motor oil storage on-site. Proposed sample locations are shown on Figures 4-50 and 4-51.

Objective: to evaluate what chemicals may be present in environmental media due to past storage, releases, or disposal of OHM and to identify target areas for additional sampling and analysis

Method:
- soil gas survey

The first phase of site screening at Study Area 35 will be a soil gas survey to identify areas with elevated concentrations of VOCs or SVOCs in the subsurface, and to focus subsequent field investigation locations for soil and groundwater sampling. The survey will cover an approximately 400-foot by 400-foot area with a grid spacing of 50 feet, as shown on Figure 4-51. The soil gas survey will extend northward to the fenced perimeter of the study area so that the potential effect of any residual contamination which may exist from the former tanks at Building 2080 may be considered. Approximately 100 points will be sampled in accordance with USEPA Level II DQOs. Following review of the survey results, soil borings and monitoring wells will be completed across the site, as described below.

Objective: to evaluate what chemicals may have been released during past and current uses of the site and to evaluate possible anomalies identified by soil gas survey results

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Following review of the soil gas results, a soil and groundwater sampling program will be initiated at Study Area 35. Some of the sample points were selected based on visual or anecdotal evidence of potential contamination; others will be located in areas identified by soil gas analysis. The following is a summary of the sampling program. Proposed sample locations are shown on Figure 4-50.

Surface Soil. Ten surface soil samples (0 to 1 foot) will be collected from areas of potential concern as follows. One sample will be collected in the stained soil area on the north side of the fence, adjacent to the flammable locker. Two samples will be collected outside the fence at locations where surface runoff from the paved parking area leaves the pavement to enter drainage swales; one of these is on the east side, bordering Mitscher Avenue, and one is on the south side, bordering Langley Street. Three samples will be collected in the vicinity of the paint booth on the south side of Building 2078; one each will be collected directly beneath the two drain pipes exiting the face of the building, just east of the sidewalk connecting the building to the street, and one will be collected from the drainage swale which parallels Langley Street, at a point where drainage from the pipes would likely have entered the swale.

In addition, a total of 4 samples will be collected from the floors of the hydraulic lift pits as shown on Figure 4-50. Two samples will be collected from the lift pit in the northwest corner of Building 2078 (the only pit with a dirt floor) and one sample each will be collected from two locations within the pits

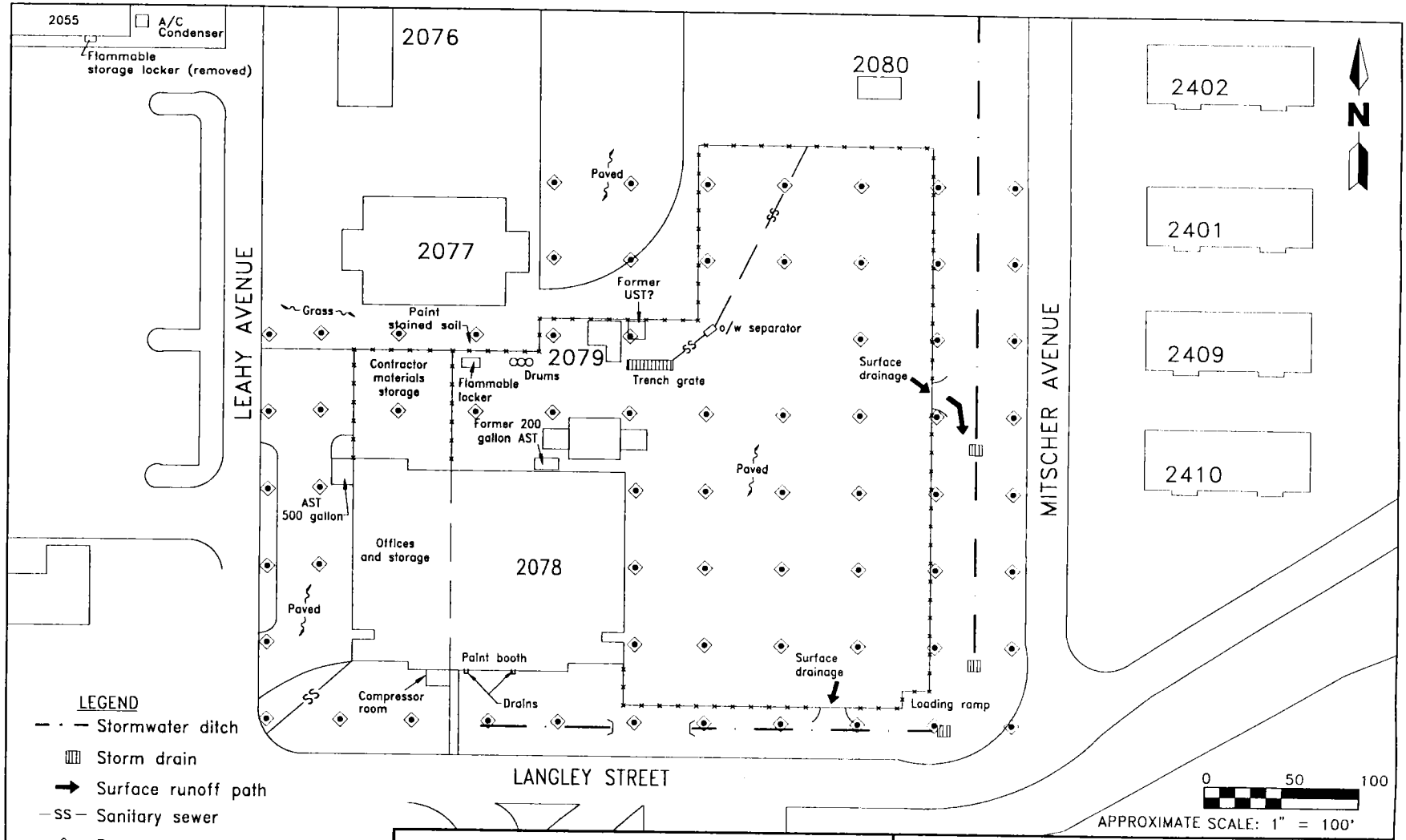

FIGURE 4-51
PROPOSED SOIL GAS SAMPLE LOCATIONS BUILDINGS 2078 AND 2079, VEHICLE MAINTENANCE FACILITY MAIN BASE, STUDY AREA 35, GROUP V STUDY AREAS

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associated with the external lift adjacent to the northeast corner of Building 2078. Sample locations will be biased toward visibly stained areas and areas most easily accessed (e.g., grate covers not welded down). Due to restricted access and the depth of the exterior pits (approximately 10 feet), these areas are to be considered confined spaces. Samples must be collected remotely, using hand augers with multiple extensions, or similar means.

All surface soil samples will be submitted for analysis of TPH and CLP TCL VOCS and SVOCs, PCBs, and TAL inorganics in accordance with USEPA Level IV DQOs.

Soil Borings and/or Monitoring Wells. At least five and up to seven soil borings will be completed across the study area, with a monitoring well installed in at least four of the seven borings. The rationale for boring and well locations is as follows.

Groundwater flow direction in this study area is assumed to be from north to south-southeast, toward Lake Susannah. Soil borings with a monitoring well installed in each will be completed at the following four locations, as shown on Figure 4-50: adjacent to the north side of Building 2078, in the vicinity of the interior drum storage area (where there is visible evidence of seepage at the base of the exterior wall); adjacent to the northeast corner of Building 2078, downgradient of the trench grate at Building 2079 and the lifts outside Building 2078; in the southeast corner of the parking area, presumably downgradient of activities in the parking area; and between Building 2078 (southeast corner) and Langley Street, presumably downgradient of the primary storage and use areas. One soil boring with no monitoring well will be completed off the northeast corner of Building 2079, outside the door, where spills or dumping would likely have occurred.

Up to two additional borings and monitoring wells may be installed in potential areas of concern based on review of the soil gas survey results. These locations are not shown on Figure 4-50 and will be determined in the field by the Technical Leader in consultation with the field team.

Each boring will be sampled continuously, using a 2-foot long split-spoon sampling device below the surface interval and a stainless steel hand auger for the surface interval. (Alternatively, the borings may be completed entirely by hand if the water table is very shallow and the borehole remains open.) Two soil samples will be submitted for laboratory analysis from each of the borings; one sample will be from the surface interval (0 to 1 ft, from the ground surface or below pavement), and the second will be from the sample interval directly above the water table or the interval in which there is visual or FID screening evidence suggesting contamination. Borings will be terminated at the water table, if no well is to be installed, or at a depth sufficient to install a well screen to intercept the seasonal water table.

One groundwater sample will be collected from each new monitoring well using the low-flow technique. In addition, the most downgradient (i.e., closest to the fence around Study Area 35) of the five existing wells associated with Building 2080 will be sampled. All boring soil (up to 14) and groundwater (up to 7) samples will be submitted for laboratory analysis of TPH, CLP TCL VOCs and SVOCs, PCBs, and TAL inorganics in accordance with USEPA Level IV DQOs. All soil and groundwater samples collected in the vicinity of Building 2079 will also be submitted for laboratory analysis of pH, and all groundwater samples will also

be submitted for laboratory analysis of TSS, in accordance with USEPA Level II DQOs.

4.36 STUDY AREA 36, MAIN BASE - BUILDING 2121 AND BUILDING 2122. The Public Works Yard at Main Base comprises Study Area 36. The focus of site screening investigation in this area is on places where OHM has been stored and where releases have likely occurred, both during occupancy by Public Works, and during earlier print shop activities. Potential impacts related to the automotive service station located west and likely upgradient of the study area will also be evaluated.

4.36.1 Background and Conditions Buildings 2121 and 2122 are located within the fenced perimeter of the Public Works Yard at Main Base. The Yard is bounded to the west by Building 109, the Naval Exchange Service and Fueling Station; to the east by Building 2025, public works administrative offices; to the south by a paved parking area for Building 2026; and to the north by Langley Street. The fueling and service station (Building 109) reportedly has 60,000 gallons of underground fuel storage capacity. This facility is likely upgradient of Study Area 36.

The current locations of Buildings 2121 and 2122 were undeveloped when the base was originally constructed (1943), but the area directly east and south of these buildings (including Buildings 2025, 2026, and 2017) served as a print shop complex. A photo lab, photo storage vault, and paint storage were originally part of this complex (all located south of the Public Works Yard), but the buildings have been demolished.

Building 2121. Building 2121 is a two-story, opened-face, wooden structure with a dirt floor. Two fenced storage compounds adjoin the building to the south. Building 2121 is part of the Public Works Yard at the corner of Langley Street and Grace Hopper Avenue (Figure 4-52). The building, constructed in 1952 on undeveloped land as a lumber storage yard, is 1,200-ft^2 in area and is currently used for the storage of pipes and wood.

There are two storage areas south of the building; the larger extends directly south of the building and contains nonhazardous bulky items, and the smaller, enclosed by a separate chain link fence, is located south and east of the building, and contains oils and hazardous wastes. The larger yard is currently used to store large pipes, abandoned ASTs, fencing, bricks and masonry blocks, asphalt shingles, scrap metal, and other bulk items. This area is partially paved, but the pavement is extremely weathered and provides no effective barrier to infiltration. The southern portion of the yard is not paved. Evidence of an oil spill (approximately 4 feet in diameter) was observed in this part of the yard during the EBS (ABB-ES, 1994b). There was no visible evidence of the spill during the most recent site visit (May 1995). No other obvious staining was observed within this storage area. Surface runoff from this area is directed westward, along a shallow depression to a storm drain adjacent to the roadway (Figure 4-52). Stormwater from this area is discharged to Lake Susannah.

At the time of the EBS (ABB-ES, 1994b), the smaller (hazardous and nonhazardous waste) storage yard contained drums of oil spill cleanup materials, waste paint, used motor oil, dielectric oil (less than 50 ppm PCB), spent solvent, transformer, oil, and other unidentified material. According to base personnel, this area was

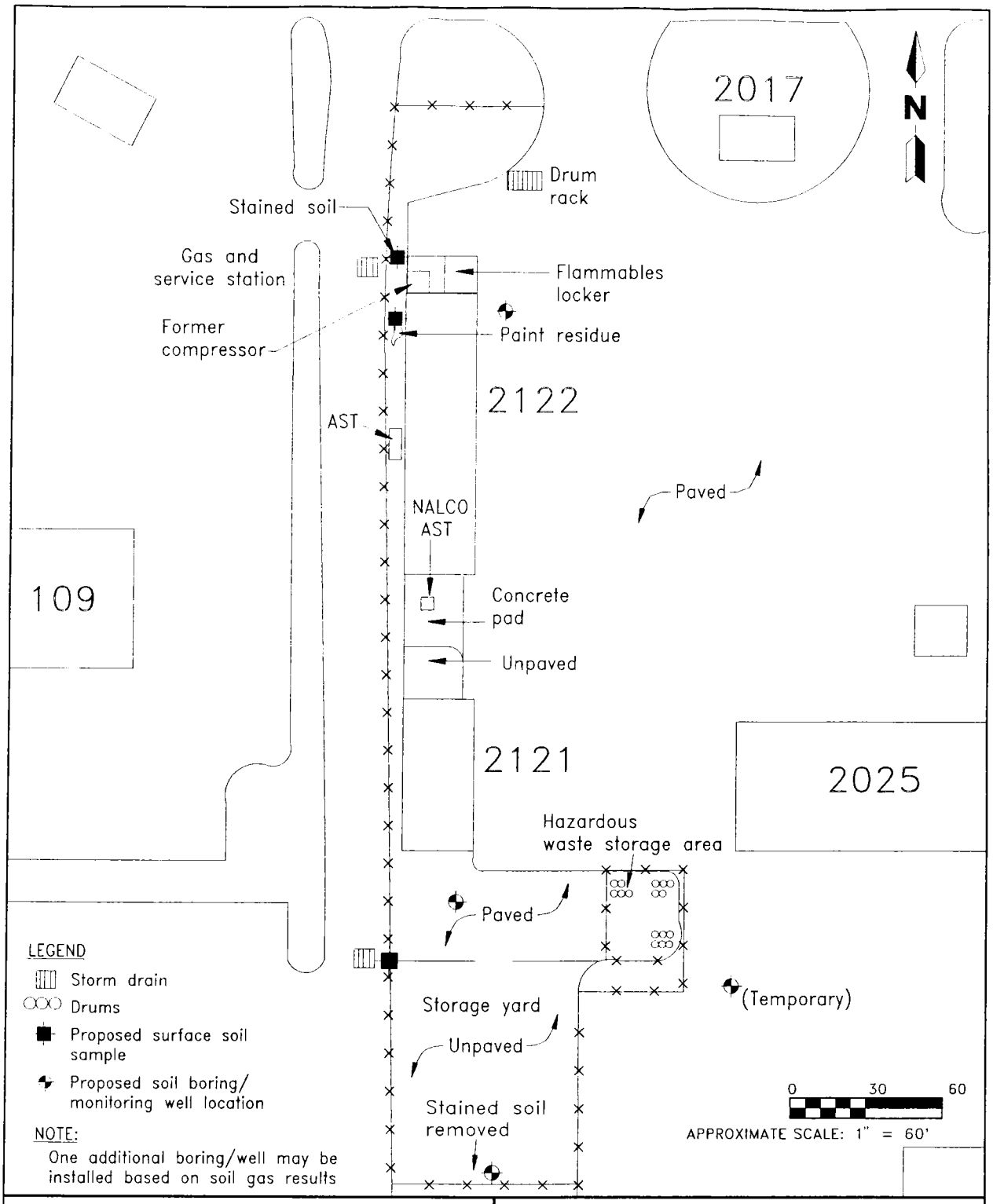

FIGURE 4-52
PROPOSED SURFACE SOIL, SOIL BORING, AND MONITORING WELL LOCATIONS BUILDINGS 2121 AND 2122, PUBLIC WORKS AREA MAIN BASE, STUDY AREA 36, GROUP V STUDY AREAS

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installed in approximately 1993. Prior to that time, the materials currently stored in this area were stored in the paved yard directly south of Building 2121. At the time of the most recent site visit (May 1995), most of the drums were on wooden pallets, and in addition to the contents listed above, several drums containing spent lead acid battery fluid and others containing contaminated soil were observed, along with vehicle batteries. Most of the batteries were wrapped in shrink wrap and were stored on pallets, as well. This storage area is paved, and the pavement appeared to be relatively intact. There were no signs of significant staining on the pavement. The area has no secondary containment, and surface runoff from the pavement would flow to the southwest onto a strip of gravel-covered soil which slopes toward the storm drain that receives runoff from the other storage yard.

Building 2122. Building 2122, built in 1952, is a one-story structure constructed of concrete masonry unit walls with a concrete floor and containment curbs. The building houses the Paint Shop and Tool Room. Located on the site were a 265-gallon AST containing diesel fuel with no secondary containment, and a 400-gallon AST which stores NALCO Transport 2802 (boiler feed water treatment) with secondary containment in place. Two used 55-gallon drums were located outside, north of the building; one was uncovered and contained used motor oil. At the time of the EBS (ABB-ES, 1994b), the Paint Shop contained several hundred open paint and thinner cans stored on shelves and on the floor. There was evidence of numerous paint spills on the floor and walls. The utility sink in the Paint Shop has signs of paint stains indicating disposal into the sanitary sewer system.

4.36.2 Rationale and Plans for Site Screening The focus of site screening at Study Area 36 is to evaluate the extent of contamination that may have occurred from past or current use and storage of photochemicals, paints, oil, and solvents onsite. In addition, there is the potential for contamination resulting from the adjacent gas station to have migrated onto the site.

Objective: to evaluate what chemicals may be present in environmental media due to past storage, releases, or disposal of OHM and to identify target areas for additional sampling and analysis

Method:
- soil gas survey

The first phase of site screening at Study Area 36 will be a soil gas survey to identify areas with elevated concentrations of VOCs or SVOCs in the subsurface, and to focus subsequent field investigation locations for soil and groundwater sampling. The survey will cover an approximately 200-foot by 400-foot area with a grid spacing of 50 feet, as shown on Figure 4-53. Approximately 55 points will be sampled in accordance with USEPA Level II DQOs. Following review of the survey results, soil borings and monitoring wells will be completed across the site, as described below.

Objective: to evaluate what chemicals may have been released during past and current uses of the site and to evaluate possible anomalies identified by soil gas survey results

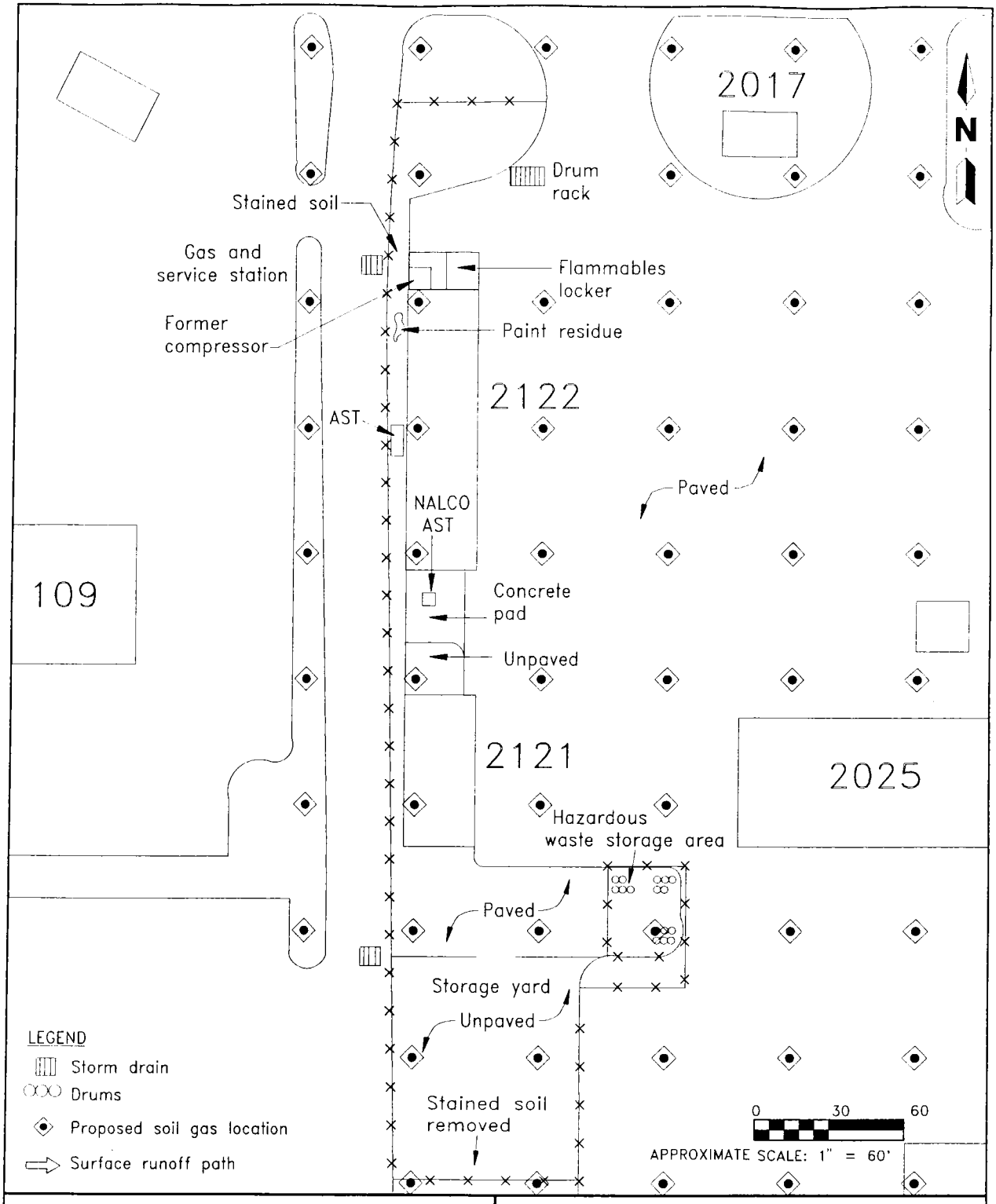

FIGURE 4-53
PROPOSED SOIL GAS SAMPLE LOCATIONS
BUILDINGS 2121 AND 2122, PUBLIC WORKS AREA
MAIN BASE, STUDY AREA 36,
GROUP V STUDY AREAS

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Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installations (temporary and permanent)
- groundwater sampling

Following review of the soil gas results, a soil and groundwater sampling program will be initiated at Study Area 36. Some of the sample points were selected based on visual or anecdotal evidence of potential contamination; others will be located in areas identified by soil gas analysis. The following is a summary of the sampling program. Proposed sample locations are shown on Figure 4-52.

Surface Soil. Three surface soil samples (0 to 1 foot) will be collected from areas of potential concern as follows. One sample will be collected in the paint-stained soil area between the fence and the northwest side of Building 2122 and one sample each will be collected from the two runoff pathways entering storm drains west of the Study Area (one is near the north end of Building 2122 and the other is adjacent to the low point in the open storage compound south of 2121).

All surface soil samples will be submitted for TPH and full suite (i.e., VOCs, SVOCs, pesticides, PCBs, and inorganics) CLP TCL and TAL laboratory analysis in accordance with USEPA Level IV DQOs.

Soil Borings and/or Monitoring Wells. Up to five soil borings will be completed across the study area, with a monitoring well installed in all of the borings. The rationale for boring and well locations is as follows.

Groundwater flow direction in this study area is assumed to be to the east-southeast, toward Lake Susannah. Soil borings with a permanent monitoring well installed in each will be completed at the following three locations, as shown on Figure 4-52: adjacent to the northeast corner of Building 2122, in the vicinity of outdoor storage and use of OHM; in the south end of the unpaved storage yard south of Building 2121, in the vicinity of the reported oil spill and miscellaneous storage activities; and south of Building 2121, in the former drum storage area. A temporary well will be installed near the southeast corner of the hazardous waste storage yard (presumably downgradient of onsite activities near Building 2121 and 2122).

One additional boring and monitoring well may be installed in potential areas of concern based on review of the soil gas survey results. This location is not shown on Figure 4-52 and will be determined in the field by the technical leader in consultation with the field team.

Each boring will be sampled continuously, using a 2-foot long split-spoon sampling device below the surface interval and a stainless steel hand auger for the surface interval. (Alternatively, the borings may be completed entirely by hand if the water table is very shallow and the borehole remains open.) Two soil samples will be submitted for laboratory analysis from each of the borings; one sample will be from the surface interval (0 to 1 foot from the ground surface or below pavement), and the second will be from the sample interval directly above the water table or the interval in which there is visual or FID screening evidence suggesting contamination. Borings will be terminated at the water table, if no well is to be installed, or at a depth sufficient to install a well screen to intercept the seasonal water table.

The temporary well will be installed by advancing the HSA 2 to 3 feet below the water table. Slotted 2-inch diameter PVC well screen will be lowered into the auger, and the auger will be retracted. A groundwater sample will be collected from inside each well screen using the low-flow technique. When groundwater sampling is complete, the well screen will be withdrawn and the boring grouted. The well material will be decontaminated in accordance with the POP, Section 4.3, Decontamination (ABB-ES, 1994a) and reused at the next temporary well location or discarded.

One groundwater sample will be collected from each new monitoring well using the low-flow technique. All subsurface soil (up to 10) and groundwater (up to 5) samples will be submitted for laboratory analysis of TPH and full suite CLP TCL and TAL compounds in accordance with USEPA Level IV DQOs. All groundwater samples will also be submitted for laboratory analysis of TSS, in accordance with USEPA Level II DQOs. A filtered groundwater sample from the temporary well will also be submitted for laboratory analysis of CLP TAL inorganics. The filtered sample and TSS data will aid in the evaluation of inorganic results, as groundwater resampling cannot be readily performed due to the use of temporary wells.

4.37 STUDY AREA 37, MAIN BASE - BUILDING 2414. The focus of site screening investigation in this study area is on former storage of OHM in an open-air shed (lean-to) attached to the building.

4.37.1 Background and Conditions

Building 2414. Building 2414 was originally constructed in 1943 as a lavatory serving the adjoining officer's quarters. It is a one-story, 480-ft^2 structure composed of cinder block walls, a concrete slab floor, with a peaked, wood-framed, shingled roof. At least two episodes of remodeling (1956 and 1962) are documented in construction drawings, although the purpose of the reconstructions is not clear. The building is currently used to store golf carts and spare towels. It is located in a complex of 19 Bachelor Officers Quarters (BOQ) facilities off Langley Street, located between the northern shore of Lake Susannah and Iwo Jima Street. A 4-foot by 5-foot open-faced wooden shed with a gravel-covered dirt floor had been added to the main building. The shed had been removed prior to the most recent site visit (May 1995), and there was no obvious evidence of releases from materials stored in the shed. This shed was used to store flammable and hazardous materials. At the time of the EBS (ABB-ES, 1994b), the shed contained two flammable storage lockers containing paints, thinners, and strippers, and numerous 5-gallon containers of paint.

4.37.2 Rationale and Plans for Site Screening. The past storage and possible release of flammable and hazardous materials within the gravel floored shed is the primary focus of site screening at Study Area 37. Proposed sample locations are shown on Figure 4-54.

Objective: to evaluate what, if any, chemical contaminants may have been released during past use of the site

Methods:
- subsurface soil sampling
- temporary monitoring well installation
- groundwater sampling

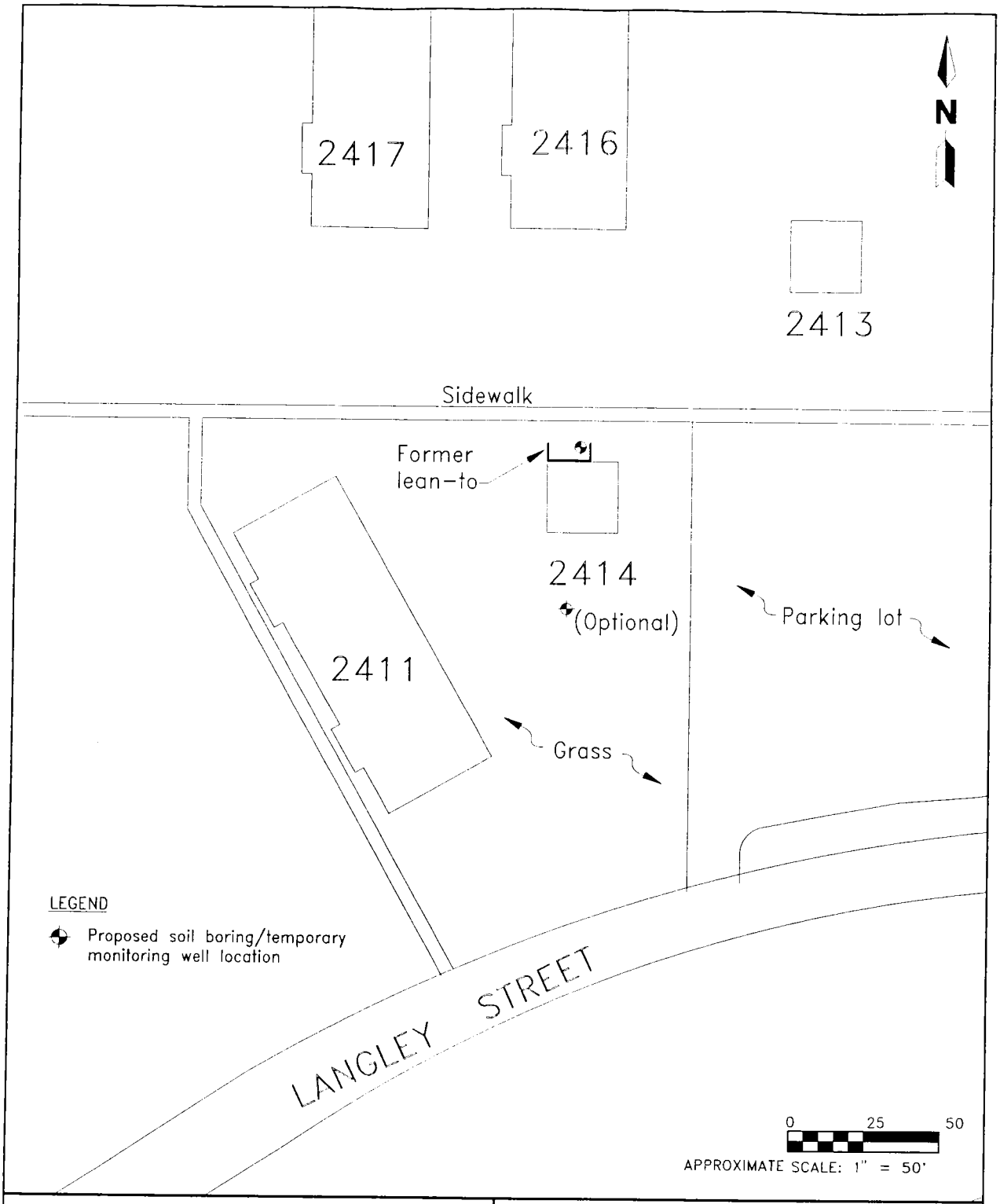

FIGURE 4-54
PROPOSED SOIL BORING AND MONITORING WELL LOCATIONS BUILDING 2414, GOLF CART STORAGE MAIN BASE, STUDY AREA 37 GROUP V STUDY AREAS

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In order to evaluate the potential impact to soil or groundwater from possible releases in the former shed, one soil boring will be completed in the former shed location. A temporary monitoring well will be installed in the boring. Soil will be sampled continuously, using a 2-foot long split-spoon sampling device below the surface interval and a stainless steel hand auger for the surface interval. Two soil samples will be collected; one from the surface interval (0 to 1 foot) and one from an interval where there is visual or FID screening evidence of potential contamination or in the absence of any evidence, the interval directly above the water table. Both soil samples will be submitted for laboratory analysis of TPH and full suite CLP TCL and TAL compounds in accordance with USEPA Level IV DQOs.

If there is any visual or FID screening evidence of contamination noted during soil or groundwater sampling of the first bore hole, then a second temporary well will be installed south of Building 2414 (downgradient of the shed), as shown on Figure 4-54. No soil samples will be collected from this location.

The temporary well(s) will be installed in accordance with the procedure outlined in Section 4.36.2. The groundwater sample(s) will be submitted for TPH and full suite CLP TCL and TAL (filtered and unfiltered) analyses in accordance with USEPA Level IV DQOs, as well as TSS determination. The filtered samples and TSS data will aid in the evaluation of inorganic results, as groundwater resampling cannot be readily performed due to the use of temporary wells.

4.38 STUDY AREA 38, MAIN BASE - BUILDING 4001. The focus of site screening activities at Study Area 38 is on the potential impact from storage and use of lawn maintenance chemicals, including pesticides and herbicides.

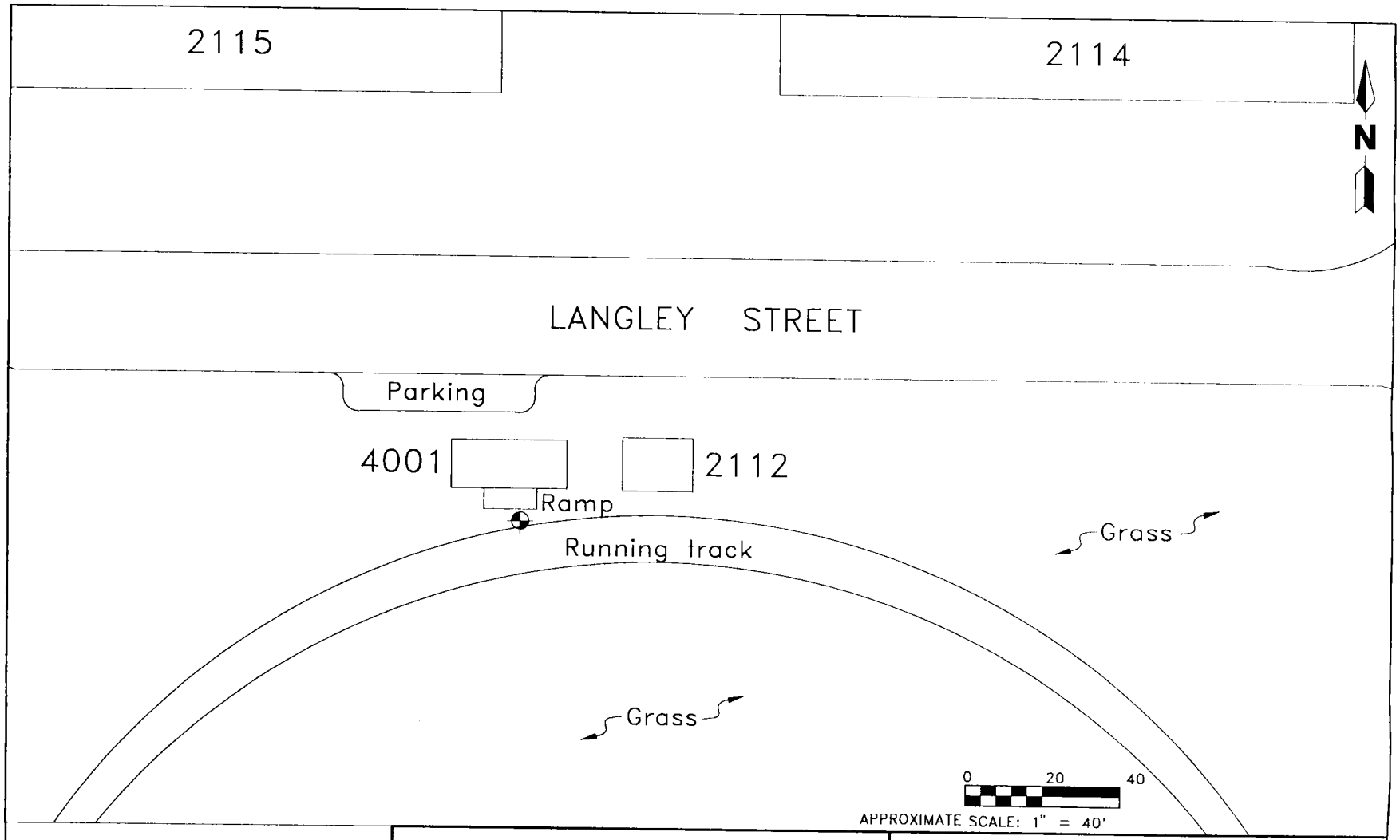
4.38.1 Background and Conditions

Building 4001. Building 4001 is a storage building located on Langley Street in the central part of the Main Base (Figure 4-55). The 192-ft^2 structure was constructed in 1965 of concrete block with a wooden roof and concrete slab floor. There is a concrete ramp on the south side of the building. Prior to 1965, the property was undeveloped open land. The area just south of the site was cleared for a football field and running track sometime before 1961. Building 2112, an open-sided storage building, is located adjacent to the site (east side). The building is surrounded by grass.

The building is used by the Morale, Welfare, and Recreation Operation Command to store grounds maintenance equipment and chemical supplies for the adjoining football field. Chemicals noted during the EBS (ABB-ES, 1994b) included lawnmower oil, fertilizers, and pesticides for control of root worms and fungus.

The floor of the building was heavily stained by fuel and oil spillage. Odors and other signs of herbicide and pesticide use and storage were observed. There was no evidence of seepage along the exterior base of the walls, nor was there any evidence of significant stress to vegetation adjoining the building.

4.38.2 Rationale and Plans for Site Screening The site screening objective for this study area is to assess the potential impact from incidental releases of lawn maintenance chemicals in and around Building 4001. Proposed sample locations are shown on Figure 4-55.



LEGEND

Proposed soil boring/temporary monitoring well location

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FIGURE 4-55
PROPOSED SOIL BORING AND MONITORING WELL LOCATION, BUILDING 4001, MAINTENANCE EQUIPMENT STORAGE, MAIN BASE, STUDY AREA 38, GROUP V STUDY AREAS

SITE SCREENING PLAN

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Objective: to evaluate what, if any, chemical contaminants may have been released to environmental media during site use

Methods:
- subsurface soil sampling
- temporary monitoring well installation
- groundwater sampling

One soil boring will be completed at the foot of the ramp on the south side of the building, where runoff from washdowns of the interior floor would likely have collected. A temporary monitoring well will be installed in the boring in accordance with the methods described in section 4.36.2. Soil will be sampled continuously, using a 2-foot long split-spoon sampling device below the surface interval and a stainless steel hand auger for the surface interval. Two soil samples will be collected; one from the surface interval (0 to 1 foot) and one from an interval where there is visual or FID screening evidence of potential contamination or, in the absence of any evidence, the interval directly above the water table. The soil samples will be submitted for laboratory analysis of TPH and full suite CLP TCL and TAL, including herbicides in accordance with USEPA Level IV DQOs.

One groundwater sample will be submitted for TPH and full suite CLP TCL, herbicides, and TAL (filtered and unfiltered) analyses, in accordance with USEPA Level IV DQOs, as well as TSS determination. The filtered samples and TSS data will aid in the evaluation of inorganic results, as groundwater resampling cannot be readily performed due to the use of temporary wells.

4.39 STUDY AREA 39, MAIN BASE - STRUCTURE 4060, STRUCTURE 4067, STRUCTURE 15109, AND UNNUMBERED FACILITY 10. The focus of site screening investigation activities in this area is on former site use as a coal storage yard and alleged landfill operations.

4.39.1 Background and Conditions

Structure 4060 and Structure 4067. Structures 4060 and 4067 are masonry block and concrete loading platforms which were built by the Air Force in 1959, possibly to load coal onto trucks. The platforms are located near the eastern edge of the former coal storage yard, and can be accessed via a dirt road west of Grace Hopper Avenue. Trash compactor units are currently located adjacent to the structures. The units are located on pavement and there is no evidence of significant staining on pavement in the vicinity of the structures.

Structure 15109. Structure 15109 is an irrigation well located south of the intersection of Grace Hopper Avenue and Rickover Circle. The well, surrounded by a chain link fence, is 500 feet deep with a 12-inch diameter casing that is 200 feet long. The well was constructed in an area formerly occupied by enlisted men's barracks (Buildings 2252 and 2266). Building 2252 was demolished sometime in the early 1970s, and Building 2266, located directly south of the well, is currently used as the Base Veterinary Facility. The well was probably constructed in the early 1970s and was used for irrigation. The well is no longer in use. This location was included in Study Area 39 due to its proximity to the former coal storage yard and landfill.

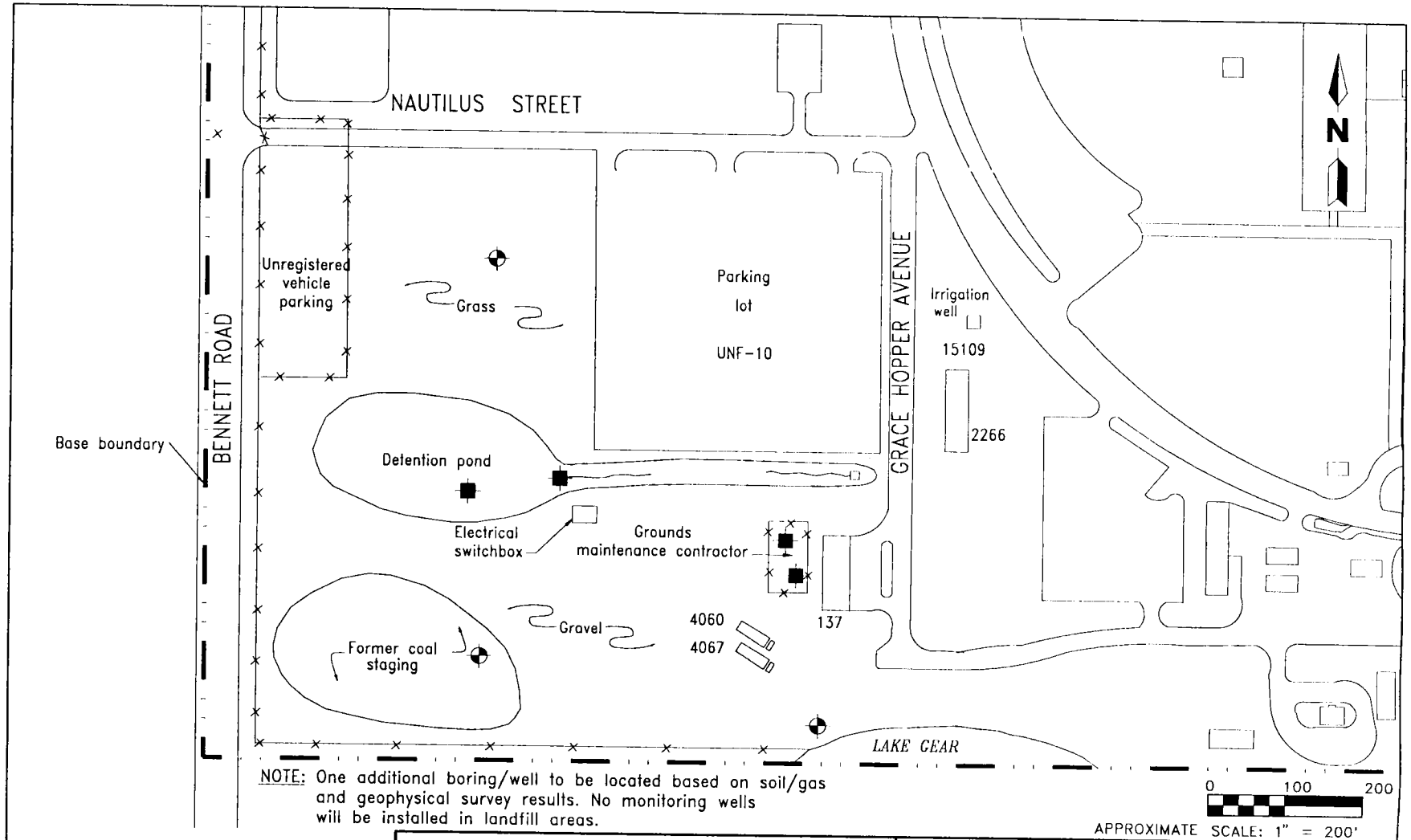


FIGURE 4-56
PROPOSED SURFACE SOIL, SOIL BORING, AND MONITORING WELL LOCATIONS, UNNUMBERED FACILITY 10 AND STRUCTURE 15109, MAIN BASE, STUDY AREA 39, GROUP V STUDY AREAS

SITE SCREENING PLAN

NAVAL TRAINING CENTER ORLANDO, FLORIDA

Unnumbered Facility 10. UNF-10 is an open grassy area located west of Rickover Circle and Grace Hopper Avenue in the southwest corner of Main Base (Figure 4-56). The area extends from Grace Hopper Avenue west to the base boundary fence along Bennett Road, and from Nautilus Street south to the base boundary fence, which borders the municipal recreation trail constructed along the former railroad right-of-way. The area is bounded by the base property boundary fence on the south and west; access to the area is via Nautilus Street on the north side and via an unpaved access road off Grace Hopper Avenue, south of Building 137. Building 137 is currently the Public Works Electrical Shop. A fenced storage yard with a mobile office trailer is set up for a grounds maintenance subcontractor, just west of Building 137. This yard is unpaved, and storage of various oils, lubricants, and lawn care products was observed at the time of the last site visit.

The southern portion of the area was initially used as a coal storage yard. Coal dust and coal fragments are visible at the ground surface throughout this area. Coal was presumably transported to the site by rail. The rail spur and main tracks that formed the original southern boundary of the base have been removed, and a paved municipal recreation trail currently occupies the right-of-way. The trail is separated from the base property by a fence. A small stand of mature pine trees occupies the southwest corner of the study area. The former coal storage yard is currently used as a staging area for solid waste contractors. Several rows of empty dumpsters were observed in this area during the last site visit (May 1995). Reportedly, electrical transformers may have been stored in this area (ABB-ES, 1994b). Several small mounds of yard waste (grass clippings and small brush) and soil were present during the last site visit. There was no evidence of significant surface soil staining anywhere in the former coal yard. Structures 4060 and 4067 are located near the eastern edge of the storage yard.

The northwest corner of the area is occupied by a fenced-off parking lot for unregistered vehicles belonging to base personnel. The northeast corner of the study area is occupied by a paved parking area used by personnel at the Nuclear Training School. Between the southern edge of the two parking lots is a stormwater detention pond. The basin is finished at approximately 6 feet below grade. Based on the vegetation present in the basin, it does not contain standing water for extensive periods of time. Stormwater flow, from the basin, as well as surface runoff from the study area, enters Lake Gear (approximately 75 feet southeast of the edge of the study area. Two electrical switchboxes are located east of the detention pond. One of the boxes appeared to be out of service at the time of the last site visit (May 1995). There was no evidence of leakage from either unit.

Reportedly the western half of the property (north of the coal yard) was used as a landfill prior to 1947 (ABB-ES, 1994b). The landfill is said to have accepted demolition debris, which may have included asbestos-containing material, small armaments, medical wastes, and household refuse. There is evidence of landfilled material at the ground surface from the retention pond northward. Materials included fragments of glass, china, scrap metal, concrete, shingles, brick, and coal fragments and ash. The landfilled material appears to be more common and diverse at the land surface north of Nautilus Street.

4.39.2 Rationale and Plans for Site Screening The objectives of site screening investigations at Study Area 39 are to evaluate the nature and extent of landfilling activities, to evaluate what contaminants may be present in landfilled

materials, and to evaluate the potential impact of other site activities. Because there are allegations of ordnance disposal in the landfill, UXO contractors will be retained to provide appropriate escort and clearance support for intrusive investigations in this area. Proposed sample locations are shown on Figures 4-56 and 4-57.

Based on review of additional information during the May 1995 site visit, no additional site screening investigation is required with respect to Irrigation Well 15109. The well should be abandoned in accordance with the procedures identified and agreed to by the BCT.

Objective: to evaluate the nature and extent of landfilling activities in this area

Method:
- geophysical survey (GPR, magnetometer, time domain metal detector)

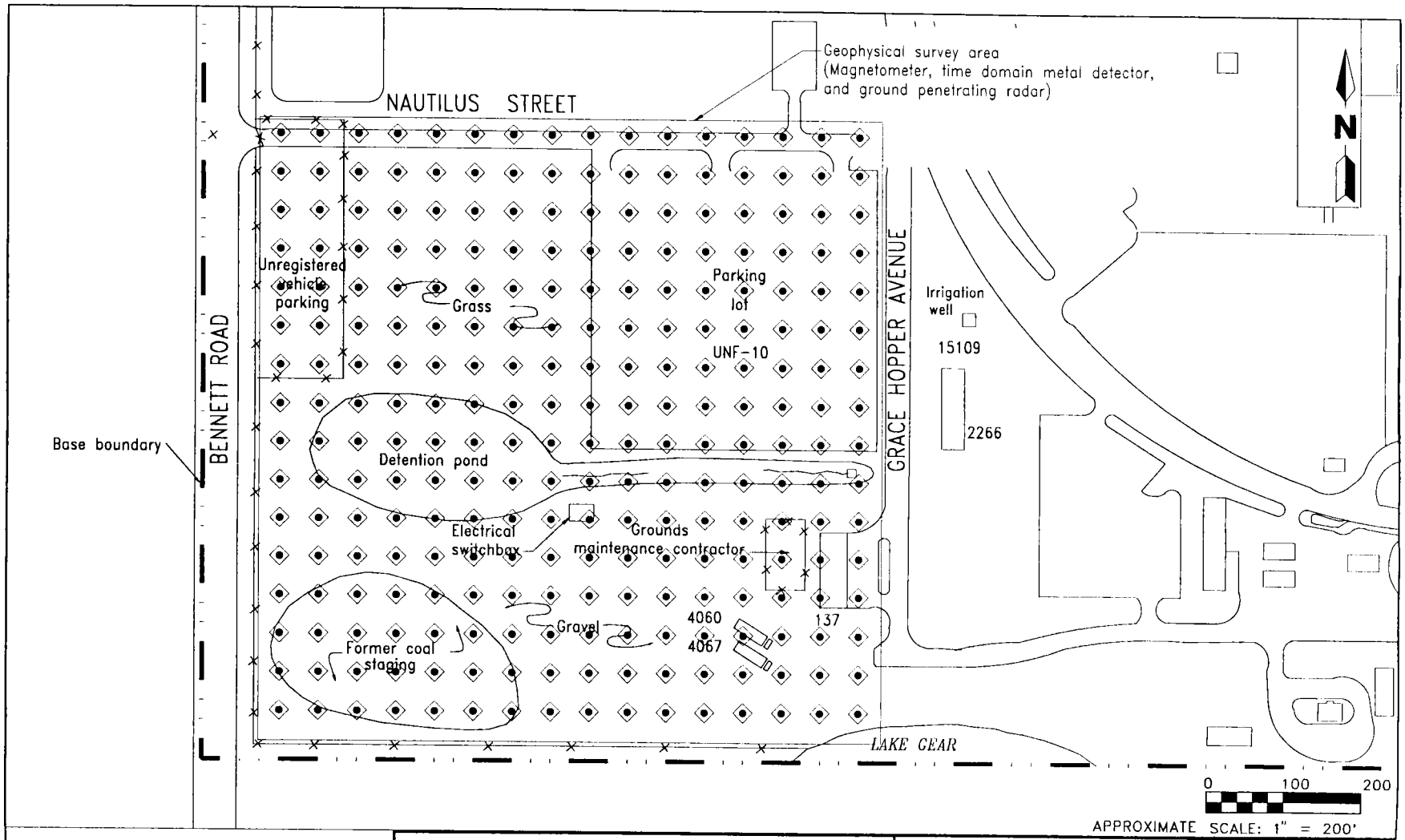
A geophysical survey will be conducted in two phases: an initial magnetometer and time domain metal detector survey, followed by a confirmatory GPR survey focused on anomalies identified by the magnetometer and metal detector. The area of investigation is estimated to be approximately 800 feet by 800 feet (Figure 4-57). The parking lot will be cleared of vehicles for the duration of the geophysical work to minimize the interference from metal objects at the surface. Interference from the boundary fence is expected. Grid nodes will be occupied every 10 to 20 feet in the survey area. Where necessary, the grid will be closed down to 5 to 10 feet, as conditions warrant.

Due to the potential for UXO materials, the locations of magnetic anomalies identified by geophysical methods will not be further investigated by ABB-ES personnel. Results of the survey will be submitted to a UXO contractor for use in escort and clearance activities for intrusive investigation tasks.

Objective: to evaluate what chemicals may be present in the environmental media due to current and past site use (particularly landfilling), and to identify target areas for additional sampling and analysis

Method:
- soil gas survey
- UXO clearance and escort

The second phase of site screening at Study Area 39 will be a soil gas survey to identify areas with elevated concentrations of VOCs or SVOCs in the subsurface and to focus subsequent field investigation locations for soil and groundwater sampling. The survey will cover an area approximately 800 feet by 800 feet (the same area as the geophysical survey) with a grid spacing of 50 feet, as shown on Figure 4-57. For correlation purposes, the soil gas grid will coincide with the geophysical survey grid. Each soil gas sample point will be cleared by a UXO specialist, using existing geophysical survey data and follow-up clearance. Approximately 250 points will be sampled in accordance with USEPA Level II DQOs. Following review of the survey results, soil borings and monitoring wells will be completed across the site, as described below.



LEGEND

◈ Proposed soil gas sample

FIGURE 4-57
PROPOSED SOIL GAS AND GEOPHYSICAL SURVEY LOCATIONS UNNUMBERED FACILITY 10 AND STRUCTURE 15109 MAIN BASE, STUDY AREA 39, GROUP V STUDY AREAS

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SITE SCREENING PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Objective: to evaluate what chemical contaminants may have been released during current or past uses of the site and evaluate possible anomalies identified by soil gas or geophysical survey results

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Following review of the soil gas and geophysical survey results, a soil and groundwater sampling program will be initiated at Study Area 39. Some of the sample points are based on visual evidence of potential contamination; others will be located in areas identified by soil gas and geophysics. The following is a summary of the sampling program. Proposed sample locations are shown on Figure 4-56.

Surface Soil. Four surface soil (0 to 1 foot) samples will be collected in areas of potential concern as follows. Two samples will be collected within the detention pond in areas that appear to have received runoff, and two samples will be collected from locations within the contractor's maintenance yard in areas near chemical storage or use. UXO clearance will be required for the two sample locations in the floor of the detention pond.

The two surface soil samples from the floor of the detention pond will be submitted for full suite CLP TAL and TCL laboratory analysis, along with TPH and explosives analysis, in accordance with USEPA Level IV DQOs. The two surface soil samples from the contractor's yard will be submitted for laboratory analysis of TPH, CLP TCL VOC and SVOCs, TCL inorganics, pesticides, and herbicides, in accordance with USEPA Level IV DQOs.

Soil Borings and/or Monitoring Wells. Four soil borings will be completed across the study area, with a monitoring well installed in each boring. Boring and/or well locations are summarized as follows. One additional boring and monitoring well will be installed in potential areas of concern based on review of the soil gas and geophysical survey results. This location is not shown on Figure 4-56 and will be determined in the field by the Technical Leader in consultation with the field team. Each soil boring and/or monitoring well location will require UXO clearance (surface and downhole) prior to installation.

Each boring will be sampled continuously, using a 2-foot long split-spoon sampling device below the surface interval and a stainless steel hand auger for the surface interval. (Alternatively, the borings may be completed entirely by hand if the water table is very shallow and the borehole remains open.) Two soil samples will be submitted for laboratory analysis from each of the borings; one will be from the surface interval (0 to 1 ft), and the second submittal will be from either the sample interval directly above the water table or the interval in which there is visual or FID screening evidence suggesting contamination. All subsurface soil samples (up to 8) will be submitted for full suite CLP TAL and TCL laboratory analysis, along with TPH and explosives analysis, in accordance with USEPA Level IV DQOs. One groundwater sample will be collected from each new monitoring well using the low-flow technique. All 4 groundwater samples will be submitted for laboratory analysis of TPH, full suite CLP TAL and TCL compounds, along with herbicides and explosives, in accordance with USEPA Level IV DQOs. Groundwater

will also be submitted for gross alpha and gross beta analysis, and for laboratory analysis of TSS to aid in evaluation of inorganics data.

4.40 STUDY AREA 40, MAIN BASE - FACILITY 21022, FACILITY 21023, AND UNNUMBERED FACILITY 6. The focus of site screening investigations in Study Area 40 is to evaluate the nature and extent of landfilling operations in the vicinity of the former "bottle landfill" and to evaluate the potential impact to environmental media from landfilled materials.

4.40.1 Background and Conditions Study Area 40 includes the area bounded by Maguire Road on the north, Bennett Road on the west, Grace Hopper Avenue to the east, and Nautilus Street to the south.

Facility 21022 and Facility 21023. Facilities 21022 and 21033 are a pair of softball fields located along Maguire Boulevard and Bennett Road, south of the Maguire Road Base entrance (Figure 4-58). The softball fields were constructed sometime after 1945 on previously undeveloped land, and underwent major renovations in 1972 when spectator stands, player's dugouts, fencing, and a scorekeeping building were added.

A landfill was discovered southwest of the fields when excavation for Building 144, a proposed cold storage facility, was begun (the facility was never constructed). The exact size and location of the landfill is unknown, although visual evidence of landfilling activities has been noted in the area extending south from the fences surrounding the outfields to the detention pond north of the former coal staging area. There is a possibility that the ball fields were built over the landfill.

Unnumbered Facility 6. UNF-6, also known as the "Bottle Landfill," is an undeveloped, relatively flat grass-covered lot at the northeast corner of Nautilus Street and Bennett Road. Aerial photographs from 1945 indicate at that time the site was undeveloped, but may have been occupied by a sink hole or other type of depression. At present, the land surface is littered with fragments of glass, paper, metal, coal, ash, wood, porcelain, and film negatives. Reportedly, this area was used as the landfill for household wastes beginning in the late 1940s. The period of operation, along with the extent of the landfill are unknown. It is unclear if and how landfilling operations in this area (i.e., north of Nautilus Street) are related to suspected landfilling operations south of the road (UNF-10).

A geotechnical investigation was initiated in January 1989 by ATEC Associates, Inc., in preparation for construction of a cold storage facility in the area (ABB-ES, 1994b). Eleven test borings were completed with five of the borings extending to 60 feet bls. Locations are shown on Figure 4-58. Landfilled materials were encountered in three of the borings at depths of up to 8 feet bls. A 1-foot thick layer of a tar-like substance was detected in one boring (No. 4) at a depth of approximately 8 feet bls. Subsequent excavation of portions of the area have revealed landfilled material to a depth of 8 to 10 feet below the surface. The material appears to have been deposited as layers of similar materials (such as glass or paper) which alternate with layers of ash, suggesting that the landfill surface was periodically burned. Depth to water in these borings ranged from 9 to 14 feet bls. Groundwater flow direction is expected to follow surface flow patterns, which would be to the south, toward Lake Gear.

MAGUIRE BLVD.

NAUTILUS STREET

GRACE HOPPER AVENUE

121

115

59

58

4048

4047

60

354

57

2000

2126

2127

21022

21023

135

21001C

TENNIS COURTS

UNF-6

#1

#2

#3

#4

#5

#6

#7

#8

#9

#10

#11

N

0 40 80

SCALE: 1" = 80 FEET

NOTE:
One additional boring/well location may be added based on soil gas geophysical survey results.

LEGEND
- Proposed soil boring/monitoring well
- #1 ATEC boring locations (approximate)

FIGURE 4-58
PROPOSED SOIL BORING AND MONITORING WELL LOCATIONS UNNUMBERED FACILITY 6 AND PLAYING FIELDS 21022 AND 23023 MAIN BASE, STUDY AREA 40, GROUP V STUDY AREAS

SITE SCREENING PLAN

NAVAL TRAINING CENTER ORLANDO, FLORIDA

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4.40.2 Rationale and Plans for Site Screening The objectives of site screening investigations at Study Area 40 are to evaluate the nature and extent of landfilling activities and to evaluate what contaminants may be present in landfilled materials. Because there are allegations of ordnance disposal in the landfill, UXO contractors will be retained to provide appropriate escort and clearance support for intrusive investigations in this area. Proposed sample locations are shown on Figures 4-58 and 4-59.

Objective: to evaluate the nature and extent of landfilling activities in this area

Method:
- geophysical survey (GPR, magnetometer, time domain metal detector)

A geophysical survey will be conducted in two phases: an initial magnetometer and time domain metal detector survey, followed by a confirmatory GPR survey focused on anomalies identified by the magnetometer and metal detector. The area of investigation is estimated to be approximately 500 feet by 500 feet (Figure 4-59). Interference from the boundary and ballpark fences is expected. Transect lines will be completed 10 to 20 feet apart in the survey area.

Due to the potential for UXO materials, the locations of magnetic anomalies identified by geophysical methods will not be further investigated by ABB-ES personnel. Results of the survey will be submitted to a UXO contractor for use in escort and clearance activities for intrusive investigation tasks.

Objective: to evaluate what chemicals may be present in the environmental media due to past site use (i.e., landfilling) and to identify target areas for additional sampling and analysis

Methods:
- soil gas survey
- UXO clearance and escort

The second phase of site screening at Study Area 40 will be a soil gas survey to identify areas with elevated concentrations of VOCs or SVOCs in the subsurface and to focus subsequent field investigation locations for soil and groundwater sampling. The survey will cover an area approximately 500-feet by 500-feet (the same area as the geophysical survey) with a grid spacing of 50 feet, as shown on Figure 4-59. For correlation purposes, the soil gas points will coincide with the geophysical survey grid. Each soil gas sample point will be cleared by a UXO specialist, using existing geophysical survey data and follow-up clearance. Approximately 100 points will be sampled in accordance with USEPA Level II DQOs.

Following review of the survey results, soil borings and monitoring wells will be completed across the site, as described below.

Objective: to evaluate what chemical contaminants may have been released during current or past uses of the site and evaluate possible anomalies identified by soil gas or geophysical survey results

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

121

MAGUIRE BLVD.

115

59

58

4048

4047

GRACE HOPPER AVENUE

60

354

N

2000

2126

2127

57

Geophysical survey area
(Magnetometer, Time domain metal detector and ground penetrating radar)

21022

21023

21001C

TENNIS COURTS

135

UNF-6

NAUTILUS STREET

0 40 80
SCALE: 1" = 80 FEET

LEGEND
Proposed soil gas locations

H:\ORLANDO\SS4-X\NP\07-25-95

FIGURE 4-59
PROPOSED SOIL GAS GEOPHYSICAL SURVEY LOCATIONS UNNUMBERED FACILITY 6 AND PLAYING FIELDS 21022 AND 21023 MAIN BASE, STUDY AREA 40, GROUP V STUDY AREAS

SITE SCREENING PLAN

NAVAL TRAINING CENTER ORLANDO, FLORIDA

Following review of the soil gas and geophysical survey results, a soil and groundwater sampling program will be initiated at Study Area 40. Some of the sample points are based on visual evidence of potential contamination; others will be located in areas identified by soil gas and geophysics. The following is a summary of the sampling program. Proposed sample locations are shown on Figure 4-58.

Soil Borings and/or Monitoring Wells. At least three and possibly a fourth soil boring will be completed across the study area, with a monitoring well installed in each boring. Boring and/or well locations are summarized as follows. Groundwater flow may be in a southerly direction toward Lake Gear, or in an easterly direction, toward Lake Susannah. One boring will be in the vicinity of a previously completed boring which indicated a tar-like substance at a depth of 8 feet. One boring will be installed south of this location, near Nautilus Street (potentially downgradient). The third boring will be installed east of the first boring (potentially downgradient). One additional boring and monitoring well will be installed in potential areas of concern based on review of the soil gas and geophysical survey results. This location is not shown on Figure 4-58 and will be determined in the field by the Technical Leader in consultation with the field team. Each soil boring and/or monitoring well location will require UXO clearance (surface and downhole) prior to installation. Borings will not be located within the body of the landfill.

Each boring will be sampled continuously, using a 2-foot long split-spoon sampling device below the surface interval and a stainless steel hand auger for the surface interval. (Alternatively, the borings may be completed entirely by hand if the water table is very shallow and the borehole remains open.) Two soil samples will be submitted for laboratory analysis from each of the borings; one will be from the surface interval (0 to 1 ft), and the second submittal will be from either the sample interval directly above the water table or the interval in which there is visual or FID screening evidence suggesting contamination. All subsurface soil samples (up to eight) will be submitted for full suite CLP TAL and TCL laboratory analysis, along with TPH and explosives analysis, in accordance with USEPA Level IV DQOs. One groundwater sample will be collected from each new monitoring well using the low-flow technique. All groundwater samples will be submitted for laboratory analysis of TPH, full suite CLP TAL and TCL compounds, and explosives, in accordance with USEPA Level IV DQOs. All groundwater samples will also be submitted for gross alpha and gross beta analysis (due to the possible landfilling of hospital wastes or other materials containing radionuclides), and for laboratory analysis of TSS, to aid in evaluation of inorganics data. The most downgradient well (near Lake Gear) will also be sampled for CLP herbicides, due to its position downgradient of the maintenance contractor's storage yard.

4.41 STUDY AREA 41, MAIN BASE - UNNUMBERED FACILITY 8

The focus of the site screening investigation in Study Area 41 is on the potential release of PCB-containing fluid from a pad-mounted transformer unit in the northeastern corner of the area.

4.41.1 Background and Conditions

Unnumbered Facility 8. UNF-8 comprises the land located between Holland Street, Leahy Avenue, Iwo Jima Street, and King Avenue in the central part of Main Base. Currently this area is occupied by a large grassy field with a parking lot in the

southeastern corner, a paved roadway bisecting the site (north and south), and two pad-mounted transformers in the northeastern corner. Prior to 1990 the site was occupied by ten buildings as summarized below. There is evidence of demolition debris, including small pieces of concrete, brick, asphalt shingle, and metal scattered across the site.

Former building locations are shown on Figure 4-60. Most of the buildings were constructed in 1943 and were largely used for administrative purposes. One of these buildings (2096) was reportedly used for paint storage. USTs and ASTs were likely associated with many of the buildings prior to demolition of the buildings. Stormwater drains from the site to Lake Susannah (ABB-ES, 1994b). Two pad-mounted transformers are currently located in the northeastern corner of the site. The units are not labeled regarding PCB content. Dark staining was evident during the most recent site visit (May 1995) on the northwest corner of the pad for the northernmost transformer. There was no visual evidence that the released material traveled beyond the pad.

Building Number	Building Use
2111, 2112	Synthetics Division Storehouses
2066	Synthetics Trainer No. 1
2065	Synthetics Trainer No. 2
2069	Trainer Auditorium
2068	Administration
2070, 2071	Administration
2072	Latrine
2096	Paint Storage

4.41.2 Rationale and Plans for Site Screening The potential presence of former USTs and ASTs in this study area, along with their potential impact on environmental media, will be evaluated in accordance with the schedule and procedures outlined in the NTC, Orlando, Tank Management Plan (ABB-ES, 1994d). The objective of site-screening activities for Study Area 41 is to evaluate the potential release of fluid from the pad-mounted transformer in the northeast corner of the study area.

Objective: to evaluate what chemical contamination, if any, is present in environmental media from the apparent release of fluid from a transformer

Methods:
- surface soil sampling
- concrete wipe sampling

In order to confirm the content of the oil apparently released from the northernmost of the two transformer units, as well as to confirm that there has been no impact to adjoining soil, two samples will be collected from the area, as shown on Figure 4-60. One surface soil sample (0 to 1 foot) will be collected directly adjacent to the northwest corner of the pad, at a point that would likely have received runoff from the pad. A wipe sample will be collected from the stained concrete surface of the pad, using standard wipe sample techniques. Both the wipe sample and the surface soil sample will be submitted for laboratory analysis of CLP PCBs only, in accordance with USEPA Level IV DQOs.

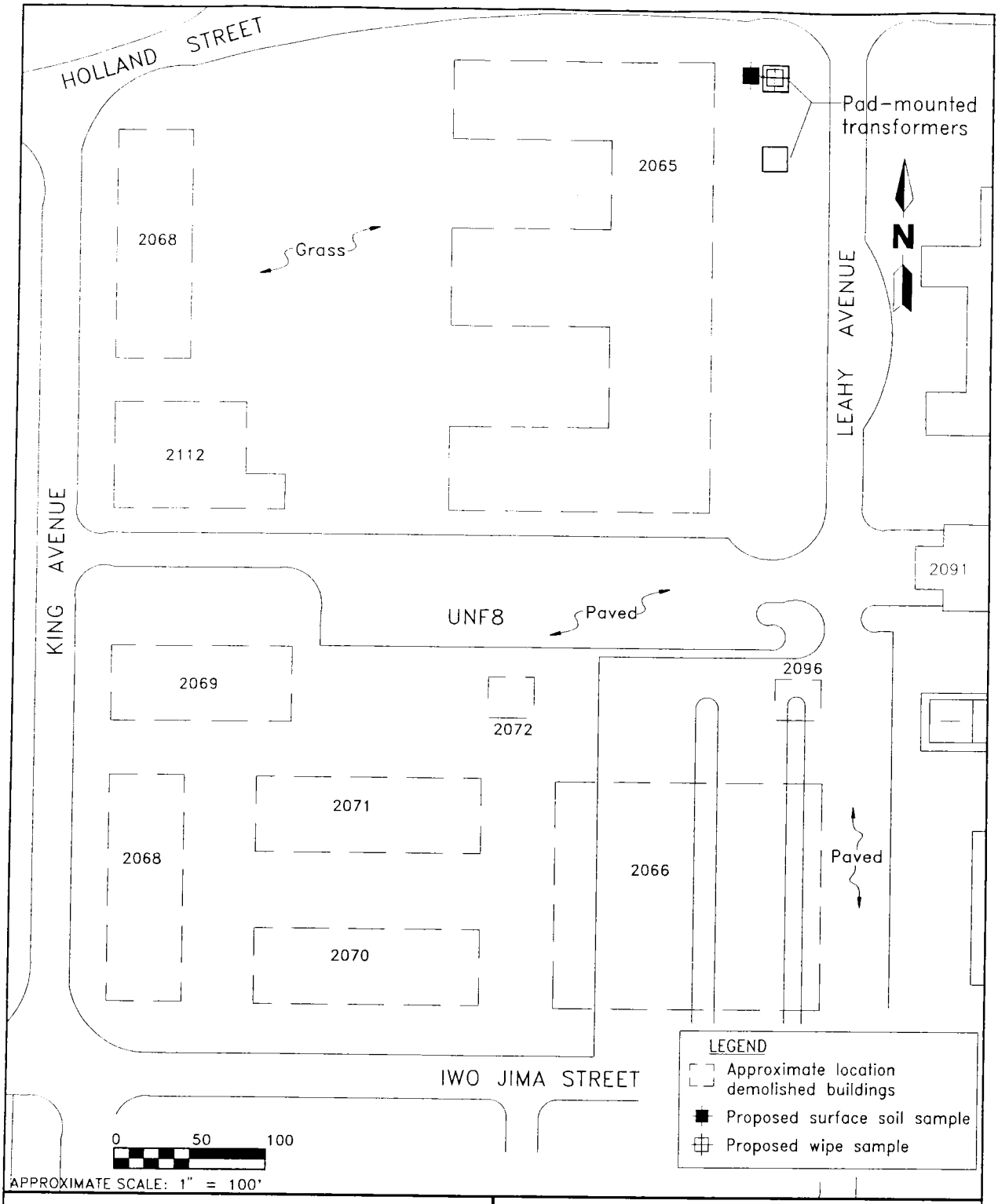

FIGURE 4-60
PROPOSED SURFACE SOIL AND WIPE SAMPLE LOCATIONS, UNF8, MAIN BASE, STUDY AREA 41, GROUP V STUDY AREAS

SITE SCREENING PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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4.42 STUDY AREA 42, MAIN BASE - BUILDING 2055. The focus of site-screening investigations in Study Area 42 is on the past and current OHM storage practices, as well as the potential impact to environmental media through disposal via two concrete sumps.

4.42.1 Background and Conditions

Building 2055. Building 2055, built in 1943, is located east of Leahy Avenue and south of Iwo Jima Street in the central part of the Main Base (Figure 4-61). The building is a painted, single-story structure with concrete masonry walls and a flat roof. Prior to 1969, Building 2055 consisted only of the eastern half of the current building; in 1969, a 26-foot wide addition was added to the midsection of the building, connecting it to former Building 2056 (the west half of the current building).

In 1945, both buildings served as classrooms. Based on engineering drawings, there were laboratory facilities located in both buildings. Drawings indicate that the lab sinks may have been connected to the concrete sump structures located on the north side of the building. Adjacent to the site are Building 2053, a classroom building, and Building 2051, a weather station.

Presently, Morale, Welfare, and Recreation occupies the eastern portion of the building and Johnson Control occupies the western portion. Johnson Control is contracted by the Navy to maintain the air conditioning systems of the base. There are several maintenance shops, administrative offices, and storage rooms in the building. Also located in the building is a paint shop.

At the time of the EBS (ABB-ES, 1994b), hazardous materials were being stored in flammable storage lockers, 55-gallon drums, and gas-tight canisters (inside). Refer to Figure 4-61 for storage locations. (At the time of the most recent site visit (May 1995), only one of two storage lockers remained.) Hazardous materials stored included waste oils, paints, paint thinners, and refrigerants, such as Freon. Waste oils are stored in 55-gallon drums enclosed in plastic containment bins.

The two sump structures are located on the north side of Building 2055. One sump is circular and measures 3 feet in diameter with 6-inch thick walls. The other sump is square and is 4 feet by 4 feet. According to engineering drawings, both sumps (which are currently full of dirt) are 4 feet deep.

4.42.2 Rationale and Plans for Site Screening The objective for site screening at this study area is to evaluate what, if any, chemical contaminants are associated with current or former OHM storage or disposal activities. Proposed sample locations are shown on Figure 4-61.

Objectives: to evaluate what, if any, chemical contaminants are present onsite resulting from current or past activities

Methods:
- surface soil sampling
- subsurface soil sampling
- temporary monitoring well installation
- groundwater sampling

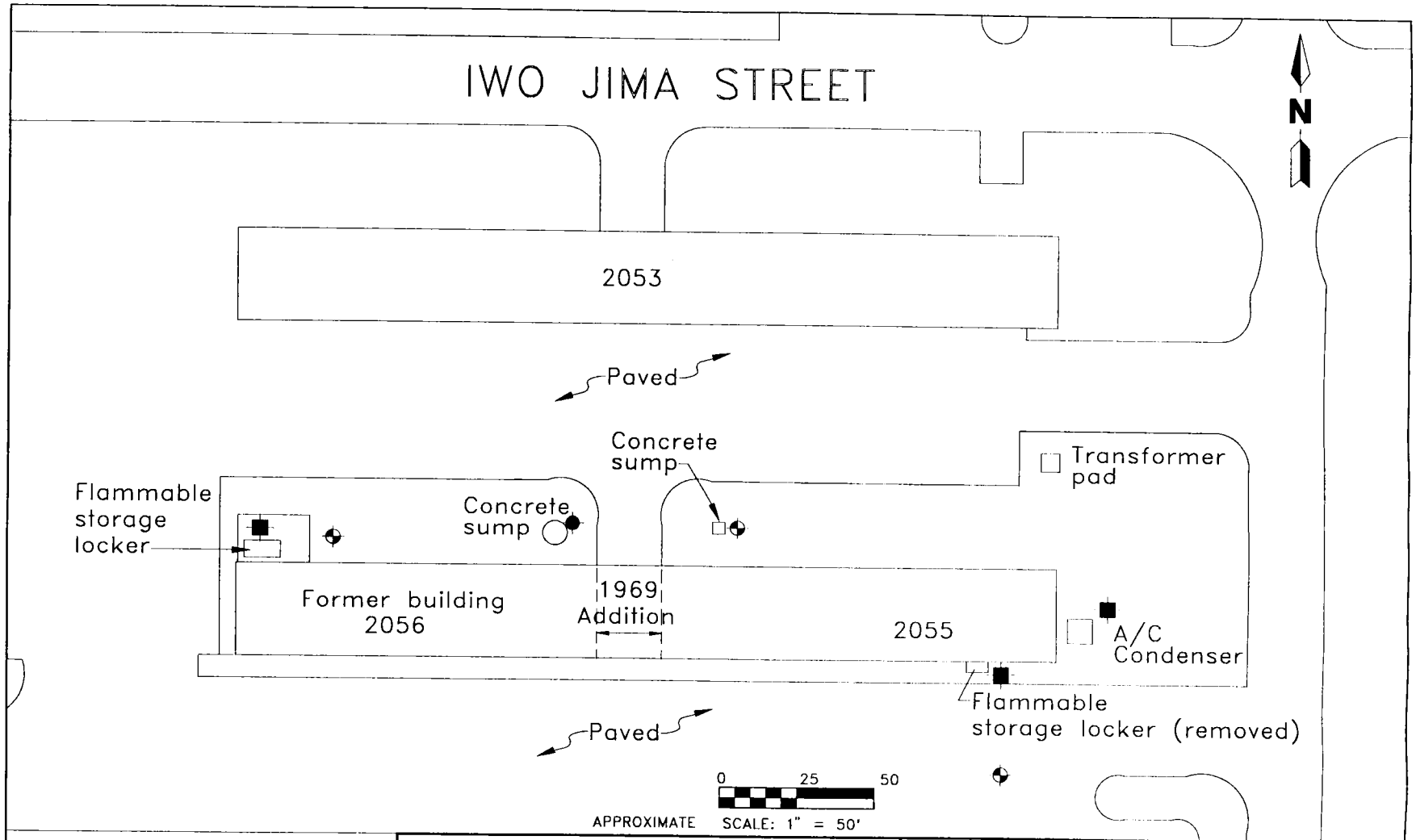

FIGURE 4-61
PROPOSED SURFACE SOIL, SOIL BORING, AND MONITORING WELL LOCATIONS, BUILDING 2055, MORALE, WELFARE, AND RECREATION OFFICE/JOHNSON CONTROLS, MAIN BASE, STUDY AREA 42, GROUP V STUDY AREAS

SITE SCREENING PLAN

NAVAL TRAINING CENTER ORLANDO, FLORIDA

A total of three surface soil samples (0 to 1 foot) will be collected from around the building. One sample will be collected from the flammable storage area located near the northwest corner of the building. One sample will be collected from the grassy area adjacent to the southeast side of the building, in the former location of a flammable storage locker. The third sample will be collected from the ground adjacent to the northeast corner of the concrete pad containing the air conditioning condenser unit (east end of building). There was evidence of dark staining on the concrete. The samples will be submitted for laboratory analysis of TPH, CLP TCL VOCs and SVOCs, and TAL inorganics, in accordance with USEPA Level IV DQOs.

Two soil borings will be completed, one at each sump. A temporary monitoring well will be installed in the eastern boring (adjacent to the square vault) only. The borings will be completed using hand augers. If possible, the borings will be installed through the floor of the sumps (based on engineering drawings, to be installed at 4 feet); if there are physical obstructions to doing so, the borings will be completed directly adjacent to the concrete structures. Two soil samples will be collected from each of these borings; one from the floor of the structure (i.e., 4 to 5 feet, or the equivalent depth interval outside of the structure) and one from the next one foot interval (presumably 5 to 6 feet).

Two additional soil borings will be completed with a temporary monitoring well installed in each. The wells will be installed in the approximate locations shown on Figure 4-61. These locations are based on an assumed east to southeast groundwater flow direction, so that the wells are downgradient of storage locations. Each boring will be sampled continuously, using a 2-foot long split-spoon sampling device below the surface interval. (Alternatively, the borings may be completed entirely by hand using a stainless steel auger if the water table

is very shallow and the borehole remains open.) One soil sample will be submitted for laboratory analysis from each of the borings; the submittal will be from either the sample interval directly above the water table or the interval in which there is visual or FID screening evidence suggesting contamination.

The temporary wells will be allowed to stabilize overnight prior to water level measurement to confirm groundwater flow direction. Temporary casing elevations will be determined using standard level and rod techniques. If groundwater flow is other than east to southeast, the technical lead will be consulted prior to sampling.

One groundwater sample will be collected from each new monitoring well using the low-flow technique. All six soil samples and three groundwater samples will be submitted for laboratory analysis of TPH and full suite CLP TCL and TAL compounds, in accordance with USEPA Level IV DQOs. Because of the storage of refrigerants onsite, the refrigerants most commonly used at NTC, Orlando, (trichloro-fluoromethane [R-11], dichlorodifluoromethane [R-12], and chlorodifluoromethane [R-22] (ABB-ES, 1994a)) will be added to the CLP VOC analyte list for groundwater samples from this study area only. All groundwater samples will also be submitted for laboratory analysis of TSS and filtered CLP TAL inorganics, to aid in evaluation of inorganics results, as groundwater resampling cannot be readily performed due to the use of temporary wells.

5.0 PERSONNEL REQUIREMENTS

The SSP at NTC, Orlando will be completed by a team of ABB-ES personnel with support services provided by several subcontractors.

The staffing requirements for the SSP including the specific duties, functions, and responsibilities for key personnel are detailed in the following paragraphs. Assigned personnel have been listed; staffing of other key roles is ongoing.

Task Order Manager (TOM). The TOM, Mr. Jim Manning, is responsible for: ensuring the appropriateness and adequacy of the technical or engineering services provided for a specific task; developing the technical approach and level of effort required to address each element of a task; supervising day-to-day conduct of the work, including integrating the efforts of all supporting disciplines and subcontractors for all tasks; overseeing the preparation of all reports and plans; providing for QC and quality review during the performance of the work; ensuring technical integrity, clarity, and usefulness of task work products; forming a task group with expertise in disciplines appropriate to accomplish the work; reviewing and approving sampling tests and QA plans, which include monitoring site locations, analytical methods to be used, and hydrologic and geophysical techniques; developing and monitoring task schedules; supervising task fiscal requirements (e.g., funds management for labor and materials) and reviewing and approving all invoicing actions; and providing day-to-day communication, both within the ABB-ES team and with the BCT and others, on all task matters including task status reporting.

Quality Assurance Manager. ABB-ES has established a corporate QA function to assure that appropriate protocols are followed and that QC plans are in place and implemented for each element of the task. Mr. Thomas Campbell is ABB-ES' QA Manager. He reports directly to the Program Manager but is responsible to the TOM in matters related to management of the QA/QC work element. The QA Manager is independent of the TOM relative to corrective action. The QA Manager has authority to stop work that is not in compliance with the POP, provided he has the concurrence of the TOM, the Program Manager, and the Contracting Manager.

Health and Safety Supervisor. Ms. Cindy Sundquist, Certified Industrial Hygienist (CIH), is ABB-ES' corporate health and safety supervisor. She has stop-work authority to prevent or mitigate any unacceptable health and safety risks to project personnel, the general public, or the environment. Responsibilities of this position include: ensuring that the project team and, in particular, field personnel, comply with the ABB-ES HASP; helping the TOM and Program Manager develop the site-specific HASP; making certain that the HASP is distributed to appropriate personnel; and informing the TOM in the specified manner when any health- or safety-related incident occurs.

Field Operations Leader (FOL). The FOL, Mr. Gerry Girardot, is responsible for conducting the field program in accordance with procedures outlined in the SSP and the POP. Responsibilities also include directing subcontractor activities and coordinating with onsite visitors and representatives.

6.0 PROJECT SCHEDULE

The general overall project schedule for site screening is presented as follows.

6.1 PROJECT IMPLEMENTATION SCHEDULE. Onsite activities will be initiated following the Notice to Proceed and are expected to require 2 months to complete. Laboratory analyses of samples collected during field operations will be conducted concurrently with the ongoing field activities, with data deliverables from the last samples collected due 30 days after the completion of the field program. Data validation activities will be initiated as needed. In general, one set of samples from each sample delivery group will be validated if a PRE is necessary to evaluate a study area. Full validation will likely only occur if a study area is recommended for an RI/FS. Data validation will be completed within 30 days after submittal of the data packages to the validation subcontractor. The draft Site Screening Report for each group of study areas will be delivered to the BCT for review 10 weeks after completion of the data validation. The Site Screening Report for each group will be issued as final 4 weeks after receipt of BCT comments.

6.2 FIELD ACTIVITIES. Field activities as described in Chapter 4.0 of this SSP will be initiated within 1 month after Notice to Proceed. The field program is estimated to require 2 months to complete. This schedule assumes that some tasks will be conducted concurrently at separate study areas and that there will be no significant delays due to weather, site access, or other unforeseen issues.

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APPENDIX A

STUDY AREA SPECIFIC HEALTH AND SAFETY PLAN ADDENDA

PREFACE

The following pages constitute the Health and Safety Plan (HASP) addendum for Naval Training Center (NTC), Orlando Project Operations Plan for Site Investigations and Remedial Investigations (ABB-ES, 1994a). The addendum must be used in conjunction with the existing generic HASP for NTC, Orlando. The pages in this addendum should be inserted, where indicated, in the generic HASP. The generic HASP, with these pages correctly inserted, completes the update of the NTC, Orlando HASP.

2.3 SCOPE OF WORK (WORKPLAN). The field investigation at NTC, Orlando, will consist of surface geophysical investigations; soil borings; monitoring well installations, development, and purging; surface soil, sediment, surface water, and groundwater sampling; and aquifer testing.

The following lists investigative objectives for each of the study areas in the project operations plan and the methods proposed to achieve them.

GROUP I (STUDY AREAS 1 THROUGH 10)

Study Area 1:

Building 3126:

Objective: to determine what chemical contaminants are associated with the stained area

Methods:
- surface soil sampling
- subsurface soil sampling

Naval Hospital Landfill (UNF-12):

Objective: to confirm the presence and location of the landfill

Methods:
- aerial photograph evaluation
- geophysical surveys (magnetometer, ground-penetrating radar [GPR], and terrain conductivity [TC])

Objective: to determine what chemical contaminants may be associated with the landfill

Methods:
- passive soil gas survey
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Study Area 2:

Facility 6001:

Objective: to determine the exact location and orientation of the septic tank, leach field, and associated piping

Methods:
- review sanitary sewer system blueprints
- use tile probe to confirm location of tank

Objective: to determine the presence of any chemical contaminants in the septic tank

Methods:
- wastewater sampling
- sludge sampling

Objective: to determine if chemical contaminants are present in the soil and groundwater adjacent to the septic tank and leach field

Methods:
- piezometer installation
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Herndon Annex

Objective: to determine if chlorinated solvents are present in the vicinity of the aircraft parking areas and the former Air Force structures

Methods:
- TerraProbe℠ subsurface soil sampling
- TerraProbe℠ groundwater sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Study Area 3:

Hazardous Materials Storage Area:

Objective: to confirm the locations of the Matador missile test cells and support activities

Methods:
- aerial photograph evaluation
- background information review

Objective: to determine what chemical contaminants are associated with the Hazardous Materials Storage Area

Methods:
- passive soil gas survey
- surface soil sampling
- subsurface soil sampling
- soil borings
- monitoring well installation
- groundwater sampling

Study Area 4:

Rusk Memorial Chapel and Annex:

Objective: to determine what specific remedial activities were completed by the Department of Public Works following the transformer leak in the mid-1980's

Method: • background information review

Objective: to evaluate the effectiveness of the previous remedial activities and to characterize the potential residual chemical contamination

Methods:
- subsurface soil sampling
- field screening analysis (polychlorinated biphenyls [PCBs])

Study Area 5:

Building UNF-13:

Objective: to confirm the presence and location of former buildings and septic system

Methods:
- aerial photograph evaluation
- geophysical surveys (magnetometer, GPR, and TC)

Objective: to determine what chemical contaminants may be associated with the motorboat facility and septic system

Methods:
- passive soil gas survey
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Study Area 6:

Lake Baldwin:

Objective: to determine the presence of metallic debris within the lake (if necessary)

Method:
- marine magnetometer survey

Objective: to identify chemical contaminants that may have been introduced to the lake from various sources

Methods:
- surface water sampling
- sediment sampling

Study Area 7:

Lake Susannah:

Objective: to determine the presence of metallic debris within the lake

Method:
- marine magnetometer survey

Objective: to identify chemical contaminants that may have been introduced to the lake from various sources

Methods:
- surface water sampling
- sediment sampling

Study Area 8:

Building 2134:

Objective: to identify chemical contaminants that may have resulted from spills or disposal of residues from oils or hazardous materials used in golf course maintenance activities

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Former Wastewater Treatment Plant (WWTP) Lagoons (IAS Site 2):

Objective: to confirm the locations of the former WWTP lagoons

Methods:
- aerial photograph survey
- geophysical surveys (GPR and TC)

Objective: to identify chemical and radiological contaminants that may be associated with the former WWTP lagoons

Methods:
- passive soil gas survey
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Study Area 9:

Former Pesticide and Herbicide Building (UNF-14):

Objective: to confirm the location of the former building (specifically, the sump structure) and, possibly, the presence of a groundwater contaminant plume

Methods:
- aerial photograph evaluation
- geophysical surveys (magnetometer, GPR, and TC)

Objective: to determine if chemical contaminants may be present in the study area

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Study Area 10:

Yard Waste Disposal Area:

Objective: to delineate the extent of the disposal area and, possibly, the presence of a groundwater contaminant plume

Methods:
- aerial photograph evaluation
- geophysical surveys (magnetometer, GPR, and TC)

Objective: to determine if chemical contaminants may be present in the study area

Methods:
- passive soil gas survey
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

GROUP II (STUDY AREAS 11 THROUGH 14)

Study Area 11:

Building 148:

Objective: to evaluate the potential impact to surface and subsurface soil associated with the drum area identified in the EBS (ABB-ES, 1994b) in the vicinity of Building 148

Method:
- surface soil sampling
- subsurface soil sampling

Study Area 12:

Area "C", Buildings 1063 and 1069:

Objective: to evaluate if current salvage operations may have contributed to contamination of environmental media and to focus intrusive investigation activities

Methods:
- site walkover

Objective: to evaluate if past salvage operations and other area uses have resulted in contamination of environmental media and to focus intrusive investigation activities

Methods:
- historical records review
- soil boring and monitoring well installation
- groundwater sampling

Objective: to determine the status of the abandoned (dry) well

Method:
- historical documents review
- groundwater sampling or sediment and sludge sampling
- determine appropriate well abandonment procedure

Objective: to evaluate the potential impact to environmental media from standard use and maintenance of the truck scales

Methods:
- shallow soil boring

Study Area 13:

Area "C", Buildings 1100 and 1101:

Objective: to evaluate subsurface debris disposal and to aid in clearing utilities for the subsurface investigations

Methods:
- review aerial photographs and documents available for this area
- geophysical surveys (GPR and magnetometer)

Objective: to evaluate if current and/or past waste handling practices have impacted environmental media

Method:
- passive soil gas survey
- shallow soil boring and soil sampling survey
- soil boring and monitoring well installation
- groundwater sampling
- sediment sampling

Objective: to evaluate the potential impact to environmental media from sludge in wastewater drains and trenches inside Building 1100.

Methods:
- sludge sampling

Study Area 14:

Area "C," Building 1102:

Objective: to evaluate subsurface scrap disposal and to aid in clearing utilities for the subsurface investigations

Methods:
- review aerial photographs and documents available for this area
- geophysical surveys (GPR and magnetometer)

Objective: to evaluate if current and/or past salvage and waste handling practices have impacted environmental media and if remediation of the perchloroethylene spill was adequate

Method:
- passive soil gas survey
- shallow soil boring and soil sampling
- soil boring and monitoring well installation
- groundwater sampling

Study Area 15:

Area "C", Building 1053:

Although this building was initially included on the list of sites for screening, subsequent evaluation indicates that the area of environmental concern at this location is related to confirmation of remedial actions at a diesel spill site. Consequently, the study area has been transferred for evaluation under the Tank Management Plan (ABB-ES, 1994d.)

Study Area 16:

Motor Pool Compound: Buildings 7168, 7169, 7170, 7171, 7172, and Former Building 7175:

Objective: to determine what chemical contaminants may be associated with current and former activities in this study area, and which environmental media may be impacted

Method:
- passive soil gas survey
- surface soil sampling
- surface water AND sediment sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Objective: to determine the presence of contamination associated with battery acid waste that may have been released from the battery storage area

Methods:
- subsurface soil sampling
- groundwater sampling

Objective: to determine the nature of stained soil beneath a pole-mounted electrical transformer

Methods:
- surface soil sampling

Study Area 17:

Defense Property Disposal Office, Training Material Storage (Building 7178), Maintenance Office (Building 7190), Inert Storage Warehouse (Building 7191), and General Warehouse (7193):

Building 7178

Objective: to confirm the possible presence of an abandoned UST near the building

Methods:
- geophysical survey (GPR only)

Objective: to determine the presence of chemical contaminants potentially released during former site activities (surplus equipment and materials storage)

Methods:
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Building 7190

Objective: to confirm the removal of an abandoned UST near the building

Methods:
- geophysical survey (GPR only)

Objective: to determine the presence of chemical contaminants potentially released during current and former site activities (vehicle maintenance)

Methods:
- subsurface soil sampling

Motor Pool and Contractor Storage Area

Objective: assess any contamination resulting from past uses of the site

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Vehicle Wash Rack

Objective: to assess potential contamination which may have been introduced to the wash rack

Methods:
- sediment and grit sampling

Objective: to determine the discharge point(s) for drains in the vehicle wash rack bays and, if possible, determine what contaminants, if any, may have been discharged to the environment from the drains

Methods:
- engineering records review
- smoke or dye tracer tests
- sediment and surface soil sampling

Building 7191

Objective: to confirm the removal of an abandoned UST near the building

Methods:
- geophysical survey (GPR only)

Objective: to determine if chemical contaminants are present in the soil and groundwater at and around Building 7191

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Building 7193

Objective: to determine the presence of any abandoned USTs within the study area

Methods:
- geophysical surveys (GPR, magnetometer, TC)

Objective: evaluate the possible presence of contamination release of waste materials stored onsite or leaked from potential USTs located onsite

Methods:
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Objective: to determine if past or current site activities have impacted surface water and sediment at the study area

Methods:
- sediment sampling
- surface water sampling

Study Area 18:

Housing Office (Building 7182):

Objective: to determine what chemical contaminants may be associated with present and former activities at the Housing Office

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Study Area 19:

Auto Hobby Shop (Building 7184):

Objective: to determine possible presence of landfilling in the wooded area.

Methods:
- geophysical surveys (magnetometer, GPR, TC)

Objective: to determine what chemical contaminants, if any, are associated with past landfilling activity, and current or past activities at the automotive hobby shop

Methods:
- surface soil sampling
- subsurface soil samples
- monitoring well installation
- groundwater samples

Study Area 20:

Warehouse Storage (Building 7187):

Objective: determine what chemical contaminants may have been released during current or former activities at the study area

Methods:
- surface soil sampling
- subsurface soil sampling

- monitoring well installation
- groundwater sampling

Study Area 21:

Maintenance Shop (Building 7203):

Objective: to determine the extent of potential contamination from past and current use

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Study Area 22:

Former Golf Course (UNF-1):

Objective: to confirm reports of landfilling and disposal of potential contaminants in and around Lake Stanley

Methods:
- review records and previous geophysical survey results
- additional geophysical surveys

Objective: to determine the extent and type of contaminants in Lake Stanley

Methods:
- surface water sampling
- sediment sampling

Objective: to determine the type and extent of contaminants that may be associated with past landfilling activities

Methods:
- passive soil gas survey
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Study Area 23:

Former Officer's Swimming Pool Complex (UNF-2):

Objective: to determine what chemical contaminants may be present in the mounded area as the result of former site use

Methods:
- passive soil gas survey
- surface soil sampling

Objective: to delineate the extent of landfilling of demolition debris and to confirm soil gas results

Methods:
- geophysical survey (GPR only)
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Study Area 24:

Northwest Swamp (UNF-4), Southeast Swamp (UNF-5):

Objective: to determine what types and how extensive disposal activities may have been on the site

Methods:
- review existing records
- geophysics (magnetometer, TC, GPR)

Objective: determine what contaminants, if any, are associated with anomalies found during geophysical surveys

Methods:
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Study Area 25:

Former Domestic Wastewater Treatment Plant:

Objective: determine location of ponds and drying beds

Method:
- geophysical survey (GPR only)

Objective: determine what contaminants, if any, are associated with past operation of the DWTP

Methods:
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Study Area 26:

Family Camp (Former Airstrip):

Objective: to determine if any chemical contaminants are present from current or past use of the study area

Method:
- passive soil gas survey

Objective: confirm the presence of chemical contaminants in the subsurface soil and groundwater

Methods:
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

GROUP IV (STUDY AREAS 27 THROUGH 34)

STUDY AREA 27:

Main Base, Buildings 111, 2073, and 2010:

Objective: to evaluate what chemicals may be present in environmental media due to past disposal and storage of OHM

Method:
- surface soil sampling
- subsurface soil sampling
- temporary monitoring well installation
- groundwater sampling

Objectives: to assess the impact, if any, of cleaning solution and paint disposal on the retention pond

Method:
- sediment and/or soil sampling

STUDY AREA 28:

Main Base, Building 114:

Objectives: to evaluate what, if any, chemical contamination has resulted from past or current site activities

Methods:
- temporary monitoring well installation
- groundwater sampling

STUDY AREA 29:

Main Base, Building 127:

Objectives: to evaluate what, if any, chemical contamination has resulted from past or current site activities

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

STUDY AREA 30:

Main Base, Buildings 129, 131, and 2262:

Objective: to evaluate what chemical contaminants may have been released during past and current uses of the site and identify target areas for additional sampling and analysis

Methods:
- soil gas survey

Objective: to evaluate what chemical contaminants may have been released during past and current uses of the site and evaluate possible anomalies identified by soil gas or geophysical survey results

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

Objective: to evaluate the potential for buried debris in the former disturbed area located west of Building 2262

Method:
- geophysical surveys (GPR, magnetometer, and time domain metal detector)

STUDY AREA 31:

Main Base, Building 354:

No site-screening activities will be conducted in this study area.

STUDY AREA 32:

Main Base, Buildings 358 and 359:

Objective: to evaluate if former site use and potential waste disposal practices have impacted the site

Methods:
- soil gas survey
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

STUDY AREA 33:

Main Base, Buildings 2001, 2002, 2003, and 2004:

Objective: to evaluate what, if any, contaminants may have impacted groundwater at Study Area 33

Method:
- subsurface soil sampling
- temporary monitoring well installation
- groundwater sampling

Main Base, Building 2001:

Objective: to evaluate what, if any, contamination is associated with the stained area

Method:
- surface soil sampling

Main Base, Building 2002:

Objective: to evaluate what, if any, contamination is associated with the area near the former flammable storage locker

Method:
- surface soil sampling

Main Base, Building 2004:

Objective: to evaluate what, if any, contamination is associated with the stained areas near the boiler house and on the east side of the building and the open drainage swale

Method:
- surface soil sampling

STUDY AREA 34:

Main Base, Building 2024:

No site-screening activities will be conducted in this study area.

GROUP V (STUDY AREAS 35 THROUGH 42)

STUDY AREA 35:

Main Base, Buildings 2078 and 2079:

Objective: to evaluate what chemical contaminants may have been released during past and current uses of the site and identify target areas for additional sampling and analysis

Methods:
- soil gas survey

Objective: to evaluate what chemical contaminants may have been released during past and current uses of the site and evaluate possible anomalies identified by soil gas or geophysical survey results

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

NOTE: Hydraulic lift trenches or pits are to be considered confined spaces. Remote sampling measures must be instituted to eliminate need for confined space entry. Appropriate monitoring and precautions should be employed.

STUDY AREA 36:

Main Base, Buildings 2121 and 2122:

Objective: to evaluate what chemical contaminants may have been released during past and current uses of the site and identify target areas for additional sampling and analysis

Methods:
- soil gas survey

Objective: to evaluate what chemical contaminants may have been released during past and current uses of the site and evaluate possible anomalies identified by soil gas or geophysical survey results

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

STUDY AREA 37:

Main Base, Building 2414:

Objectives: to evaluate what, if any, chemical contamination has resulted from past site activities

Methods:
- subsurface soil sampling
- temporary monitoring well installation
- groundwater sampling

STUDY AREA 38:

Main Base, Building 4001:

Objectives: to evaluate what, if any, chemical contamination has resulted from past or current site activities

Methods:
- subsurface soil sampling
- temporary monitoring well installation
- groundwater sampling

STUDY AREA 39:

Main Base, Buildings 4060, 4067, UNF-10, and 15109:

Objective: to evaluate what chemical contaminants may have been released during past use of the site (landfilling) and identify target areas for additional sampling and analysis

Methods:
- soil gas survey
- UXO clearance and escort

Objective: to evaluate the nature and extent of landfilled material in this area

Method: • geophysical surveys (GPR, magnetometer, and time domain metal detector)

Objective: to evaluate what chemical contaminants may have been released during past and current uses of the site and evaluate possible anomalies identified by soil gas or geophysical survey results

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

NOTE: Due to allegations of small arms and munitions disposal in the former landfill area, all intrusive investigation teams (sampling) must be accompanied by a UXO technician. All sampling locations must be cleared prior to initiation. Safety procedures appropriate to UXO sites will be employed.

STUDY AREA 40:

Main Base, Buildings 21022, 21023, and UNF-8:

Objective: to evaluate what chemical contaminants may have been released during past use of the site (landfilling) and identify target areas for additional sampling and analysis

Methods:
- soil gas survey
- UXO clearance and escort

Objective: to evaluate the nature and extent of landfilled material in this area

Method: • geophysical surveys (GPR, magnetometer, and time domain metal detector)

Objective: to evaluate what chemical contaminants may have been released during past and current uses of the site and evaluate possible anomalies identified by the soil gas survey.

Methods:
- surface soil sampling
- subsurface soil sampling
- monitoring well installation
- groundwater sampling

NOTE: Due to allegations of small arms and munitions disposal in the former landfill area, all intrusive investigation teams (sampling) must be accompanied by a UXO technician. All sampling locations must be cleared prior to initiation. Safety procedures appropriate to UXO sites will be employed.

STUDY AREA 41:

Main Base, UNF-6:

Objective: to evaluate what chemical contaminants, if any, may be present in environmental media from the apparent release of fluid from a transformer unit

Methods:
- surface soil sampling
- concrete wipe sampling

STUDY AREA 42:

Main Base, Building 2055:

Objective: to evaluate what chemical contaminants may have been released during past and current uses of the site

Methods:
- surface soil sampling
- subsurface soil sampling
- temporary monitoring well installation
- groundwater sampling

APPENDIX B

SITE SCREENING STUDY AREA LOCATIONS

STUDY AREA 41:

Main Base, UNF-6:

Objective: to evaluate what chemical contaminants, if any, may be present in environmental media from the apparent release of fluid from a transformer unit

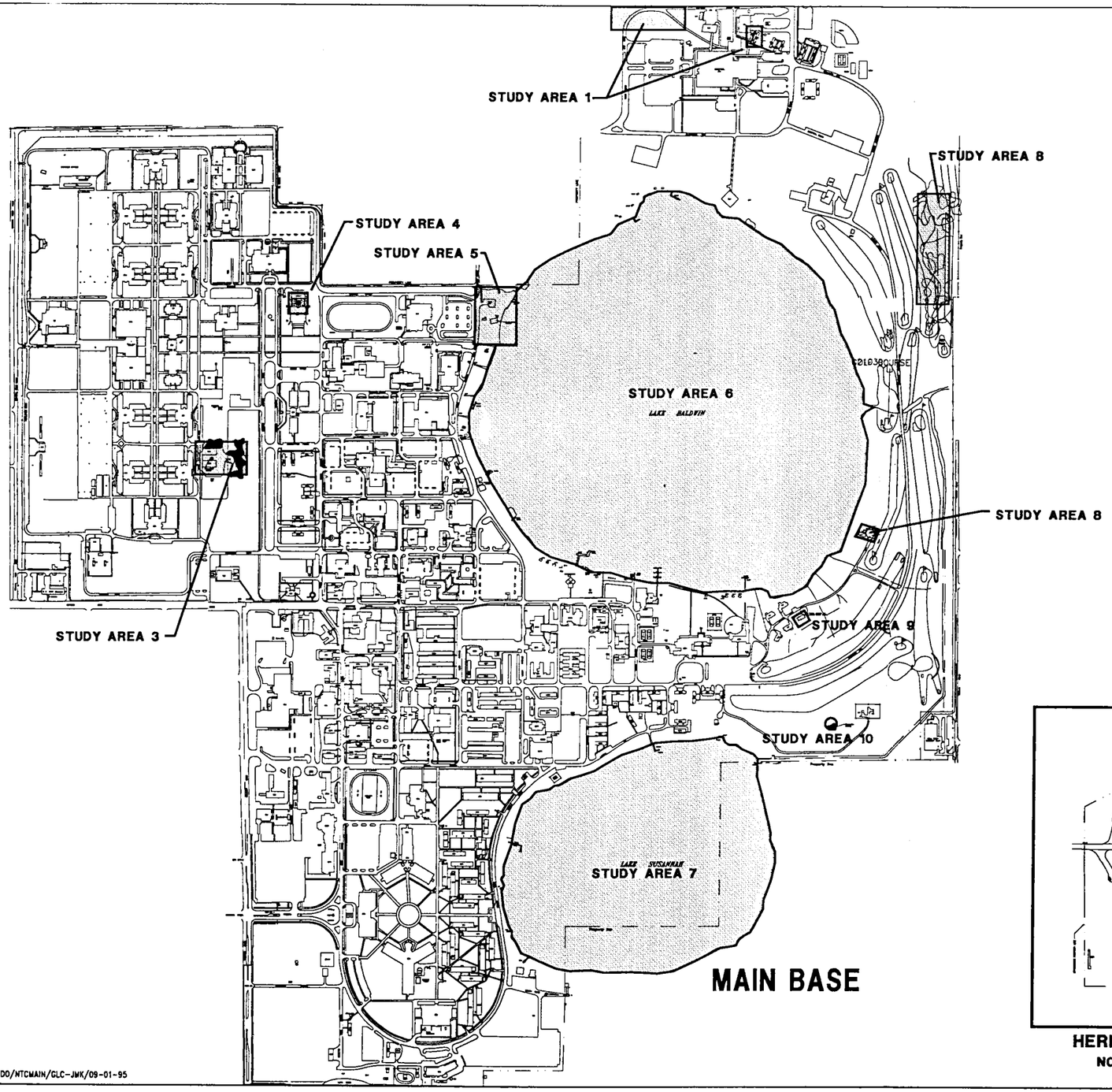
Methods:
- surface soil sampling
- concrete wipe sampling

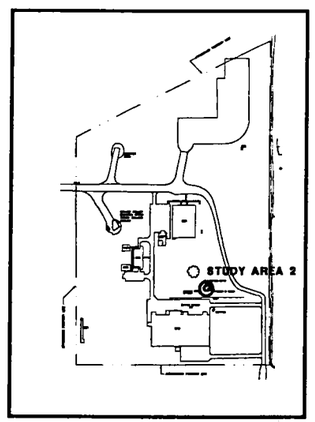
STUDY AREA 42:

Main Base, Building 2055:

Objective: to evaluate what chemical contaminants may have been released during past and current uses of the site

Methods:
- surface soil sampling
- subsurface soil sampling
- temporary monitoring well installation
- groundwater sampling





HERNDON ANNEX
NOT TO SCALE

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0 500 1000
SCALE: 1" = 1000'

SOURCE: ABB-ES 1994b.

FIGURE B-1
LOCATIONS OF GROUP I STUDY AREAS

SITE SCREENING PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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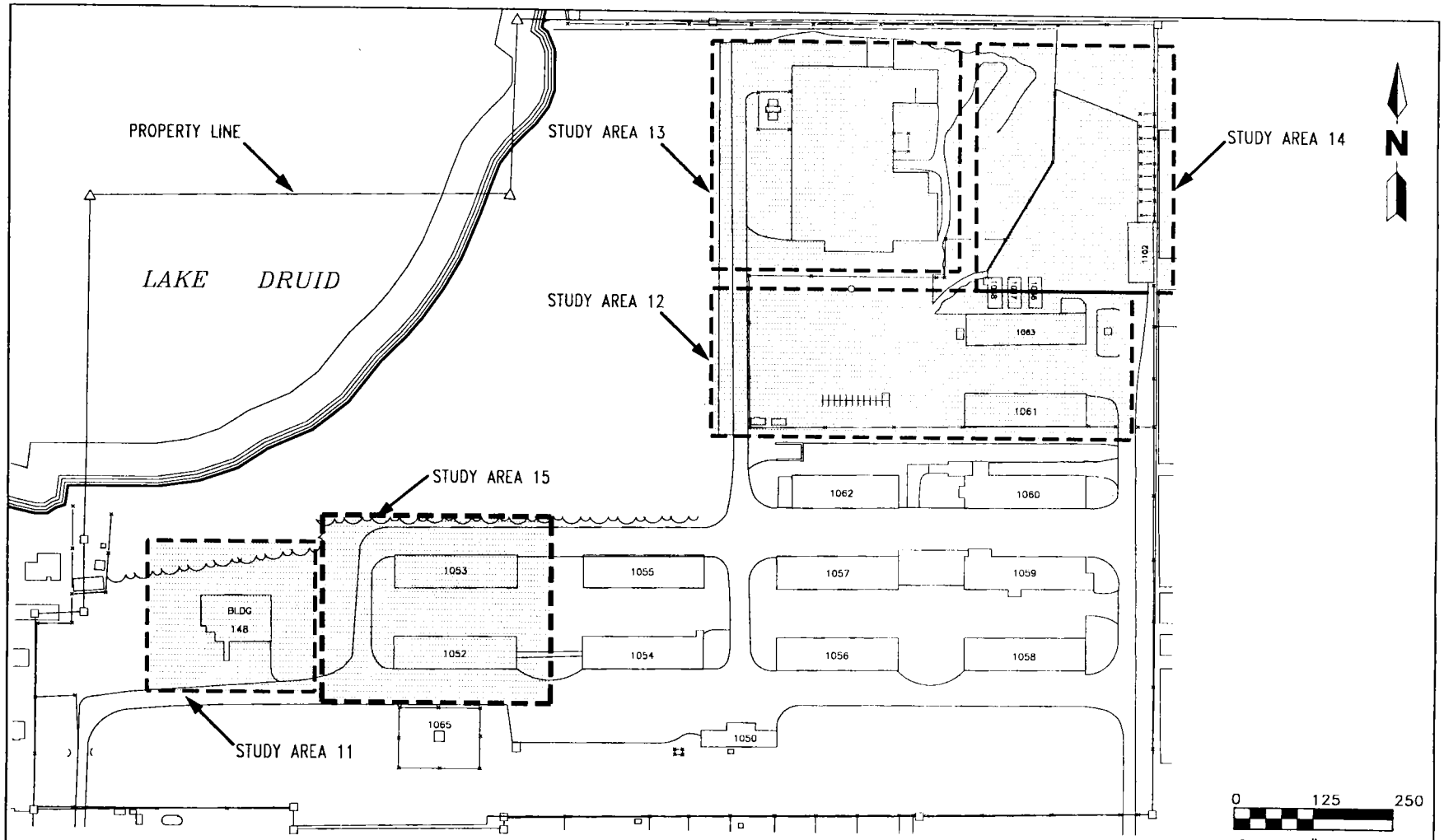

FIGURE B-2
LOCATIONS OF GROUP II STUDY AREAS

SITE SCREENING PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

ORLANDO\AREA-C\GLC--JMK\09-01-95

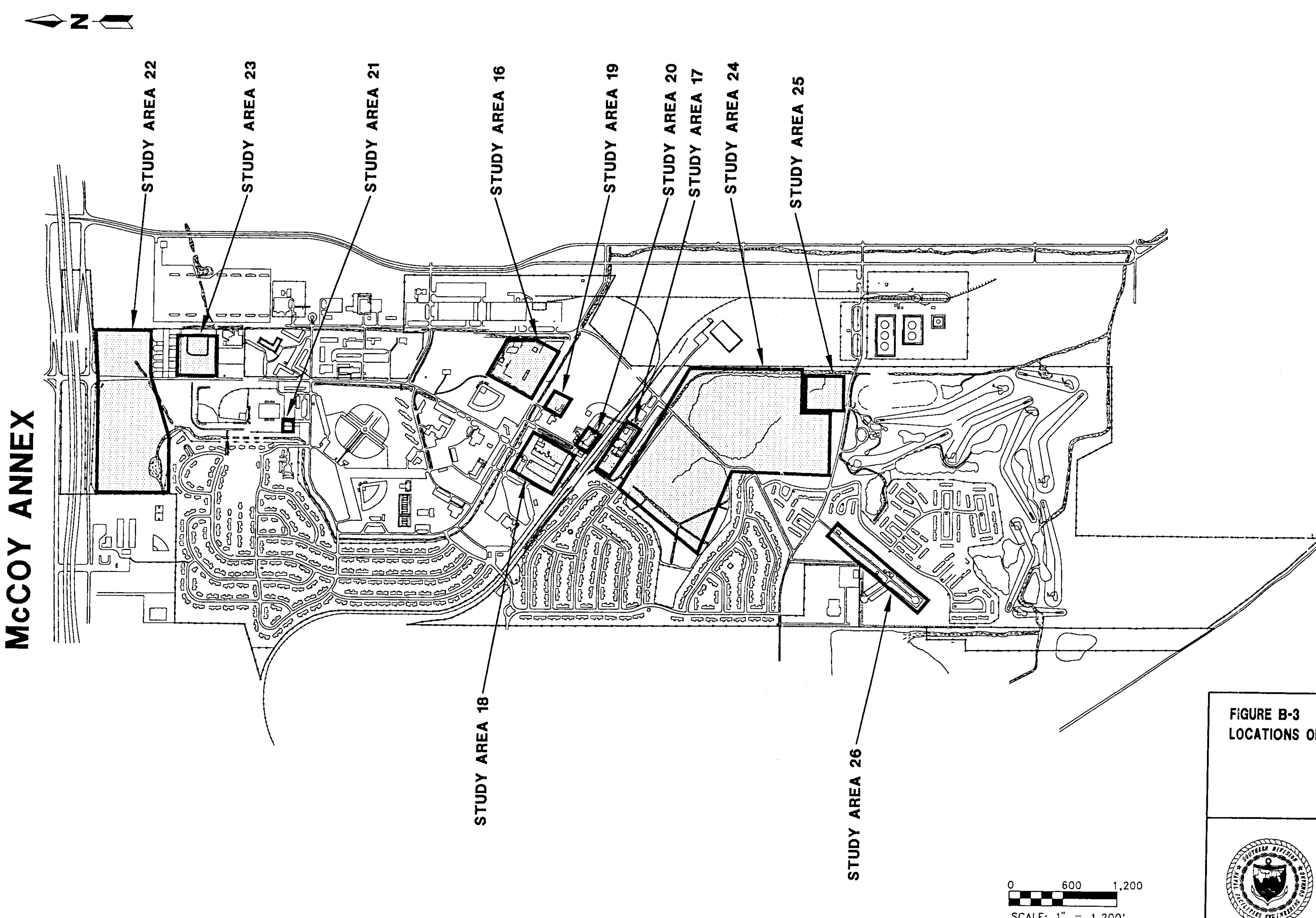

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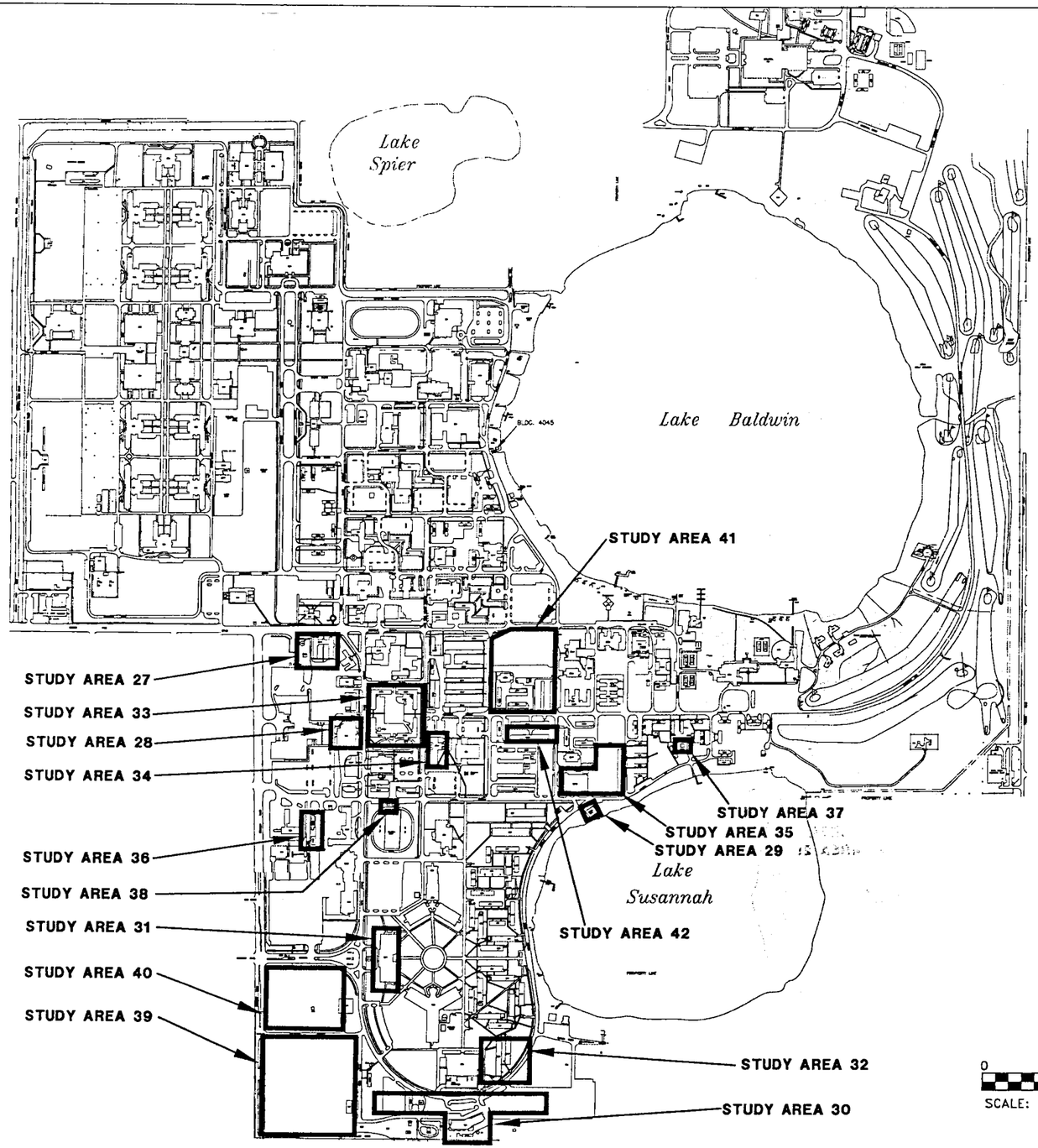
FIGURE B-3
LOCATIONS OF GROUP III STUDY AREAS

SITE SCREENING PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA



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LIBRARY\ORLANDO\ORLBASE\KGP-SB\05-30-95

FIGURE B-4
LOCATIONS OF GROUPS IV AND V STUDY AREAS, MAIN BASE

SITE SCREENING PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

APPENDIX C

DEEP VOLATILE ORGANIC AROMATIC (VOA) PLUME CHARACTERIZATION STUDY AND ADDITIONAL SURFACE SOIL SAMPLING AT HERNDON ANNEX

ADDENDUM TO WORKPLAN FOR GROUP I STUDY AREAS
DEEP VOLATILE ORGANIC AROMATIC PLUME CHARACTERIZATION STUDY
AND ADDITIONAL SURFACE SOIL SAMPLING
HERNDON ANNEX, NAVAL TRAINING CENTER
ORLANDO, FLORIDA

INTRODUCTION.

Site Description Herndon Annex is a 54-acre, noncontiguous parcel that is part of the Naval Training Center (NTC) in Orlando, Florida. Herndon Annex is located approximately 1.5 miles south of the Main Base, adjacent to the Orlando Executive Airport. The property is enclosed by a chain-link fence, and includes seven Navy facilities: four buildings that house research laboratories and office space for the Naval Training Systems Command (Bldgs. 606, 608, 610, and 612), a uniform supply warehouse (Bldg. 602), and an abandoned shooting range (Bldg. 601). Building 607 is an auxiliary heating and cooling plant to Building 606. Because the property was originally part of Orlando Municipal Airport No. 1 that was later taken over by the Army Air Corps/Air Force, there are several circular concrete parking aprons adjacent to a taxiway for parking and performing maintenance on aircraft. The Orange County Sheriff's Department leases an area that includes one of the parking aprons, upon which is set up a doublewide trailer and a partially covered service area for the Collision Avoidance Training School. A sewage pump station (Bldg. 605) and an abandoned septic tank and leach field (Facility 6001) are also on the property.

Background Herndon Annex is currently being assessed in fulfillment of the Phase 2 closure requirements under the Base Realignment and Closure (BRAC) program. Two potential sources of contamination were initially investigated at Herndon Annex: the septic tank and leach field (Facility 6001), and the aircraft parking aprons. Six shallow monitoring wells were installed on the property, five beside parking aprons and one in the leach field. Figure 1 shows the locations of all the monitoring wells onsite. Based on soil and groundwater laboratory analytical data, these areas do not appear to be an environmental concern.

Site reconnaissance and geophysical survey methods were employed at several areas within the property where potential landfilling during Air Force ownership was identified in aerial photographs (dated from the 1940s to 1962). The existence of a Herndon Annex landfill was also verified by a record search that uncovered a discussion of the landfill in the 1964 OAFB Master Plan. Scattered areas of distressed vegetation and exposures of buried refuse were observed in the southwest, south-central, and northwest areas of the property during the reconnaissance. Observed refuse included rolls of film, china, tableware, deteriorated drum parts, and medical waste. Three subtle north-south-trending ridges were also observed in the northwest survey area, indicative of the settlement of filled trenches. The geophysical surveys included magnetometer and ground penetrating radar (GPR) in the areas indicated on Figure 1. Chaotic reflections consistent with buried debris were observed in the GPR data from all three areas. Magnetic anomalies that could not be explained by known subsurface structures were observed in both the southwest and south-central survey areas.

Based on these data, the BCT agreed to have five additional monitoring wells (three deep and two shallow) installed in positions downgradient of the landfilled

areas. Using one of the previously installed monitoring wells (OLD-02-02), the new wells were positioned into three pairs of one shallow and one deep (see Figure 1). The groundwater flow direction of the shallow aquifer was estimated to be to the northeast, toward Lake Barton. Figure 2 is a piezometric surface map for March 20, 1995. The deep wells are constructed with 5 feet of screen that are set on top of the Hawthorn Formation (an aquiclude), which is 57 to 66 feet below land surface (bls). During development, the organic vapor concentration detected in the headspace of a 55-gallon drum containing the purge water from deep monitoring well OLD-02-08 was 2,485 parts per million (ppm) by organic vapor analyzer and flame ionization detector (OVA/FID). Preliminary laboratory analytical results of groundwater samples collected from these paired wells indicated that benzene contamination exists near the bottom of the aquifer at deep monitoring wells OLD-02-08 and OLD-02-10 (see Figure 1). The respective benzene concentrations were 47 and 40 micrograms per liter ($\mu g/\ell$). The (unvalidated) Contract Laboratory Program (CLP) analytical results for these two wells were received on April 14, 1995. The results indicate that sample number 02G00801 (from monitoring well OLD-02-08) had a benzene concentration of 21 $\mu g/\ell$ (with a "D" qualifier, indicating the sample was diluted prior to analysis) and sample number 02G01001 (from monitoring well OLD-02-10) had a benzene concentration of 32 $\mu g/\ell$ ("D" qualifier). These results compare favorably with the initial screening values.

Benzene was not detected in the groundwater samples from the paired shallow wells. Because benzene is a very light volatile organic aromatic (VOA), one explanation for its presence at this depth so close to the landfill is that it has migrated onsite from a source(s) some distance upgradient to the south or southwest. One possible source may be the (former) firefighting training pits located approximately 900 feet to the southeast of the property that were used by the OAFB Fire Department, as reported by Mr. Lawrence Dunn, a fire chief stationed at Pinecastle AFB and Herndon Annex during the late 1940s and early 1950s.

This workplan outlines the tasks and methodology proposed to collect screening data to assess the vertical and horizontal extent of the VOA plume within the property boundaries. The workplan also addresses concerns regarding potential exposures to contaminants in landfilled materials known or suspected to exist in several areas based on surface observations and geophysical surveys. Surface soil sampling will be completed in known or suspected landfill areas to assess surface soil contamination.

SCOPE OF SERVICES

Objectives This workplan for additional site screening at Herndon Annex proposes a strategy to ascertain the location of the source(s) of the deep VOA plume detected onsite. Adequate stratigraphic and groundwater chemical data will be collected to assess its vertical and horizontal extent within the property boundaries, and also the hydrogeological characteristics of the shallow aquifer, which will indicate whether the source is onsite or offsite. If the data indicate that the source is off Navy property, then Herndon Annex will be eligible for Finding of Suitability to Transfer and/or Finding of Suitability to Lease (FOST/FOSL). If the data indicate that the source is onsite, then further investigations may be necessary under the Remedial Investigation and Feasibility Study (RI/FS).

The workplan also provides for surface soil sampling and analysis in three areas where landfill activity is known or suspected. The purpose of the sampling and analysis is to assess the potential for exposure to contaminants of future tenants of the Herndon Annex property.

Methodology

Direct Push Technology. The following methods are proposed to implement these objectives. ABB-ES proposes to use direct push technology (DPT) to perform cone penetrometer testing (CPT) and discrete-depth groundwater sampling. A DPT rig is a box truck equipped with a hydraulic press for pushing instruments into the subsurface. Onboard computer systems are linked to a cone penetrometer attached to the tip of the leading push rod, and real-time soil responses are recorded on logs as a function of depth. Tip resistance, pore pressure, and sleeve friction values, and ratios thereof, are used to classify the soil type. The CPT logs show the depths at which any of these changes occur. The CPT logs will be correlated with the soil boring logs of the continuously sampled existing deep monitoring wells. The CPT data from all the probe locations can be used to produce a fence diagram which shows the stratigraphy of the surficial aquifer in two dimensions. The CPT data will also be used to select discrete depth intervals at permeable layers to sample the groundwater for analysis, which will delineate the plume vertically. To collect groundwater samples, a discrete sampler is attached to the tip of the leading push rod, which has a shielded screened section that becomes exposed to the groundwater when the push rods are retracted about 2 feet. The groundwater passes through the screen and then enters into either a stainless steel chamber that is retrieved and decanted or the center of the push rods themselves and is collected with a small diameter bailer. It is anticipated that the equipment will be capable of exploring the entire thickness of the shallow aquifer. Each probe hole will be abandoned by pumping bentonite grout through uninstrumented push rods. The DPT rig mobilized for work at Operable Unit (OU) 1 on the Main Base will be used to perform this work.

Groundwater samples will be collected at 2 to 3 depths per CPT location. The number of samples and sample depths per CPT location will be determined in the field from the lithologic interpretations of the CPT logs. At each CPT and/or ground-water sampling location, CPT will be performed to a depth not to exceed 4 feet into the Hawthorn Formation. After sample depths are determined from the CPT logs, the DPT rig will be repositioned approximately 5 to 6 feet away in the upgradient direction to advance the discrete sampler to collect groundwater samples at the desired depths. The initial seven CPT or groundwater sampling locations will be along the south and west property line, approximately 400 feet apart, to determine if the VOA plume is entering the property from upgradient areas offsite. An additional 8 locations should suffice to characterize the plume onsite, for a total of 15 locations. Figure 3 shows the anticipated CPT or groundwater sampling locations. For estimating purposes, 3 groundwater samples per location, or 45 samples, will be analyzed for VOAs in the field using a portable gas chromatograph (GC). The existing deep monitoring wells may also be sampled for analysis to provide additional data points. Ten percent of the DPT-acquired samples (five samples) will be sent to a certified laboratory for confirmation and analysis by USEPA Methods 601/602, plus total xylenes. Based on the CPT and GC results, up to three additional deep monitoring wells will be installed to verify conclusions drawn from these data. The new wells will be installed with hollow-stem augers after continuous split-spoon sampling for

lithologic descriptions. The groundwater samples collected from these wells will be sent to a certified laboratory for the same analyses.

Surface Soil Sampling. Three areas were defined during geophysical surveys at Herndon Annex in which landfilling activities have been confirmed or are suspected. They are shown on Figure 1 (northwest, southwest, and south-central geophysical survey areas). The total area of each of these areas is 1.25, 3.3, and 1.5 acres, respectively. ABB-ES proposes to obtain composited surface soil samples from each of these areas at the density of one per acre within a depth range of 0 to 1 foot bls (below land surface). Therefore, two samples will be obtained from the northwest geophysical survey area, four from the southwest geophysical survey area, and two from the south-central geophysical survey area, for a total of eight composited samples. Each sample will be composited from five locations within the central part of each 1-acre block as shown on Figure 4. Samples taken for VOCs would not be composited, but would be taken from the central node of the composite pattern.

Primary parameters that will be analyzed include CLP target analyte list (TAL) metals and target compound list (TCL) organics. Dioxins will be analyzed only if polychlorinated biphenyls (PCBs) are detected. Pesticide levels will be compared to background values during evaluation.