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SITE SCREENING PLAN GROUPS 1 AND 2 STUDY AREAS NTC ORLANDO FL
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ABB ENVIRONMENTAL

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SITE SCREENING PLAN
GROUPS I AND II STUDY AREAS

NAVAL TRAINING CENTER, ORLANDO
ORLANDO, FLORIDA

Unit Identification Code (UIC): N65928

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

Prepared by:

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Issued: August 1994
Revision 1: February 1995

CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

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

DATE: February 14, 1995

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Task Order Manager

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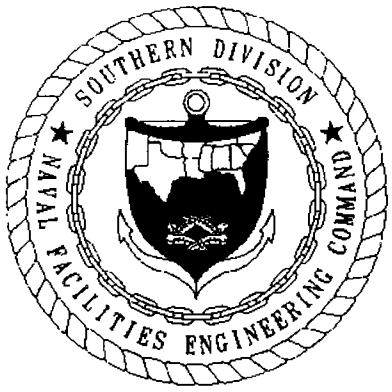
(DFAR 252.227-7036)



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.

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
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
BRAC	Base Realignment and Closure
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
°F	degrees Fahrenheit
DNAPL	dense non-aqueous phase liquid
DOD	Department of Defense
DON	Department of Navy
DQOs	data quality objectives
DRMO	Defense Reutilization and Marketing Office
EBS	Environmental Baseline Survey
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

GLOSSARY (Continued)

MCL	maximum contaminant level
MEK	methyl ethyl ketone or (2-butanone)
msl	mean sea level
MS/MSD	matrix spike and matrix spike duplicate
NACIP	Naval Assessment and Control of Installation Pollutants
NTC	Naval Training Center
OSWER	Office of Solid Waste and Emergency Response
OVA	organic vapor analyzer
PCBs	polychlorinated biphenyls
PCE	perchloroethylene (or tetrachloroethene)
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
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
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

GLOSSARY (Continued)

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

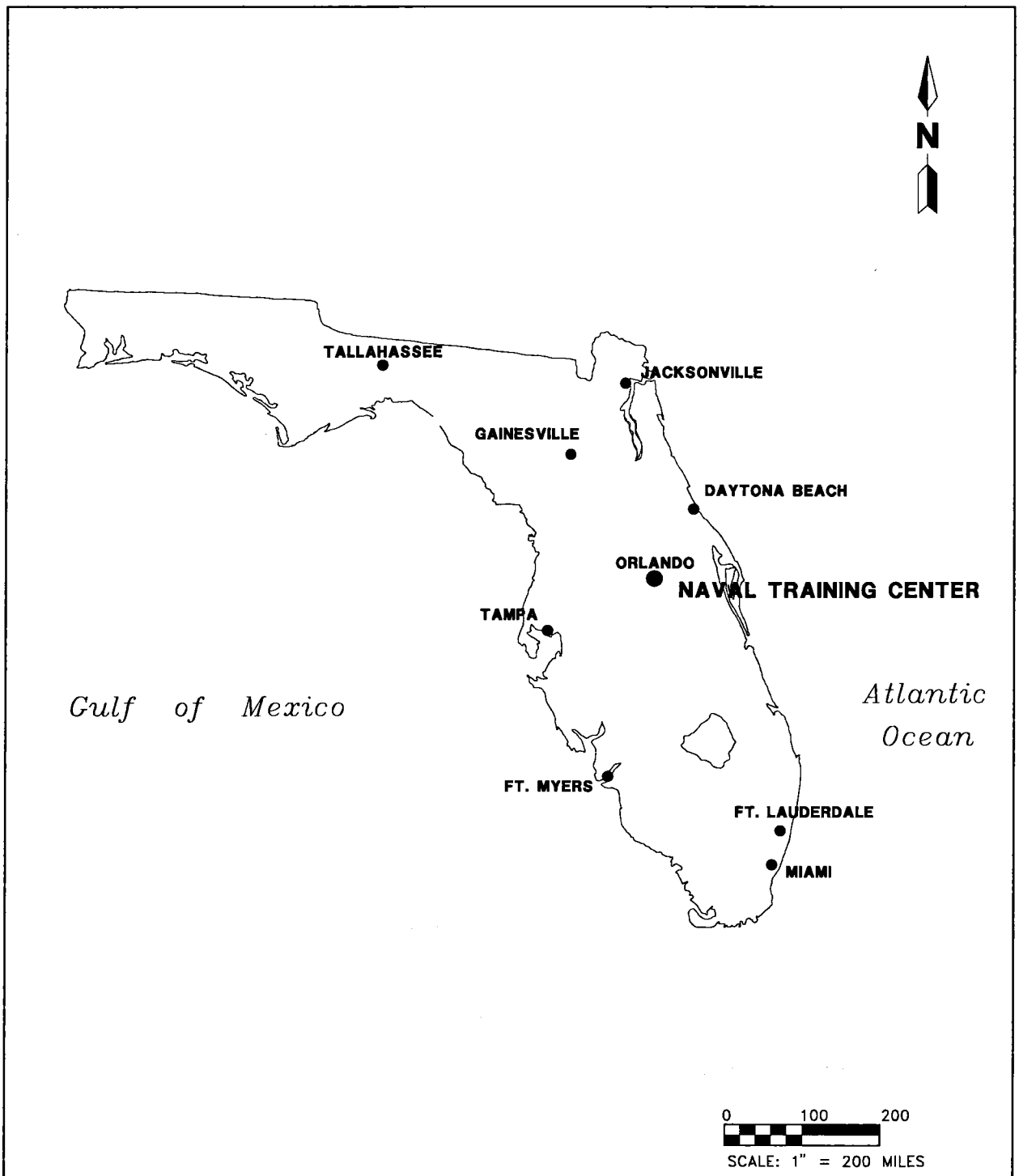

FIGURE 1-1
FACILITY LOCATION

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

SITE SCREENING PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

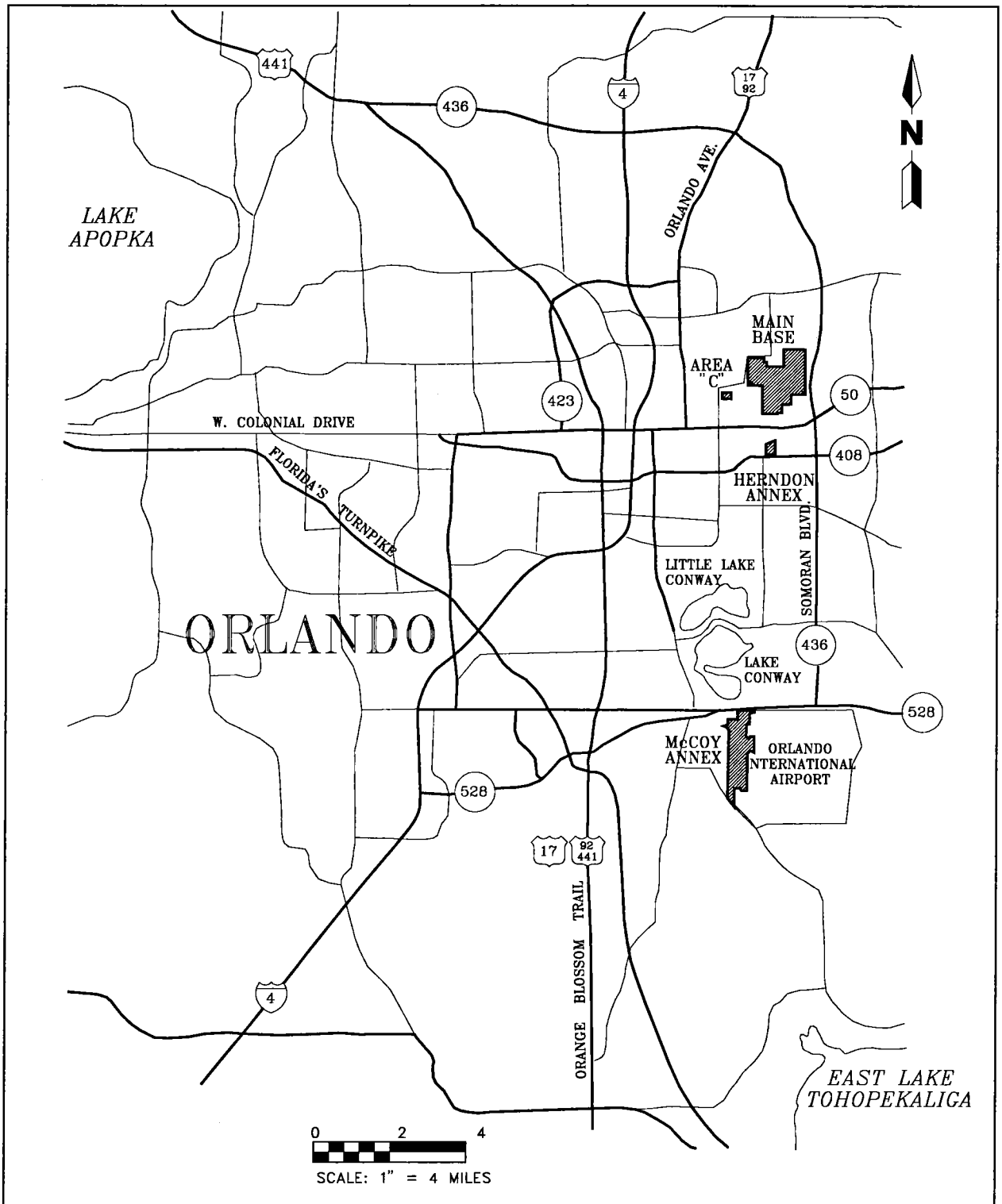

FIGURE 1-2
SITE LOCATION

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
Groups I and II Study Areas
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.

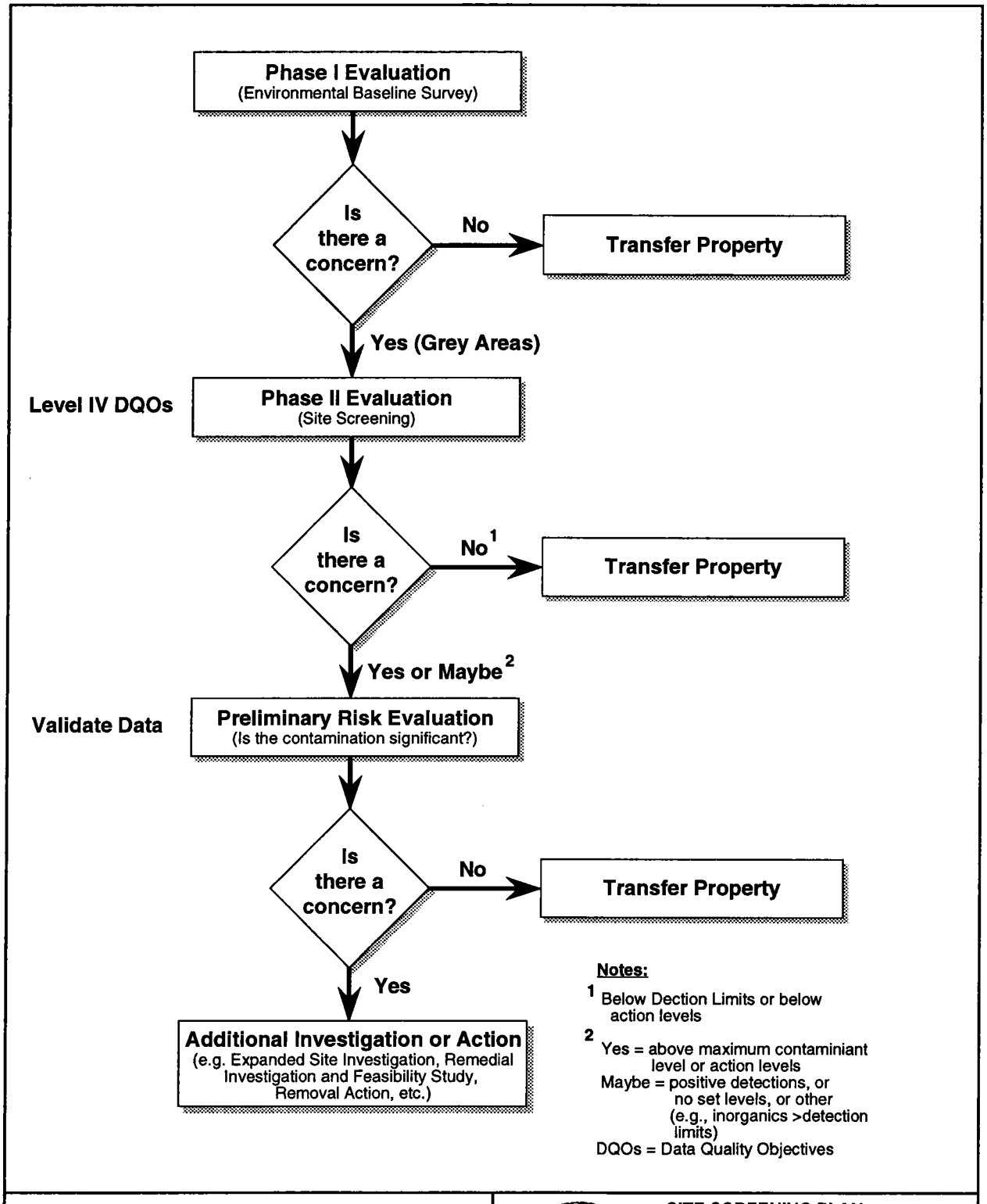

FIGURE 1-3

STUDY AREA REVIEW PROCESS, BASE REALIGNMENT AND CLOSURE

SITE SCREENING PLAN

NAVAL TRAINING CENTER ORLANDO, FLORIDA

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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,	Site Screening Study Area Listing.

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
Groups I and II Study Areas
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
Groups I and II Study Areas
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
Groups I and II Study Areas
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 C-1, Appendix C) 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
Groups I and II Study Areas
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
Groups I and II Study Areas
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
Groups I and II Study Areas
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
Groups I and II Study Areas
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
Groups I and II Study Areas
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.

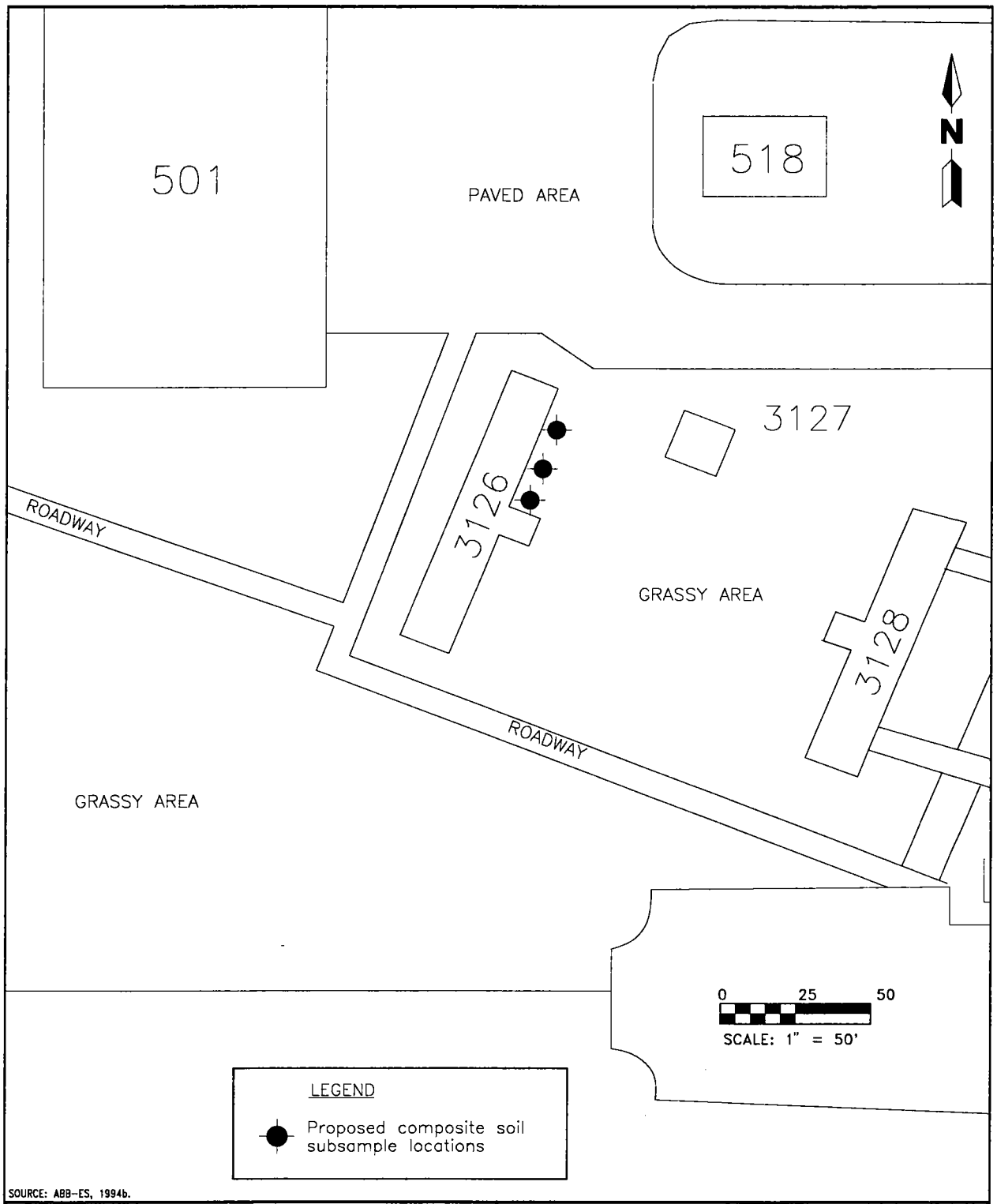
Table 4-1 (Continued)
Analytical Program Summary, Group I Study Areas

Site Screening Plan
Groups I and II Study Areas
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.
CLP = contract laboratory procedure.
TCL = target compound list.
VOCs = volatile organic compounds.
SVOCs = semivolatile organic compounds.
TAL = target analyte list.
PCBs = polychlorinated biphenyls.
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.
QC = quality control.



SOURCE: ABB-ES, 1994b.

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

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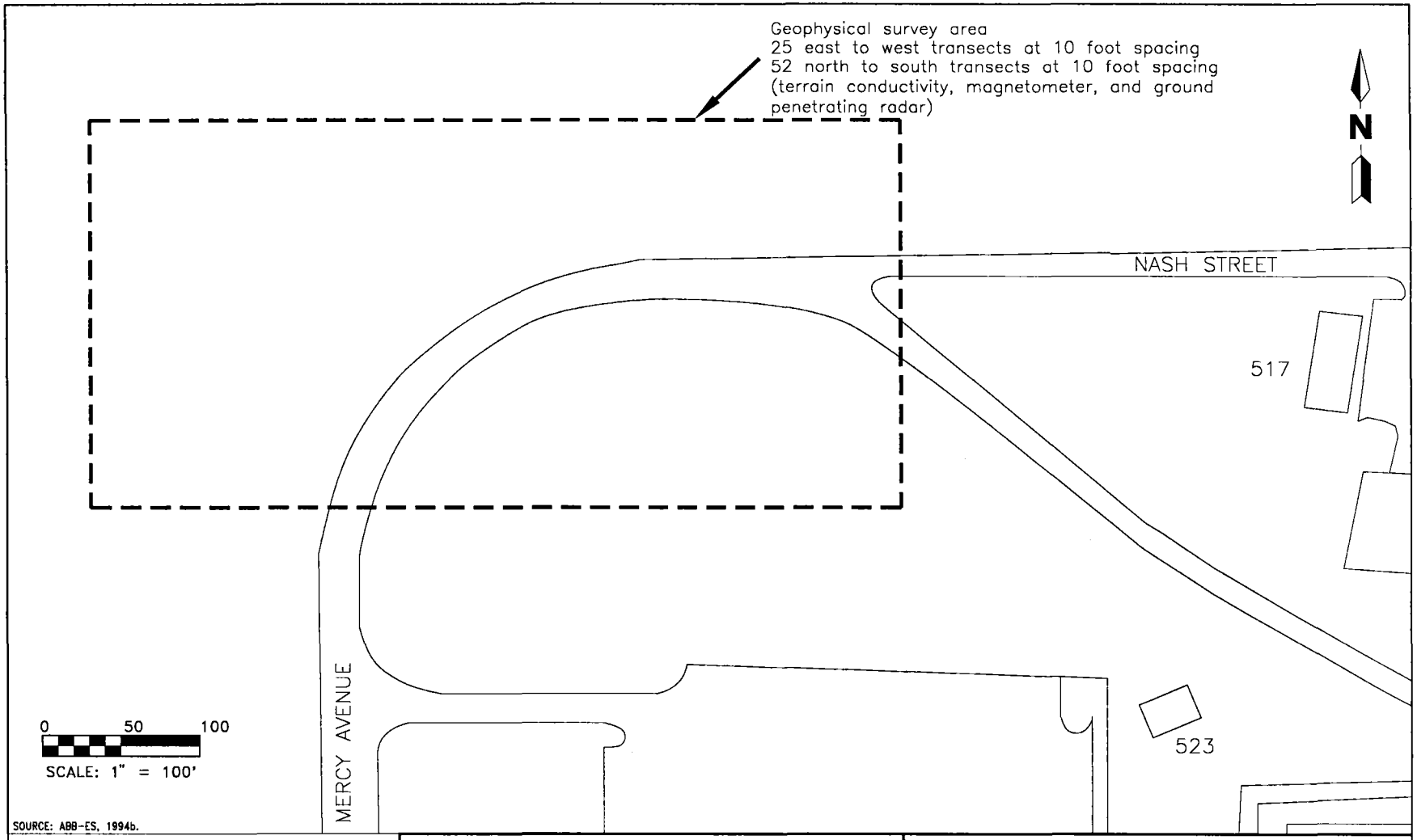

FIGURE 4-2
PROPOSED GEOPHYSICAL SURVEY AREA AT UNF-12, ALLEGED HOSPITAL LANDFILL, STUDY AREA 1, GROUP I STUDY AREAS

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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.

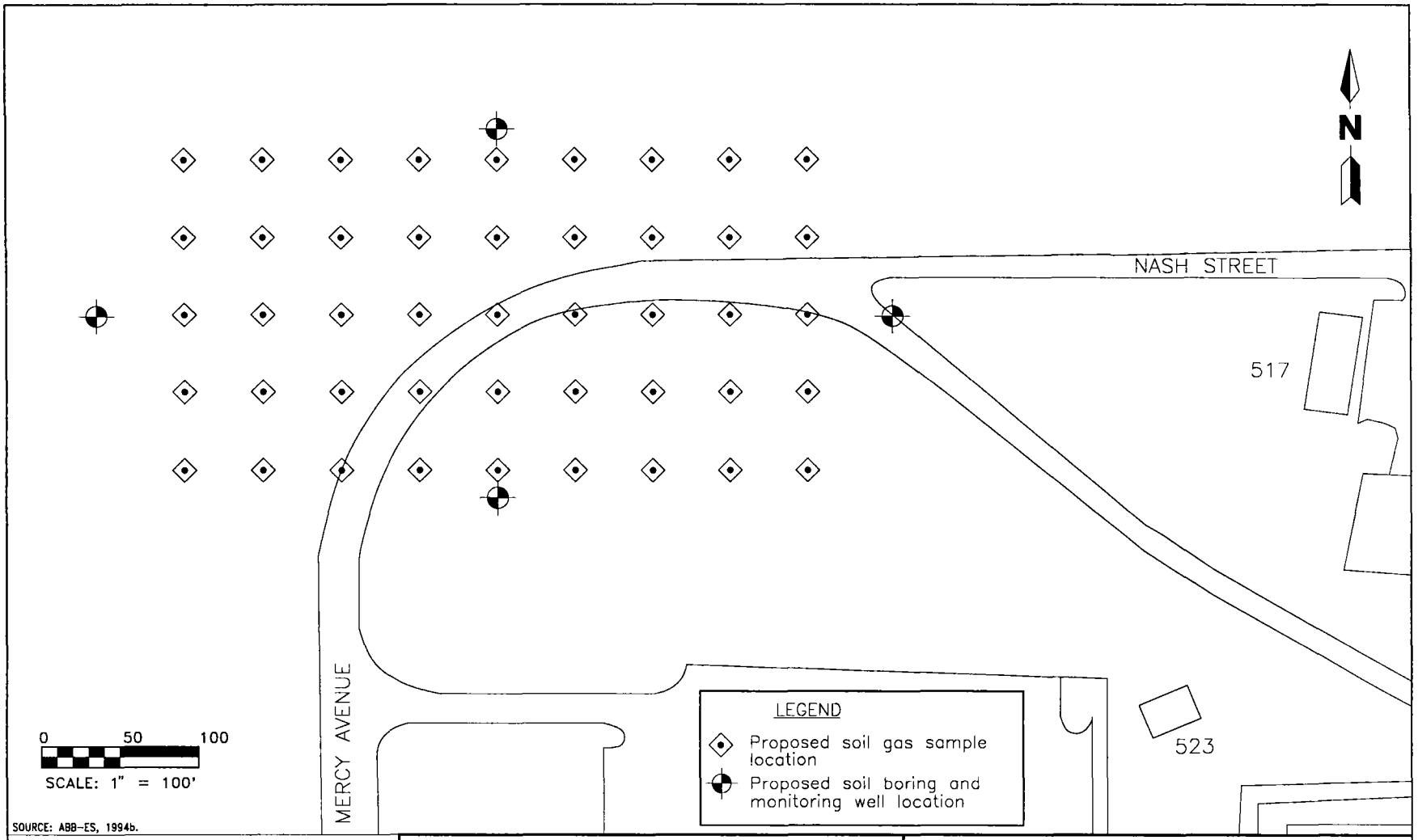

FIGURE 4-3
PROPOSED SOIL GAS SURVEY, SOIL BORING, AND MONITORING WELL LOCATIONS AT UNF-12, ALLEGED HOSPITAL LANDFILL, STUDY AREA 1, GROUP I STUDY AREAS

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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℠, Soil Boring, and Monitoring Well Locations, Facility 6001, Abandoned Septic Tank and Drain Field, Study Area 2, and the Herndon Annex

- 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

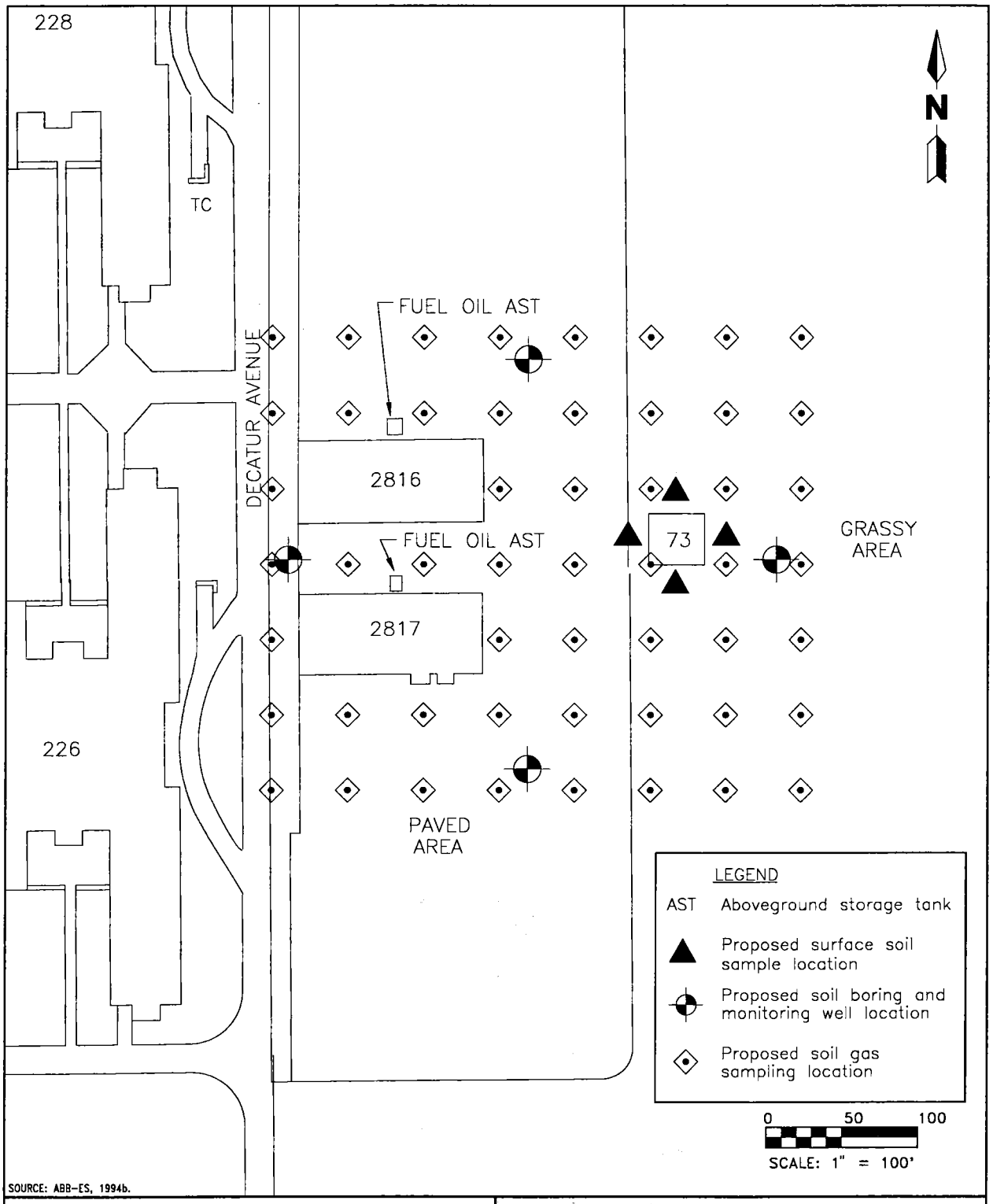

FIGURE 4-5
PROPOSED SOIL GAS SURVEY, SURFACE SOIL SAMPLE, SOIL BORING, AND MONITORING WELL LOCATIONS AT BUILDINGS 73, 2816, AND 2817, HAZARDOUS MATERIALS STORAGE AREAS, STUDY AREA 3, GROUP I STUDY AREAS
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damage evident. Facility personnel stated that 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.

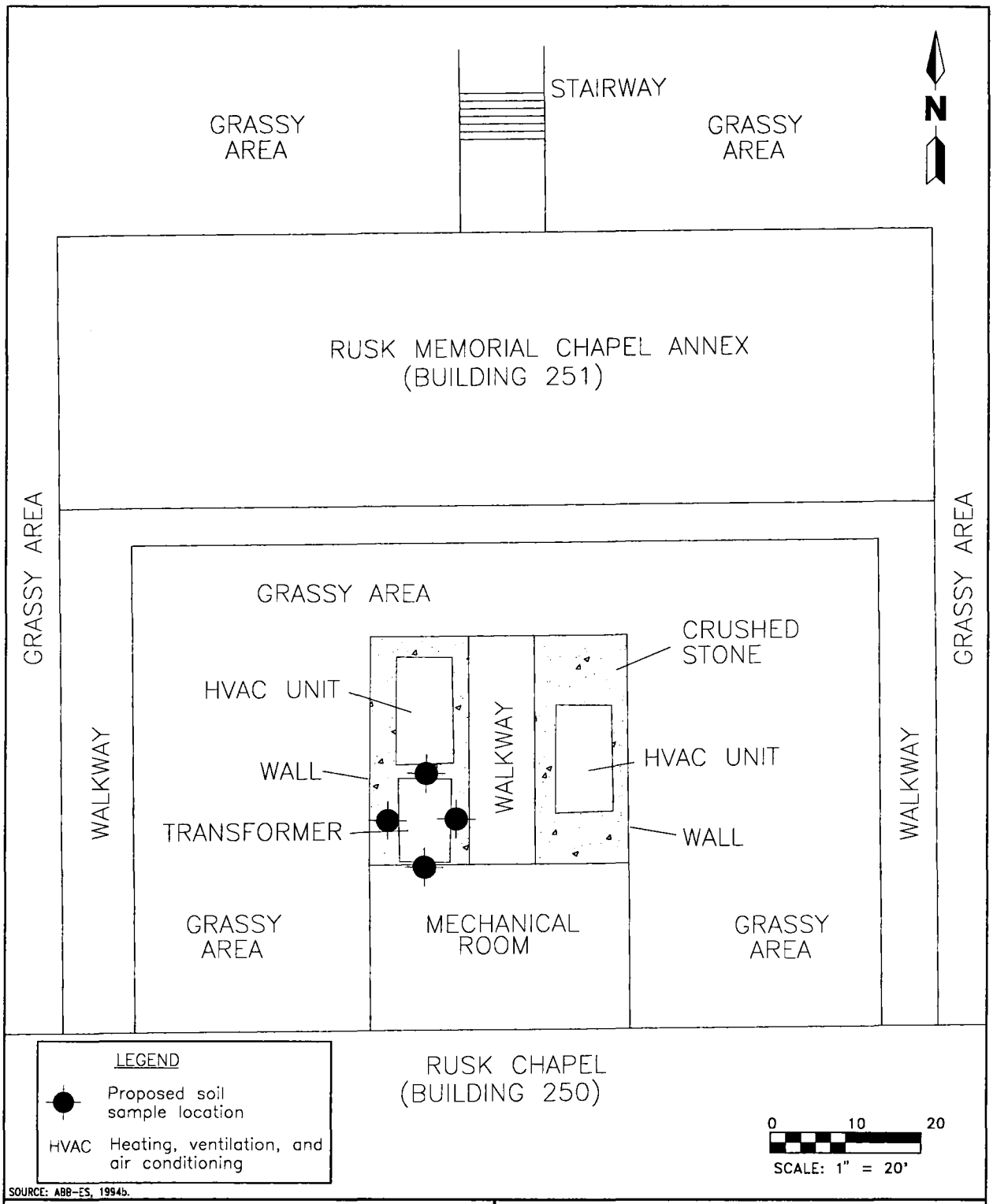
Soil will be screened qualitatively, using test kits calibrated for detection of 1 ppm total PCBs. Soil samples that exceed 1 ppm PCBs will then be screened using test kits calibrated for detection of 10 ppm PCBs. Once a soil sample from a boring location exceeds 10 ppm PCBs, the boring will be terminated 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

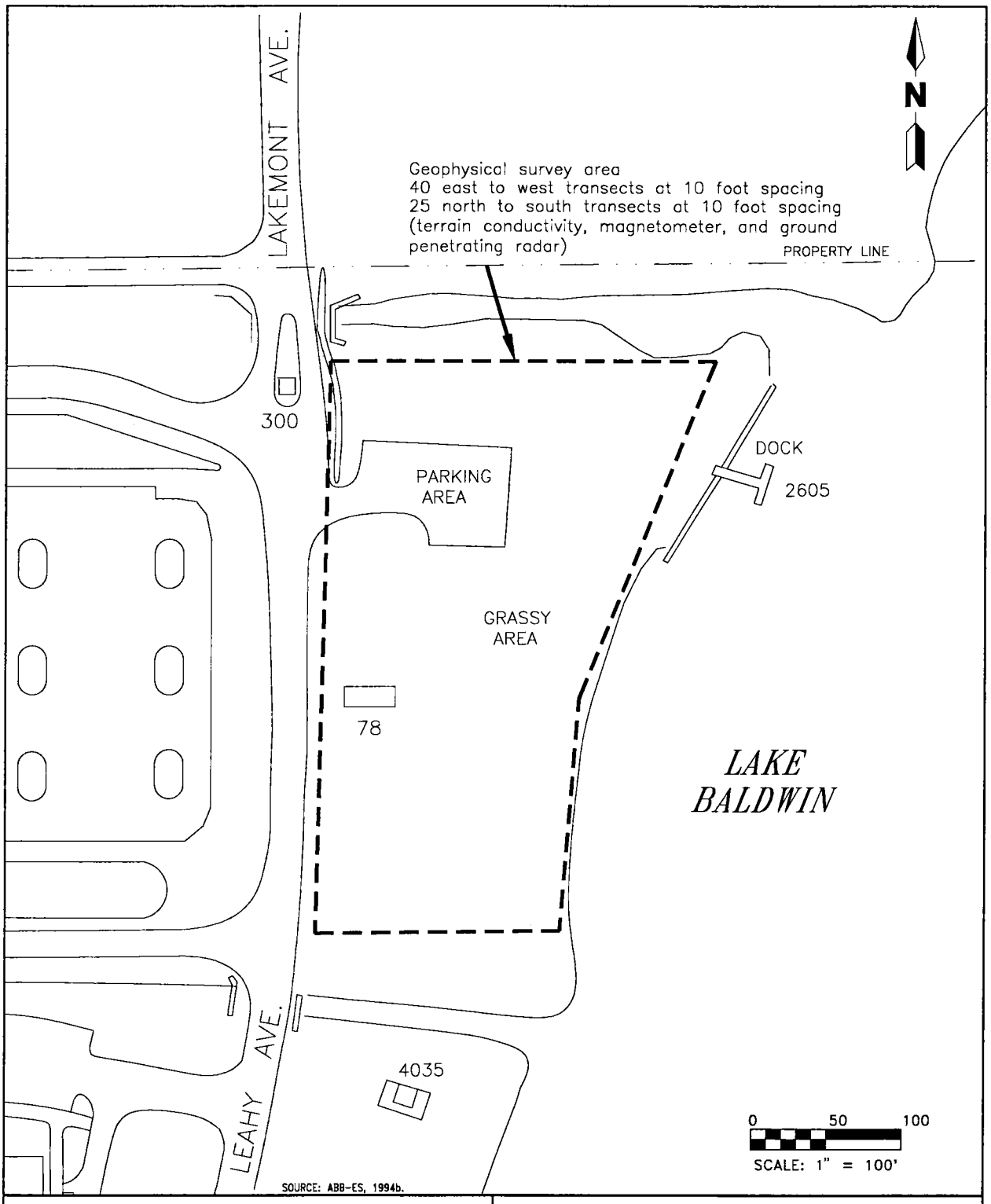

FIGURE 4-7
PROPOSED GEOPHYSICAL SURVEY AREA AT UNF-13, FORMER MOTORBOAT RENTAL AND MAINTENANCE AREA, STUDY AREA 5, GROUP I STUDY AREAS
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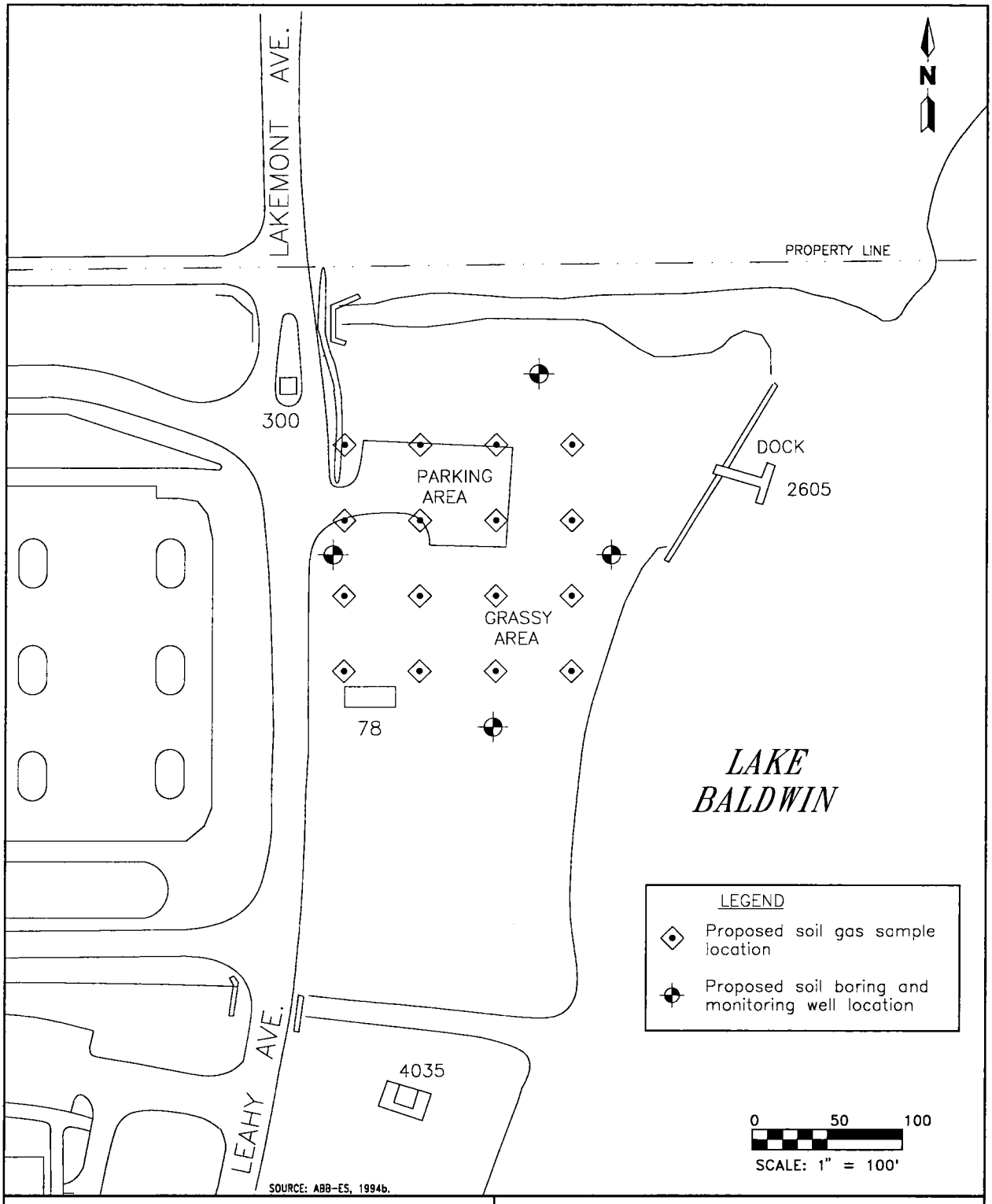

FIGURE 4-8
PROPOSED SOIL GAS SURVEY, SOIL BORING, AND MONITORING WELL LOCATIONS AT UNF-13, FORMER MOTORBOAT RENTAL AND MAINTENANCE AREA,STUDT AREA 5, GROUP I STUDY AREAS
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on a 50-foot spacing interval in target areas as identified by geophysical methods.

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).

Figure 4-9 Proposed Surface Water and Sediment Sample Locations at Lake Baldwin, Study Area 6

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

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

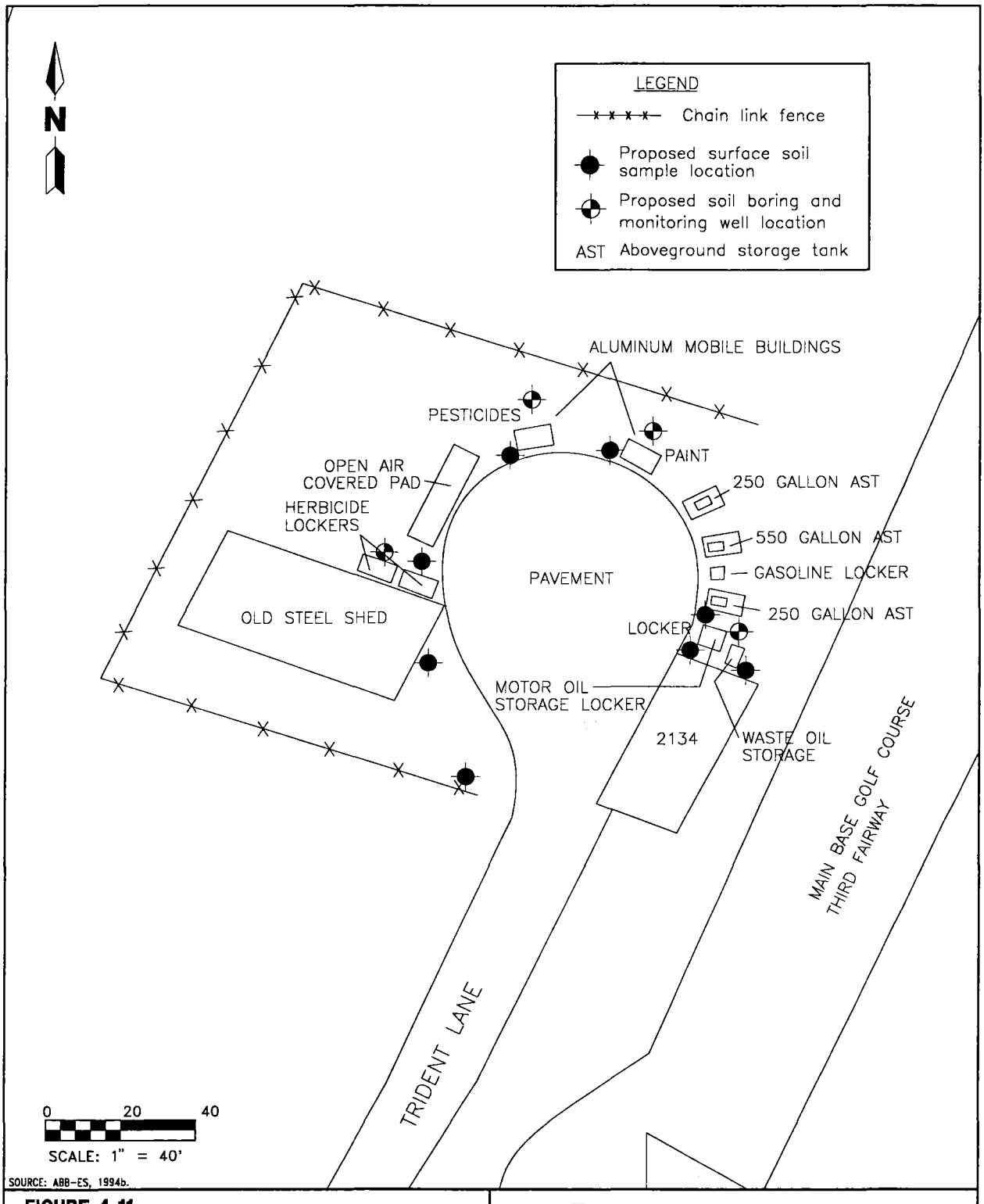

FIGURE 4-11
PROPOSED SURFACE SOIL, SOIL BORING, AND MONITORING WELL LOCATIONS AT BUILDING 2134, GREENS KEEPER STORAGE AREA, STUDY AREA 8, GROUP I STUDY AREAS
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noted on the floor and walls of Building 2134 and around a small motor oil storage pad. Stressed 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.

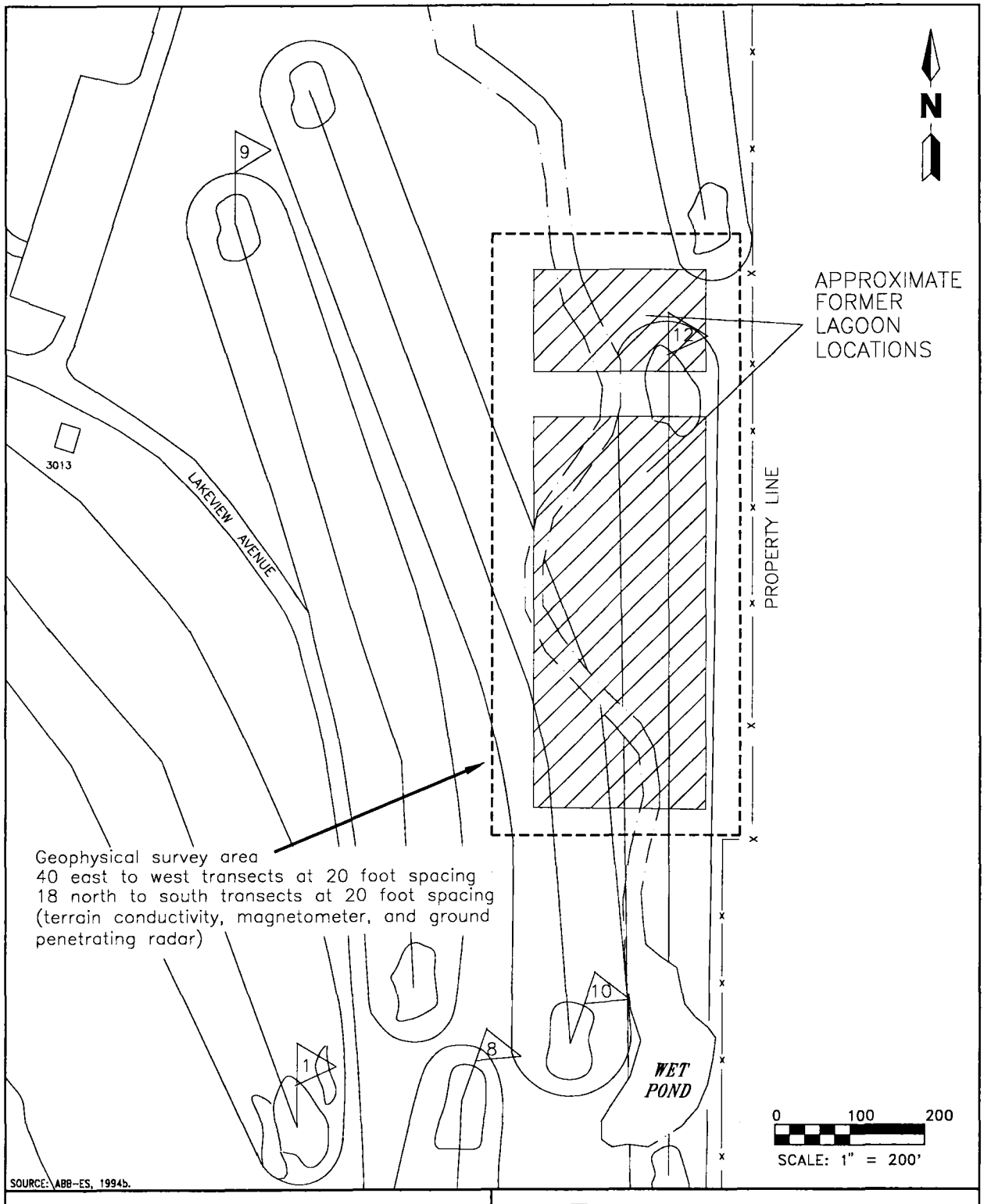

FIGURE 4-12
PROPOSED GEOPHYSICAL SURVEY AREA AT UNF-15, FORMER WASTEWATER TREATMENT PLANT LAGOONS, STUDY AREA 8, GROUP I STUDY AREAS
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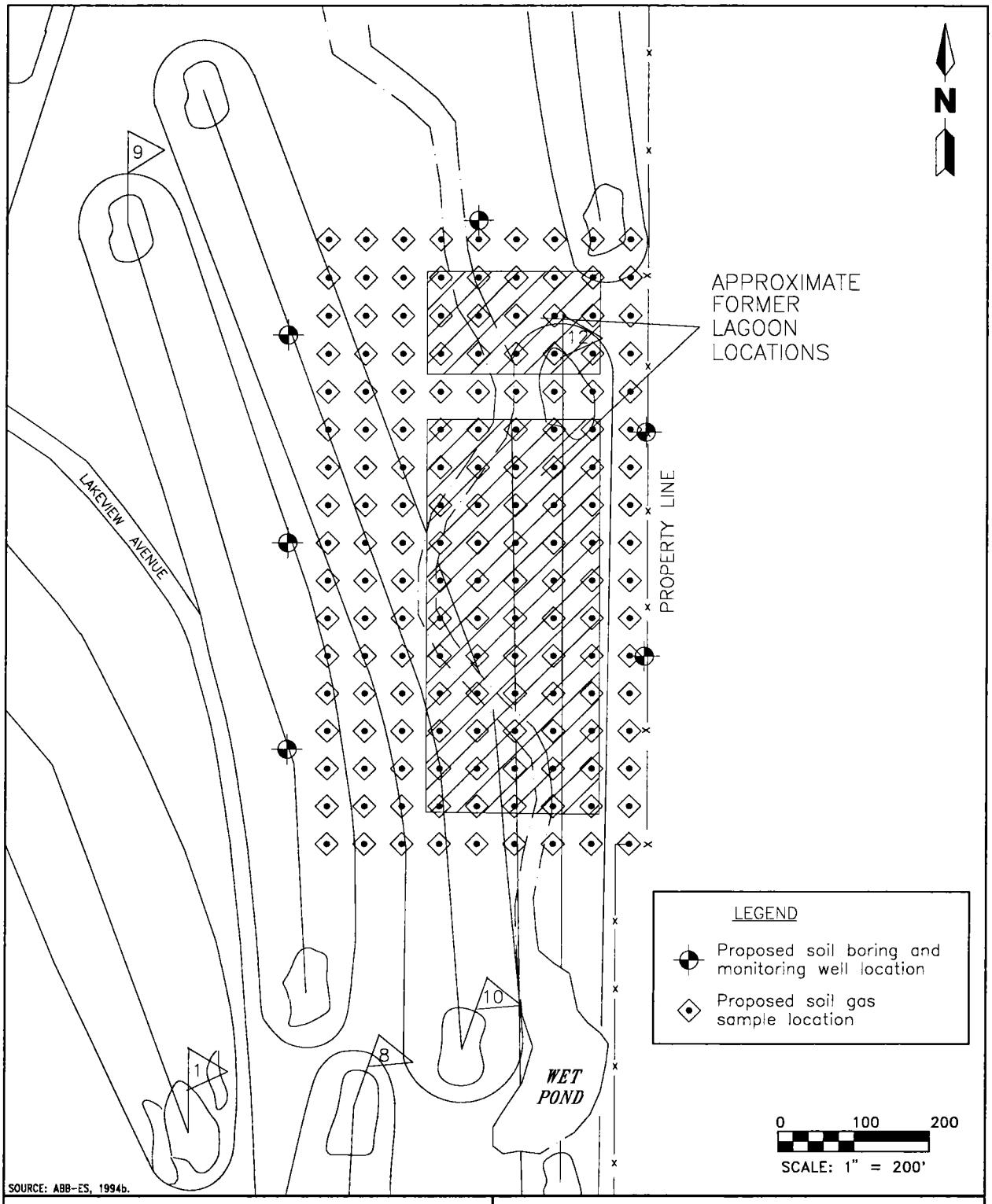

FIGURE 4-13
PROPOSED SOIL GAS SURVEY, SOIL BORING, AND MONITORING WELL LOCATIONS AT UNF-15, FORMER WASTEWATER TREATMENT PLANT LOGOONS, STUDY AREA 8, GROUP I STUDY AREAS
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Former WWTP Lagoons

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

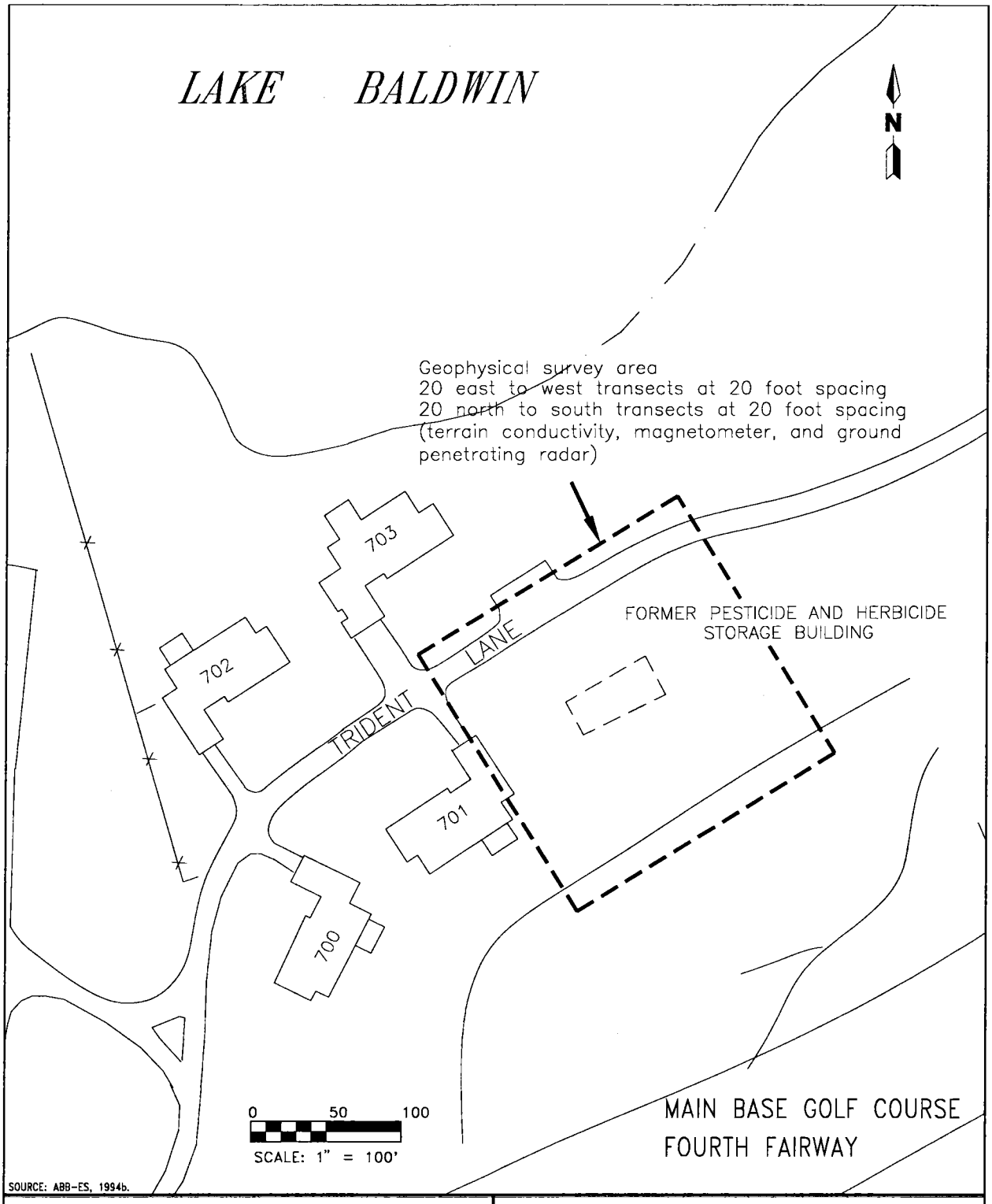

FIGURE 4-14
PROPOSED GEOPHYSICAL SURVEY AREA AT UNF-14, FORMER PESTICIDE/ HERBICIDE STORAGE BUILDING, STUDY AREA 9 GROUP I STUDY AREAS
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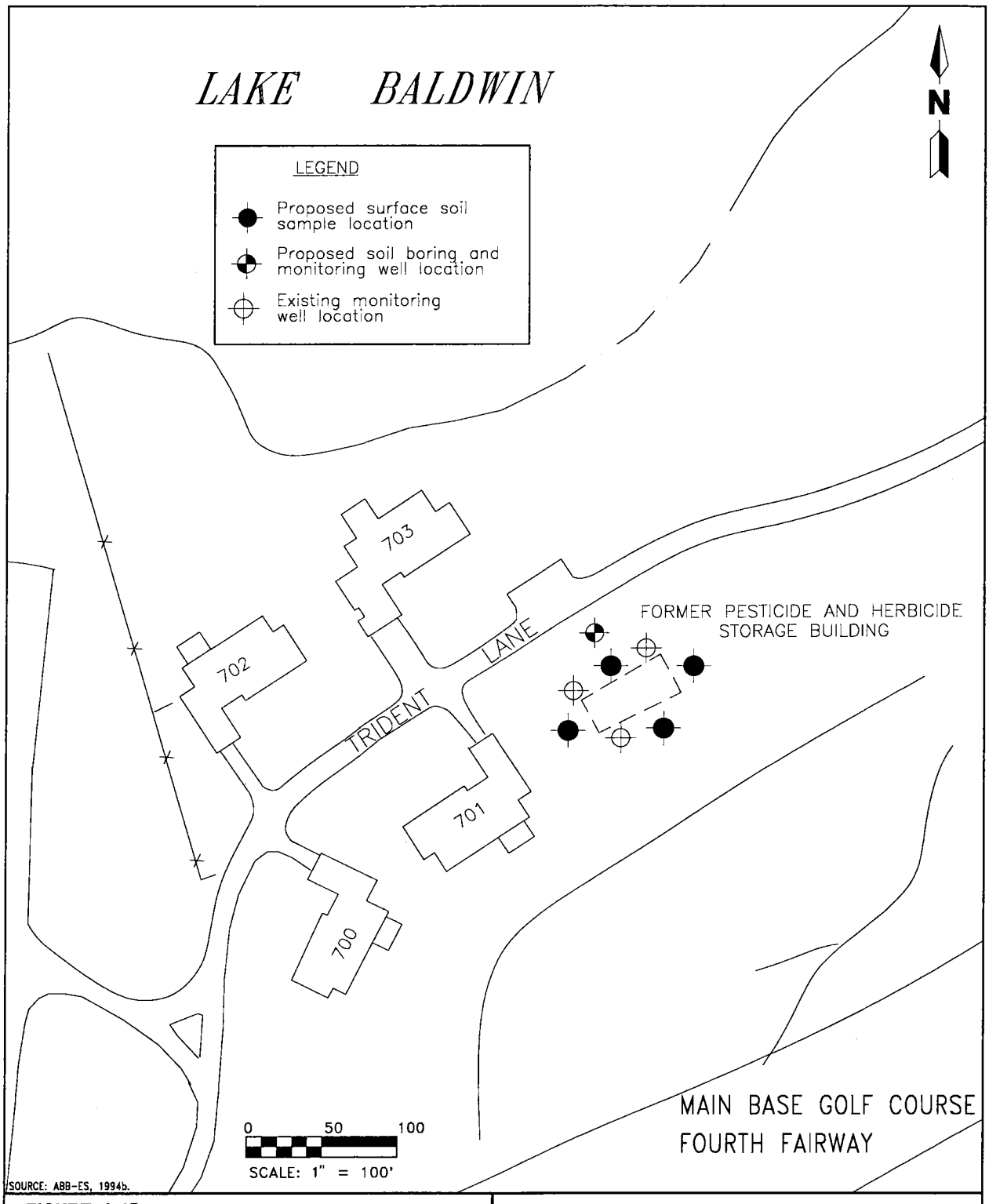

FIGURE 4-15
PROPOSED SURFACE SOIL SAMPLE AND EXISTING MONITORING WELL LOCATIONS AT UNF-14, FORMER PESTICIDE AND HERBICIDE STORAGE BUILDING, STUDY AREA 9, GROUP I STUDY AREAS

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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

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

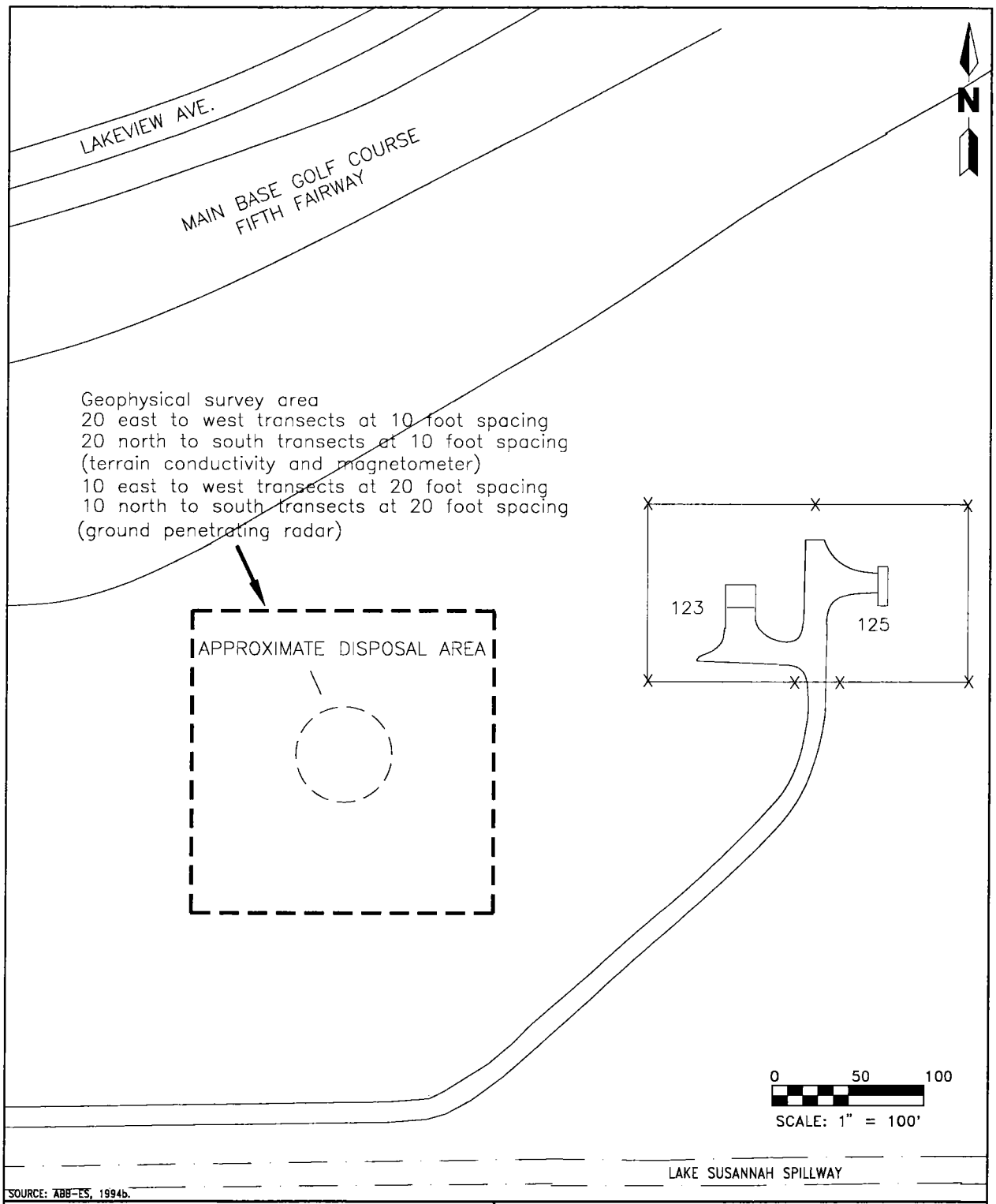

FIGURE 4-16
PROPOSED GEOPHYSICAL SURVEY AREA, IAS SITE 4, ALLEGED YARD WASTE DISPOSAL AREA, STUDY AREA 10, GROUP I STUDY AREAS
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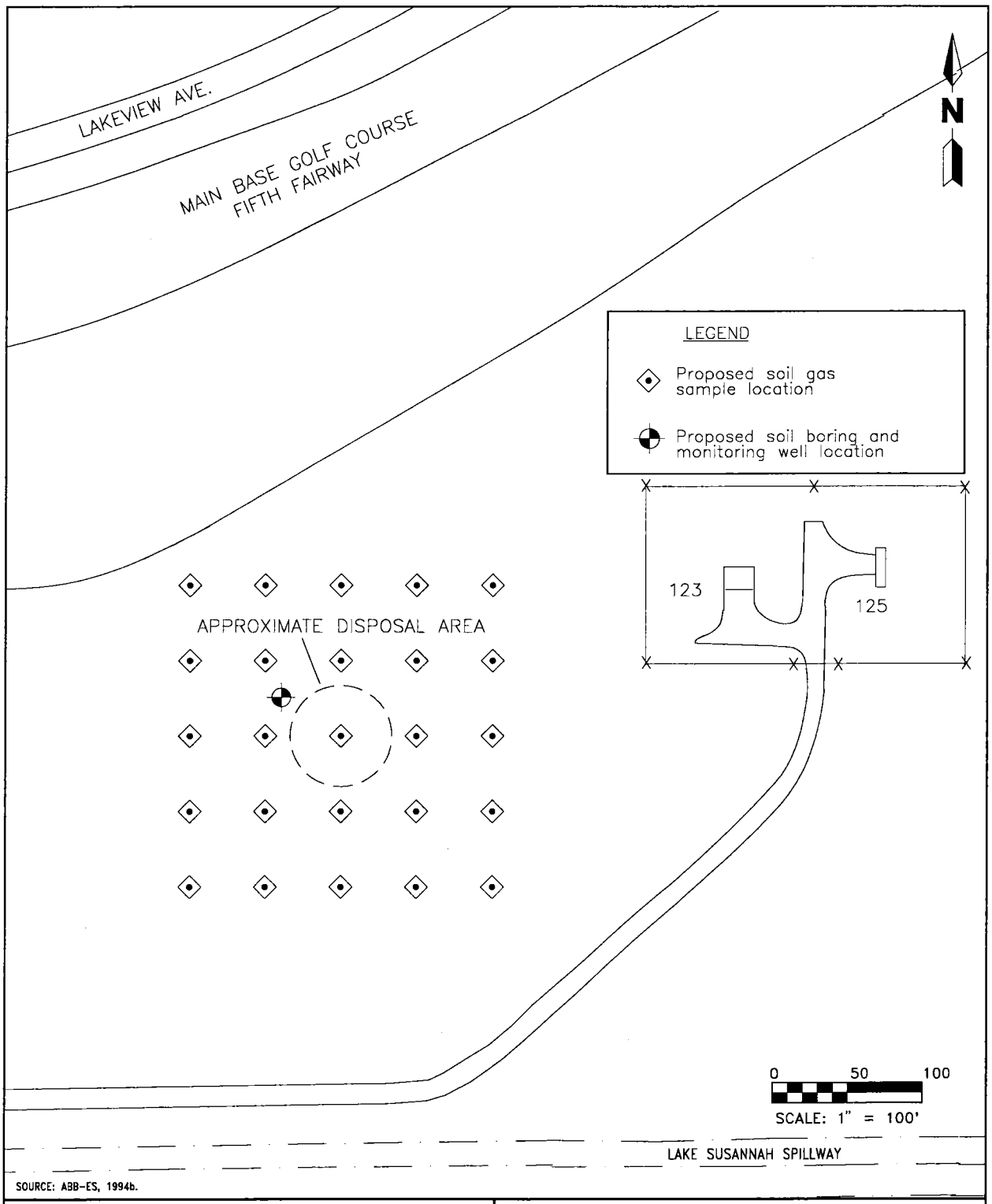

SOURCE: ABB-ES, 1994b.

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 C-1, Appendix C) 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

Table 4-2
Analytical Program Summary
Group II Study Areas

Site Screening Plan
Groups I and II Study Areas
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
Groups I and II Study Areas
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
Groups I and II Study Areas
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: CLP = Contract Laboratory Program.
TCL = target compound list.
VOCs = volatile organic compounds.
QC = quality control.
SVOCs = semivolatile organic compounds.
TAL = target analyte list.
PCBs = polychlorinated biphenyls.
$\mu g/\ell$ = micrograms per liter.
TPH = total petroleum hydrocarbons by USEPA Method 9071/418.1.
TSS = total suspended solids by USEPA Method 160.2.

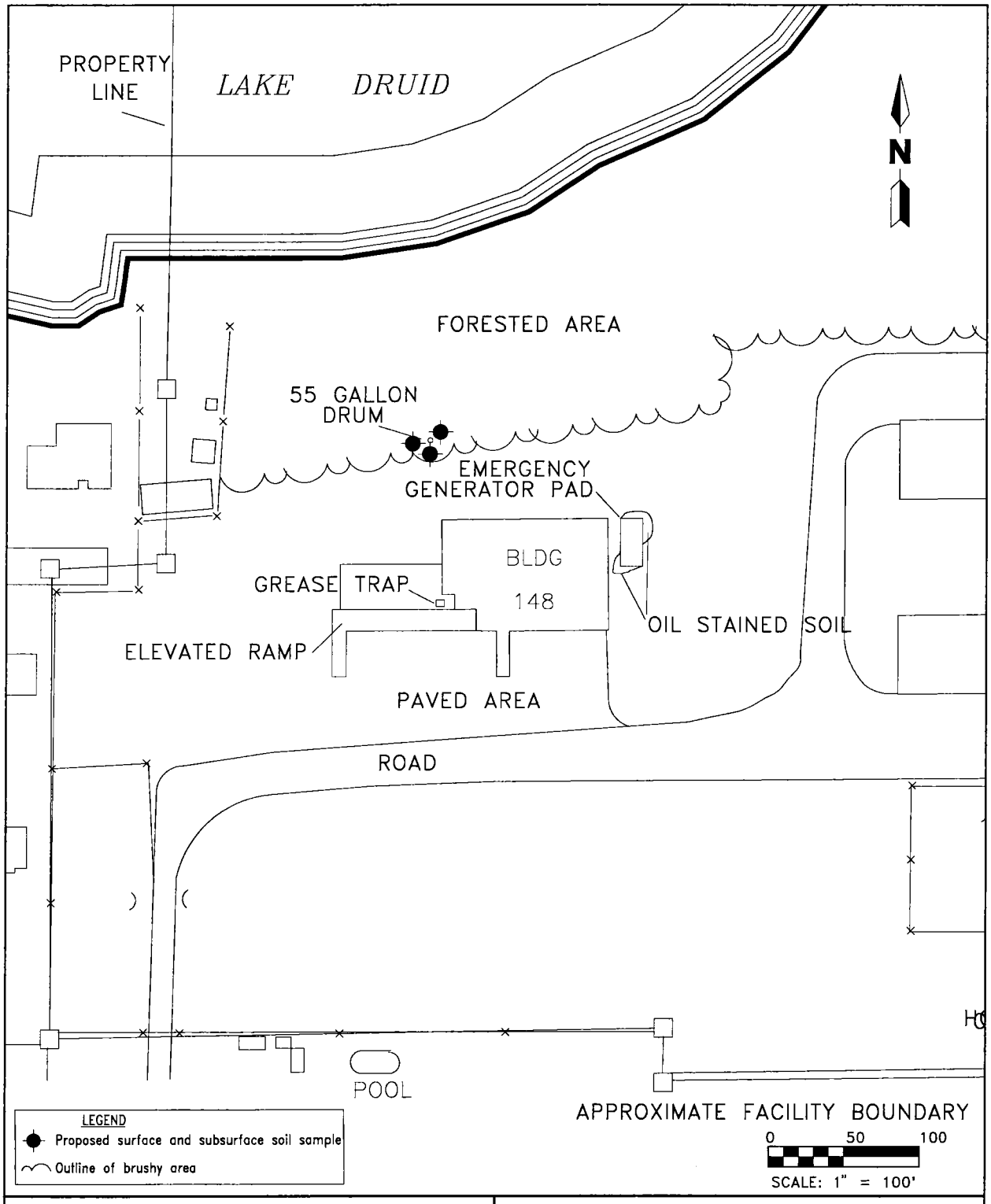

FIGURE 4-18
PROPOSED SOIL SAMPLE LOCATIONS
BUILDING 148, COLD STORAGE WAREHOUSE
AREA 'C', STUDY AREA 11,
GROUP II STUDY AREAS

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SITE SCREENING PLAN

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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

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.

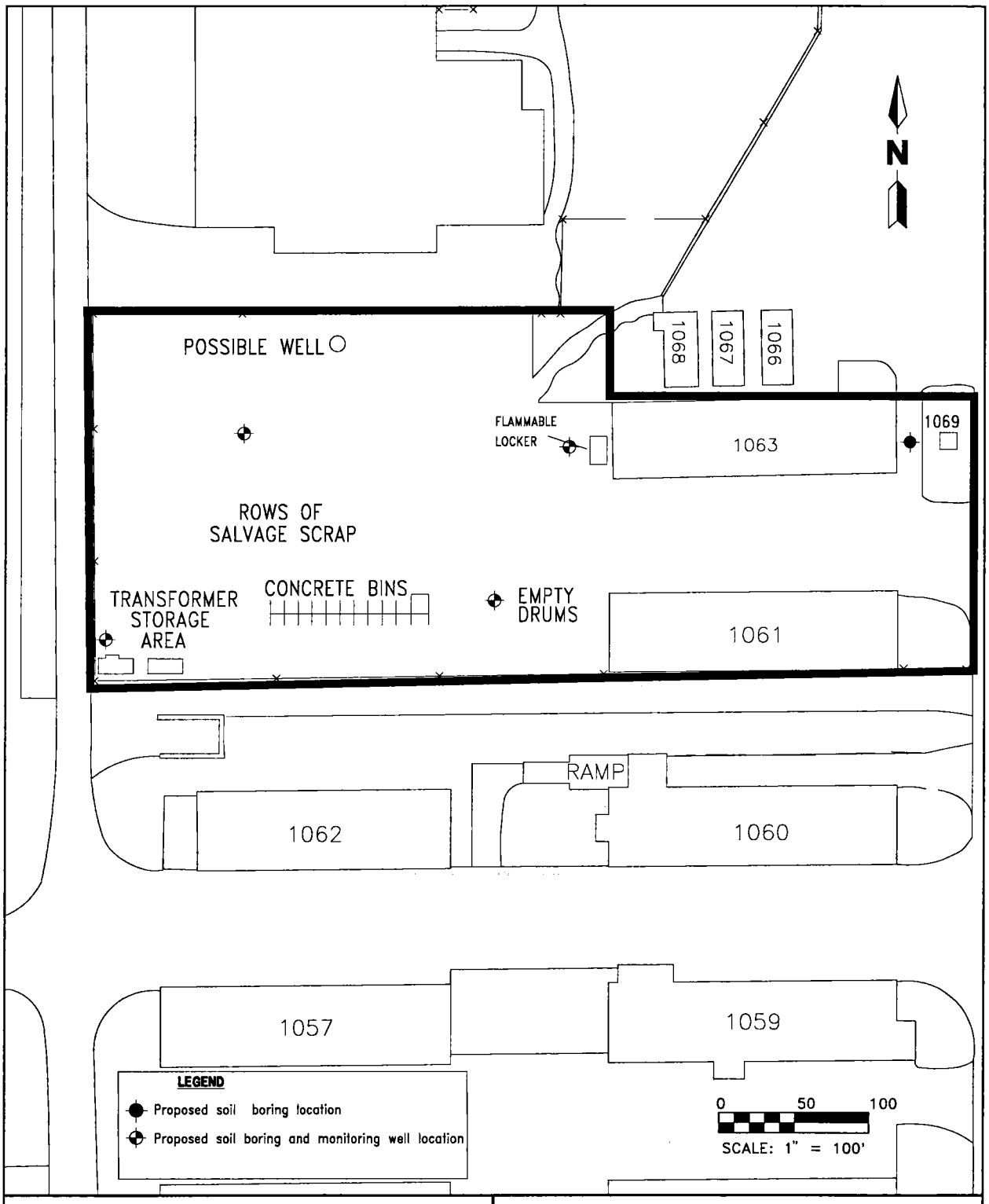

FIGURE 4-19
PROPOSED SOIL BORING, AND MONITORING WELL LOCATIONS, BUILDINGS 1063 AND 1069, DRMO WAREHOUSE AND SCALES, AREA 'C', STUDY AREA 12, GROUP II STUDY AREAS
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Objective: to evaluate if current salvage operations may have contributed to contamination 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

Methods:
- 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.

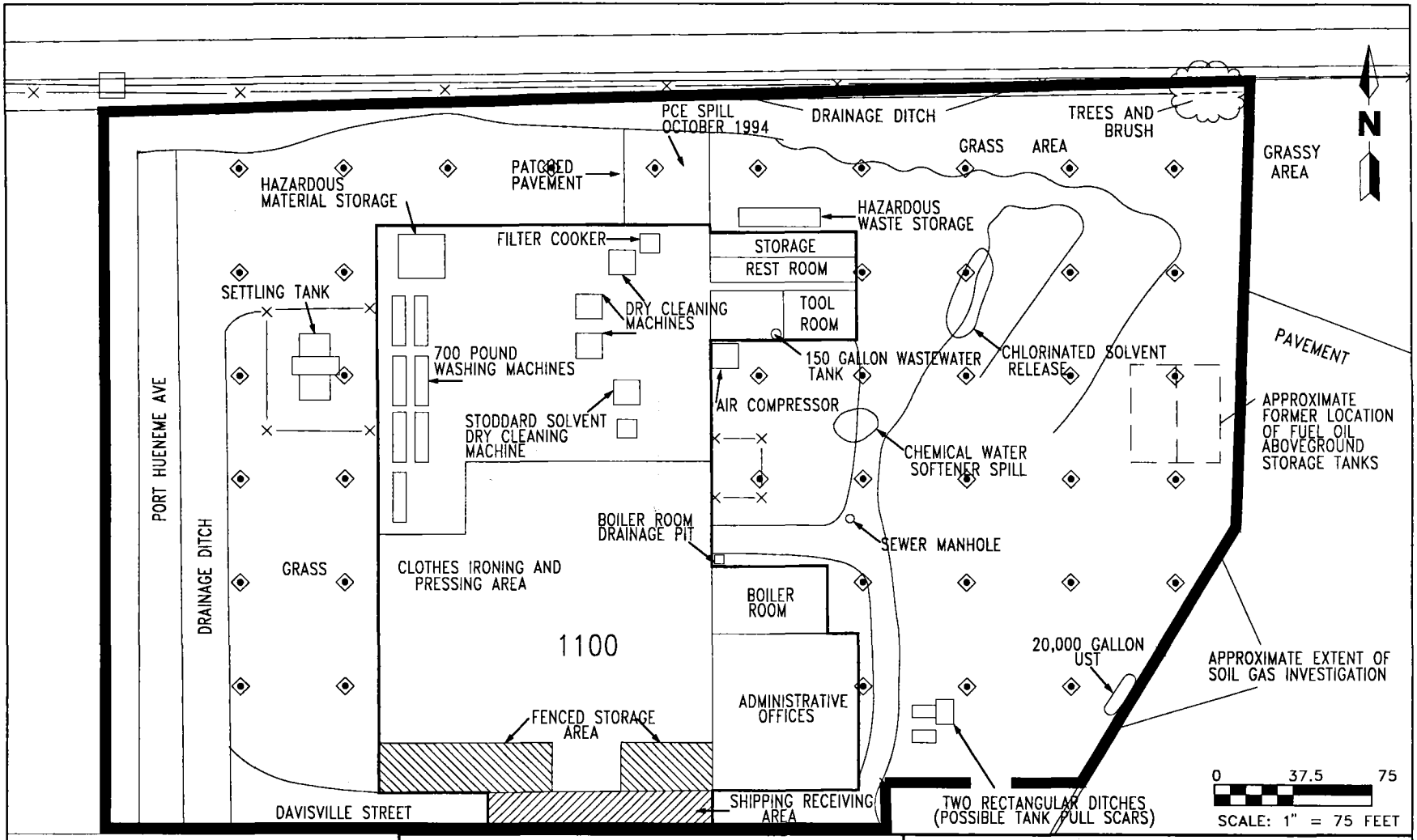
Reportedly, hazardous wastes generated and materials used in the dry cleaning process have been poorly managed. At the time of the survey, there were many containers in the building, ranging in volume from ½ to 55 gallons that were open and not labeled. The facility has received a Notice of Violation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

SITE SCREENING PLAN

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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

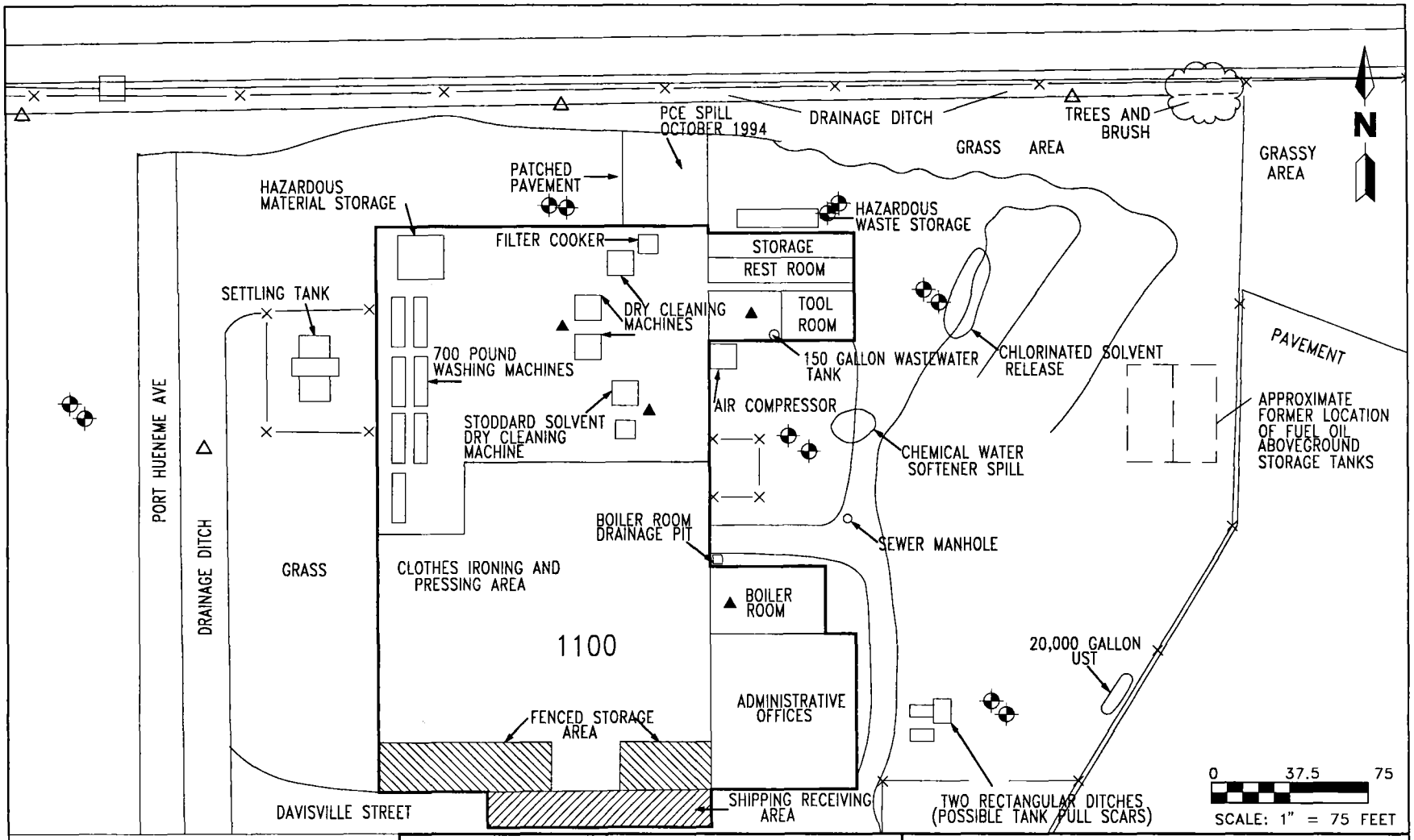

FIGURE 4-21
PROPOSED SOIL, SEDIMENT AND SLUDGE SAMPLE, SOIL BORING AND MONITORING WELL LOCATIONS, BUILDING 1100, AREA "C", STUDY AREA 13, GROUP II STUDY AREAS

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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

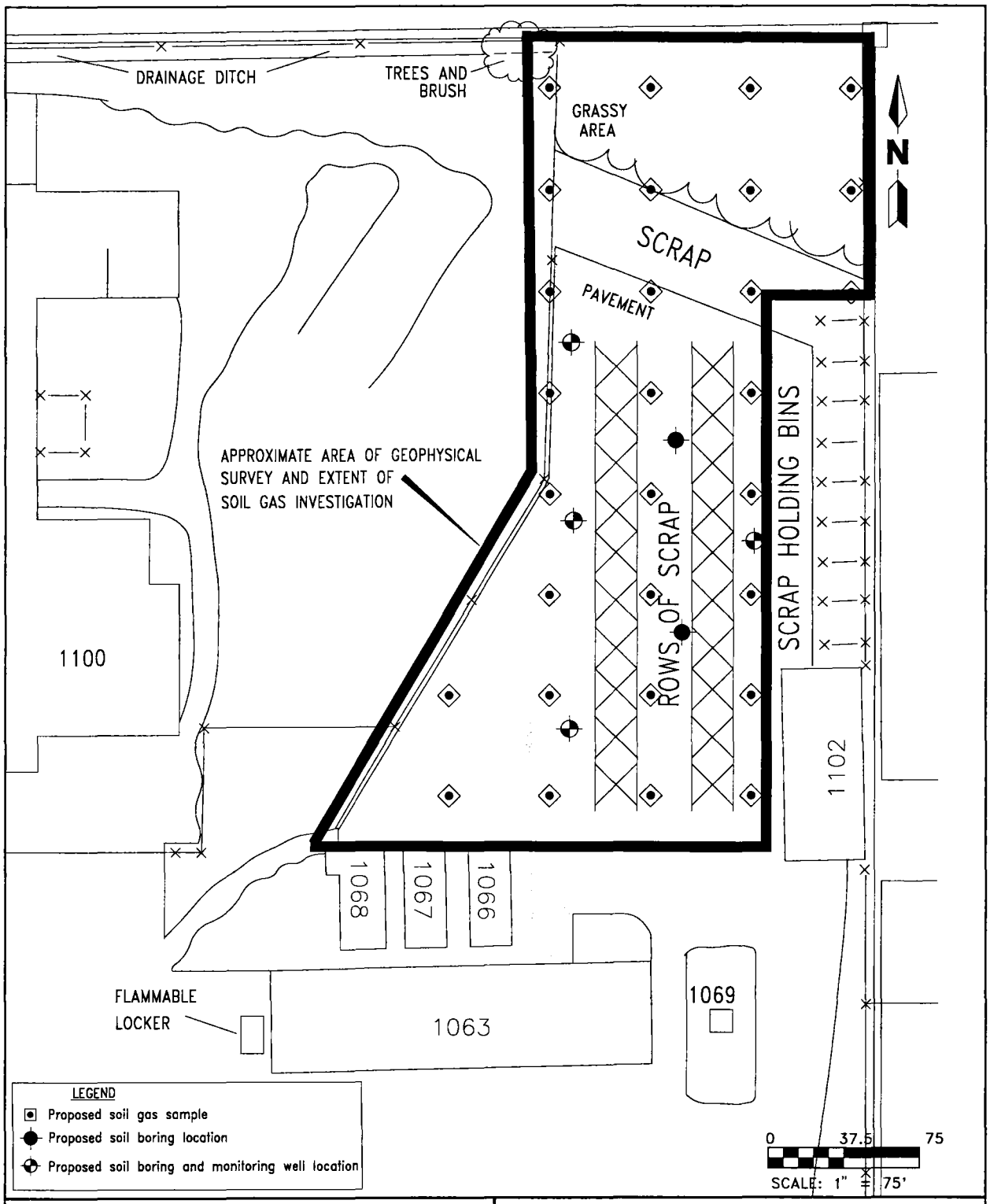

FIGURE 4-22
PROPOSED SOIL GAS SURVEY, SOIL BORING, AND MONITORING WELL LOCATIONS, BUILDING 1102, DISPOSAL, SALVAGE, AND SCRAP BUILDING, AREA 'C', STUDY AREA 14, GRUOP II STUDY AREAS
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SITE SCREENING PLAN

NAVAL TRAINING CENTER ORLANDO, FLORIDA

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.)

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

APPENDIX B

SITE SCREENING STUDY AREA LOCATIONS

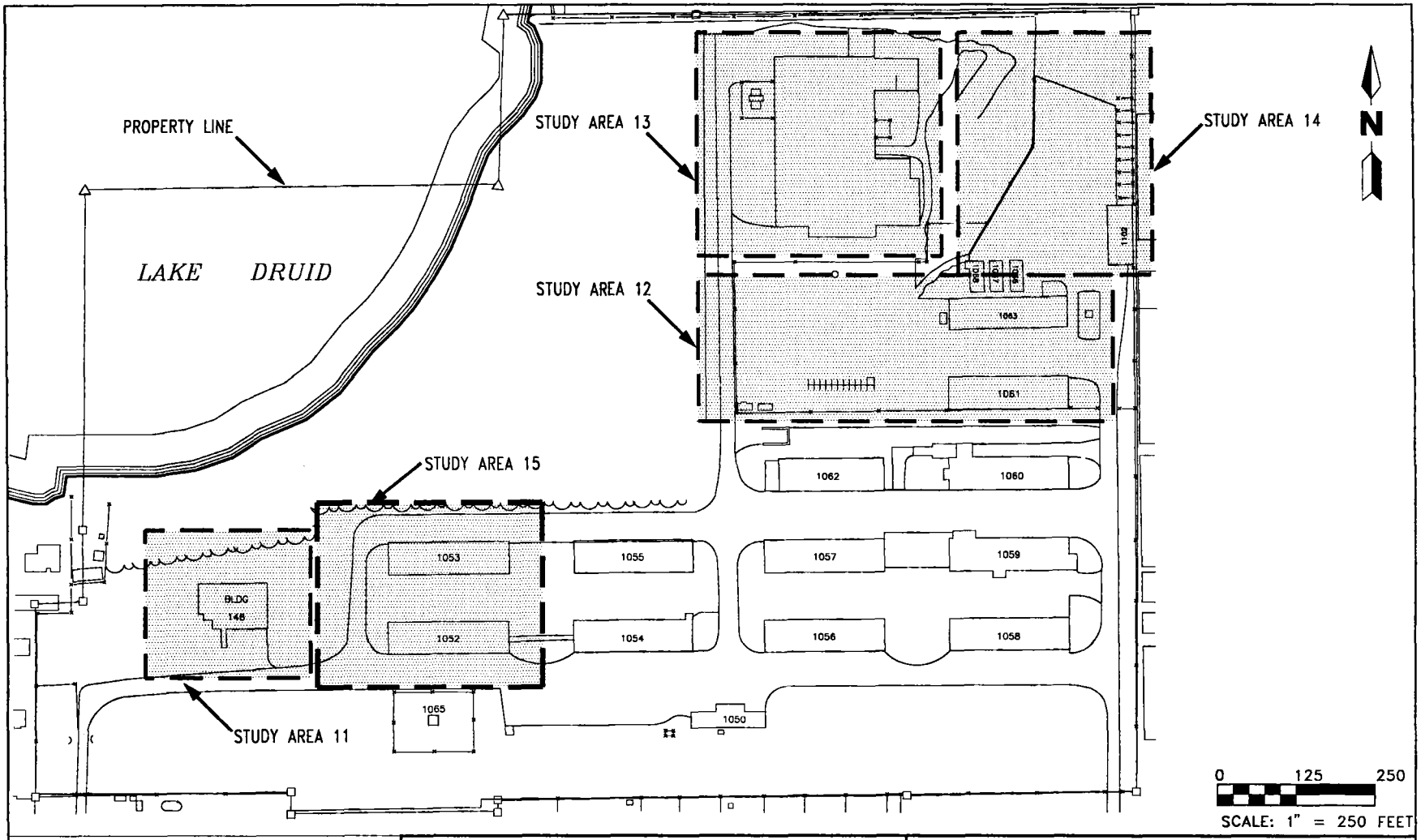

FIGURE B-2
LOCATIONS OF GROUP II STUDY AREAS

SITE SCREENING PLAN

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