01.09-9/1/86-00389

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WORK AND SAFETY PLAN

CONFIRMATION STUDY TO DETERMINE EXISTENCE AND POSSIBLE MIGRATION OF SPECIFIC CHEMICALS IN SITU

ROUND TWO VERIFICATION STEP and
CHARACTERIZATION STEP--HADNOT POINT

MARINE CORPS BASE
Camp Lejeune, North Carolina

Contract No. N62470-83-B-6106

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
Gainesville, Florida

September 1986

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comments given to Bob Gregory on 9/22/86

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES
(Continued, Page 2 of 2)

1.0 INTRODUCTION

This report presents the Work and Safety/Contingency Plans for the Confirmation Study at the Marine Corps Base (MCB), Camp Lejeune, North Carolina. The Work Plan addresses Round Two of the Verification Step (Step IA) for Camp Lejeune as a whole and the Characterization Step (Step IB) and Feasibility Step (Step II) for the Hadnot Point Area. The Safety/Contingency Plan applies to all phases of the study. These plans may be modified later, as onsite conditions become more clearly defined or as warranted by unforeseen considerations.

The objective of the Verification Step is to determine whether specific toxic and hazardous materials identified in the Initial Assessment Study (IAS), and possibly other contaminants, are present in concentrations considered to be hazardous. Efforts in this round of the Verification Step will include the installation of additional ground water monitoring wells and sampling of ground water, surface water, soil, and sediment. The result of the Verification Step will be a general evaluation of contamination found, including geohydrological, health, safety, and regulatory aspects, and a recommendation as to whether or not to proceed with the Characterization Step of the Confirmation Study. or to proceed to the third and last round of sampling under Verification.

The Characterization Step seeks to quantify, in detail, the source, strength, and extent of specific contaminant discharges. Additionally, site-specific determination of aquifer characteristics, rate, and direction of ground water flow and contaminant transport are to be determined. Specific work efforts include additional sampling of all environmental media, soil gas surveys, and aquifer testing. The ultimate goal of these efforts is to provide a complete data base from which a Feasibility Study (FS) may be conducted.

Discuss the feasibility study cost estimates, project documentation, etc for programming purposes.

2.0 WORK PLAN

The Work Plan consists of a task-by-task description of the plan of action for completing Round Two of the Verification Step of the Confirmation Study. Additionally, the Characterization Step will be initiated for the Hadnot Point Area (Site 22). The Work Plan includes a project schedule and a brief discussion of the project organization that was developed to assure successful project completion. Each of these components of the Work Plan is presented in this section.

2.1 PLAN OF ACTION

The plan of action was developed based on a thorough review of the scope of work detailed in Change Order P00002 to Contract No. N62470-83-C-6106. Information from the collection and analysis of samples derived from the work efforts of Round One of the Verification Step was utilized to select Round Two sampling stations. Additionally, the IAS Report for MCB Camp Lejeune [Naval Energy and Environmental Support Activity (NEESA) Report No. NEESA 13-011, April 1983] was utilized in the design of this Work Plan.

The plan of action includes the Verification Step investigation of 20 sites of potential contamination which are listed below and shown in Figure 2-1.

Site Number	Name
1	French Creek Liquids Disposal Area
2	Former Nursery/Day Care Center (Bldg. 712)
6	Storage Lots 201 and 203
9	Fire Fighting Training Pit
21	Transformer Storage Lot 140
24	Industrial Area Fly Ash Dump
28	Hadnot Point Burn Dump
30	Sneads Ferry Road Fuel Tank Sludge Area

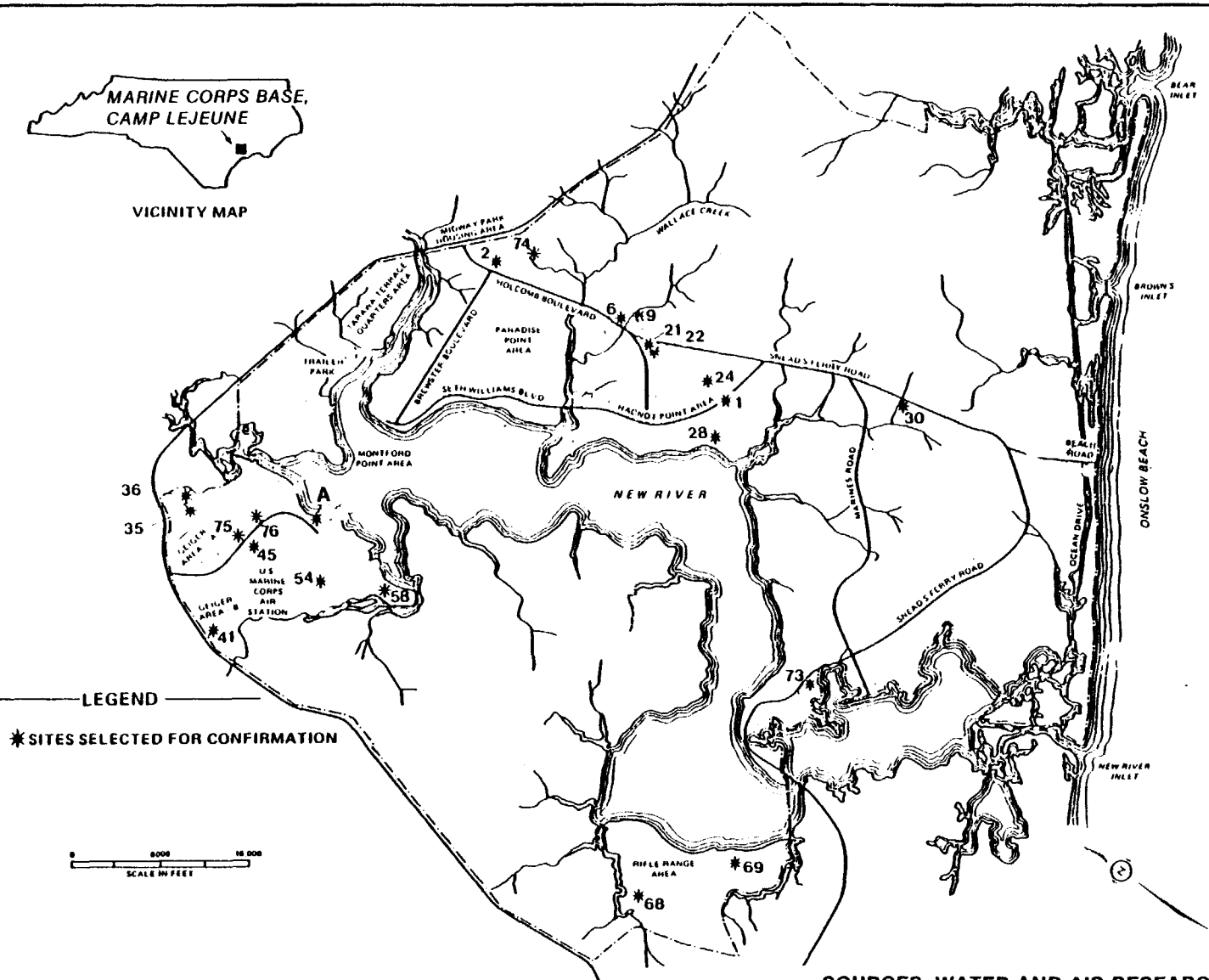


Figure 2-1
SITE MAP SHOWING LOCATIONS OF SITES OF POTENTIAL CONTAMINATION AT MARINE CORPS BASE, CAMP LEJEUNE

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE

USMC 9/86 k

35	Camp Geiger Area Fuel Farm
36	Camp Geiger Area Dump near Sewage Treatment Plant (STP)
41	Camp Geiger Dump
45	Campbell Street Fuel Farm
54	Crash Crew Fire Training Burn Pit
68	Rifle Range Dump
69	Rifle Range Chemical Dump
73	Courthouse Bay Liquids Disposal Area
74	Mess Hall Grease Disposal Area
75	Marine Corps Air Station (MCAS) Basketball Court Site
76	MCAS Curtis Road Site
A	MCAS(H) Officers Housing Area

Characterization Step efforts will be initiated at Site 22, Hadnot Point Industrial Area Tank Farm (Fig. 2-1).

A task-by-task description of the plan of action for performing the required work efforts at 20 designated sites follows.

2.1.1 PRESITE ACTIVITIES

1. Development of Work Plan: Review existing records, conduct site reconnaissance, and meet with Engineer-In-Charge (EIC) and MCB Camp Lejeune personnel to discuss Plan of Action and Milestones (POA&M). Prepare work plan and forward to EIC.
2. Development of Safety/Contingency Plan: Assess potential risks associated with field investigations and laboratory analyses and coordinate with MCB Camp Lejeune Safety personnel to establish a Safety/Contingency Plan. Plan must address safety precautions to be taken by contractor, subcontractor, and MCB Camp Lejeune personnel, to include protective clothing and training, and emergency response procedures.

3. Well Drilling Specifications: Prepare specifications and subcontract for well drilling subcontractor.
4. Training: In accordance with the Safety Plan, an indoctrination of MCB Camp Lejeune personnel on all aspects of the contractor's safety requirements, including equipment, will be conducted. In addition, in-house training for contractor personnel will be performed.

2.1.2 ONSITE INVESTIGATION

1. Setup of Equipment Storage: Upon arrival of the field team at MCB Camp Lejeune, secure locations for storage of equipment and supplies will be identified and utilized.
2. Physical Survey and Document Review: Contaminated water supply wells have been identified in the Hadnot Point Industrial Area. The source(s) of this contamination by chlorinated organic compounds is not identified by the current data base. Prior to any geotechnical, geochemical, or geohydrological investigations within Hadnot Point, an extensive inspection of the past and present physical facilities of Hadnot Point will be conducted. Additionally, review of all pertinent documentation of use of solvent compounds in the area will take place, as well as interviews of all available Camp LeJeune staff with knowledge of solvent usage. This investigation will include the areas surrounding contaminated supply wells 651, 652, and 653, located to the north of the central area of Hadnot Point.
3. Soil Gas Investigation: Prior to the drilling and installation of monitor wells at Site 22 (Hadnot Point Industrial Area), a soil gas investigation will be conducted to optimize the location of the monitor wells with regard to delineation of both the source(s) and extent of the area of contamination. The investigation will be concentrated in the areas of Hadnot Point which have been identified, by the records review effort, to be the most probable source areas. Additionally, soil gas

investigations will be conducted in the vicinity of contaminated wells 651, 652, and 653.

4. Drilling and Boring: Drilling and boring will be required for monitor well installation and soil sampling. Tables 2-1, 2-2, and 2-3 describe the sampling and analysis program for the verification effort, potable well survey, and characterization effort, respectively. Figures 2-2 through 2-19 show the proposed locations for the wells and soil cores. In addition, Table 2-4 presents information relative to the number of soil borings and the number of soil samples to be collected from each boring. Drilling will begin at the sites located in the northeastern portion of the installation (Sites 2, 6, 9, 21, 24, 28, 30, and 74) and proceed to Site 73, located in the southeastern portion of the base. From Site 73, drilling will then proceed to those sites located in MCAS (Sites A, 35, 36, 41, 45, and 54). The locations of wells and borings, as well as the installation schedule, may be modified by the senior ESE field person, based on site-specific requirements.

5. Well Development: Following the installation of ground water monitoring wells, each well will be developed by vigorous pumping and surging to assure the collection of representative ground water samples during subsequent sampling activities.

6. Surveying: Surveying will be performed to provide ~~approximate~~ vertical and horizontal locations of all monitoring wells and borings and to determine ground water elevations in each well. The elevation of the top of casing for each well at a specific site will be determined based on a relative datum to be established for each site. Elevations of wells will be reported at the top of the well casing, with the cap off. All well and boring locations will be plotted on existing base maps and described (with distances and compass headings) relative to fixed landmarks.

this must be to the 0.01 ft approx.

to 0.01 ft.

Table 2-1. Round Two Verification Step Sampling and Analysis Program

Site No.	Wells to be Installed	Existing Wells	Surface Water	Sediment	Soil Samples	Frequency	Target Analytes
1	0	6	2	2	0	1	Water: Cd, Cr, Pb, Sb, O&G VOA, T. Phenols, Xylene, MEK, MIBK, EDB, Cr^{+6} Sediment: Cd, Cr, Pb, Sb, O&G, T. Phenols, EDB, Cr^{+6}
2	4	1	2	2	4	1/2 *	Water: OCP, OCH, TCDD, VOA Sediment: OCP, OCH, TCDD
6	8	0	4	4	0	1/2	DDT-R, VOA
9	1	2	0	0	0	1/2	Cd, Cr, Pb, O&G, VOA, T. Phenol, Xylene, MEK, MIBK, EDB, Cr^{+6}
21	0	1	0	0	32	1	Soil: OCP, OCH, PCB, TCDD Water: VOA, OCP, OCH, PCB, TCDD, Xylene, MEK, MIBK, EDB, O&G
24	2	5	4	4	0	1/2	Sediment: Metals A, Cr^{+6} Water: VOA, Metals A, Cr^{+6}
28	1	3	7	7	0	1/2	Water: Metals B, OCP, PCB, O&G, VOA, TCDD, Xylene, MEK, MIBK, Cr^{+6} Sediment: Metals B, OCP, PCB, O&G, TCDD, Cr^{+6}
30	1	1	1	1	0	1/2	Water: Pb, O&G, VOA, Xylene, MEK, MIBK, EDB Sediment: Pb, O&G, EDB

* need to

Table 2-1. Round Two Verification Step Sampling and Analysis Program (Continued, Page 2 of 3)

Site No.	Wells to be Installed	Existing Wells	Surface Water	Sediment	Soil Samples	Frequency	Target Analytes
35	3	0	2	2	0	1/2	Water: Pb, VOA, EDB, Xylene, O&G Sediment: Pb, EDB, O&G
36	1	4	4	4	0	1/2	Water: Cd, Cr, Pb, O&G, VOA, T. Phenol, TCDD, Xylene, MEK, MIBK, Cr^{+6}, EDB Sediment: Cd, Cr, Pb, O&G, T. Phenols, TCDD, Cr^{+6}, EDB
41	1	4	4	4	0	1/2	Water: Cd, Cr, Pb, VOA, T. Phenols, OCP, O&G, Mirex, Ordnance, TCDD, Xylene, MEK, MIBK, Cr^{+6} Sediment: Cd, Cr, Pb, T. Phenols, OCP, O&G, Mirex, Ordnance, TCDD, Cr^{+6}
45	1	3	2	2	18	1/2	Water: Pb, O&G, VOA, EDB, Xylene Soil/Sediment: Pb, O&G
54	2	1	3	3	0	1/2	Water: Cd, Cr, Pb, O&G, VOA, T. Phenols, Xylene, MEK, MIBK, EDB, Cr^{+6} Sediment: Cd, Cr, Pb, O&G, T. Phenols, EDB, Cr^{+6}
68	0	3	0	0	0	1	VOA, Xylene, MEK, MIBK, EDB

Table 2-1. Round Two Verification Step Sampling and Analysis Program (Continued, Page 3 of 3)

Site No.	Wells to be Installed	Existing Wells	Surface Water	Sediment	Soil Samples	Frequency	Target Analytes
69	0	8	5	2	0	1	Water: OCP, PCB, PCP, VOA, Hg, Residual Chlorine, TCDD, Xylene, MEK, MIBK, EDB Sediment: OCP, PCB, PCP, Hg, Residual Chlorine, TCDD, EDB
73	1	4	3	3	0	1/2	Water: Cd, Cr, Pb, Sb, O&G, VOA, T. Phenols, Xylene, MEK, MIBK, EDB, Cr^{+6} Sediment: ?
74	1	2	0	0	0	1/2	OCP, OCH, PCB, TCDD, VOA
75	0	3	0	0	0	1	VOA, Chloropicrin, TCDD
76	0	2	0	0	0	1	VOA, Chloropicrin, TCDD
A	3	0	1	1	0	1/2	Water: VOA, O&G, Free Chlorine Sediment: O&G

Note:

Key to Analyte Abbreviations:

Cd = cadmium;
Cr = chromium;
Pb = lead;
Sb = antimony;
O&G = oil and grease;
VOA = volatile organic analysis;
T. Phenols = total phenols;
OCP = organochlorine pesticides;
OCH = organochlorine herbicides;
DDT-R = o,p- and p,p'-isomers of DDD, DDE, and DDT;
EDB = ethylene dibromide;
TCDD = tetrachlorodioxin;
PCB = polychlorinated biphenyls;
Metals A = arsenic, cadmium, chromium, copper, lead, nickel, selenium, and zinc;
Metals B = arsenic, cadmium, chromium, lead, mercury, nickel, and zinc;
Ordnance = TNT, DNT, RDX, and white phosphorus (WP);
PCP = pentachlorophenol;
Hg = mercury;
Cr^{+6} = hexavalent chromium;
Xylene = o, m, and p- isomers;
MEK = methylethyl ketone; and
MIBK = methyl isobutyl ketone.

All surface and ground water samples will be analyzed for temperature, specific conductance, and pH in the field.

Source: ESE, 1986.

Table 2-2. Potable Well Sampling Program

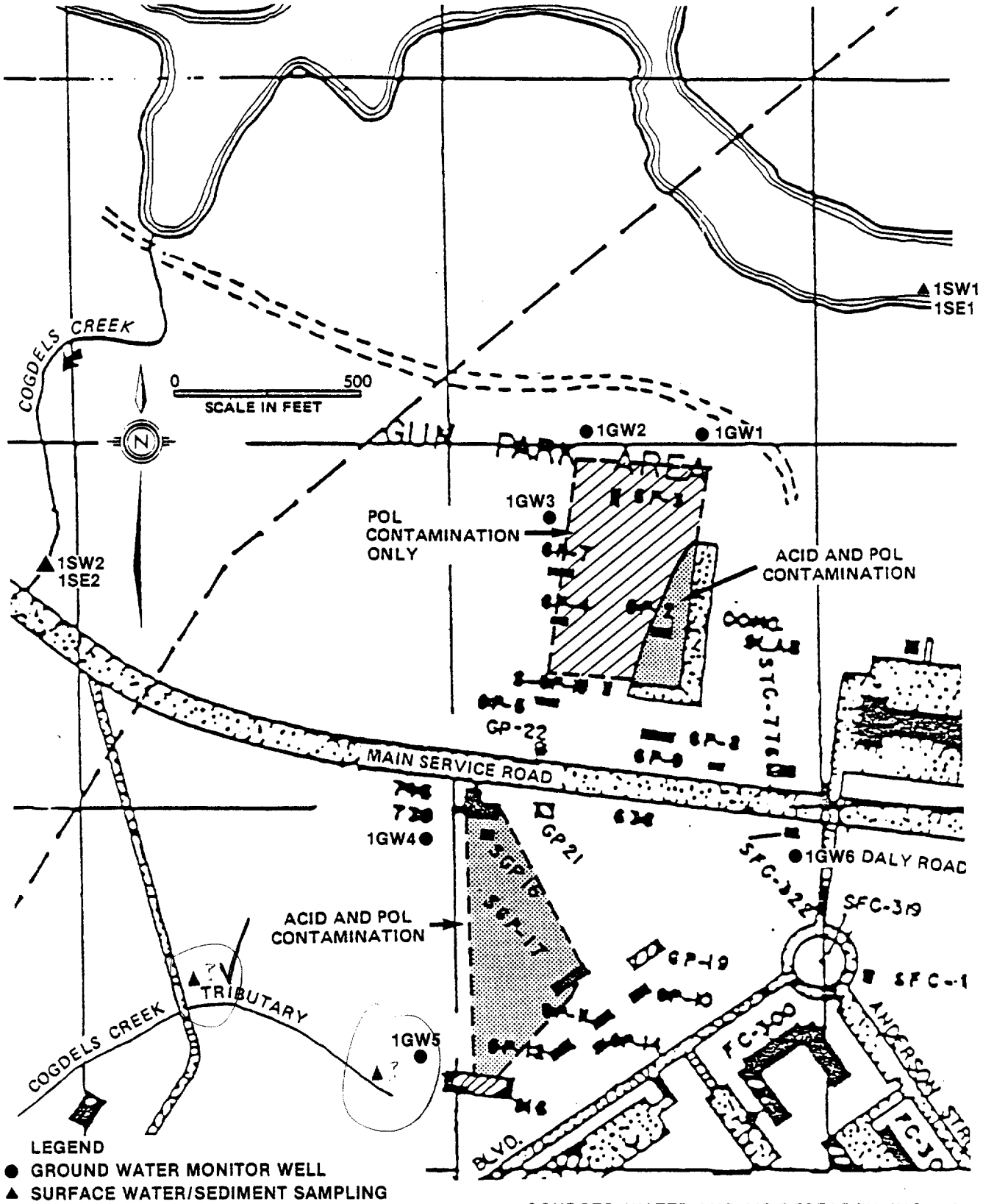
No. of Wells	No. of Wells per Sample	No. of Samples	Target Analytes
100	10	10	Priority pollutants (minus VOA), Ba, nitrate, chloride, Fe, Mn, Na, sulfate, THM, color, TDS, turbidity, EDB
100	1	100	VOA, Xylene, MEK, MIBK
8	1	8	Priority pollutants, xylene, MEK, MIBK, Ba, nitrate, chloride, Fe, Mn, Na, sulfate, THM, color, TDS, turbidity

Source: ESE, 1986.

Table 2-3. Characterization Step Sampling and Analysis Program--Hadnot Point Industrial Area

No. of Wells	Frequency of Sampling	Target Analytes
A. Area of Contaminated Wells 651, 652, 653		
5	2	VOA, xylene, MEK, MIBK
B. Site 22, Industrial Area Tank Farm		
29	3	Pb, O&G, VOA, xylene, MEK, MIBK, EDB

Source: ESE, 1986.



SOURCES: WATER AND AIR RESEARCH, INC., 1983.
ESE, 1986.

Figure 2-2
SAMPLING LOCATIONS AT SITE NO. 1, FRENCH CREEK LIQUIDS DISPOSAL AREA

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE

USMC 9/86 k

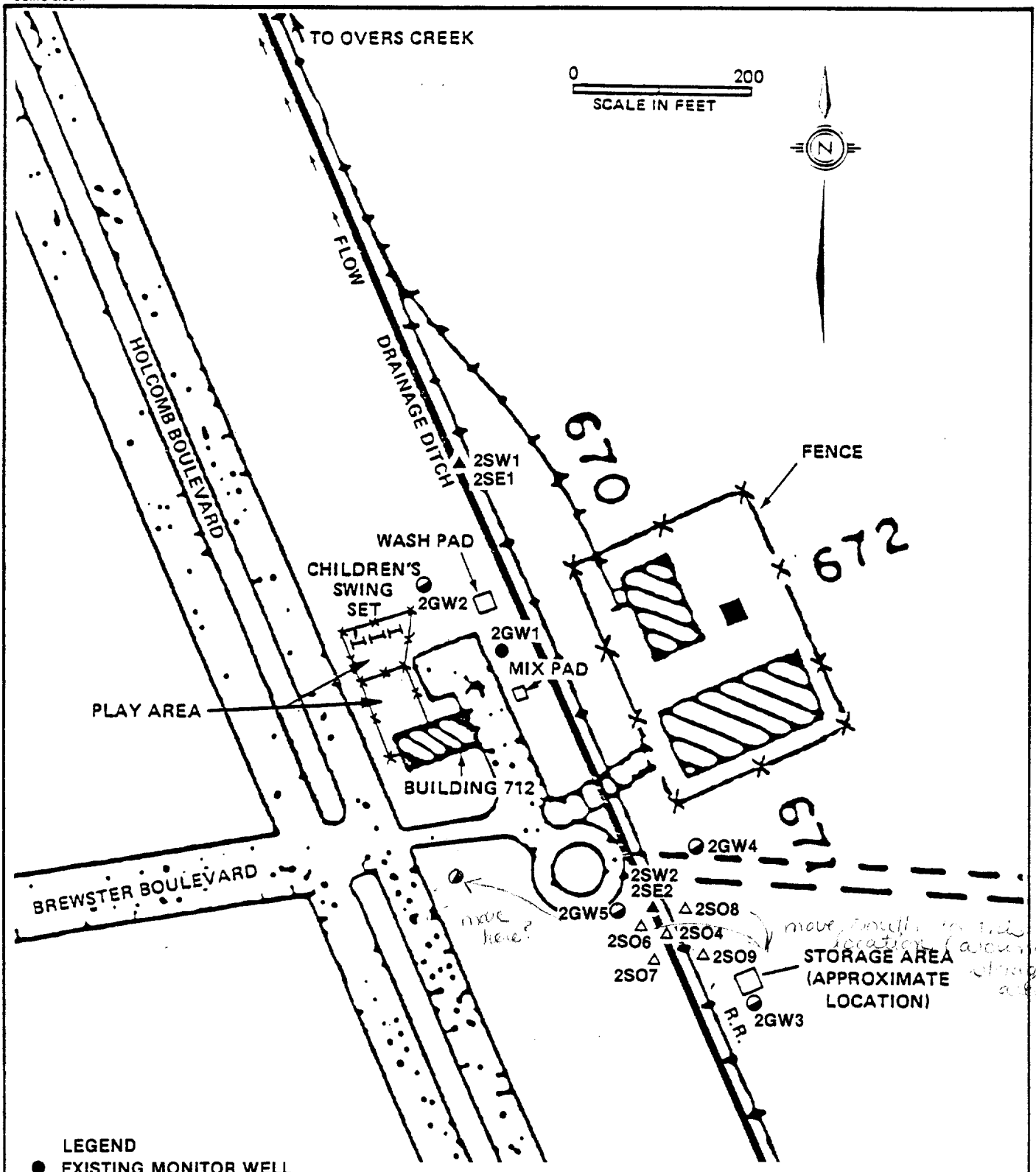


Figure 2-3
SAMPLING LOCATIONS AT SITE NO. 2, FORMER NURSERY/DAY CARE CENTER

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE

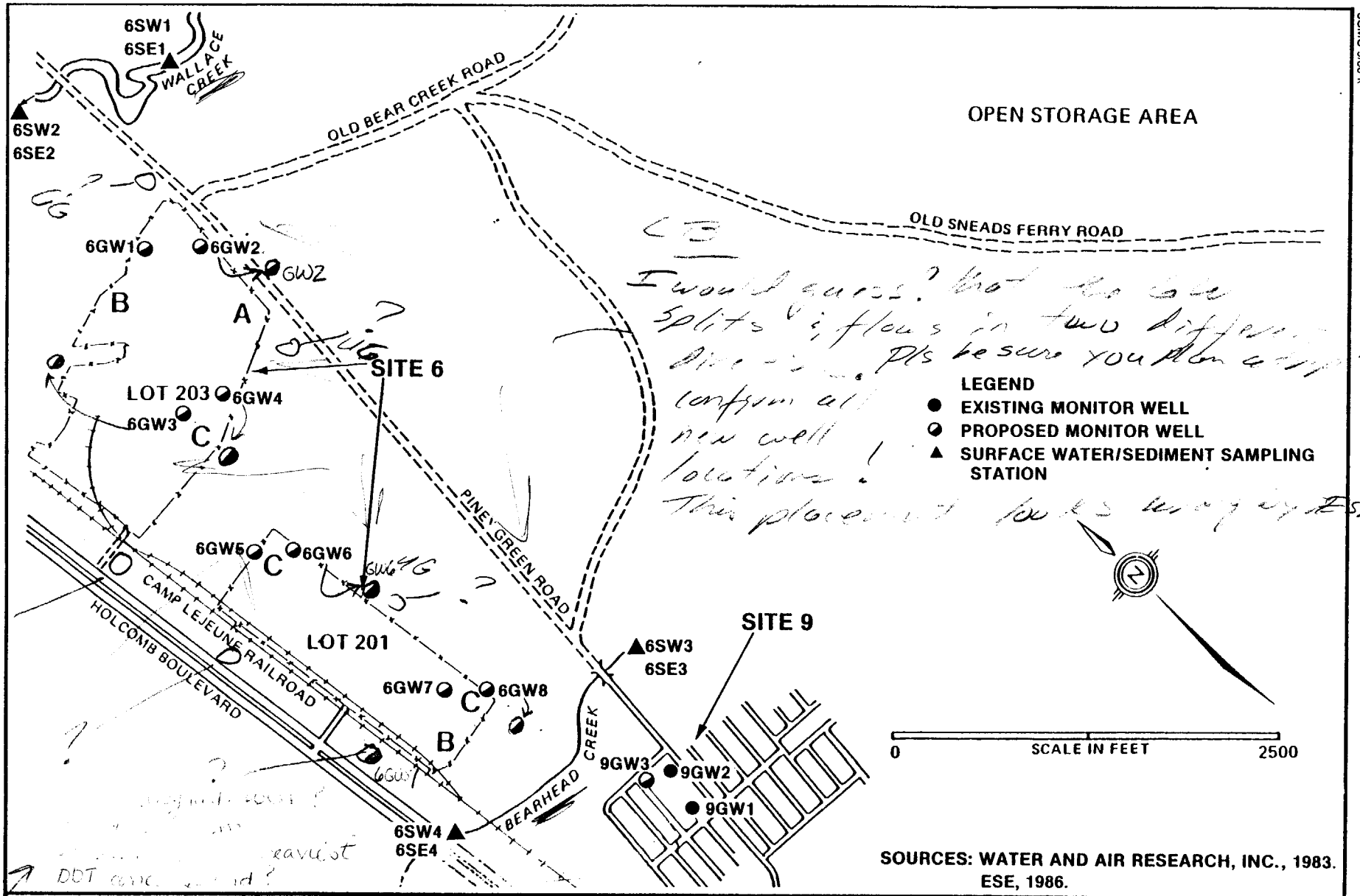


Figure 2-4
SAMPLING LOCATIONS AT SITE NOS. 6 AND 9, STORAGE LOTS 201 AND 203 AND FIRE FIGHTING TRAINING PIT

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE

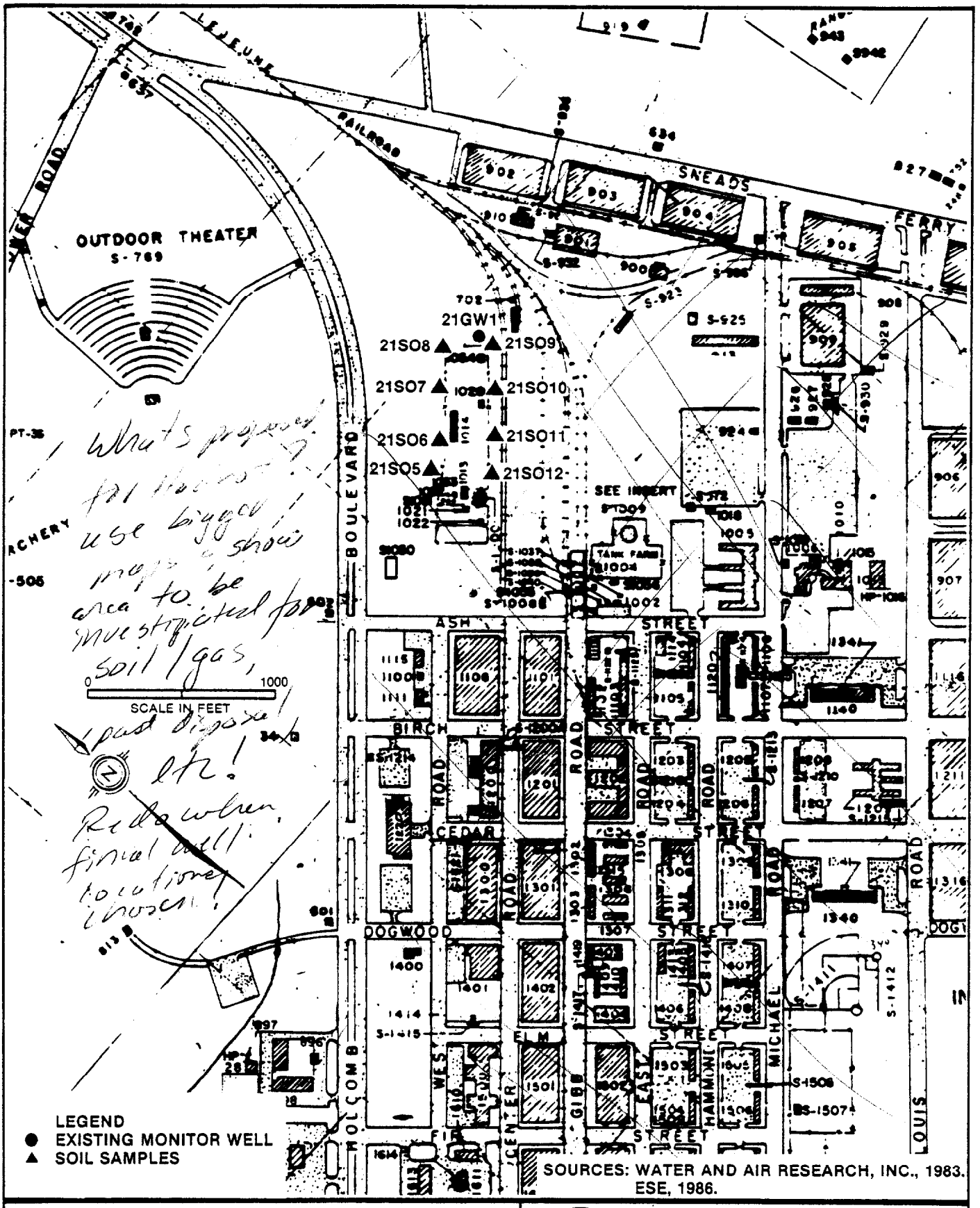
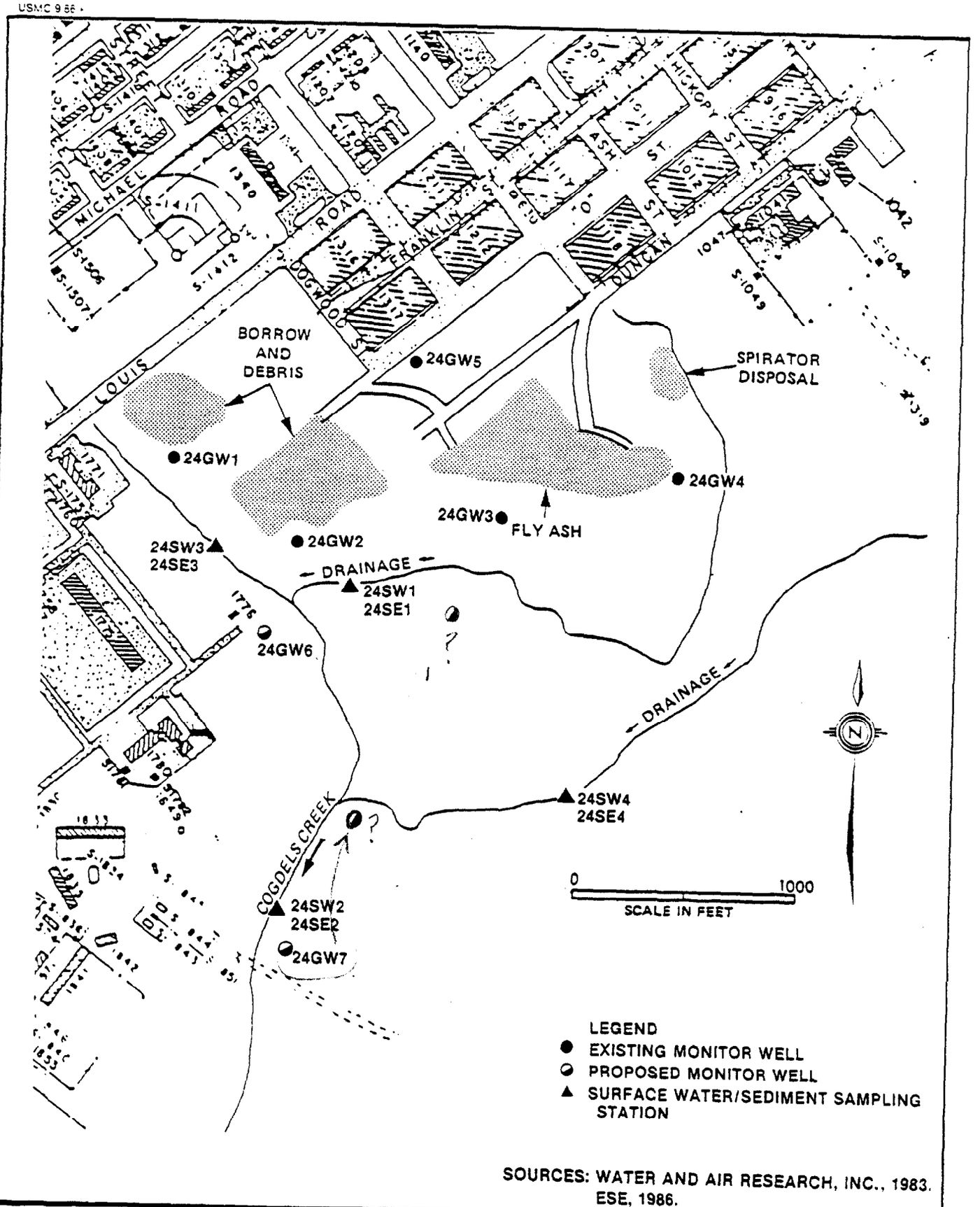


Figure 2-5
SAMPLING LOCATIONS AT SITE NO. 21
TRANSFORMER STORAGE LOT 140

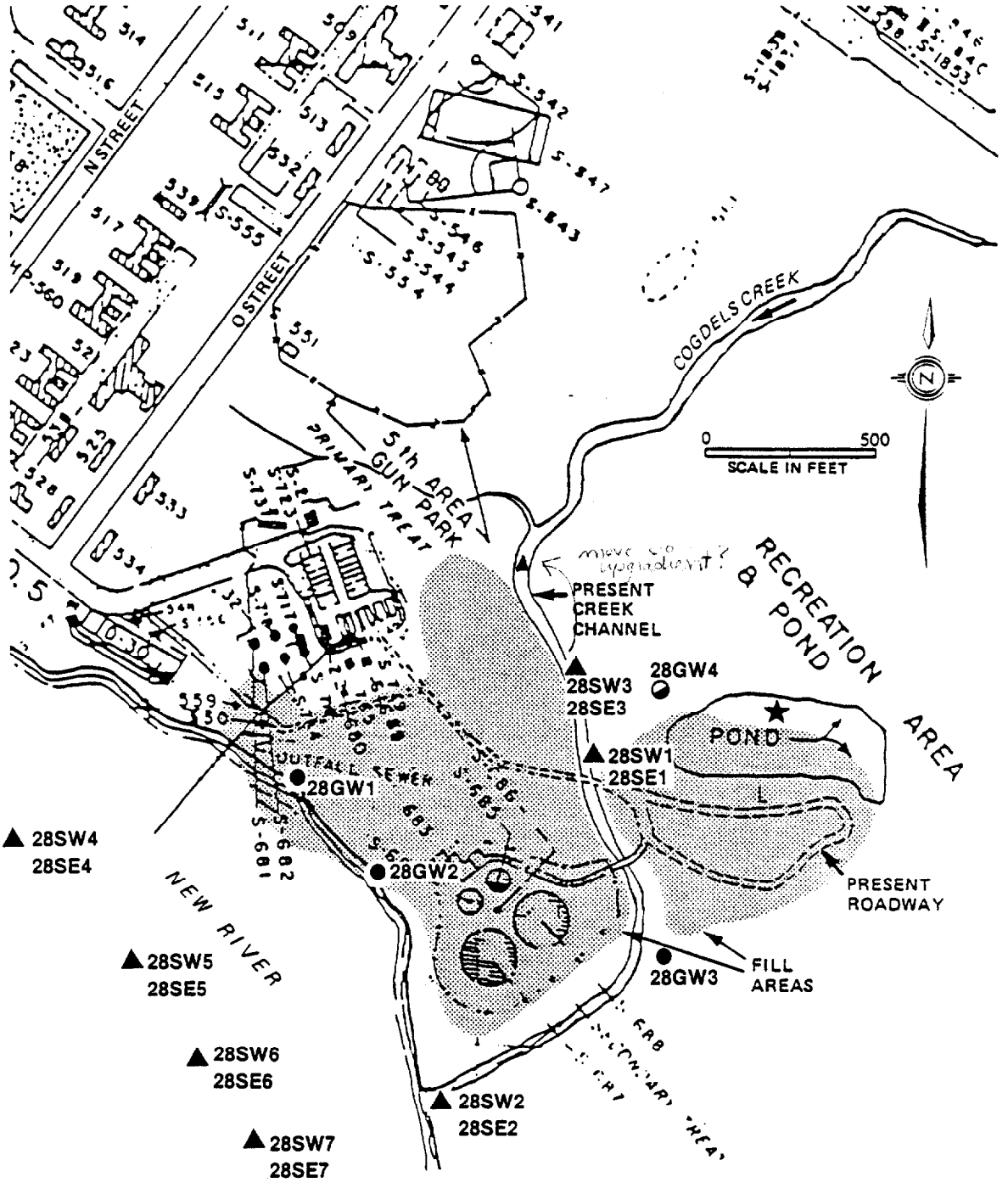
CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE



SOURCES: WATER AND AIR RESEARCH, INC., 1983.
ESE, 1986.

Figure 2-6
SAMPLING LOCATIONS AT SITE NO. 24,
INDUSTRIAL AREA FLY ASH DUMP

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE



LEGEND
- ● EXISTING MONITOR WELL
- ◕ PROPOSED MONITOR WELL
- ▲ SURFACE WATER/SEDIMENT SAMPLING STATION

SOURCES: WATER AND AIR RESEARCH, INC., 1983.
ESE, 1986.

Figure 2-7
SAMPLING LOCATIONS AT SITE NO. 28, HADNOT POINT BURN DUMP

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE

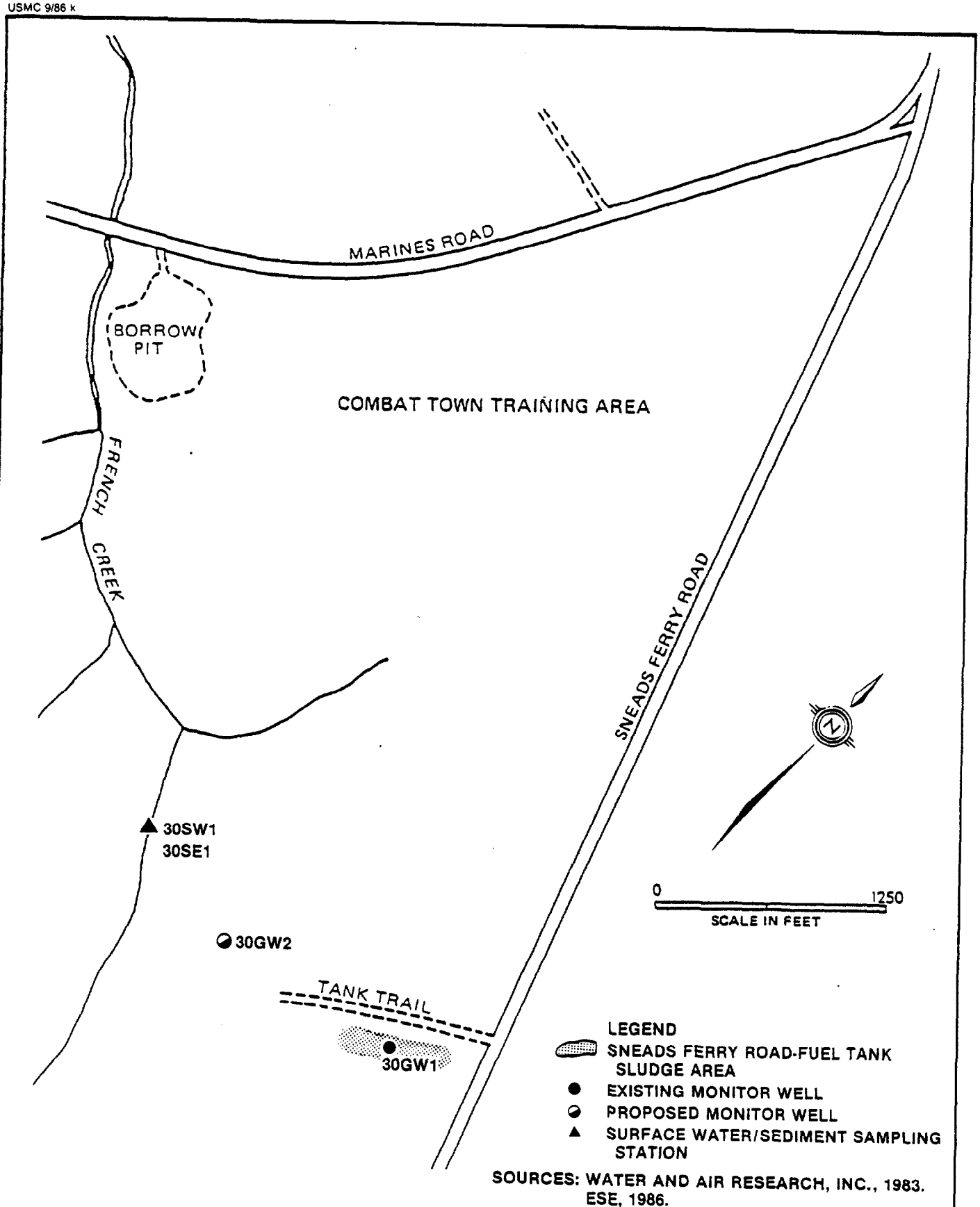


Figure 2-8
SAMPLING LOCATIONS AT SITE NO. 30, COMBAT TOWN TRAINING AREA

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE

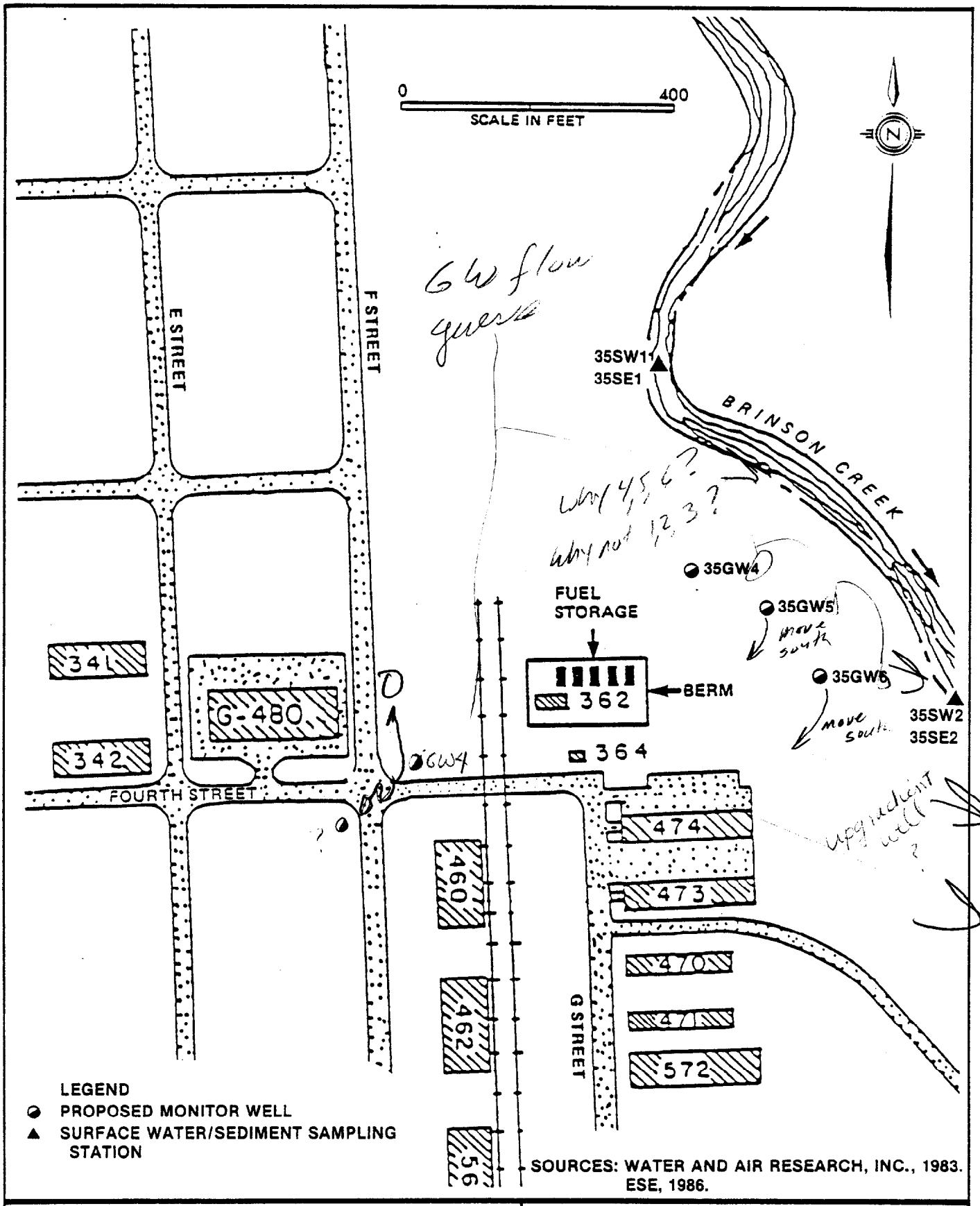
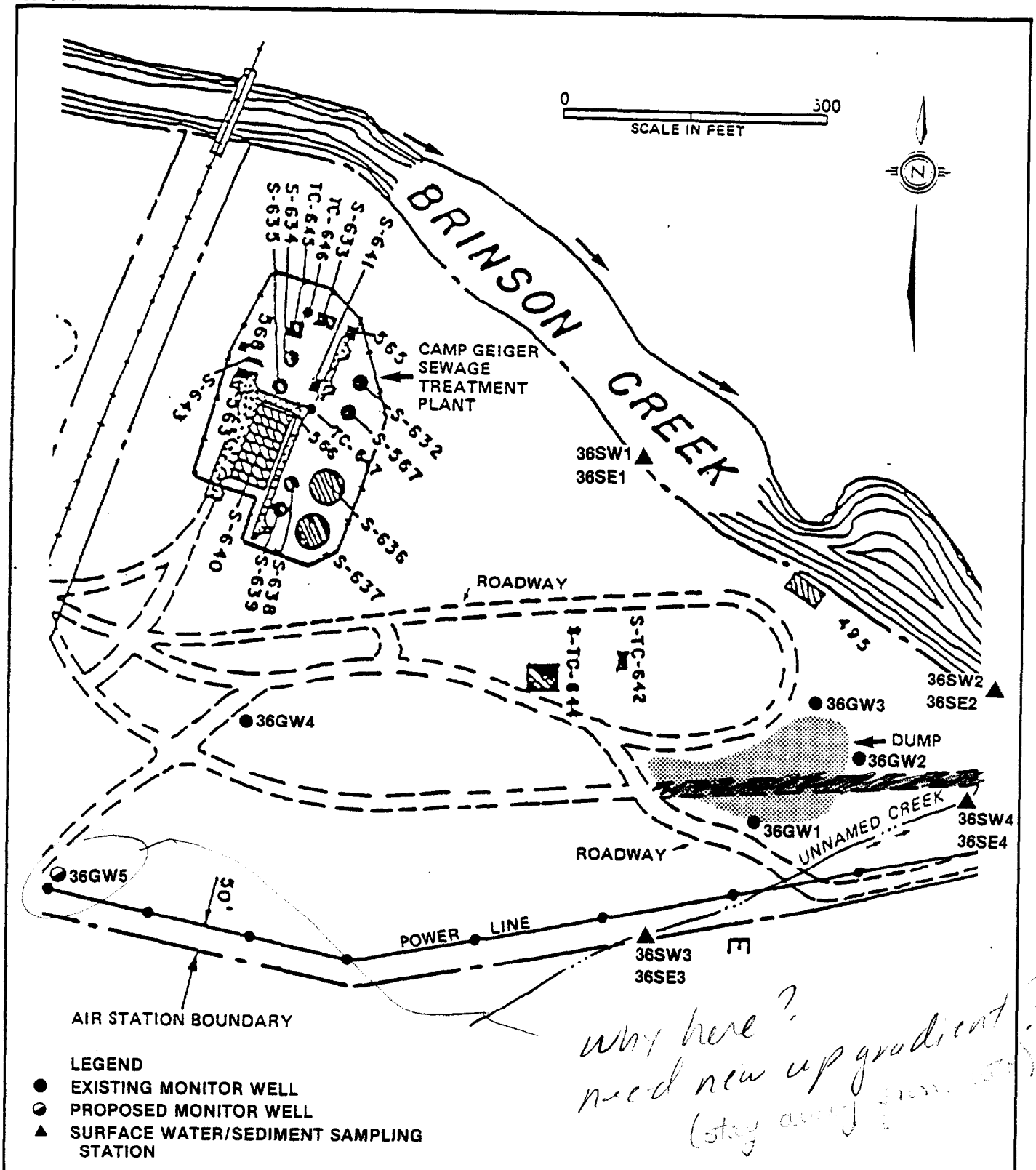


Figure 2-9
SAMPLING LOCATIONS AT SITE NO. 35, CAMP GEIGER AREA FUEL FARM

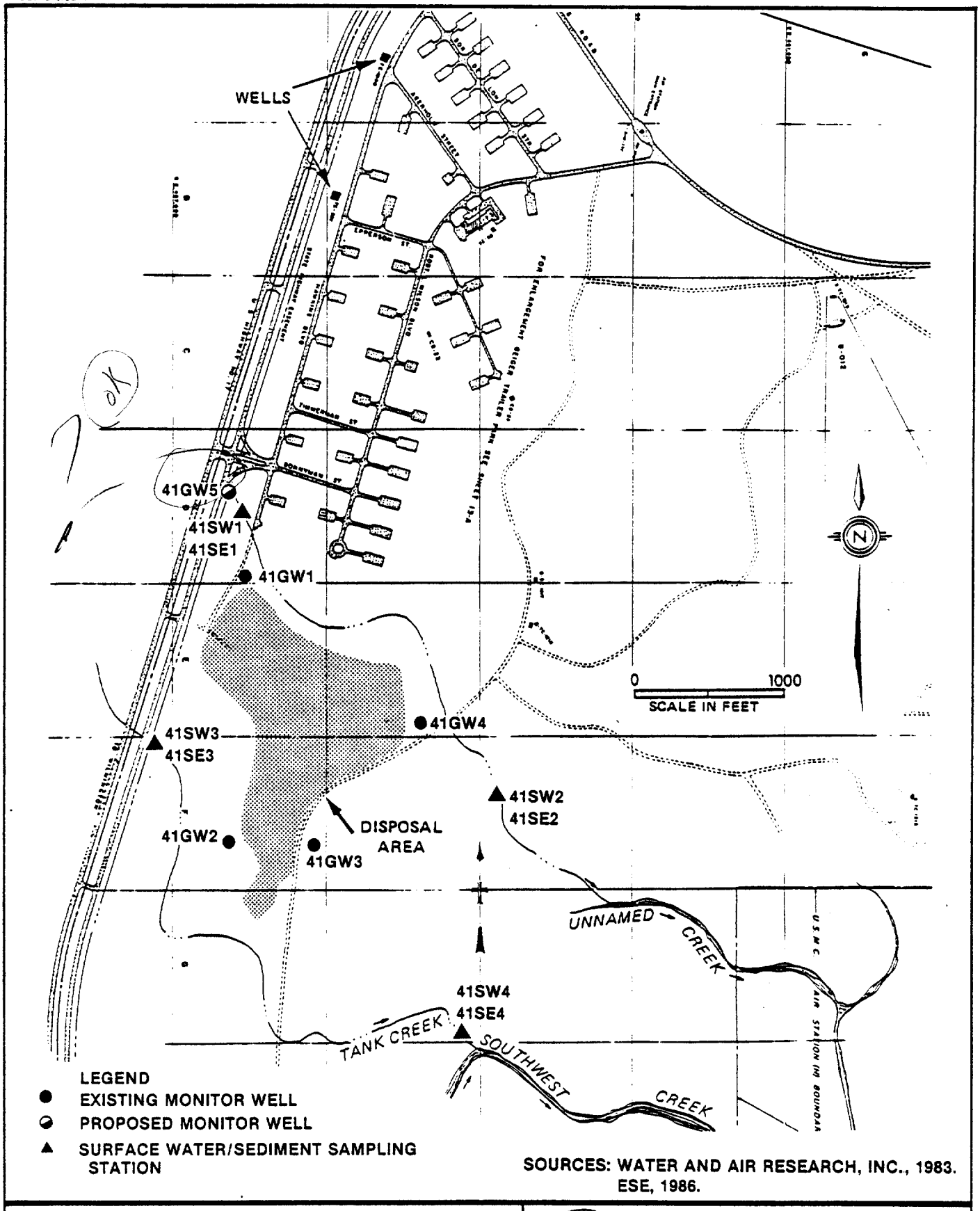
CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE



SOURCES: WATER AND AIR RESEARCH, INC., 1983.
ESE, 1986.

Figure 2-10
SAMPLING LOCATIONS AT SITE NO. 36, CAMP GEIGER AREA DUMP (NEAR STP)

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE



SOURCES: WATER AND AIR RESEARCH, INC., 1983.
ESE, 1986.

Figure 2-11
SAMPLING LOCATIONS AT SITE NO. 41, CAMP GEIGER DUMP (NEAR FORMER TRAILER PARK)

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE

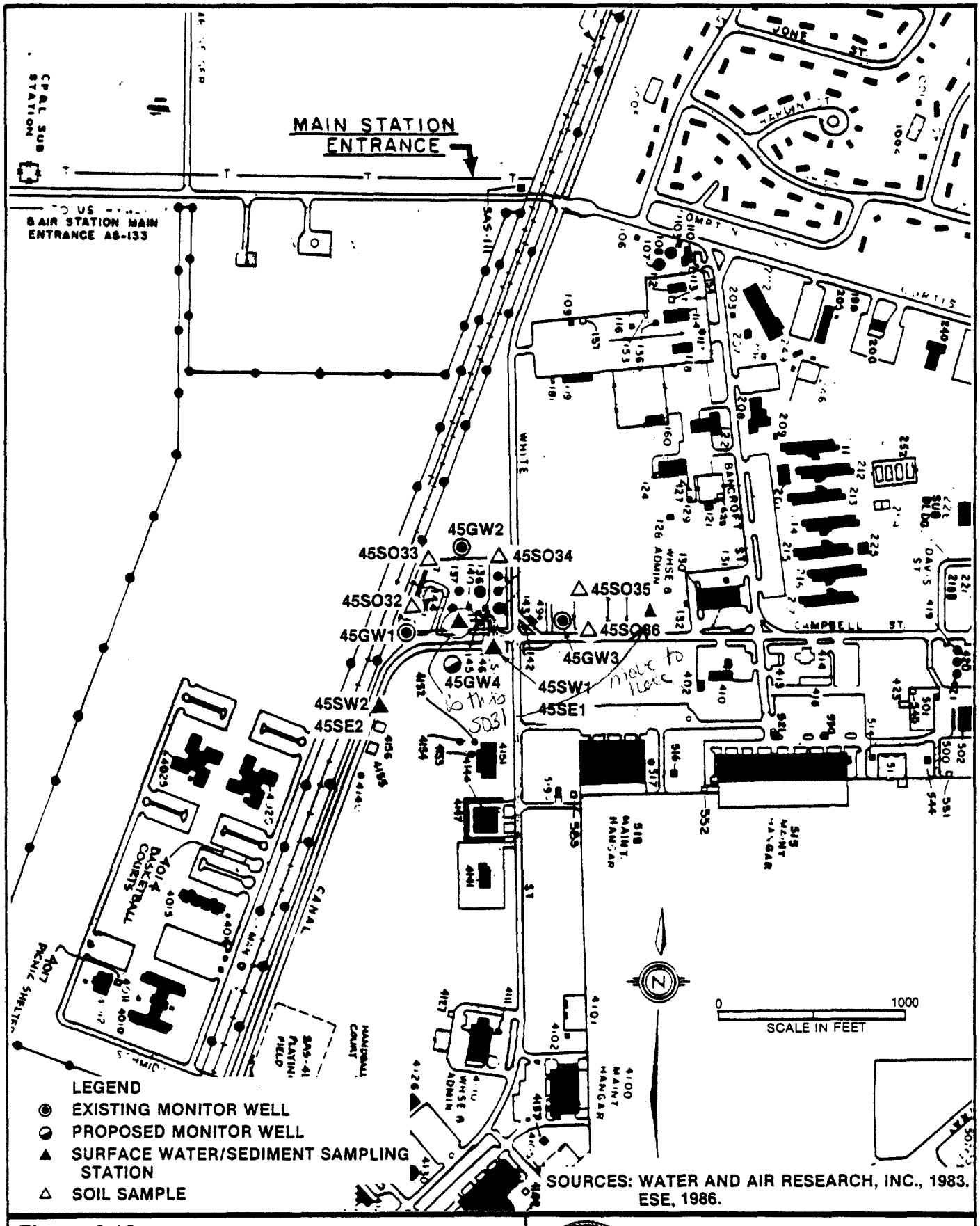


Figure 2-12
SAMPLING LOCATIONS AT SITE NO. 45, CAMPBELL STREET UNDERGROUND FUEL STORAGE AREA

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE

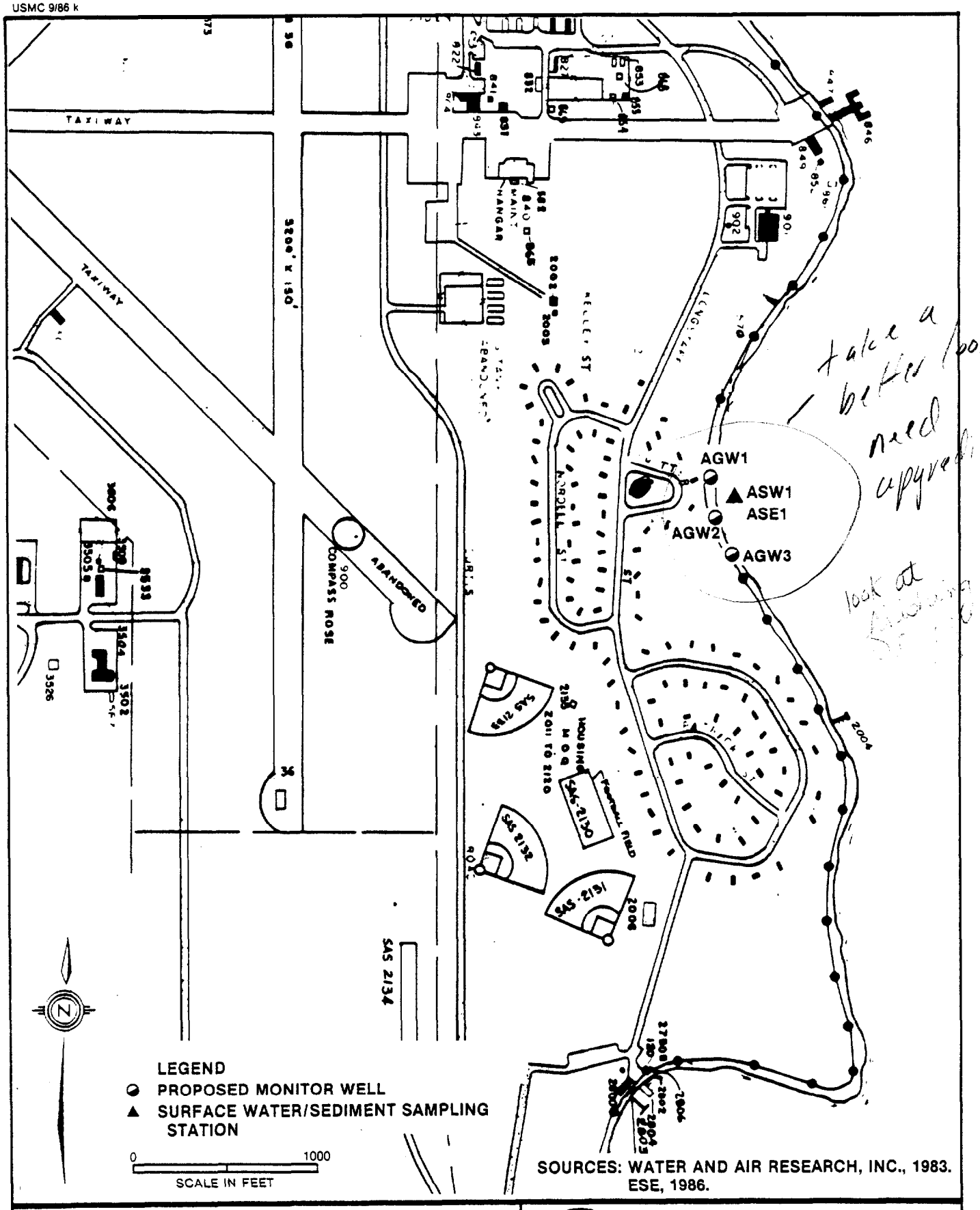


Figure 2-13
SAMPLING LOCATIONS AT SITE A, MCAS (H) OFFICERS

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE

USMC 9/86 k

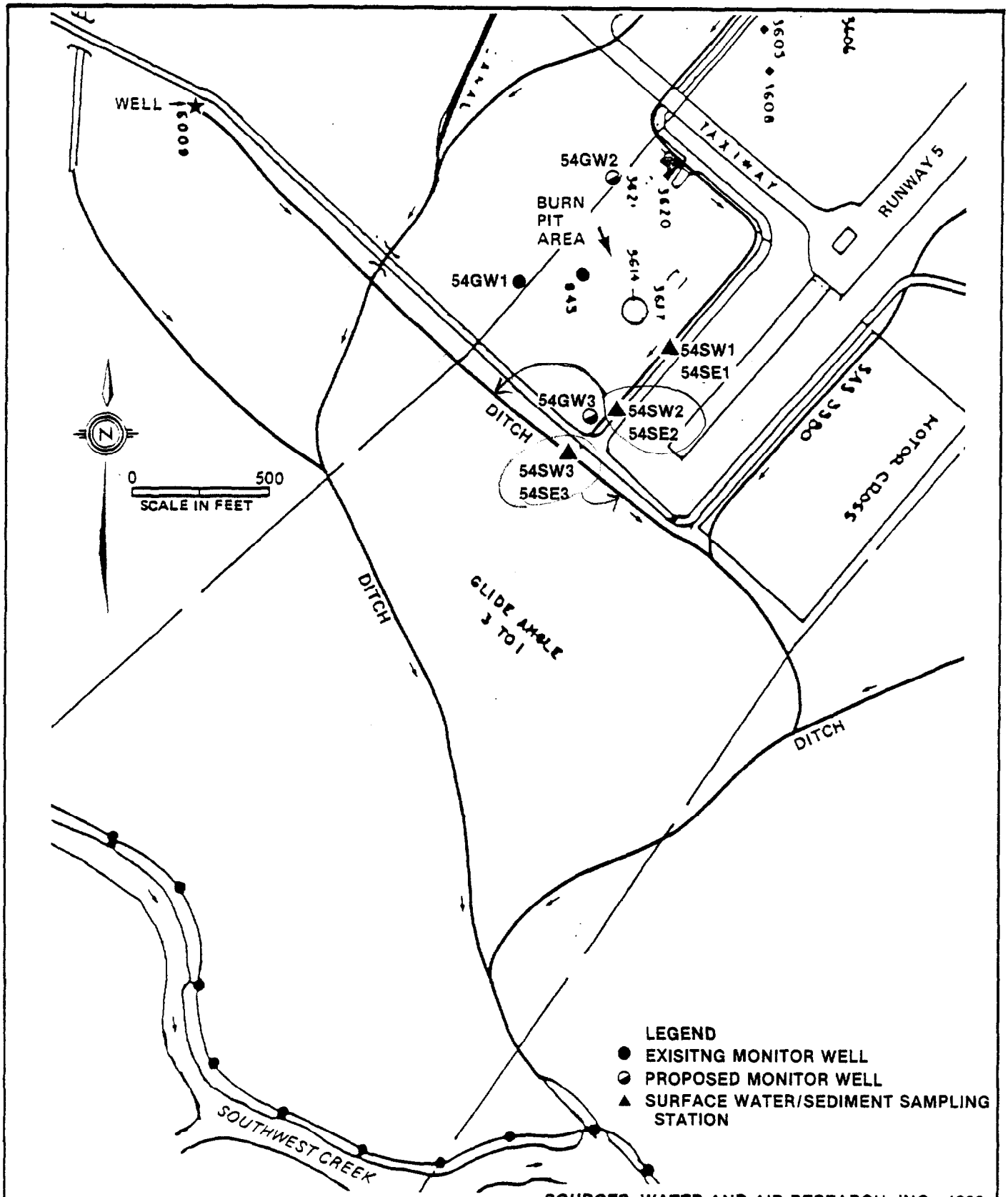
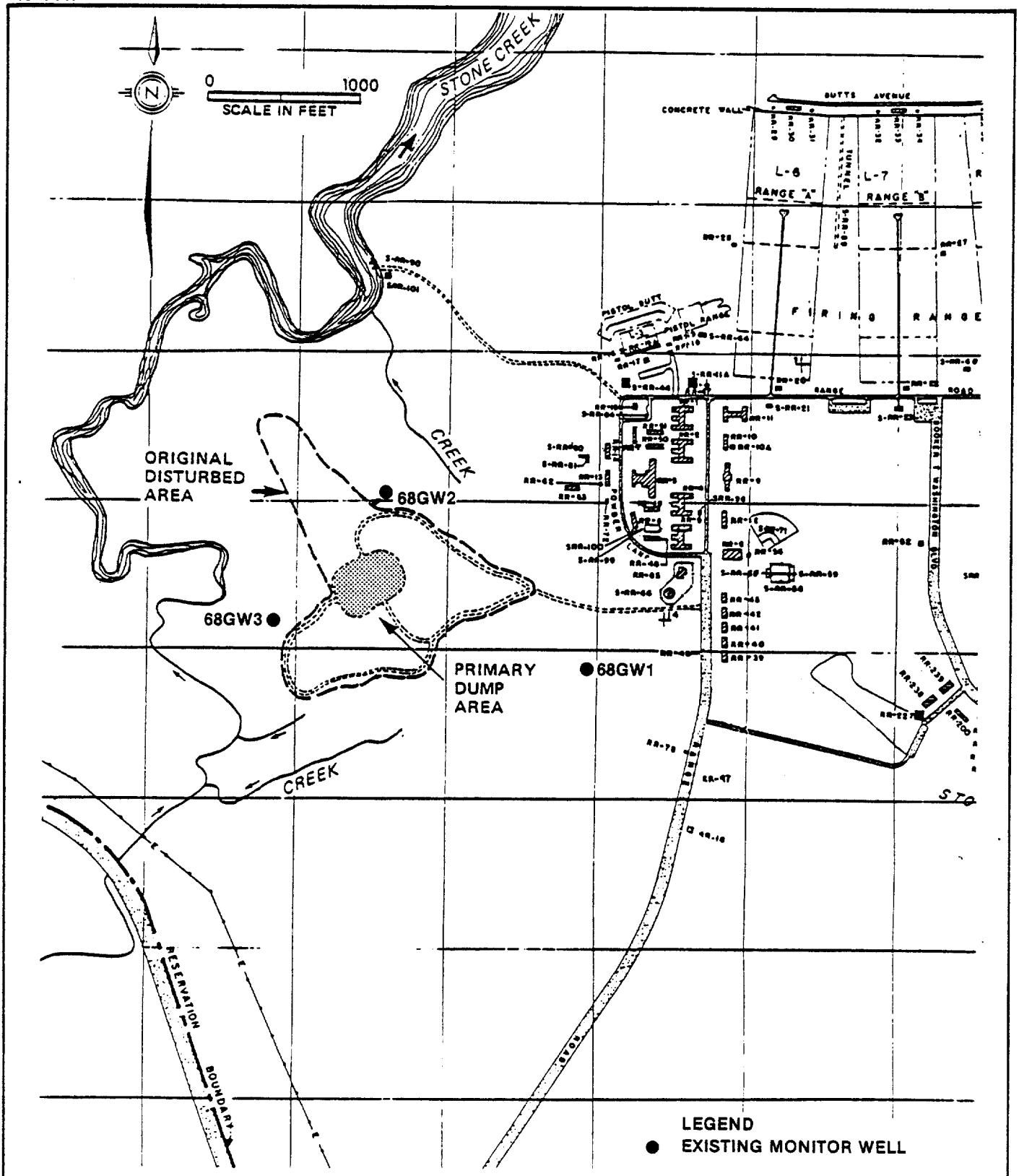


Figure 2-14
SAMPLING LOCATIONS AT SITE NO. 54, CRASH CREW FIRE TRAINING BURN PIT

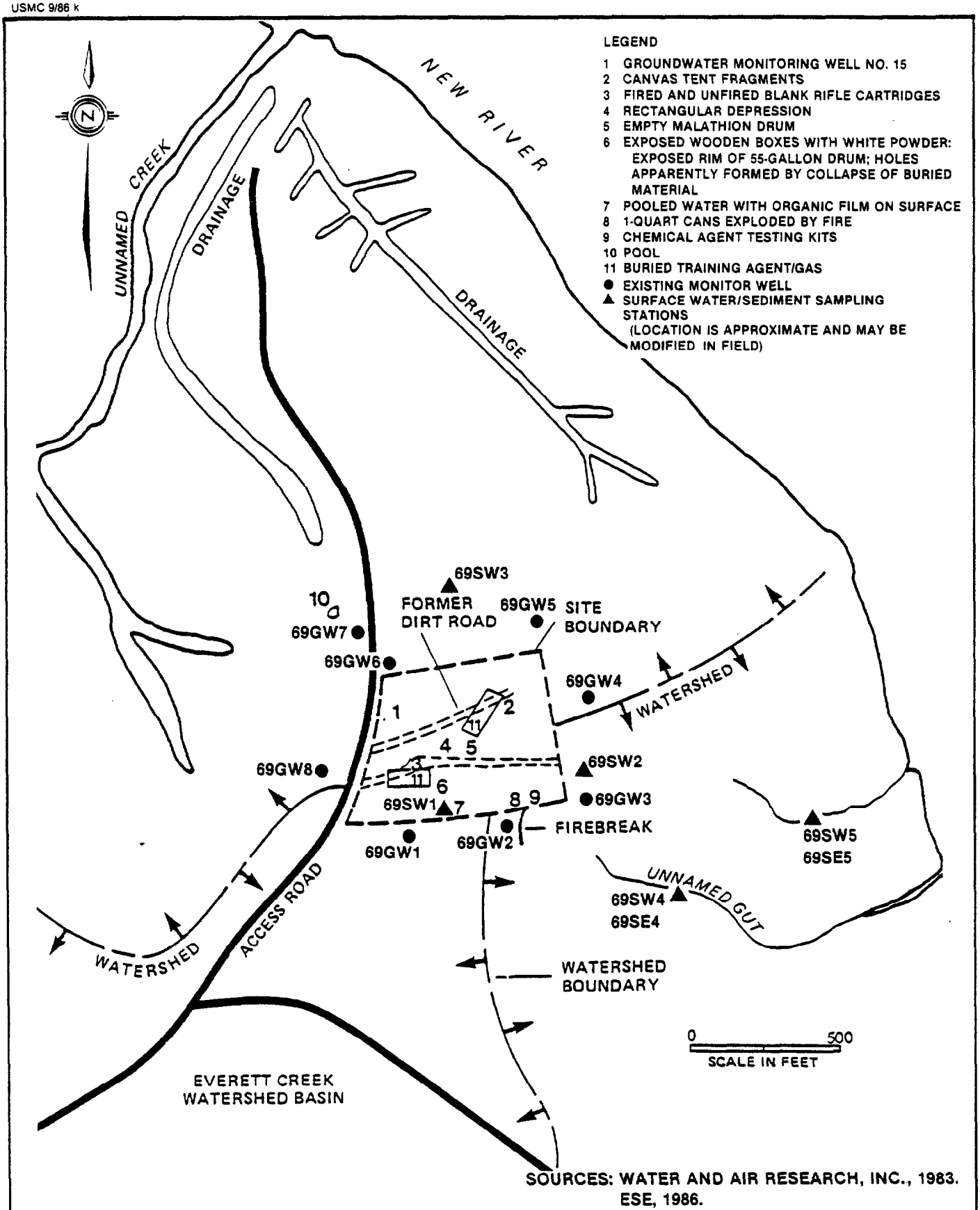
CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE



SOURCES: WATER AND AIR RESEARCH, INC., 1983.
ESE, 1986.

Figure 2-15
SAMPLING LOCATIONS AT SITE NO. 68, RIFLE RANGE DUMP

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE



SOURCES: WATER AND AIR RESEARCH, INC., 1983.
ESE, 1986.

Figure 2-16
SAMPLING LOCATIONS AT SITE NO. 69, RIFLE RANGE CHEMICAL DUMP

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE

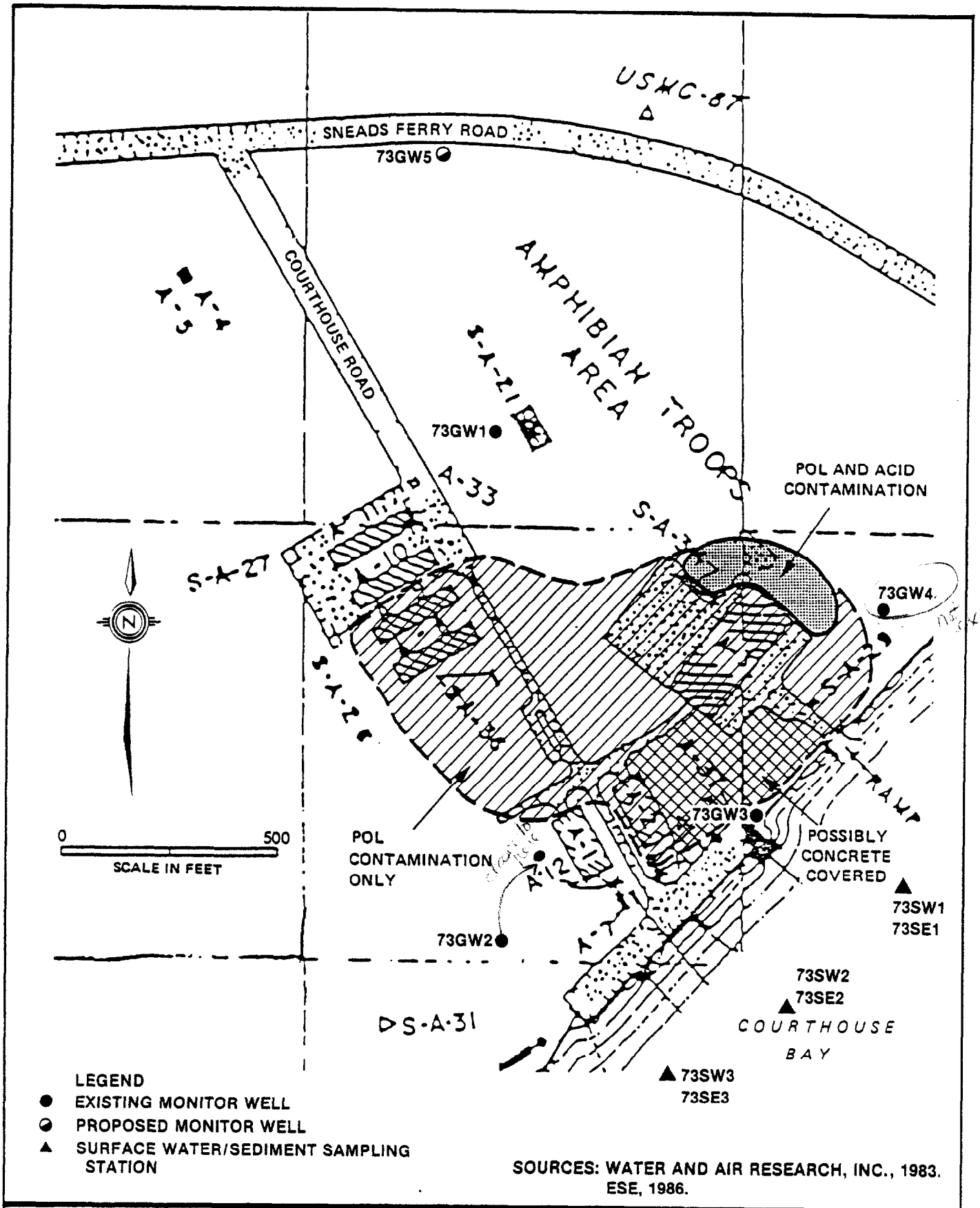
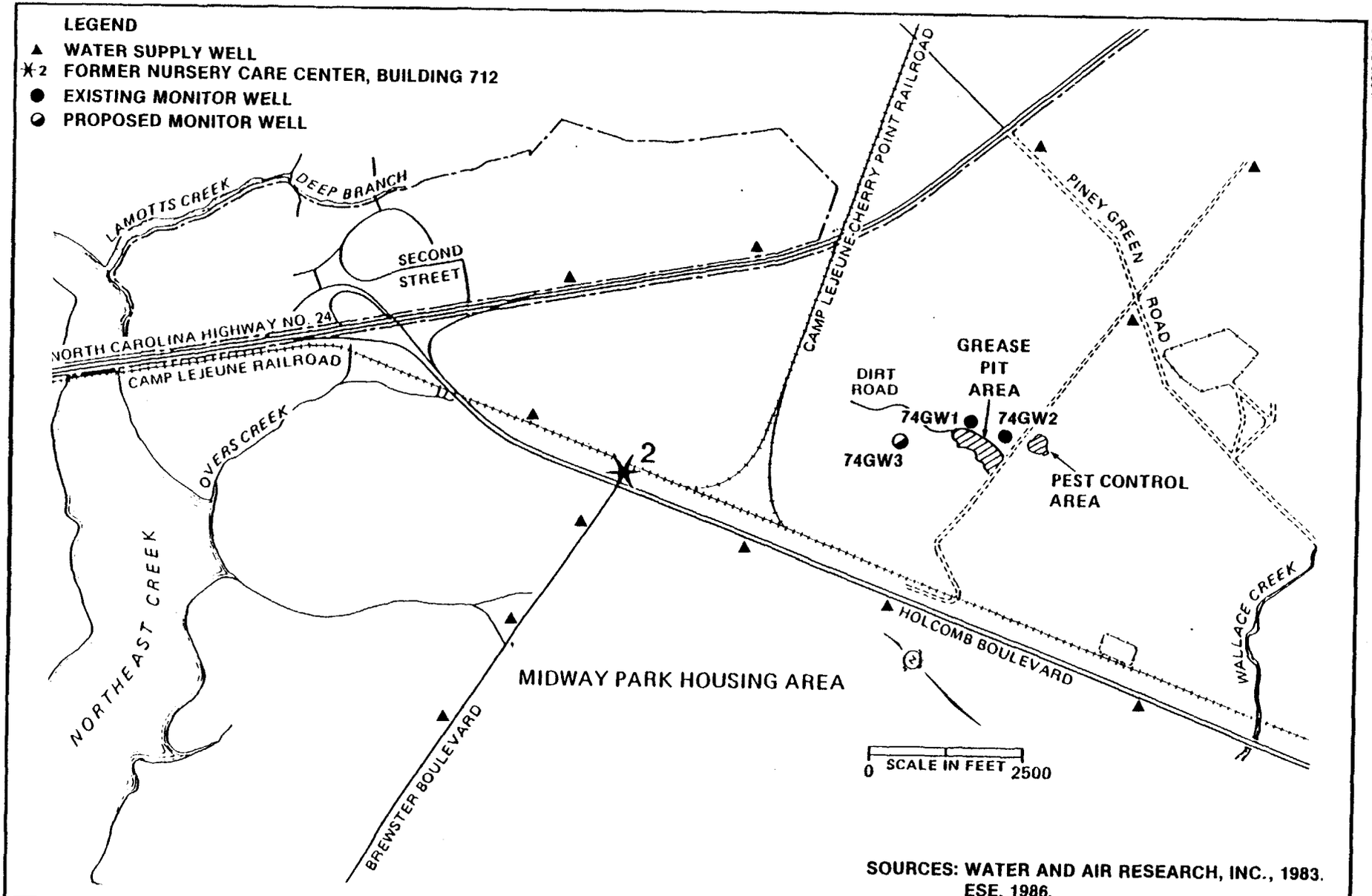


Figure 2-17
SAMPLING LOCATIONS AT SITE NO. 73, COURTHOUSE BAY LIQUID DISPOSAL AREA

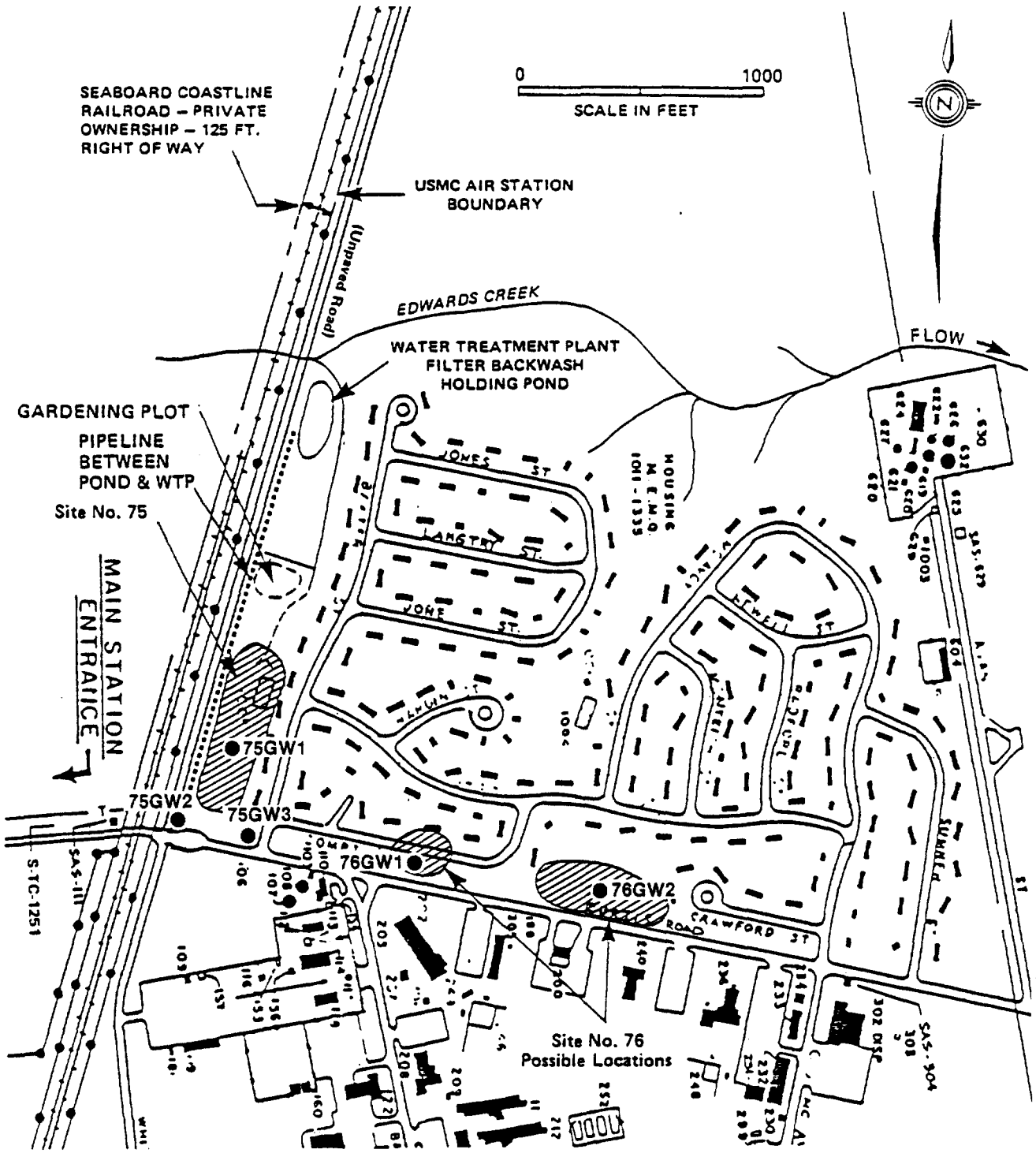
CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE



SOURCES: WATER AND AIR RESEARCH, INC., 1983.
ESE, 1986.

Figure 2-18
SAMPLING LOCATIONS AT SITE NO. 74, GREASE PIT AND PEST CONTROL AREA

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE



SOURCES: WATER AND AIR RESEARCH, INC., 1983.
ESE, 1986.

Figure 2-19
SAMPLING LOCATIONS AT SITE NOS. 75 AND 76, MCAS BASKETBALL COURT AND MCAS CURTIS ROAD SITES

CONFIRMATION STUDY
MARINE CORPS BASE
CAMP LEJEUNE

Table 2-4. Soil Sampling and Analysis Program

Site No.	No. of Soil Borings	No. of Samples Per Boring	Total No. of Soil Samples	Target Analytes
2	4	1	4	OCP, OCH, TCDD
21	8	4	32	OCP, OCH, PCB, TCDD
45	6	3	18	Pb, O&G
MCAS (H) New River Fuel Pipeline	23	0*	0*	Visual only*

*Continuous visual observation to note the presence of petroleum, oil, or lubricant (POL) contamination.

Source: ESE, 1986.

7. Soil Augering/Sampling: Soil augering/sampling will be conducted using a drill rig at Site 21 and the MCAS (H) New River Fuel Pipeline. Hand augering will be conducted at Sites 2 and 45. Samples from Sites 2, 21, and 45 will be submitted to the laboratory for chemical analysis. The 23 borings at Site 45 will be visually inspected in the field for signs of fuel contamination. Figures 2-3, 2-5, and 2-12 show the location of the soil borings for Sites 2, 21, and 45, respectively. The study area at the Fuel Pipeline is located to the southwest of Site 45; the specific location of the 23 borings at this study area will be determined in the field.

8. Water Quality/Sediment Sampling: Samples of ground water, surface water, sediment, and soil will be collected and analyzed. Table 2-1 shows the number and type of samples to be collected from each site during the second round of verification step sampling, as well as the analytical parameters for each sample. Figures 2-2 through 2-19 show all the proposed verification sampling locations. Characterization Step ground water sampling will be conducted at Site 22, Hadnot Point Industrial Area. The specific location of the 32 monitor wells to be installed in this study area are not shown because final locations will not be determined until the soil gas investigation (Sec. 2.1.2, No. 3) has been completed.

9. Aquifer Testing: A 144-hour pump test will be conducted in the Hadnot Point area to determine aquifer characteristics and rate and direction of ground water flow and contaminant transport. An existing water supply well in the area will be used as the pumped well, and three observation wells will be installed. The specific location of the pump test network will be determined in the field following discussion and coordination with Camp Lejeune Utilities/Base Maintenance staff.

2.1.3 EVALUATION AND REPORTS

1. Monthly Progress Reports: A brief progress report will be submitted to the EIC by the 15th day of each calendar month for the duration of the contract.
2. Evaluation of Results: All laboratory analytical results and field investigation data will be evaluated.
3. Round Two Verification Step Draft Report: A draft report summarizing the results of the round two sampling and analysis will be submitted to the EIC and MCB Camp Lejeune within 45 days of completion of the onsite investigation.
4. Characterization Step Sampling Report: The results of the soil gas investigation, characterization sampling and analysis, and the aquifer testing program in the Hadnot Point Industrial Area will be described in this report.
5. Step II Feasibility Report: Subsequent to the Step II sampling and aquifer testing in the Hadnot Point Industrial Area, an evaluation of five interim and five long-term remedial action alternatives for the restoration of contaminated aquifers will be conducted and documented in a separate report. The projected effectiveness and cost estimate for each alternative will be provided.
6. Presentation: Upon completion of the round two verification sampling and analysis, the characterization/feasibility efforts at Hadnot Point, and the soil boring program at MCAS (H) New River, a briefing will be conducted at Camp Lejeune. The EIC, activity personnel, EPA Region IV, and North Carolina Division of Environmental Management will be present at this briefing.

2.2 PROJECT SCHEDULE

Appendix A presents the project schedule for each task described in Sec. 2.1. The schedule was developed to meet the milestones presented in the Contract. Throughout the course of the project, ESE will routinely contact the EIC to report project status and any adjustments to the schedule.

2.3 PROJECT ORGANIZATION

2.3.1 ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. (ESE)

ESE will be responsible for providing all personnel, material, and equipment necessary to complete the study. Persons in responsible positions on the project staff have extensive experience and expertise in their area(s) of involvement, which include geohydrologic investigations, contamination assessments, remedial engineering, and site safety for hazardous waste disposal sites. ESE's responsibilities include the development of and adherence to an appropriate safety/contingency plan to protect contractor and Government personnel. Key ESE project personnel are listed in Table 2-5, along with pertinent identification information.

2.3.2 DAVIS DRILLING CO., INC. (DDC)

As a subcontractor to ESE, DDC will be responsible for performing all drilling operations associated with the installation of ground water monitoring wells. DDC personnel will be required to adhere to the Safety/Contingency Plan, as directed by the ESE Onsite Investigation Task Manager. DDC personnel assigned to this project are listed in Table 2-6, along with pertinent identification information.

2.3.3 MCB CAMP LEJEUNE PERSONNEL

A list of primary contacts at Naval Facilities Engineering Command, Atlantic Division (LANTNAVFACENGCOM) and MCB Camp Lejeune involved in this project follows.

Name	Title	Involvement	Telephone No.
C. Barnett	Environmental Engineer	EIC	804/445-1814
R.E. Alexander	Environmental Engineer	Base Environmental Engineer	919/451-3034 -3035
Lt. Cdr. Gentry	Industrial Hygienist	Safety/Medical Support	919/451-2707

Additional contacts are listed in Appendix B.

Table 2-5. ESE Project Personnel

Name	Title	Frequency On Site	Date of Birth	Social Security No.	Telephone No. (MCB Camp Lejeune No.)	Medical Examination (Within the Last Year)
John D. Bonds	Project Director	Periodic	10/25/41	418-52-0929	904/332-3318 (919/451-3034)	No
Robert G. Gregory	Project Manager	Periodic	01/10/52	036-36-8532	904/332-3318 (919/451-3034)	Yes
Michael J. Geden	Onsite Investigation/ Task Manager	Daily	08/12/55	351-50-2247	904/332-3318 (919/451-3034)	Yes
Thomas R. Tibbs	Geologist/Field Team Leader	Daily	05/06/58	264-47-5049	904/332-3318 (919/451-3034)	Yes
David A. Brentlinger	Geologist	Daily	11/27/61	237-11-8540	919/455-8355 (919/451-3034)	Yes

* Verification of medical records is on file with: Personnel Office
Environmental Science and Engineering, Inc.
P.O. Box ESE
Gainesville, Fla. 32602
904/332-3318

Source: ESE, 1986.

Table 2-6. Davis Drilling Co., Inc. Project Personnel*

Name	Title	Frequency on Site	Date of Birth	Social Security No.
Clayton Davis	Drilling Supervisor	Periodic	03/15/35	262-50-4518
James Davis	Driller	Daily	02/08/60	262-53-1258
Michael Haire	Driller	Daily	05/18/56	264-27-5492
Charles Smith	Helper	Daily	08/23/54	405-86-0080
Anthony Hall	Helper	Daily	12/20/63	265-83-4371
Dean Bowden	Helper	Daily	10/06/54	247-04-7000

*All personnel have had medical examinations within the last year. Verification of medical records on file with Davis Drilling Co., Inc., 3445 State Road 580, Safety Harbor, Florida 33519, 813/726-0969.

Note: MCB Camp Lejeune Telephone No.: 919/451-3034.

Source: ESE, 1986.

3.0 SAFETY PLAN

3.1 PROJECT DESCRIPTION

ESE will provide sampling and analytical services to determine the extent of soil and water contamination that may have resulted from past disposal operations, spills, or leaks at MCB Camp Lejeune, near Jacksonville, NC.

Ground water monitor wells will be installed, and sampling will include soil, sediments, ground water, and surface water to confirm or refute the presence of contamination. If ground water contamination is detected, additional wells will be installed to further define the extent of ground water contamination. Once evaluations based on the site investigation are completed, recommendations on future remedial action at Camp Lejeune will be made.

3.2 RESPONSIBILITY AND ORGANIZATION

The purpose of the Safety Plan is to protect all personnel and the surrounding environment during investigative activities at MCB Camp Lejeune and to satisfy Occupational Safety and Health Administration (OSHA) requirements. The plan includes procedures and preventive measures that will protect human health and the environment from the hazards of metal, acid, and volatile organic compound exposure and from fire, explosion, and mechanical hazards which may exist during field and laboratory activities.

The corporate safety policy of ESE requires that a safety plan be implemented at Camp Lejeune to protect all individuals and the environment. It is the responsibility of each member of the investigative team, including all subcontractor personnel, to conform to and comply with all aspects of this safety program. All personnel must regard and conduct themselves as members of the "safety team" and adhere

to the prescribed site safety plan. The senior ESE person onsite is responsible for enforcing strict adherence to the plan.

The "buddy system" is a key element of this plan and requires that all activities at the site be conducted using a minimum of 2-person teams.

Overall responsibility for safety during the site investigation and laboratory activities rests with the Project Manager, R.G. Gregory, P.G. His responsibilities include:

1. Preparing an effective site safety plan for the project, which satisfies OSHA requirements;
2. Categorizing and identifying the project staff as to the levels of potential exposure to dangerous levels of hazardous materials;
3. Assuring that adequate and appropriate safety training and equipment are available for project personnel;
4. Arranging for medical examinations for specified project personnel; and
5. Designating a Site Safety Officer.

The responsibilities of the Site Safety Officer, M.J. Geden, P.G., include:

1. Implementing all safety procedures and operations onsite;
2. Updating equipment or procedures based upon new information gathered during site inspections and monitoring;
3. Upgrading or downgrading (with approval of the Project Manager) the levels of personnel protection based upon site observations;
4. Determining and posting locations and routes to medical facilities, including poison control centers, and arranging emergency transportation to medical facilities (as required);
5. Notifying (as required) local public emergency officers (i.e., police and fire departments) of the nature of the team's operations, and making emergency telephone numbers available to all team members;

6. Observing work party members for symptoms of exposure or stress; and
7. Arranging for the availability of emergency medical care and first aid onsite, as necessary.

The Site Safety Officer has the ultimate responsibility to stop any operation that threatens the health and safety of the team or surrounding populace or causes significant adverse impact to the environment.

In the absence of M.J. Geden during the onsite investigation, the Field Team Leader, T.R. Tibbs, will serve as the Site Safety Officer. In the absence of M.J. Geden and T.R. Tibbs, D.A. Brentlinger becomes the acting Site Safety Officer.

It is the responsibility of all other onsite personnel to:

1. Comply with all aspects of the Project Safety Plan, including strict adherence to the "buddy system;"
2. Obey the orders of the Site Safety Officer; and
3. Notify the Site Safety Officer of hazardous or potentially hazardous incidents or working situations.

3.3 GENERAL SAFETY RULES

3.3.1 ONSITE SAFETY

In addition to the specific requirements of the Project Safety Plan, common sense should prevail at all times. The following general safety rules will be in effect at the site.

1. Each sample must be treated as though it were toxic and hazardous;
2. Unauthorized personnel are not permitted at the work sites or within 50 feet (ft) of drilling equipment, and Base Security will be asked to remove violators upon failure to heed a verbal request to vacate the site;

3. To reduce contact between the hands and mouth, all smoking, eating, and drinking will be strictly prohibited in the work area;
4. Persons with beards or other facial hair that interferes with respirator fit are not permitted within the site boundaries when conditions require respiratory protection;
5. Persons with long hair and/or loose-fitting clothing which could become entangled in drilling equipment are not permitted in the work area;
6. All personnel should avoid unnecessary contact with contaminated soil and water;
7. All personnel should avoid any contact between their hands and mouths until they are thoroughly decontaminated;
8. Horseplay is prohibited;
9. Use of alcohol, narcotics, or controlled substances while working is prohibited;
10. Firearms, ammunition, fireworks, and explosives are prohibited; and
11. Approved and appropriate safety equipment, as specified in the Project Safety Plan, such as eye protection, hardhats, foot protection, and respirators, must be worn in areas where required by the Safety Plan. In addition, eye protection must be worn when handling acidic, caustic, or other hazardous liquids, such as analytical preservatives.

The Site Safety Officer will have the authority to modify the site safety rules when necessitated by onsite conditions.

3.3.2 LABORATORY SAFETY

Samples collected from MCB Camp Lejeune and shipped to the ESE laboratory for analysis may present a potential for exposure of laboratory personnel to dangerous levels of metals, pesticides, or PCBs. Potentially hazardous samples will be identified as such by the Field Team Leader and appropriately labeled prior to shipment to the

laboratory. It is important that the laboratory implement an effective safety plan for handling these materials.

Handling procedures must protect personnel from skin contact with the hazardous materials and offer respiratory protection from airborne concentrations of hazardous samples. At a minimum, all laboratory personnel having direct contact with the hazardous samples must be equipped with:

1. Safety glasses or a face shield to protect from splashes,
2. Impervious gloves, and
3. Rubberized aprons and other chemical protective garments.

Respiratory protection in the form of air-purifying cartridge respirators for acids and dust may be required by the Laboratory Coordinator, J.D. Shamis, if airborne exposure to hazardous samples is likely. All operations conducted with raw hazardous materials must be performed where there is adequate ventilation.

Due to possibly high concentrations of toxic materials in the contaminated water and soil samples, all laboratory personnel handling these samples:

1. Must not smoke, eat, chew gum, or drink, to avoid contact between their hands and mouths while carrying out laboratory activities;
2. Must thoroughly wash their hands and other potentially exposed skin upon completion of laboratory work; and
3. Must keep the work area and equipment as clean as possible to avoid contamination.

All appropriate safety precautions described in the ESE Laboratory Safety Manual must be followed during laboratory work.

3.4 SITE CHARACTERIZATION AND SITE SAFETY PLAN

A characterization of each site of potential contamination was performed, based on a thorough evaluation of the IAS of MCB Camp Lejeune (NEESA 13-011, April 1983) and an assessment of the potential hazards at each site. Based on the site characterization, a Site Safety Plan was prepared to describe various procedures and precautions that will be followed to assure preservation of health and safety during all site activities.

3.4.1 SITE CHARACTERIZATION

The IAS of MCB Camp Lejeune (NEESA 13-011, April 1983) identified 21 sites that may pose a potential threat to human health or the environment due to contamination resulting from past hazardous materials operations. A thorough review of the information presented in the IAS regarding type and estimated quantities of hazardous materials disposed of at each site was conducted to identify the potential hazards that exist in performing the confirmation study. Information contained in the IAS report indicates that many different compounds have been spilled, leaked, or disposed of at the various sites of potential contamination. Possible PCB contamination has been identified at several sites, which could pose a skin absorption problem or an inhalation problem when present in dust particles. Possible pesticide and herbicide contamination has also been identified at several sites. These compounds affect the nervous system, and many are absorbed through intact skin. Both solutions and dusts containing these compounds are potentially hazardous. Solvents such as trichloroethylene, chloroform, and methylene chloride have been reported as possible water contaminants and may be present in drums in a relatively pure state. Skin contact should be avoided, but inhalation is the greatest hazard. Explosives are an obvious hazard to drilling and sampling activities and may be present at some of the sites. Additionally, underground fuel leaks have occurred at some of the sites which could pose a fire and/or explosion hazard during drilling activities.

The following Site Safety Plan presents procedures and precautions that will be followed to ensure the protection of human health and the environment during confirmation study activities.

3.4.2 SITE SAFETY/CONTINGENCY PLAN

The Site Safety/Contingency Plan outlines procedures to be used during investigations at uncontrolled hazardous waste sites to minimize the risk of injury or illness resulting from onsite activities. The specific health and safety concerns in this plan deal with chemical and physical hazard exposure during the various phases of the site investigation. The intent is to carry out these duties to the degree that injuries, occupational illnesses, and unwarranted property losses are prevented, and at the same time ensure compliance with applicable laws and regulations. Emphasis will be placed on individual awareness, personal protective equipment, and emergency response. In this project, it is expected that the work currently identified will be conducting geophysical studies, installing ground water monitoring wells, and collecting samples of water, leachate, soil, and tissue from locations of suspected hazardous conditions.

Site Safety Plan

The Site Safety Plan is comprised of the following major sections:

* Personal Protective Clothing and Equipment
* Medical Monitoring
* Site Entry Procedures
* Decontamination Procedures
* Investigation-Derived Material Disposal

Personal Protective Clothing and Equipment--Personnel must wear protective equipment when response activities involve known or suspected atmospheric contamination, when vapors, gases, or particulates may be generated, or when direct contact with skin-affecting substances may occur. Respirators can protect lungs, gastrointestinal tract, and eyes against air toxicants. Chemical-resistant clothing can protect the

skin from contact with skin-destructive and absorbable chemicals. Good personal hygiene limits or prevents ingestion of material.

Equipment to protect the body against contact with known or anticipated chemical hazards has been divided into four categories according to the degree of protection afforded:

- Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.
- Level B: Should be selected when the highest level of respiratory protection, but a lesser level of skin protection, is needed. Level B protection is the minimum level recommended on initial site entries until the hazards have been further defined by onsite studies and appropriate personal protection utilized.
- Level C: Should be selected when the types of airborne substances are known, the concentrations measured, and the criteria for using air-purifying respirators are met.
- Level D: Should not be worn on any site with respiratory or skin hazards. Is primarily a work uniform providing minimal protection.

The level of protection selected should be based primarily on:

- Types and measured concentrations of chemical substances in the ambient atmosphere and their toxicity.
- Potential or measured exposure to substances in air, splashes of liquids, or other direct contact with material due to work being performed.

In situations where the types of chemicals, their concentrations, and possibilities of contact are not known, the appropriate level of protection must be selected based on professional experience and judgment until the hazards can be better characterized. Additional guidance for selecting level of protection utilizing air monitoring equipment is presented later in this section.

The specifications of protective clothing and equipment associated with each level of protection identified follow.

Level A Protection

Personal Protective Equipment:

- Pressure-demand, self-contained breathing apparatus, approved by the Mine Safety and Health Administration (MSHA) and National Institute of Occupational Safety and Health (NIOSH)
- Fully encapsulating chemical-resistant suit
- Coveralls*
- Long cotton underwear*
- Gloves (outer), chemical-resistant
- Gloves (inner), chemical-resistant
- Boots, chemical-resistant, steel toe and shank (depending on suit construction, worn over or under suit boot)
- Hardhat* (under suit)
- Disposable protective suit, gloves, and boots* (worn over fully encapsulating suit)
- 2-way radio communications

*Optional

Criteria for Selection: Meeting any of these criteria warrants use of Level A protection:

- The chemical substances have been identified and require the highest level of protection for skin, eyes, and the respiratory system based on:
  - Measured (or potential for) high concentrations of atmospheric vapors, gases, or particulates; or
  - Site operations and work functions involving high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates.
- Extremely hazardous substances [for example: dioxin, cyanide compounds, concentrated pesticides, Department of Transportation (DOT) Poison "A" materials, suspected carcinogens, and infectious substances] are known or suspected to be present, and skin contact is possible.
- The potential exists for contact with substances that destroy skin.

- Operations must be conducted in confined, poorly ventilated areas until the absence of hazards requiring Level A protection is demonstrated.

- Total atmospheric readings on the Century OVA System, HNU Photionizer, and similar instruments indicate 500 to 1,000 parts per million (ppm) of unidentified substances.

Level B Protection

Personal Protective Equipment:

- Pressure-demand, self-contained breathing apparatus (MSHA/NIOSH approved)

- Chemical-resistant clothing (overalls and long-sleeved jacket; coveralls; hooded, 1- or 2-piece chemical-splash suit; disposable chemical-resistant coveralls)

- Coveralls*

- Gloves (outer), chemical-resistant

- Gloves (inner), chemical-resistant

- Boots (outer), chemical-resistant, steel toe and shank

- Boots (outer), chemical-resistant (disposable*)

- Hardhat (face shield*)

- 2-way radio communications

*Optional

Criteria for Selection: Meeting any one of these criteria warrants use of Level B protection:

- The types and atmospheric concentrations of toxic substances have been identified and require the highest level of respiratory protection, but a lower level of skin and eye protection. These would be atmospheres:

  - With concentrations Immediately Dangerous to Life and Health (IDLH); or

  - Exceeding limits of protection afforded by a full-face, air-purifying mask; or

  - Containing substances for which air-purifying canisters do not exist or have low removal efficiency; or

  - Containing substances requiring air-supplied equipment, but substances and/or concentrations do not represent a serious skin hazard.

- The atmosphere contains less than 19.5 percent oxygen.

- Site operations make it highly unlikely that the small, unprotected area of the head or neck will be contacted by splashes of extremely hazardous substances.

- Total atmospheric concentrations of unidentified vapors or gases range from 5 ppm to 500 ppm on instruments such as the Century OVA or HNU Photoionizer, and vapors are not suspected of containing high levels of chemicals toxic to skin.

Level C Protection

Personal Protective Equipment:

- Full-face, air-purifying, canister-equipped respirator (MSHA/NIOSH approved)

- Chemical-resistant clothing (coveralls; hooded, 2-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls)

- Coveralls*

- Gloves (outer), chemical-resistant

- Gloves (inner), chemical-resistant*

- Boots (outer), chemical-resistant, steel toe and shank*

- Boots (outer), chemical-resistant (disposable*)

- Hardhat (face shield*)

- 2-way radio communications

*Optional

Criteria for Selection: Meeting all of these criteria permits use of Level C protection:

- Measured air concentrations of identified substances will be reached by the respirator at or below the substance's exposure limit, and the concentration is within the service limit of the canister.

- Atmospheric contaminant concentrations do not exceed IDLH levels.

- Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect the small area of skin left unprotected by chemical-resistant clothing.

- Job functions have been determined not to require self-contained breathing apparatus.

- Total vapor readings register between background and 5 ppm above background on instruments such as the HNU Photoionizer and Century OVA.

- Air will be monitored periodically.

Level D Protection

Personal Protection Equipment:

- Coveralls

- Gloves*

- Boots/shoes, leather or chemical-resistant, steel toe and shank

- Boots (outer), chemical-resistant (disposable*)

- Safety glasses or chemical splash goggles*

- Hardhat (face shield*)

- Escape mask*

*Optional

Criteria for Selection: Meeting any of these criteria allows use of Level D protection:

- No hazardous air pollutants have been measured.

- Work functions preclude splashes, immersion, or potential for unexpected inhalation of any chemicals.

Guidance on Selection Criteria: Level D protection is primarily a work uniform. It can be worn in areas where: (1) only boots can be contaminated, or (2) there are no inhalable toxic substances.

Based on the site characterization, personnel involved in the drilling operations during the investigation will wear Level D protection at all 21 sites of potential contamination, which will include:

- o Saranex® or uncoated Tyvek® coveralls (based on site history),
- o Steel-toed neoprene boots,
- o Disposable boot covers,
- o Disposable gloves (geologist),

- o Impervious inner gloves and outer drilling gloves (drillers),
- o Hardhats,
- o Faceshields (drillers), and
- o Respirators (full-face, with organic vapor/pesticide cartridges)*.

*Not regularly worn but available for use if air monitoring indicates need.

Saranex®-coated Tyvek® coveralls will be substituted for uncoated coveralls during all drilling programs at sites known or suspected to contain explosives, solvents, PCBs, or pesticides.

As mentioned earlier, air monitoring will be conducted during all phases of drilling operations to assess the need for upgrading personal protection. The criteria described previously for each level for protection will be used in decision making regarding the appropriate level of personal protection. The ESE Site Safety Officer will be responsible for air monitoring and assessment of the need for upgrading the level of personal protection. Air monitoring will be performed at each drilling location using an HNU, with a 10.2-electron volt (eV) lamp or the Foxboro OVA. Full-face, air-purifying respirators with organic vapor/pesticide cartridges will be available and will be used if air monitoring instruments show readings above background levels. Respirators will also be used if visible dusting occurs in the vicinity of the drilling operation at pesticide or PCB sites.

Prior to drilling operations at some of the sites, geophysic surveys will be performed to screen potential drilling locations to prevent drilling into buried objects such as ordnance, gas cylinders, and drums. Techniques to be utilized include: resistivity, magnetometer, and metal detector surveys. Personnel involved in these activities will wear Level D equipment:

proposed
Make sure MCB checks all sites to clear for underground utilities!

- o Tyvek® coveralls,
- o Steel-toed neoprene boots,
- o Disposable boot covers, and
- o Two pairs of disposable gloves.

The same equipment listed for drilling operations, with the exception of hardhats and faceshields, will be used by personnel involved in the collection of surface and ground water, sediment, and soil samples.

In addition to the protective clothing and equipment specified previously for conditions normally anticipated for this investigation, an emergency egress pack will be available for each field team member in the event of a major release of toxic gas, vapor, or dust emission. The emergency egress pack will allow field personnel to quickly vacate the area affected by the sudden release.

Medical Monitoring--Medical monitoring of all field personnel involved in this investigation is required to identify potential adverse effects that may result from exposure to toxic substances. The medical monitoring program consists of a baseline medical examination and periodically scheduled surveillance examinations. The surveillance examinations are at the discretion of the Site Safety Officer.

The baseline physical examinations shall provide a history of previous exposure and general health status and will serve as a baseline for comparative purposes.

The baseline examinations include the following:

1. Self-administered health history questionnaire as an aid in diagnosis.
2. General physical examination to assess the individual's overall health and current heart and neurological conditions. Specific tests which will be given in this regard include:

- Chest X-ray
- Electrocardiogram
- Stress test

3. Laboratory hematologic analysis to determine liver and blood functions. These clinical tests include a complete blood count with differential, VDRL, thyroid hormone, albumin, alkaline phosphatase, bilirubin-total and iron-serum, lactic acid dehydrogenase, phosphorus, potassium, protein-total, sodium, SGOT, SGPT, triglycerides, urea nitrogen (BUN) and uric acid, hemoglobin, methemoglobin, heavy metals, and pesticide residues.
4. Urinalysis for urine characterization.
5. Pulmonary functions to be measured for determining lung condition. These specific tests include: forced vital capacity, forced volume, max-mid exploratory flow, maximum voluntary ventilation, functional residual volume, residual volume, and total lung capacity.
6. Hearing abilities will be determined through audiometric testing.

Periodic examinations will be performed annually for all personnel participating in the medical monitoring program. Periodic monitoring provides a continuous record of health status and also assists in the early identification of advanced health effects. Periodic surveillance examinations shall include those items that are considered good indicators of acute toxicity. Specifically, these involve the clinical tests listed previously for kidney, liver, and blood functions.

Copies of medical records will be kept in personnel files at the office of the person's employer.

Site Entry Procedures--Field personnel should enter sites where drilling operations are underway from an upwind direction, if possible. This practice will avoid obvious contamination and lessen the risk of exposure.

Decontamination Procedures--A portable steam cleaning unit will be used to decontaminate the drill rigs to be used in the investigation. Waste rinse water will be disposed of at the site of potential contamination. Likewise, wash and rinse water generated by the cleaning of contaminated boots, gloves, other protective clothing, and sampling equipment will be disposed of onsite. Due to the number of sites to be investigated in a short time frame, decontamination stations must be easily mobile and simple (wash-and-rinse basins, heavy duty trash bags for disposable clothing).

Investigation-Derived Material Disposal--Contaminated disposable clothing must be labeled and stored onsite in heavy plastic bags or drums. Disposition of this contaminated material will be determined by the Site Safety Officer.

Contingency Plan

The Contingency Plan is comprised of two major sections: (1) Emergency Communications, and (2) Medical Support. These sections provide critical information required for emergency response related to the following:

- Fire or explosion requiring fire department response
- Serious injury requiring immediate attention
- Any other serious incident requiring rescue, police, fire, or security support from MCB Camp Lejeune.

Emergency Communications--In the event of emergency, the appropriate MCB Camp Lejeune response resource must be contacted. Pertinent emergency response activities and telephone numbers follow.

Ambulance	451-4551 (4551 on base)
Hospital Emergency Room	451-4300 (4300 on base)
Police	451-2555 (2555 on base)
Fire Department	451-3333 (3333 on base)
Explosives Unit	451-0558 (0558 on base)

In addition, the following emergency contacts are available to lend information and support:

1. R.J. Andrews, Camp Lejeune (Safety Manager), 919/451-5725
2. Lt. Cdr. Gentry, Camp Lejeune (Safety/Medical Support), 919/451-2707
3. Charles Haury, ESE (Industrial Hygiene Manager), 904/332-3318

Once the appropriate emergency response activity has been notified, the following personnel should also be notified of the nature of the emergency, and corrective actions should be taken:

1. R.E. Alexander (MCB Camp Lejeune)--919/451-3034 or 3035
2. C. Barnett (LANTNAVFACENGCOM)--804/445-1814

All field team members should acquaint themselves with the location of the nearest telephone to each site prior to initiation of work. This will help minimize response time in the event of an emergency. In addition, while working at remote sites (Sites 30, 68, 69, and 74), a hand-held radio will be used for emergency communications.

In the event of a medical emergency, the Base Hospital, as well as numerous clinics at various locations around the installation, will provide medical attention required for stabilizing the injured person prior to transfer to an offpost medical facility. The Base Hospital is located on Brewster Boulevard, approximately 0.5 mile west of the intersection of Brewster Boulevard and Holcomb Boulevard. A list of the base clinics that will provide medical support follows.

Sites	Facility
1, 6, 9, 21, 22, 24, 28, 30	Hadnot Point Branch Clinic, Bldg. 15
2, 74	Hospital Emergency Room
73	Courthouse Bay Branch Clinic, Bldg. BB-10
68, 69	Rifle Range Branch Clinic, Bldg. RR-11
A, 41, 45, 54, 75, 76	Air Station New River Branch Clinic, Bldg. 302
35, 36	Camp Geiger Branch Clinic, Bldg. G-770

Appendix C contains a base map showing the locations of the 21 sites of potential contamination, the Base Hospital, and the clinics.

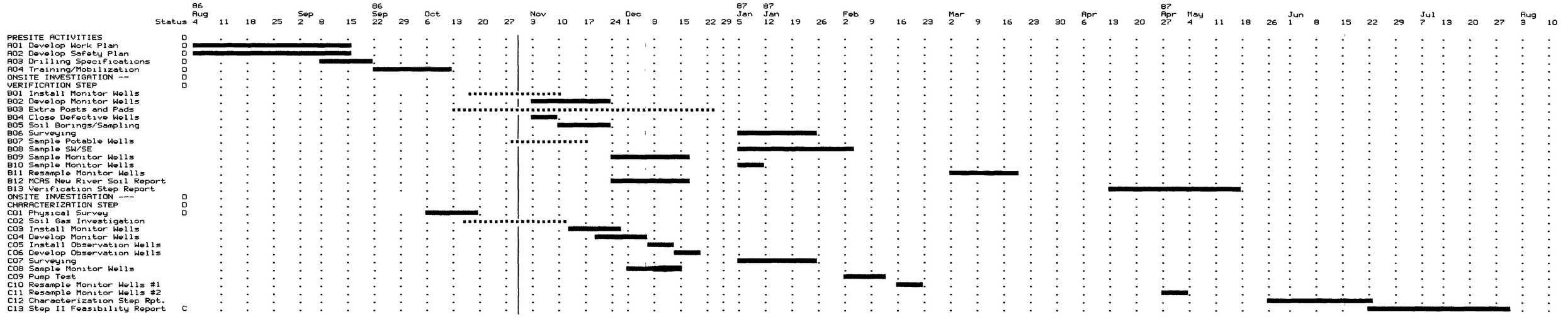
APPENDIX A

PROJECT SCHEDULE

RGG

Schedule Name: Confirmation Study - Camp Lejeune
Project Manager: R.G. Gregory
As of date: 29-Oct-86 1:00am Schedule File: A:MCBCLJS

Round Two Verification Step
Characterization/Feasibility Step - Hadnot Point



D Done
C Critical
R Resource conflict
p Partial dependency
Scale: Each character equals 1 day

Task
Started task
Milestone

- Slack time (——), or
Resource delay (——)
Conflict

00389C01X

APPENDIX B

ADDITIONAL MCB CAMP LEJEUNE CONTACTS

APPENDIX B

Name	Activity	Telephone No.
R.J. Andrews	Assistant Chief of Staff, Manpower (Base Safety)	919/451-5725
Danny Sharpe	Natural Resources and Environmental Affairs Division	919/451-5003
Gary Horne	Resident Officer in Charge of Construction	919/451-2581
F.E. Acosta	MCAS (H) S-4, Construction Coordinator	919/451-6506
B.W. Elston	Deputy Assistant Chief of Staff, Facilities	919/451-5925
Willard Price	Base Maintenance Division (Supervisory Utilities Foreman)	919/451-5988

ROICC MCB?
CFD - should we be working
closer with the ROICC?
Might be better source of
contract inspection than us/OH.

APPENDIX C

MAP SHOWING CAMP LEJEUNE EMERGENCY MEDICAL FACILITIES