

FINAL

**FISCAL YEAR 1999
SITE MANAGEMENT PLAN**

**MARINE CORPS BASE,
CAMP LEJEUNE, NORTH CAROLINA**

CONTRACT TASK ORDER 0099

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LIST OF ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
AST	Aboveground Storage Tank
Baker	Baker Environmental, Inc.
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
CWM	Chemical Warfare Material
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DNAPL	Dense Non-Aqueous Phase Liquid
DoN	Department of the Navy
DRMO	Defense Reutilization Maintenance Office
EE/CA	Engineering Evaluation/Cost Analysis
FFA	Federal Facilities Agreement
FS	Feasibility Study
HPIA	Hadnot Point Industrial Area
IAS	Initial Assessment Study
IRA	Interim Remedial Action
IR	Installation Restoration
IRP	Installation Restoration Program
LANTDIV	Naval Facilities Engineering Command, Atlantic Division
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MORFORLANT	Marine Forces Atlantic
mg/kg	milligram per kilogram
NACIP	Navy Assessment and Control of Installation Pollutants
NC DENR	North Carolina Department of Environment and Natural Resources
NC	North Carolina
NCP	National Oil and Hazardous Substances Pollution Control Contingency Plan
NCWQS	North Carolina Water Quality Standards
NPL	National Priorities List
OU	Operable Unit
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyls
PCE	tetrachloroethene
PITT	Partitioning Interwell Tracer Test
POL	petroleum, oil, lubricant
ppb	parts per billion

LIST OF ACRONYMS AND ABBREVIATIONS
(Continued)

PRAP	Proposed Remedial Action Plan
Pre-RI	Pre-Remedial Investigation
RA	Remedial Action
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SEAR	Surfactant Enhanced Aquifer Remediation
SGI	Supplemental Groundwater Investigation
SI	Site Investigation
SMP	Site Management Plan
STP	Sewage Treatment Plant
SVE	Soil Vapor Extraction
SVOC	Semivolatile Organic Compound
SWMU	Solid Waste Management Unit
TCE	trichloroethene
TCRA	Time Critical Removal Action
TPH	total petroleum hydrocarbon
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic contaminant

1.0 INTRODUCTION

This report presents the Fiscal Year 1999 Site Management Plan (SMP) for Marine Corps Base (MCB) Camp Lejeune, North Carolina. The SMP presents planned activities to be conducted at MCB, Camp Lejeune during Fiscal Year 1999 and provides projections for long-term progress in accordance with the Department of Navy, Installation Restoration (IR) Program. This report has been prepared by Baker Environmental, Inc. (Baker) for the Atlantic Division, Naval Facilities Engineering Command (LANTDIV) and the MCB, Camp Lejeune IR Program. The report has been submitted to representatives of the North Carolina Department of Environment and Natural Resources (NC DENR) and the U.S. Environmental Protection Agency (USEPA), Region IV.

1.1 General Description

Located in Onslow County, North Carolina, MCB, Camp Lejeune is host to six Marine Corps commands and two Navy commands. All of the real estate and infrastructure is owned, operated, and maintained by the host command. MCB, Camp Lejeune also provides support and training for the following tenant commands: Headquarters, Marine Forces Atlantic (MORFORLANT); Headquarters Nucleus, Second Marine Expeditionary Force; Second Marine Division; Second Marine Force Service Support Group; Second Marine Surveillance, Reconnaissance, and Intelligence Group; Sixth Marine Expeditionary Brigade; the Naval Hospital; and the Naval Dental Clinic.

The entire facility includes approximately 236 square miles and is located within the, generally flat, Atlantic Coastal Plain. MCB, Camp Lejeune is bisected by the New River, which flows in a southeasterly direction and forms a large estuary before entering the Atlantic Ocean. The Atlantic Ocean forms the southeastern boundary of the facility. The western and northwestern boundaries are U.S. Route 17 and State Route 24, respectively. The City of Jacksonville, North Carolina is located immediately northwest of MCB, Camp Lejeune. Three large, publicly-owned tracts of land are located within 15 miles of the facility: Croatian National Forest, Hoffman Forest, and Camp Davis Forest. A majority of the land surrounding the facility is used for agriculture. Estuaries along the coast support commercial fishing and residential resort areas are located adjacent to MCB, Camp Lejeune along the Atlantic Ocean.

1.2 Environmental History

MCB, Camp Lejeune has been actively involved with environmental investigations and remediation programs since 1983, beginning with the Navy Assessment and Control of Installation Pollutants (NACIP) Program. An Initial Assessment Study (IAS) was the first investigation of potentially hazardous sites conducted under NACIP. The IAS, which was conducted in 1983, identified areas of concern that might potentially cause threats to human health and the environment as a result of past storage, handling, and disposal of hazardous materials. Based on a review of historical records, field inspections, and personal interviews, 76 areas of concern (AOCs) were identified. The IAS concluded that, while none of the sites posed an immediate threat to human health or the environment, further investigations to assess the potential long-term impacts were warranted at 22 of the 76 sites.

The Department of Navy's IR Program was initiated in 1986 following enactment of the Superfund Amendments and Reauthorization Act (SARA) legislation. The IR Program, which was implemented to follow the requirements of SARA, replaced the NACIP. MCB, Camp Lejeune was placed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

National Priorities List (NPL) on October 4, 1989 (54 Federal Register 41015, October 4, 1989). The Hazardous Ranking System Score for MCB, Camp Lejeune is 36.84. Following that listing, a Federal Facilities Agreement (FFA) between USEPA Region IV, North Carolina Department of Environment, Health, and Natural Resources (now NC DENR), and the Department of Navy was signed in February 1991. The FFA was prepared to fulfill the following objectives:

- To ensure that potential environmental impacts associated with past and present activities at MCB, Camp Lejeune are thoroughly investigated and appropriate CERCLA response actions are developed and implemented as necessary to protect public health, welfare, and the environment;
- To establish a procedural framework and a schedule for developing, implementing, and monitoring appropriate response actions at MCB, Camp Lejeune in accordance with CERCLA, the National Oil and Hazardous Substances Pollution Control Contingency Plan (NCP), and relevant USEPA remediation policy;
- To encourage public participation, facilitate cooperation, and exchange of information among parties associated with the investigation and remediation process.

The original FFA pertained to 23 of the initial sites identified at MCB, Camp Lejeune. The 23 sites have been investigated in accordance with the NCP, CERCLA, and SARA, under the terms and conditions of the FFA. Based upon the conclusions and recommendations identified by subsequent site inspections, newly-identified sites throughout MCB, Camp Lejeune have been added to the original list of 23.

1.3 Purpose

This Fiscal Year 1999 SMP is a forward-looking management tool; one of the primary documents identified in the FFA. The SMP includes proposed deadlines for completion of deliverables, as specified in the FFA, to be submitted during Fiscal Year 1999. In addition, the SMP identifies IR Program activities projected for the next five-year period (1999-2003).

1.4 Site Listing Changes

The FFA identified 23 sites where Remedial Investigation and Feasibility Study (RI/FS) activities were to be conducted. However, Site 22 and Site 45 have been reassigned to the Underground Storage Tank (UST) Program at MCB, Camp Lejeune and will not require an RI/FS.

Based upon the results of Site Inspections conducted at MCB, Camp Lejeune during 1991, 1992, and 1993, the following sites were added to the IR Program:

- Site 3 (Old Creosote Plant)
- Site 7 (Tarawa Terrace Dump)
- Site 43 (Agan Street Dump)
- Site 44 (Jones Street Dump)
- Site 54 (Crash Crew Fire Training Burn Pit)
- Site 63 (Verona Loop Dump)
- Site 65 (Engineer Area Dump)

- Site 80 (Paradise Point Golf Course Maintenance Area)
- Site 82 (Volatile Organic Compound [VOC] Disposal Area at Piney Green Road)

Based upon findings from UST investigations conducted at MCB, Camp Lejeune during 1994, 1995, and 1996, the following sites have also been added to the IR Program:

- Site 88 (Building 25, Base Dry Cleaners)
- Site 89 (STC - 868)
- Site 90 (Building BB-9)
- Site 91 (Building BB-51)
- Site 92 (Building BB-46)
- Site 93 (Building TC-942)
- Site 94 (Building 1613)

As of September 1998, a total of 42 sites were included in the IR Program at MCB, Camp Lejeune. Provided in Table 1-1 is a listing of all the IR sites and Table 1-2 provides a listing of activities to be conducted during Fiscal Year 1999. Figure 1-1 depicts the locations of all IR sites located throughout MCB, Camp Lejeune. [Note that tables and figures are provided after each text section of the report.]

1.5 Federal Facilities Agreement

At the present time, LANTDIV, NC DENR, USEPA Region IV, and MCB, Camp Lejeune are assessing the need to formally amend the FFA. If amendments to the FFA are necessary, a summary of the changes will be outlined in this section of the SMP.

1.6 Site Management Plan Format

The Fiscal Year 1999 SMP for MCB, Camp Lejeune consists of six sections. Section 1.0 describes the overall history of environmental program activities at MCB, Camp Lejeune, the FFA, and the purpose of the SMP. Section 2.0 describes the history and current status of each Operable Unit and each Pre-Remedial Investigation (Pre-RI) site at MCB, Camp Lejeune. A summary of ongoing and planned activities associated with each Operable Unit and each Pre-RI site is provided in Section 3.0. Also provided within Section 3.0 of the SMP are schedules for conducting CERCLA activities and specific target submittal dates for Fiscal Year 1999 documents. Ongoing and planned removal actions are presented in Section 4.0. And, although not part of the FFA, additional activities conducted as part of the Resource Conservation and Recovery Act (RCRA) at several solid waste management units (SWMUs) located throughout MCB, Camp Lejeune are presented in Section 5.0. Lastly, references are provided in Section 6.0.

SECTION 1.0 TABLES

TABLE 1-1

INSTALLATION RESTORATION PROGRAM SITES
 FISCAL YEAR 1999 FIVE YEAR REVIEW, CTO-0099
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Site No.	Site Description
1	French Creek Liquids Disposal Area
2	Former Nursery/Day-Care Center
3	Old Creosote Site
6	Storage Lots 201 and 203
7	Tarawa Terrace Dump
9	Fire Fighting Training Pit at Piney Green Road
10 ⁽¹⁾	Original Base Dump
12 ⁽¹⁾	Explosive Ordnance Disposal (EOD-1, formerly known as G-4A)
16	Montford Point Burn Dump
21	Transformer Storage Lot 140
22 ⁽²⁾	Industrial Area Tank Farm
24	Industrial Area Fly Ash Dump
28	Hadnot Point Burn Dump
30	Sneads Ferry Road - Fuel Tank Sludge Area
35	Camp Geiger Area Fuel Farm
36	Camp Geiger Area Dump near Sewage Treatment Plant
41	Camp Geiger Dump near Former Trailer Park
43	Agan Street Dump
44	Jones Street Dump
45 ⁽²⁾	Campbell Street Underground AVGAS Storage and Adjacent JP Fuel Farm at Air Station
48	MCAS New River Mercury Dump Site
54	Crash Crew Fire Training Burn Pit
63	Verona Loop Dump
65	Engineer Area Dump
68 ⁽¹⁾	Rifle Range Dump
69	Rifle Range Chemical Dump
73	Courthouse Bay Liquids Disposal Area
74	Mess Hall Grease Pit Area
75 ⁽¹⁾	MCAS Basketball Court Site
76 ⁽¹⁾	MCAS Curtis Road Site
78	Hadnot Point Industrial Area
80	Paradise Point (Golf Course Maintenance Area)
82	VOC Disposal Area at Piney Green Road
84 ⁽¹⁾	Building 45 Area
85 ⁽¹⁾	Camp Johnson Battery Dump
86	Tank Area AS419-AS421 at MCAS

**TABLE 1-1
(Continued)**

**INSTALLATION RESTORATION PROGRAM SITES
FISCAL YEAR 1999 FIVE YEAR REVIEW, CTO-0099
MCB, CAMP LEJEUNE, NORTH CAROLINA**

Site No.	Site Description
87 ⁽¹⁾	MCAS Officer's Housing Area (formerly Site A)
88	Building 25
89	STC-868
90	Building BB-9
91	Building BB-51
92	Building BB-46
93	TC-942
94	Building 1613

Note: Additional sites may be added if the need to perform an RI/FS is identified and a corresponding modification to the Federal Facilities Agreement is approved.

- (1) Pre-Remedial Investigation Site (initial investigations will determine the need to conduct an RI/FS).
- (2) Underground Storage Tank Site (ongoing efforts conducted as part of UST Program).

TABLE 1-2

INSTALLATION RESTORATION PROGRAM ACTIVITIES
 FISCAL YEAR 1999 SITE MANAGEMENT PLAN, CTO 0099
 MCB, CAMP LEJEUNE, NORTH CAROLINA

OU No.	Site No.	NFA	NFRAP	RA	TS	RI	FS	PRAP	EE/CA	Design	Interim ROD	Amended ROD	ROD	ROD Action	LTM Start	LTM Stop
1	21	X											9/94	NFA		
	24	X											9/94	LTM	07/95	10/97
	78												9/94	GT/LTM	07/95	★
2	6	X		•									9/93	GT/LTM	07/96	★
	9	X											9/93	NFA		
	82			•									9/93	GT/LTM	07/96	★
3	48	X											9/93	NFA		
4	41												12/95	LTM	01/97	★
	74	X											12/95	NFA	01/97	7/98
5	2												9/94	LTM	07/95	★
6	36												•	MNA	10/98	★
	43												•	NFA		
	44												•	NFA		
	54			•						\$			•	MNA	07/98	★
	86												•	MNA	07/98	★
7	1												5/96	NFA	01/96	1/99
	28												5/96	NFA	01/96	1/99
	30	X											5/96	NFA		
8	16	X											9/96	NFA		
9	65							•					•	NFA		
	73				★		•	•		•			•	GT/LTM		
10	35				★			•		•			•	GT/LTM	10/98	★
11	7	X											8/97	NFA		
	80	X											8/97	NFA		
12	3			•						•		X	4/97	MNA	01/97	★
13	63	X											4/97	NFA		
14	69												•	MNA	10/98	★
15	88				★		•	•	•	•						

TABLE 1-2 (Continued)

INSTALLATION RESTORATION PROGRAM ACTIVITIES
 FISCAL YEAR 1999 SITE MANAGEMENT PLAN, CTO 0099
 MCB, CAMP LEJEUNE, NORTH CAROLINA

OU No.	Site No.	NFA	NFRAP	RA	TS	RI	FS	PRAP	EE/CA	Design	Interim ROD	Amended ROD	ROD	ROD Action	LTM Start	LTM Stop
16	89						•	•			\$		•			
	93						•	•			\$		•			
17	90							•					•	NFA		
	91							•					•	NFA		
	92							•					•	NFA		
18	94					▲										
Pre-RI Sites	10		•			•										
	12		X			•										
	68		X			•										
	75		X			•										
	76		X			•										
	84					•			★	•						
	85			•		•			•	•						
	87		X			•										

Notes:

- | | | | |
|---------|--------------------------------------|-------|---|
| EE/CA = | Engineering Evaluation/Cost Analysis | RI = | Remedial Investigation |
| FS = | Feasibility Study | ROD = | Record of Decision |
| LTM = | Long-Term Monitoring | TS = | Treatability Study |
| MNA = | Monitored Natural Attenuation | X = | No Additional Funding Required |
| NFA = | No Further Action | • = | Currently Funded |
| NFRAP = | No Further Remedial Action Plan | ★ = | Fiscal Year 99 Funded List |
| PRAP = | Proposed Remedial Action Plan | ▲ = | Fiscal Year 99 Spending Plan Swing List |
| RA = | Remedial Action | \$ = | Additional Funding May be Required |
| GT = | Groundwater Treatment | | |

SECTION 1.0 FIGURES

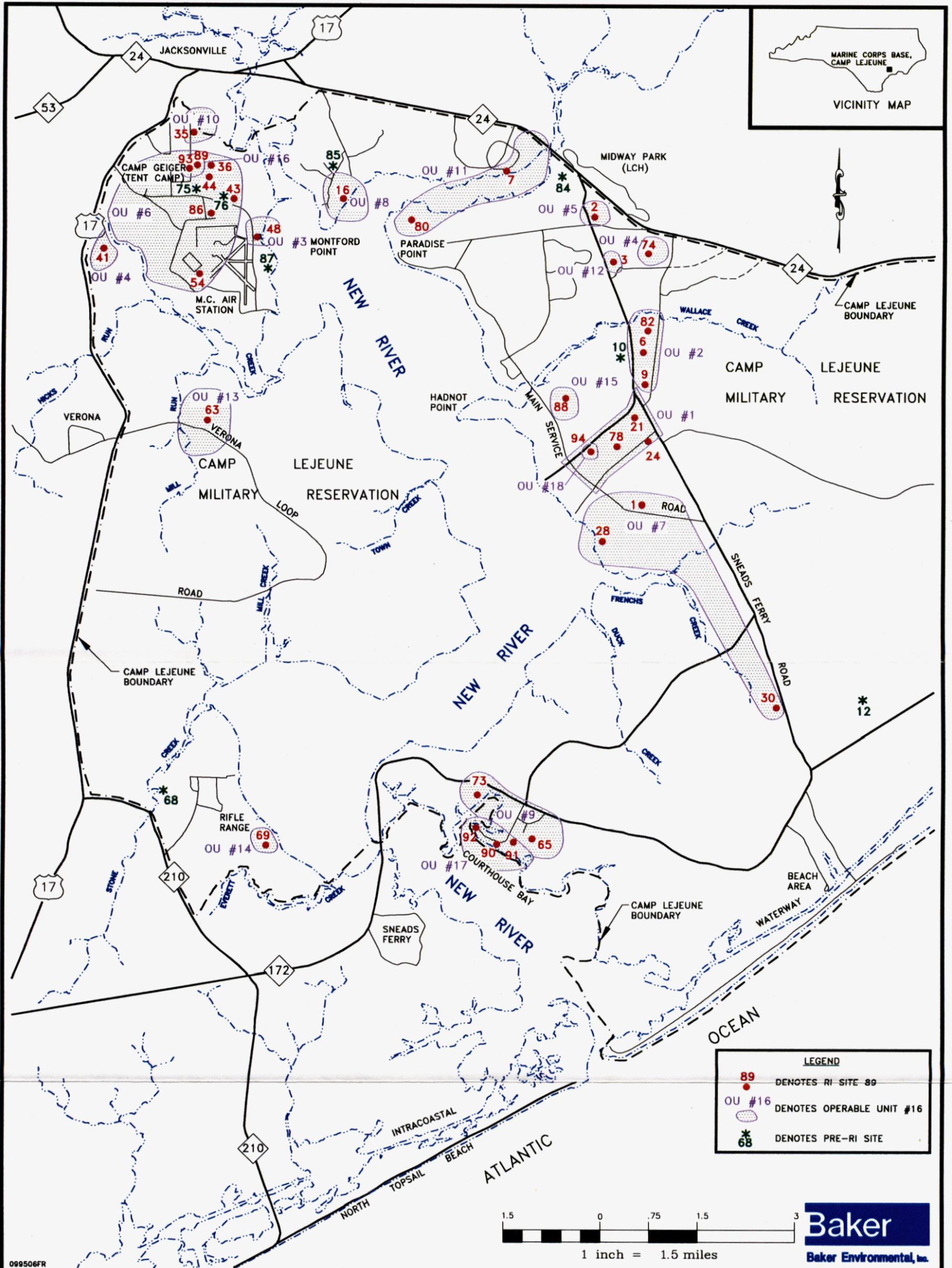


FIGURE 1-1
 OPERABLE UNIT AND SITE LOCATION MAP
 FISCAL YEAR 1999
 SITE MANAGEMENT PLAN
 CTO - 0099
 MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA

02309KK01Y

2.0 OPERABLE UNITS

As defined in the NCP, an "Operable Unit" is an incremental step toward comprehensively addressing site problems. This portion of a remedial response action is devised to either eliminate or mitigate a release, threat of a release, or pathway of exposure. The cleanup of a particular site may be divided into a number of operable units, depending on the complexity of the problems associated with the site. Operable Units (OUs) may address geographical portions of a site, specific site problems, or initial phases of an action, or may consist of any set of actions performed over time or any actions that are concurrent but located in different parts of a site. In accordance with guidance provided in the NCP, the Navy and Marine Corps have recommended that the 34 of the 42 IR Program sites be grouped into 18 OUs to proceed with RI/FS activities. Each of the 18 OUs are listed in Table 2-1 and their locations are depicted in Figure 1-1.

Section 2.0 of the SMP identifies each of the 18 OUs at MCB, Camp Lejeune where IR Program activities have been implemented or will be implemented. Anticipated project start dates for IR Program activities are also identified. The project start dates reflect the priority of each OU and its potential for groundwater contamination, proximity to receptors, contaminants verified, and potential ecological impacts. A summary of IR Program activities since inception is provided in Table 2-2.

2.1 Operable Unit No. 1 (Sites 21, 24, and 78)

The Final Record of Decision (ROD) for OU No. 1 was signed on September 15, 1994.

2.1.1 Site 21 - Transformer Storage Lot 140

Site 21 is located within Site 78, between Ash Street and Sneads Ferry Road on Center Road. In 1950 and 1951, an on-site pit, located in the northern portion of the site, was used as a drainage receptor for oil from transformers. Site 21 was used from 1958 to 1977 for pesticide mixing and as a cleaning area for pesticide application equipment. The mixing area for the pesticides was in the southern portion of the site.

The RI conducted at Site 21 concluded that soils within portions of the site were impacted by pesticides and Polychlorinated Biphenyls (PCBs). A soil removal action was implemented at Site 21 to remove pesticide and PCB contaminated soil. Initial excavation in three AOCs was performed during Fiscal Year 1995.

No additional remedial action or monitoring is planned for Site 21.

2.1.2 Site 24 - Industrial Area Fly Ash Dump

Site 24 is located south and east of the intersection of Birch and Duncan Streets, adjoining Site 78. Site 24 was used for the disposal of fly ash, cinders, solvents, used paint stripping compounds, sewage sludge, and water treatment sludge from the late 1940s to 1980. Approximately 100 acres in size, the site lies adjacent to upstream portions of Cogdels Creek.

An RI/FS was conducted at Site 24 during 1993-1994. Due to elevated pesticide (heptachlor epoxide) levels in groundwater, a monitoring program was implemented in 1995. After four consecutive quarterly sampling periods without any pesticide detections, the monitoring program at Site 24 was discontinued.

No additional remedial action or monitoring is planned for Site 21.

2.1.3 Site 78 - Hadnot Point Industrial Area

The Hadnot Point Industrial Area (HPIA) is the area bounded by Holcomb Boulevard to the west, Sneads Ferry Road to the north, Louis Street to the east, and the Main Service Road to the south. A transformer storage lot (Site 21), the former UST fuel farm (Site 22), and an active service station (Site 94) are located within HPIA. The HPIA is comprised of approximately 590 acres and includes maintenance shops, gas stations, administrative offices, printing shops, warehouses, storage yards, and other similar industrial facilities.

An interim remedial action RI/FS was conducted at Site 78 concerning the shallow groundwater aquifer in 1992. Based on this initial study, an interim remedial action groundwater extraction and treatment system was implemented in 1995. An RI/FS was completed at Site 78 during 1993-1994. The results of this investigation indicated that organics (e.g., solvents and fuel-related compounds) had impacted the groundwater within certain areas of the study area.

Separate groundwater extraction and treatment systems were constructed in the northern and southern portions of Site 78. Operation of the plants and long-term monitoring of the groundwater is currently ongoing. Groundwater samples are collected on a semi-annual basis and the plant operations are evaluated to determine the effectiveness of the remediation system. During Fiscal Year 1999, plant monitoring will continue to be conducted on a monthly basis and the findings will be incorporated into the semiannual monitoring and treatment system evaluation reports.

2.2 Operable Unit No. 2 (Sites 6, 9, and 82)

The Final ROD for OU No. 2 was signed on September 24, 1993.

2.2.1 Site 6 (Storage Lots 201 and 203) and Site 82 (Piney Green Road VOC Area)

Sites 6 and 82 adjoin one another and comprise over 200 acres. The sites are bounded by Wallace Creek to the north, Site 9 to the south, Piney Green Road to the east, and Holcomb Boulevard to the west. Prior to the late 1980s, much of the northern area (i.e., Storage Lot 203 and Site 82) was reportedly used for storage, disposal, and handling of potentially hazardous waste and materials. During the initial site reconnaissance in 1991, soil mounds were noted throughout the northern portion of the sites. Currently, Lot 201 is used for equipment staging and much of the former wooded areas have been converted to open storage.

An RI/FS at OU No. 2 was initiated during August 1992 and completed in September 1993 with the Final ROD. Several areas of concern were identified during the investigation. A time-critical removal action (TCRA) was conducted for the removal of the debris in 1994. Twenty drums of dichlorodiphenyl trichloroethane (DDT) were removed and contaminated soil was excavated during the removal action. Another TCRA was conducted in 1995-1996 to remove drums, batteries, and communications wire. The soil was contaminated with POL (petroleum, oil, and lubricants) constituents. Soil and groundwater sampling conducted during the Remedial Investigation (RI) revealed elevated levels of volatile organic compounds (VOCs) in soil and both shallow and deep groundwater. Chlorinated solvents were found as deep as 240 feet below ground surface. Groundwater remains contaminated with solvent constituents such as trichloroethene (TCE), 1,2-dichloroethene, and vinyl chloride. The highest levels of contamination are present where Site

6 and 82 meet. Water supply wells no less than 1,500 feet away from Sites 6 and 82 were closed when the contamination was discovered. Construction of a groundwater extraction and treatment system was initiated in December 1994 and full-scale operation of the treatment system began in July 1996. In addition, a soil vapor extraction system (SVE) was in operation for six months beginning in 1996.

During Fiscal Year 1997, a groundwater monitoring program was initiated and will continue for a minimum of 5 years. Operation of the plant is expected to continue through 2000. In addition, the monitoring of wells associated with monitoring the plant's performance and the migration of contamination will be conducted as long-term monitoring on a semiannual basis. Monitoring and treatment system evaluation reports will be provided on a semiannual basis during Fiscal Year 1999.

2.2.2 Site 9 - Fire Fighting Training Pit at Piney Green Road

Site 9 is located immediately south of Site 6 and west of Piney Green Road. The area encompasses approximately 2.6 level acres. The fire training area consists of a concrete-lined pit with an oil and water separator. There were four 500-gallon aboveground storage tanks (ASTs) near the training area that are no longer present. The fire fighting pit has been used for training since the early 1960s. Until 1981, the training exercises were conducted in an unlined pit (the pit is now asphalt-lined). Flammable liquids including heating oil, solvents, and fuels are used as accelerants during the training exercises.

Soil and groundwater samples collected during the RI did not reveal extensive contamination. The absence of widespread soil and groundwater contamination may be due to the combustion of fuel during the training exercises. No remedial actions were required at this site. However, during Fiscal Year 1999 plans to upgrade the fire training area will be completed and installed. The new fire training apparatus will employ clean-burning fuels.

No additional remedial action or monitoring is planned for Site 9.

2.3 Operable Unit No. 3 (Site 48)

The Final ROD for OU No. 3 was signed on September 10, 1993.

2.3.1 Site 48 - MCAS Mercury Dump

Site 48 is located within Marine Corps Air Station (MCAS), New River. The site is bounded by Longstaff Road to the west and to the east by the New River. An unnamed tributary to the New River borders the site to the north. The site includes approximately four flat acres and consists of Building AS-804 and a lawn area behind the building. During the late 1950s to the mid-1960s, Building AS-804 was used for photographic development. During the photographic development process, mercury was generated and periodically disposed of in small quantities behind the building. It was reported that approximately one gallon of mercury per year was disposed of in this manner. Building AS-804 is currently used as a classroom training facility.

During the 1992 RI/FS, historical aerial photographs were obtained and evaluated in order to identify the suspected disposal area(s). A geophysical investigation was also performed to identify the presence of mercury. The geophysical investigation did not reveal anything associated with mercury disposal. A soil and groundwater investigation were conducted, focusing on the anomalies identified

in the aerial photographs. The results of this study did not identify mercury in either soil or groundwater. The RI concluded that the absence of mercury at Site 48 was most likely due to washout of the area and periodic flooding during severe storms because of its proximity to the New River.

No additional remedial action or monitoring is planned for Site 48.

2.4 Operable Unit No. 4 (Sites 41 and 74)

The Final ROD for OU No. 4 was signed on December 5, 1995.

2.4.1 Site 41 - Camp Geiger Dump Near Former Trailer Park

Site 41 is located within the Camp Geiger area of MCB, Camp Lejeune and is comprised of approximately 30 acres. The site is situated between Highway 17 to the west, Tank Creek to the south, an unnamed tributary to the north, and an unimproved road to the east. During the period 1946 to 1970, the area was used as an open burn dump. Construction debris, POL wastes, mirex (a pesticide), solvents, batteries, ordnance, and chemical training agents were reportedly disposed at Site 41. Based upon background information, the debris was burned and graded over with soil.

An RI/FS was initiated in December 1993 and completed in May 1995. Results of the RI indicated that the site contains a significant amount of buried construction debris. Analytical results indicated that surface soil in the central portion of the study area were contaminated with polynuclear aromatic hydrocarbon (PAH) compounds, most likely the result of previous burning activities. Groundwater samples obtained from the site exhibited chromium, iron, lead, and manganese above North Carolina Water Quality Standards (NCWQSs) for groundwater. The human health risk assessment concluded that there were no risks to human health because groundwater in this area is not used as a potable supply. The ecological risk assessment concluded that potential adverse impacts to ecological receptors were low due to the low levels of contamination in soil, sediment, and surface water.

The selected remedy for Site 41 includes long-term groundwater and surface water monitoring and deed restrictions prohibiting development of the site. A groundwater reclassification and surface water variance were requested due to the nature of potential contamination that could not feasibly be remediated. In August 1997, a letter from NC DENR Wilmington Regional Office informed MCB, Camp Lejeune that, based on limited site contamination, the groundwater reclassification and surface water variance were no longer required. Groundwater, surface water, and sediment monitoring will continue on a semiannual basis and will be reviewed every five years to determine whether the alternative is protective of human health and the environment.

2.4.2 Site 74 - Mess Hall Grease Disposal Area

Site 74 is located approximately one-half mile east of Holcomb Boulevard in the northeast section of MCB, Camp Lejeune just north of Henderson Pond. During the early 1950s through the early 1960s, grease from the mess hall was reportedly taken to the area and disposed in trenches. It was also reported that drums containing PCBs and "pesticide soaked bags" were taken to the site and buried. Chemical warfare materials (CWM), similar to the types documented at Site 69, also were reportedly taken to Site 74.

An RI was conducted at Site 74 in conjunction with Site 41. Historical aerial photographs of Site 74 depict extensive trenching operations. Results of the RI did not indicate widespread contamination. Some pesticides were detected in soil at the former pest control area, and one monitoring well exhibited low levels of a pesticide. Based on the results of the human health and ecological risk assessments, Site 74 poses no unacceptable risks.

The selected remedy for Site 74 includes deed restrictions, which prohibit the development of the site, and restrictions on the use of the groundwater as a potable supply and long-term groundwater monitoring. The decision to restrict development of the site is based on the potential presence of buried CWM near the grease pit disposal area. This alternative will be reviewed every five years to determine whether the alternative is protective of human health and the environment.

2.5 Operable Unit No. 5 (Site 2)

The Final ROD for OU No. 5 was signed on September 15, 1994.

2.5.1 Site 2 - Former Nursery/Day Care Center

Site 2 is located at the intersection of Holcomb and Brewster Boulevards, just inside the main gate of MCB, Camp Lejeune. From 1945 to 1958 an on-site building was used for the storing, handling, and dispensing of pesticides. This building, Building 712, was later used as a day care center for children. Chemicals known to have been used at Site 2 include chlordane, 4,4'-DDT, diazinon, and 4,4'-dichlorodiphenyldichloroethane (DDD). Chemicals known to have been stored at this site include dieldrin, lindane, malathion, and silvex. A preliminary soil sampling investigation conducted in 1982 indicated the presence of pesticides. Based on these results, the day care activities were moved to another location. Building 712 is currently being used as a personnel office for non-appropriated funding personnel.

An RI/FS was initiated in April 1993 and completed in September 1994. Based on results of the RI/FS, elevated levels of pesticides were detected in soil near the former mixing pads. In addition, a plume consisting of low levels of ethylbenzene and toluene was present in the shallow aquifer. Ethylbenzene and toluene are known constituents in petroleum based pesticides similar to what was used on Site 2. Contamination of site environmental media was believed to be the result of small spills, washout, and excess disposal. A TCRA was initiated in January 1994. The TCRA involved the excavation and off-site treatment of pesticide-contaminated soil and concrete. A total of 1,049 tons of pesticide contaminated soils were excavated and sent for off-site disposal.

Institutional controls, including groundwater monitoring, were implemented at Site 2. A groundwater monitoring program for volatile organics was initiated in 1995 and will continue on a semiannual basis throughout 1999. Based upon findings of the monitoring program, the sampling frequency and analyses were modified.

2.6 Operable Unit No. 6 (Sites 36, 43, 44, 56, and 86)

A Final ROD is expected to be signed for OU No. 6 during Fiscal Year 1999.

2.6.1 Site 36 - Camp Geiger Dump Area

Site 36 is located approximately 1,000 feet east of Camp Geiger and 500 feet west of the New River, adjacent to the Camp Geiger Sewage Treatment Plant (STP). Camp Geiger is situated directly north of MCAS, New River, approximately 3 miles southwest of Jacksonville, North Carolina. Site 36 was originally estimated to be approximately 1.5 acres in size. However, based upon a review of aerial photographs and observations recorded during a site scoping visit, the size of the site was adjusted to include nearly 20 acres. The site was reported to have been used for the disposal of mixed industrial wastes including trash, waste oils, solvents, and hydraulic fluids. Most of the material was first burned and then buried, however, some unburned material was buried. The dump was active from the late 1940s to the late 1950s.

An RI field investigation at Site 36 commenced during February 1995 and continued through May 1995. Additional monitoring wells were installed and a second round of groundwater samples were collected in July of 1995. Additional soil borings and two sediment samples were collected in October of 1995. The RI indicated that positive detections of organic compounds in groundwater were limited to the northern and western portions of the study area. The presence of volatile compounds were confirmed by results of the second groundwater sampling round. In addition, PCBs were detected among soil samples obtained from the western portion of the site. A limited number of volatile and pesticide compounds were also detected among surface water and sediment samples.

Removal of the PCB-contaminated soil was completed during Fiscal Year 1998. During Fiscal Year 1999, approval of monitored natural attenuation for the groundwater aquifer is anticipated pending final approval.

2.6.2 Site 43 - Agan Street Dump

Site 43 is comprised of approximately 11 acres and is located within the operations area of MCAS, New River, two miles west of the main entrance. The site is bordered to the north by Edwards Creek and to the east and south by Strawhorn Creek. The Agan Street Dump reportedly received inert material such as construction debris (i.e., fiberglass and lumber) and trash. Sludge from a former sewage disposal facility, located adjacent to the study area, was also dumped onto the ground surface of Site 43. The years during which disposal operations took place are not known.

The RI field investigation commenced in February 1995 and continued through May 1995. Soil test borings were completed at two separate locations identified as having partially buried containers.

Positive detections of semivolatile organic compounds (SVOCs) among soil samples obtained at Site 43 were primarily limited to a cleared portion of the study area adjacent to the gravel access road. In general, higher concentrations of pesticides were observed in samples obtained from a small portion of the study area with partially buried containers. No other organic compounds were detected among groundwater samples obtained from the shallow and deep aquifers.

A surficial metallic debris removal action was performed during July 1995. Approximately 7.3 tons of metallic debris was routed to recycling recovery in July 1995. It is anticipated that no additional remedial action or monitoring will be required for Site 43. The ROD for Site 43 is anticipated to be approved during Fiscal Year 1999.

2.6.3 Site 44 - Jones Street Dump

Site 44 encompasses approximately 5 acres and is located at the northern terminus of Baxter Street, behind base housing units along Jones Street within the New River operations area. The site is bordered to the north and west by Edwards Creek, to the south by base housing units along Jones Street, and to the east by woods and an unnamed tributary to Edwards Creek. Edwards Creek flows east from the study area toward Site 43, which is located about 2,000 feet to the east. Site 44 was reportedly in operation during the 1950s. Although the quantity of waste is not known, debris, cloth, lumber, and paint cans were reportedly disposed of at the site.

An RI field investigation at Site 44 commenced in February 1995 and continued through May 1995. A total of four semivolatile contaminants, including two PAH compounds, were identified during the soil investigation at Site 44. The pesticides 4,4'-dichlorodiphenyldichroethylene (DDE), 4,4'-DDD, and 4,4'-DDT were the most widely distributed compounds in the soil. Inorganics were the most prevalent and widely distributed constituents in groundwater at Site 44. Positive detections of organic compounds were limited to two monitoring wells. A total of 6 VOCs were detected among the 13 surface water samples obtained from Edwards Creek. Volatile organic compounds were not detected in any of the ten sediment samples obtained from Edwards Creek.

The occurrence of VOCs among the limited groundwater and surface water samples obtained from the study area were traced to Sites 89 and 93, located upgradient of Site 44. It is anticipated that no additional remedial action or monitoring will be required for Site 44. The ROD for Site 44 is anticipated to be approved during Fiscal Year 1999.

2.6.4 Site 54 - Crash Crew Fire Training Burn Pit

Site 54 is located near the southwest end of runway 5-23, within the operations area of MCAS, New River. The burn pit is approximately 50 feet in diameter and is situated at the center of this 1.5 acre site. An 8,000-gallon UST lies to the northwest of the burn pit. Fire training exercises are conducted within the burn pit using JP-type fuel, which is stored in the nearby UST. An oil and water separator, located approximately 100 feet to the southeast of the burn pit, is used for temporary storage and collection of the spent fuel. Site 54 has served as a fire training burn pit since the mid-1950s. In 1975 a lined burn pit was constructed. The same burn pit remains in operation today, however, only JP-type fuels are currently used during training exercises.

An RI field investigation for Site 54 commenced in February 1995 and continued through May 1995. Soil borings were completed to assess the suspected impact of burn pit operations and were utilized for the installation of monitoring wells. SVOCs were identified in both surface and subsurface soil samples from the southern and southwestern portions of the study area. Positive detections of organic compounds were limited to portions of the study area immediately adjacent to the burn pit or UST and extending southwest of the burn pit. The presence of volatile and semivolatile compounds in soil samples obtained from this portion of the study area is consistent with current site operations. Both volatile and semivolatile organic compounds were also detected in groundwater samples obtained from the same portion of the study area.

Conversion of the burn pit to a training area that uses clean-burning propellants will be completed during Fiscal Year 1999. Also during Fiscal Year 1999, approval of monitored natural attenuation for the shallow groundwater aquifer is anticipated pending final approval.

2.6.5 Site 86 -Tank Area AS419-AS421

Site 86 is located on the southwest corner of the Foster and Campbell Street intersection, within the operations area of MCAS New River. The site is comprised of a lawn area surrounded by buildings, asphalt roads, and parking lots. Site 86 served as a storage area for petroleum products from 1954 to 1988. In 1954, three 25,000-gallon ASTs were installed within an earthen berm. The three tanks were reportedly used for No.6 fuel oil storage until 1979. From 1979 to 1988 the tanks were then used for temporary storage of waste oil. The three tanks were emptied in 1988 and are believed to have been removed in 1992. Today, the former location of the tanks is grass-covered and only a very slight depression remains.

The RI field investigation at Site 86 commenced in February 1995 and continued through May 1995. Positive detections of volatile and semivolatile organic compounds were detected in both surface and subsurface soil samples. The majority of SVOCs detected in soil samples were PAH compounds. Based upon the initial results from the RI, additional wells were installed at Site 86 in 1997 and 1998. The groundwater monitoring wells were installed in locations to better define the limits of the identified plumes and to determine VOC contaminant migration.

During Fiscal Year 1999, approval of monitored natural attenuation for the shallow and deep groundwater aquifers is anticipated pending final approval.

2.7 Operable Unit No. 7 (Sites 1, 28, and 30)

The Final ROD for OU No. 7 was signed on May 16, 1996.

2.7.1 Site 1 - French Creek Liquids Disposal Area

Site 1 is located approximately one mile east of the New River and is situated along both the north and south sides of Main Service Road near the western edge of the Gun Park Area and Force Troops Complex. Site 1 had been used by several different mechanized, armored, and artillery units since the 1940s. Reportedly, liquid wastes generated from vehicle maintenance were routinely poured onto the ground surface. At times, holes were reportedly dug for waste acid disposal and then immediately backfilled. Thus, the disposal areas at Site 1 are suspected to contain POL and battery acid. The total extent of both the northern and southern disposal areas is estimated to be between seven and eight acres. The quantity of POL waste disposed at the areas is estimated to be between 5,000 and 20,000 gallons; the quantity of battery acid waste is estimated to be between 1,000 and 10,000 gallons. Site 1 continues to serve as a vehicle and equipment maintenance/staging area.

In 1994, an RI was conducted at Site 1. VOCs were not found in surface soils, but were detected in limited subsurface soil samples. Positive detections of VOCs in groundwater were limited to the northern portion of the study area. TCE was detected in samples obtained from the shallow aquifer. Vinyl chloride was also detected at concentrations that exceeded the state and federal drinking water standards.

As a result of the RI findings, institutional controls were required for Site 1. As such, a groundwater monitoring program for volatile organic compounds was established. Monitoring at Site 1 began in July 1996 and has continued on a semiannual basis. Based upon results of the monitoring program, it is anticipated that monitoring activities will no longer be required during Fiscal Year 1999.

2.7.2 Site 28 - Hadnot Point Burn Dump

Site 28 is located along the eastern bank of the New River, south of the HPIA on the Mainside portion of MCB, Camp Lejeune. Site 28 is surrounded by the Hadnot Point STP to the north, wooded and marshy areas to the east and south, and the New River to the west. Cogdels Creek flows into the New River at Site 28 and forms a natural divide between the eastern and western portions of the site. A majority of the estimated 23 acres that constitute Site 28 are used for recreation and physical training exercises. Site 28 operated from 1946 to 1971 as a burn area for a variety of solid wastes generated on the Base. Reportedly, industrial waste, trash, oil-based paint, and construction debris were burned then covered with soil. In 1971, the burn dump ceased operations, and was graded and seeded with grass. The total volume of fill within the dump is estimated to be between 185,000 and 375,000 cubic yards. This estimate was based upon a surface area of 23 acres and a depth ranging from five to ten feet.

In 1994, an RI was conducted at Site 28. VOCs were found in the surface soil and subsurface soil at very low concentrations. Based upon their wide dispersion, infrequent detection, and low concentration, the occurrence of VOCs in soils are not a significant problem resulting from previous disposal practices.

SVOCs appeared to be the most directly linked to past disposal practices. Several SVOCs were identified in both surface and subsurface soil samples, primarily from the western disposal area. Inorganics were detected in both surface and subsurface soil samples from the western portion of the study area at concentrations greater than one order of magnitude above Base-specific background levels. Inorganics were the most prevalent and widely distributed contaminants in groundwater at Site 28 and were found distributed throughout the site. Concentrations of inorganics, in samples obtained during both sampling rounds, were generally higher in shallow groundwater samples than in samples collected from the deeper aquifer.

As a result of the RI findings, institutional controls were required for Site 28. A groundwater monitoring program for metals was then established. Monitoring at Site 28 began in July 1996 and has continued on a semiannual basis. Based upon results of the monitoring program, it is anticipated that monitoring activities will no longer be required during Fiscal Year 1999.

2.7.3 Site 30 - Sneads Ferry Road Fuel Tank Sludge Area

Site 30 is situated along a tank trail that intersects Sneads Ferry Road from the west, approximately 1 mile south of the intersection with Marines Road, and roughly 4-1/2 miles south of the HPIA. The majority of the Site 30 area is wooded containing trees of less than three inches in diameter and dense understory. Site 30 was reportedly used by a private contractor as a cleaning area for emptied fuel storage tanks from other locations. The tanks were used to store leaded gasoline that contained tetraethyl lead and related compounds. Since fuel residuals remaining in the emptied tanks were reportedly washed out at Site 30, the disposal area is suspected to contain fuel sludge and wastewater from the washout of the tanks.

In 1994, an RI was conducted at Site 30. A very limited number of VOCs were detected among surface and subsurface soil samples. No significant detections of any other potentially hazardous compounds were noted during the RI.

No additional remedial action or monitoring is planned for Site 30.

2.8 Operable Unit No. 8 (Site 16)

The Final ROD for OU No. 8 was signed on September 30, 1996.

2.8.1 Site 16 - Former Montford Point Burn Dump

Site 16 is located southwest of the intersection of Montford Landing Road and Wilson Drive in the Montford Point area of Camp Lejeune. The study area is approximately 4 acres in size and is bordered by wooded areas. Northeast Creek is approximately 400 feet southeast from the boundary of the burn dump. Limited information is available concerning the operational history of the burn dump. Trash from the surrounding housing area and buildings is suspected to have been burned and then covered with soil at Site 16. Records indicate that small amounts of waste oils were also disposed of at this site. Currently, the study area is being used for staging vehicles and for vehicle training exercises.

An RI/FS at Site 16 was initiated in June 1994 and was completed in November 1994. A second round of groundwater samples were collected in February 1995. A confirmatory soil investigation was conducted in December 1995. Several pesticide contaminants were detected among soil and sediment samples obtained from the site. The pesticide levels detected at Site 16 were similar to levels detected at other areas within MCB, Camp Lejeune. Surface soil contamination also consisted of PCBs. The detections of Aroclor 1254 and 1260 were from sampling locations across the site. PCBs were not found in the groundwater indicating that vertical migration to the water table had not occurred. Semivolatile compounds were infrequently encountered at low levels in the surface soil. Subsurface soil was relatively free of semivolatile contamination. The source of the semivolatile compounds is believed to be due to historical open burning operations. Volatile contaminants benzene and ethylbenzene were detected in one groundwater sample collected during the first round of groundwater sampling. Volatile contaminants were absent in all groundwater samples collected as part of the second round.

Although several contaminants were detected among the various samples of environmental media, the levels were not enough to warrant further action; however, institutional controls were established. No additional remedial action or monitoring is planned for Site 16.

2.9 Operable Unit No. 9 (Sites 65 and 73)

A Final ROD is expected to be signed for OU No. 9 during Fiscal Year 1999.

2.9.1 Site 65 - Engineer Area Dump

Site 65 is located in the Courthouse Bay area of MCB, Camp Lejeune and is approximately five acres in size. Two separate disposal areas have been reported at Site 65, a battery acid disposal area and a liquids disposal area. The types of liquids that have been disposed are reported to have been comprised of POL. In addition, the dump was used to burn construction debris. The dump was in operation from before 1958 until 1972.

An RI was conducted at Site 65 in 1995. Findings from the RI indicate that there were no releases of hazardous substances from the waste disposal areas that would result in a risk to human health or the environment.

It is anticipated that the Final RI, Final Proposed Remedial Action Plan (PRAP), and Final ROD will be submitted in Fiscal Year 1999. No additional remedial action or monitoring is expected for Site 65, pending approval of the Final ROD.

2.9.2 Site 73 - Courthouse Bay Liquids Disposal Area

Site 73 is located within an active amphibious vehicle maintenance facility located along the northwest shore of Courthouse Bay. Available information indicates that disposal activities occurred within a 13-acre area from 1946 until 1977. An estimated 400,000 gallons of waste oil were disposed of in this area. The waste oil was generated during routine vehicle maintenance. The oil drained directly on the ground surface. In addition, approximately 20,000 gallons of waste battery acid were reportedly disposed of in this area. Waste battery acid was poured into shallow hand-shoveled holes that were backfilled after disposal.

An RI was conducted at Site 73 in 1995. Findings from the RI indicated the presence of VOCs among a select number of shallow and deep groundwater samples scattered across the study area. A follow-up Phase II RI was conducted in the spring of 1996 to further delineate the extent of groundwater contamination.

A natural attenuation evaluation of Site 73 is planned for the first quarter of Fiscal Year 1999. If natural attenuation of the VOCs in groundwater is shown to be a viable treatment option, it is anticipated that the Final ROD will be submitted for approval during the third quarter of Fiscal Year 1998. In addition to natural attenuation, air sparging will be employed to address an area of concentrated VOCs in the shallow aquifer. The air sparging system will be installed, if approved, in the southwest portion of the study area, adjacent to Courthouse Bay. Implementation of the preferred alternative should occur, pending approval, during the latter portion of Fiscal Year 1999.

2.10 Operable Unit No. 10 (Site 35)

A Final ROD is expected to be signed for OU No. 10 during Fiscal Year 1999.

2.10.1 Site 35 - Camp Geiger Area Fuel Farm

Site 35 is located immediately north of the intersection of G and Fourth Streets, approximately 400 feet southwest of Brinson Creek. The Fuel Farm consisted of five 15,000-gallon ASTs and associated underground distribution lines, a pumphouse, a fueling pad, a distribution island, and an oil separator. The ASTs were erected in 1945 as part of the original Camp Geiger construction. The Fuel Farm was active until it was decommissioned in the spring of 1995 to make way for the construction of a highway. During the active life of the Fuel Farm several releases of fuel occurred. During 1957-58 approximately 1,000-gallons of fuel were released. To control the release, interceptor trenches were dug and the fuel was ignited. There is also evidence of a fuel release from an abandoned underground distribution line that supplied No. 6 fuel oil to a UST that fueled a boiler at the Mess Hall Heating Plant, located adjacent to "D" Street between Third and Fourth Streets.

During 1993-94 an Interim RI and comprehensive RI were conducted at Site 35. The Interim RI identified elevated levels of petroleum hydrocarbon contamination in soils at three locations adjacent to the former fuel farm. The comprehensive RI began in March 1994 and was completed in July 1995. The comprehensive RI identified multiple plumes of fuel and solvent related groundwater contamination in the surficial aquifer. An Interim Feasibility Study (FS) and ROD were prepared

that focused on fuel impacted soils at the site. A soil removal was conducted in 1995 and completed in the spring of 1996. Due to poor site conditions, lack of access, and a lack of benzene, toluene, ethylbenzene, and total xylenes (BTEX) contamination in groundwater east of the proposed highway, it was recommended that an in-situ air sparging system be constructed along the western edge of the proposed right-of-way. It was further recommended that the in-situ air sparging system proposed be tested in a pilot phase prior to full-scale implementation.

Monitored natural attenuation coupled with air sparging has been identified as the preferred remedial alternative for Site 35. Pending approval of the preferred alternative, it is anticipated that the Final PRAP and Final ROD will be submitted during Fiscal Year 1999. Implementation of the preferred alternative should occur in the winter of 1999.

2.11 Operable Unit No. 11 (Sites 7 and 80)

The Final ROD for OU No. 11 was signed on August 21, 1997.

2.11.1 Site 7 - Tarawa Terrace Dump

Site 7 is approximately 5 acres in size and is situated just south of the Tarawa Terrace community center between Tarawa Boulevard and Northeast Creek. Site 7 is a former dump that was used during the construction of the base housing located in Tarawa Terrace. Precise years of operation are unknown, but it has been reported that the dump was closed in 1972. Historical records do not indicate that hazardous materials were disposed of at this facility; only construction debris, water treatment plant filter media, and household trash are known to have been disposed.

The RI field program at Site 7 was conducted in 1994 and consisted of a site survey; a soil investigation that included drilling and sampling; a groundwater investigation that included monitoring well installation and sampling; a surface water and sediment investigation; a habitat evaluation; and an earthworm bioaccumulation study. The pesticides dieldrin, 4,4'-DDE, 4,4'-DDT, and 4,4'-DDD were the most prevalent pesticide contaminants among the soil and sediment samples. Semivolatile contamination was detected in the north and eastern portions of the study area. Metals were the most prevalent and widely distributed contaminants in the groundwater. None of the contaminants detected were considered to pose a threat to human health or the environment, however.

No additional remedial action or monitoring is planned for Site 7.

2.11.2 Site 80 - Paradise Point Golf Course Maintenance Area

Site 80 is located northwest of Brewster Boulevard within the Paradise Point Golf Course, behind Building 1916. Information regarding past golf maintenance procedures is unknown, however, the facility is currently in operation.

The initial phase of the RI field investigation commenced in October 1994 and continued through December 1994. A subsequent soil and groundwater investigation at Site 80 commenced in June, 1995 and continued through July 1995. Based upon the results of the investigations, pesticides were the predominant contaminants at Site 80. Six of the eleven pesticides detected in soils at Site 80 were in 20 of the 55 samples analyzed. Based on the risk assessment presented in the RI report, a TCRA was performed to remove soil contaminated with pesticides. The TCRA was completed

during 1996. Remedial action levels were based upon Region III Risk-Based Concentrations for industrial workers, which resulted in a ten-fold increase in the action levels for dieldrin and aldrin, the drivers of the remedial effort. Approximately 988 tons of contaminated soil were excavated from Site 80.

After completion of the TCRA, a No Action Alternative was presented in the ROD signed in August 1997. No additional remedial action or monitoring is planned for Site 80.

2.12 Operable Unit No. 12 (Site 3)

The Final ROD for OU No. 12 was signed on April 3, 1997 and will be amended in Fiscal Year 1999.

2.12.1 Site 3 - Old Creosote Plant

Site 3 is located on the mainside portion of MCB, Camp Lejeune, approximately one mile north of Wallace Creek along Holcomb Boulevard. Site 3 encompasses approximately 5 acres, is generally flat, and is intersected by a dirt access road. Remnants of a former creosote plant including the chimney, concrete pads, and train rails are present in the southern portion of Site 3. The creosote plant reportedly operated from 1951 to 1952 to supply treated lumber during construction of the Camp Lejeune Railroad. The cleared area in the northern portion of the Site 3 was reported to be the location of the former sawmill, which supplied the cut timbers for creosote treatment. The treated lumber was used during construction of the Camp Lejeune Railroad.

The RI field investigation commenced in September 1994 and continued through December 1994. A follow-up phase of the RI field investigation was completed in June and July of 1995. Due to volatile and PAH contamination detected within the groundwater during the first round of sampling, additional monitoring wells were installed to further define the vertical and horizontal extent of contamination. Naphthalene was the only PAH constituent detected above applicable standards in the groundwater. PAH constituents were also detected among soil samples obtained from the site. The highest concentrations of PAHs occurred in the central portion of the site, the former treatment area. Fuel constituents, such as ethylbenzene and xylene, were also detected in surface and subsurface soils at Site 3, primarily at the former treatment area in the central portion of the site.

Based on the findings of the RI/FS, the recommended alternative presented in the ROD includes excavation of contaminated soil, on-site treatment of the soil, and groundwater monitoring. An Amended ROD will be prepared and submitted for approval during the first quarter of Fiscal Year 1999. The amended remedial action will propose that the excavated soil be taken off-site for disposal at a permitted facility in lieu of on-site treatment. Semiannual monitoring of groundwater conditions at Site 3 will continue through Fiscal Year 2000.

2.13 Operable Unit No. 13 (Site 63)

The Final ROD for OU No. 13 was signed on April 3, 1997.

2.13.1 Site 63 - Verona Loop Dump

Site 63 is comprised of approximately five acres and is located nearly two miles south of the MCAS, New River operations area. Site 63 is bordered to the south by Verona Loop Road, to the east by an unnamed tributary to Mill Run, and to the west by a gravel access road. Much of the site is heavily vegetated with dense understory and trees greater than three inches in diameter. Very little information is known regarding the history or occurrence of waste disposal practices at Site 63. The study area reportedly received wastes generated during training exercises. The type of materials generated during these exercises are described only as "bivouac" wastes. Additional information suggests that no hazardous wastes were disposed of at Site 63. The years during which disposal operations may have taken place are not known. Training exercises, maneuvers, and recreational hunting are frequently conducted in the area.

The RI field investigation of OU No. 13 was completed during November 1995. The RI field program at Site 63 consisted of a site survey; a soil investigation; a groundwater investigation; a surface water and sediment investigation; and a habitat evaluation. Positive detections of SVOCs, pesticides, and metals were observed in environmental samples obtained at Site 63. Pesticide concentrations were low (i.e., less than 0.1 mg/kg) and primarily limited to within and adjacent to the suspected disposal portion of the study area. The presence of SVOCs and pesticides is most likely the result of former or ongoing activities at Site 63.

Based upon the findings presented in the RI, there are no threats to human health and the environment from the contamination at Site 63. No additional remedial action or monitoring is planned for Site 63.

2.14 Operable Unit No. 14 (Site 69)

A Final ROD is expected to be signed for OU No. 14 during Fiscal Year 1999.

2.14.1 Site 69 - Rifle Range Chemical Dump

Site 69 is located approximately one-quarter mile west of the New River in the Rifle Range area of MCB, Camp Lejeune. The site includes approximately 14 acres and is situated in a topographically high area. The former disposal area slopes downward in all directions from the central portion of the study area. During the period between 1950 to 1976, the area was used to dispose of chemical wastes including PCBs, solvents, pesticides, calcium hypochlorite, and drums of "gas" that possibly contained CN (i.e., tear gas) or other agents such as mustard gas. Based upon background information, chemical agents may be buried at this site.

The RI/FS at Site 69 commenced in 1992 and, after a number of supplemental investigations, concluded in 1995. Results from the RI indicate that groundwater is contaminated with solvent constituents. The groundwater contamination is believed to be centered in the south-central portion of the site, and has not migrated extensively from the disposal area. Surface soil has not been impacted by the former disposal activities; however, it is believed that the top two feet of soil may be cover material that was placed over the debris. No intrusive investigations were conducted due to the potential for encountering chemical agents. Geophysical investigations have indicated buried metallic objects near the groundwater source area. It is likely that the buried material consists of drums or canisters that contain solvents. Surface water and sediment collected from the New River,

Everett Creek and an unnamed tributary north of the site have not been impacted by the former disposal operations.

A treatability study was initiated in March 1996 to assess the effectiveness of an innovative groundwater treatment technology called in-well aeration. After two years of operation and testing, in-well aeration was determined to be ineffective at reducing the number and concentration of contaminants in the groundwater aquifer. During Fiscal Year 1999, approval of monitored natural attenuation as the most feasible treatment alternative for the groundwater aquifer is anticipated.

2.15 Operable Unit No. 15 (Site 88)

A Focused RI was completed for Operable Unit No. 15 (Site 88) on May 15, 1998. A ROD for Operable Unit No. 15 may be prepared during Fiscal Year 2000, pending results of current studies being performed.

2.15.1 Site 88 - Base Dry Cleaners

Site 88 is located at the Base dry cleaners (Building 25) within a densely populated area of MCB, Camp Lejeune. Barracks, office buildings, and other occupied structures are located adjacent to Building 25.

The USTs at Site 88 were installed in the 1940s and were used for the storage of varsol and tetrachloroethene. The tanks were removed between November 1995 and January 1996. A Focused RI was completed that identified the limits of soil and groundwater contamination at the site. In general, contaminated soil appears to be concentrated beneath the building and the parking lot to the northwest near Building 43. Groundwater contamination extends to a depth 50 feet below ground surface and extends approximately 700 feet to the northwest. Isolated areas of free phase dense non-aqueous liquid (DNAPL) exist beneath Building 25 and areas immediately north of the building. To address the DNAPL situation at Site 88 a partial free phase liquid recovery has been completed in addition to a pre-surfactant remediation characterization and delineation study. These studies have established the nature and extent of residual phase of DNAPL. During Fiscal Year 1999 surfactant enhanced aquifer remediation (SEAR) will begin to remove the residual phase DNAPL and some free phase DNAPL.

2.16 Operable Unit No. 16 (Sites 89 and 93)

Operable Unit No. 16 consists of Site 89 (STC-868) and Site 93 (TC-942). A remedial investigation has been completed for both sites and was issued as final on June 15, 1998.

2.16.1 Site 89 - (STC-868)

Due the presence of chlorinated solvents detected during UST investigations, Site 89 has been further characterized by a remedial investigation under the IR Program. The site is located near the intersection of G and 8th Streets in the Camp Geiger area of MCB, Camp Lejeune. A UST containing waste oil was installed in 1983 and removed in 1993. UST investigations detected elevated levels of total petroleum hydrocarbon (TPH), oil and grease, and chlorinated solvents in soil and groundwater samples.

The remedial investigation was conducted in two phases in 1996 and in 1997. Activities under this investigation included the installation of temporary and permanent monitoring wells with associated soil and groundwater sampling. In addition, surface water and sediment samples were collected from Edwards Creek, which borders the southern portion of the site.

The remedial investigation at Site 89 identified impact to the soil and groundwater at the site by chlorinated solvents. The majority of the groundwater contamination is located in the area of the Defense Reutilization Maintenance Office (DRMO). The contaminant plume extends to approximately 50 feet below ground surface and extends approximately 1,200 feet east of the DRMO. Groundwater at the site moves south and provides base flow to Edwards Creek, therefore, chlorinated solvents have impacted this stream. A ROD is planned for Fiscal Year 1999.

2.16.2 Site 93 - (TC-942)

Site 93 is located northwest of the intersection of "E" and 10th Streets at Camp Gieger. The site consisted of one UST that was used to store used oil. The UST was removed in December 1993. Subsequent investigations detected chlorinated solvents, and oil and grease compounds at the site. In addition, cadmium and lead were detected at concentrations exceeding state groundwater standards.

The remedial investigation identified shallow groundwater contamination in the area near the former UST. The impact to the groundwater at Site 93 is not as severe as what was discovered at Site 89. The depth and the areal extent of contamination are much less at Site 93. A ROD is planned for Fiscal Year 1999.

2.17 Operable Unit No. 17 (Sites 90, 91, 92)

Operable Unit No. 17 is located in the southeast portion of MCB, Camp Lejeune in the Courthouse Bay Complex. Sites 90, 91, and 92 are all former UST program sites that have been placed on the IR Program list due to the detection of contaminants not typically related to petroleum UST sites. Each of the sites were investigated under the IR Program by a Focused RI completed in April 1997. As a result of the findings of the Focused RI, each of the sites are anticipated to receive a No Action PRAP. The ROD is planned to be submitted in Fiscal Year 2000.

2.17.1 Site 90 - (BB-9)

Site 90 contained three USTs used to contain heating oil. These tanks were removed in March 1993. Subsequent investigations confirmed the presence of soil and groundwater contamination. The Focused RI field activities detected toluene in the soil samples. Groundwater samples were collected from existing and newly installed temporary monitoring wells. The laboratory analysis of these samples only detected chloroform, which is not a site related compound.

2.17.2 Site 91 - (BB-51)

Site 91 contained one UST that was removed in August 1992. At the time of the UST closure, TPH contamination was detected in the soil samples. The groundwater samples collected during the Focused RI detected tetrachloroethene (PCE); however, the concentrations were below state and federal standards.

2.17.3 Site 92 - (BB-46)

Site 92 contained one UST that was installed in 1980 and used to store gasoline. The tank was deactivated in 1989, and removed in January 1994. A subsequent site investigation identified the presence of chlorinated hydrocarbons in the groundwater. Soil and groundwater samples were collected from existing and newly installed temporary monitoring wells as part of the Focused RI. There were no volatile organic compounds detected in the soil samples. Only chloroform was detected in the groundwater samples. This compound is not considered to be site related.

2.18 Operable Unit No. 18 (Site 94)

There have been no IR Program investigations at Site 94. However, investigations have been completed at this site under the UST Program. Project Plans and a remedial investigation are scheduled for Operable Unit No. 18 during Fiscal Year 1999. Additional submittals will depend on the results of the RI.

2.18.1 Site 94 - PCX Service Station

Site 94 is located within the Hadnot Point Industrial Area. Four gasoline USTs were reportedly installed during the 1950s northeast of Building 1613. The tanks supplied various grades of gasoline to the service station. All of the USTs were removed on January 13, 1995. Hydrocarbon contamination of the subsurface soil was confirmed at the site during the UST removal. Further investigations at the site have identified free phase hydrocarbons and chlorinated solvent related contaminants.

Dissolved purgeable aromatic constituents were identified and delineated in the area of the former UST basin and the free product plume areas. Dissolved purgeable halocarbon compounds were identified at concentrations exceeding North Carolina groundwater standards in three isolated areas, suggesting multiple sources. In addition, the vertical extent of purgeable halocarbons is at least 50 feet below ground surface.

2.19 Pre-Remedial Investigation Sites

This section discusses sites that have been assessed through Pre-RIs. It is important to note that these Pre-RI sites are not required to adhere to the same reporting requirements as defined in the Camp Lejeune FFA for RI/FS sites. If these sites warrant further investigation based on the Pre-RI results, the sites will be added to the FFA list of RI/FS sites.

2.19.1 Site 10 - Original Base Dump

Site 10 covers approximately 5 to 10 acres. It was operated prior to 1950 and was mainly used for disposal of construction debris and as a burn dump. It is located to the west of Open Storage Lot 203 along Holcomb Boulevard. This site was recently added to the IR Program when it was reported that two marines obtained skin rashes by contacting a heavy oily material that may have been at the site. Project plan development for this site was completed in September 1997. This site was investigated through the completion of a Site Investigation (SI) in 1998. Results of the SI indicated minimal impact to soil, sediment, surface water and groundwater at the site. Therefore, a No Further Remedial Action Plan Decision Document will be prepared in Fiscal Year 1999.

2.19.2 Site 12 - Explosive Ordnance Disposal

Site 12 covers approximately 8 to 10 acres. During the early 1960s, ordnance was disposed of by burning or exploding when it was found to be inert, unserviceable, or defective. Materials disposed of included ordnance, colored smokes, and white phosphorous. Any undestroyed residues were typically less than one pound. Baker conducted soil and groundwater sampling activities in January and February 1996. Results indicate that neither soil nor groundwater have been significantly impacted by site activities. Accordingly, a No Further Remedial Action Decision Document has been completed for this site.

2.19.3 Site 68 - Rifle Range Dump

The Rifle Range Dump is located west of Range Road approximately 2,000 feet west of the Rifle Range water treatment plant and 800 feet east of Stone Creek. This 3- to 4-acre area was used as a disposal site for various types of wastes, including garbage, building debris, waste treatment sludge, and solvents. The site was utilized as a disposal facility from 1942 to 1972. The depth of the fill area is approximately 10 feet, and the amount of material deposited has been estimated to be 100,000 cubic yards.

Organic compounds were identified in potable supply wells RR-45 and RR-97 located near the site. Even though these wells are located upgradient from the site, it was suspected that continuous pumping may have drawn contaminants to the wells. Baker conducted soil, groundwater, surface water, and sediment sampling activities in January and February 1996 with additional samples collected in March 1998.

Results indicated that none of the media sampled have been significantly impacted by site activities. Accordingly, this site is likely to be considered for No Further Actions.

2.19.4 Site 75 - MCAS Basketball Court Site

The MCAS Basketball Court Site is located along the north side of Curtis Road. This site was reportedly a drum burial area that was used on at least one occasion in the early 1950s. The excavation as seen in an aerial photograph was an oval shaped pit approximately 90 feet long by 70 feet wide and was sufficiently deep to have encountered the water table. An estimated seventy-five to one hundred 55-gallon drums were placed in this pit. The drums reportedly contained a chloroacetophenone tear gas solution used for training. Additional organic chemicals, such as chloroform, carbon tetrachloride, benzene, and chloropicrin, may have been present in the solution. Degradation of the drums could have resulted in the release of the suspected materials into the groundwater. This was of particular concern due to the proximity of several water supply wells in the area, two of them being within 500 feet of the alleged disposal site. Baker conducted soil and groundwater sampling activities in January and February 1996. In addition, a comprehensive geophysical survey was also performed. The geophysical survey did not indicate that either soil or groundwater have been significantly impacted. The geophysical survey did not indicate any major subsurface anomalies that could have been the suspected drums. Accordingly, this site is likely to be considered for No Further Actions.

2.19.5 Site 76 - MCAS Curtis Road Site

The MCAS Curtis Road Site is located in the vicinity of and along the north side of Curtis Road. The precise location of the site is unknown, and two possible locations have been identified based on interviews and aerial photography. This alleged dump site was reportedly used as a drum disposal area on two occasions in 1949. The estimated area of the disposal unit is 1/4 acre and approximately 25 to 75 55-gallon drums were allegedly involved. It is believed that the drums contained a chloroacetophenone tear gas agent similar to that allegedly buried in the MCAS Basketball Court Site (Site 75). Potential contaminants are chloroform, carbon tetrachloride, benzene, and chloropicrin. Baker conducted soil and groundwater sampling activities in January and February 1996. Additional groundwater data was collected in March of 1998. In addition, a comprehensive geophysical survey was also performed. The geophysical survey did not indicate that either soil or groundwater have been significantly impacted. The geophysical survey did not indicate any major subsurface anomalies that could have been the suspected drums. Accordingly, a No Further Remedial Action Plan Decision Document is being prepared for this site and will be published in the spring of 1999.

2.19.6 Site 84 - Building 45 Area

Site 84 is located approximately 200 yards south of Highway 24 on the main side of MCB, Camp Lejeune, one mile west of the main gate entrance. The study area is bordered by Building 45, an electrical substation, to the east and Northeast Creek to the west. The area is wooded and vegetated with a pond, possibly manmade, within the study area. There are no direct access roads; however, access to the site is unrestricted.

This site is in proximity of a former electrical substation. Transformers reportedly containing PCBs were known to be used and possibly stored at the substation. A transformer was discovered in the wooded area, east of the substation, during an UST Investigation. Additional transformers (approximately 20) potentially containing PCB transformer oil were discovered and removed from the lagoon.

Baker conducted soil, groundwater, surface water, and sediment sampling activities in October 1995 as part of a SI. Additional sampling was performed in March 1998. It is obvious the site has been adversely impacted by PCB contamination. PCBs have been detected at levels above 500 parts per billion (ppb) in soil collected from around the lagoon, and in surface water and sediment (above 1,000 ppb) collected from within the lagoon. Characterization of the site will be presented in the Final Pre-RI Screening Study. An Engineering Evaluation/Cost Analysis (EE/CA) will be published in the spring of 1999. It is anticipated that remediation of PCBs in the lagoon and nearby soils will be recommended as a TCRA.

2.19.7 Site 85 - Camp Johnson Battery Dump

The Camp Johnson Battery Dump was recently discovered off Wilson Drive in the Montford Point Area during road repairs. Decomposed batteries, which were used in military communication equipment during the Korean era, were unearthed as a roadway was being widened. Military personnel utilizing this area also discovered discarded charcoal canisters from old air purifying respirators. The discarded battery packs and charcoal canisters were observed in piles, randomly located throughout a 2 to 3 acre area.

Baker conducted soil and groundwater sampling activities in August 1995. Results indicated that soil in the vicinity of the battery disposal piles have been impacted by metals leaching from the batteries. Removal of the soil and battery packs was recommended as part of a TCRA. Based upon recent comments by the USEPA (Region IV) an EE/CA will be completed prior to finalizing the design of the removal action.

2.19.8 Site 87 - MCAS Officer's Housing Area

The MCAS Officers' Housing Area site (formerly Site A) is located on the west bank of the New River. This area was identified during the second round of sampling conducted in 1986. Waste was identified eroding out of a cut bank along the New River in the vicinity of an officers' housing area. The materials were tentatively identified as hospital wastes. Various hospital waste materials were noted, including hypodermic needles and vials of white powder that were believed to contain a chlorine-based substance. No information was available regarding the volume of the waste or the mode of disposal. Baker conducted soil, groundwater, surface water, sediment, and test pit sampling activities in October 1995 (groundwater, soil, surface water, and sediment) and February 1996 (test pits). Results indicate that none of the media sampled have been significantly impacted by site activities. Accordingly, a No Further Remedial Action Decision Document has been completed for Site 87.

SECTION 2.0 TABLES

TABLE 2-1

OPERABLE UNIT DESCRIPTIONS
FISCAL YEAR 1999 SITE MANAGEMENT PLAN, CTO-0099
MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit No.	Site No(s).	Site Name(s)	Primary Reasons for OU Selection
1	21 24 78	Transformer Storage Lot 140 Industrial Area Fly Ash Dump Hadnot Point Industrial Area	Geographic location of sites.
2	6 9 82	Storage Lots 201 and 203 Firefighting Training Pit at Piney Green Road Piney Green Road VOC Area	Geographic location of sites.
3	48	MCAS New River Mercury Dump Site	Unique characteristic of suspected waste (mercury).
4	41 74	Camp Geiger Dump Near Former Trailer Park Mess Hall Grease Disposal Area.	Unique characteristic of suspected waste (chemical agents).
5	2	Former Nursery/Day Care Center	Unique characteristic of material handled at site (pesticides).
6	36 43 44 54 86	Camp Geiger Area Dump near Sewage Treatment Plant Agan Street Dump Jones Street Dump Crash Crew Fire Training Burn Pit Tank Area AS419-AS421 at Marine Corps Air Station	Similar characteristics of material disposed (POL, waste oils, solvents) and contaminants detected (metals, VOCs, O&G). Geographic location of sites.
7	1 28 30	French Creek Liquids Disposal Area Hadnot Point Burn Dump Sneads Ferry Road Fuel Tank Sludge Area	Geographic location of sites. Unique characteristic of suspected waste (O&G, POL, and metals).
8	16	Montford Point Burn Dump	Geographic location of site.
9	65 73	Engineer Area Dump Courthouse Bay Liquids Disposal Area	Geographic location of sites. Unique characteristic of suspected waste (O&G, VOCs, POL, and metals).
10	35	Camp Geiger Area Fuel Farm	Accelerated cleanup necessary to abate impacts to Brinson Creek.
11	7 80	Tarawa Terrace Dump Paradise Point (Golf Course Maintenance Area)	Geographic location of sites.
12	3	Old Creosote Plant	Isolated site with unique waste source.

TABLE 2-1
(Continued)

OPERABLE UNIT DESCRIPTIONS
FISCAL YEAR 1999 SITE MANAGEMENT PLAN, CTO-0099
MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit No.	Site No(s).	Site Name(s)	Primary Reasons for OU Selection
13	63	Verona Loop Dump	Isolated site with unique waste source.
14	69	Rifle Range Chemical Dump	Isolated site with unique waste source.
15	88	Building 25, Base Dry Cleaners	Unique characteristic of suspected waste (dry cleaning solvent).
16	89 93	STC - 868 TC-942	Geographic location of sites and adjacent surface water body. Unique characteristic of suspected waste (solvents).
17	90 91 92	Building BB-9 Building BB-51 Building BB-46	Former UST sites with similar contamination detected groundwater.
18	94	Building 1613	Geographic location of site, within Site 78, and similar contaminants adjacent shallow groundwater plume. Former UST site.
Pre-RI Sites	10 12 68 75 76 84 85 87	Original Base Dump Explosive Ordnance Disposal (formerly EOD-1, G-4A) Rifle Range Dump MCAS Basketball Court Site MCAS Curtis Road Site Building 45 Area Camp Johnson Battery Dump MCAS Officer's Housing Area (formerly Site A)	Supplemental investigations required to confirm presence of suspected contamination.

TABLE 2-2

**SUMMARY OF OPERABLE UNIT IRP ACTIVITIES
FOR FISCAL YEAR 1998
MCB, CAMP LEJEUNE, NORTH CAROLINA**

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal Date	ROD Signature Date
1	78	Interim Remedial Action RI Interim Remedial Action FS Interim Remedial Action PRAP Interim Remedial Action ROD Interim Remedial Action Design	FY 91 FY 91 FY 91 FY 91 FY 92	FY 91 FY 91 FY 91 FY 91 FY 92	FY 92 FY 92 FY 92 FY 92 FY 94	FY 92 FY 92 FY 92 FY 92 FY 93	April 16, 1992 April 16, 1992 May 8, 1992 September 17, 1992 June 18, 1993	September 15, 1994
1	21, 24, and 78	Project Plans RI FS PRAP ROD	FY 92 FY 93 FY 94 FY 94 FY 94	FY 92 FY 93 FY 94 FY 94 FY 94	FY 93 FY 94 FY 94 FY 94 FY 94	FY 93 FY 94 FY 94 FY 94 FY 94	March 11, 1993 June 23, 1994 July 22, 1994 July 22, 1994 September 8, 1994	September 15, 1994
2	6, 9, and 82	Project Plans RI FS PRAP ROD Remedial Design	FY 91 FY 92 FY 92 FY 92 FY 92 FY 94	FY 91 FY 92 FY 92 FY 92 FY 92 FY 94	FY 92 FY 94 FY 94 FY 94 FY 94 FY 95	FY 92 FY 93 FY 93 FY 93 FY 93 FY 94	May 18, 1992 August 20, 1993 August 20, 1993 August 20, 1993 September 24, 1993 May 10, 1994	September 24, 1993
3	48	Project Plans RI PRAP ROD	FY 91 FY 92 FY 92 FY 92	FY 91 FY 92 FY 92 FY 92	FY 92 FY 94 FY 94 FY 94	FY 92 FY 93 FY 93 FY 93	May 18, 1992 June 21, 1993 June 21, 1993 July 26, 1993	September 10, 1993
4	41 and 74	Project Plans RI FS PRAP ROD	FY 93 FY 94 FY 94 FY 94 FY 94	FY 93 FY 94 FY 94 FY 94 FY 94	FY 94 FY 95 FY 95 FY 95 FY 95	FY 94 FY 95 FY 95 FY 95 FY 95	December 2, 1993 May 8, 1995 May 8, 1995 May 8, 1995 October 17, 1995	December 5, 1995
5	2	Project Plans RI FS PRAP ROD	FY 92 FY 93 FY 93 FY 93 FY 93	FY 92 FY 93 FY 93 FY 93 FY 93	FY 93 FY 94 FY 94 FY 94 FY 94	FY 93 FY 94 FY 94 FY 94 FY 94	March 11, 1993 June 14, 1994 June 23, 1994 June 23, 1994 September 8, 1994	September 15, 1994
6	36, 43, 44, 54, and 86	Project Plans RI FS PRAP ROD	FY 94 FY 95 FY 95 FY 95 FY 95	FY 94 FY 95 FY 95 FY 95 FY 95	FY 95 FY 97 FY 97 FY 97 FY 97	FY 95 FY 96 -- -- --	December 2, 1994 August 22, 1996 -- -- --	
7	1, 28, and 30	Project Plans RI FS PRAP ROD	FY 93 FY 94 FY 94 FY 94 FY 94	FY 93 FY 94 FY 94 FY 94 FY 94	FY 94 FY 95 FY 95 FY 95 FY 95	FY 94 FY 96 FY 96 FY 96 FY 96	December 15, 1993 June 29, 1995 July 13, 1995 July 13, 1995 December 13, 1995	May 16, 1996

TABLE 2-2 (Continued)

SUMMARY OF OPERABLE UNIT IRP ACTIVITIES
 FISCAL YEAR 1998
 MCB CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal Date	ROD Signature Date
8	16	Project Plans	FY 94	FY 94	FY 94	FY 94	October 2, 1994	September 30, 1996
		RI	FY 94	FY 94	FY 96	FY 96	January 31, 1996	
		PRAP	FY 94	FY 94	FY 96	FY 96	February 15, 1996	
		ROD	FY 94	FY 94	FY 96	FY 96	April 12, 1996	
9	65 and 73	Project Plans	FY 94	FY 94	FY 95	FY 95	March 7, 1995	
		RI	FY 95	FY 95	FY 98	FY 98	November 7, 1997	
		FS	FY 95	FY 95	FY 98	--	--	
		PRAP	FY 95	FY 95	FY 98	--	--	
		ROD	FY 95	FY 95	FY 98	--	--	
		Remedial Design	FY 97	--	FY 98	--	--	
10	35	Project Plans	FY 93	FY 93	FY 94	FY 94	December 20, 1993	
		Interim Remedial Action FS (Soil)	FY 93	FY 93	FY 94	FY 94	July 20, 1994	
		Interim Remedial Action PRAP (Soil)	FY 93	FY 93	FY 94	FY 94	July 20, 1994	
		Interim Remedial Action ROD (Soil)	FY 93	FY 93	FY 94	FY 94	August 31, 1994	
		Interim Remedial Action FS (Groundwater)	FY 95	FY 95	FY 95	FY 95	June 13, 1995	
		Interim Remedial Action PRAP (Groundwater)	FY 95	FY 95	FY 95	FY 95	June 8, 1995	
		Interim Remedial Action ROD (Groundwater)	FY 95	FY 95	FY 95	FY 95	December 5, 1995	
		RI	FY 94	FY 94	FY 95	FY 95	May 3, 1995	
		FS	FY 94	FY 94	FY 97	--	--	
		PRAP	FY 94	FY 94	FY 97	--	--	
ROD	FY 94	FY 94	FY 97	--	--			
11	7	Project Plans	FY 94	FY 94	FY 94	FY 95	October 2, 1994	August 21, 1997
		RI	FY 94	FY 94	FY 97	FY 96	February 6, 1996	
		PRAP	FY 94	FY 94	FY 97	FY 96	November 27, 1996	
		ROD	FY 94	FY 94	FY 97	FY 97	April 10, 1997	
11	80	Project Plans	FY 94	FY 94	FY 94	FY 95	October 2, 1994	August 21, 1997
		RI	FY 94	FY 94	FY 97	FY 96	April 5, 1996	
		PRAP	FY 94	FY 94	FY 97	FY 96	November 27, 1996	
		ROD	FY 94	FY 94	FY 97	FY 97	April 10, 1997	
12	3	Project Plans	FY 94	FY 94	FY 94	FY 95	October 2, 1994	April 3, 1997
		RI	FY 94	FY 94	FY 97	FY 96	June 12, 1996	
		FS	FY 94	FY 94	FY 97	FY 96	August 14, 1996	
		PRAP	FY 94	FY 94	FY 97	FY 97	October 23, 1996	
		ROD	FY 94	FY 94	FY 97	FY 97	January 6, 1997	
		Remedial Design	FY 97	FY 97	FY 98	--	--	
13	63	Project Plans	FY 95	FY 95	FY 96	FY 95	September 1, 1995	April 3, 1997
		RI	FY 96	FY 96	FY 97	FY 97	October 18, 1996	
		PRAP	FY 96	FY 96	FY 97	FY 97	November 1, 1996	
		ROD	FY 96	FY 96	FY 97	FY 97	January 21, 1996	

TABLE 2-2 (Continued)

SUMMARY OF OPERABLE UNIT IRP ACTIVITIES
 FISCAL YEAR 1999
 MCB CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal Date	ROD Signature Date
14	69	Project Plans	FY 93	FY 93	FY 94	FY 94	December 2, 1993	
		RI	FY 94	FY 94	FY 97	FY 97	December 5, 1997	
		FS	FY 94	FY 94	FY 97	--	--	
		PRAP	FY 94	FY 94	FY 97	--	--	
		ROD	FY 94	FY 94	FY 97	--	--	
		Remedial Design	FY 97	--	FY 98	--	--	
15	88	Project Plans	FY 96	FY 96	FY 97	FY 97	February 21, 1997	
		Focused RI	FY 97	FY 97	FY 98	FY 98	May 15, 1998	
		Remedial Design	FY 98	--	FY 98	--	--	
16	89 and 93	Project Plans	FY 95	FY 95	FY 97	FY 97	February 20, 1997	
		RI	FY 96	FY 96	FY 98	FY 98	June 15, 1998	
		FS	FY 98	--	FY 98	--	--	
		PRAP	FY 98	--	FY 98	--	--	
		ROD	FY 98	--	FY 98	--	--	
		Remedial Design	FY 98	--	FY 99	--	--	
17	90, 91, and 92	Project Plans	FY 96	FY 96	FY 97	FY 96	June 31, 1996	
		RI	FY 97	FY 97	FY 98	--	--	
		PRAP	FY 98	--	FY 98	--	--	
		ROD	FY 98	--	FY 98	--	--	
18	94	Project Plans	FY 98	FY99	FY 98	--	--	
		RI	FY 99	--	FY 00	--	--	
		FS	FY 00	--	FY 00	--	--	
		PRAP	FY 00	--	FY 00	--	--	
		ROD	FY 00	--	FY 00	--	--	
Pre-RI Sites	10	Project Plans	FY 96	FY 96	FY 97	FY 98	January 20, 1998	
		SI	FY 98	FY 98	FY 99	--	--	
	12, 68, 75, 76, 84, 85, 87	Project Plans	FY 95	FY 95	FY 95	FY 95	January 21, 1995	
		SI	FY 95	FY 95	FY 99	FY99	November 24, 1998	

3.0 SITE MANAGEMENT SCHEDULES

The purpose of this section is to present project schedules for Fiscal Years 1999 through 2003. These schedules are adjusted annually within the Site Management Plan. Operable Units and sites that will be active during Fiscal Year 1999 are summarized below.

Operable Unit	Site	Fiscal Year 1999 Activities
1	78	Groundwater remediation (source control) and monitoring
2	82	Groundwater remediation (source control) and monitoring
3	48	No action
4	41 74	Long-term monitoring of shallow groundwater and surface water No action
5	2	Groundwater monitoring
6	36, 54, and 86 43 and 44	ROD, remedial design, and monitored natural attenuation ROD
7	1 and 28	Monitored natural attenuation
8	16	No action.
9	65 73	ROD ROD and remedial design
10	35	ROD and remedial design
11	7 and 80	No action
12	3	Monitored natural attenuation
13	63	No action
14	69	ROD and monitored natural attenuation
15	88	Complete RI/FS and treatability study
16	89 and 93	Complete RI/FS and initiate remedial design
17	90, 91, and 92	ROD
18	94	Complete project plans and initiate RI/FS

The project schedules for active OUs are presented in Tables 3-1 through 3-14. A project schedule for Pre-RI sites is presented in Table 3-15. The project schedules include a detailed listing of Fiscal Year 1999 activities; the duration of each IR Program activity; the deliverables (e.g., RI/FS Project Plans, RA Work Plans, etc.); and submittal dates. A listing of Fiscal Year 1999 deliverables by Operable Unit is summarized in Table 3-16. Table 3-17 provides a list of deliverables by month for Fiscal Year 1999 IR Program deliverables.

The project schedules for 9 of the 18 OUs reflect government/agency review times specified in the FFA. These review durations are as follows.

- Draft Primary Documents: 60 days to review and 60 days to prepare and submit the Draft Final document.

- **Draft Final Primary Documents:** 30 days to review and 30 days to finalize. Draft Final documents will become final if no comments are received within 30 days unless an extension is requested in accordance with the FFA.
- The project schedule for Remedial Design/Remedial Action (RD/RA) activities cannot be established until the RI/FS is completed. For remedial design activities, a project duration of 15 months has been established because Section 120(e)(2) of CERCLA requires that remedial action activities begin within 15 months following the ROD.
- The project schedule for sites where long-term monitoring has been implemented do not indicate a government review period. Reports submitted for a long-term monitoring event are used to document recommendations and modifications to the long-term sampling requirements. Comments will be requested to implement modifications or at the five-year review period.

SECTION 3.0 TABLES

Table 3-9
 Fiscal Year 1999 Site Management Plan, CTO-0099
 Operable Unit No. 12 (Site 3), MCB Camp Lejeune, North Carolina

Task Name	Duration	Start	Finish	1998					1999					2000					2001						
				J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
Semi-Annual Monitoring Period	183ed	7/1/98	12/31/98	■																					
Field Investigation	21ed	7/10/98	7/31/98	■																					
Semi-Annual Monitoring Report	1d	11/20/98	11/20/98						◆																
Semi-Annual Monitoring Period	180ed	1/1/99	6/30/99						■																
Field Investigation	21ed	1/10/99	1/31/99						■																
Preliminary Final Amended ROD	1d	2/15/99	2/15/99						◆																
Final Amended ROD	1d	3/22/99	3/22/99						◆																
Semi-Annual Monitoring Report	1d	5/20/99	5/20/99											◆											
Semi-Annual Monitoring Period	183ed	7/1/99	12/31/99						■																
Field Investigation	21ed	7/10/99	7/31/99						■																
Semi-Annual Monitoring Report	1d	11/19/99	11/19/99											◆											
Semi-Annual Monitoring Period	181ed	1/1/00	6/30/00											■											
Field Investigation	21ed	1/10/00	1/31/00											■											
Semi-Annual Monitoring Report	1d	5/19/00	5/19/00																◆						



TABLE 3-16
DOCUMENT SUBMITTALS BY OPERABLE UNIT
FISCAL YEAR 1999 SITE MANAGEMENT PLAN, CTO-0099
MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Sites	Activity	Primary Document Submittal	Anticipated Submittal Date
1	78	Remedial Action	Semi-Annual Monitoring Report	March 3, 1999
		Remedial Action	Semi-Annual Monitoring Report	September 1, 1999
2	6 and 82	Remedial Action	Semi-Annual Monitoring Report	March 3, 1999
		Remedial Action	Semi-Annual Monitoring Report	September 1, 1999
4	41 and 74	Remedial Action	Semi-Annual Monitoring Report	November 20, 1998
		Remedial Action	Semi-Annual Monitoring Report	May 20, 1999
5	2	Remedial Action	Semi-Annual Monitoring Report	February 19, 1999
		Remedial Action	Semi-Annual Monitoring Report	August 20, 1999
6	36, 54, 86	Remedial Investigation/Feasibility Study	RAC Design Package- Final (Sites 9 & 54)	February 22, 1999
		Remedial Investigation/Feasibility Study	Final ROD	April 5, 1999
		Remedial Investigation/Feasibility Study	Draft CAP	May 6, 1999
		Remedial Action	Quarterly Monitoring and Natural Attenuation Evaluation Report	October 31, 1998
		Remedial Action	Quarterly Monitoring and Natural Attenuation Evaluation Report	January 31, 1999
		Remedial Action	Quarterly Monitoring and Natural Attenuation Evaluation Report	April 30, 1999
		Remedial Action	Quarterly Monitoring and Natural Attenuation Evaluation Report	July 31, 1999
7	1 and 28	Remedial Action	Semi-Annual Monitoring Report	January 31, 1999
9	65 and 73	Remedial Investigation/Feasibility Study	Draft CAP/NAE Report/LTM Work Plan	August 20, 1999

TABLE 3-16 (Continued)

DOCUMENT SUBMITTALS BY OPERABLE UNIT
 FISCAL YEAR 1999 SITE MANAGEMENT PLAN, CTO-0099
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Sites	Activity	Primary Document Submittal	Anticipated Submittal Date	
10	35	Remedial Investigation/Feasibility Study	Tracer Test Work Plan	January 29, 1999	
		Remedial Investigation/Feasibility Study	Free Product Investigation Work Plan	February 26, 1999	
		Remedial Investigation/Feasibility Study	Draft CAP/NAE/LTM Work Plan	March 22, 1999	
		Remedial Investigation/Feasibility Study	Draft Free Product Report	May 19, 1999	
		Remedial Investigation/Feasibility Study	Final CAP/NAE/LTM Work Plan	June 11, 1999	
		Remedial Investigation/Feasibility Study	Draft Tracer Test Report	June 30, 1999	
		Remedial Investigation/Feasibility Study	Final Free Product Report	July 3, 1999	
		Remedial Investigation/Feasibility Study	Final Tracer Test Report	July 30, 1999	
		Remedial Investigation/Feasibility Study	Final PRAP/Draft ROD	September 30, 1999	
		Remedial Investigation/Feasibility Study	Final FS	September 30, 1999	
			Remedial Action	Quarterly Monitoring and Groundwater Treatment System Evaluation Report	April 30, 1999
12	3	Remedial Investigation/Feasibility Study	Preliminary Final Amended ROD	February 15, 1999	
		Remedial Investigation/Feasibility Study	Final Amended ROD	March 22, 1999	
			Remedial Action	Semi-Annual Monitoring Report	November 20, 1998
			Remedial Action	Semi-Annual Monitoring Report	May 20, 1999
14	69	Remedial Investigation/Feasibility Study	Final FS	November 12, 1998	
		Remedial Investigation/Feasibility Study	Draft ROD	March 15, 1999	
		Remedial Investigation/Feasibility Study	Pre-Final ROD	May 7, 1999	
		Remedial Investigation/Feasibility Study	Final ROD	July 7, 1999	
			Remedial Action	Semi-Annual Monitoring and Natural Attenuation Evaluation Report	February 19, 1999
			Remedial Action	Semi-Annual Monitoring and Natural Attenuation Evaluation Report	August 20, 1999

TABLE 3-16 (Continued)

DOCUMENT SUBMITTALS BY OPERABLE UNIT
 FISCAL YEAR 1999 SITE MANAGEMENT PLAN, CTO-0099
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Sites	Activity	Primary Document Submittal	Anticipated Submittal Date
15	88	Remedial Action	Draft Work Plans-Surfactant Flood Test	December 7, 1998
		Remedial Action	Final Work Plans-Surfactant Flood Test	January 15, 1999
16	89 and 93	Remedial Investigation/Feasibility Study	Final FS	March 12, 1999
		Remedial Investigation/Feasibility Study	Final PRAP	March 29, 1999
		Remedial Investigation/Feasibility Study	Prefinal ROD	May 17, 1999
		Remedial Investigation/Feasibility Study	Final ROD	July 23, 1999
17	90, 91, 92	Remedial Investigation/Feasibility Study	Agency-Review Focused RI Report	May 31, 1999
		Remedial Investigation/Feasibility Study	Final Focused RI Report	August 2, 1999
		Remedial Investigation/Feasibility Study	Final PRAP/ROD	August 2, 1999
18	94	Remedial Investigation/Feasibility Study	Draft Project Plans	December 18, 1998
		Remedial Investigation/Feasibility Study	Final Project Plans	February 24, 1999
Pre-RI Sites	10	Pre-Remedial Investigation	Final SI Report	June 1, 1999
	12	Pre-Remedial Investigation	Final SI Report	November 2, 1998
		Remedial Action	Draft NFRAP	March 31, 1999
	68	Remedial Action	Final NFRAP	May 1, 1999
		Pre-Remedial Investigation	Final SI Report	November 2, 1998
		Remedial Action	Draft NFRAP	March 31, 1999
	75	Remedial Action	Final NFRAP	May 1, 1999
		Pre-Remedial Investigation	Final SI Report	November 2, 1998
		Remedial Action	Draft NFRAP	March 31, 1999
	76	Remedial Action	Final NFRAP	May 1, 1999
		Pre-Remedial Investigation	Final SI Report	November 2, 1998
	84	Pre-Remedial Investigation	Final SI Report	November 2, 1998
		Pre-Remedial Investigation	Draft EE/CA Report	December 21, 1998
Pre-Remedial Investigation		Draft 100% Design	April 2, 1999	
Pre-Remedial Investigation		Final 100% Design	June 30, 1999	

TABLE 3-16 (Continued)

DOCUMENT SUBMITTALS BY OPERABLE UNIT
 FISCAL YEAR 1999 SITE MANAGEMENT PLAN, CTO-0099
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Sites	Activity	Primary Document Submittal	Anticipated Submittal Date
Pre-RI Sites (Continued)	85	Pre-Remedial Investigation	Final SI Report	November 2, 1998
		Remedial Action	Draft EE/CA Report	October 2, 1998
		Remedial Action	Final 100% Design	February 26, 1999
	87	Pre-Remedial Investigation	Final SI Report	November 2, 1998
		Remedial Action	Draft NFRAP	March 31, 1999
		Remedial Action	Final NFRAP	May 1, 1999

TABLE 3-17

**DOCUMENT SUBMITTALS BY MONTH
FISCAL YEAR 1999 SITE MANAGEMENT PLAN, CTO-0099
MCB, CAMP LEJEUNE, NORTH CAROLINA**

Anticipated Submittal Date	Operable Unit	Sites	Primary Document Submittal
October 2, 1998	Pre-RI Site	85	Draft EE/CA Report
October 31, 1998	6	54 and 86	Quarterly Monitoring and Natural Attenuation Monitoring Report
November 2, 1998	Pre-RI Sites	12,68,75,76,84,85,87	Final SI Report
November 12, 1998	14	69	Final FS
November 20, 1998	4	41 and 74	Semi-Annual Monitoring Report
November 20, 1998	12	3	Semi-Annual Monitoring Report
December 7, 1998	15	88	Draft Work Plans-Surfactant Flood Test
December 18, 1998	18	94	Draft Project Plans
December 21, 1998	Pre-RI Site	84	Draft EE/CA Report
January 15, 1999	15	88	Final Work Plans- Surfactant Flood Test
January 29, 1999	10	35	Tracer Test Work Plan
January 31, 1999	6	36, 54, 86	Quarterly Monitoring and Natural Attenuation Evaluation Report
January 31, 1999	7	1 and 28	Semi-Annual Monitoring Report
February 15, 1999	12	3	Preliminary Final Amended ROD
February 19, 1999	5	2	Semi-Annual Monitoring Report
February 19, 1999	14	69	Semi-Annual Monitoring and Natural Attenuation Evaluation Report
February 22, 1999	6	36, 54, 86	RAC Design Package- Final (Sites 9 & 54)
February 24, 1999	18	94	Final Project Plans
February 26, 1999	10	35	Free Product Investigation Work Plan
February 26, 1999	Pre-RI Site	85	Final 100% Design

TABLE 3-17 (Continued)

**DOCUMENT SUBMITTALS BY MONTH
FISCAL YEAR 1999 SITE MANAGEMENT PLAN, CTO-0099
MCB, CAMP LEJEUNE, NORTH CAROLINA**

Anticipated Submittal Date	Operable Unit	Sites	Primary Document Submittal
March 3, 1999	1	78	Semi-Annual Monitoring Report
March 3, 1999	2	6 and 82	Semi-Annual Monitoring Report
March 4, 1999	6	36,54,86	Pre-Final ROD
March 12, 1999	16	89 and 93	Final FS
March 15, 1999	14	69	Draft ROD
March 22, 1999	10	35	Draft CAP/NAE/LTM Work Plan
March 22, 1999	12	3	Final Amended ROD
March 29, 1999	16	89 and 93	Final PRAP
March 31, 1999	Pre-RI Sites	12,68,75,87	Draft NFRAP
April 2, 1999	Pre-RI Site	84	Draft 100% Design
April 5, 1999	6	36,54,86	Final ROD
April 30, 1999	6	36, 54, 86	Quarterly Monitoring and Natural Attenuation Evaluation Report
April 30, 1999	10	35	Quarterly Monitoring and Groundwater Treatment System Evaluation Report
May 1, 1999	Pre-RI Sites	12,68,75,87	Final NFRAP
May 6, 1999	6	36,54,86	Draft CAP
May 7, 1999	14	69	Pre-Final ROD
May 17, 1999	16	89 and 93	Prefinal ROD
May 19, 1999	10	35	Draft Free Product Report
May 20, 1999	4	41 and 74	Semi-Annual Monitoring Report
May 20, 1999	12	3	Semi-Annual Monitoring Report
May 31, 1999	17	90, 91, 92	Agency-Review Focused RI Report
June 1, 1999	Pre-RI Site	10	Final SI Report
June 11, 1999	10	35	Final CAP/NAE/LTM Work Plan
June 30, 1999	10	35	Draft Tracer Test Report
June 30, 1999	Pre-RI Site	84	Final 100% Design

TABLE 3-17 (Continued)

DOCUMENT SUBMITTALS BY MONTH
 FISCAL YEAR 1999 SITE MANAGEMENT PLAN, CTO-0099
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Anticipated Submittal Date	Operable Unit	Sites	Primary Document Submittal
July 3, 1999	10	35	Final Free Product Report
July 7, 1999	14	69	Final ROD
July 23, 1999	16	89 and 93	Final ROD
July 30, 1999	10	35	Final Tracer Test Report
July 31, 1999	6	36, 54, 86	Quarterly Monitoring and Natural Attenuation Evaluation Report
August 2, 1999	17	90, 91, 92	Final Focused RI Report
August 2, 1999	17	90, 91, 92	Final PRAP/ROD
August 20, 1999	5	2	Semi-Annual Monitoring Report
August 20, 1999	9	65 and 73	Draft CAP/NAE Report/LTM Work Plan
August 20, 1999	14	69	Semi-Annual Monitoring and Natural Attenuation Evaluation Report
September 1, 1999	1	78	Semi-Annual Monitoring Report
September 1, 1999	2	6 and 82	Semi-Annual Monitoring Report
September 30, 1999	10	35	Final FS
September 30, 1999	10	35	Final PRAP/Draft ROD

4.0 REMOVAL ACTIONS AND INTERIM REMEDIAL ACTIONS

Removal actions are taken to prevent immediate and substantial harm to human health. Examples of removal actions include site-control fencing, removal of waste containers on-site, and removal of buried drums, if identified during geophysical surveys. Interim remedial actions are conducted to prevent a potential release of contaminants or to limit further migration of contaminants.

4.1 Operable Unit No. 6 (Site 36)

During Fiscal Year 1998, a removal action was performed at Site 36. Soil contaminated with PCBs was excavated from the western-most portion of the study area.

4.2 Operable Unit No. 10 (Site 35)

An interim remedial action, IAS trench, at Site 35 was installed in February 1998. Support was provided to LANTDIV throughout the 6-month trial operation phase of the IAS system. Based upon a review of current IAS data, the trial phase has been extended three months so that additional evaluation of the system may be performed.

4.3 Operable Unit No. 15 (Site 88)

During Fiscal Year 1999, an interim action will be completed at Site 88. Surfactants will be employed to remediate DNAPLs from the most contaminated portion of the shallow aquifer. Surfactants will be injected into the shallow aquifer and then extracted with the contaminants. It is anticipated that on-site operations for the SEAR test and post-SEAR partitioning interwell tracer test (PITT) will commence in January 1999.

4.4 Pre-Remedial Investigation Sites

During Fiscal Year 1999, a removal action is planned for Sites 84 and 85. Several battery piles at Site 85 will be removed once an EE/CA for this site has been submitted and approved. Possible removal of PCB-contaminated soil and sediment at Site 84 may be recommended pending review and approval of the final investigation report.

5.0 RESOURCE CONSERVATION AND RECOVERY ACT SITES

Under the guidelines of the RCRA, a Facility Assessment for MCB, Camp Lejeune was conducted in 1996. Based upon the initial findings, confirmatory sampling was conducted in 1997 at 62 of the 3,500 SWMUs identified in the initial assessment report. The confirmatory sampling was performed to determine if operations conducted at the 62 SWMUs had impacted the environment. Sampling was completed in September 1997, and involved the collection of soil, sediment, and surface water samples. The 62 SWMUs identified in the RCRA Facility Assessment consist of 28 oil and water separators, 14 above ground storage tanks, 3 areas of documented release, 1 pest control shop, 1 historic dump site, 5 solid waste containers, 3 underground storage tanks, 1 unidentified container, and 1 wastewater treatment plant.

The Final Phase I Confirmatory Sampling Report was submitted in October 1998. The State's comments or concurrence to this report are anticipated in early January 1999. Results of the Phase I Investigation will determine data requirements and sampling objectives for the Phase II Confirmatory Sampling Investigation. Based on receipt of the State's comments/concurrence on the Phase I investigation results, it is anticipated that the Work Plans for the Phase II investigation will be submitted in April 1999, with the field work to be conducted in April/May of 1999. Table 5-1 provides a schedule for the RCRA Confirmatory Sampling project. The table includes schedules of proposed field work and submittal dates.

At the present time, 50 of the original 62 SWMUs will require further investigation for Phase II. However, this number is subject to change based upon negotiations with the State of North Carolina. The Phase II Investigation will include the sampling of soil and groundwater to fully characterize those SWMUs with contamination.

SECTION 5.0 TABLES

6.0 REFERENCES

Baker, 1992. Draft Operable Unit Prioritization Report for MCB, Camp Lejeune, North Carolina. April 24, 1992.

Camp Lejeune Federal Facility Agreement. February 1991.

ESE, 1990. Final Site Summary Report, MCB, Camp Lejeune, North Carolina. September 1990.