Final

Site Management Plan
Fiscal Year 2006

Marine Corps Base (MCB)
Camp Lejeune, North Carolina

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Acronyms and Abbreviations

AFVR	Aggressive Fluid Vapor Recovery
AOC	Area of Concern
AST	Aboveground Storage Tank
Baker	Baker Environmental, Inc.
Bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CWM	Chemical Warfare Materiel
DD	Decision Document
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DNAPL	Dense Non-Aqueous Phase Liquid
DoD	Department of Defense
DoN	Department of the Navy
DRMO	Defense Reutilization Marketing Office
EE/CA	Engineering Evaluation/Cost Analysis
EPA	United States Environmental Protection Agency
ERH	Electrical Resistance Heating
ESD	Explanation of Significant Differences
FFA	Federal Facilities Agreement
FS	Feasibility Study
FY	FY
HPIA	Hadnot Point Industrial Area
HRC®	Hydrogen Release Compounds®
IAS	Initial Assessment Study
IR	Installation Restoration
IRA	Interim Removal Action
IROD	Interim Record of Decision
JP	Jet Propulsion
LNAPL	Low Non-Aqueous Phase Liquid
LTM	Long Term Monitoring
LTTD	Low Temperature Thermal Desorption
LUC	Land Use Control
LUCIP	Land Use Control Implementation Plan

MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MNA	Monitored Natural Attenuation
MRP	munitions response program
msl	mean sea level
NACIP	Navy Assessment and Control of Installation Pollutants
NAE	Natural Attenuation Evaluation
NAVFAC Atlantic	Naval Facilities Engineering Command, Atlantic Division
NCDENR	North Carolina Department of Environment and Natural Resources
NCP	National Oil and Hazardous Substances Pollution Control Contingency Plan
NFA	No Further Action
NTCRA	Non-Time Critical Removal Action
NPL	National Priorities List
ORC®	Oxygen Release Compounds®
OU	Operable Unit
PA	Preliminary Assessment
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyls
PCE	tetrachloroethene
PCP	pentachlorophenol
POL	petroleum, oil, lubricant
ppb	parts per billion
ppm	parts per million
Pre-RI	Pre-Remedial Investigation
PRAP	Proposed Remedial Action Plan
RAA	Remedial Action Alternative
RAB	Restoration Advisory Board
RABITT	Reductive Anaerobic Bioremediation In-Situ Treatment Technology
RAC	Remedial Action Contractor
RBC	Risk-Based Concentration
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
SI	Site Investigation/Site Inspection
SMP	Site Management Plan
STP	Sewage Treatment Plant
SVE	Soil Vapor Extraction
SVOC	Semivolatile Organic Compound

TCE	trichloroethene
TCL	Target Compound List
TCRA	Time Critical Removal Action
TPH	total petroleum hydrocarbon
TSCA	Toxic Substance Control Act
UST	Underground Storage Tank
VOC	Volatile Organic Compound

SECTION 1

Introduction

This document presents the Draft Fiscal Year 2006 Site Management Plan (SMP) for Marine Corps Base (MCB) Camp Lejeune, North Carolina (see Figure 1-1). The SMP presents planned activities to be conducted at MCB Camp Lejeune during Fiscal Year (FY) 2006 and provides projections for long-term progress in accordance with the Department of the Navy (DoN) Installation Restoration (IR) Program through FY 2008. This document has been prepared by CH2M HILL, Inc. for the Naval Facilities Engineering Command Atlantic Division (NAVFAC Atlantic) and the MCB Camp Lejeune IR Program. This document is submitted to representatives of the North Carolina Department of Environment and Natural Resources (NCDENR), the U.S. Environmental Protection Agency (EPA) Region IV, and members of the Camp Lejeune IR Restoration Advisory Board (RAB).

1.1 Purpose

The FY 2006 SMP is a forward-looking management tool and one of the primary documents identified in the Federal Facilities Agreement (FFA). The SMP includes proposed deadlines for completion of deliverables, as specified in the FFA, to be submitted during FY 2006. In addition, the SMP identifies IR Program activities projected for the next 3-year period (FY06-FY08).

In addition to the SMP, the Camp Lejeune Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 5-Year Review and Community Implementation Plan were updated in FY 2004. This was the second version of the CERCLA 5-Year Review document (initial version in FY 1999) and the third version of the Community Implementation Plan (previous version in FY 1994).

1.2 SMP Report Organization

The FY 2006 SMP for MCB Camp Lejeune consists of six sections. Section 1 describes the purpose of the SMP, and the SMP report organization. Section 2 describes MCB Camp Lejeune and its environmental history. Section 3 presents a brief description, history, and summary of previous investigations of the sites identified in the FFA for additional remediation under CERCLA. Descriptions of the pre-remediation sites are also provided in Section 3. Section 4 provides schedules for conducting CERCLA activities and specific target submittal dates for FY 2006 documents. Previous, ongoing, and planned removal actions are presented in Section 5. References are provided in Section 6.

\\Ariadne\groups\GIS\USNavFaceNGCom\315007CampLejeune\Projects\SiteMgmtPlan\Figure 1-1 - Base Location Map.mxd

Legend
- Installation Area
- Limited Access Highway
- Highway
- Local Roads
- Cities

N
W E
S

0 4,500 9,000 13,500 18,000
Meters

Figure 1-1
Base Location Map
MCB Camp Lejeune, North Carolina

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SECTION 2

MCB Camp Lejeune Description and Environmental History

2.1 Base Description

Located in Onslow County, North Carolina, MCB Camp Lejeune is host to five Marine Corps commands and two Navy commands. All of the real estate and infrastructure are owned, operated, and maintained by the host command. MCB Camp Lejeune also provides support and training for the following tenant commands: 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 covers 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.

2.2 Facility-wide Demography and Land Use

MCB Camp Lejeune is home to an active duty, dependent, retiree, and civilian population of approximately 150,000. Approximately 47,000 military personnel are stationed at MCB Camp Lejeune, including 39,000 Marines for resident formal school training, and 8,000 Marines and Department of Defense (DoD) employees for job enhancement training. MCB Camp Lejeune provides housing, training facilities, logistical support, and administrative supplies for Fleet Marine Force units and other assigned units.

Training facilities at the Base are Camp Geiger, Camp Johnson, Stone Bay, Greater Sandy Run Training Area, and Marine Corps Air Station (MCAS) New River. Military training operations also include 54 live-fire ranges, 89 maneuver areas, 33 gun positions, 25 tactical landing zones, and a military operation in an urban terrain training facility. In addition, the beach frontage of the Base is capable of supporting amphibious operations.

Located within Onslow County, along the coastal plain of North Carolina, the Base covers more than 153,000 acres that consist of approximately 26,000 acres of water and 127,000 acres of terrestrial features. Elevation at the Base ranges from sea level to 70 feet above mean sea level (msl), with much of the site topography traversed by swales, wetlands, streams, and creeks that drain into the New River. The Base encompasses a 92-mile perimeter, including approximately 14 miles along the Atlantic Ocean. The ocean frontage of the Base is composed of a fragile barrier island system that is separated from the mainland by salt marshes, small bays, and an intercoastal waterway.

The City of Jacksonville, North Carolina is located immediately northwest of MCB Camp Lejeune. Most 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 the Base along the Atlantic Ocean.

2.3 Regional and Facility-wide Physiography, Climate, and Surface Water Hydrology

MCB Camp Lejeune lies within the outer part of the Atlantic Coastal Plain Physiographic Province in North Carolina. This physiographic province stretches from Georgia to Long Island, New York. The physiography of the area is typical of the Atlantic Coastal Plain, with stepped terraces consisting of wide, gently eastward-sloping plains separated by linear, steeper, northward and eastward-facing scarps. Low elevations and relatively low relief characterize topography across MCB Camp Lejeune. The surface elevations range from sea level to approximately 70 feet above msl, with most of MCB Camp Lejeune's elevation ranging from 20 to 40 feet above msl.

Mild winters and hot, humid summers generally characterize climatic conditions within southeastern North Carolina and at MCB Camp Lejeune. Winters are usually short and mild with occasional short, cold periods. Summers are long, hot, and humid. Average annual net precipitation is approximately 50 inches. Ambient air temperatures generally range from 33 to 53 degrees Fahrenheit (°F) in the winter months and 71°F to 88°F during the summer months. Winds are generally south-southwesterly in the summer, and north-northwesterly in the winter (Water and Air Research, 1983).

The land at MCB Camp Lejeune generally slopes toward the New River with a grade of about 0.5 percent. The relief between stream and interstream areas typically ranges from 20 to 30 ft.

2.4 Geology and Hydrogeology

2.4.1 General Regional Geologic and Hydrogeologic Framework

Southeastern North Carolina and MCB Camp Lejeune are within the Tidewater region of the Atlantic Coastal Plain Physiographic Province. The Tidewater region is of low relief, with elevations averaging about 20 feet msl, and is generally swampy. The MCB Camp Lejeune area is underlain by an eastward-thickening wedge of marine and non-marine sediments ranging in age from early Cretaceous to Holocene. The eastward-thickening wedge of sediment begins at the fall line (western boundary of Atlantic Coastal Plain physiographic province) and dips southeastward towards the coast. Along the coastline, several thousands of feet of interlayered, unconsolidated sediment is present, consisting of gravel, sand, silt, clay deposits, calcareous clays, shell beds, sandstone, and limestone, that was deposited over pre-Cretaceous crystalline basement rock. Minor amounts of detrital carbonate shells and secondary minerals, such as glauconite, siderite, and chlorite, often distinguish these sedimentary units.

Historical Coastal Plain sedimentation and deposition was controlled by fluctuations in sea level on a subsiding continental margin in marine and near-shore environments (Winner and Coble, 1989). Confining units associated with specific aquifers within the Coastal Plain region are composed of less permeable beds of clay and silt. Within the MCB Camp Lejeune area, approximately 1,500 ft of a sedimentary sequence that overlies the basement rock is composed of seven aquifers (the Surficial, Castle Hayne, Beaufort, Peedee, Black Creek, and Upper and Lower Cape Fear aquifers) and their associated confining units (Cardinell, et al., 1993).

Recharge of aquifers within the Coastal Plain region generally occurs within interstream areas. Annual recharge to the aquifers has been estimated in the range of 5 to 21 inches of rainfall (Heath, 1989). Natural discharge of groundwater from the Coastal Plain aquifer system is generally into streams, swamps, and lakes. Evapotranspiration from the soil zone and upward leakage through confining units into streams, estuaries, swamps, and even the ocean also contribute to groundwater discharge. The New River estuary serves as the principal discharge area for groundwater from the Castle Hayne aquifer within the vicinity of MCB Camp Lejeune (Harned et al., 1989).

2.4.2 Regional Water Usage

Potable water to MCB Camp Lejeune and the surrounding residential area is provided by water supply wells that pump groundwater from the Castle Hayne aquifer. Although fresh water is present within the Surficial, Castle Hayne, Beaufort, and Peedee aquifers, all of which are located below MCB Camp Lejeune, only the Castle Hayne aquifer is used by the Base as a water supply source (Cardinell, et al., 1993). Regionally in southeastern North Carolina, the Castle Hayne Aquifer may be used as a potable source of domestic water supply and for watering lawns or filling swimming pools.

Based on the information provided in the Wellhead Management Program Study report (Geophex, 1991), there are two water supply wells within 1,500 ft of Site 94. Water supply well HP-603, which is located 350 ft west-northwest of Site 94, is screened from 70-80, 100-110, 130-140, 160-170, and 190-195 ft below ground surface (bgs). Water supply well HP-601 is located 950 ft north of Site 94 and is screened from 95-100, 115-130, and 175-195 ft bgs. Both wells have been abandoned. No wells between Site 94 and groundwater discharge points are reported to use the Castle Hayne Aquifer for domestic potable supply or any other uses. MCB Camp Lejeune controls all the land between Site 94 and associated groundwater discharge points. There are two water supply wells within 1,500 ft of Site 2, HP-646 and HP-647. Water supply wells HP-654, HP-704, and TC-1253 are within 1,500 ft of IR sites 74, 84, and 93 respectively.

2.5 Environmental History

MCB Camp Lejeune has been actively engaged in 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 at the Base conducted under NACIP. The IAS, which was conducted in 1983 (Water and Air Research, 1983) identified areas of concern (AOCs) that might 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 AOCs were identified. The IAS conclusions stated 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 23 of these sites.

The DoN'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 CERCLA National Priorities List (NPL) on October 4, 1989 (54 *Federal Register* 41015, October 4, 1989). Following that listing, an FFA between EPA Region IV, North Carolina Department of Environment, Health, and Natural Resources (now NCDENR), and the DoN 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 EPA remediation policy
- To encourage public participation and to 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, 23 newly identified sites throughout MCB Camp Lejeune have been added to the original list of 23, bringing the total to 46 IR sites.

As part of the requirements established under CERCLA, an administrative record file has been established for the IR Program at MCB Camp Lejeune. The administrative record is a compilation of all documents that the DoN used to select a remedial action or removal action for a site. Regardless of the nature of the site, an administrative record must be maintained. The administrative record will also serve as the basis for any future legal review of decisions made by the DoN concerning remedial action taken at a site. A copy of the MCB Camp Lejeune administrative record file is available for review at NAVFAC Atlantic in Norfolk, Virginia. The files can also be viewed online at: http://lejeune.lantops-ir.org/. Access to the website is available at the Onslow County Library.

2.6 Federal Facilities Agreement

As noted in Section 2.5, an FFA was signed for Camp Lejeune in 1991. This agreement was created under CERCLA Section 120 (page 2) and was signed by the Navy, EPA, and the State of North Carolina. At present, there are no specific requirements to amend the FFA. If,

however, amendments to the FFA are necessary, a summary of the changes will be outlined in this section of the SMP.

2.7 CERCLA Process

The objectives of the CERCLA process are to evaluate the nature and extent of contamination at a site, and to identify, develop, and implement appropriate remedial actions to protect human health and the environment. The major elements of the CERCLA process are:

- Preliminary Assessment (PA)
- Site Investigation (SI)
- Remedial Investigation (RI)/Feasibility Study (FS)
- Engineering Evaluation/Cost Analysis (EE/CA) and Removal Action (may be implemented at any time in the CERCLA process)
- Proposed Remedial Action Plan (PRAP) and Record of Decision (ROD)
- Remedial Design and Remedial Action (RD/RA)
- Post-Remedial Action Monitoring and Reporting
- Community Participation

2.7.1 Preliminary Assessment

A Preliminary Assessment (PA) phase begins with the concerns about a site, area, or potential contaminant source. The PA is a limited-scope assessment designed to distinguish between sites that clearly pose little or no threat to human health or the environment and sites that may pose a threat and require further investigation. Environmental samples are rarely collected during a PA. The PA also identifies sites requiring assessment for possible response actions. If the PA results in a recommendation for further investigation, a Site Investigation or Site Inspection (SI) is conducted.

2.7.2 Site Investigation

Some sites warrant preliminary or interim investigations, studies, or removal/remedial actions. If it is unclear as to whether a site should be included in the CERCLA RI/FS process, a Site Investigation (SI) is sometimes conducted to make a general determination if activities at the site have affected environmental media. SIs typically include the collection of environmental and waste samples to identify what hazardous substances are present at a site and to determine if these substances have been released to the environment.

2.7.3 Remedial Investigation/Feasibility Study

The Remedial Investigation (RI) serves as the mechanism for collecting data to characterize site conditions, determining the nature of the waste, assessing risk to human health and the environment, and, if necessary, conducting treatability tests to evaluate the potential performance and cost of the treatment technologies being considered.

The Feasibility Study (FS) is the mechanism for the development, screening, and detailed evaluation of alternative remedial actions. The RI and FS can be conducted concurrently; data collected in the RI influences the development of remedial alternatives in the FS, which in turn affect the data needs and scope of treatability studies and additional field

investigations. This phased approach encourages the continual scoping of the site characterization, thereby minimizing the collection of unnecessary data and maximizing data quality.

Treatability studies are performed to assist in the evaluation of a potentially promising remedial technology. The primary objectives of treatability testing are to provide sufficient data to allow treatment alternatives to be fully developed and evaluated during the FS, and to support the remedial design of a selected alternative. Treatability studies may be conducted at any time during the process. The need for a treatability study generally is identified during the FS. Treatability studies may be classified as either bench-scale (laboratory study) or pilot-scale (field studies). For technologies that are well-developed and tested, bench-scale studies are often sufficient to evaluate performance. For innovative technologies, pilot tests may be required to obtain the desired information. Pilot tests simulate the physical and chemical parameters of the full-scale process, and are designed to bridge the gap between bench-scale and full-scale operations.

2.7.4 Engineering Evaluation/Cost Analysis and Removal Action

Removal actions are implemented to clean up or remove hazardous substances from the environment at a specific site to mitigate the spread of contamination. Removal actions may be implemented at any time during the CERCLA process. Actions taken immediately to mitigate an imminent threat to human health or the environment, such as the removal of corroded or leaking drums, are classified as time-critical removal actions. Removal actions that may be delayed for 6 months or more without significant additional harm to human health or the environment are classified as non-time-critical removal actions (NTCRA).

For an NTCRA, an engineering evaluation/cost analysis (EE/CA) is prepared rather than the more extensive FS. An EE/CA focuses only on the substances to be removed rather than on all contaminated substances at the site. A removal action can become the final RA if the risk assessment results indicate that no further RA is required to protect human health and the environment.

2.7.5 Proposed Remedial Action Plan and Record of Decision

A Proposed Remedial Action Plan (PRAP) presents the remedial alternatives developed in the FS and recommends a preferred remedial method. The public has an opportunity to comment on the PRAP during an announced formal public comment period. Site information is compiled in an administrative record and placed in the general IR Program information repositories established at local libraries for public review. The public comments are reviewed and the responses are recorded in a document called a Responsiveness Summary.

At the end of the public comment period, an appropriate remedial alternative is chosen to protect human health and the environment. The Record of Decision (ROD) document is then issued, and explains the selected remedial action. Public comments received are considered as part of the Responsiveness Summary in the ROD. Following the public comment period, RD/RA activities are initiated.

2.7.6 Remedial Design/Remedial Action

The final stage in the process is the RD/RA. The technical specifications for cleanup remedies and technologies are designed in the RD phase. The RA is the actual construction or implementation phase of the cleanup process.

Interim RAs are implemented to provide temporary mitigation of human health risks or to mitigate the spread of contamination in the environment. Similar to removal actions, RAs may be implemented at any time during the process. Examples of interim RAs include installing a pump-and-treat system for product recovery from groundwater or installing a fence to prevent direct contact with hazardous materials. For interim RAs, a focused FS is prepared rather than the more-extensive FS. As with the removal action, an interim action may become the final RA if the results of the risk assessment indicate that no further action is required to protect human health and the environment.

2.7.7 Post-Remedial Action Monitoring and Reporting

Five-year reviews generally are required by CERCLA or program policy when hazardous substances remain on a site above levels that permit unrestricted use and unlimited exposure. Five-year reviews provide an opportunity to evaluate the implementation and performance of a remedy and whether it still protects human health and the environment. Generally, reviews are performed 5 years after the initiation of a CERCLA response action, and are repeated every 5 years as long as future uses remain restricted. EPA or the lead agency for a site can perform these reviews, but EPA is responsible for assessing the protectiveness of the remedy.

2.7.8 Community Participation

The documents prepared for the program are maintained in information repositories for public review. MCB Camp Lejeune has developed a Community Involvement Plan and established an RAB comprised of members of the community, local environment group members, and state and federal officials, who meet semi-annually to keep the community informed on IR issues at the base.

SECTION 3

Site Descriptions

As of August 2005, there are 46 sites in the IR Program at MCB Camp Lejeune, including 23 sites identified in the original FFA and 23 sites that were identified at a later date. Table 3-1 lists these sites and Table 3-2 lists activities to be conducted during FY 2006. Figure 3-1 depicts all IR sites located throughout MCB Camp Lejeune. For figures illustrated in this SMP, that the OU boundaries were developed prior to investigation completion, the site boundaries were developed based on suspected contamination, and the LUC boundaries were set based on final investigative data.

3.1 Sites Requiring No Further Action

Based upon the investigations conducted to date, the following sites have been closed out and require no further action (NFA):

- Site 1 - French Creek Liquids Disposal Area
- Site 7 - Tarawa Terrace Dump
- Site 9 - Fire Fighting Training Pit at Piney Green Road
- Site 10 - Original Base Dump
- Site 12 - Explosive Ordnance Disposal
- Site 16 - Former Montford Point Burn Dump
- Site 21 - Transformer Lot
- Site 24 - Industrial Area Fly Ash Dump
- Site 28 - Hadnot Point Burn Dump
- Site 30 - Sneads Ferry Road Fuel Tank Sludge Area
- Site 41 - Camp Geiger Dump near Former Trailer Park
- Site 43 - Agan Street Dump
- Site 44 - Jones Street Dump
- Site 48 - MCAS Mercury Dump
- Site 54 - Crash Crew Fire Training Burn Pit
- Site 63 - Verona Loop Dump
- Site 65 - Engineer Area Dump
- Site 68 - Rifle Range Dump
- Site 74 - Mess Hall Grease Dump Area
- Site 75 - MCAS Basketball Court Site
- Site 76 - MCAS Curtis Road Site
- Site 80 - Paradise Point Golf Course Maintenance Area
- Site 85 - Camp Johnson Battery Dump
- Site 87 - MCAS Officers' Housing Area
- Site 90 - Building BB-9
- Site 91 - Building BB-51
- Site 92 - Building BB-46

3.2 New Sites

Based upon findings from archeological studies and initial assessments conducted during 2004, one site was added to the IR Program for FY 2006:

- Site 95 - Jaybird Road, Magnolia Road, and Lyman Road Dipping Vats

This site has been identified as Operable Unit (OU) 22. Detailed information regarding this OU can be found in Section 3.5.22.

3.3 Preliminary Assessment Sites

In FY 2000, the IR Division, Environmental Management Division at MCB Camp Lejeune identified 20 sites that required further investigation. These sites are listed in the "Plants Account Facilities Inventory Listing of Buildings and Structures, 30 June 1990, Marine Corps Base, Camp Lejeune, North Carolina." Based on the review of historical information, eight sites were removed from further actions in the second quarter of FY 2002.

A Draft PA Report was completed in May 2002 for the remaining 12 sites. Four of these 12 sites were identified for further investigation. Additional sampling was conducted in the third quarter of FY 2004; from that investigation, the following three sites were retained for further investigation:

- Hadnot Point Industrial Area (Figure 3-2)
  - Building 1120, Auto Hobby Shop
  - Building 1409, Carpenter/Boat Repair
  - Building 1512, Auto Repair Shop
- MCAS New River (Figure 3-3)
  - Building SAS113, Auto Hobby Shop
  - Building AS116, Vehicle Maintenance Shop
  - Building AS119, Vehicle Maintenance Shop
- Montford Point (Figure 3-4)
  - Building M119, Weapons/Auto Maintenance
  - Building M315, Laundry Pickup Facility

The Hadnot Point Industrial Area, Buildings 1120, 1409, and 1512, are anticipated to obtain NFA status. The Laundry Pickup Facility, building M315, at Montford Point is also anticipated to obtain NFA status since investigations revealed it was not utilized as a dry cleaning facility. Results of these investigations will be presented in the Final PA Report, which will be completed in the second quarter of FY 2006. Table 3-3 provides a proposed schedule of activities for the PA sites.

3.4 Pre-Remedial Investigation Sites

This section discusses sites that were assessed through Pre-Remedial Investigations (Pre-RIs). Documentation about these Pre-RI sites is not required to adhere to the same reporting requirements as defined in the Camp Lejeune FFA for RI/FS sites. As noted in Section 3.1,

Sites 10, 12, 68, 75, 76, 85, and 87 have been closed out and do not require further action. Table 3-4 provides a proposed schedule of activities.

3.4.1 Site 10 – Original Base Dump

Site 10 covers approximately 5 to 10 acres. It was operated before 1950 and was used primarily as a construction debris and burn dump. It is located to the west of Open Storage Lot 203 along Holcomb Boulevard (Figure 3-5). This site was added to the IR Program in 1994 when it was reported that two marines developed skin rashes after 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 an SI in 1998. Results of the SI indicated minimal impact to soil, sediment, surface water, and groundwater at the site. Additional investigative activities were completed in FY 2001 to further evaluate metals in groundwater. The Final SI Report was submitted in FY 2001 and recommended no further actions at the site. A Final NFA Decision Document (DD) was completed for Site 10 in the third quarter of FY 2005.

Site Chronology – Site 10

Event	Date
Disposal area	Prior to 1950
SI	1998
Groundwater investigation	2001
Final SI Report	2001
Final NFA Decision Document	2005

3.4.2 Site 12 - Explosive Ordnance Disposal

Site 12 covers approximately 8 to 10 acres (Figure 3-6). During the early 1960s, ordnance was disposed by burning or detonating when it was found to be inert, unserviceable, or defective. Materials disposed included ordnance, colored smokes, and white phosphorous. Any undestroyed residues were typically less than one pound. Baker Environmental, Inc. (Baker) conducted soil and groundwater sampling in January and February 1996. Results indicated that neither soil nor groundwater had been significantly affected by site activities. The Final NFA DD was completed in FY 2001, and stated that all investigations or activities for the IR Program for Site 12 are complete. Because Site 12 is an active range, it now falls under the Navy's Active Range Program.

Site Chronology – Site 12

Event	Date
Ordnance disposal	Early 1960s
Pre-RI Screening Study	1998
Final NFA DD	2001

3.4.3 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 (Figure 3-7). 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, 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 in January and February 1996, and additional sampling in March 1998.

Results indicated that none of the media sampled have been significantly affected by site activities; however, because the site was a former dump, aquifer and land use restrictions are included as part of the NFA. A Final NFA DD, which includes a land use control (LUC) to implement aquifer and land use restrictions, was initiated in FY 2000. Final concurrence for the NFA DD was obtained in FY 2001.

Site Chronology – Site 68

Event	Date
Disposal operations	1942 to 1972
Pre-RI Screening Study	1998
Final NFA DD	2001
LUCs prepared	June 2001 (updated July 2002)
Plat maps prepared	July 2005

3.4.4 Site 75 - MCAS Basketball Court Site

The MCAS Basketball Court Site is located along the north side of Curtis Road (Figure 3-8). 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 ft long by 70 ft wide and was sufficiently deep to have encountered the water table. An estimated 75 to 100 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 because of the site's proximity to several water supply wells in the area, two of them within 500 feet of the alleged disposal site.

Baker conducted soil and groundwater sampling in January and February 1996. A comprehensive geophysical survey also was performed, but it did not detect any major subsurface anomalies that could have been the suspected drums. The initial Final No Action DD was completed in FY 2000. Final concurrence for the NFA document was obtained in FY

2001.

Site Chronology – Site 75

Event	Date
Drum burial area	Early 1950s
Pre-RI Screening Study	1998
Final NFA DD	2001

3.4.5 Site 76 - MCAS Curtis Road Site

The MCAS Curtis Road Site is located near and along the north side of Curtis Road (Figure 3-9). 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 disposed of at this site. 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 in January and February 1996. Additional groundwater data were collected in March of 1998. A comprehensive geophysical survey also was performed, but it did not detect any major subsurface anomalies that could have been the suspected drums. In response to an agency comment and because of previous detections of metals above screening criteria, groundwater was sampled again in October 1999. These data showed the presence of some metals above screening criteria but within range of the natural background of groundwater at Camp Lejeune. The initial NFA DD was completed in FY 2000. Final concurrence for the NFA document was obtained in FY 2001.

Site Chronology – Site 76

Event	Date
Drum disposal area	1949
Pre-RI Screening Study	1998
Final NFA DD	2001

3.4.6 Site 85 - Camp Johnson Battery Dump

The Camp Johnson Battery Dump is located near Wilson Drive in the Montford Point Area (Figure 3-10). Decomposed batteries, which were used in military communication equipment during the Korean era, were unearthed as a roadway was being widened. Military personnel using 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 in August 1995. Results indicated that soil near the battery disposal piles has been contaminated by metals leaching from the batteries.

Removal of the soil and battery packs was recommended as part of a TCRA. Based upon comments by EPA (Region IV), an EE/CA was completed on September 10, 1999, and an Action Memorandum was completed on September 17, 1999. The removal action was completed in FY 2000 and the post-removal groundwater monitoring was completed in FY 2003. The Final NFA DD was completed in the third quarter of FY 2005.

Site Chronology – Site 85

Event	Date
Battery disposal	unknown
Pre-RI Screening Study	1998
Action Memorandum	1999
TCRA	2000
Groundwater monitoring	2001 to 2003
Final NFA DD	2005

3.4.7 Site 87 - MCAS Officers' Housing Area

The MCAS Officers' Housing Area site (formerly Site A) is located on the west bank of the New River (Figure 3-11). 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 near 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 and it is unclear how the materials got into the river bank.

Baker conducted soil, groundwater, surface water, sediment, and test pit sampling in October 1995 (groundwater, soil, surface water, and sediment) and February 1996 (test pits). Results indicated that none of the media sampled have been significantly affected by site activities. In response to an agency comment and because of a previous detection of pentachlorophenol (PCP), groundwater was sampled again in October 1999. No PCP was detected in groundwater from the October 1999 sampling event. The final NFA DD was completed in FY 2001.

Site Chronology – Site 87

Event	Date
Waste materials discovered	1986
Pre-RI Screening Study	1998
Final NFA DD	2001

3.5 Sites within Operable Units

As defined in the NCP, an OU represents an incremental step toward comprehensively

dealing with environmentally impaired sites. 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 OU may be divided into a number of sites, depending on the complexity of the problems associated with the OU. OUs may cover geographical portions of a site, specific site problems, initial phases of an action, or may consist of any set of actions performed over time in different parts of a site. In accordance with guidance provided in the NCP, the Navy and Marine Corps have recommended that 36 of the 46 IR Program sites be grouped into 22 OUs to proceed with RI/FS activities. Seven sites (10, 12, 68, 75, 76, 85, and 87) are in or were previously in the Pre-RI phase and have not been assigned to OUs. Each of the 22 OUs is listed in Table 3-5, and their locations are depicted in Figure 3-2.

This section of the SMP identifies each of the 22 OUs at MCB Camp Lejeune where IR Program activities have been implemented or will be implemented in the future. The project start dates reflect the priority of each OU based on the potential releases of contamination, proximity to receptors, contaminants verified, and potential ecological impacts, as well as the availability of funding. A summary of IR Program activities conducted since the program's inception is provided in Table 3-6.

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

An Interim Record of Decision (IROD) was signed on September 23, 1992 for the shallow aquifer (Baker, 1992). The Final ROD for OU No. 1 was signed on September 15, 1994 (Baker, 1994a). Table 3-7 provides a summary of the LUCs implemented at OU No. 1. The Final ROD outlines remedial actions to be implemented at OU No. 1, and includes separate remedial actions for each site as follows:

- The selected remedial action alternative (RAA) for Site 21 was for surface soils within three separate AOCs. The RAA included excavation of contaminated soil from Site 21, off-site treatment of the soil, and finally disposal of the soil at a permitted facility.
- The RAA for Site 24 required periodic monitoring of groundwater conditions that presumably had been adversely affected by previous site operations. Groundwater samples from three monitoring wells were collected periodically and evaluated to assess the effectiveness of the selected remedy. The monitoring program at Site 24 was implemented during July 1996, and the requirements for completing the monitoring program were achieved in 1998.
- The RAA at Site 78 included remediation of the shallow aquifer using an extraction and onsite treatment system, coupled with a groundwater monitoring program. Based on site investigative results, separate groundwater extraction and treatment systems were constructed in the northern and southern portions of the study area. In addition to groundwater treatment, groundwater samples from monitoring wells and the treatment plants are being collected on a semiannual basis to assess the effectiveness of the entire remedial approach. The two treatment plants have been in operation since 1995.

Table 3-8 provides a proposed schedule for OU No. 1. A location map of OU No. 1 is provided as Figure 3-12.

3.5.1.1 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, a pit located in the northern portion of the site was used as a drainage receptor for oil from transformers. Site 21 was also 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.

It was found during the RI conducted at Site 21 that soils within portions of the site were contaminated 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 FY 1995. A Land Use Control Implementation Plan (LUCIP) that restricts development to industrial land use and use of groundwater is in place. No additional remedial actions are planned for Site 21.

Site Chronology – Site 21

Event	Date
Oil from electric transformers was drained into a disposal pit in the northern portion of the site.	1950 to 1951
Pesticide mixing and washdown area for equipment used during the application of pesticides.	1958 to 1977
IAS	1983
Confirmation Study	1984 through 1987
RI	1993
Final ROD	1994
Explanation of Significant Differences (ESD)	1995
Excavation of three AOCs	1995
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

3.5.1.2 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. Approximately 100 acres in size, the site lies adjacent to upstream portions of Cogdels Creek. 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.

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. Land and aquifer use controls were implemented through a LUCIP that was completed during FY 2001. No additional remedial actions are planned for Site 24. A final monitoring report was completed in FY 2001.

Site Chronology – Site 24

Event	Date
Disposal of fly ash, cinders, solvents, used paint stripping compounds, sewage sludge, and water treatment spiractor sludge	Late 1940s to 1980
Disposal of construction debris	Late 1960s
IAS	1983
Confirmation Study	1984 through 1987
RI	1993
Final ROD	1994
Groundwater Monitoring Program	1996 to 1997
LUCs prepared	2001(updated July 2002)
Plat maps prepared	2001
Final Monitoring Report	2001

3.5.1.3 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 former transformer storage lot (Site 21), the HPIA fuel farm (formerly Site 22), an active service station (Site 94), and various other potential source areas are located within HPIA. The HPIA comprises 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 concerning the shallow groundwater aquifer was conducted at Site 78 in 1992. Based on this initial study, an interim remedial action groundwater extraction and treatment system was installed in 1995. An RI/FS was completed at Site 78 in 1994. The results of this investigation indicated that organics (e.g., solvents and fuel-related compounds) had affected the groundwater within certain areas of the study area.

Separate groundwater extraction and treatment systems were constructed in the northern (also referred to as Site 78 North) and southern (also referred to as Site 78 South) portions of Site 78. Groundwater extraction and treatment operations and monitored natural attenuation (MNA) of the groundwater are currently ongoing. Operations at the south plant were temporarily discontinued from January 2000 through May 2002 to allow for the completion of the MNA study. Initial MNA studies were completed in FY 2002 for both Sites 78 North and South. Land and aquifer use controls were implemented through a LUC that was completed during FY 2001. The LUC was updated in FY 2002.

A supplemental investigation was conducted in June 2002 to further characterize groundwater at Site 78 South in the ball field area of the site. Soil samples were also collected at several known “hot spot” areas within both Sites 78 South and North. The additional groundwater data indicated that the plume at Site 78 South extends farther south and southwest than delineated during the Natural Attenuation Evaluation (NAE) Study.

Volatile organic compounds (VOCs) and benzene, toluene, ethylbenzene, and toluene (BTEX) compounds were detected in soil samples collected from within several known "hot spot" areas.

During FY 2003, pilot studies were initiated at two groundwater "hot spot" areas (one at Site 78 North and one at Site 78 South). Oxygen Release Compounds® (ORC®) were injected into the vinyl chloride plume at Site 78 North (near Building 903) and Hydrogen Release Compounds® (HRC®) were injected into the trichloroethene (TCE) plume at Site 78 South (near Building 1601) to reduce the contaminant mass at each area. Six post-injection groundwater sampling events were conducted to evaluate the effectiveness of the ORC®/ HRC® treatments, and sampling was completed in the fourth quarter of FY 2004. In addition, soil gas samples were collected before the injections and four rounds after the injections from the vadose zone within the treatment areas.

The Final Pilot Study Evaluation Report was completed in FY 2005. Should the ORC®/HRC® or other technologies demonstrate effectiveness, then they could be applied to other plume areas within the site, and an Amended PRAP and ROD may be prepared to change the remedial actions for groundwater at Site 78. The target completion dates of the Amended PRAP and ROD are FY 2007. Accordingly, the remedial actions on the remaining groundwater plumes would start after the Amended ROD is signed. Should these technologies prove to be ineffective in meeting the treatment goals, however, other technologies may also be considered for the amendments. MNA monitoring will also continue through FY 2006 to further monitor plume movement and to continue the evaluation of the pump and treatment systems.

Site Chronology – Site 78

Event	Date
Petroleum and solvent related spills and leaks	Beginning in the 1940s
IAS	1983
Confirmation Study	1984 through 1987
Groundwater Study at Hadnot Point Fuel Farm	1990
Supplemental Characterization Step	1990 and 1991
Interim Remedial Action RI/FS	1992
OU/RI/FS	1993 to 1994
ROD	1994
Excavation of one AOC	1995
Groundwater treatment plants in operation	1995
Long-Term Monitoring (LTM) Program	1995 to present
ESD	1995
New recovery wells installed at the north and south treatment plants	1998
Optimization Study conducted on treatment systems	1999
South treatment plants shut down	2000

Event	Date
Site 78 North NAE started	2000
Site 78 South NAE started	2001
South treatment plant back on-line	2002
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001
Selected recovery wells at north and south treatment plant shut down for pilot test	2002
Supplemental Investigation	2002
NAE studies completed	2002
Technology Evaluation for Groundwater Pilot Study	2002
Site 78 PA sites investigated	2002
Groundwater Pilot Study	2003-2004
Final Pilot Study Evaluation Report	2005

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

The Final ROD for OU No. 2 was signed on September 24, 1993 (Baker, 1993a). The RAA at Sites 6 and 82 includes remediation of the shallow and deep aquifers using an extraction and onsite treatment system, coupled with a groundwater monitoring program. In addition to groundwater treatment, groundwater samples from recovery wells and the treatment plant are collected on a semiannually and monthly basis, respectively, to gauge the effectiveness of the entire remedial approach. The treatment plant has been in operation since 1996. The ROD also contains institutional controls as part of the selected remedy. These controls include land and aquifer use controls that were implemented through an LUC that was completed in FY 2001. The LUC was updated in FY 2002. Table 3-7 provides a summary of the LUCs implemented at OU No. 2.

Because of the minimal impact of fire training activities upon the study area, no immediate remedial actions were required in the ROD at Site 9. During FY 2000, a new petroleum, oil, lubricant (POL) Fire Training Pit was completed at Site 9. Table 3-9 provides a proposed schedule for OU No. 2. A location map of OU No. 2 is provided as Figure 3-13.

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

Sites 6 and 82 adjoin one another and comprise more than 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. Before 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. Most of Lot 203 remains an open field; 21 acres are temporarily being used by the Defense Reutilization Marketing Office (DRMO) for metal staging operations. The

groundwater extraction and treatment operations building and contractor field offices are located on the northeastern portion of Lot 203.

An RI/FS was initiated during August 1992 and completed in September 1993 with the Final ROD. Soil and groundwater sampling conducted during the RI/FS investigation revealed elevated levels of VOCs. Chlorinated solvents in groundwater were found as deep as 240 ft bgs. Groundwater remains contaminated with solvents such as tetrachloroethene (PCE), TCE, 1,2-dichloroethene, 1,1,2,2-tetrachloroethene, and vinyl chloride. A TCRA was conducted for the removal of the debris and soil in 1994, during which 20 drums of dichlorodiphenyl trichloroethane (DDT) were removed and contaminated soil was excavated. Another TCRA was conducted from 1995 to 1996 to remove drums, batteries, and communications wire. The soil was contaminated with POLs. In addition, a soil vapor extraction (SVE) system was in operation at Site 82 for 6 months in 1996 to remediate residual soil contamination in the vadose zone.

Construction of a groundwater extraction and treatment system began in December 1994 and full-scale operation of the system began in July 1996. Groundwater from both the surficial and Castle Hayne aquifers is being treated by this system at Site 82. Operation of the plant will continue in FY 2006. A groundwater pilot study is scheduled to take place at Site 82 late in the first quarter or early in the second quarter of FY 2006. During the pilot study, one well will be taken offline for use in the pilot study.

An LTM program was implemented in FY 1996. Monitoring and recovery wells, surface water, and sediment are sampled on a semiannual basis. Monitoring and treatment system reports will be provided on a semiannual and annual basis during FY 2006. Throughout the history of LTM at Site 6, groundwater monitoring well 6-GW16 has returned intermittent and varied detections of chlorobenzene. Accordingly, a focused field investigation near this monitoring well was completed in the third quarter of FY 2004 to delineate the horizontal and vertical extent of the chlorobenzene contamination. Results of the investigation indicated localized chlorobenzene detections in both the soil and groundwater in the vicinity of the well.

Site Chronology – Sites 6 and 82

Event	Date
Lot 201 stored pesticides and transformers containing PCBs	1940s to late 1980s
Lot 203 served as a waste disposal area (various chemicals including PCBs, cleaning solvents, used batteries, and waste oils). Pesticides were also stored here.	1940s to late 1980s
IAS	1983
Confirmation Study	1984 through 1987
Soil gas survey at Lot 203	1989
SI at Site 82	1991
OU2 RI/FS	1992 to 1993
ROD	1993
TCRA	1994

Event	Date
Second TCRA	1995 to 1996
SVE at Site 82	1996
Groundwater treatment system operation	1996 to present
LTM	1997 to present
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001
Chlorobenzene Investigation near Monitoring Well 6-GW16.	2004

3.5.2.2 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 acres. The original fire training area consisted of a concrete-lined pit with an oil and water separator. Four 500-gallon aboveground storage tanks (ASTs) were located near the training area but are no longer present. The pit has been used for training since the early 1960s. Before to 1981, training exercises were conducted in an unlined pit (the pit is now concrete-lined). Flammable liquids such as heating oil, solvents, and fuels are used as accelerants during the training exercises.

Soil and groundwater samples collected during the RI in 1992 did not reveal extensive contamination. Accordingly, no remedial actions were required at this site based on the RI findings. A new POL Fire Training Pit was completed in FY 2002. The new training facility employs a petroleum source for burning operations and the pit is lined with high-temperature concrete. During the installation of the new facility, POL-contaminated soils were excavated and removed from the site. No additional remedial actions are planned for Site 9.

Site Chronology – Site 9

Event	Date
Fire training exercises	Early 1960s to present
Using an unlined pit	Early 1960s to 1981
Using an asphalt-lined pit	1981 to 2000
New facility with concrete-lined pit	2002
IAS	1983
Confirmation Study	1984 through 1987
OU2 RI	1992 to 1993
ROD	1993
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

3.5.3 Operable Unit No. 3 (Site 48, MCAS Mercury Dump)

The Final ROD for OU No. 3 was signed on September 10, 1993 (Baker, 1993b). No remedial actions were required in the ROD for Site 48 because of the absence of contamination.

Site 48 is located within MCAS New River. A location map of Operable Unit No. 3 is provided as Figure 3-14. 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 encompasses approximately 4 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 developing photographs. Mercury was drained from radar units and disposed in small quantities behind the building. It was reported that approximately 1 gallon of mercury per year over a 10-year period was disposed 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 to identify the suspected disposal area(s). A geophysical investigation was also performed to identify the presence of mercury, but it did not reveal anything associated with mercury disposal. A soil and groundwater investigation was conducted, focusing on the anomalies identified in the aerial photographs. The results of this study did not identify mercury in either soil or groundwater. It was concluded in the RI 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 actions are planned for Site 48.

Site Chronology – Site 48

Event	Date
Mercury was drained from radar units in woods near Building AS-804	1956 to 1966
IAS	1983
Confirmation Study	1984 through 1987
Supplemental Characterization	1991
RI	1992
ROD	1993

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

The Final ROD for OU No. 4 was signed on December 5, 1995 (Baker, 1995a). The selected remedy for Site 41 includes long-term groundwater, surface water, and sediment monitoring and land use restrictions. The selected remedy for Site 74 also includes land use restrictions and long-term groundwater monitoring. The requirements for completing the monitoring program at Site 74 were achieved in 1998. Table 3-10 provides a proposed schedule of activities for OU No. 4. A location map of OU No. 4 is provided as Figure 3-15.

3.5.4.1 Site 41 - Camp Geiger Dump near Former Trailer Park

Site 41 is located within the Camp Geiger area of MCB Camp Lejeune and consists 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. From 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. The debris was reported to be burned and graded over with soils.

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 was contaminated with polynuclear aromatic hydrocarbon (PAH) compounds, most likely the result of previous burning activities. Groundwater samples obtained from the site exhibited levels of chromium, iron, lead, and manganese above the North Carolina 2L Water Quality Standards for groundwater. The Human Health Risk Assessment stated that there were no risks to human health because groundwater in this area is not used as a potable supply. The ecological risk assessment conclusions stated that potential adverse impacts to ecological receptors were low owing to the low levels of contamination in soil, sediment, and surface water.

A groundwater reclassification and surface water variance were requested because of the nature of potential contamination that could not feasibly be remediated. In August 1997, a letter from NCDENR Wilmington Regional Office informed MCB Camp Lejeune that based on limited site contamination; the groundwater reclassification and surface water variance were no longer required.

The selected remedy for Site 41 includes groundwater and surface water monitoring, and aquifer and land use controls prohibiting development of the site. These controls were implemented through an LUC that was completed in FY 2001 and updated in FY 2002 (Table 3-7). The decision to restrict development of the site is based on the former use of the site as a dump. The Army Corps of Engineers may be involved with issues in the future regarding the chemical training agents. The final monitoring event was completed in the fourth quarter of FY 2004. The Final OU No. 4 Closeout Report is scheduled to be completed in the first quarter of FY 2006.

Site Chronology – Site 41

Event	Date
Open burn dump	1946 to 1970
IAS	1983
Confirmation Study	1984 through 1987
RI/FS	1995
ROD	1995
LTM	1997 to 2004
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

3.5.4.2 Site 74 - Mess Hall Grease Disposal Area

Site 74 is located approximately 0.5 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 training agents in the form of test kits, 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 land use controls prohibiting the development of the site, restrictions on the use of the groundwater as a potable supply, and groundwater monitoring (Table 3-7). Monitoring was discontinued in July 1998 because detected metal concentrations are indicative of naturally occurring metals in the presence of acidic soils. The decision to restrict development of the site is based on the former use of the site as a dump. The Army Corps of Engineers may be involved with issues in the future regarding the chemical warfare materiel (CWM). These land use controls were implemented through an LUC that was completed in FY 2001 and updated in FY 2002.

A final monitoring report was completed in FY 2002 to serve as an interim document before a final closeout report is prepared for the OU. As noted earlier, the Final OU No. 4 Closeout Report is scheduled to be completed in the first quarter of FY 2006.

Site Chronology – Site 74

Event	Date
Grease, pesticide, and reported chemical training agents disposal	Early 1950s to early 1960s
IAS	1983
Confirmation Study	1984 through 1987
RI/FS	1995
ROD	1995
LTM	1997 – 1998
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001
Final LTM Report	2002

3.5.5 Operable Unit No. 5 (Site 2, Former Nursery/Day Care Center)

The Final ROD for OU No. 5 was signed on September 15, 1994 (Baker, 1994b). The ROD stipulated completing a TCRA for the pesticide-contaminated soils, which was initiated in January 1994. For groundwater, the ROD stipulated institutional controls, including groundwater monitoring, which was implemented at Site 2 in 1995.

Site 2 is located at the intersection of Holcomb and Brewster Boulevards, just inside the main gate of MCB Camp Lejeune. A location map of OU No. 5 is provided as Figure 3-16. From 1945 to 1958, an onsite building (No. 712) was used for storing, handling, and dispensing of pesticides. This building 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 center was 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 offsite treatment of pesticide-contaminated soil and concrete. A total of 1,049 tons of pesticide contaminated soils were excavated and sent for offsite disposal.

Institutional controls and groundwater monitoring were implemented at Site 2. Aquifer and land use controls were implemented through an LUC that was completed in FY 2001 and updated in FY 2002 (Table 3-7). A groundwater monitoring program was initiated in 1995 and is ongoing on a semiannual basis. Table 3-11 provides a proposed schedule of activities for OU No. 5.

Site Chronology – Site 2

Event	Date
Storage, handling, and dispensing of pesticides at Building 712	1945 to 1958
Former Storage Area used to store bulk materials and vehicles	1945 to 1958
IAS	1983
Confirmation Study	1984 through 1987
Geophysical investigation	1992
Additional geophysical investigation	1994
Limited groundwater sampling program	1992
RI/FS	1993 to 1994
TCRA	1994
ROD	1995
LTM	1995 to present
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

3.5.6 Operable Unit No. 6 (Sites 36, 43, 44, and 54)

The Final ROD for OU No. 6 was signed July 6, 2005. The ROD stipulates LUCs for soil at all four sites and MNA and LUCs for the groundwater at Site 36 (Table 3-7). An EE/CA was completed in early FY 2003 as part of the interim response removal action. The Final Action Memorandum was also signed in early FY 2003 and the removal actions were completed in early FY 2004. Table 3-12 provides a schedule of activities for OU No. 6. A location map of OU No. 6 is provided as Figure 3-17.

3.5.6.1 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, and is approximately 3 miles southwest of Jacksonville, North Carolina. Site 36 was originally estimated to be approximately 1.5 acres; 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. Some of the materials were burned before burial. 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 was collected in July 1995. Additional soil borings and two sediment samples were collected in October 1995. The RI results 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 was 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 FY 1998 as part of an NTCRA. The PCB-contaminated area was located in the northwestern region of the site at the intersection of two dirt roads.

Site 36 was placed in the monitoring program in 1998. Groundwater samples were initially collected at this site on a quarterly basis, but the sampling was reduced to semiannual in 2000. Surface water samples from Brinson Creek are also collected under the monitoring program. Additional monitoring wells were installed in FY 2003 at Site 36 to provide more data to support the LTM program. Monitoring of the groundwater and surface water will continue in FY 2006.

Three temporary groundwater monitoring wells were installed on private property across Brinson Creek from the Base and sampled (for TCE only) in June 2000 to ascertain whether contaminants were migrating off Base property. The data indicated non-detectable levels of TCE in all three wells. In addition, groundwater elevation data from the temporary wells confirmed that groundwater within the surficial aquifer discharges into Brinson Creek.

The selected remedies as detailed in the Final PRAP were presented at the public meeting held on June 18, 2002. Owing to the national debate between EPA and the DoD regarding

enforcement issues of the LUCs, completion of the Final ROD was temporarily delayed. Accordingly, an Action Memorandum was also presented at the public meeting for completing interim response removal actions at Site 36. An EE/CA was completed in early FY 2003 as part of the interim removal action (IRA). The IRA was completed at Site 36 in 2003, before the Final ROD was issued. The primary focus of the IRA was the removal of PAH and pesticide-contaminated soil in four areas within the south central portion of the site. A total of 1,630 tons of soil was excavated during the removal action (Shaw, 2003).

The LUCs will be implemented through the Remedial Design (RD) document guidelines, which were finalized in the fourth quarter of FY 2005. The LUCs include the prohibition of intrusive activities and non-industrial land uses in areas where lead-impregnated soil exceeded the EPA Action Level of 400 parts per million (ppm), and for the former soil contaminated areas.

Site Chronology – Site 36

Event	Date
Active disposal area	Late 1940s to late 1950s
IAS	1983
Confirmation Study	1984 through 1987
RI/FS	1995 to 1998
Non-TCRA for PCBs	1998
LTM	1998 to present
Monitoring wells installed and sampled across Brinson Creek	2000
Revised FS	2002
Final PRAP	2002
Final Action Memorandum	2002
Final EE/CA Report	2003
Interim Removal Response Action	2003
Final ROD	2005
Final Remedial Design Document	2005

3.5.6.2 Site 43 - Agan Street Dump

Site 43 covers approximately 11 acres and is located within the operations area of MCAS, New River, and 2 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. It is not clear when disposal operations took place.

The RI field investigation commenced in February 1995 and continued through May 1995. 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. In all, approximately 7.3 tons of metallic debris was removed for recycling recovery.

The selected remedies as detailed in the Final PRAP were presented at the public meeting held on June 18, 2002. Owing to the national debate between EPA and the DoD regarding enforcement issues of the LUCs, completion of the Final ROD was temporarily delayed. Accordingly, an Action Memorandum was also presented at the public meeting for completing interim response removal actions at Site 43. An EE/CA was completed in early FY 2003 as part of the IRA. The IRA was completed at Site 43 in 2003, before the Final ROD was issued. The primary focus of the IRA was the removal of PAH-contaminated soil in one area located in the western portion of the site. A total of 1,476 tons of soil were excavated during the removal action (Shaw, 2003).

No additional remedial action or monitoring will be required for Site 43. The LUCs will be implemented through the RD document guidelines, which were finalized in the fourth quarter of FY 2005, for intrusive activities within the site boundary to restrict excavation activities.

Site Chronology – Site 43

Event	Date
Active disposal area	Unknown
IAS	1983
SI	1991
RI/FS	1995 to 1998
Surficial metallic debris removal action	1995
Revised FS	2002
Final PRAP	2002
Final Action Memorandum	2002
Final EE/CA	2003
Interim Removal Response Action	2003
Final ROD	2005
Final Remedial Design Document	2005

3.5.6.3 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 SVOCs, 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, but not in any of the 10 sediment samples obtained from the creek. The occurrence of VOCs among the limited groundwater and surface water samples obtained from the study area was traced to Site 89, located upgradient of Site 44.

The LUCs will be implemented through the RD document guidelines, which were finalized in the fourth quarter of FY 2005, for intrusive activities within the site boundary to restrict excavation activities.

Site Chronology – Site 44

Event	Date
Active disposal area	1950s
IAS	1983
SI	1991
RI/FS	1995 to 1998
Final ROD	2005
Final Remedial Design Document	2005

3.5.6.4 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 investigated during the RI was approximately 50 ft in diameter and was situated at the center of this 1.5-acre site. Fire training exercises were conducted within the burn pit using JP-type fuel, which was stored in a nearby underground storage tank (UST). An oil and water separator, located approximately 100 ft to the southeast of the burn pit, was used for temporary storage and collection of the spent fuel. Site 54 has served as a fire training burn pit since the mid-1950s. Originally, fire training was conducted on the ground surface within a bermed area. In 1975, a lined burn pit was constructed and was used until 1999. Conversion of the burn pit to a training area that employs clean-burning fuels with operational and engineering controls started August 2000. During the installation, POL-contaminated soils were removed. The new training facility was completed in FY 2001.

An RI field investigation for Site 54 began in February 1995 and continued through May 1995. Soil borings were taken to assess the suspected impact of burn pit operations and were used to install 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 VOC and SVOC compounds in soil and groundwater samples obtained from this portion of the study area is consistent with former site operations.

Site 54 was placed in the monitoring program in 1998. Groundwater samples have been collected at this site on a quarterly basis since that time. Sampling was temporarily suspended in FY 2001 following the soil removal action. Based on the groundwater data collected after the removal, it was determined that VOCs and SVOCs no longer pose an impact to the groundwater. Subsequently, monitoring for VOCs and SVOCs was discontinued in FY 2002.

The LUCs will be implemented through the RD document guidelines, which were finalized in the fourth quarter of FY 2005. LUCs include the prohibition of intrusive activities and land use restrictions within the former impacted area.

Site Chronology – Site 54

Event	Date
Fire training facility	mid-1950s to present
Fire training activities performed on the ground surface using JP-type fuel	mid-1950s to 1975
A concrete-lined burn pit was constructed and used for training	1975 through 1999
IAS	1983
Confirmation Study	1984 through 1987
RI/FS	1995 to 1998
LTM	1998 to 2002
New training area constructed; old pit and contaminated soils removed	2000
Final ROD	2005
Final Remedial Design Document	2005

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

The Final ROD for OU No. 7 was signed on May 16, 1996 (Baker, 1996a). The ROD for Sites 1 and 28 stipulated the implementation of institutional controls and groundwater monitoring program. Monitoring at the sites began in July 1996, and the requirements for completing the monitoring programs were achieved in 2000 for Site 1 and in 2001 for Site 28. No remedial actions were required in the ROD for Site 30 because of the absence of contamination. A location map of OU No. 7 is provided as Figure 3-18.

3.5.7.1 Site 1 - French Creek Liquids Disposal Area

Site 1 is located approximately 1 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. Liquid wastes generated from vehicle maintenance were reportedly routinely poured onto the ground surface. At times, holes were reportedly excavated 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 7 and 8 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 and groundwater monitoring were required for Site 1. These land and aquifer use controls were implemented through an LUC that was completed during FY 2001 and updated in FY 2002 (Table 3-7). Monitoring was discontinued in January 2001 when site-wide groundwater concentrations fell below the remedial action goals. A Final OU No. 7 Closeout Report was completed in FY 2002 to document the completion of the remedial action (monitoring).

Site Chronology – Site 1

Event	Date
Various artillery units disposing of liquid wastes on ground surface	1940s
IAS	1983
Confirmation Study	1984 through 1987
Soil Assessment	1991
Groundwater Sampling Study	1993
RI/FS Report	1995
Final ROD	1996
LTM	1996 to 2001
OU 7 Final Closeout Report	2002
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

3.5.7.2 Site 28 - Hadnot Point Burn Dump

Site 28 is located along the eastern bank of the New River, south of the HPIA. Site 28 is surrounded by the former 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.

Most 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. Industrial waste, trash, oil-based paint, and construction debris were reportedly burned and 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 on a surface area of 23 acres and a depth ranging from 5 to 10 feet.

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

Detections of SVOCs are likely related 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, surface water, and sediment monitoring program for metals was established in July 1996. Based upon findings of the monitoring program, the number of wells sampled was modified since 1996 from 13 wells to 4 wells in 1998. In 1999, the number of wells in the monitoring program was reduced again, to one.

Additional actions were taken in FY 2001 when one new shallow well was installed in the area of the highest lead concentrations in soil found during the RI. Results from soil and groundwater sampling indicated lead concentrations in both media, but below the levels found during the RI. The lead was found to be at naturally high levels because of natural soil conditions. This new well was added to the monitoring program in FY 2001. A Final OU No. 7 Closeout Report was completed in FY 2002 to document the completion of the remedial action (monitoring). The final LTM sampling was completed in the fourth quarter of FY 2001.

Land and aquifer use controls are included in the selected remedy as institutional controls. These were implemented through an LUC, which was completed during FY 2001 and updated in FY 2002 (Table 3-7).

Site Chronology – Site 28

Event	Date
Burn area for various soil wastes	1946 to 1971
IAS	1983
Confirmation Study	1984 through 1987
Additional sampling activities	1993
RI/FS Report	1995
Confirmatory soil sampling	1995
ROD	1996
LTM	1996 to 2001
Additional delineation	2001
OU7 Final Closeout Report	2002
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

3.5.7.3 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 4.5 miles south of the HPIA. Most of the Site 30 area is wooded, containing trees of less than 3 inches in diameter and a 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. Because 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 tank cleaning process.

In 1994, an RI was conducted at Site 30. A very limited number of VOCs were detected between surface and subsurface soil samples. No significant detections of any other potentially hazardous compounds were noted during the RI. Accordingly, no additional remedial actions were recommended and a No Action ROD was prepared for Site 30.

Site Chronology – Site 30

Event	Date
Cleaning area for emptied fuel storage tanks	Unknown
IAS	1983
Confirmation Study	1984 through 1987
Additional groundwater sampling	1993
RI	1994 to 1995
Confirmatory soil sampling	1995
ROD	1996

3.5.8 Operable Unit No. 8 (Site 16, Former Montford Point Burn Dump)

The Final ROD for OU No. 8 was signed on September 30, 1996 (Baker, 1996b). Although several contaminants were detected among the various environmental samples, the levels were not high enough to warrant further action; however, institutional controls were established (Table 3-7). With the absence of contamination at Site 16, no remedial actions were required. A location map of OU No. 8 is provided as Figure 3-19.

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 ft southeast from the boundary of the burn dump. Limited information is available concerning the operational history. 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 semi-fenced and vacant.

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 included PCBs. The detections of Aroclor 1254 and 1260 were obtained from sampling locations across the site. PCBs were not found in the groundwater, indicating that vertical migration to the water table had not occurred. SVOCs were infrequently encountered at low levels in the surface soil, and subsurface soil was relatively free of SVOC contamination. The source of the SVOCs is believed to be historical open burning. Benzene and ethylbenzene were detected in one groundwater sample collected during the first round of groundwater sampling. VOCs 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 high enough to warrant further action. Institutional controls were established, however, and include land and aquifer use controls, which were implemented through an LUC completed in FY 2001 and updated in FY 2002 (Table 3-7). No additional remedial actions are planned for Site 16.

Site Chronology – Site 16

Event	Date
Burn dump	Suspected dates - 1958 to 1972
RI/FS Report	1996
ROD	1996
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2005

3.5.9 Operable Unit No. 9 (Site 65, Engineer Area Dump)

A Final ROD was signed for OU No. 9 on September 30, 2001 (Baker, 2001a). No remedial actions were required for Site 65 because of the absence of contamination. A location map of OU No. 9 is provided as Figure 3-20.

Site 65 is located in the Courthouse Bay area of MCB Camp Lejeune and is approximately 5 acres in size. Two separate disposal areas have been reported at Site 65, a battery acid disposal area and a liquid disposal area. The liquids that have been disposed are reported to have been POL types . In addition, the dump was used to burn construction debris. The dump was in operation from at least 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. In early 2001, several discarded containers were discovered near Site 65. The containers were heavily corroded and no materials were observed in the containers. Groundwater, soil, and surface water and sediment (from a nearby creek) were collected in April 2001 to determine if surrounding media had been affected by potential releases, but the data indicated there were no effects caused by the containers. The Final PRAP and ROD were completed in FY 2001. No additional remedial actions are planned for Site 65.

Site Chronology – Site 65

Event	Date
Disposal operations	1958 through 1972
IAS	1983
SI	1991
RI Report	1997
Discarded containers found and subsequent field investigation completed	2001
ROD	2001

3.5.10 Operable Unit No. 10 (Site 35, Camp Geiger Area Fuel Farm)

IRODs were signed on September 15, 1994 and September 22, 1995 for soil and the shallow groundwater, respectively (Baker, 1994c and 1995b) at OU No. 10. A removal action for hydrocarbon-contaminated soils was performed from September 1995 to May 1996 as part of the soil IROD. An in-situ air sparge trench was installed in February 1998 as part of the groundwater IROD and is currently operating. Table 3-13 provides a schedule of activities proposed for OU No. 10. A location map of OU No. 10 is provided as Figure 3-21.

Site 35 is located immediately north of the intersection of G and Fourth Streets, approximately 400 ft southwest of Brinson Creek. The fuel farm consisted of five 15,000-gallon ASTs, underground distribution lines, a pumphouse, a fueling pad, a distribution island, and an oil/water separator. The ASTs were installed 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 and 1958 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 and 1994, an Interim RI and a 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 FS and ROD were prepared that focused on fuel-contaminated soil at the site. A soil removal action was conducted in 1995 and completed in the spring of 1996. An IROD was signed in FY 1995 for the shallow groundwater. As noted earlier, the selected remedy presented in the IROD was an in-situ air sparge trench. This remedy was intended to expedite the reduction of organic contaminants in the surficial aquifer.

Because of unfavorable site conditions, lack of access, and a lack of BTEX contamination in groundwater east of the proposed highway, it was recommended that an in-situ air sparge trench (approximately 100 ft in length) be constructed along the western edge of the proposed right-of-way. It was further recommended that the system be tested before full-scale implementation. The pilot air sparging system is currently operating and is maintained by the Remedial Action Contractor (RAC).

A Draft NAE Report was prepared during FY 1999. A Focused NAE Study for the wetlands at Site 35 was conducted in FYs 2002 and 2003 based on the recommendations of the draft report. Additional data to support the focused NAE study was also collected in October 2002 as part of the Site 35 Hot Spot Investigation. The purpose of the NAE study was to evaluate the site conditions to determine if MNA could serve as a potential remedial alternative for groundwater. The Final NAE Study Report was submitted in FY 2003 and concluded that conditions were generally favorable to reduce the contaminant mass in groundwater; however, complete reduction may not be possible within a regulatory time frame due to the continued release of VOCs from the primary TCE "hot spot."

A Technology Evaluation Report and Treatability Study Work Plan were completed in FY 2004 and recommended injections of modified Fenton's Reagent and permanganate for the study. A pilot study was initiated in the second quarter of FY 2004 on the main TCE "hot spot." The pilot study and monitoring were completed in the fourth quarter of FY 2005, and the draft Pilot Study Evaluation Report will be submitted in the first quarter of FY 2006.

An EE/CA to address a POL low non-aqueous phase liquid (LNAPL) area near Building G480 (Amory) was completed in the 4th quarter of FY 2004 for both soil and groundwater. As of the fourth quarter of FY 2005, the POL site associated with Building G480 is in the process of being transferred to the NAVFAC UST program.

Site 35 was incorporated into the monitoring program in October 1998. Monitoring will be conducted as part of the Amended RI activities. Completion of the Amended RI/FS, PRAP, ROD, and RD are anticipated in FYs 2006 through 2008.

Site Chronology – Site 35

Event	Date
Fuel farm operations	1945 to 1995
IAS	1983
Confirmation Study	1984 through 1987
UST Site Characterization	1992
Interim RI and comprehensive RI	1993 through 1994
Fuel farm and associated structures dismantled	1995
Soil removal	1995 to 1996
IRODs – Soil and Groundwater	1994 and 1995
Pilot scale in-situ air sparge trench	1998 to present
Supplemental Groundwater Investigation	1997
LTM	1998 to FY05
Initial NAE Study Report	1999
Hot Spot Characterization Study	2002
Final NAE Study Report	2003
Technology Evaluation Report for Pilot Study	2003
Groundwater Pilot Study	2004-2005

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

The Final ROD for OU No. 11 was signed on August 21, 1997 (Baker, 1997a). No remedial actions were required in the ROD for Site 7 because of the absence of contamination. The ROD for Site 80 stipulated completing a TCRA for pesticide- contaminated soils, which was initiated in 1996. After completion of the TCRA, an NFA alternative was presented in the ROD and approved. No additional remedial action or monitoring is planned for Site 80. A location map of OU No. 11 is provided as Figure 3-22.

3.5.11.1 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 at this facility—only construction debris, water treatment plant filter media, and household trash.

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. SVOCs were 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 was considered to pose a threat to human health or the environment. Accordingly, no additional remedial actions are planned for Site 7.

Site Chronology – Site 7

Event	Date
Disposal operations	Closed in 1972
Pre-RI	1991
RI Report	1996
ROD	1997

3.5.11.2 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 maintenance procedures is unknown; however, the facility is currently operating.

The initial phase of the RI field investigation began 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 11 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 EPA Region III Risk-Based Concentrations (RBCs) 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 soils were excavated from Site 80.

After completion of the TCRA, a No Action Alternative was presented in the ROD, signed in August 1997. A Plat Map is planned for Site 80 in FY06.

Site Chronology – Site 80

Event	Date
Golf maintenance	Unknown to present
Pre-RI	1991
RI Report	1996
TCRA	1996
ROD	1997

3.5.12 Operable Unit No. 12 (Site 3, Old Creosote Plant)

The Final ROD for OU No. 12 was signed on April 3, 1997 and was amended in FY 1999. The remedial action proposed in the Amended ROD recommended that the excavated soil be taken offsite for disposal at a permitted facility in lieu of onsite treatment. This action was completed in 2000. Groundwater monitoring was also stipulated in the Amended ROD. Table 3-14 provides a proposed schedule of activities at OU No. 12. A location map of OU No. 12 is provided as Figure 3-23.

Site 3 is located approximately 1 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 former sawmill, which supplied the cut timbers for creosote treatment, was reportedly located in the cleared area in the northern portion of Site 3.

The RI field investigation commenced in September 1994 and continued through December 1994, with a follow-up phase being completed in June and July of 1995. Due to VOC 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 included excavation of contaminated soil, onsite treatment of the soil, and groundwater monitoring. An Amended ROD was prepared and submitted for approval during the first quarter of FY 1999. The Amended ROD proposed that the excavated soil be taken offsite for disposal at a permitted facility in lieu of onsite treatment; however, due to a change in the regulatory status of creosote-contaminated soils, other remediation options were considered. These options include in-situ solidification, monitored natural attenuation, and removal/onsite treatment/offsite disposal.

The final remedy, which included removal and disposal of the PAH-contaminated soils, was selected and implemented in FY 2000. The Final Amended ROD was signed on June 20, 2000. The Amended ROD also includes an LUC which implements aquifer and land use controls at Site 3. The LUC was updated in FY 2002 (Table 3-7). Semiannual monitoring of groundwater at Site 3 will continue in FY 2006.

Site Chronology – Site 3

Event	Date
Creosote plant	1951 to 1952
SI	1991

RI/FS	1996
ROD	1997
LTM	1998 to present
Non-TCRA	2000
Amended ROD	2000
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

3.5.13 Operable Unit No. 13 (Site 63, Verona Loop Dump)

The Final ROD for OU No. 13 was signed on April 3, 1997 (Baker, 1997b). The ROD for Site 63 stipulated that no additional remedial action or monitoring was required; however, land use controls are being implemented to restrict aquifer usage. A location map of OU No. 13 is provided as Figure 3-24.

Site 63 is comprised of approximately 5 acres and is located nearly 2 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 3 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 is 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 frequently take place 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. SVOCs, pesticides, and metals were detected at Site 63. Pesticide concentrations were low (i.e., less than 0.1 milligrams per kilogram) 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, no threats to human health and the environment from the contamination at Site 63 are present. No additional remedial action or monitoring is planned for Site 63. An LUC was recommended for intrusive activities and aquifer use was implemented in FY 2001 and updated in FY 2002 (Table 3-7).

Site Chronology – Site 63

Event	Date
Disposal operations	Unknown
IAS	1983

SI	1991
RI Report	1996
ROD	1997
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

3.5.14 Operable Unit No. 14 (Site 69, Rifle Range Chemical Dump)

A Final IROD was signed for OU No. 14 on June 29, 2000 (Baker, 2000b). The Interim ROD for Site 69 stipulates MNA as the interim remedy. Table 3-15 provides a proposed schedule of activities for OU No. 14. A location map of OU No. 14 is provided as Figure 3-25.

Site 69 is located approximately ¼ mile west of the New River in the rifle range area of MCB Camp Lejeune. The site covers 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. From 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 cyanide (i.e., tear gas) or other training agents, also known as CWM. Based upon background information, chemical training 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 affected by the former disposal activities; however, it is believed that the top 2 ft 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 impaired 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 2 years of operation and testing, in-well aeration was ineffective at reducing the number and concentration of contaminants in the groundwater. During FY 2000, a Final Interim ROD was signed, identifying MNA and institutional controls as the most feasible treatment alternatives for the groundwater aquifer. During FY 2006, an amended RI investigation will be conducted, followed by a PRAP and Amended ROD. The Interim ROD will be in effect until the Amended ROD is signed. The responsibility for the CWM at Site 69 will be transferred to the MCB Camp Lejeune Munitions Response Program (MRP) in FY 2007. Institutional controls include aquifer and land use controls and are implemented through LUCs, which were updated in FY 2002 (Table 3-7). Monitoring will be conducted as part of the Amended RI activities.

Site Chronology – Site 69

Event	Date
Disposal operations	1950 through 1976
IAS	1983
Confirmation Study	1984 through 1987
RI	1992 through 1999
In-Well Aeration Pilot Study	1997 through 1998
LTM	1998 to FY05
Final Interim ROD	2000
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

3.5.15 Operable Unit No. 15 (Site 88, Base Dry Cleaners)

A Focused RI was completed for OU No. 15 (Site 88) on May 15, 1998 (Baker, 1998a). An Amended RI report will be completed in FY 2006. Table 3-16 provides a proposed schedule of activities at OU No. 15. A location map of OU No. 15 is provided as Figure 3-26.

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 were installed in the 1940s and were used to store varsol, an early dry-cleaning chemical. PCE replaced Varsol in the 1970s and was stored in an AST. In the mid-1980s the AST was taken out of service. The USTs were removed between November 1995 and January 1996.

A Focused RI 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 25. Groundwater contamination extends to approximately 50 ft bgs and extends approximately 700 ft to the northwest. Isolated areas of free-phase dense non-aqueous liquid (DNAPL) are present 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 the residual-phase DNAPL. Surfactant-enhanced aquifer remediation (SEAR) was conducted to remove the residual phase DNAPL and some free phase DNAPL. This pilot program was completed in August 1999. The Final SEAR Report was issued January 25, 2000. Post-SEAR monitoring was completed in FY 2001.

In FY 2001, several other interim remedial actions were also initiated. The Air Force started operations of the Reductive Anaerobic Bioremediation In-Situ Treatment Technology (RABITT) pilot scale test within the dissolved portion of the plume near monitoring wells 88-MW05 and 88-MW05IW. This pilot test was completed in FY 2002. In addition, the RAC started aggressive fluid vapor recovery (AFVR) activities at Site 88 by pumping free phase

product monthly from six existing extraction wells. Free phase product recovery will continue in FY 2005.

Site 88 was added to the monitoring program in April 1999. Semiannual groundwater monitoring was discontinued in the fourth quarter of FY 2001 and a Pre-Amended RI sampling event was completed in the fourth quarter of FY 2002. The Work Plan for the Amended RI was completed in FY 2003, and the fieldwork started in FY 2004 and is currently ongoing. The Amended RI Report and FS are scheduled to be completed in FY 2006.

An EE/CA for the soil source removal action under Building 25 was completed FY 2004, and provided recommendations for the technology and approach to be completed as part of source removal action. A public meeting for the EE/CA was held on June 1, 2004 to support the EE/CA. Shallow soil mixing with clay-zero valent iron and dual phase extraction were the recommended technologies in the EE/CA. The removal action was completed in FY 2005.

The PRAP, ROD, and RD will be completed in FYs 2006 through 2008.

Site Chronology – Site 88

Event	Date
USTs installed	1940s
USTs removed	1995 through 1996
Focused RI	1998
DNAPL Investigation	1998
SEAR Pilot Study	1999
LTM	1999 to 2001
RABITT Pilot Study	2001
Pre-Amended RI sampling event	2002
AFVR	2001 to present
Amended RI Field Work	2003 to present
Building 25 EE/CA	2004
Public meeting for EE/CA	2004
NTCRA	2005

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

OU No. 16 consists of Site 89 (Former DRMO) and Site 93 (TC-942). Focused RIs were completed for both sites and the reports were issued as final on June 15, 1998 (Baker, 1998b). Both sites were included in the monitoring program in FY 1999. A TCRA for contaminated soils was completed in FY 2001 at Site 89 (IT, 2001). A pilot study at Site 89 for groundwater source removal treatment was completed in the second quarter of FY 2004. Table 3-17

provides a schedule of proposed activities at OU No. 17. A location map of OU No. 16 is provided as Figure 3-27.

3.5.16.1 Site 89 - Former DRMO

Owing to the presence of chlorinated solvents detected during UST investigations, Site 89 has been further characterized by a Focused RI 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 for 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 Focused RI 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 Focused RI at Site 89 identified chlorinated solvent contamination of soil and groundwater. Most of the groundwater contamination is located in the area of the former DRMO. The contaminant plume extends to approximately 50 ft bgs and extends approximately 1,200 ft east of the DRMO. In addition, solvents in the groundwater affected Edwards Creek, which is located along the southern boundary of Site 89.

Additional investigation activities were conducted in June/July 1999 and in October 1999. Activities included the installation of permanent monitoring wells and associated groundwater sampling, the collection of soil samples, and the collection of surface water and sediment samples. These investigations verified that the extensive amounts of chlorinated solvents had contaminated the immediate and surrounding areas of Site 89.

A follow-up investigation was conducted in December 1999 to further delineate the extensive soil contamination in the southern portion of Site 89. Soil samples were collected from the southern portion of Site 89, both inside and outside the DRMO. This sampling confirmed that extremely high levels of chlorinated solvents were affecting an extensive area within the southern portion of the site.

A TCRA was completed in FY 2001 for the removal and treatment of vadose zone contaminants in the southern portion of the site. Low Temperature Thermal Desorption (LTTD) units were used to treat the contaminated soil and roughly, 32,000 tons were treated. In addition, an aeration system was installed in Edwards Creek to assist in the remediation of VOCs in the creek. This system is anticipated to be operational through FY 2006.

The DNAPL that remains within the southern portion of Site 89 will be dealt with through the FS. The Phase I supplemental field investigation to support the EE/CA was completed in third quarter of 2001 and the Phase II supplemental field investigation was completed in the third quarter of FY 2002. Operation of a pilot scale test to evaluate electrical resistance heating (ERH) was completed in the third quarter of FY 2004 on the eastern DNAPL source area as identified through the supplemental field investigations. Follow-up sampling as part of the post-treatment monitoring program will continue through the third quarter of FY 2005. Based on preliminary review of the data, a 99 percent reduction of contamination was observed in the treatment area.

Site 89 was added to the monitoring program in April 1999. Groundwater monitoring, which is conducted on a semiannual basis, was temporarily suspended in FY 2001 due to the TCRA (only surface water sampling was performed). Sampling will continue as part of the Amended RI/FS in FY 2006. Additionally, a Draft Amended RI for Site 89 was completed in FY 2005. The Final RI, FS, PRAP, and ROD are scheduled to be completed in FYs 2006 through 2008.

Site Chronology – Site 89

Event	Date
Waste oil UST installed	1983
Waste oil UST removed	1993
Focused RI	1996 through 1997
Additional investigations	1999 through 2000
LTM	1999 to FY05
Action Memorandum for TCRA	2001
TCRA for soil	2001
Phase I supplemental field investigation to support the EE/CA	2001
Phase II supplemental field investigation to support the EE/CA	2002
ERH Pilot Study	2003 to 2004
Draft Amended RI	2005

3.5.16.2 Site 93 - TC-942

Site 93 is located northwest of the intersection of "E" and 10th Streets at Camp Geiger. 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, concentration, and the aerial extent of contamination are much less at Site 93. Because of the significant contamination at Site 89, the evaluation of Site 93 will be completed separately.

In January 2002, a supplemental investigation was completed. The investigation included the installation of Geoprobe® borings and four shallow monitoring wells. A letter report documenting the field program and results was completed in the second quarter of FY 2002. The Draft FS was also completed during FY 2002. Site 93 was added to the monitoring program in April 1999 and was discontinued in FY05 due to the ongoing FS. The PRAP and IROD are scheduled to be completed during FY 2006.

Site Chronology – Site 93

Event	Date

UST installed	Unknown
UST removed	1993
Focused RI	1996 to 1997
LTM	1999 to FY05
Supplemental investigation	2002
Technology Evaluation for Groundwater Pilot Study	2003 to present

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

The Final ROD was signed for OU No. 17 on September 30, 2001 (Baker, 2001). No remedial actions were required in the ROD for Sites 90, 91, and 92 because of the absence of contamination. A location map of OU No. 17 is provided as Figure 3-28.

OU 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 because contaminants not typically related to petroleum UST sites were detected. Each of the sites was investigated under the IR Program through a Focused RI completed in April 1997. As a result of the findings of the Focused RI, additional sampling was completed in September 1999. The Final Focused RI was submitted in FY 2000, and a No Further Action Final ROD was signed in FY 2001.

3.5.17.1 Site 90 - (BB-9)

Site 90 contained three USTs used for 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 suspected to be a site-related compound. Additional groundwater samples were collected from permanent monitoring wells to confirm the presence or absence of chloroform. A supplemental groundwater report was issued and commented on by all reviewing parties. The comments were incorporated into the Final Focused RI Report, which was completed in FY 2001. Three temporary wells were installed around a monitoring well that had detectable concentrations of TCE during the Supplemental Groundwater Study to delineate the possible TCE plume. Samples from the three temporary wells did not contain TCE; therefore, no further actions were required.

Site Chronology – Site 90

Event	Date
Three heating oil USTs installed	Unknown
Three heating oil USTs removed	1993
Final Focused RI	2001
Supplemental Groundwater Report	2001
ROD	2001

3.5.17.2 Site 91 - (BB-51)

Site 91 contained two USTs that were 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 PCE; however, the concentrations were below state and federal standards. Additional groundwater samples were collected from permanent monitoring wells to confirm the presence or absence of suspected non-site related compounds. A supplemental groundwater report was issued and commented on by all reviewing parties. The comments were incorporated into the Final Focused RI Report. Site 91 was placed into the monitoring program in July 2000. Sitewide groundwater monitoring was completed in FY 2001. Monitoring of two wells for chloroform was completed in FY 2002.

Site Chronology – Site 91

Event	Date
Two waste oil USTs installed	Unknown
Two waste oil USTs removed	1992
Final Focused RI	2000
LTM	2000 through 2002
ROD	2001

3.5.17.3 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. No volatile organic compounds were detected in the soil samples, and only chloroform was detected in the groundwater samples. Site 92 was placed into the monitoring program in July 2000. Groundwater monitoring was completed in FY 2001.

Site Chronology – Site 92

Event	Date
UST installed	Unknown
UST removed	1994
Focused RI	1996 through 1997
LTM	1999 to 2001
ROD	2001

3.5.18 Operable Unit No. 18 (Site 94, PCX Service Station)

Investigations and ongoing remedial actions at this site have been performed under the UST Program. Table 3-18 provides a proposed schedule of activities at OU No. 18. A location map of OU No. 18 is provided as Figure 3-29.

Site 94 is located within the HPIA. 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 ft bgs. The extent of the chlorinated hydrocarbon plume is not defined. A final schedule for future actions at the site has not been established.

In September 2000, an additional groundwater investigation was conducted by OHM to evaluate groundwater conditions in an area of the site where monitoring wells had not been installed. Three monitoring wells were installed in the shallow zone and were sampled along with 18 existing monitoring wells at the site. The groundwater samples were analyzed for VOCs (Methods 602 and selected wells for 601) and PAHs (Method 610). The results indicated that six monitoring wells had VOC (BTEX and Methyl Turt-Butyl Ethylene [MTBE]) concentrations that exceeded North Carolina 2L Standards and two wells had PAH concentrations in excess of the standards.

A baseline groundwater sampling event was conducted in September 2003 to obtain current groundwater quality data. All 25 existing monitoring wells (22 monitoring wells from Site 94 and 3 monitoring wells associated with Site 78) were gauged and sampled for VOCs (EPA Method 8260B). TCE was detected in the three wells (UST1613-MW13, -MW14, and –MW15) screened within the intermediate aquifer above the NC 2L standard; the concentrations ranged from 21 to 54 µg/L. TCE, methylene chloride, and acetone were detected in shallow wells; only acetone was detected above the NC 2L standards in one well. These data were collected to assist in developing the Phase I Sample Strategy approach and resulted in a focus on the intermediate and deep aquifer zones.

An RI investigation began in the 4th quarter of FY 2004 to further evaluate the groundwater contamination near Site 94, and was completed in FY 2005. An NFA PRAP and ROD will be completed in FY 2006.

Site Chronology – Site 94

Event	Date
USTs installed	1950s
USTs/contaminated soil removed	1995
UST characterization	1996

Remedial actions under UST Program	1998 to present
Additional groundwater investigation	2000
RI baseline groundwater sampling	2003
RI	2005

3.5.19 Operable Unit No. 19 (Site 84, Building 45 Area)

The selected remedies for this site, as detailed in the Final PRAP, were presented at the public meeting held on June 18, 2002. Owing to the national debate between EPA and DoD regarding enforcement issues of the LUCs, completion of the Final ROD was temporarily delayed. Accordingly, an Action Memorandum was also presented at the public meeting for completing an IRA as an alternative plan to completing the ROD remedial actions. An EE/CA was completed in early FY 2003 as part of the interim removal response action. The Final Action Memorandum was also signed in early FY 2003. The Phase I response action, which included the removal of affected soils and the building foundation, was also completed in FY 2003. The Phase II response action was completed in the fourth quarter of FY 2004. Table 3-19 provides a proposed schedule of activities at OU No. 19.

Site 84, which includes the former powerhouse, is located approximately 200 yards south of Highway 24, 1 mile west of the main gate. A location map of OU No. 19 is provided as Figure 3-30. The site lies east of Northeast Creek. The site is mostly wooded and vegetated. A small lagoon near the center of the site, possibly man-made, is hidden by trees. The lagoon is roughly circular in shape with a diameter of approximately 50 feet. There are no direct access roads, and access to the site is restricted by locked gates. The site is relatively flat, with some minor surface mounds in the wooded areas. Overland surface water drainage is west in the direction of Northeast Creek.

The site contains a former electrical powerhouse. Transformers reportedly containing PCBs were known to have been used and possibly stored at the powerhouse. A transformer was discovered near the wooded area, east of the powerhouse. Additional transformers (approximately 20), potentially containing PCB dielectric oil, were discovered near the woods, east of the powerhouse. Maintenance personnel at Building 45 have indicated that additional transformers may still be buried in areas near the lagoon. Public Works Center personnel were reported to have performed minor excavations in the area and did not discover any waste materials.

Baker conducted soil, groundwater, surface water, and sediment sampling in October 1995 as part of an SI. Additional sampling was performed in March 1998. Samples were analyzed for target compound list (TCL) PCBs only. From the results of the sampling, it is obvious that the site has been adversely affected 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. A Pre-RI Screening Study was conducted in 1998 to initially characterize the site.

An EE/CA was prepared on January 15, 1999 for the contaminated soils and lagoon area. Based on delineation sampling that was conducted for the EE/CA, it was concluded that the extent of the contamination warranted an RI/FS. Two USTs have been removed from the

site under the UST Program, followed by SVE/air sparge treatment. Building 45 was demolished (except for the basement) between August and September 1999. Baker conducted concrete sampling and surface water sampling at Building 45 in August 1999. Additional field activities in FY 2000 included fencing and engineering controls to prevent intrusion into the basement.

The RI field investigation was completed in August 2001. The findings from the investigation indicated that soils around former Building 45 and limited areas west of the building are impacted by organic compounds (primarily PCBs, pesticides, and PAHs) and metals. Limited groundwater contamination is present in the surficial aquifer, mostly from benzene, pesticides, and metals. Sediments in the lagoon as detected during the Pre-RI Investigation are also contaminated, primarily from PCBs. The Final RI/FS documents were completed during FY 2002.

The Phase I response action, based on the recommendations presented in the RI/FS, was completed at former Building 45 to remove the remaining building foundation and affected soils in FY 2003. The Phase II interim removal response action was completed in FY 2004 for the remaining contaminated soils and lagoon. A technical evaluation will also be implemented in FY 2006.

Site Chronology – Site 84

Event	Date
Electrical transformers stored in powerhouse	unknown
Building 45 maintenance facility	1965 to early 1990s
Phase I Site Screening sampling	1995
Additional Site Screening sampling	1998
Pre-RI Study	1998
Preliminary EE/CA	1999
Building 45 demolished (basement remained)	1999
Concrete foundation and surface water sampling	1999
RI	2001
Final PRAP, EE/CA and Action Memorandum	2002
Removal of Building 45 foundation and surrounding soils (Phase I IRA)	2003
Phase I IRA Closeout Report	2003
Phase II IRA fieldwork	2004

3.5.20 Operable Unit No. 20 (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. A location map of OU No. 20 is provided as Figure 3-31. The site consists 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 used for temporary storage of waste oil. The three tanks were emptied in 1988 and were removed in 1992. Today, the former location of the tanks is grass-covered and only a slight depression remains.

The initial RI field investigation at Site 86 began in February 1995 and continued through May 1995. VOCs and SVOCs were detected in both surface and subsurface soil samples. Most of the SVOCs detected in soil samples were PAH compounds. Based on 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 track VOC contaminant migration.

Site 86 was added to the monitoring program in 1998. From 1998 through 2000, groundwater samples were collected on a quarterly basis, but were reduced to annual monitoring in 2001. In June 2000 it was recommended that Site 86 be further evaluated based on the increasing levels of TCE, as noted during monitoring, in a downgradient intermediate well. The data also suggested that the TCE plume may be migrating, as indicated by several downgradient wells. Subsequently, it was decided at the July 2000 IR Partnering Meeting that Site 86 would be permanently removed from OU No. 6 and a new operable unit, No. 20, would be created for this site. Fieldwork associated with the Amended RI was completed in two phases—Phase I was completed in the fourth quarter of FY 2001 and Phase II was completed the second quarter of FY 2002. The findings from the Amended RI field investigation showed that the primary TCE plume is located at a depth of 40 to 45 feet bgs. The plume extends from the boundary of Site 86 to approximately 1,700 feet downgradient. The Amended RI Report was completed in FY 2003.

The Technology Evaluation Report and Treatability Study Work Plan were completed in FY 2004 and recommended injection of ozone through a horizontal well for the pilot test. A pilot study began in FY 2005 for the main TCE groundwater plume at the site. The Pilot Test Study Report will be prepared following completion of the test. Completion of the FS, PRAP, ROD, and RD are anticipated in FYs 2006 through 2008. Table 3-20 provides a proposed schedule of activities at OU No. 20.

Site Chronology – Site 86

Event	Date
Storage area for petroleum products	1954 to 1988
Three 25,000-gallon waste oil USTs emptied	1988
Three 25,000-gallon waste oil USTs removed	1992
Preliminary Site Characterization	1992
Initial RI/FS	1995 through 1998
LTM	1998 to present
Amended RI	2001 through 2003
Groundwater Pilot Study	2005

3.5.21 Operable Unit No. 21 (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. A location map of OU No. 21 is provided as Figure 3-32. Available information indicates that disposal activities occurred within a 13-acre area from 1946 until 1977. An estimated 400,000 gallons of waste oil, generated during routine vehicle maintenance, were disposed of in this area. 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. An initial (Phase I) NAE field investigation at Site 73 was completed and a Draft NAE Report was prepared in the second quarter of FY 1999. A Phase II field investigation was completed in May 2001 and provided additional data on plume characterization and natural attenuation conditions. The Final NAE Report was completed in the second quarter of FY 2002. Although natural attenuation of the VOCs in groundwater was demonstrated to be a viable treatment option, the time frame needed to reach the cleanup objectives was believed to be prohibitive. Sampling will continue in FY 2006 as part of the Amended RI sampling program.

Air sparging points were employed as an interim measure to treat an area of concentrated vinyl chloride near the bulkhead area. Air was injected into 29 well points for a 4-month period from January through April 2002. Data from the treatment area indicated that the air was not effectively moving through the shallow formation due to the low permeability of the soil. Accordingly, it was decided to discontinue the air injection.

The Technology Evaluation Report and Treatability Study Work Plan were completed in FY 2003 and recommended hydrogen sparging through a horizontal well for the pilot test. The pilot study began in FY 2004 for the main TCE groundwater plume at the site and was completed in FY 2005. A Pilot Test Study Report will be prepared in FY 2006. Completion of the FS, PRAP, ROD, and RD is anticipated in FYs 2006 through 2008. Table 3-21 provides a proposed schedule of activities for OU No. 21.

Site Chronology – Site 73

Event	Date
Disposal operations (waste oil/battery acid)	1946 through 1977
IAS	1983
Confirmation Study	1990
UST Investigations	1991 through 1993
Preliminary Investigation	1994
RI	1995
Phase II RI	1996 through 1997

NAE Study	1999 through 2002
LTM	2000 to present
Air injection for vinyl chloride plume	2002
Technology Evaluation for Groundwater Pilot Study	2002
Groundwater Pilot Study	2003 through present

3.5.22 Operable Unit No. 22 (Site 95, Dipping Vat Sites)

Site 95 was added to the IR Program in FY 2005, comprising the Jaybird Road Dipping Vat, Magnolia Road Dipping Vat, and Lyman Road Dipping Vat. These vats were in operation from approximately 1906 through 1961 and were used to submerge livestock in a pesticide solution consisting of arsenic and synthetic pesticides, such as DDT and toxaphene. A location map of OU No. 22 is provided as Figure 3-33. Table 3-22 provides a proposed schedule of activities for OU No. 22.

Based on findings by MCB Camp Lejeune archeologists, two of the three dipping vat sites, Jaybird Road and Magnolia Road, were sampled for RCRA metals and pesticides. Media sampled included soil and groundwater. At the Jaybird Road site, soil samples exceeded criteria for arsenic, chromium, and mercury. At the Magnolia Road site, soil samples exceeded criteria for 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, arsenic, and mercury.

An SI Work Plan will be completed in the first quarter of FY 2006, followed by a field investigation. The field investigation will include all three sites. A draft SI report is anticipated to be completed in the third quarter of FY 2006.

Site Chronology – Site 95

Event	Date
Dipping vats used for livestock submersion into pesticide solutions	1906-1961
Initial Sampling	2005

3.6 Long-Term Monitoring Program

The LTM Program at MCB Camp Lejeune has been in operation since 1995 under the IR Program. During FY 2005, an LTM Program Optimization Investigation was conducted to review the LTM program at MCB Camp Lejeune. The goal of the optimization investigation was to economize resources while maintaining, and possibly increasing, the level of assessment and monitoring of potential contaminant migration and management of risk. Based on this investigation, the number of wells in the LTM program will be reduced. Table 3-23 presents a summary of site recommendations, and Table 3-24 provides a summary of current and recommended sample points.

TABLE 3-1
Installation Restoration Program Sites
MCB Camp Lejeune, North Carolina

Site No.	Site Description
1	French Creek Liquids Disposal Area
2	Former Nursery/Daycare 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	Original Base Dump
12	Explosive Ordnance Disposal (EOD-1, formerly known as G-4A)
16	Montford Point Burn Dump
21	Transformer Storage Lot 140
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
48	MCAS New River Mercury Dump Site
54	Crash Crew Fire Training Burn Pit
63	Verona Loop Dump
65	Engineer Area Dump
68	Rifle Range Dump
69	Rifle Range Chemical Dump
73	Courthouse Bay Liquids Disposal Area
74	Mess Hall Grease Pit Area
75	MCAS Basketball Court Site
76	MCAS Curtis Road Site
78	Hadnot Point Industrial Area
80	Paradise Point (Golf Course Maintenance Area)
82	VOC Disposal Area at Piney Green Road

TABLE 3-1
Installation Restoration Program Sites
MCB Camp Lejeune, North Carolina

Site No.	Site Description
84	Building 45 Area
85	Camp Johnson Battery Dump
86	Tank Area AS419-AS421 at MCAS
87	MCAS Officer's Housing Area (formerly Site A)
88	Building 25
89	Former DRMO
90	Building BB-9
91	Building BB-51
92	Building BB-46
93	TC-942
94	Building 1613
95	Jaybird Road, Magnolia Road, and Lyman Road Dipping Vats

TABLE 3-2
Installation Restoration Program Activities for FY2006-FY2008
MCB Camp Lejeune, North Carolina

OU No.	Site No.	NFA	NFRAP	OU Close - out	RA	IRA	TS	PA	SI	RI	FS	PRAP	EE/CA	Design	Interim ROD	Amended ROD	ROD	ROD Action	LTM Start	LTM Stop
1	21														9/92		9/94	NFA		
	24														9/92		9/94	LTM	07/96	10/98
	78				O&M and LTM		Pilot Test								9/92	X	9/94(1)	GT/ LTM	07/95	
2	6				O&M and LTM												9/93	GT/ LTM	07/96	
	9	X															9/93	NFA		
	82				O&M and LTM												9/93	GT/ LTM	07/96	
3	48	X															9/93	NFA		
4	41	X		X	LTM												12/95	LTM	01/97	7/04
	74	X		X													12/95	LTM	01/97	7/98
5	2				LTM												9/94	LTM	07/95	
6	36				LTM												7/05	LTM	10/98	
	43	X															7/05	NFA		
	44	X															7/05	NFA		
	54	X															7/05	LTM	07/98	01/02
7	1	X															5/96	LTM	01/96	01/01
	28	X															5/96	LTM	01/96	10/01
	30	X															5/96	NFA		
8	16	X															9/96	NFA		
9	65	X															9/01	NFA		
10	35				X		Pilot Test			X	X	X	X	X			(2)	GT	10/98	09/05
11	7	X															8/97	NFA		

TABLE 3-2
Installation Restoration Program Activities for FY2006-FY2008
MCB Camp Lejeune, North Carolina

OU No.	Site No.	NFA	NFRAP	OU Close - out	RA	IRA	TS	PA	SI	RI	FS	PRAP	EE/CA	Design	Interim ROD	Amended ROD	ROD	ROD Action	LTM Start	LTM Stop
	80	X															8/97	NFA		
12	3				LTM												4/97(3)	LTM	01/97	
13	63	X															4/97	NFA		
14	69				LTM					X	X	X		X	6/00(4)	X		MNA/ LTM	10/98	09/05
15	88				X					X	X	X		X			X		01/99	07/01
16	89																X		04/99	09/05
	93						Pilot Test										X		04/99	09/05
17	90	X															09/01	NFA		
	91	X															09/01	NFA	07/00	01/02
	92	X															09/01	NFA	07/00	04/01
18	94																X			
19	84				X									X			X			
20	86				X		Pilot Test				X	X					X		01/98	09/05
21	73				X		Pilot Test			X	X	X					X		07/00	09/05
22	95								X											
Pre-RI Sites	10		X																	
	12	X																		
	68		X																	
	75	X																		
	76	X																		
	85		X																07/01	09/05

TABLE 3-2
Installation Restoration Program Activities for FY2006-FY2008
MCB Camp Lejeune, North Carolina

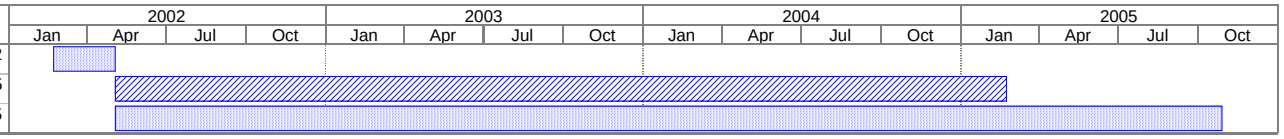
OU No.	Site No.	NFA	NFRAP	OU Close - out	RA	IRA	TS	PA	SI	RI	FS	PRAP	EE/CA	Design	Interim ROD	Amended ROD	ROD	ROD Action	LTM Start	LTM Stop
	87	X																		
PA Sites	HPIA								X											
	MCAS New River								X											
	Montford Point								X											

Notes:

EE/CA	=	Engineering Evaluation/Cost Analysis	RA	=	Remedial Action	(1)	=	IROD for shallow aquifer signed FS on September 23, 1992
FS	=	Feasibility Study	RI	=	Remedial Investigation			
GT	=	Groundwater Treatment	ROD	=	Record of Decision	(2)	=	IRODs for soil and groundwater signed on September 15, 2994, and September 22, 1995, respectively.
IRA	=	Interim Response Action	SI	=	Site Inspection			
LTM	=	Long-Term Monitoring	TS	=	Treatability Study			
MNA	=	Monitored Natural Attenuation	X	=	CERCLA Status	(3)	=	Amended ROD signed on June 20, 2000
NFA	=	No Further Action				(4)	=	IROD signed on June 29, 2000
NFRAP	=	No Further Remedial Action Plan						
PRAP	=	Proposed Remedial Action						
PA	=	Preliminary Assessment						

Table 3-3
Schedule for Preliminary Assessment Sites, FY06
MCB Camp Lejeune, North Carolina

ID	% Complete	Task Name	Start	Finish
1	100%	Draft PA Report	Fri 2/22/02	Fri 5/3/02
2	100%	Comment Period	Sat 5/4/02	Tue 2/22/05
3	93%	Final PA Report	Sat 5/4/02	Fri 10/28/05



Project: CT0-060
Date: Thu 4/27/06

Task Progress Tentative

Table 3-4
Schedule for Pre-Remedial Investigation Sites,FY06
MCB Camp Lejeune, North Carolina

ID	% Complete	Task Name	Start	Finish	Mar	Apr	May
1	100%	Final NA Report (Site 10)	Sat 3/5/05	Tue 5/10/05			
2	100%	Final NFA Report (Site 85)	Sat 3/5/05	Tue 5/10/05			

Project: CT0-060
Date: Thu 4/27/06

Task Progress Tentative

TABLE 3-5
Description of Operable Units
MCB Camp Lejeune, North Carolina

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

TABLE 3-5
Description of Operable Units
MCB Camp Lejeune, North Carolina

Operable Unit No.	Site No(s).	Site Name(s)	Primary Reasons for OU Selection
	80	Paradise Point (Golf Course Maintenance Area)	
12	3	Old Creosote Plant	Isolated site with unique waste source.
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	Former DRMO	Geographic location of sites and adjacent surface water body. Unique characteristic of suspected waste (solvents).
	93	TC-942	
17	90	Building BB-9	Former UST sites with similar contamination detected in groundwater.
	91	Building BB-51	
	92	Building BB-46	
18	94	Building 1613	Geographic location of site, within Site 78, and similar contaminants adjacent shallow groundwater plume. Former UST site.
19	84	Building 45 Area	Isolated site with unique waste (PCBs, POL).
20	86	Tank Area AS419-AS421 at MCAS	Operable Unit created for Site 86 due to increasing levels of VOCs. Site 86 was originally included under OU 6.
21	73	Courthouse Bay	Unique characteristic of suspected wastes
		Liquids Disposal Area	(POL, solvents).
22	95	Jaybird Road Dipping Vat	Suspected wastes
		Magnolia Road Dipping Vat	
		Lyman Road Dipping Vat	

TABLE 3-6
Summary of Activities at Operable Units
MCB Camp Lejeune, North Carolina

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
1	24	Final LTM Report	FY 01	FY 01	FY 02	FY 02	FY 02	
1	78	Interim Remedial Action RI	FY 91	FY 91	FY 92	FY 92	April 16, 1992	
		Interim Remedial Action FS	FY 91	FY 91	FY 92	FY 92	April 16, 1992	
		Interim Remedial Action PRAP	FY 91	FY 91	FY 92	FY 92	May 8, 1992	
		Interim Remedial Action ROD	FY 91	FY 91	FY 92	FY 92	September 23, 1992	September 23, 1992
		Interim Remedial Action Design	FY 92	FY 92	FY 94	FY 93	June 18, 1993	
		Technology Evaluation Report	FY 02	FY 02	FY 02	FY 02	April 16, 2002	
		Technology Evaluation Summary	FY 02	FY 02	FY 02	FY 02	July 30, 2002	
		Treatability Study/Pilot Test Work Plan	FY 02	FY 02	FY 03	FY 03	February 20, 2003	
		Pilot Study Test	FY 03	FY 03	FY 04	FY 04	FY 04	
		Pilot Study Report	FY 04	--	FY 04	FY 05	September 12, 2005	
		Amended PRAP	FY 04	--	FY 07	--	--	
		Amended ROD	FY 04	--	FY 07	--	--	
1	21, 24, and 78	Project Plans	FY 92	FY 92	FY 93	FY 93	March 11, 1993	
		RI	FY 93	FY 93	FY 94	FY 94	June 23, 1994	
		FS	FY 94	FY 94	FY 94	FY 94	July 22, 1994	
		PRAP	FY 94	FY 94	FY 94	FY 94	July 22, 1994	
		ROD	FY 94	FY 94	FY 94	FY 94	September 8, 1994	September 15, 1994
		LUC	FY 99	FY 99	FY 00	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
2	6, 9, and 82	Project Plans	FY 91	FY 91	FY 92	FY 92	May 18, 1992	
		RI	FY 92	FY 92	FY 94	FY 93	August 20, 1993	
		FS	FY 92	FY 92	FY 94	FY 93	August 20, 1993	
		PRAP	FY 92	FY 92	FY 94	FY 93	August 20, 1993	
		ROD	FY 92	FY 92	FY 94	FY 93	September 24, 1993	September 24, 1993
		Remedial Design	FY 94	FY 94	FY 95	FY 94	May 10, 1994	
		LUC	FY 99	FY 99	FY 00	FY 01	June 2001	

TABLE 3-6
Summary of Activities at Operable Units
MCB Camp Lejeune, North Carolina

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
3	48	Project Plans	FY 91	FY 91	FY 92	FY 92	May 18, 1992	
		RI	FY 92	FY 92	FY 94	FY 93	June 21, 1993	
		PRAP	FY 92	FY 92	FY 94	FY 93	June 21, 1993	
		ROD	FY 92	FY 92	FY 94	FY 93	July 26, 1993	September 10, 1993
4	41 and 74	Project Plans	FY 93	FY 93	FY 94	FY 94	December 2, 1993	
		RI	FY 94	FY 94	FY 95	FY 95	May 8, 1995	
		FS	FY 94	FY 94	FY 95	FY 95	May 8, 1995	December 5, 1995
		PRAP	FY 94	FY 94	FY 95	FY 95	May 8, 1995	
		ROD	FY 94	FY 94	FY 95	FY 95	October 17, 1995	
		LUC	FY 00	FY 00	FY 00	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
		Final OU4 Closeout Report	FY 06	FY 06	FY 06	FY 06		
4	74	Final LTM Report	FY 01	FY 01	FY 02	FY 04		
5	2	Project Plans	FY 92	FY 92	FY 93	FY 93	March 11, 1993	
		RI	FY 93	FY 93	FY 94	FY 94	June 14, 1994	
		FS	FY 93	FY 93	FY 94	FY 94	June 23, 1994	
		PRAP	FY 93	FY 93	FY 94	FY 94	June 23, 1994	
		ROD	FY 93	FY 93	FY 94	FY 94	September 8, 1994	September 15, 1994
		LUC	FY 99	FY 99	FY 00	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
6	36, 43, 44, and 54	Project Plans	FY 94	FY 94	FY 95	FY 95	December 2, 1994	
		RI	FY 95	FY 95	FY 97	FY 96	August 22, 1996	
		FS	FY 95	FY 95	FY 97	FY 98	June 24, 1998	
		Revised FS	FY02	FY 02	FY 02	FY 02	June 19, 2002	July 6, 2005
		PRAP	FY 95	FY 95	FY 97	FY 98	June 18, 1998	
		Revised PRAP	FY 02	FY 02	FY 02	FY 02	June 18, 2002	

TABLE 3-6
Summary of Activities at Operable Units
MCB Camp Lejeune, North Carolina

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
		Pre-Final ROD	FY 95	FY 96	FY 97	FY 04	February 21, 2004 Version 5	
		Final ROD	FY 95	FY 95	FY 97	FY 05	July 6, 2005	
		RD	FY 05	--	FY 05	FY 05	September 22, 2005	
6	36 and 43	EE/CA	FY 02	FY 02	FY 02	FY 03	October 22, 2002	
		Action Memorandum	FY 02	FY 02	FY 02	FY 03	November 20, 2002	
		Response Action Work Plan	FY 03	FY 03	FY 03	FY 03	February, 2003	
		Response Action Close Out Report	FY 03	FY 03	FY 03	FY 04	October, 2004	
7	1, 28, and 30	Project Plans	FY 93	FY 93	FY 94	FY 94	December 15, 1993	
		RI	FY 94	FY 94	FY 95	FY 96	June 29, 1995	
		FS	FY 94	FY 94	FY 95	FY 96	July 13, 1995	
		PRAP	FY 94	FY 94	FY 95	FY 96	July 13, 1995	
		ROD	FY 94	FY 94	FY 95	FY 96	December 13, 1995	May 16, 1996
		LUC	FY 99	FY 99	FY 00	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
		Final OU Close Out Report	FY 02	FY 02	FY 02	FY 02	September 6, 2002	
8	16	Project Plans	FY 94	FY 94	FY 94	FY 94	October 2, 1994	
		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	September 30, 1996
		LUC	FY 99	FY 99	FY 99	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
9	65	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	FY 98	July 31, 1998	September 30, 2001
		PRAP	FY 95	FY 95	FY 98	FY 01	July 18, 2001	
		ROD	FY 95	FY 95	FY 98	FY 01	August 24, 2001	

TABLE 3-6
Summary of Activities at Operable Units
MCB Camp Lejeune, North Carolina

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
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	September 15, 1994	September 15, 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	September 22, 1995	September 22, 1995
		RI	FY 94	FY 94	FY 95	FY 95	May 3, 1995	
		Treatability Study - Airsparge Trench	FY 96	FY 96	FY 96	FY 96	May 31, 1996	
		Interim Action Remedial Design	FY 97	FY 97	FY 97	FY 97	April 14, 1997	
		FS	FY 94	FY 94	FY 06	--	--	
		NAE Work Plans	FY 99	FY 99	FY 99	FY 99	December 4, 1998	
		Focused NAE Work Plans	FY 99	FY 99	FY 00	FY 01	January 7, 2002	
		Supplemental NAE Report	FY 02	FY 02	FY 02	FY 02	August 14, 2002	
		Final NAE Report	FY 01	FY 03	FY 01	FY 03	April 17, 2003	
		Technology Evaluation Report	FY 02	FY 03	FY 03	FY 04	December 2003	
		Treatability Study/Pilot Test Work Plan	FY 03	FY 03	FY 03	FY 04	February 3, 2004	
		Pilot Study Test	FY 03	FY 04	FY 04	FY 04	January 30, 2004	
		Pilot Study Report	FY 05	--	FY 05	FY 05	FY 05	
		EE/CA (Building G480) – Soil	FY 04	FY 04	FY 04	FY 06	--	
		Amended RI/FS	FY 94	--	FY 06	--	--	
		PRAP	FY 05	FY 05	FY 06	--	--	
		ROD	FY 04	--	FY 06	--	--	
		RD	FY 06	--	FY 07			
11	7	Project Plans	FY 94	FY 94	FY 94	FY 95	October 2, 1994	
		RI	FY 94	FY 94	FY 97	FY 96	February 6, 1996	

TABLE 3-6
Summary of Activities at Operable Units
MCB Camp Lejeune, North Carolina

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
		PRAP	FY 94	FY 95	FY 97	FY 96	November 27, 1996	
		ROD	FY 94	FY 96	FY 97	FY 97	April 10, 1997	August 21, 1997
11	80	Project Plans	FY 94	FY 94	FY 94	FY 95	October 2, 1994	
		TCRA Work Plan for Soils	FY 95	FY 95	FY 96	FY 96	April 10, 1996	
		TCRA Close Out Report	FY 95	FY 95	FY 96	FY 96	September 9, 1996	
		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	August 21, 1997
		Plat Map	FY 05	FY 05	FY 06	---	---	
12	3	Project Plans	FY 94	FY 94	FY 94	FY 95	October 2, 1994	
		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	April 3, 1997
		Amended ROD	FY 99	FY 99	FY 00	FY 00	July 28, 1999	June 20, 2000
		LUC	FY 99	FY 99	FY 00	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
13	63	Project Plans	FY 95	FY 95	FY 96	FY 95	September 1, 1995	
		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	April 3, 1997
		LUC	FY 00	FY 00	FY 00	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
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	
		Treatability Study	FY 97	FY 97	FY 98	FY 98	January 30, 1998	
		Final RI	FY 94	FY 94	FY 97	FY 99	October 4, 1999	

TABLE 3-6
Summary of Activities at Operable Units
MCB Camp Lejeune, North Carolina

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
		PRAP	FY 06	FY 94	FY 06	--	--	
		Pre-Final Interim	FY 94	FY 94	FY 97	FY 99	October 4, 1999	June 29, 2000
		Final Interim ROD	FY 99	FY 99	FY 00	FY 00	June 29, 2000	
		LUC	FY 00	FY 00	FY 00	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
		Amended ROD	FY 06		FY 06			
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	
		SEAR Investigation/Demonstration	FY 98	FY 98	FY 99	FY 99	January 25, 2000	
		Amended RI Work Plan	FY 02	FY 03	FY 03	FY 03	July 7, 2003	
		Amended RI	FY 02	FY 03	FY 06	--	--	
		EE/CA (Building 25) - Soil	FY 04	FY 04	FY 04	FY 04	September 24, 2004	
		FS	FY 05	--	FY 06	--	--	
		PRAP	FY 05	--	FY 07	--	--	
		ROD	FY 06	--	FY 07	--	--	
		RD	FY 06	--	FY 08	--	--	
16	89	Project Plans	FY 95	FY 95	FY 97	FY 97	February 20, 1997	
		Focused RI	FY 95	FY 96	FY 98	FY 98	June 15, 1998	
		Action Memo (Southern DRMO)	FY 00	FY 00	FY 00	FY 00	June 9, 2000	
		Remedial Design (Southern DRMO) for TCRA	FY 00	FY 00	FY 00	FY 00	June 16, 2000	
		TCRA (Southern DRMO) - Soil	FY 00	FY 01	FY 01	FY 01	June 2001	
		EE/CA (Southern DRMO) - Groundwater	FY 00	FY 01	FY 01	FY 03	November 1, 2002	
		ERH Pilot Study Work Plan	FY 02	FY 02	FY 02	FY 03	December 18, 2002	
		ERH Pilot Test Design	FY 02	FY 03	FY 03	FY 03	May 14, 2003	
		ERH Pilot Study	FY 01	FY 03	FY 02	--	--	
		ERH Pilot Study Report	FY 04	--	FY 04	--	--	
			FY 04	FY 04	FY 05	FY 05	--	

TABLE 3-6
Summary of Activities at Operable Units
MCB Camp Lejeune, North Carolina

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
		Amended RI (Site-wide)	FY 05	--	FY 06	FY 05	FY 05	
		FS (Site-wide)	FY 06	--	FY 06	--	July 13, 2005	
		PRAP	FY 07	--	FY 06			
		ROD	FY 07		FY 07			
		RD	FY 07		FY 07			
16	93	Project Plans	FY 95	FY 95	FY 97	FY 97	February 20, 1997	
		RI	FY 95	FY 96	FY 98	FY 98	June 15, 1998	
		Additional Plume Characterization Report	FY 02	FY 02	FY 02	FY 02	April 2, 2002	
		Technology Evaluation Report	FY 02	FY 03	FY 03	NA	NA	
		Treatability Study/Pilot Test Work Plan	FY 03	FY 03	FY 03	NA	NA	
		FS	FY 01	FY02	FY 06	--	--	
		PRAP	FY 06	--	FY 06	--	--	
		ROD	FY 06	--	FY 06	--		
		RD	FY 07	--	FY 07			
17	90, 91, and 92	Project Plans	FY 96	FY 96	FY 97	FY 96	June 31, 1996	
		Focused RI	FY 97	FY 97	FY 98	FY 01	April 27, 2001	
		PRAP	FY 98	FY 98	FY 98	FY 01	July 18, 2001	
		ROD	FY 98	FY 98	FY 98	FY 01	August 24, 2001	September 30, 2001
18	94	Project Plans	FY 03	FY 04	FY 04	FY 04	April16, 2004	
		RI Field Investigation	FY 04	FY 04	FY 04	FY 05	FY 05	
		RI Report	FY 04	FY 04	FY 04	FY 05	September 9, 2005	
		PRAP	FY 06		FY 06			
		ROD	FY 06		FY 06			

TABLE 3-6
Summary of Activities at Operable Units
MCB Camp Lejeune, North Carolina

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
19	84	SI	FY 95	FY 95	FY 99	FY 99	November 24, 1998	
		Trip Report	FY 99	FY 99	FY 99	FY 99	September 17, 1999	
		Project Plans	FY 99	FY 00	FY 00	FY 01	June 1, 2001	
		Non-TCRA Building 45 Work Plan	FY 02	FY 02	FY 02	FY 02	January 2, 2002	
		Phase I Response Action (Building 45)	FY 02	FY 02	FY 03	FY 03	January 15, 2003	
		Close Out	FY 00	FY 01	FY 02	FY 02	June 27, 2002	
		RI	FY 00	FY 02	FY 02	FY 02	June 4, 2002	
		FS	FY 00	FY 02	FY 02	FY 02	June 18, 2002	
		PRAP	FY 02	FY 02	FY 02	FY 03	October 22, 2002	
		EE/CA	FY 02	FY 02	FY 02	FY -2	November 20, 2002	
		Action Memorandum	FY 03	FY 03	FY 05	FY 03	--	
		CAP	FY 03	FY 03	FY 04		October 10, 2003	
		Phase II Response Action Work Plan	FY 03	FY 04	FY 04	--	--	
		Phase II Response Action Close Out	FY 00	FY 02	FY 05	--	--	
		Technical Evaluation	FY 05	FY 05	FY 06	--		
		ROD	FY 05	--	FY 07	--		
		RD				--		
20	86	Initial Project Plans	FY 94	FY 94	FY 95	FY 95	December 2, 1994	
		RI (under OU 6)	FY 95	FY 95	FY 97	FY 96	August 22, 1996	
		FS (under OU 6)	FY 95	FY 95	FY 97	FY 98	June 24, 1998	
		PRAP (under OU 6)	FY 95	FY 95	FY 97	FY 98	June 18, 1998	
		Amended RI	FY 00	FY 02	FY 02	FY 03	May 21, 2003	
		Technology Evaluation Report	FY 02	FY 02	FY 03	FY 03	December 2003	
		Treatability Study/Pilot Test Work Plan	FY 03	FY 03	FY 03	FY 04	April 5, 2004	
		Pilot Study Test	FY 04	FY 05	FY 05	--	--	
		Pilot Study Report	FY 05	--	FY 06	--	--	
		Amended FS	FY 06	--	FY 06	--	--	

TABLE 3-6
Summary of Activities at Operable Units
MCB Camp Lejeune, North Carolina

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
		Amended PRAP	FY 06	--	FY 07	--	--	
		ROD	FY 07	--	FY 07	--	--	
		RD	FY 07	--	FY 07	--	--	
21	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	
		Modeling Report	FY 97	FY 97	FY 98	FY 98	April 27, 1998	
		NAE Study	FY 99	FY 99	FY 00	FY 02	January 7, 2002	
		Technology Evaluation Report	FY 02	FY 02	FY 03	FY 03	May 8, 2003	
		Treatability Study/Pilot Test Work Plan	FY 03	FY 03	FY 03	FY 04	November 14, 2003	
		Pilot Study Test	FY 03	FY 04	FY 05	FY 05	--	
		Pilot Study Report	FY 05	--	FY 05	--	--	
		Amended RI	FY 06	FY 06	--	--		
		FS	FY 06	--	FY 06	--	--	
		PRAP	FY 06	--	FY 06	--	--	
		ROD	FY 07	--	FY 07	--	--	
		RD	FY 07	--	FY 07	--	--	
22	95	Site Investigation Work Plan	FY 06		FY 06			
		Site Investigation	FY 06		FY 06			
		Site Investigation Report	FY 06		FY 07			
Pre-RI Sites	10	Project Plans	FY 96	FY 96	FY 97	FY 98	January 20, 1998	
		SI	FY 98	FY 98	FY 99	FY 01	July 13, 2001	
		NFA	FY 01	FY 01	FY 02	FY 05	May 12, 2005	

TABLE 3-6
Summary of Activities at Operable Units
MCB Camp Lejeune, North Carolina

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
	12, 68, 75, 76, 85, 87	Project Plans	FY 95	FY 95	FY 95	FY 95	January 21, 1995	
		SI	FY 95	FY 95	FY 99	FY 99	November 24, 1998	
		EE/CA (Site 85)	FY 98	FY 98	FY 99	FY 99	September 10, 1999	
		Action Memorandum (Site 85)	FY 99	FY 99	FY 99	FY 99	September 17, 1999	
		NFA Document (Site 85)	FY 00	FY 01	FY 00	FY 05	May 12, 2005	
		NFA Document (Site 68)	FY 98	FY 98	FY 00	FY 01	May 8, 2001	
		NA Document (Sites 12, 75, 76, 87)	FY 98	FY 98	FY 00	FY 01	May 8, 2001	
PA Sites	PA Sites 902, 908, 1120, 1124, 1409, 1512, TC830, SAS113, AS116, AS119, M119, M315, and SM173	PA Report	FY 01	FY 02	FY 06	--	--	

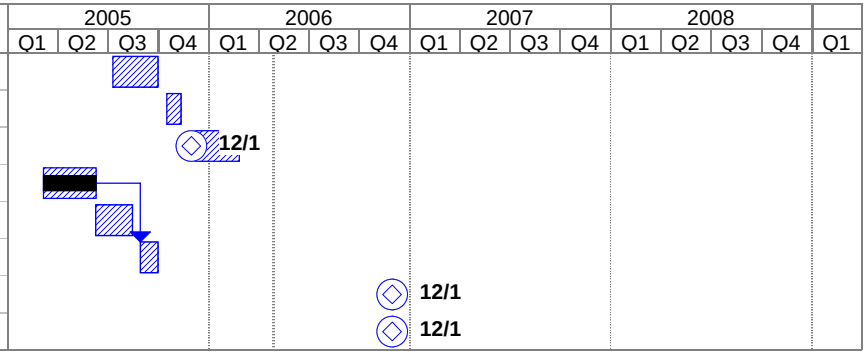
TABLE 3-7
Summary of Land Use Controls
MCB Camp Lejeune, North Carolina

Operable Unit	Sites	LUCIP Boundary	Estimated Area (Acres)	Final Submitted	Version II Update
1	21, 24, 78	Non-Industial Land Use Control - Soil	0.815	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater	102.28	June 15, 2001	July, 2002
		Aquifer Restriction (1000 feet)	501.54	June 15, 2001	July, 2002
2	6, 9, 82	Non-Industial Land Use Control - Soil	206.75	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater	99.4	June 15, 2001	July, 2002
		Aquifer Restriction (1000 feet)	404.91	June 15, 2001	July, 2002
4	41, 74	Non-Industial Land Use Control - Soil (Site 41)	36.6	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater (Site 41)	16.4	June 15, 2001	July, 2002
		Intrusive Activities - Soil (Site 41)	36.6	June 15, 2001	July, 2002
		Aquifer Restriction (500 feet - Site 41)	86.4	June 15, 2001	July, 2002
		Access Control Boundary (Site 41)	30	June 15, 2001	July, 2002
		Non-Industial Land Use Control - Soil (Site 74)	23.8	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater (Site 74)	13.9	June 15, 2001	July, 2002
		Intrusive Activities - Soil (Site 41)	23.8	June 15, 2001	July, 2002
		Aquifer Restriction (500 feet - Site 74)	71.2	June 15, 2001	July, 2002
		Access Control Boundary (Site 74)	8	June 15, 2001	July, 2002
5	2	Non-Industial Land Use Control - Soil	3.2	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater	1.8	June 15, 2001	July, 2002
		Aquifer Restriction (1000 feet)	31.5	June 15, 2001	July, 2002
6	36, 43, 44, 54	Non-Industrial Land Use Control - Soil (Site 36)		September 5, 2005	
		Intrusive Activities - Soil (Site 36)		September 5, 2005	
		Intrusive Activities - Groundwater (Site 36)		September 5, 2005	
		Aquifer Restriction (xxxx ft) - (Site 36)		September 5, 2005	
		Non-Industrial Land Use Control - Soil (43)		September 5, 2005	
		Intrusive Activities - Soil (Site 43)		September 5, 2005	
		Non-Industrial Land Use Control - Soil (Site 44)		September 5, 2005	
		Intrusive Activities - Soil (Site 44)		September 5, 2005	
		Non-Industrial Land Use Control - Soil (Site 54)		September 5, 2005	
		Intrusive Activities - Soil (Site 54)		September 5, 2005	
7	1, 28	Non-Industial Land Use Control - (combined)	33.8	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater (Site 28)	4	June 15, 2001	July, 2002
		Aquifer Restriction (1000 feet - combined)	171.6	June 15, 2001	July, 2002
8	16	Non-Industial Land Use Control - Soil	2.1	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater	0.69	June 15, 2001	July, 2002
		Aquifer Restriction (1000 feet)	60.2	June 15, 2001	July, 2002
11	80	TBD		TBD	
12	3	Non-Industial Land Use Control - Soil	0.14	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater	4.1	June 15, 2001	July, 2002
		Aquifer Restriction (1000 feet)	85.2	June 15, 2001	July, 2002
13	63	Intrusive Activities - Groundwater	2	June 15, 2001	July, 2002
		Aquifer Restriction (1000 feet)	100.1	June 15, 2001	July, 2002
14	69	Non-Industial Land Use Control - Soil	13.9	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater	8	June 15, 2001	July, 2002

		Aquifer Restriction (1000 feet) Site Access Controls	127.2 13.9	June 15, 2001 June 15, 2001	July, 2002 July, 2002
19	84	To be determined for final ROD	TBD	TBD	TBD
Pre-RI Site	68	Non-Industial Land Use Control - Soil Intrusive Activities - Groundwater Aquifer Restriction (1000 feet)	 202.69 	June 15, 2001 June 15, 2001 June 15, 2001	July, 2002 July, 2002 July, 2002

Table 3-8
Schedule for Operable Unit 1, FY06
MCB Camp Lejeune, North Carolina

ID	% Complete	Task Name	Start	Finish
1	75%	LTM Field Investigation	Mon 7/11/05	Fri 9/30/05
2	50%	Annual Monitoring Report	Mon 10/17/05	Fri 11/11/05
3	1%	Final Site 24 TM Close Out Report	Thu 12/1/05	Sat 2/25/06
4	100%	Draft Pilot Study Evaluation Report	Mon 3/7/05	Fri 6/10/05
5	75%	Comment Period	Fri 6/10/05	Mon 8/15/05
6	0%	Final Pilot Study Evaluation Report	Tue 8/30/05	Fri 9/30/05
7	0%	Ammended PRAP (Site 78)	Fri 12/1/06	Fri 12/1/06
8	0%	Amended ROD (Site78)	Fri 12/1/06	Fri 12/1/06

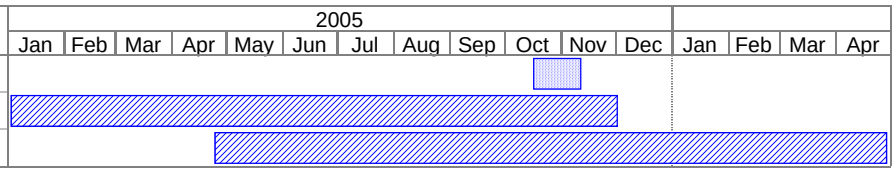


Project: CT0-060
Date: Thu 4/27/06

Task
Progress
Milestone
Tentative Schedule
Dates to be determined

Table 3-9
Schedule for Operable Unit 2, FY06
MCB Camp Lejeune, North Carolina

ID	% Complete	Task Name	Start	Finish
1	0%	Annual Monitoring Report	Mon 10/17/05	Fri 11/11/05
2	75%	Technical Evaluation Report	Mon 1/3/05	Thu 12/1/05
3	20%	Pilot Study	Mon 4/25/05	Fri 4/28/06

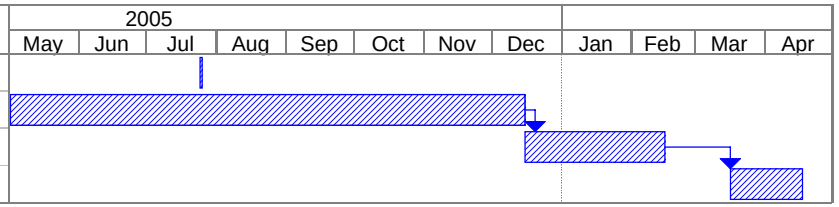


Project: CT0-060
Date: Mon 5/1/06

Task
Progress
Milestone
Tentative Schedule

Table 3-10
Schedule for Operable Unit No. 4, FY06
MCB Camp Lejeune, North Carolina

ID		% Complete	Task Name	Start	Finish
1		0%	Annual Monitoring Report	Mon 7/25/05	Mon 7/25/05
2		45%	Draft OU 4 Close Out Report	Mon 5/2/05	Thu 12/15/05
3		0%	Comment Period	Fri 12/16/05	Wed 2/15/06
4		0%	Final OU 4 Close Out Report	Fri 3/17/06	Mon 4/17/06



Project: CT0-060
Date: Mon 5/1/06

Task
Progress
Milestone
Tentative Schedule

Table 3-11
Schedule for Operable Unit No. 5, FY06
MCB Camp Lejeune, North Carolina

ID		% Complete	Task Name	Start	Finish	2005										
						Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1		0%	Annual Monitoring Report	Tue 8/23/05	Tue 10/31/06											

Project: CT0-060
Date: Mon 5/1/06

Task
Progress
Milestone
Tentative Schedule

Table 3-11
Schedule for Operable Unit No. 5, FY06
MCB Camp Lejeune, North Carolina

ID		% Complete	Task Name	Start	Finish		2006								
						Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1		0%	Annual Monitoring Report	Tue 8/23/05	Tue 10/31/06										

Project: CT0-060
Date: Mon 5/1/06

Task
Progress
Milestone
Tentative Schedule

Table 3-11
Schedule for Operable Unit No. 5, FY06
MCB Camp Lejeune, North Carolina

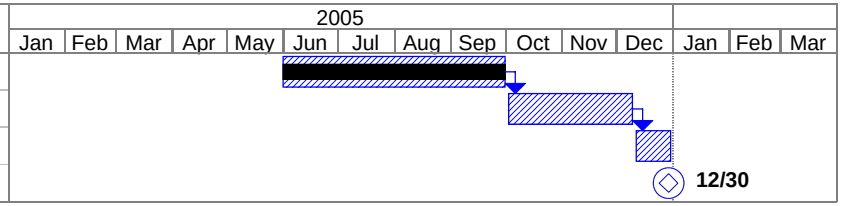
ID		% Complete	Task Name	Start	Finish										
									2007						
						Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
1		0%	Annual Monitoring Report	Tue 8/23/05	Tue 10/31/06										

Project: CT0-060
Date: Mon 5/1/06

Task
Progress
Milestone
Tentative Schedule

Table 3-12
Schedule for Operable Unit No. 6, FY06
MCB Camp Lejeune, North Carolina

ID		% Complete	Task Name	Start	Finish
1	✓	100%	Draft RD	Wed 6/1/05	Fri 9/30/05
2		25%	Comment Period	Mon 10/3/05	Fri 12/9/05
3		0%	Final RD	Mon 12/12/05	Fri 12/30/05
4		0%	RA	Fri 12/30/05	Mon 1/30/06



Project: CT0-060
Date: Mon 5/1/06

Task

Progress

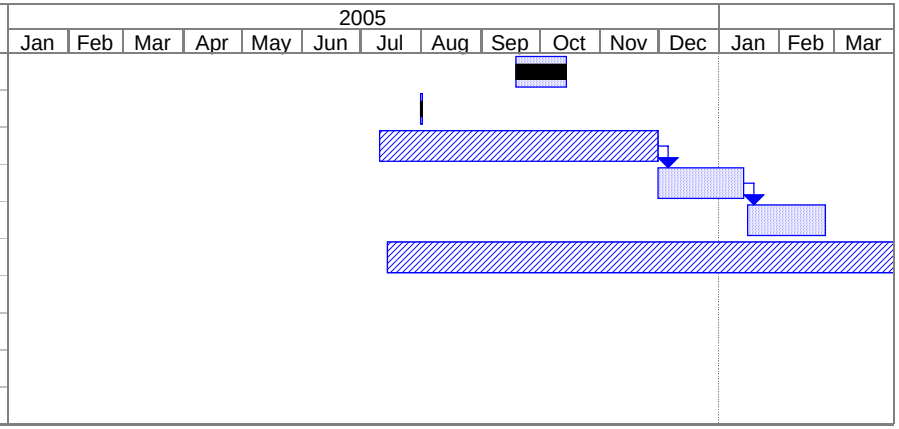
Milestone

Tentative Schedule

RA finish date to be determined

Table 3-13
Schedule for Operable Unit No. 10, FY06
MCB Camp Lejeune, North Carolina

ID		% Complete	Task Name	Start	Finish
1	✓	100%	Annual Monitoring Report	Mon 9/19/05	Fri 10/14/05
2	✓	100%	Pilot Study Complete	Mon 8/1/05	Mon 8/1/05
3		50%	Draft Pilot Study Evaluation Report	Mon 7/11/05	Wed 11/30/05
4		0%	Comment Period	Thu 12/1/05	Fri 1/13/06
5		0%	Final Pilot Study Evaluation Report	Mon 1/16/06	Fri 2/24/06
6		10%	Amend RI/FS	Fri 7/15/05	Fri 5/26/06
7		0%	PRAP	Mon 5/29/06	Fri 10/13/06
8		0%	ROD	Mon 10/16/06	Fri 3/23/07
9		0%	RD	Mon 3/26/07	Fri 6/29/07
10		0%	RA	Mon 6/25/07	Mon 6/25/07

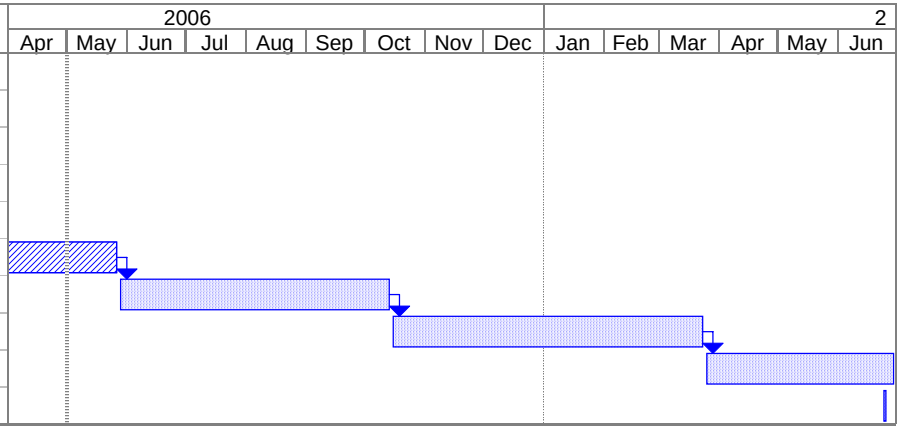


Project: CT0-060
Date: Mon 5/1/06

Task
Progress
Milestone
Tentative Schedule

Table 3-13
Schedule for Operable Unit No. 10, FY06
MCB Camp Lejeune, North Carolina

ID		% Complete	Task Name	Start	Finish
1	✓	100%	Annual Monitoring Report	Mon 9/19/05	Fri 10/14/05
2	✓	100%	Pilot Study Complete	Mon 8/1/05	Mon 8/1/05
3		50%	Draft Pilot Study Evaluation Report	Mon 7/11/05	Wed 11/30/05
4		0%	Comment Period	Thu 12/1/05	Fri 1/13/06
5		0%	Final Pilot Study Evaluation Report	Mon 1/16/06	Fri 2/24/06
6		10%	Amend RI/FS	Fri 7/15/05	Fri 5/26/06
7		0%	PRAP	Mon 5/29/06	Fri 10/13/06
8		0%	ROD	Mon 10/16/06	Fri 3/23/07
9		0%	RD	Mon 3/26/07	Fri 6/29/07
10		0%	RA	Mon 6/25/07	Mon 6/25/07



Project: CT0-060
Date: Mon 5/1/06

Task
Progress
Milestone
Tentative Schedule

Table 3-14
Schedule for Operable Unit No. 12, FY06
MCB Camp Lejeune, North Carolina

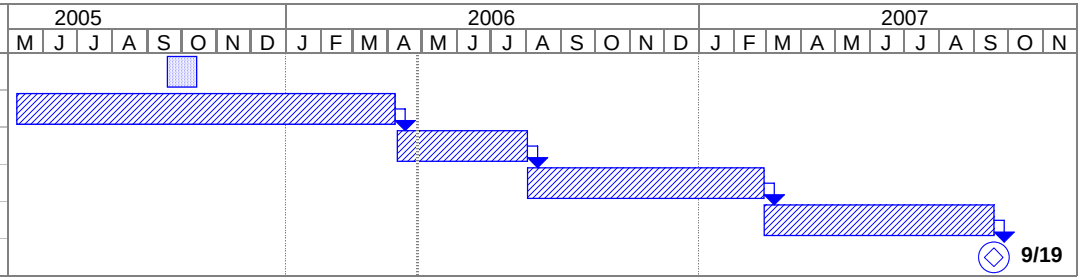
ID		% Complete	Task Name	Start	Finish	2005			
						Jun	Jul	Aug	Sep
1		0%	Annual Monitoring Report	Wed 6/8/05	Fri 9/2/05				

Project: CT0-060
Date: Mon 5/1/06

Task
Progress
Milestone
Tentative Schedule

Table 3-15
Schedule for Operable Unit No. 14, FY06
MCB Camp Lejeune, North Carolina

ID	% Complete	Task Name	Start	Finish
1	0%	Annual Monitoring Report	Mon 9/19/05	Fri 10/14/05
2	15%	Amend RI/FS	Mon 5/9/05	Fri 4/7/06
3	0%	Amended PRAP	Mon 4/10/06	Wed 8/2/06
4	0%	ROD	Thu 8/3/06	Tue 2/27/07
5	0%	RD	Wed 2/28/07	Tue 9/18/07
6	0%	RA	Wed 9/19/07	Wed 9/19/07

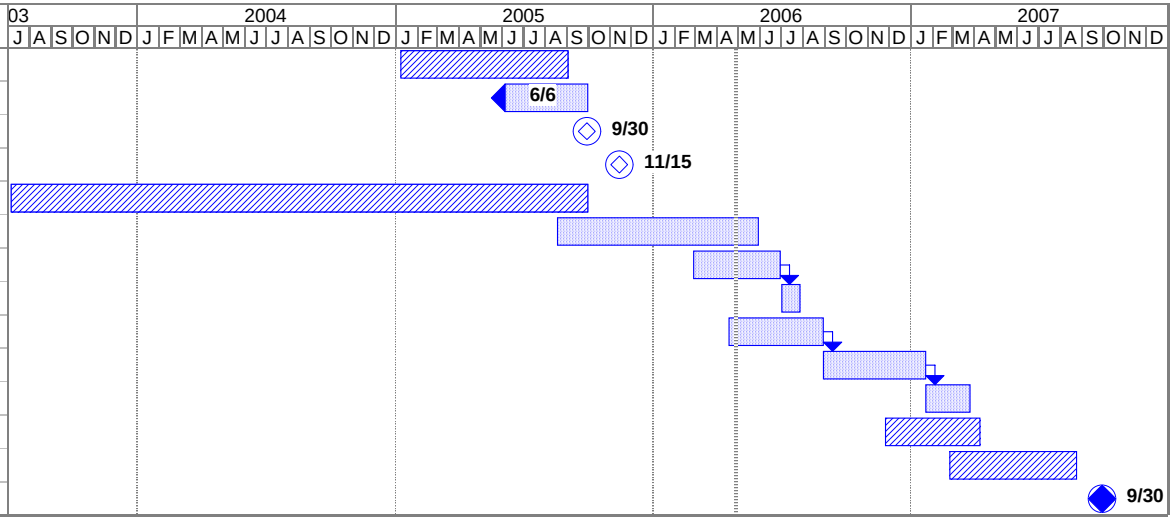


Project: CT0-060
Date: Thu 4/27/06

Task
Progress
Milestone
Tentative Schedule
RA finish date to be determined

Table 3-16
Schedule for Operable Unit No. 15, FY06
MCB Camp Lejeune, North Carolina

ID	% Complete	Task Name	Start	Finish
1	59%	Bldg. 25 Source Removal Action	Sun 1/9/05	Fri 9/2/05
2	45%	Draft Bldg. 25 Close Out Report	Mon 6/6/05	Fri 9/30/05
3	0%	Comment Period	Fri 9/30/05	Tue 11/15/05
4	0%	Final Bldg. 25 Close Out Report	Tue 11/15/05	Thu 12/15/05
5	76%	Amended RI Field Work	Mon 7/7/03	Fri 9/30/05
6	0%	Draft Amended RI Report	Fri 8/19/05	Tue 5/30/06
7	0%	Comment Period	Tue 2/28/06	Fri 6/30/06
8	0%	Final Amended RI Report	Mon 7/3/06	Fri 7/28/06
9	0%	FS	Wed 4/19/06	Wed 8/30/06
10	0%	PRAP	Thu 8/31/06	Mon 1/22/07
11	0%	Comment Period	Tue 1/23/07	Mon 3/26/07
12	0%	ROD	Mon 11/27/06	Mon 4/9/07
13	0%	RD	Mon 2/26/07	Fri 8/24/07
14	0%	RA	Sun 9/30/07	Sun 9/30/07

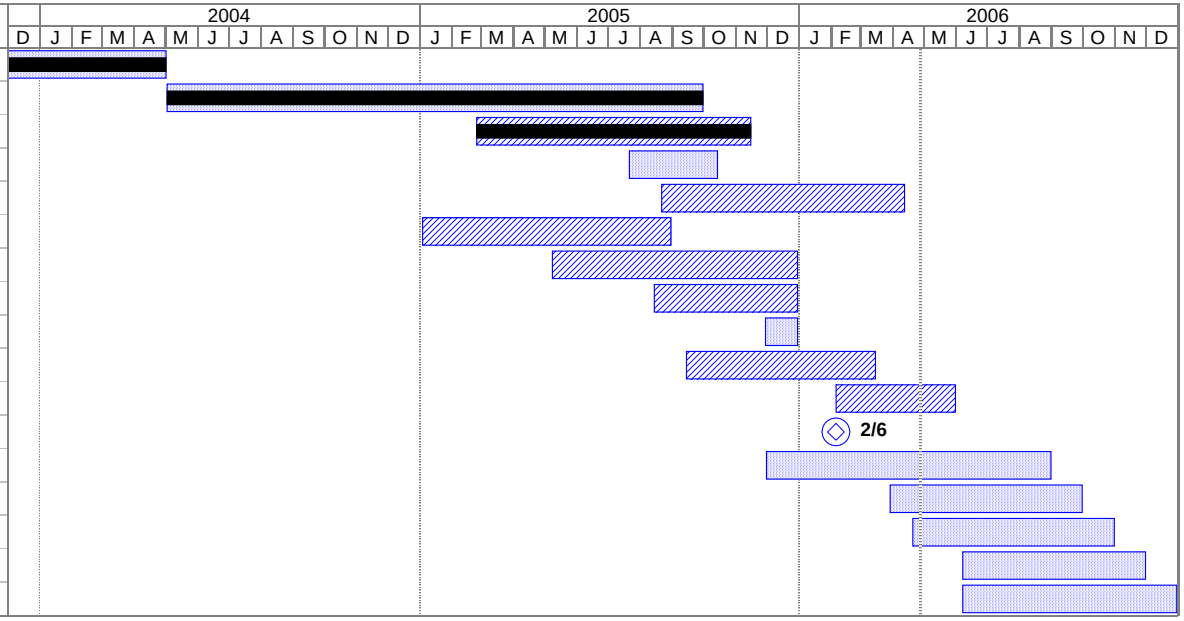


Project: CT0-060
Date: Thu 4/27/06

Task
Progress
Milestone
Tentative Schedule
RA finish date to be determined

Table 3-17
Schedule for Operable Unit No. 16, FY06
MCB Camp Lejeune, North Carolina

ID	% Complete	Task Name	Start	Finish
1	100%	Amended RI (Site 89) Field Investigation	Mon 12/1/03	Sat 5/1/04
2	100%	Draft Amended RI (site 89)	Mon 5/3/04	Fri 9/30/05
3	100%	Comment Period	Fri 2/25/05	Tue 11/15/05
4	0%	Additional RI/Eco Field Activities	Fri 7/22/05	Fri 10/14/05
5	0%	Final Amended RI (Site 89)	Mon 8/22/05	Wed 4/12/06
6	50%	FS (Site 93)	Tue 1/4/05	Tue 8/30/05
7	0%	FS (Site 89)	Mon 5/9/05	Fri 12/30/05
8	0%	PRAP (Sites 93)	Mon 8/15/05	Fri 12/30/05
9	0%	Comment Period	Wed 11/30/05	Fri 12/30/05
10	0%	IROD (Sites 93)	Thu 9/15/05	Wed 3/15/06
11	0%	RD (Site 93)	Mon 2/6/06	Wed 5/31/06
12	0%	RA (Site 93)	Mon 2/6/06	Fri 9/29/06
13	0%	OU16 PRAP (Site 89)	Thu 12/1/05	Thu 8/31/06
14	0%	Comment Period	Thu 3/30/06	Sat 9/30/06
15	0%	OU16 ROD (Site 89)	Fri 4/21/06	Tue 10/31/06
16	0%	RD (Site 89)	Thu 6/8/06	Thu 11/30/06
17	0%	RA (Site 89)	Thu 6/8/06	Sat 12/30/06

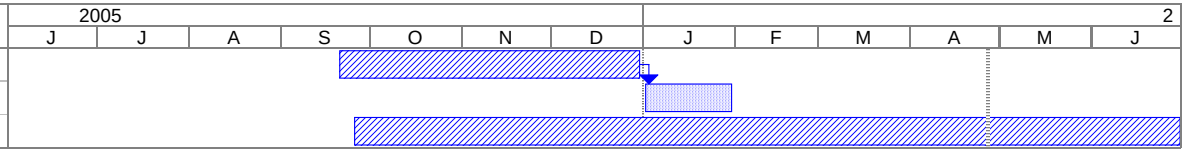


Project: CT0-060
Date: Thu 4/27/06

Task
Progress
Milestone
Tentative Schedule
RA finish date to be determined

Table 3-18
Schedule for Operable Unit No. 18, FY06
MCB Camp Lejeune, North Carolina

ID	% Complete	Task Name	Start	Finish
1	0%	PRAP	Wed 9/21/05	Fri 12/30/05
2	0%	Comment Period	Mon 1/2/06	Mon 1/30/06
3	0%	ROD	Mon 9/26/05	Fri 6/30/06

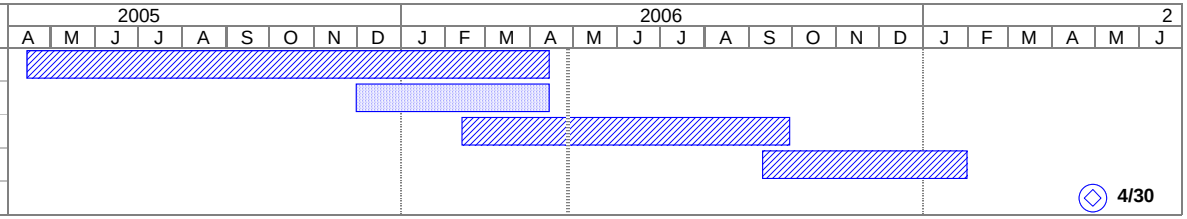


Project: CT0-060
Date: Thu 4/27/06

Task
Progress
Milestone
Tentative Schedule
RA finish date to be determined

Table 3-19
Schedule for Operable Unit No. 19, FY06
MCB Camp Lejeune, North Carolina

ID	% Complete	Task Name	Start	Finish
1	10%	Phase III Site Evaluation	Fri 4/15/05	Fri 4/14/06
2	0%	Phase III Report	Thu 12/1/05	Fri 4/14/06
3	0%	ROD	Mon 2/13/06	Fri 9/29/06
4	0%	RD	Mon 9/11/06	Wed 1/31/07
5	0%	RA	Mon 4/30/07	Mon 4/30/07

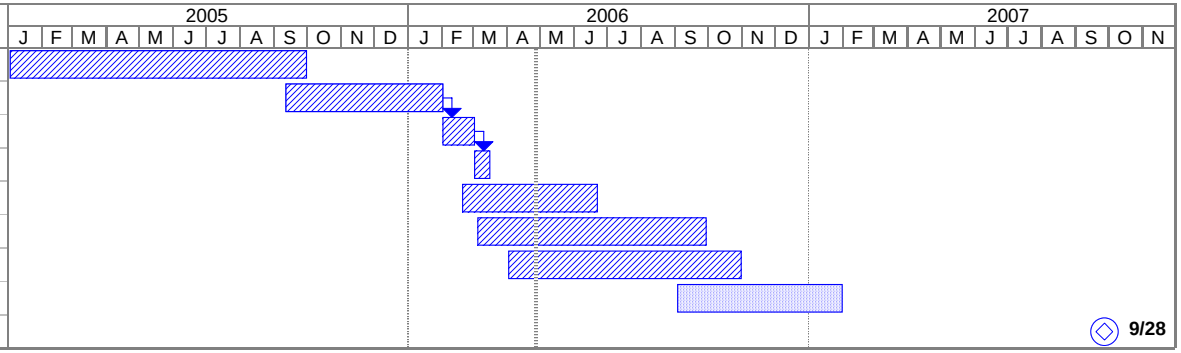


Project: CT0-060
Date: Thu 4/27/06

Task
Progress
Milestone
Tentative Schedule
RA finish date to be determined

Table 3-20
Schedule for Operable Unit No. 20, FY06
MCB Camp Lejeune, North Carolina

ID	% Complete	Task Name	Start	Finish
1	75%	Field Pilot Study	Tue 1/4/05	Fri 9/30/05
2	14%	Draft Pilot Study Evaluation Report	Mon 9/12/05	Wed 2/1/06
3	0%	Comment Period	Thu 2/2/06	Thu 3/2/06
4	0%	Final Pilot Study Evaluation Report	Fri 3/3/06	Thu 3/16/06
5	0%	Amended FS Report	Mon 2/20/06	Thu 6/22/06
6	0%	PRAP	Mon 3/6/06	Fri 9/29/06
7	0%	ROD	Mon 4/3/06	Tue 10/31/06
8	0%	RD	Mon 9/4/06	Wed 1/31/07
9	0%	RA	Fri 9/28/07	Fri 9/28/07

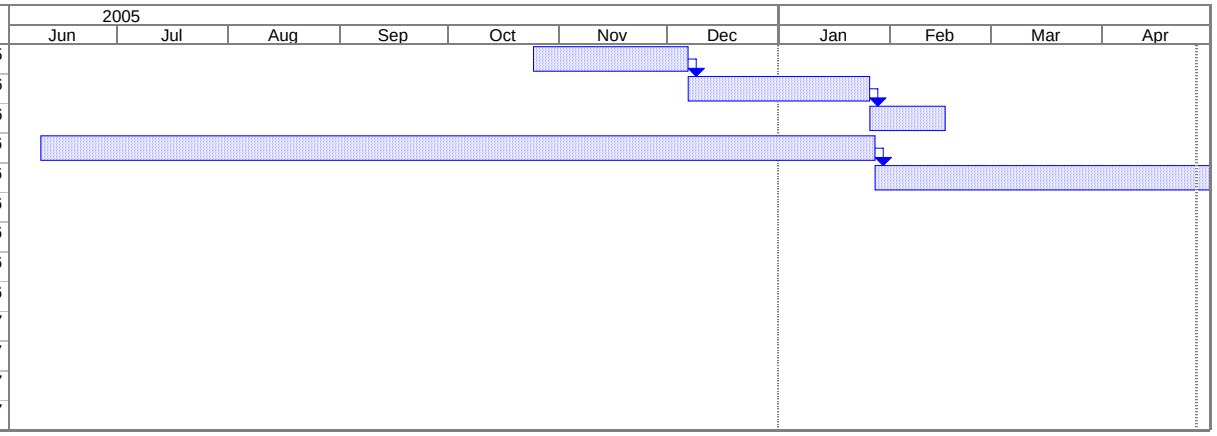


Project: CT0-060
Date: Thu 4/27/06

Task
Progress
Milestone
Tentative Schedule
RA finish date to be determined

Table 3-21
Schedule for Operable Unit No. 21, FY06
MCB Camp Lejeune, North Carolina

ID	% Complete	Task Name	Start	Finish
1	0%	Draft Pilot Study Report	Tue 10/25/05	Tue 12/6/05
2	0%	Regulatory Review	Wed 12/7/05	Thu 1/26/06
3	0%	Final Pilot Study Report	Thu 1/26/06	Thu 2/16/06
4	0%	Amended RI Work	Fri 6/10/05	Fri 1/27/06
5	0%	Draft Amended RI Report	Sat 1/28/06	Fri 6/30/06
6	0%	Comment Period	Mon 7/3/06	Fri 8/18/06
7	0%	Final Amended RI Report	Mon 8/21/06	Fri 10/6/06
8	0%	FS	Mon 7/24/06	Fri 11/17/06
9	0%	PRAP	Mon 10/16/06	Fri 12/1/06
10	0%	Comment Period	Mon 12/4/06	Thu 1/11/07
11	0%	ROD	Mon 11/13/06	Fri 2/2/07
12	0%	RD	Mon 2/5/07	Mon 6/11/07
13	0%	RA	Tue 6/12/07	Tue 6/12/07



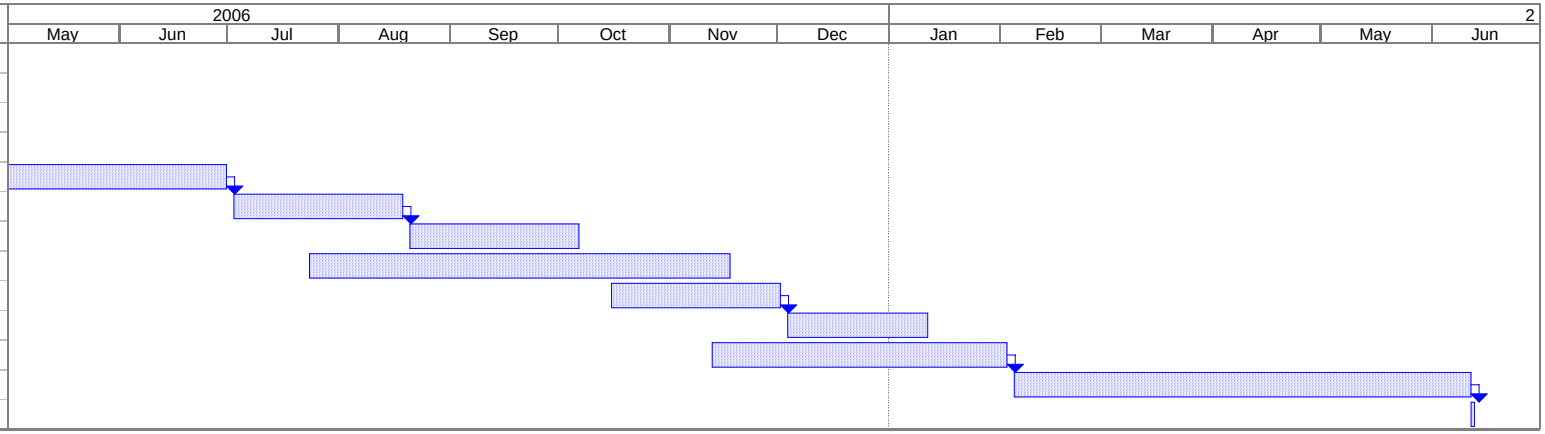
Project: CT0-060
Date: Thu 4/27/06

Task

Progress

Table 3-21
Schedule for Operable Unit No. 21, FY06
MCB Camp Lejeune, North Carolina

ID	% Complete	Task Name
1	0%	Draft Pilot Study Report
2	0%	Regulatory Review
3	0%	Final Pilot Study Report
4	0%	Amended RI Work
5	0%	Draft Amended RI Report
6	0%	Comment Period
7	0%	Final Amended RI Report
8	0%	FS
9	0%	PRAP
10	0%	Comment Period
11	0%	ROD
12	0%	RD
13	0%	RA



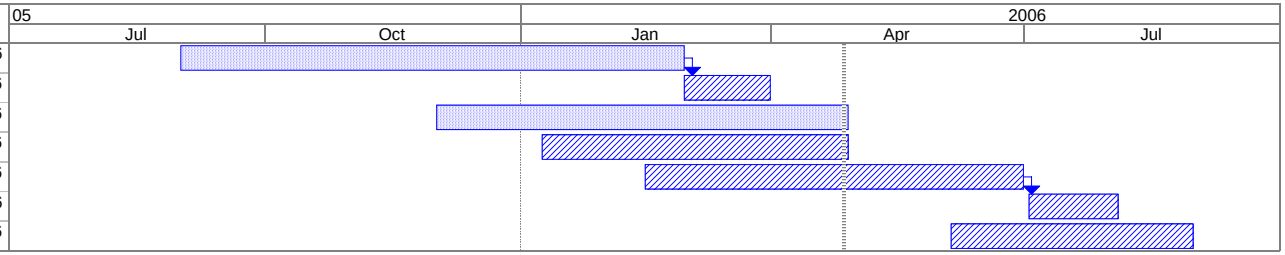
Project: CT0-060
Date: Thu 4/27/06

Task

Progress

Table 3-22
Schedule for Operable Unit No.22, FY06
MCB Camp Lejeune, North Carolina

ID	% Complete	Task Name	Start	Finish
1	0%	Draft SI Work Plan	Thu 9/1/05	Tue 2/28/06
2	0%	Comment Period	Wed 3/1/06	Fri 3/31/06
3	0%	Final SI Work Plan	Fri 12/2/05	Fri 4/28/06
4	0%	SI Field Investigation	Mon 1/9/06	Fri 4/28/06
5	0%	Draft SI Report	Wed 2/15/06	Fri 6/30/06
6	0%	Comment Period	Mon 7/3/06	Thu 8/3/06
7	0%	Final SI Report	Mon 6/5/06	Wed 8/30/06



Project: CT0-060
Date: Thu 4/27/06

Task Progress Tentative

Table 3-23
Summary of Site LTM Recommendations
MCB Camp Lejeune, North Carolina

Site	Current Monitoring Status	Recommendations
OU 1, Site 78	54 monitoring wells, 11 recovery wells VOCs and NAIPs all sampled semiannually	39 monitoring wells, 10 recovery wells VOCs 5 wells sampled quarterly, remaining annually
OU 2, Sites 6 & 82	40 monitoring wells, 3 sediment/surface water locations VOCs and NAIPs 8 wells sampled annually, remaining semiannually	38 monitoring wells, 3 sediment/surface water locations VOCs 2 wells sampled quarterly, 1 well and 3 surface water/sediment locations semiannually, remaining annually
OU 4, Site 41	7 monitoring wells, 3 sediment/surface water locations VOC and metals Semiannual sampling	Close site, discontinue LTM
OU 5, Site 2	6 monitoring wells VOCs Semiannual sampling	5 monitoring wells VOCs annual sampling
OU 6, Site 36	12 monitoring wells, 4 surface water locations VOCs and NAIPs Semiannual sampling	10 monitoring wells, 4 surface water locations VOCs and NAIPs surface water locations sampled semiannually, wells annually
OU 10, Site 35	23 monitoring wells, 3 surface water locations VOCs and NAIPs Semiannual sampling	On-going investigation, discontinue LTM
OU 12, Site 3	4 monitoring wells VOCs, SVOCs Semiannual sampling	4 monitoring wells VOCs, SVOCs annual sampling
OU 14, Site 69	15 monitoring wells VOCs and NAIPs Semiannual sampling	On-going investigation, discontinue LTM
OU 16, Site 89	19 monitoring wells, 7 surface water/sediment locations VOCs and NAIPs Semiannual sampling	On-going investigation, discontinue LTM
OU 16, Site 93	8 monitoring wells VOCs and NAIPs Semiannual sampling	On-going investigation, discontinue LTM
OU 20, Site 86	19 monitoring wells VOCs and NAIPs Annual sampling	On-going investigation, discontinue LTM
OU 21, Site 73	28 monitoring wells VOCs and NAIPs Semiannual sampling	On-going investigation, discontinue LTM

Notes
VOCs = volatile organic compounds
NAIPs = natural attenuation indicator parameters
SVOCs = semivolatile organic compounds
LTM = long term monitoring

TABLE 3-24

Summary of Current and Recommended LTM Sample Points

MCB Camp Lejeune, North Carolina

Site 78		Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site
North	**South**	**6 & 82**	**41**	**2**	**36**	**35**	**3**	**69**	**89**	**93**	**86**	**73**
GW22	GW01	GW01	GW11	GW03	GW03	MW10	MW02	GW01	MW02	MW01	AS428-GW06	A47/3-8
GW23	GW04-1	GW01D	GW01	GW03IW	GW09	MW10IW	MW02IW	GW02	MW02IW	MW02	GW08IW	A47/3-11
GW24-1	GW05	*GW01DA*	GW02	GW05	GW10	MW14	MW06	GW02DW	MW04	MW04	GW10IW	A47/3-16
GW24-2	GW08	*GW01DB*	GW03	GW07	GW10IW	MW14IW	MW11	GW03	MW04IW	MW05	GW15DW	MW09
GW24-3	GW09-1	GW03	GW09	GW08	GW10DW	MW31		GW03DW	MW05	MW06	GW15IW	MW09IW
GW25	GW09-3	MW03	GW08	GW12	GW13	MW31IW		GW10	MW05IW	MW07	GW16IW	MW13
GW40	GW10	MW03D	GW11DW		GW13IW	MW38IW		GW12	MW06IW	MW08	GW19DW	MW13DW
GW41	GW11	GW11	UT-SW01		GW16IW	MW40IW		GW12DW	MW08IW	MW09	GW23IW	MW14
GW43	GW39	*GW15D*	TC-SW12		GW18	MW47		GW13	MW09		GW24IW	MW15
GW44	GW42	GW16	DD-SD02		GW18IW	MW47IW		GW13DW	MW10		GW25IW	MW20DW
GW45	GW49	GW23			GW20IW	MW55		GW14	MW11		GW28IW	MW27
GW46	GW50	GW27DW			GW21IW	MW55IW		GW14IW	MW14		GW29IW	MW27DW
GW47	GW51	*GW27DA*			SW01	MW61		GW15	MW14IW		GW30IW	MW29
GW48	GW52	GW28S			SW02	MW62		GW15IW	MW15		GW31DW	MW31DW
GW69	GW53	GW28DW			SW03	MW63IW		GW15DW	MW15IW		GW31IW	MW35
GW70	GW54	GW30			SW04	MW64IW			MW16		GW32IW	MW39DW
GW71	GW55	GW31				MW65IW			MW16IW		GW33IW	MW40DW
GW72	GW56	GW32				MW72			MW17		GW33DW	MW43DW
RW10	GW57	GW33				MW72IW			MW17IW		GW34IW	MW44DW
RW11	GW58	GW34				MW73			SW02			MW45DW
RW12	GW59	*GW35D*				MW73IW			SW03			MW46DW
	GW60	*GW36D*				MW74			SW04			MW47DW
	GW61	GW37D				MW74IW			SW06			MW48DW
	GW62	*GW38D*				SW01			SW07			MW49DW
	GW63	*GW40DW*				SW02			SW09			MW49IW
	GW64	GW41				SW03			SW11			MW50DW
	GW65	GW42							SD02			MW52DW
	GW66	GW43DW							SD03			MW63DW
	GW67	82-MW02							SD04			
	GW68	82-MW03							SD06			
	GW73	SRW01							SD07			
	GW74	SRW02							SD09			
	GW75	SRW03							SD11			
	GW76	SRW04										
	GW77	SRW05										
	GW78	SRW06										
	RW05	DRW01										
	RW06	DRW02										
	RW07	DRW03										
	RW08	DRW04										

TABLE 3-24

Summary of Current and Recommended LTM Sample Points

MCB Camp Lejeune, North Carolina

Site 78		Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site
North	**South**	**6 & 82**	**41**	**2**	**36**	**35**	**3**	**69**	**89**	**93**	**86**	**73**
	RW09	SW01										
	RW13	SW02										
	RW14	SW03										
	RW15	SD01										
		SD02										
		SD03										

Notes:

Italics indicates wells that are sampled on an annual basis.

Shaded sampling points are recommended for removal from LTM

SECTION 4

Site Management Schedules

This section presents project schedules for FYs 2006 through 2008. These schedules are adjusted annually within the SMP or periodically throughout the fiscal year. The OUs and sites that will be active during FY 2006 are summarized below.

Operable Unit	Site	FY 2006 Activities
-	PA sites	Finalize Preliminary Assessment Report.
1	78	Groundwater pump and treatment (limited to the areas outside of the pilot scale tests), semiannual MNA sampling of surficial and Castle Hayne aquifers, begin Amended PRAP/ROD process.
2	82	Groundwater pump and treatment system; groundwater pilot study, semiannual monitoring of groundwater and surface water/sediment.
4	41 and 74	Complete Final OU Closeout Report.
5	2	Semiannual groundwater monitoring.
6	36, 43, 44, and 54	Complete plat maps, semiannual MNA sampling of groundwater, and surface water sampling at Site 36.
10	35	Complete Amended RI sampling activities, ongoing operation of air sparge system, complete the draft pilot study evaluation report.
12	3	Monitor surficial aquifer.
14	69	Conduct Amended RI sampling activities.
15	88	Complete the Amended RI and FS.
16	89 and 93	Complete the RI/FS.
18	94	Complete the NFA PRAP and ROD.
19	84	Conduct technical evaluation of the site.
20	86	Complete the pilot study on TCE groundwater plume, begin FS.
21	73	Complete the draft pilot study evaluation report, conduct Amended RI sampling activities, and begin FS.
22	95	Site Investigation sampling and report.

The project schedules for active OUs are presented in Tables 3-8 through 3-22. A project schedule for PA and Pre-RI sites is presented in Tables 3-3 and 3-4, respectively. The project schedules include a detailed list of activities projected for FY 2006 and beyond, the duration of each IR Program activity, the deliverables (e.g., RI/FS Project Plans), and submittal dates. Deliverables projected for FY 2006 and beyond by OU are summarized in Table 4-1. Not all of the dates are available at this time for all future document submittals. These dates are listed as to be determined (TBD) and will be updated in future deliveries of the SMP. For the sites currently in the monitoring program, the schedules have been projected through FY

2006, although monitoring at some of the sites will go beyond FY 2006.

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

- Draft Documents: 60 days to review and 60 days to prepare and submit the Final document.
- Pre-Final Documents (ROD only): 30 days to review and 30 days to finalize. Pre-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 schedules for sites where LTM has been implemented do not indicate a government review period. Reports submitted for an LTM event are used to document recommendations and modifications to the long-term sampling requirements. Comments will be requested to implement modifications or at the 5-year review period.

TABLE 4-1
Document Submittals by Operable Unit
MCB Camp Lejeune, North Carolina

Operable Unit	Sites	Activity	Primary Document Submittal	Submittal Date/Anticipated Submittal Date
1	78 and 24	Remedial Action	Annual Monitoring Report (Site 78)	November 14, 2003
		Remedial Action	Semi-Annual Monitoring Report (Site 78)	December 19, 2003
		Remedial Action	Semi-Annual Monitoring Report (Site 78)	April 16, 2004
		Remedial Action	Annual Monitoring Report (Site 78)	November 12, 2004
		Treatability Study	Draft OU 1 TS Report (Site 78)	June 5, 2005
		Treatability Study	Final OU 1 TS Report (Site 78)	September 12, 2005
		Proposed Remedial Action	Draft Amended PRAP (Site 78)	TBD-FY07
		Proposed Remedial Action	Final Amended PRAP (Site 78)	TBD-FY07
		Record of Decision	Draft Amended ROD (Site 78)	TBD-FY07
		Record of Decision	Pre-Final Amended ROD (Site 78)	TBD-FY07
		Record of Decision	Final Amended ROD (Site 78)	TBD-FY07
2	6 and 82	Remedial Action	Annual Monitoring Report	November 13, 2003
		Remedial Action	Semi-Annual Monitoring Report	December 19, 2003
		Remedial Action	Semi-Annual Monitoring Report	April 16, 2004
		Remedial Action	Annual Monitoring Report	November 12, 2004
		Post ROD	Draft Source Area Study Report	TBD-FY06
		Post ROD	Final Source Area Study Report	TBD-FY06
		Post ROD	Draft Wallace Creek Wells Report	TBD-FY06
		Post ROD	Final Wallace Creek Wells Report	TBD-FY06
		Post ROD	Draft Optimization Study Report	TBD-FY06
		Post ROD	Final Optimization Study Report	TBD-FY06
		Post ROD	Draft Technology Evaluation Report	TBD-FY06
		Post ROD	Final Technology Evaluation Report	TBD-FY06
4	41 and 74	Remedial Action	Semi-Annual Monitoring Report (Site 41)	November 28, 2003
		Remedial Action	Semi-Annual Monitoring Report (Site 41)	March 30, 2004
		Remedial Action	Annual Monitoring Report (Site 41)	August 6, 2004
		Remedial Action	Draft OU 4 Close Out Report	TBD-FY06
		Remedial Action	Final OU 4 Close Out Report	TBD-FY06
5	2	Remedial Action	Annual Monitoring Report	September 19, 2003
		Remedial Action	Semi-Annual Monitoring Report	January 16, 2004
		Remedial Action	Semi-Annual Monitoring Report	April 30, 2004
		Remedial Action	Annual Monitoring Report	August 27, 2004

TABLE 4-1
Document Submittals by Operable Unit
MCB Camp Lejeune, North Carolina

Operable Unit	Sites	Activity	Primary Document Submittal	Submittal Date/Anticipated Submittal Date
6	36, 43, 44, and 54	Interim Removal Action	Draft RA Close Out Report (Sites 36 and 43)	November 14, 2003
		Record of Decision	Pre-Final ROD V5	January 22, 2004
		Post Remedial Investigation	Semi-Annual Monitoring Report (Site 36)	January 30, 2004
		Interim Removal Action	Final RA Close Out Report (Site 36 and 43)	February 13, 2004
		Post Remedial Investigation	Semi-Annual Monitoring Report (Site 36)	June 11, 2004
		Record of Decision	Final ROD	July 23, 2004
		Post Remedial Investigation	Annual Monitoring Report (Site 36)	September 17, 2004
		Corrective Action Plan	Final CAP (Site 36)	December 17, 2004
		Remedial Design	Draft Remedial Design	August 9, 2005
		Remedial Design	Final Remedial Design	September 22, 2005
7	1 and 28	--	--	--
10	35	Treatability Study	Final Tech Evaluation Report	December 12, 2003
		Treatability Study	Final TS Work Plan	February 3, 2004
		Post Remedial Investigation	Semi-Annual Monitoring Report	February 13, 2004
		Post Remedial Investigation	Semi-Annual Monitoring Report	July 2, 2004
		Post Remedial Investigation	Annual Monitoring Report	October 15, 2004
		Interim Removal Action	Draft EE/CA-Bldg. 6480	September 9, 2004
		Interim Removal Action	Final EE/CA-Bldg. 6480	Transferred to UST program
		Treatability Study	Draft TS Report	TBD-FY06
		Treatability Study	Final TS Report	TBD-FY06
		Feasibility Study/Proposed Remedial Action	Draft FS/PRAP	TBD-FY06
		Feasibility Study/Proposed Remedial Action	Final FS/PRAP	TBD-FY06
		Record of Decision	Draft ROD	TBD-FY07
		Record of Decision	Pre-Final ROD	TBD-FY07
		Record of Decision	Final ROD	TBD-FY07
		Remedial Design	Draft Remedial Design Report	TBD-FY07
		Remedial Design	Final Remedial Design Report	TBD-FY07
12	3	Remedial Action	Semi-Annual Monitoring Report	November 28, 2003
		Remedial Action	Semi-Annual Monitoring Report	March 30, 2004
		Remedial Action	Annual Monitoring Report	August 6, 2004

TABLE 4-1
Document Submittals by Operable Unit
MCB Camp Lejeune, North Carolina

Operable Unit	Sites	Activity	Primary Document Submittal	Submittal Date/Anticipated Submittal Date
14	69	Remedial Action	Semi-Annual Monitoring Report	February 13, 2004
		Remedial Action	Semi-Annual Monitoring Report	July 2, 2004
		Remedial Action	Annual Monitoring Report	October 15, 2004
15	88	Interim Removal Action	Draft Bldg. 25 EE/CA	May 31, 2004
		Interim Removal Action	Final Bldg. 25 EE/CA	August 27, 2004
		Remedial Investigation	Draft Amended RI Report	TBD-FY06
		Remedial Investigation	Final Amended RI Report	TBD-FY06
		Feasibility Study	Draft FS	TBD-FY06
		Feasibility Study	Final FS	TBD-FY06
		Proposed Remedial Action Plan	Draft PRAP	TBD-FY07
		Proposed Remedial Action Plan	Final PRAP	TBD-FY07
		Record of Decision	Draft ROD	TBD-FY07
		Record of Decision	Pre-Final ROD	TBD-FY07
		Record of Decision	Final ROD	TBD-FY07
		Remedial Design	Draft Remedial Design Report	TBD-FY07
		Remedial Design	Final Remedial Design Report	TBD-FY07
16	89 and 93	Monitoring	Semi-Annual Monitoring Report	March 5, 2004
		Monitoring	Semi-Annual Monitoring Report	July 23, 2004
		Monitoring	Annual Monitoring Report	October 15, 2004
		Feasibility Study	Draft Feasibility Study (Site 93)	March 31, 2005
		Feasibility Study	Final Feasibility Study (Site 93)	September 30, 2005
		Treatability Study	Draft ERH Pilot Study Report (Site 89)	June 1, 2005
		Treatability Study	Final ERH Pilot Study Report (Site 89)	July 1, 2005
		Amended Remedial Investigation	Draft Amended RI Report (Site 89)	February 23, 2005
		Amended Remedial Investigation	Final Amended RI Report (Site 89)	TBD-FY06
		Feasibility Study	Draft FS Report (Sites 89)	TBD-FY06
		Feasibility Study	Final FS Report (Sites 89)	TBD-FY06
		Proposed Remedial Action Plan	Draft PRAP (Sites 89 and 93)	TBD-FY06
		Proposed Remedial Action Plan	Final PRAP (Sites 89 and 93)	TBD-FY06
		Record of Decision	Draft ROD (Sites 89 and 93)	TBD-FY07
		Record of Decision	Pre-Final ROD (Sites 89 and 93)	TBD-FY07
		Record of Decision	Final ROD (Sites 89 and 93)	TBD-FY07
		Remedial Design	Draft Remedial Design Report	TBD-FY07
		Remedial Design	Final Remedial Design Report	TBD-FY07

TABLE 4-1
Document Submittals by Operable Unit
MCB Camp Lejeune, North Carolina

Operable Unit	Sites	Activity	Primary Document Submittal	Submittal Date/Anticipated Submittal Date
18	94	Site Investigation	Draft Phase I SI Project Plans	December 5, 2003
		Site Investigation	Final Phase I SI Project Plans	April 30, 2004
		Site Investigation	Draft Phase I SI Report	July 30, 2004
		Site Investigation	Final Phase I SI Report	November 5, 2004
		Remedial Investigation	Draft RI Report	July 8, 2005
		Remedial Investigation	Final RI Report	September 9, 2005
		Proposed Remedial Action Plan	Draft PRAP	FY06
		Proposed Remedial Action Plan	Final PRAP	FY06
		Record of Decision	Draft ROD	FY06
		Record of Decision	Final ROD	FY06
19	84	Interim Removal Action	Final Phase II RA Work Plan	October 1, 2003
		Interim Removal Action	Draft RA Close Out Report	TBD-FY06
		Interim Removal Action	Final RA Close Out Report	TBD-FY06
		Corrective Action Plan	Final CAP	TBD-FY06
		Record of Decision	Draft Final ROD V2	TBD-FY07
		Record of Decision	Final ROD	TBD-FY07
		Remedial Design	Draft Remedial Design Report	TBD-FY07
		Remedial Design	Final Remedial Design Report	TBD-FY07
20	86	Treatability Study	Final Treatability Study Work Plan	June 2, 2004
		Feasibility Study	Draft Amended FS Report	TBD-FY06
		Proposed Remedial Action Plan	Draft PRAP	TBD-FY06
		Feasibility Study	Final Amended FS Report	TBD-FY06
		Proposed Remedial Action Plan	Final PRAP	TBD-FY06
		Record of Decision	Draft ROD	TBD-FY07
		Record of Decision	Pre-Final ROD	TBD-FY07
		Record of Decision	Final ROD	TBD-FY07
		Remedial Design	Draft Remedial Design Report	TBD-FY07
		Remedial Design	Final Remedial Design Report	TBD-FY07
21	73	Treatability Study	Final Treatability Study Work Plan	November 14, 2003
		Feasibility Study	Draft FS Report	TBD-FY06
		Proposed Remedial Action Plan	Draft PRAP	TBD-FY06
		Feasibility Study	Final FS Report	TBD-FY06
		Proposed Remedial Action Plan	Final PRAP	TBD-FY06
		Record of Decision	Draft ROD	TBD-FY07

TABLE 4-1
Document Submittals by Operable Unit
MCB Camp Lejeune, North Carolina

Operable Unit	Sites	Activity	Primary Document Submittal	Submittal Date/Anticipated Submittal Date
		Record of Decision	Pre-Final ROD	TBD-FY07
		Record of Decision	Final ROD	TBD-FY07
		Remedial Design	Draft Remedial Design Report	TBD-FY07
		Remedial Design	Final Remedial Design Report	TBD-FY07
22	95	Site Investigation	Draft Work Plan	TBD-FY06
		Site Investigation	Final Work Plan	TBD-FY06
		Site Investigation	Draft Report	TBD-FY06
		Site Investigation	Final Report	TBD-FY06
Pre-RI Sites	10, 12, 68, 75, 76, 85, and 87	No Action Document	Final NA Report (Site 85)	May 12, 2005
		No Action Document	Final NA Report (Site 10)	May 12, 2005
PA Sites	Buildings 902, 908, 1120, 1124, 1409, 1512, SAS113, AS116, AS119, TC830, M119 and SM173	Preliminary Assessment	Final PA Report	TBD-FY06

SECTION 5

Remedial Actions and Interim Removal Actions

Remedial Actions (RAs) are conducted to prevent a potential release of contaminants and/or further migration of contaminants. Removal actions are taken to prevent immediate and substantial harm to human health and the environment. Examples include the removal of drums or tanks or removal of contaminated soils. This section discusses the sites that have undergone either RAs or IRAs.

5.1 Pre-Remedial Investigation Sites

During FY 2000, a removal action was completed for Site 85. Several battery piles at Site 85 were removed based on recommendations in the Final EE/CA for this site. The Final Closeout Report for this removal was submitted in February 2000.

5.2 Operable Unit No. 1 (Sites 21 and 78)

From March to December 1995, OHM performed a removal and disposal of pesticide- and PCB-contaminated soils contained in AOCs 1, 2, 3, and 4 of Sites 21 and 78. OHM's project activities involved two distinct phases of work: onsite field screening and final excavation. Approximately 650 tons of pesticide-contaminated soils were shipped offsite for incineration disposal and approximately 161 tons of PCB-contaminated soils were shipped off-site for disposal in a Subtitle D landfill. Confirmation sampling conducted after the excavation revealed that soils remaining onsite exhibited levels of pesticide contamination below the cleanup goals identified in the Basis of Design Report dated November 11, 1994 prepared by Baker. Cleanup goals for areas that were affected by PCB contamination were modified with EPA permission to 10 ppm. All onsite soil exhibited levels of PCB below the modified cleanup goal.

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

A TCRA was conducted in 1994 for the removal of the debris and contaminated soil at Site 6. Twenty drums of DDT were removed and contaminated soil was excavated. Another TCRA was conducted in 1995 to remove drums, batteries, and communications wire. This removal action included six AOCs of POL-contaminated soil. More than 2,655 cubic yards of soil and debris were removed from Sites 6 and 82. Contaminated POL soil was removed in FY 2000 during excavation work for the installation of the new Fire Training Pit at Site 9.

5.4 Operable Unit No. 5 (Site 2)

A TCRA was completed in 1994 at Site 2. The TCRA involved the excavation and offsite treatment of pesticide-contaminated soil and concrete. A total of 1,049 tons of pesticide-contaminated soils were excavated and sent for offsite disposal.

5.5 Operable Unit No. 6 (Sites 36, 43, and 54)

In 1995, a TCRA for surficial metallic debris at Site 43 was conducted. Project activities involved removing all surficial metallic debris, including empty drums, various scrap metal, and an old tank. Additionally, four drums (1,400 pounds) of hazardous materials were shipped offsite for disposal. During FY 1998, a removal action was performed at Site 36. Soil contaminated with PCBs was excavated from the western-most portion of the study area. Approximately 240 tons on non-regulated and regulated PCB-contaminated soils were removed. A total of 4,960 cubic yards (6,461 tons) of PAH- contaminated soils were excavated at Site 54 in FY 2001. The contaminated soil was disposed of at a soil reclamation facility. A new, propane-burning, live-fire training aircraft mock-up was constructed in an area adjacent to the soil excavation area. The new fire training system was turned over to the Base on January 9, 2001. IRAs were also completed in FY 2003 at Sites 36 and 43. A total of 1,629 tons of PAH- and pesticide-contaminated soils were excavated at Site 36, and a total of 1,476 tons of PAH-contaminated soil were excavated at Site 43.

5.6 Operable Unit No. 10 (Site 35)

An RA for hydrocarbon-contaminated soils was performed from September 1995 to May 1996 at Site 35. Approximately 15,700 tons of hydrocarbon-contaminated soils were shipped offsite for recycling disposal. An air sparge system was installed at Site 35 in February 1998. The RAC initially supported the 6-month trial operation phase of the IAS system. Based upon a review of the IAS data, the trial phase was extended for 3 months, and in 2000 it was decided to keep the system operational. An emergency soil removal action was completed in FY 2000 associated with a release of POL from an existing pipeline that was severed during construction of the Highway 17 bypass. The affected soils were excavated and taken to the Camp Geiger storage cell for treatment. A pilot study was initiated in the second quarter of FY 2004 on the main TCE "hot spot." The pilot study and monitoring were completed in the fourth quarter of FY 2005.

5.7 Operable Unit No. 11 (Site 80)

A TCRA was completed during 1996 at Site 80. Remedial actions were based on EPA 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 soils were excavated from Site 80.

5.8 Operable Unit No. 12 (Site 3)

From June 18, 2000 to August 9, 2000, OHM excavated, managed, and disposed of 2,535 cubic yards (3,295 tons) of PAH-contaminated soils from Site 3. The original scope of the excavation volume was estimated at 1,340 cubic yards. Based on final negotiations with regulators, two separate action levels for the site contaminants of concern were developed. For confirmation sampling and analysis of the excavation limits, NC DENR soil to groundwater criteria was employed for all PAH compounds detected during RI activities.

5.9 Operable Unit No. 15 (Site 88)

An IRA was completed at Site 88 during FY 2000. Surfactants were employed to remediate DNAPLs from much of the contaminated portion of the shallow aquifer. Surfactants were injected into the aquifer and then extracted with the contaminants. The onsite operations for the SEAR test and post-SEAR partitioning interwell tracer test were completed in August 1999. The results of these operations were reported during FY 2000 (January 2000). In FY 2001, several other IRAs were initiated. The Air Force started operations of the RABITT pilot scale test within the dissolved portion of the plume near monitoring wells 88-MW05 and 88-MW05IW. This pilot test was completed in FY 2002. In addition, the RAC started AFVR activities at Site 88 by monthly pumping of free phase product from six existing extraction wells. During FY 2005, soil mixing was implemented at the source area beneath former Building 25.

5.10 Operable Unit No. 16 (Site 89)

A TCRA was completed in FY 2001 for contaminated vadose soil within the southern portion of Site 89. The soils were excavated and treated using an LTTD technology. Approximately 32,000 tons were treated and returned to the site. An aeration system was also installed and remains operational in Edwards Creek to assist in the remediation of VOCs in the creek. In addition, new fencing was installed in areas south of the site and along Edwards Creek to minimize access.

5.11 Operable Unit No. 19 (Site 84)

The Phase I IRA was completed in FY 2003 at Site 84 to remove the Building 45 existing foundation and contaminated soils around the former building. A total of 4,857 tons of non-hazardous PCB-contaminated soils and 142 tons of contaminated soils were excavated and disposed. The Phase II response action was completed in the fourth quarter of FY 2004.

SECTION 6

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