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FINAL

**Record of Decision  
Operable Unit 18  
Site 94, PCX Service Station**

Marine Corps Base Camp Lejeune  
Jacksonville, North Carolina



Prepared for

**Department of the Navy**  
Naval Facilities Engineering Command  
Mid-Atlantic Division  
Norfolk, Virginia

Contract No.  
N62470-02-D-3052  
CTO-036  
Navy Clean III

**April 2006**

Prepared by

**CH2MHILL**

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*Final*

**Record of Decision  
Operable Unit 18: Site 94  
Marine Corps Base Camp Lejeune  
Jacksonville, North Carolina**



**Department of the Navy  
Naval Facilities Engineering Command  
Mid-Atlantic  
Norfolk, Virginia**

**April 2006**

# Contents

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<b>Acronyms and Abbreviations</b> .....	<b>ii</b>
<b>Declaration</b> .....	<b>1-1</b>
1.1 Site Name and Location.....	1-1
1.2 Statement of Basis and Purpose .....	1-1
1.3 Description of the Selected Remedy .....	1-1
1.4 Statutory Determinations .....	1-2
1.5 Authorizing Signatures .....	1-2
<b>Decision Summary</b> .....	<b>2-1</b>
2.1 Site Name, Location, and Description .....	2-1
2.2 Site History and Enforcement Activities .....	2-1
2.2.1 Initial Assessment Study (Water and Air Research, 1983) .....	2-2
2.2.2 Leaking UST Comprehensive Site Assessment (Richard Catlin and Associates, 1996) .....	2-2
2.2.3 Additional Soil Assessment (OHM, 2000) .....	2-2
2.2.4 Additional Groundwater Investigation (OHM, 2000).....	2-2
2.2.5 Remedial Investigation/Human Health Risk Assessment/Ecological Risk Assessment (CH2M HILL, 2005) .....	2-3
2.3 Community Participation.....	2-4
2.4 Scope and Role of Response Actions .....	2-4
2.5 Site Characteristics .....	2-4
2.6 Current and Potential Future Site and Resource Uses .....	2-5
2.7 Site Risks .....	2-5
2.7.1 Soil .....	2-6
2.7.2 Shallow Groundwater.....	2-6
2.8 No Further Action Necessary .....	2-6
2.9 Documentation of Significant Changes.....	2-7
<b>Responsiveness Summary</b> .....	<b>3-1</b>
<b>References</b> .....	<b>4-1</b>

## Tables

2-1 Human Health Risk Summary

## Figures

- 2-1 Site Location Map
- 2-2 Site 94 Boundary and Vicinity
- 2-3 Conceptual Site Model for Potential Human Exposures
- 2-4 Conceptual Site Model for Potentially Complete Ecological Exposure

Attachment A NCDENR Letter of Concurrence

# Acronyms and Abbreviations

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AST	Aboveground Storage Tank
AS/SVE	Air Sparging/Soil Vapor Extraction
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAP	Corrective Action Plan
CACR	Cumulative Apparent Cancer Risk
CAHI	Cumulative Apparent Hazard Index
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSA	Comprehensive Site Assessment
COPC	Chemical Of Potential Concern
EPA	U.S. Environmental Protection Agency
HHRA	Human Health Risk Assessment
IAS	Initial Assessment Study
IR	Installation Restoration
IRP	Installation Restoration Program
MCB	Marine Corps Base
MTBE	Methyl Tertiary Butyl Ether
Navy	U.S. Department of the Navy
NCDENR	North Carolina Department of Environment and Natural Resources
NCGWQS	North Carolina Groundwater Quality Standards
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	No Further Action
NPL	National Priorities List
OU	Operable Unit
PAHs	Polynuclear Aromatic Hydrocarbons
PRAP	Proposed Remedial Action Plan
RAB	Restoration Advisory Board
RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SLERA	Screening level Ecological Risk Assessment
UST	Underground Storage Tank
VOC	Volatile Organic Compound

# Declaration

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## 1.1 Site Name and Location

Site 94, OU 18: PCX Service Station  
Marine Corps Base, Camp Lejeune  
Jacksonville, North Carolina  
EPA ID# NC6170022580

## 1.2 Statement of Basis and Purpose

This Record of Decision (ROD) presents the Selected Remedy at Site 94, Operable Unit (OU) 18, PCX Service Station, at Marine Corps Base (MCB) Camp Lejeune, Jacksonville, North Carolina. The determination has been made in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on information contained in the Administrative Record file for the site.

The United States Department of the Navy (Navy) is the lead agency and provides funding for site cleanups at MCB, Camp Lejeune. The remedy set forth in this ROD has been selected by the United States Department of the Navy and Marine Corps, together with the United States Environmental Protection Agency (EPA), with the concurrence of the North Carolina Department of Environment and Natural Resources (NCDENR). A copy of the NCDENR concurrence letter dated April 17, 2006, is included as Attachment A. NCDENR has also indicated concurrence with the Selected Remedy by signing this ROD.

## 1.3 Description of the Selected Remedy

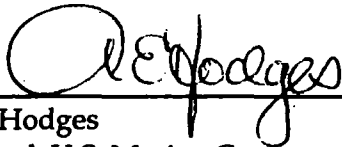
The PCX Service Station (Site 94) is among several Installation Restoration Program (IRP) sites under CERCLA investigation at MCB Camp Lejeune. The status of all the IRP sites at MCB Camp Lejeune can be found in the Site Management Plan, which is located in the Administrative Record.

The Selected Remedy at Site 94 is no further action (NFA). The Site 94 area is encompassed by Site 78 and shares physical groundwater properties. As evidenced by the Remedial Investigation (RI), contamination present in groundwater at the surrounding site (Site 78) has migrated to the Site 94 area. Hence, the contaminants identified as posing unacceptable risks/hazards to current or future receptors will be addressed under the Site 78 groundwater remediation program. The Navy and MCB Camp Lejeune, in partnership with EPA and NCDENR agree that no further CERCLA actions are warranted for Site 94. Groundwater contamination beneath Site 94 is caused by upgradient contamination from Site 78, and is not included in this ROD.

## 1.4 Statutory Determinations

The selected remedy is protective of human health and the environment. Any hazardous substances, pollutants, or contaminants present at the site above levels that prohibit unlimited use and unrestricted exposure are caused by contamination migrating from the surrounding Site 78, and are being addressed under the Site 78 remedial action. As this remedy will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that prohibit unlimited use and unrestricted exposure, a 5-year review will not be required for Site 94. However, a five year review will be conducted at Site 78 and will include the groundwater at Site 94.

## 1.5 Authorizing Signatures

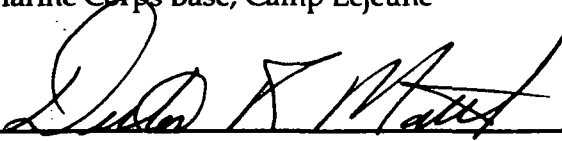


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A.E. Hodges  
Colonel, U.S. Marine Corps  
Commanding Officer  
Marine Corps Base, Camp Lejeune

JUN 20 2006

Date

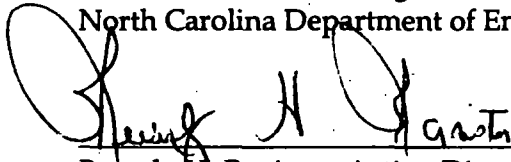


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Dexter R. Matthews, Director  
Division of Waste Management  
North Carolina Department of Environment and Natural Resources

7-25-06

Date



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Beverly H. Banister, Acting Director  
Waste Management Division  
U.S. Environmental Protection Agency

8-28-06

Date

# Decision Summary

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## 2.1 Site Name, Location, and Description

MCB Camp Lejeune was commissioned in 1942 as a training area to prepare Marines for combat. This has been a continuing function of the facility during the Korean and Vietnam conflicts and the recent Gulf War. Toward the end of World War II, the camp was designated as the home base for the Second Marine Division. Since that time, Fleet Marine Force units also have been stationed here as tenant commands.

MCB Camp Lejeune is located on 236 square miles of land in Onslow County, North Carolina, adjacent to the southern side of the City of Jacksonville. Jacksonville is the largest city near the MCB Camp Lejeune and contains approximately half of the county's total population. Since 1990, much of the MCB Camp Lejeune complex has been part of Jacksonville. The areas adjacent to the MCB are generally rural. The MCB is bisected by the New River, which flows into the Atlantic Ocean in a southeasterly direction. The MCB is bordered by the Atlantic Ocean to the east, U.S. Route 17 to the west, and State Route 24 to the north. In November 1989, MCB Camp Lejeune was placed on EPA's National Priorities List (NPL).

Site 94 is located at the PCX Service Station (Building 1613) within the Hadnot Point Industrial Area of MCB Camp Lejeune (Figure 1), near the intersection of Gum Street and West Road. Site 94 lies within the western portion of Site 78 (OU #1). Building 1613 is an active facility, providing refueling services for private vehicles, and consists of a single-story brick structure flanked by three concrete pump islands on two sides.

Historical records indicate that two 10,000-gallon and two 30,000-gallon underground storage tanks (USTs) storing various grades of gasoline were installed northeast of Building 1613 during the 1950s. The USTs and associated petroleum-contaminated soil were removed in January 1995. During subsequent phases of investigation, chlorinated organic contaminants were detected in groundwater, resulting in the subject Installation Restoration (IR) investigation.

## 2.2 Site History and Enforcement Activities

Previous basewide investigations include the Initial Assessment Study (IAS). Investigations at Site 94 have historically been focused on the former UST basin area at the PCX Service Station that contained four USTs used to store various grades of gasoline. Soil and groundwater contamination resulting from the petroleum releases at the site is currently being remediated under NCDENR's UST program. Summaries of investigations conducted at Site 94 are presented below.



### **2.2.1 Initial Assessment Study (Water and Air Research, 1983)**

The Navy conducted the IAS as part of the Naval Assessment and Control of Installation Pollutants Program. The purpose was to qualitatively identify and assess sites that posed a potential threat to human health or the environment as a result of contamination from past handling of (and operations involving) hazardous materials.

In 1983, the Navy identified several sites at MCB Camp Lejeune as potential sources of contamination. Site 94 was not identified as a potential source of contamination, however, Site 78 which surrounds Site 94 was identified as a potential source of contamination.

### **2.2.2 Leaking UST Comprehensive Site Assessment (Richard Catlin and Associates, 1996)**

After the removal of the former gasoline USTs at Building 1613, a site assessment was performed to determine the extent of the petroleum-related contamination in the soil and groundwater associated with Building 1613 and the USTs. The investigation included the installation of hydropunches, monitoring wells, and a pumping well. Although the results indicated the presence of UST-related contamination in the soils, contamination did not exceed the action levels established by NCDENR. Free product and groundwater petroleum-related contamination were identified. Dissolved purgeable halocarbons were detected above the North Carolina Groundwater Quality Standards (NCGWQS) at one hydropunch location and five monitoring well locations across Site 94.

Subsequent to the Comprehensive Site Assessment (CSA), a Corrective Action Plan (CAP) was submitted in April 1998 that recommended air sparging with soil vapor extraction (AS/SVE) to remediate the contamination in the soil and groundwater caused by the petroleum releases. The AS/SVE system has been in operation at the site since the mid-1990s when it was installed.

### **2.2.3 Additional Soil Assessment (OHM, 2000)**

As requested by NCDENR in a letter addressing comments to the CSA report, an additional soil investigation was conducted in the vicinity of the fuel dispensers and buried transfer piping at the site during September 2000. Soil samples were collected from the 3 to 4 feet depth interval, where the transfer piping was reportedly buried. The samples were analyzed for gasoline range organics and diesel range organics. Soil samples were also analyzed for volatile petroleum hydrocarbons and extractable petroleum hydrocarbons. Since the concentrations were significantly below the target concentrations requiring active remediation under the NCDENR Groundwater Guidelines, it was recommended that no further assessment be completed at Building 1613.

### **2.2.4 Additional Groundwater Investigation (OHM, 2000)**

Also in September 2000, an additional groundwater investigation was conducted to evaluate groundwater conditions in an area of the site where monitoring wells had not been installed. Monitoring wells were installed and were sampled along with the existing monitoring wells at the site. The groundwater samples were analyzed for volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs). The results indicated

that six monitoring wells had VOC concentrations that exceeded NCGWQSs and two wells had PAH concentrations in excess of the standards. The VOCs of concern were benzene, toluene, ethylbenzene, and xylene (BTEX) and methyl tertiary butyl ether (MTBE).

### **2.2.5 Remedial Investigation/Human Health Risk Assessment/Ecological Risk Assessment (CH2M HILL, 2005)**

A December 1, 2000 letter from MCB Camp Lejeune to NCDENR requested the transfer of the PCX Service Station to the IRP, which resulted in the subsequent CERCLA investigation activities. A RI was conducted in 2004 with the installation of groundwater monitoring wells and collection and analysis of soil and groundwater samples. A screening level Human Health Risk Assessment (HHRA) was conducted to evaluate the potential human health risks associated with the presence of potentially site-related constituents in soil (surface and subsurface soil combined) and groundwater at Site 94. The HHRA characterizes the current and potential future human health risks at the site if no additional remediation is implemented. A conservative estimate of risk was determined for potential exposure scenarios including current visitors, current/future industrial workers, future construction workers, and future adult and child residents.

Data collected during the RI reveal that no unacceptable risks or hazards associated with surface or subsurface soil exist based on current site use or on future site uses, with potential cancer and non-cancer risks within EPA acceptable risk range.

The screening level HHRA for the groundwater at Site 94 indicates that the risks posed to current and potential future receptors coming in contact with contaminants of potential concern (COPCs) would most likely exceed EPA's acceptable cancer risk range of  $10^{-6}$  to  $10^{-4}$  and non-cancer hazard index of 1.0.

Site 94 is currently being remediated under an UST program, to remove contaminants related to petroleum spills at the site. As evidenced by the RI, chlorinated VOCs present in groundwater at the surrounding site (Site 78) have migrated to Site 94. Hence, the chlorinated VOCs identified as posing unacceptable risks/hazards to current/future receptors will be addressed under the Site 78 groundwater remediation program.

Therefore the Navy and MCB Camp Lejeune in partnership with EPA and NCDENR agree there are no unacceptable human health risks associated with soil at Site 94.

A Screening Level Ecological Risk Assessment (SLERA) was performed in accordance with federal, state, and Navy guidelines to identify and characterize the current and potential threats to the environment from Site 94. The SLERA consists of determining whether there are ecological receptors to protect based on the ecological setting, fate and transport of the COPCs, and any potentially complete pathways. If there are complete exposure pathways, maximum media concentrations are screened against ecological benchmarks.

Exposure pathways at Site 94 are either incomplete or insignificant due to the lack of ecological receptors and no potential for exposure to significant levels of contamination in surface water via offsite groundwater discharge. The conclusion of the SLERA is that there are no unacceptable ecological risks at MCB Camp Lejeune Site 94.

## 2.3 Community Participation

The Navy, MCB Camp Lejeune, NCDENR, and EPA provide information regarding the cleanup of MCB Camp Lejeune to the public through the community relations program which includes a Restoration Advisory Board (RAB), public meetings, the Administrative Record file for the site, and announcements published in local newspapers. RAB meetings continue to be held to provide an information exchange among community members, the EPA, NCDENR, MCB Camp Lejeune, and the Navy. These meetings are open to the public and are held quarterly.

In accordance with Sections 113 and 117 of CERCLA, the Navy provided a public comment period from February 1 through March 3, 2006, for the Proposed Remedial Action Plan (PRAP) for Site 94. Public notice of the PRAP and availability of documents was placed in *The Globe and The Jacksonville Daily News* newspapers on February 1, 2006.

The Administrative Record, Community Relations Plan, Installation Restoration Program fact sheets, and final technical reports concerning Site 94 can be obtained from the IRP web site:

[http://bakerenv.com/camplejeune\\_irp/default\\_frameset.htm](http://bakerenv.com/camplejeune_irp/default_frameset.htm)

Internet access is available to the public at the following location:

Onslow County Public Library  
58 Doris Avenue East  
Jacksonville, North Carolina 28540  
(910) 455-7350

## 2.4 Scope and Role of Response Actions

Site 94 is among the IRP sites under CERCLA investigation at MCB Camp Lejeune. The status of all the IRP sites at MCB Camp Lejeune can be found in the Site Management Plan, which is located in the Administrative Record.

## 2.5 Site Characteristics

Site 94 is located at the PCX Service Station (Building 1613) within the Hadnot Point Industrial Area of MCB Camp Lejeune (Figure 2-1), near the intersection of Gum Street and West Road. Site 94 lies within the western portion of Site 78 (OU #1). Building 1613 is an active facility, providing refueling services for private vehicles, and consists of a single-story brick structure flanked by three concrete pump islands on two sides.

Asphalt and concrete areas cover most of the PCX Service Station. Roadways and parking areas are located within Site 94. Three above ground storage tanks (ASTs) are located in a fenced area to the north of Building 1613 along the pavement (Figure 2-2).

Groundwater flow within the shallow aquifer at Site 94 is generally west toward the New River, although locally near Building 1613 there are some mounding effects that appear to create some radial flow. Within the intermediate unit and deep unit, groundwater flow was determined to be generally westward toward the New River. The average groundwater

flow velocity within the intermediate aquifer unit at Site 94 has been calculated to be approximately 115 ft/yr.

The conceptual site models for human health (Figure 2-3) and ecological (Figure 2-4) exposure pathways were developed for the RI.

## 2.6 Current and Potential Future Site and Resource Uses

MCB Camp Lejeune anticipates the current land use (active service station) to continue indefinitely. No socio-economic and community revitalization impacts are anticipated.

Site 94 consists almost entirely of paved land (0.71 acres) with two small patches or islands of grass (<0.25 acres). The grass is mowed regularly and provides no cover for wildlife. The site is located adjacent to roads that receive heavy traffic most of the day and moderate evening traffic, and is within a heavy industrial area. The limited available habitat, lack of cover, heavy traffic, and heavy industry make Site 94 unattractive to wildlife. Terrestrial exposure pathways at the site are expected to be incomplete in the paved areas and insignificant in the two islands of mowed grass.

## 2.7 Site Risks

A screening level HHRA and SLERA were conducted to evaluate the potential human health and ecological risks associated with the presence of potentially site-related constituents in soil and groundwater at Site 94. The risk assessments characterize the current and potential future risks at the site if no additional remediation is implemented.

A detailed discussion of risks identified at Site 94 can be found in the RI Report (CH2M HILL, 2005). A summary of potential human health risk is provided in Table 2-1.

**TABLE 2-1**  
Human Health Risk Summary  
Site 94 Record of Decision

	CACR	CAHI
<b>Soil – Residential Exposure</b>		
Surface Soil	$9 \times 10^{-6}$	0.2
Subsurface Soil	$2 \times 10^{-6}$	0.2
Cumulative Soil	$1 \times 10^{-5}$	0.4
<b>Soil – Industrial Exposure</b>		
Surface Soil	$2 \times 10^{-6}$	0
Subsurface Soil	$4 \times 10^{-6}$	0.3
Cumulative Soil	$6 \times 10^{-6}$	0.3
<b>Groundwater</b>	$2 \times 10^{-3}$	93

CACR = Cumulative Apparent Cancer Risk. Acceptable range is between  $10^{-4}$  and  $10^{-6}$

CAHI = Cumulative Apparent Hazard Index. Acceptable range is less than 1.0

## 2.7.1 Soil

There is no unacceptable human health risk associated with exposure to Site 94 soil. The noncarcinogenic cumulative apparent hazard index (CAHI) is less than 0.5, lower than the EPA's target hazard index of 1.0 for exposure to combined surface and subsurface soil (future child resident). There are no carcinogenic contaminants of concern in surface or subsurface soil. Therefore no unacceptable risk is present.

Ecological exposure pathways at Site 94 are either incomplete or insignificant due to the lack of ecological receptors. The conclusion of Step 1 of the Screening Level ERA is that there are no unacceptable ecological risks at MCB Camp Lejeune Site 94.

## 2.7.2 Shallow Groundwater

Groundwater beneath the site is not currently used as a potable water supply and not anticipated to be used as a potable water supply in the future. However, the screening level HHRA for the groundwater at Site 94 indicates that the risks posed to current and potential future receptors coming in contact with COPCs would most likely exceed EPA's acceptable cancer risk range of  $10^{-6}$  to  $10^{-4}$  and non-cancer hazard index of 1.0. The COPCs contributing to unacceptable cumulative apparent cancer risk (CACR =  $2.0E^{-03}$ ) are primarily benzene, trichloroethylene, and arsenic. COPCs contributing to unacceptable non-cancer hazard (CAHI = 93) include ethylbenzene, toluene, xylene, 2-methylnaphthalene, naphthalene and iron.

The SLERA concluded that there is no potential for exposure to significant levels of contamination in surface water via offsite groundwater discharge

Site 94 is currently being remediated under an UST program, to remove contaminants related to petroleum spills at the site. As evidenced by the RI, chlorinated VOCs present in groundwater at the surrounding site (Site 78) have migrated to Site 94. Hence, the chlorinated VOCs identified as posing unacceptable risks/hazards to current/future receptors will be addressed under the Site 78 groundwater remediation program.

## 2.8 No Further Action Necessary

As demonstrated by the risk assessments, Site 94 poses no unacceptable risk to human health or the environment from exposure to soil. The Navy, MCB Camp Lejeune, and EPA, in conjunction with NCDENR, agree that action to remediate chlorinated groundwater contamination at Site 94 will be addressed through the Site 78 groundwater remedial activities. Consequently, with the exception of no action, no remedial action alternatives were considered and the development of remedial action objectives is not necessary. An NFA determination for Site 94, subject to the remediation of the groundwater contamination attributable to Site 78, meets the statutory requirements of CERCLA for protection of human health and the environment. No separate response action under CERCLA will be performed at Site 94. Remedial actions under the UST program are not covered under this NFA decision, and Site 78 groundwater remedial activities will continue.

## 2.9 Documentation of Significant Changes

The PRAP for Site 94 identified NFA as the preferred alternative. No comments were received during the public comment period. Therefore, no significant changes were made to the preferred remedial action alternative identified in the PRAP.

SECTION 3

## **Responsiveness Summary**

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The participants in the Public Meeting held on February 16, 2006 included representatives from the Navy, MCB Camp Lejeune, EPA, and NCDENR. No comments were received during the public comment period.

SECTION 4

## References

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CH2M HILL 2005. *Final Remedial Investigation, Site 94 – Operable Unit No. 18, Building 1613*. September

CH2M HILL 2005. *Proposed Remedial Action Plan, Site 94, OUI-18: PXS Service Station, Camp Lejeune, North Carolina*.

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Water and Air Research. 1983. Water and Air Research, Inc. *Initial Assessment Study of Marine Corps Base, Camp Lejeune, North Carolina*. Prepared for Naval Energy and Environmental Support Activity.






Figures

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**Legend**

-  Installation Area
-  Environmental Restoration Area
-  Operable Unit Area

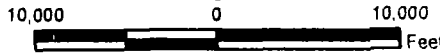
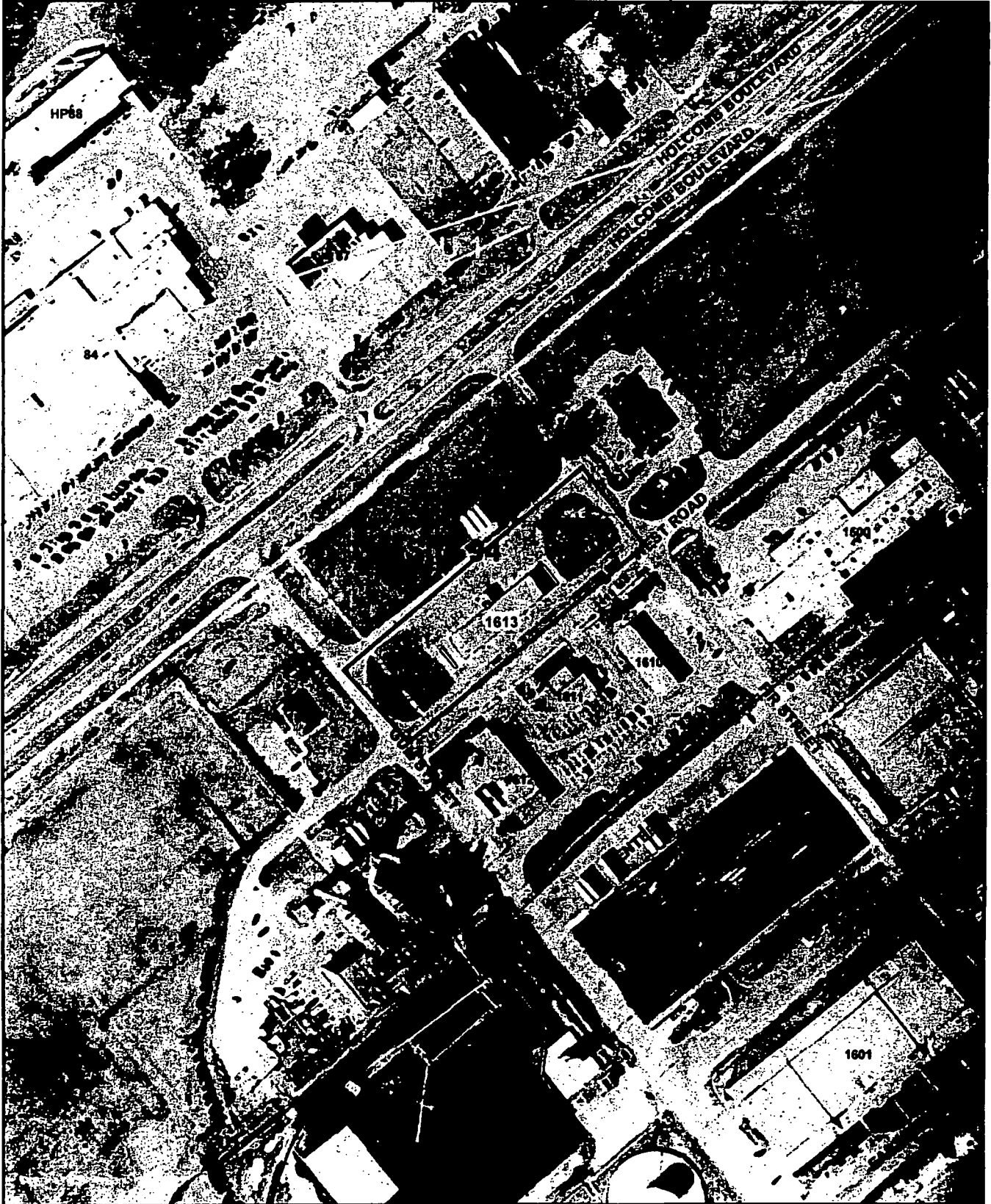




Figure 2-1  
Site Location Map  
MCB Camp Lejeune  
Camp Lejeune, North Carolina





**Legend**

-  Environmental Restoration Area
-  Operable Unit Area

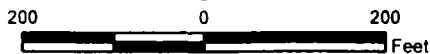
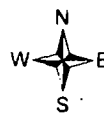


Figure 2-2  
Site 94 Boundary and Vicinity  
MCB Camp Lejeune  
Camp Lejeune, North Carolina

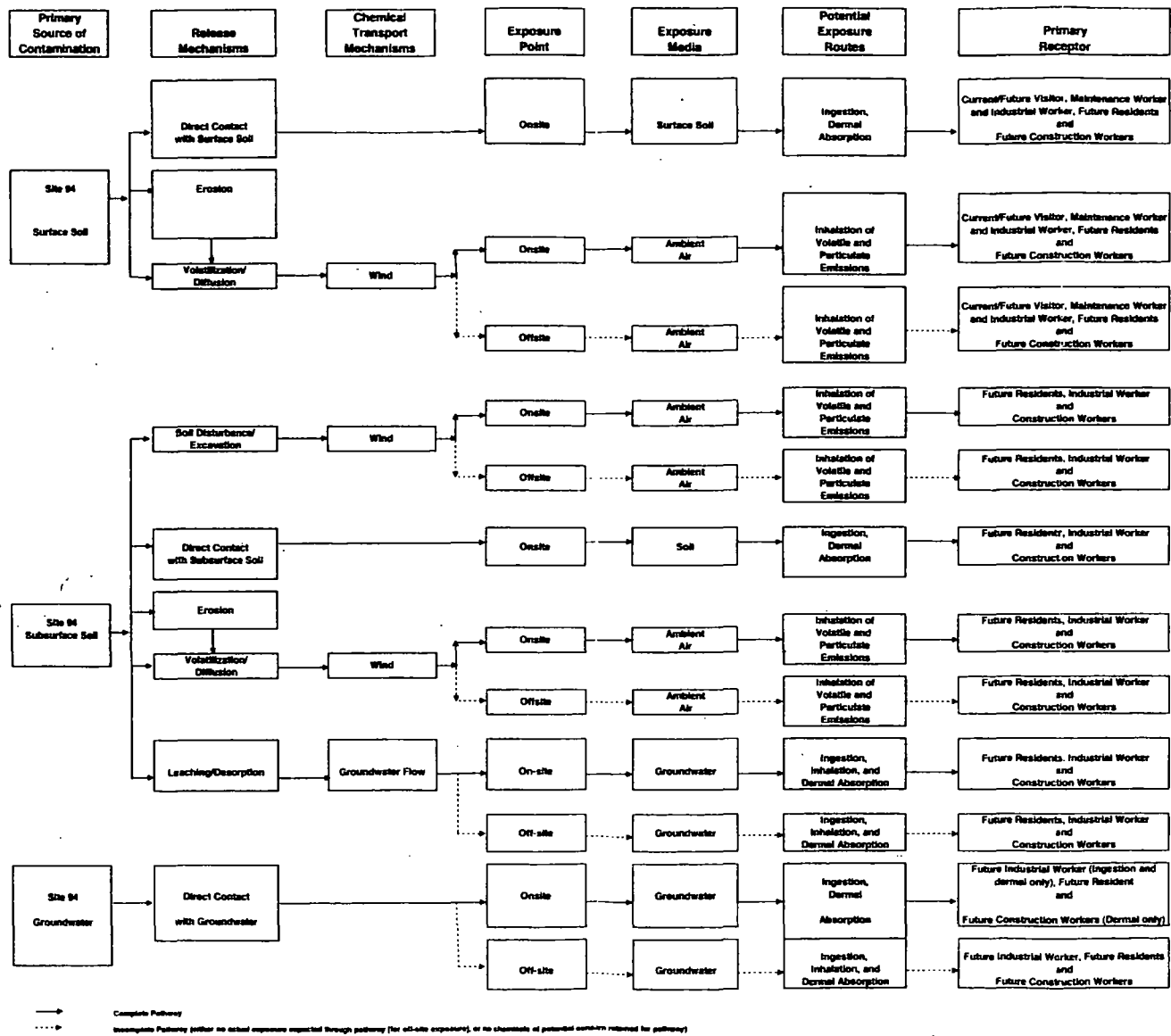


Figure 2-3  
 Conceptual Site Model for Potential Human Exposures  
 Site 94 Record of Decision  
 MCB Camp Lejeune, North Carolina

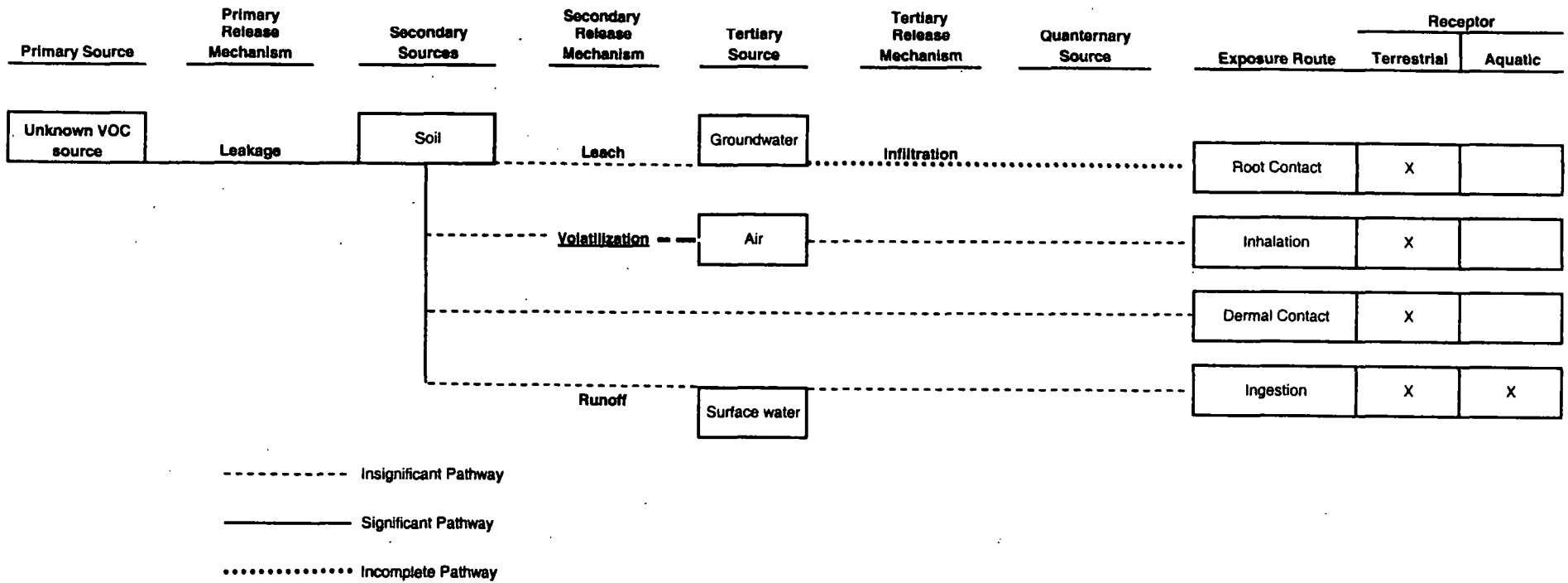


Figure 2-4  
 Conceptual Site Model for Potentially Complete Ecological Exposure  
 Site 94 Record of Decision  
 MCB Camp Lejeune, North Carolina

**Attachment A**

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North Carolina  
Department of Environment and Natural Resources  
Division of Waste Management



Michael F. Easley, Governor  
William G. Rosa Jr., Secretary  
Dexter R. Matthews, Director

April 17, 2006

NAVFAC Atlantic  
Attn: Daniel R. Hood  
Code: OPCEV  
NC/Caribbean IPT, EV Business Line  
6506 Hampton Blvd  
Norfolk, VA 23508-1273

RE: State Concurrence on the Record of Decision (ROD)  
OU#18, Site 94 - Soil and Groundwater  
MCB Camp Lejeune, NC6170022580  
Jacksonville, Onslow County, North Carolina

Dear Mr. Hood:

The NC Superfund Section received and reviewed the ROD for Operable Unit #18, Site 94 at MCB Camp Lejeune, dated April 2006 and concurs with the proposed Final ROD. The State's concurrence is based solely on the information contained in the April 2006 Revised Final ROD received in April 2006 for OU#18, Site 94. Should we receive additional information that significantly affects the conclusions of the ROD, we may modify or withdraw this concurrence with written notice to the Naval Facilities Engineering Command for Camp Lejeune and the EPA Region IV.

If you have any questions or comments, please contact me, at (919) 508 8464 or email [David.Lown@ncmail.net](mailto:David.Lown@ncmail.net)

Sincerely,

David J. Lown, LG, PE  
Head, Federal Remediation Branch  
Superfund Section

Cc: ✓Randy McElveen, NC Superfund Section  
Bob Lowder, EMD/IR  
Gena Townsend, USEPA

1646 Mail Service Center, Raleigh, North Carolina 27699-1646  
Phone: 919-508-8400 \ FAX: 919-715-3605 \ Internet: [www.enr.state.nc.us](http://www.enr.state.nc.us)