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FINAL

INTERIM REMEDIAL ACTION PROPOSED PLAN FOR THE SHALLOW AQUIFER AT THE HADNOT POINT INDUSTRIAL AREA OPERABLE UNIT CAMP LEJEUNE, NORTH CAROLINA

CONTRACT TASK ORDER 0017

Prepared For:

NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION
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Under:

Contract N62470-89-D-4814

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INTERIM REMEDIAL ACTION PROPOSED PLAN

This Interim Remedial Action Proposed Plan is issued to describe the Marine Corps Base (MCB) Camp Lejeune and the Department of the Navy's (DoN's) preferred interim remedial action to restrict the further migration of the contaminated groundwater plumes in the shallow aquifer at the Hadnot Point Industrial Area (HPIA), an operable unit at MCB Camp Lejeune. The HPIA (Site 78) is a portion of the HPIA Operable Unit located within the Camp Lejeune Military Reservation and Marine Corps Base located in Onslow County, North Carolina. This operable unit is comprised of three sites: Site 78 (the HPIA); Site 21 (Transformer Storage Yard); and Site 24 (Industrial Fly Ash Dump).

The MCB Camp Lejeune/DoN is issuing this Interim Remedial Action Proposed Plan as part of its public participation responsibility under Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and the Federal Facilities Agreement between the DoN, Region IV of the U.S. Environmental Protection Agency (EPA), and the North Carolina Department of Environment, Health, and Natural Resources (N.C. DEHNR).

The MCB Camp Lejeune/DoN, with the assistance of EPA Region IV and the N.C. DEHNR, will select an interim remedy for the HPIA operable unit only after the public comment period has ended and the information submitted during this time has been reviewed and considered. The selected remedial action plan may be different from the preferred interim alternative presented in this plan depending upon new information or public comments on all of the interim remedial action alternatives identified in this plan.

This document summarizes information that can be found in greater detail in the Interim Remedial Action Remedial Investigation (RI) and Interim Remedial Action Feasibility Study (FS) reports and other documents referenced in the RI and FS Reports. The DoN encourages the public to review these other documents in order to gain a more comprehensive understanding of the site. The administrative record file, which contains the information upon which the selection of the interim response action is based, is available for public review at Building 1 at MCB Camp Lejeune. The public is invited to review and comment on the administrative record and this proposed plan.

Site Description and Background

Camp Lejeune is a training base for the Marine Corps, located in Onslow County, North Carolina (see Figure 1). The base covers approximately 170 square miles with 14 miles of coastline. It is bounded to the southeast by the Atlantic Ocean, to the northeast by State Road 24, and to the west by U.S. 17. The town of Jacksonville, North Carolina is north of the base. The HPIA, located within Camp Lejeune, is bounded by Sneads Ferry Road to the north, Holcomb Boulevard to the west, Louis Road to the east, and Main Service Road to the south (see Figure 2).

The HPIA, constructed in the late 1930s, was the first facility at the Marine Corps Base (MCB) Camp Lejeune. It was comprised of approximately 75 buildings and facilities including: maintenance shops, gas stations, administrative offices, commissaries, snack bars, warehouses, storage yards, and a dry cleaning facility. A steam plant and training facility occupy the southwest portion of the HPIA. Several of these areas have been investigated for potential contamination due to Marine operations and activities resulting in the generation of potentially hazardous wastes. The investigations indicate that contamination has resulted at HPIA due to improper waste disposal, underground storage tank leakage, solvent spills, and sludge disposal.

Since 1983, various investigation and sampling activities have been conducted at the HPIA operable unit. On November 4, 1989, Camp Lejeune was placed on the National Priorities List (NPL). The Department of the Navy, the EPA, and the N.C. DEHNR entered into a Federal Facilities Agreement on February 13, 1991. The studies that have been conducted at the HPIA operable unit are briefly summarized below.

In 1983, an Initial Assessment Study (IAS) was conducted at Camp Lejeune by Water and Air Research, a consulting firm. The study identified a number of areas within Camp Lejeune, including HPIA, as potential sources of contamination.

Between 1984 and 1988, Environmental Science and Engineering, Inc. (ESE) conducted a two part confirmation study which focused on the potential source areas identified in the IAS. The first stage of this two-step study identified the presence of volatile organic compounds (VOCs) in the shallow aquifer within the HPIA operable unit. As a result of this part of the investigation and limited additional sampling, Camp Lejeune closed five supply wells in the area. The second stage of this investigation was designed to evaluate the extent of the VOC

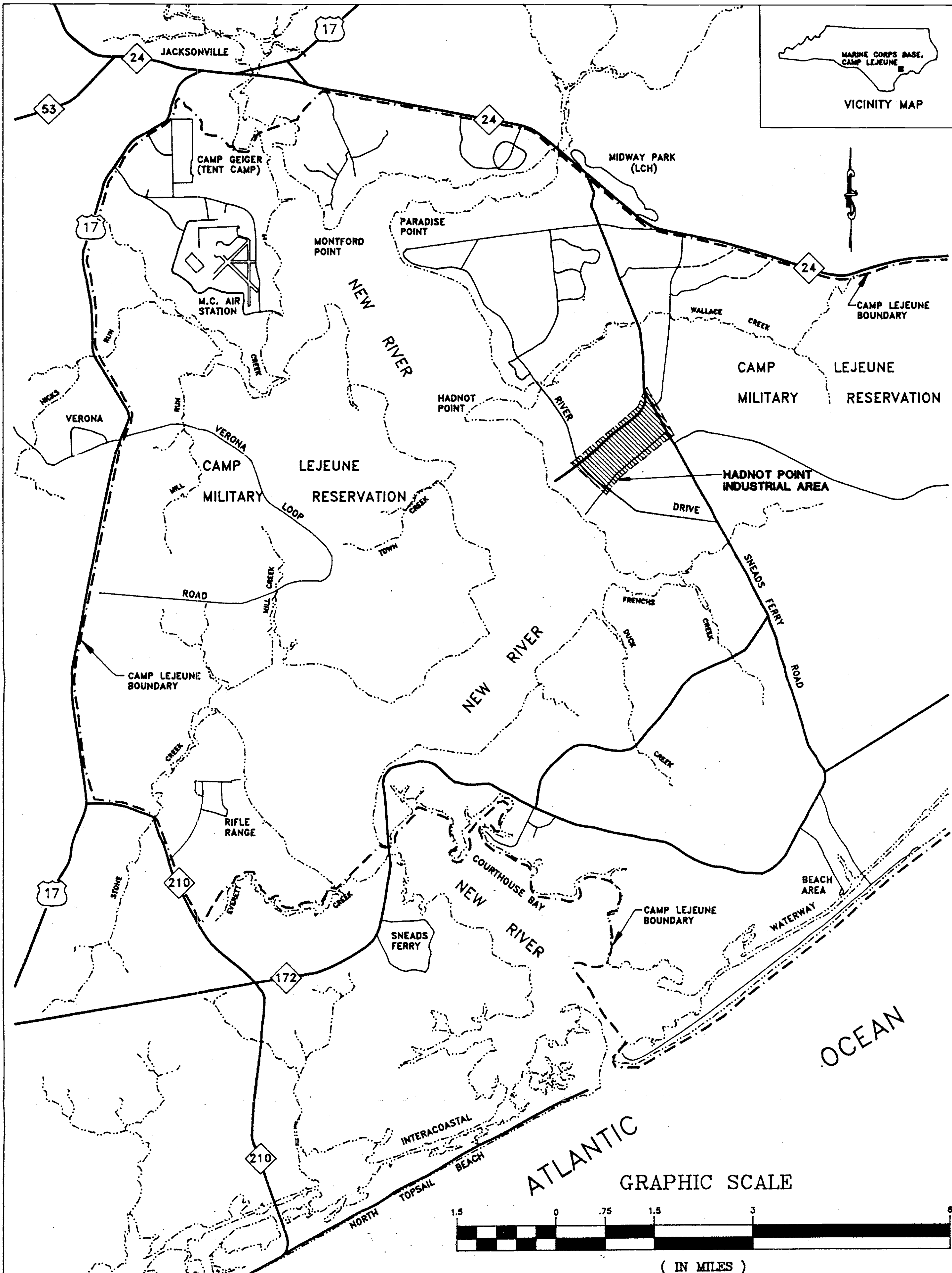

FIGURE 1
LOCATION MAP
MCB CAMP LEJEUNE, NORTH CAROLINA

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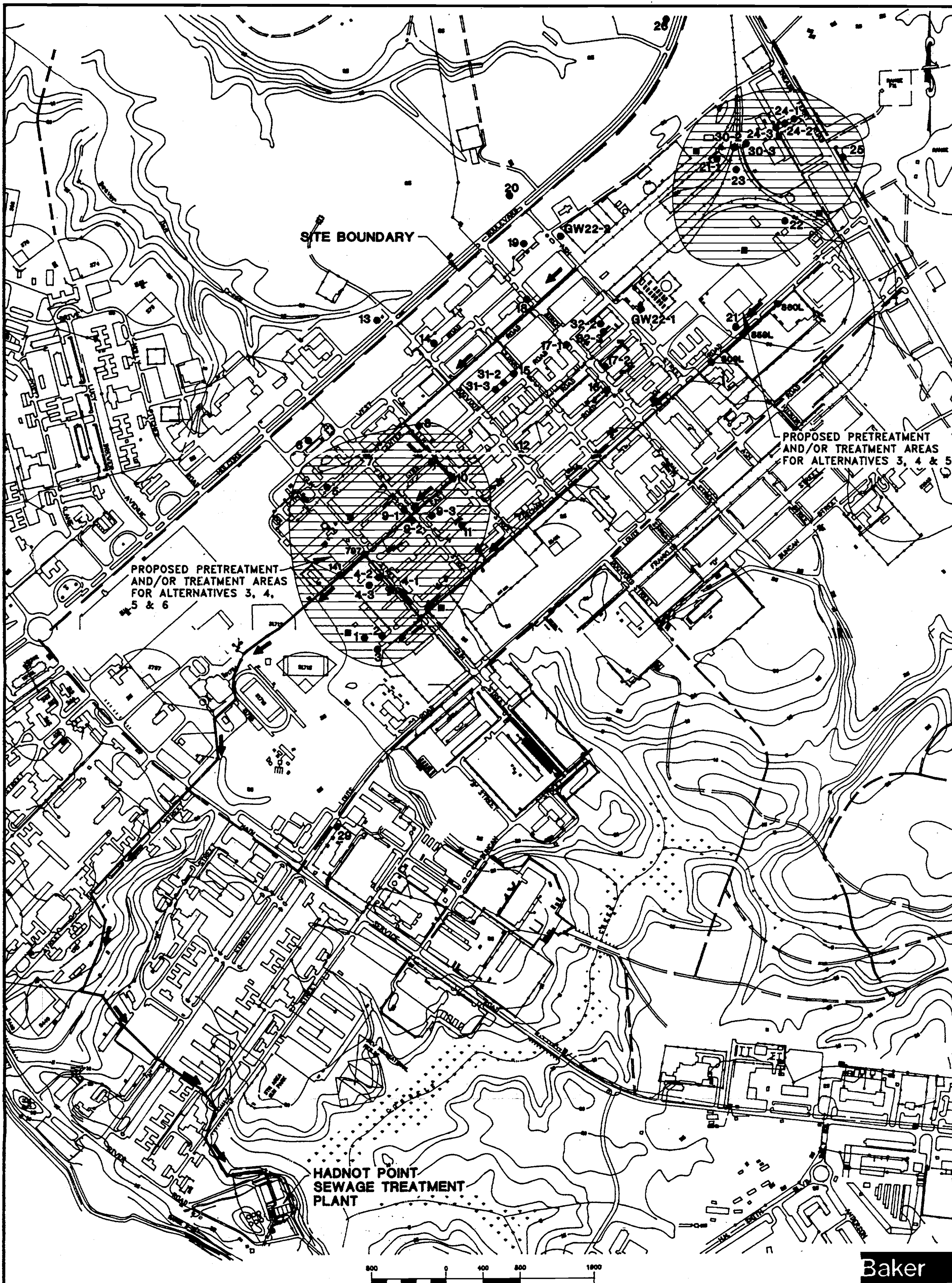

LEGEND	
29 ●	EXISTING MONITORING WELL LOCATION
(hatched circle)	APPROXIMATE SOURCE AREA OF GROUNDWATER CONTAMINATION IN THE SHALLOW AQUIFER
■	PROPOSED EXTRACTION WELL LOCATION
•	MANHOLES
——	PROPOSED SEWER LINES TO BE USED

SOURCE: LANTDIV, FEBRUARY 1992

FIGURE 2
LOCATION OF INITIAL PHASE EXTRACTION WELLS, ON-SITE TREATMENT SYSTEMS AND PROPOSED SANITARY SEWER LINES
HADNOT POINT INDUSTRIAL AREA
MCB CAMP LEJEUNE, NORTH CAROLINA

contamination identified in the first stage. Thirty-three groundwater monitoring wells were installed and sampled during this part of the investigation. The shallow aquifer is the subject of this interim remedial action.

A focused FS for HPIA was conducted by ESE in May 1988. The FS was to provide information about potential remedial alternatives to restrict migration of contamination within the shallow aquifer at HPIA.

An RI for HPIA was conducted by ESE during 1986-1987 and 1990-1991. The purpose of this investigation was to delineate the horizontal and vertical extent of contamination within the shallow aquifer. The investigation included installation of monitoring wells downgradient of potential source areas, determination of groundwater flow direction and gradients, and collection of groundwater analytical data to characterize the plume.

Baker Environmental, Inc. (Baker) conducted an Interim Remedial Action RI and an Interim Remedial Action FS for HPIA during 19911992. These studies focused on the shallow groundwater aquifer beneath the HPIA and were based solely on data generated during previous field investigations. The purpose of the Interim Remedial Action RI was to consolidate currently available information on the shallow aquifer and to develop the basis and supporting documentation for preparation of the Interim Remedial Action FS.

The Interim Remedial Action FS prepared by Baker considered various interim remedial actions which may be taken to contain and/or remediate contamination in the shallow aquifer. The study focused on a limited number of alternatives directly applicable to conducting an interim remedial action for the shallow aquifer.

Based on the results of the above-mentioned studies and investigations, two contaminated groundwater plumes have been identified in the shallow aquifer at the HPIA Operable Unit. The contaminants of concern contained in these plumes include: benzene, 1,2-dichloroethene (1,2-DCE), trichloroethylene (TCE), antimony, arsenic, beryllium, chromium, lead, iron, manganese, mercury, nickel and oil & grease. One of the plumes is located in the northeast portion of the site, the other in the southwest portion of the site (Figure 2).

Scope and Role of Action

The proposed interim remedial action identified in this plan is a component of the overall site strategy in that it restricts the migration of the contaminant plume identified in the shallow aquifer. Implementation of this interim remedial action will reduce the potential for the migration of the contaminated groundwater both horizontally and vertically, which in turn will reduce the risk to human exposure through continued contamination of the aquifer. This interim remedial action is consistent with future plans for complete remediation of the site and will not preclude implementation of a comprehensive final remedy.

Subsequent actions are planned to fully address the soil and groundwater contamination at HPIA. The overall site remediation strategy for the entire HPIA Site includes the remediation of the soil and all groundwater contaminated at the site. Additionally, it includes the remediation of the other separate study areas within HPIA (i.e., a transformer storage area [Site 21] and a fly ash dump area [Site 24].)

Summary of Site Risks

The analytical results from previous studies conducted at the site, predominantly the RI, indicate that there are two plumes of contamination in the shallow aquifer within the HPIA Site. Compounds detected in these plumes include typical gasoline/fuel compounds such as benzene; other VOCs such as TCE and 1,2-DCE; and various metals such as antimony, arsenic, beryllium, chromium, iron, lead, manganese, mercury and nickel. These plumes have adversely affected several drinking water supply wells on site. In 1986, VOCs were identified in five on-site supply wells screened in the deeper aquifer (to be addressed as part of the additional studies at the site), and subsequently, the wells were closed. It is not known whether or not the contaminants detected in the shallow aquifer have contributed to the contamination of these deeper wells. However, concentrations of contaminants above regulatory limits have been documented in the shallow aquifer. This contamination is the basis for this interim action at the site. The interim action proposed in this plan will prevent further degradation of the shallow aquifer. Another potential benefit is reduction of the risk posed to the deep aquifer at the site. As noted on Table 1, Federal and State drinking water and groundwater standards, respectively have been exceeded in the aquifer.

TABLE 1

SUMMARY OF CONTAMINANTS OF CONCERN DETECTED IN THE SHALLOW GROUNDWATER AQUIFER, JANUARY 1991

Potential Contaminants of Concern	HPGW1	HPGW2	HPGW3	HPGW4-1	HPGW5	HPGW6	HPGW7	HPGW8	HPGW9-1	HPGW10	HPGW11	HPGW12	HPGW13	HPGW14	HPGW15	HPGW16
VOCs (µg/l): Benzene	5<	5<	5<	5<	5<	5<	5<	5<	5<	5<	5<	5<	5<	5<	5<	5<
1,2-Dichloroethene (1,2,-DCE)	73	5<	5<	5<	5<	5<	5<	5<	1200	5<	5<	5<	5<	5<	7	5<
Trichloroethene (TCE)	91	5<	5<	0.9J	5<	5<	5<	2J	14000	5<	5<	5<	5<	5<	4J	5<
Inorganics (µg/l): Chromium	87	64.3	16.7	187	3.6B	1590	313	91.8	66.4	310	140	25.5	48.9	127	21.4	209
Iron	64100	34800	10400	100000	3100	265000	65700	40900	19800	119000	31800	5600	33500	87200	4800	47200
Lead	16.6	29.4	11.4	66.6	13.6	60.7	112	54.1	128	186	45.2	15.7	9	66.5	16.6	100
Manganese	168	77	53.9	425	162	487	136	46.5	45	255	103	18.3	30.3	80	18.3	98.3
Antimony	13.3<	15.6B	46.5B	21.9B	13.3<	13.3<	22<	22	17.6B	22<	22<	22<	13.3<	13.3<	22<	22<
Arsenic	8B	24.1	15.6	15.5	1.5<	31.5	18.3	28.4	3B	39.9	9.1B	1.8<	47	45.6	1.8<	17.3
Beryllium	6	1.7B	1.2B	6.7	0.86B	20	4.8B	2.1	0.79B	5.6	2.1<	2.1<	0.59B	2.7B	2.1<	5.3
Mercury	0.1<	0.1<	0.1<	0.1<	0.1<	1.4	0.25	0.13	0.1<	0.82	0.1B	0.1<	0.1<	0.26	0.1<	0.13B
Nickel	31.3B	16.9B	12.1B	57	5.2<	161	50.7	25.2	15.1B	92.2	23.6B	11<	21.2B	41.6	11<	41

Potential Contaminants of Concern	HPGW17-1	HPGW18	HPGW19	HPGW20	HPGW21	HPGW22	HPGW23	HPGW24	HPGW25	HPGW26	HPGW29	22GW1	22GW2	North Carolina Water Quality Criteria (µg/l)	Federal Drinking Water MCLs (µg/l)
VOCs (µg/l): Benzene	5<	N/A	5<	5<	5<	5<	24	3J	5<	5<	5<	7900	5<	1	5
1,2-Dichloroethene (1,2,-DCE)	5<	N/A	0.8J	5<	5<	5<	8900	42000D	5<	5<	5<	5<	5<	--	--
Trichloroethene (TCE)	5<	N/A	2J	5<	3J	5<	3700	180	5<	5<	5<	5J	5<	2.8	5
Inorganics (µg/l): Chromium	37	N/A	13.8	424	45	79.8	76.3	26.3	205	13	179	457	26.3	50	100
Iron	10500	N/A	36200	152000	56600	24400	23300	19200	46600	19000	76200	101000	16200	300	--
Lead	23.7	N/A	31.7	20	49.4	39.4	45	21.4	71.6	9	29.1	307	16.2	50	15
Manganese	31.3	N/A	79	217	136	94.1	68.8	54.8	118	10.6B	236	284	763	50	--
Antimony	22<	N/A	13.3	21.9B	13.3<	24.6B	24.6B	22<	13.3<	13.3<	13.3<	20.9B	13.3	--	10/5
Arsenic	1.8<	N/A	5B	49.4	12.1	7.2B	6.6B	4.2B	13.2	1.5<	25.6	50.3	11	50	50
Beryllium	2.1<	N/A	2.3B	9.5	3.7B	0.6B	1B	2.1<	2.8B	0.5<	8.7	5.8	0.5	0.5	1
Mercury	0.1<	N/A	N/A	0.5	0.1<	0.1<	0.1<	0.1<	0.1<	0.1<	0.1<	0.35	0.1	1.1	2
Nickel	11.9B	N/A	7.3B	168	30.8B	23.2B	33.2B	14<	39.2B	5.2<	93.5	186	17	150	100

Notes:

- N/A = Not analyzed
- < = Compound was analyzed, but not detected at the listed detection limit
- J = Value is estimated
- B = Reported value is < contract required detection limit, but > instrument detection limit (IDL)
- D = Compound identified in an analysis at a secondary dilution factor
- -- = Not established

Summary of Alternatives

Extraction and treatment of the contaminated groundwater is an element of each of the treatment alternatives evaluated for the shallow aquifer at the HPIA, with the exception of two "no action" alternatives. The seven interim remedial action alternatives evaluated in the FS for the containment/remediation of the contaminant plumes in the shallow aquifer are:

- Alternative 1: No Action
- Alternative 2: No Action With Institutional Controls
- Alternative 3: Biological Treatment at the Sewage Treatment Plant (STP)
- Alternative 4: Physical/Chemical Treatment (Air Stripping)
- Alternative 5: Physical/Chemical Treatment (Carbon Adsorption)
- Alternative 6: On-site Thermal Treatment
- Alternative 7: Off-site RCRA Facility

These alternatives are intended to prevent the spread of contaminated groundwater by treating the migration of the contaminated shallow groundwater plume early in the Superfund process. The final alternative for the shallow aquifer may require alteration and refinement, based on monitoring results and the evaluation of data collected during implementation of interim remedial action.

Common Elements Between the Alternatives: With the exception of the No Action Alternative and the No Action With Institutional Controls Alternative, all of the interim remedial action alternatives being considered for the HPIA operable unit can be considered as "pump and treat" options. Each of these alternatives include extraction of the contaminated groundwater and either on-site or off-site treatment. The major difference between each of the five pump and treat alternatives is in the primary treatment technology (i.e., aeration lagoon/trickling filter, air stripping, carbon adsorption, liquid injection incineration, and off-site RCRA facility). All of the alternatives, excluding the No Action Alternative, include a long-term groundwater monitoring program, aquifer-use restrictions, and well installation restrictions.

The five "pump and treat" alternatives include a phased approach for groundwater extraction and treatment. Initially, four extraction wells will be installed in each of the two contaminated plume areas (Figure 2). Based upon the results of groundwater monitoring, additional extraction wells may be installed. (For costing purposes only in the FS, it was assumed that eight additional extraction wells would be installed during each of the first three years of operation for a total of 32 wells.)

A brief overview of each of the interim remedial action alternatives is included below. All costs and implementation times are estimated.

Alternative 1: No Action

There are no costs associated with the No Action Alternative. Under this alternative, the groundwater in the shallow aquifer is left as is and no remedial actions are implemented. The no action alternative is required by the NCP and provides a baseline for comparison with other groundwater alternatives.

Alternative 2: No Action With Institutional Controls

Capital cost:	$0 (Minimal)
Annual O&M Costs:	$60,000 for Years 1 through 30
Present Worth (PW):	$970,000
Months to Implement:	1

The No Action With Institutional Controls Alternative is similar to the No Action Alternative in that no remedial actions are implemented at the site. This alternative differs from the No Action Alternative because it includes quarterly sampling of 20 existing monitoring wells at the HPIA, and restrictions placed on the use of the aquifer and on the installation of new water wells.

Alternative 3: Biological Treatment at the STP

Capital cost:	$1.3 million
Annual O&M Costs:	$334,000 for Years 1 through 30
PW:	$6.9 million
Months to Implement:	15

Alternative 3 includes groundwater extraction, pretreatment for oil and grease and for inorganic chemicals, treatment of VOCs at the existing Hadnot Point STP, and institutional controls. The pretreatment system will consist of an oil/water gravity separator, an inorganic chemical removal system utilizing at least precipitation, chemical reduction, and sedimentation technologies. The biological system that will be utilized at the existing Hadnot

Point STP consists of an aerated equalization lagoon, primary clarifiers, two trickling filters, secondary clarifiers, anaerobic digesters, and chlorine contact chambers. The effluent from the Hadnot Point STP discharges to the New River. The same institutional controls identified in Alternative 2 will be included in this alternative.

Alternative 4: Physical/Chemical Treatment (Air Stripping)

Capital cost:	$1.0 million
Annual O&M Costs:	$393,000 for Years 1 through 30
PW:	$7.6 million
Months to Implement:	15

Alternative 4 is similar to Alternative 3 with the exception of the method of groundwater treatment. In general the Air Stripping Alternative includes groundwater extraction, pretreatment for oil and grease and for inorganic chemicals, treatment for VOCs via an on-site air stripper, discharge to the Hadnot Point STP, and institutional controls. The same pretreatment system identified in Alternative 3 and the same institutional controls identified in Alternative 2 will be included in this alternative.

Alternative 5: Physical/Chemical Treatment (Carbon Adsorption)

Capital cost:	$940,000
Annual O&M Costs:	$400,000 for Years 1 through 30
PW:	$7.6 million
Months to Implement:	15

Alternative 5 is similar to Alternatives 3 and 4 with the exception of the method of groundwater treatment. In general, the Carbon Adsorption Alternative includes groundwater extraction, pretreatment for oil and grease and for inorganic chemicals, treatment for VOCs via on-site carbon adsorption units, discharge to the Hadnot Point STP, and institutional controls. The same pretreatment system identified in Alternative 3 and the same institutional controls identified in Alternative 2 will be included in this alternative.

A brief overview of each of the interim remedial action alternatives is included below. All costs and implementation times are estimated.

Alternative 1: No Action

There are no costs associated with the No Action Alternative. Under this alternative, the groundwater in the shallow aquifer is left as is and no remedial actions are implemented. The no action alternative is required by the NCP and provides a baseline for comparison with other groundwater alternatives.

Alternative 2: No Action With Institutional Controls

Capital cost:	$0 (Minimal)
Annual O&M Costs:	$60,000 for Years 1 through 30
Present Worth (PW):	$970,000
Months to Implement:	1

The No Action With Institutional Controls Alternative is similar to the No Action Alternative in that no remedial actions are implemented at the site. This alternative differs from the No Action Alternative because it includes quarterly sampling of 20 existing monitoring wells at the HPIA, and restrictions placed on the use of the aquifer and on the installation of new water wells.

Alternative 3: Biological Treatment at the STP

Capital cost:	$1.3 million
Annual O&M Costs:	$334,000 for Years 1 through 30
PW:	$6.9 million
Months to Implement:	12

Alternative 3 includes groundwater extraction, pretreatment for oil and grease and for inorganic chemicals, treatment of VOCs at the existing Hadnot Point STP, and institutional controls. The pretreatment system will consist of an oil/water gravity separator, an inorganic chemical removal system utilizing at least precipitation, chemical reduction, and sedimentation technologies. The biological system that will be utilized at the existing Hadnot

Point STP consists of an aerated equalization lagoon, primary clarifiers, two trickling filters, secondary clarifiers, anaerobic digesters, and chlorine contact chambers. The effluent from the Hadnot Point STP discharges to the New River. The same institutional controls identified in Alternative 2 will be included in this alternative.

Alternative 4: Physical/Chemical Treatment (Air Stripping)

Capital cost:	$1.0 million
Annual O&M Costs:	$393,000 for Years 1 through 30
PW:	$7.6 million
Months to Implement:	12

Alternative 4 is similar to Alternative 3 with the exception of the method of groundwater treatment. In general the Air Stripping Alternative includes groundwater extraction, pretreatment for oil and grease and for inorganic chemicals, treatment for VOCs via an on-site air stripper, discharge to the Hadnot Point STP, and institutional controls. The same pretreatment system identified in Alternative 3 and the same institutional controls identified in Alternative 2 will be included in this alternative.

Alternative 5: Physical/Chemical Treatment (Carbon Adsorption)

Capital cost:	$940,000
Annual O&M Costs:	$400,000 for Years 1 through 30
PW:	$7.6 million
Months to Implement:	12

Alternative 5 is similar to Alternatives 3 and 4 with the exception of the method of groundwater treatment. In general, the Carbon Adsorption Alternative includes groundwater extraction, pretreatment for oil and grease and for inorganic chemicals, treatment for VOCs via on-site carbon adsorption units, discharge to the Hadnot Point STP, and institutional controls. The same pretreatment system identified in Alternative 3 and the same institutional controls identified in Alternative 2 will be included in this alternative.

Alternative 6: Thermal Treatment

Capital cost:	$1.5 million
Annual O&M Costs:	$627,000 for Years 1 through 30
PW:	$11.8 million
Months to Implement:	15

Alternative 6 is similar to Alternatives 3, 4 and 5 with the exception of the method of groundwater treatment. In general, the Thermal Treatment Alternative includes groundwater extraction, pretreatment for oil and grease and for inorganic chemicals, treatment for VOCs via an on-site liquid injection incinerator, and institutional controls. The same pretreatment system identified in Alternative 3 and the same institutional controls identified in Alternative 2 will be included in this alternative.

Alternative 7: RCRA Facility

Capital cost:	$900,000
Annual O&M Costs:	$4.2 million for Years 1 through 30
PW:	$68.9 million
Months to Implement:	15

Alternative 7 is somewhat similar to Alternatives 3, 4, 5 and 6 with the exception of the method of groundwater treatment. In general, the RCRA Facility Alternative includes groundwater extraction, off-site treatment at an approved RCRA facility, and institutional controls. No pretreatment systems are included in this alternative. The same institutional controls identified in Alternative 2 will be included in this alternative.

Evaluation of Alternatives and the Preferred Alternative

The preferred interim remedial action alternative for reducing the potential for further migration of the contamination in the shallow aquifer at HPIA is Alternative 3: Biological Treatment at the STP. Based on available information, this alternative appears to provide the best balance with respect to the nine CERCLA evaluation criteria used to evaluate alternatives. The action will limit the extent of migration of the contamination in the shallow groundwater aquifer and reduce the concentration of contaminants in the groundwater. This interim remedial action will be consistent with any other remedial actions that selected for the site. Based on new information or public comments, MCB Camp Lejeune/DoN, in consultation with EPA and the State of North Carolina, may later modify the preferred alternative or select another treatment alternative presented in this Proposed Plan and the RI/FS. The public therefore is encouraged to review and comment on all of the alternatives identified in this proposed plan. The RI/FS should be consulted for more information on these alternatives.

A profile of the performance of alternatives with respect to the nine criteria follows. A glossary of the evaluation criteria is noted on the next page.

Analysis of Alternatives

Overall Protection of Human Health and the Environment - The five "pump and treat" alternatives would provide protection of human health and the environment by reducing or controlling risk through treatment, engineering controls, or institutional controls. Each of these "pump and treat" alternatives would treat the contaminants in the extracted groundwater, thereby reducing the risks associated with contact with the groundwater and minimizing the migration of contamination from the groundwater.

Since neither the No Action Alternative nor the No Action With Institutional Controls Alternative are protective of human health and the environment, they are not evaluated any further in this analysis for the HPIA Site.

Compliance with ARARs - An interim remedial action alternative need only address those ARARs applicable or relevant and appropriate to the limited-scope interim action. All of the treatment alternatives will meet the NPDES requirements for discharge to a surface water body. ARARs for the aquifer are Federal and North Carolina Maximum Contaminant Levels (MCLs) for drinking water and groundwater, respectively. The ultimate goal of all of the "pump and treat" alternatives is to meet these ARARs. The final remedial alternative (to be proposed after completion of additional studies) will provide additional information on the compliance with ARARs.

Long-Term Effectiveness and Permanence - This criteria is irrelevant to the interim action presented in this Proposed Plan. Long-term effectiveness and permanence will be evaluated as part of the final remedial action for the shallow aquifer.

GLOSSARY OF EVALUATION CRITERIA

- **Overall Protection of Human Health and Environment** - addresses whether or not an alternative provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment engineering controls or institutional controls.

- **Compliance with ARARs** - addresses whether or not an alternative will meet all of the applicable or relevant and appropriate requirements (ARARs) or other Federal and State environmental statutes and/or provide grounds for invoking a waiver.

- **Long-term Effectiveness and Permanence** -- refers to the magnitude of residual risk and the ability of an alternative to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

- **Reduction of Toxicity, Mobility, or Volume through Treatment** - is the anticipated performance of the treatment options that may be employed in an alternative.

- **Short-term Effectiveness** - refers to the speed with which the alternative achieves protection, as well as the remedy's potential to create adverse impacts on human health and the environment that may result during the construction and implementation period.

- **Implementability** - is the technical and administrative feasibility of an alternative, including the availability of materials and services needed to implement the chosen solution.

- **Cost** - includes capital and operation and maintenance costs. For comparative purposes, presents present worth values.

- **State Acceptance** - indicates whether, based on its review of the RI and FS reports and the Interim Action Proposed Plan, the State concurs with, opposes, or has no comment on the preferred alternative.

- **Community Acceptance** - will be assessed in the Record of Decision (ROD) following a review of the public comments received on the RI and FS reports and the Interim Action Proposed Plan.

Reduction of Toxicity, Mobility, or Volume of the Contaminants Through Treatment - All of the "Pump and treat" alternatives would extract and treat the contaminated groundwater to reduce the toxicity, mobility, and volume of the contaminants in the water.

Short-term Effectiveness - It is not expected that the implementation of any of the alternatives would cause adverse effects to human health and the environment. Workers could be exposed to contaminated soil or water during construction and installation of the extraction well systems. Implementation of appropriate worker health and safety precautions will mitigate any threat. No threats to the community are anticipated, due to the location and industrial nature of the activities at HPIA. All of the "pump and treat" alternatives will be effective in achieving the goal of reducing contaminant migration upon implementation. Alternatives 3, 4 and 5 would take approximately 12 months to implement, while Alternatives 6 and 7 are anticipated to require 18 months (due to the availability of equipment or capacity at an off-site facility).

Implementability - All of the alternatives have similar administrative difficulties (i.e., obtaining permits) that could delay implementation. Acquiring the necessary permits is feasible and should not adversely affect the implementability of any of the alternatives. All of the alternatives are technically feasible and, therefore, implementable. The majority of the required equipment for each of the alternatives is readily available. Alternative 3 has an advantage with implementability since the biological system is in-place and operating at the existing sewage treatment plant within Camp Lejeune.

Cost - Alternative 3 has the present worth cost as compared to Alternatives 4, 5, 6 and 7. The present worth cost for Alternative 3 is approximately \$6.9 million; for Alternative 4 is approximately \$7.6 million; for Alternative 5 is \$7.6 million; for Alternative 6 is approximately \$11.8 million, and for Alternative 7 is approximately \$68.9 million.

State/Support Agency Acceptance - The Environmental Protection Agency and the State of North Carolina have concurred with this Plan.

Community Acceptance - Community acceptance of the preferred interim remedial action alternative summarizes the public's general response to the alternatives described in this Proposed Plan and in the RI/FS, based on public comments received during the public comment period. Community Acceptance of the Interim Remedial action will be evaluated following the public comment period and described in the ROD for the HPIA.

Summary of the Preferred Alternative

In summary, the preferred alternative is believed to provide the best balance of trade-offs among the alternatives evaluated with respect to pertinent criteria, given the limited scope of the action. MCB Camp Lejeune/DoN believe the preferred alternative would protect human health and the environment, would comply with the pertinent ARARs, and would be cost-effective. The preferred interim alternative would also use treatment to the maximum extent practicable. The permanence requirement will be addressed in the final decision document for the shallow aquifer. The interim remedial action alternative is an initial start in the complex process of remediating the shallow groundwater.

Alternative 3 would achieve risk reduction through withdrawal, treatment by use of the existing biological treatment system at the Hadnot Point STP and discharge to the New River. In addition, Alternative 3 includes groundwater monitoring, aquifer-use restrictions, and well installation restrictions.

COMMUNITY PARTICIPATION

A critical part of the selection of an interim remedial action alternative is community involvement. The following information is provided to allow the community to provide input into selection of the remedy for the shallow groundwater at HPIA.

Public Comment Period

The public comment period will begin on May 14, 1992 and end on June 14, 1992 for the Interim Remedial Action Proposed Plan for the shallow aquifer within the HPIA operable unit. Written comments should be sent to the following:

Commander, Atlantic Division Naval Facilities Engineering Command Code 1822
Attention: MCB Camp Lejeune RPM
Norfolk, Virginia 23511-6287

A Public Meeting will be held at the Tarawa Terrace No. 1 Elementary School Gym-natorium, Tarawa Boulevard at 7:00 p.m. on May 14, 1992. The purpose for this meeting will be to answer questions and accept public comments on the proposed interim Record of Decision

(ROD) for the shallow aquifer at the HPIA operable unit. In addition, this meeting will provide an overview of the site situation, alternatives evaluated, and the proposed action.

The meeting will be transcribed and a copy of the transcript will be made available to the public through the information repository. A responsiveness summary will be prepared at the conclusion of the comment period to summarize significant comments, criticisms, and new relevant information submitted to MCB Camp Lejeune/DoN during the comment period and the response to each issue. After the interim Record of Decision is signed, MCB Camp Lejeune/DoN shall publish a notice of availability of the ROD (including the Responsiveness Summary) in the newspaper and place a copy of the ROD in the information repository.

Information Repositories

A collection of information, including the administrative record is available to the community at the following locations:

Onslow County Library
58 Doris Avenue East
Jacksonville, NC 28540
(919) 455-7350

Hours:

M-Th:	9:00 a.m. - 9:00 p.m.
F-Sa:	9:00 a.m. - 6:00 p.m.

Closed Sunday

MCB Camp Lejeune Central Library
Building 1220
Marine Corps Base
Camp Lejeune, NC 28542
(919) 451-5724

Hours:

M-Th:	9:00 a.m. - 10:00 p.m.
F:	9:00 a.m. - 4:30 p.m.
Sa-Su:	10:00 a.m. - 10:00 p.m.

IF YOU HAVE ANY QUESTIONS ABOUT THE HPIA SITE,
PLEASE CONTACT ONE OF THE FOLLOWING:

Mr. George Radford
Installation Restoration Office
AC/S EMD, Building 1
MCB Camp Lejeune
Camp Lejeune, North Carolina 28452-5001
(919) 451-5874

Mr. Byron Brant
Commanding Officer
Atlantic Division
Naval Facilities Engineering Command
Norfolk, Virginia 23511-6287
(804) 445-2931

Ms. Michelle Glenn
Remedial Project Manager
U.S. EPA, Region IV
345 Courtland Street, NE
Atlanta, GA 30365
(404) 347-3016

Mr. Jack Butler
N. C. Department of Environment, Health, and Natural Resources
Division of Solid Waste Management
Superfund Section
P.O. Box 27687
Raleigh, North Carolina 27611-7687
(919) 733-2801

Community Information Line
Public Affairs Office
Marine Corps Base Camp Lejeune
North Carolina
(919) 451-5782

MAILING LIST

If you are not on the mailing list and would like to receive future publications pertaining to the HPIA Site, please fill out, detach, and mail this form to:

Mr. George Radford
Installation Restoration Office
AC/S EMD, Building 1
MCB Camp Lejeune
Camp Lejeune, North Carolina 28452-5001
(919) 451-5874

Name ______________________________

Address ______________________________

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Affiliation ______________________________

Phone (   ) ______________