



PROPOSED PLAN FOR **R** E C E I V E REMEDIAL ACTION

FEB 08 2000

Groundwater Zone OT033 and Remedial Unit 2

DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

Naknek Recreation Camp 2 (Lake Camp)

611 CES/CEVR Installation Restoration Program 10471 20th Street, Suite 302, Elmendorf Air Force Base, Alaska 99506

INTRODUCTION

This proposed plan provides information on the investigation and planned Remedial Action for the Naknek Recreation Camp 2 (Lake Camp, see Figures 1 and 2). Lake Camp occupies four acres of land adjacent to the Naknek River and is located approximately six miles east of the King Salmon Air Station. The Air Force operated this camp from 1956 to 1977 as a recreation site for military personnel stationed at King Salmon Air Force Base. Lake Camp contained boat docks, fish camps, lodging, and fuel storage for a generator and refueling boats. In 1978 the hotel and support structures at Lake Camp were razed and either buried on site or removed. During the remedial action, the extent of remaining debris will be evaluated. At present, the only visible remains are metal fragments, broken concrete, exposed pipe, pilings, and other debris.

The Air Force, the Alaska Department of Environmental Conservation (ADEC), and the U.S. Environmental Protection Agency (EPA) have been investigating contamination and developing cleanup alternatives at this site. Four areas of contamination were identified at Lake Camp: the former lodge (a source area), generator pad (a source area), landfill (a source area), and the wetland.

The Air Force, ADEC, and EPA selected Alternative OT033-C and asbestos Alternative RU2-A addressed in the *Final Feasibility Study Report*. After further review of the

How You Can Participate

Final decisions will not be made until after the community has the opportunity to review and comment on this Proposed Plan. You are encouraged to comment on this Proposed Plan. **The public comment period begins February 4, 2000 through March 3, 2000. A public meeting will be held at the King Salmon Air Station Lounge on February 16, 2000 at 7:00 p.m.** You are invited to write or use e-mail. Please send your comments to the following address:

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Lake Camp *Feasibility Study* and formal peer review by the Air Force, Alternatives OT033-B and RU2-A were selected as the "preferred alternatives" that best address the contamination issues at Lake Camp. Alternative OT033-B requires surface debris removal and disposal, excavation of 2200 cubic yards of petroleum-contaminated soil, treatment of soil in an offsite biotreatment cell, removal of surface debris and drums, a landfill soil cap, sediment and surface water sampling, and intrinsic remediation (moni-

tored natural attenuation) of groundwater. This alternative also includes evaluation of the need for managed wetlands after two years of monitoring. Alternative RU2-A stipulates no further action. A record search will be performed to evaluate material that was left on site.

Work defining the contamination issues at Lake Camp commenced in the early 90's. Much of the early work developing remedial alternatives was performed prior to promulgation of the current ADEC regulations. Consequently, the remedial alternatives presented in this plan have been modified somewhat from those originally presented in the feasibility study to be consistent with current regulations.

PURPOSE AND SCOPE OF PROPOSED PLAN

The purpose of the Proposed Plan is to explain how the Air Force, the ADEC, and the EPA evaluated cleanup alternatives for the Lake Camp site. The Feasibility Study (FS) for the site (titled *Final Feasibility Study Report, Installation Restoration Program, Naknek Recreation Camps*, dated May 1999) provides a detailed review of site conditions and potentially appropriate remedial technologies.

The scope of this Proposed Plan is as follows:

- To describe the nature and extent of contamination at the site
- To describe the revised cleanup alternatives
- To identify the preferred cleanup alternative for the site and explain the rationale for considering it the preferred alternative

- To provide information on how the public can be involved in choosing the cleanup alternative, and
- To request public review and comment on all of the cleanup alternatives presented.

BACKGROUND

Surface soil, subsurface soil, wetland, and groundwater samples were collected throughout the site and analyzed for potential contaminants. All study areas investigated, including the former lodge, generator pad, landfill, and wetland areas, were found to have levels of chemical constituents above preliminary remediation goals. The specifics of this study are addressed in *Final Naknek Recreation Camps Remedial Investigation Report*, June 1995.

Subsequent analysis in the *Feasibility Study Report* identified the primary contaminant of concern as petroleum hydrocarbons.

Contaminants of concern in the generator pad soils were identified as petroleum hydrocarbons. The petroleum hydrocarbons were found at concentrations that exceed the Remedial Action Objective (RAO) level of 100 ppm for soil and 1 ppm for ground water.

At the wetland area, petroleum hydrocarbons were detected above the RAO. Petroleum hydrocarbons (diesel-range) were detected in six of seven samples at concentrations that exceeded the RAO.

Groundwater at the former lodge area was found to contain petroleum hydrocarbons above the RAO. One of two groundwater samples had concentrations of diesel-range organics about ten times greater than the RAO.

Groundwater at the generator pad area exceeded RAO for petroleum hydrocarbons.

Groundwater samples collected at the landfill exceeded the RAO for petroleum hydrocarbons. Diesel-range organics exceeded the RAO in three of three groundwater samples collected.

Wetlands surface water samples exceeded the RAO for petroleum hydrocarbons. Diesel-range organics were detected in two of seven surface water samples.

The extent of soil and groundwater contamination has not been completely defined. Prior to initiation of the remedial alternative, up to ten additional groundwater monitoring wells or well points will be installed to determine the size of the groundwater plume.

SUMMARY OF SITE RISKS

The Air Force conducted a human health risk assessment and an ecological risk assessment for the Lake Camp area. The human health risk assessment evaluated the potential for the contaminants to increase the risk of a person living or working at the site to contract cancer or suffer other adverse health effects. Exposure to contaminated soil, groundwater, and surface water at the sites may pose a risk to future residents. Skin contact or accidental ingestion may increase the potential for noncarcinogenic health effects. Carcinogenic contaminants were not found at the site.

The State of Alaska and the Air Force proposed the following cleanup goals for Lake Camp to be protective of human health and the environment.

- A diesel concentration of 4,900 ppm was determined by risk assessment to be protective of human health at the site. The Air Force proposes to clean up the site to more conserva-

tive values of 794 ppm total diesel-range organics.

- Cleanup A-aquifer groundwater to 1.5 ppm for diesel-range organics.

The ecological risk assessment identified potential terrestrial and aquatic birds and mammals at Lake Camp and evaluated the potential for harm due to site contaminants. The evaluation indicated that exposure to petroleum products in the soil could potentially cause harm to small-sized wildlife species with home ranges that were exclusively on the study sites.

SUMMARY OF ALTERNATIVES FOR GROUNDWATER ZONE OT033

The site included hydrocarbon-contaminated groundwater, wetlands, and soil associated with the Lake Camp generator pad area, the landfill, and the wetlands downgradient of the landfill and generator pad.

Initially a wide range of alternatives was considered to address contamination within the site. After further screening, four cleanup alternatives were carried forward for final analysis using nine criteria described in the National Contingency Plan (NCP) and the *Final Feasibility Study Report* and listed in Table 1.

Each evaluation criteria to the site is discussed below. The *Final Feasibility Study Report*, section 5.4.2, contains more information about the cleanup alternatives and provides details of each evaluation.

Alternative A

Alternative A is the no action alternative. This alternative is required under CERCLA as a baseline to reflect current conditions without any cleanup being conducted and is used as a comparison with the other alternatives. Although monitored natural at-

tenation will occur, this alternative does not include modeling or treatability studies to evaluate the effectiveness of these processes.

- Cost: \$0
- Operation & Maintenance: \$0
- Total Present Worth: \$0

Alternative B

Alternative B includes excavation of approximately 2,200 cubic yards of contaminated soils from the generator pad area and treatment in a biotreatment cell. The excavation area would be 125 feet in diameter to a maximum depth of 5 feet. Biotreatment would be conducted at King Salmon Air Station for up to five years.

Intrinsic remediation (monitored natural attenuation), long-term monitoring, and institutional controls for groundwater; capping the landfill area with a compacted soil cover graded to promote drainage and runoff; and a managed wetland system to treat surface water and wetland sediments are part of this alternative. In addition, this alternative includes removing and disposing of surface debris and exposed drums located on the surface of the site. Debris will be disposed at the Bristol Bay Borough Landfill in King Salmon.

The extent of soil and groundwater contamination has not been completely defined. Prior to initiation of the remedial alternative, up to ten additional groundwater monitoring wells or well points will be installed to determine the size of the groundwater plume.

As the impacted groundwater discharges into the downgradient wetland, the managed wetland system limits contaminant-plume migration and enhances intrinsic remediation of contaminants in groundwater. Institutional controls under this alternative would include long-term monitoring and property

land use restrictions that would restrict access to the impacted wetland and groundwater until remedial action objectives have been achieved.

- Cost: \$1.04M to \$2.23M
- Operation & Maintenance: \$0.66M to \$1.41M
- Total Present Worth: \$1.71M to \$3.65M

Alternative C

Alternative C includes in-situ bioventing of approximately 2,000 cubic yards of contaminated soil at the generator area, removing and disposing of surface debris and drums located on the site at the Bristol Bay Borough Landfill, capping the landfill with a compacted soil cover graded to promote drainage and runoff, intrinsic remediation (monitored natural attenuation), long-term monitoring and institutional controls for groundwater; excavating contaminated surface soils at the generator pad, and evaluating the need for a managed wetlands after two years of monitoring.

Bioventing would be implemented with ten 20-foot horizontally-installed 2-inch diameter injection screens to treat petroleum contamination in vadose zone soils with injected air. Air would be injected with blowers sufficient to support aerobic biodegradation while minimizing drying of soil. Approximately 1.1 miles of power line would be installed by Naknek Electric Association to provide electricity to the bioventing system.

The managed wetland system addresses impacted groundwater discharges into the downgradient wetland. The wetland limits contaminant-plume migration and enhances intrinsic remediation of contaminants in groundwater. Institutional controls would include long-term monitoring and restricted use of wetland and groundwater until remedial action objectives have been achieved.

- Cost: \$1.04M to \$2.22M
- Operation & Maintenance: \$0.58M to \$1.24M
- Total Present Worth: \$1.62M to \$3.46M

Alternative D

Alternative D consists of excavating approximately 2,000 cubic yards of petroleum-contaminated soil from the generator pad and 9,000 cubic yards of petroleum-contaminated soil from the landfill, and thermal treatment on-site. Approximately 1.1 miles of power line would be installed by Naknek Electric Association to provide electricity to the thermal treatment system.

This alternative includes excavating surface debris and drums located on-site, and disposal at the Bristol Bay Borough Landfill. In addition, drums buried in the landfill (presumed empty) would be excavated, sampled, and disposed of as hazardous waste if required.

A 400-foot long French drain/interceptor trench would be constructed perpendicular to groundwater flow to capture contaminated groundwater for treatment with activated carbon. Managed wetlands, groundwater monitoring, and institutional controls would augment the active remediation aspects of this alternative.

- Cost: \$4.15M to \$8.88M
- Operation & Maintenance: \$0.40M to \$0.86M
- Total Present Worth: \$4.54M to \$9.74M

REMEDIAL UNIT (RU) 2

RU2 includes buried asbestos and building debris associated with the former Lake Camp Lodge. Some metals (primarily arsenic and lead) were detected in the soil in this area but at levels that do not warrant further action.

The National Park Service (NPS) recently conducted a limited subsurface site investigation adjacent to the former lodge area. Results from this investigation indicated that no asbestos containing material was present in the debris encountered. This debris is considered representative of debris from the lodge. Based on the results of the NPS investigation coupled with the results of a literature review conducted by the Air Force, the Air Force determined that asbestos-containing material is not a concern at the site. Consequently, no remedial action is currently planned to address asbestos-containing material. A record search will be performed to evaluate material that was left on site. This documentation will become part of the Record of Decision for the site.

EVALUATION OF ALTERNATIVES

The remedial alternatives were evaluated with respect to eight of the nine NCP criteria. The NCP evaluation criteria are summarized in Table 1. The selected alternative must protect human health and the environment and meet ARARs.

ADEC and EPA have been involved throughout the process, so State Acceptance has already been achieved. Community acceptance (the ninth criterion) of the preferred alternative will be determined when the public comment period ends and all comments have been reviewed and considered.

Alternative OT033-A (no action alternative) does not meet the criteria of protection of human health and the environment or compliance with state and federal regulations. Consequently, this alternative will not be considered further.

Protection of Human Health and the Environment

Alternatives OT033-B through OT033-D effectively protect human health and the environment by removing and/or treating contaminated soil at the generator pad and isolating contamination at the landfill.

Compliance with ARARs

Alternatives OT033-B through OT033-D meet all applicable or relevant and appropriate requirements (ARARs) by treating contaminated soil. In the long-term, contamination found in groundwater would decline by intrinsic remediation, although Alternative OT033-D includes active groundwater treatment.

Long-term Effectiveness and Permanence

Alternatives OT033-B and OT033-C are partially effective and permanent because they include removing the primary sources of contamination, but potential does exist for release from the Lake Camp Landfill. Alternative OT033-D is fully effective and permanent because all contamination is removed from the Lake Camp area. For groundwater, monitoring will be used to assess effectiveness over time.

Reduction in Toxicity, Mobility, and Volume through Treatment

Alternatives OT033-B and OT033-C include removal (B) and active treatment (B and C) of some contaminated media. Alternative OT033-D includes removal and active treatment of all contaminated media, hence is considered more effective in toxicity, mobility, and volume reduction.

Table 1 NCP Evaluation Criteria

Threshold Criteria

Protection of Human Health and the Environment – This criterion addresses whether a remedial action alternative provides adequate protection of human health and the environment.

Compliance with ARARs – This criterion is used to determine and describe how a remedial action alternative will meet all of the federal and state regulations, or whether the remedial action justifies a waiver from a regulation.

Balancing Criteria

Long-Term Effectiveness and Permanence – This criterion evaluates the long-term effectiveness and permanence that the alternative affords, along with the degree of certainty that the alternative will prove successful.

Reduction of Toxicity, Mobility, and Volume – This criterion evaluates the anticipated performance of a remedial technology, based on the reduction of toxicity, mobility, and/or volume, through treatment.

Short-Term Effectiveness – This criterion addresses the risks to and protection of the community during the construction and implementation phase of a remedial alternative, until cleanup goals are achieved.

Implementability – This criterion addresses the technical and administrative feasibility of a remedial alternative, based on the availability of materials and services needed to implement the alternative.

Cost – This criterion addresses the cost-effectiveness of a remedial alternative based on design, construction, start-up, monitoring, and maintenance costs. Cost estimate is accurate to within -30 percent to +50 percent.

Modifying Criteria

State Acceptance – This criterion addresses state concerns.

Community Acceptance – This criterion addresses concerns of the community.

Short-term Effectiveness

Alternatives OT033-B and OT033-D result in some additional risk to the community and the environment due to excavation of contaminated material. Remobilization of contaminants is possible. This risk is lower for Alternative OT033-C because of the in-situ nature of the proposed treatment. All three alternatives rely on monitoring to verify that contamination is not posing an unacceptable risk to workers and the community. Groundwater would be monitored to verify the negligible short-term risk to the community.

Implementability

Technical implementation of Alternatives OT033-B through OT033-D requires special techniques, materials, and permits, although all proposed remediation methods are proven and equipment is available commercially.

Cost

For comparison purposes, the estimated *present worth* costs for implementation of the alternatives are:

OT033-B	\$1.71M to \$3.65M
OT033-C	\$1.62M to \$3.46M
OT033-D	\$4.54M to \$9.74M

Costing details and major assumptions are provided in the appendix of the *Final Feasibility Study Report*.

State Acceptance

The State of Alaska concurs with the preferred alternatives, but will make its final remedy selection after reviewing and evaluating public comments.

Community Acceptance of the Preferred Alternative

Community acceptance will be evaluated after reviewing all public comments received during the public comment period of this Proposed Plan. The Air Force will respond to comments in a Responsiveness Summary as part of the Record of Decision.

PREFERRED ALTERNATIVE

The Air Force, EPA, and ADEC consider groundwater zone Alternative OT033-B as the preferred alternative for remedial action at Lake Camp. This selected preferred alternative provides effective protection of public health and the environment. Ultimately, government agencies involved with the site and the community must determine which alternative or set of alternatives are most desirable based on effectiveness, implementability, acceptability, and cost.

Alternative OT033-B was considered superior to Alternatives OT033-C and OT033-D because of the long-term effectiveness of off-site biotreatment as a method of reducing and eliminating petroleum contamination in soil and the technical difficulties that would be encountered in operating a bioventing system in the shallow vadose zone (Alternative C). Alternative D is impractical due to its high cost and lack of technical advantages compared to the preferred alternative. The Air Force and other federal agencies have successfully implemented biotreatment at remediation sites in Alaska.

Surface debris and drums will be removed, cleaned, and disposed of in the Bristol Bay Borough Landfill. Any hazardous waste present will be processed and sent to an out-of-state hazardous waste landfill. The landfill will be capped to permanently contain existing debris. This alternative was selected over Alternative OT033-D because

of its long-term effectiveness and substantially lower cost to implement.

Because of the remoteness of Lake Camp, groundwater at the site does not currently present a health risk. Groundwater samples will be collected annually from monitoring wells currently present and planned for installation. Samples will be analyzed for specific identified contaminants. Groundwater monitoring will be conducted until the groundwater cleanup levels are achieved. In addition, surface water and sediment from the managed wetlands will be sampled annually until the cleanup levels are achieved.

PUBLIC PARTICIPATION REQUEST

The Air Force, EPA, and ADEC would like you to review this plan and associated documents and provide us with your comments on these alternatives, particularly the preferred alternative. After the comment period, the agencies will read and consider your comments before making a final decision. Your comments can change or modify the preferred alternative or give the agencies sufficient information to choose another alternative.

All comments received during the comment period and public meeting will be answered in a document called a *Responsiveness Summary*. This document becomes part of the final decision. The final cleanup decision on this area is expected in 2000. This decision will be explained in a document called a *Record of Decision*. You will be notified when this document is signed by the agencies and made available to the public.

If you have questions or wish to provide comments on this project, please contact one of the following people:

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Air Force Community Relations

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Glossary of Terms

ADEC – Alaska Department of Environmental Conservation, the lead regulatory agency for the King Salmon Air Station sites.

ARARs – Applicable or relevant and appropriate requirements, laws and regulations that establish cleanup levels for sites with contamination.

CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act of 1980, also known as Superfund

Diesel-range Organics – A mixture of organic compounds found in diesel fuel

EPA – United States Environmental Protection Agency

FS – Feasibility Study, an evaluation of site conditions and potentially applicable remedial actions. As stated by the NCP, the primary objective of the FS is to "ensure that appropriate remedial alternatives are developed and evaluated such that relevant information concerning the remedial action alternatives can be presented to a decision-maker and an appropriate remedy selected."

Intrinsic Remediation – Natural chemical, physical, and biological processes that reduce or eliminate contaminant concentrations in soil, surface water, or groundwater

Monitoring – Periodic analysis of soil, surface water, and/or groundwater quality to determine the extent of contamination and the degree to which it has been cleaned up.

NCP – National Contingency Plan, the regulations that provide the structure and procedures for responding to discharges of oil and hazardous substances, as directed by CERCLA

OT033 – Groundwater Zone 033, which is the hydrocarbon-contaminated groundwater,

wetland, and soil associated with the Lake Camp generator pad area, the landfill, and the wetland downgradient of the landfill and generator pad. In addition, the hydrocarbon-contaminated groundwater associated with the former Lake Camp lodge.

Proposed Plan – A document that informs the public about alternatives that are considered for cleanup of a contaminated site and identifies a preferred cleanup alternative. The document encourages public comment on all alternatives.

Remedial Action – Action taken to eliminate, reduce, or control the hazards posed by contamination at a site.

RAO – Remedial Action Objective.

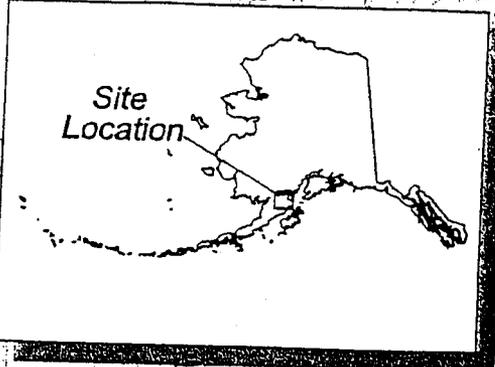
Remedial Unit 2 – includes buried asbestos and building debris associated with the former Lake Camp Lodge.

Residual Product – Small globs of product cut-off from the mobile, free phase product by the presence of water or air. The residual product is trapped in the subsurface pore spaces.

Responsiveness Summary – A summary of oral and/or written public comments received during a comment period and the responses to those comments

Record of Decision – Documentation of the selected remedy for a site and the rationale for its selection.

Site Location



To King Salmon

Recreation Camp

Lake Camp

Naknek River



0 1500 3000

Scale (feet)
1:15

Source: USGS Naknek (C2)
15 Minute Quadrangle, 1973



811TH AIR SUPPORT GROUP
811TH CIVIL ENGINEER BATTALION
ELMENDORF AFB, ALASKA

DATE
OCT. 1999
CHKD
TD
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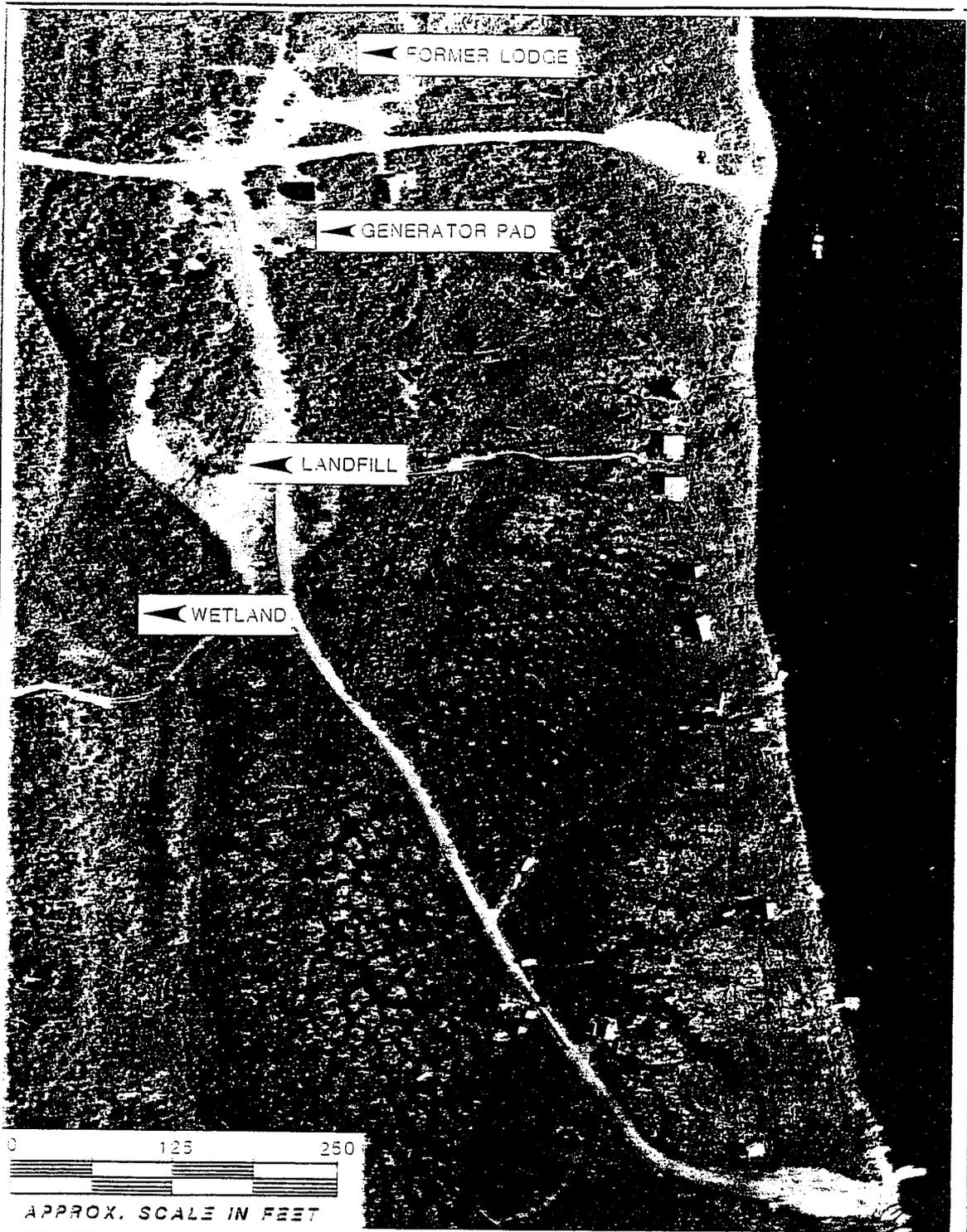
Site Location Map

Naknek Recreation Camp 2 (Lake Camp)
King Salmon, Alaska

FIGURE

1

FILE: 8019FX-45 - 811TH AIR SUPPORT GROUP - 811TH CIVIL ENGINEER BATTALION - 8019FX-45 - LAKE CAMP PLANNING 1999 AUTOCAD FIGURES FIG 1 - LOCATION MAP



Naknek Recreation Camps RI/FS
King Salmon, Alaska
LAKE CAMP, 1986

FIGURE
2