



**611TH AIR SUPPORT GROUP
611TH CIVIL ENGINEER
SQUADRON
ELMENDORF AFB, ALASKA**

**KING SALMON AIR STATION
KING SALMON, ALASKA
INSTALLATION RESTORATION PROGRAM**

**RECORD OF DECISION FOR
FINAL REMEDIAL ACTION
NAKNEK RECREATION CAMP 1
(RAPIDS CAMP/SITE OT032)**

APRIL 2000

R E C E I V E D

JUL 12 2000

**DEPARTMENT OF
ENVIRONMENTAL CONSERVATION**

RECORD OF DECISION
FOR
FINAL REMEDIAL ACTION

NAKNEK RECREATION CAMP 1 (RAPIDS CAMP)
KING SALMON AIR STATION
KING SALMON, ALASKA

DECLARATION,
DECISION SUMMARY,
AND
RESPONSIVENESS SUMMARY

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TECHNICAL DOCUMENT TO SUPPORT INSTALLATION RESTORATION DECISION

DECLARATION

SITE NAME AND LOCATION

Installation Restoration Program (IRP) Site OT032 (Groundwater Zone (GWZ) 6); Naknek Recreation Camp 1 (also known as Rapids Camp), located at King Salmon Air Station (KSA), Alaska.

STATEMENT OF BASIS

This decision is based on information contained in the Administrative Record, including but not limited to the results of an IRP Records Search, site investigations (1990 and 1991), a Remedial Investigation (RI) (1995), follow-up sampling (1996 and 1998), a Feasibility Study (FS) (1998), and Interim Remedial Action (IRA) performed in 1998 and 1999.

This Record of Decision (ROD) presents the selected alternative for the above listed site. This ROD has been developed in accordance with the Defense Environmental Restoration Program, 10 *United States Code* (USC) 2701, consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601 and Executive Order 12580 (52 *Federal Register* 2923) and Alaska Department of Environmental Conservation (ADEC) Water Quality Standards [18 Alaska Administrative Code (AAC) 70] and Oil and Hazardous Substances Pollution Control Regulations (18 AAC 75), and to the extent practicable with the National Oil and Hazardous Substances Pollution Contingency Plan (40 *Code of Federal Regulations* 300).

ASSESSMENT OF SITE

Rapids Camp was established in 1952 as a recreational facility for troops stationed at KSA. The facility included boat docks, fish camps, lodging, and a fuel storage area. Waste oils, fuels, and polychlorinated biphenyls (PCBs) were used and stored at the site. The camp was permanently closed in 1977.

A Preliminary Assessment (PA) of the site in June 1988 revealed approximately thirty 55-gallon drums, ground surface staining, and steel construction debris. Site investigation activities performed at Rapids Camp in 1990 and 1991 revealed buried tanks and debris, and the potential presence of petroleum hydrocarbons and solvents in site soils. A 1994 RI identified two main areas of contamination: the generator pad and the beach/dock areas. Additional investigations and evaluations, including a baseline human and ecological risk assessment, fate and transport modeling, an FS to evaluate remedial alternatives, and site monitoring, were performed from 1996 through 1998 at Rapids Camp. Resulting compounds of concern (COCs) were identified as are petroleum hydrocarbons, including diesel-range organics (DRO), ethylbenzene, and toluene, and the chlorinated solvent, trichloroethylene (TCE).

A Proposed Plan (PP) for IRA at Rapids Camp was prepared in March 1998. The preferred remedial alternative (general debris cleanup, excavation and remediation of contaminated surface soils, and continued groundwater monitoring) was selected and implemented in July 1998. A landfill identified on the Rapids Camp site was capped with 12-inches of soil and vegetative material in 1998.

In June 1999, additional excavation of surface soils contaminated above ADEC cleanup levels was completed at five isolated areas. This additional excavation eliminated the need for continued monitoring of these areas.

A Fact Sheet summarizing IRA results, monitoring results, and current site conditions at Rapids Camp was prepared and distributed in June 1999. The Fact Sheet also briefly describes the plan of action for site closure, which is detailed in this decision document. The Fact Sheet is provided as Appendix B. Details pertaining to current site groundwater and soil conditions are presented below.

Groundwater. Results from the most recent groundwater-sampling event (October 1998) indicate that no contaminants are present in site groundwater. Additionally, no contaminants were found in any of the area residential wells sampled from 1993 through 1997.

Soil. An isolated area of subsurface soil with DRO concentrations up to 9,300 mg/kg will be left in-place in the generator pad area. This area of impacted soil is located approximately 45 feet above the groundwater table and 30 feet bgs. Based on modeling, which indicated that this contamination will not leach to the groundwater, a cleanup level of 12,500 mg/kg (the maximum allowable DRO soil concentration under 18 AAC 75) was established for the generator pad area.

DESCRIPTION OF THE SELECTED REMEDY

Based on current site conditions at Rapids Camp and the successful implementation of interim remedial actions in 1998 and 1999, the U.S. Air Force (USAF) and ADEC have selected a plan of institutional controls (land-use restrictions), inspection and maintenance of the landfill cap, and continued groundwater monitoring, with no further remedial action planned, as the final action for Rapids Camp.

The selected remedy is deemed sufficient to protect human health and the environment from risks associated with exposure to contaminated soil and groundwater at the site. The selected remedy includes the following components:


- The USAF will modify the General Plan, 611th Air Support Group (ASG), Remote Alaska (hereafter referred to as the General Plan) and appropriate land records (i.e., deeds and/or notices) to include approved institutional controls, which restrict future installation of drinking-water wells and soil excavation within 100 feet of the generator pad and the landfill. Construction also will be prohibited at the landfill site. Land-use restrictions and land surveys will be included in the General Plan, which is scheduled for completion by October 2000.
- An inspection and maintenance program has been developed for the landfill cap. This program will be implemented following plans similar to those designed for the North and South Bluff sites (IRP Site OT029), as detailed in the *Draft Operation, Monitoring, and Maintenance Manual, North and South Barrel Bluffs, King Salmon, Alaska* (Hart Crowser, 1999).
- Annual groundwater monitoring will continue at the landfill site until the field and analytical data support the conclusion that contaminant levels remain below ADEC 18 AAC 75, Table C Groundwater Cleanup Levels. Monitoring may be discontinued after the five-year review and only with agency and community approval.

- Contamination remaining at the Rapids Camp site does not pose an unacceptable threat to human health or the environment; however, subsurface soil contamination exceeding established cleanup levels is being left in-place at the generator pad; therefore, the remedy summarized above and detailed in this ROD will be reviewed by the USAF and ADEC at a frequency of not less than once every five years to evaluate if the remedy continues to be effective and appropriate. The first review will be conducted by 2005. Input from the Naknek/South Naknek Native Village Council, King Salmon Village Council, Federal and State trustees, and the King Salmon Restoration Advisory Board (RAB) will be solicited prior to implementing any changes.

STATUTORY DETERMINATIONS

No further remedial action, except institutional controls and monitoring, is necessary to protect human health or the environment at this site. Interim remedial actions taken at the site have eliminated the need to conduct further remedial action. The monitoring results will be reviewed no less often than once every five years to ensure that the remedy remains protective of human health and the environment.

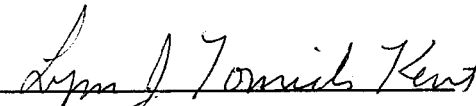
This decision may be reviewed and modified in the future if new information becomes available which indicates the presence of previously undiscovered contamination or exposure routes that may cause a risk to human health or the environment.



Michael Wyka, Colonel, USAF
Commander, 611th Air Support Group
United States Air Force

30 Jun 00

Date



Lynn J. Tomich Kent
Division of Spill Prevention and Response
Alaska Department of Environmental Conservation

4/11/00

Date

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ABBREVIATIONS AND ACRONYMS

611 th CES	611th Civil Engineer Squadron
AAC	Alaska Air Command
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AFB	Air Force Base
ARARs	Applicable or Relevant and Appropriate Requirements
ASG	Air Support Group
bgs	Below Ground Surface
BRISTOL	Bristol Environmental Services
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CFR	Code of Federal Regulations
COCs	Contaminants of Concern
CRP	Community Relations Plan
DRO	Diesel-Range Organics
EMCON	EMCON Alaska, Inc.
FAA	Federal Aviation Administration
FS	Feasibility Study
GRO	Gasoline-Range Organics
GWZ	Groundwater Zone
IRA	Interim Remedial Action
IRP	Installation Restoration Program
KSA	King Salmon Air Station
MCL	Maximum Contaminant Level
MSL	Mean Sea Level
NCP	National Contingency Plan
NFRAP	No Further Response Action Planned
NORAD	Northern American Aerospace Defense Command
OASIS	OASIS Environmental, Inc.
PA	Preliminary Assessment
PCB	Polychlorinated Biphenyl
PP	Proposed Plan
PRG	Preliminary Remediation Goal
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RG	Remediation Goal
RI	Remedial Investigation
ROD	Record of Decision
TCE	Trichloroethylene
TPH	Total Petroleum hydrocarbons
USAF	United States Air Force
USC	United States Code
VOC	Volatile Organic Compound

UNITS OF MEASURE

mg/Kg	Milligrams Analyte per Kilogram of Sample
mg/L	Milligrams Analyte per Liter of Sample
μg/Kg	Micrograms Analyte per Kilogram of Sample
μg/L	Micrograms Analyte per Liter of Sample

1 INTRODUCTION

This Decision Summary provides an overview of the No Further Remedial Action Planned (NFRAP) determination with institutional controls and continued groundwater monitoring for Installation Restoration Program (IRP) Site OT-032 (Groundwater (GWZ) 6); Naknek Recreation Camp 1 (commonly known as Rapids Camp), located at King Salmon Air Station (KSA), Alaska.

This document presents the physical features of the site, the contaminants present, and the associated risks to human health and the environment. It also describes the rationale for a NFRAP determination with institutional controls and continued groundwater monitoring, and states how the determination satisfies requirements of the Defense Environmental Restoration Program, 10 *United States Code* (USC) 2701, consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601 and Executive Order 12580, and the National Oil and Hazardous Substances Pollution Contingency Plan.

The U.S. Air Force (USAF) has completed a remedial investigation, feasibility study, human health and ecological risk assessments, modeling assessment, interim remedial action (IRA), and additional sampling at Rapids Camp. The results of the various investigation activities and the risk assessment were used to determine the need for remedial action at Rapids Camp.

A Proposed Plan (PP) for IRA at Rapids Camp was prepared in March 1998. The PP outlined a preferred remedial alternative for the site. After consideration of public comments, the preferred remedial alternative was selected. The selected alternative for remedial action (debris removal, excavation, and remediation of contaminated soils, and continued site monitoring) was implemented in July 1998. A fact sheet presenting the plan of action for site closure at Rapids Camp was distributed in June 1999 and is summarized below.

Generally, fieldwork conducted at the site has reduced the risk to human health and the environment; therefore, the need to conduct further remedial action has been eliminated. The resulting decision includes the following elements:

- Institutional controls limiting the installation of drinking wells, soil excavation, and construction;
- An inspection and maintenance program for the landfill cap;
- Annual groundwater monitoring; and
- Five-year reviews to ensure that no unacceptable risk or threat to public health or the environment remains at the site.

2 SITE NAME, LOCATION, AND DESCRIPTION

King Salmon is situated on the Alaska Peninsula adjacent to Bristol Bay and Katmai National Park and Preserve, approximately 280 miles southwest of Anchorage and 15 miles east of Kvichak Bay (Figure 1). King Salmon lies in the Nushagak-Bristol Bay Lowland, a broad piedmont characterized by morainal topography and abundant fresh-water lakes. The area is accessible only by air or water.

The name "King Salmon" is used in this ROD to indicate the general area of the property and installation, including the commercial airport, current and former USAF property, and the community of King Salmon. KSA refers specifically to current and former USAF property.

Rapids Camp is located on the northern bank of the Naknek River, roughly 6 miles southeast of KSA (Figure 1). The camp occupies about 12.5 acres of land and is contained within Section 4 of Township 18S, Range 44W. A road provides access to the site from the community of King Salmon.

ADEC is the lead regulatory agency for KSA. As such, the Rapids Camp site is presently being addressed as a contaminated site under the State of Alaska Oil and Hazardous Substances Pollution Control Regulations (18 AAC 75).

Contract Drafting Service AUTOCAD File 9934SLM.DWG, Dated October 29, 1999

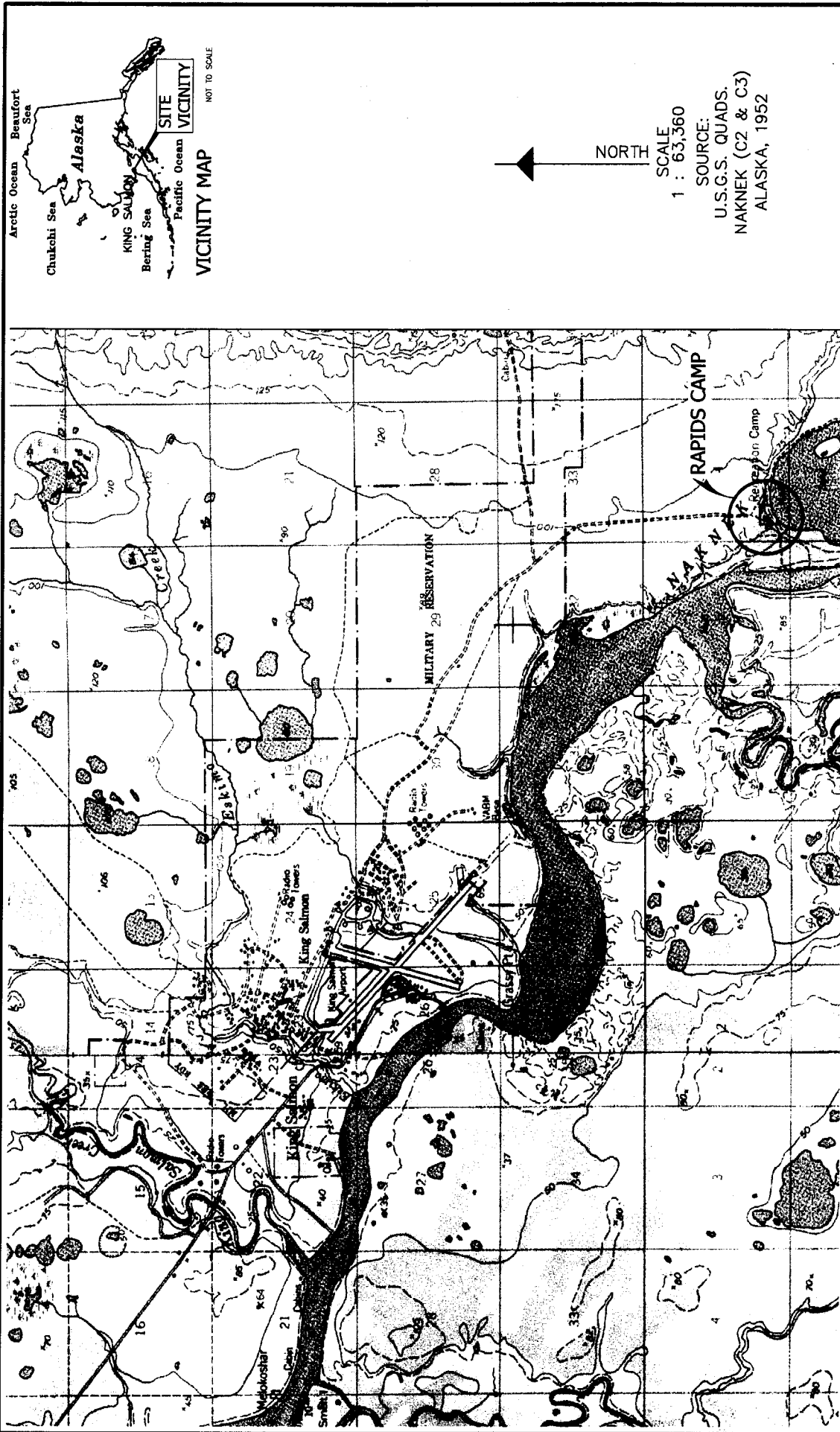


FIGURE
1

LOCATION MAP
NAKNEK RECREATION CAMP I (RAPIDS CAMP) ROD
King Salmon, Alaska

611TH AIR SUPPORT GROUP
611TH CIVIL ENGINEER SQUADRON
ELMENDORF AFB, ALASKA

DATE: AUG. 1999
CHKD: J.P.
DRAWN: NO
CDS-LJW
PROJ. NO: 71-002-02



3 SITE HISTORY

3.1 KSA HISTORY

KSA was constructed by the Civil Aeronautics Authority (now the Federal Aviation Administration [FAA]) as part of an overall airfield construction program in Alaska during the early 1940s. The field was completed and turned over to the U.S. Army in 1941. The airfield became an advance staging base and fuel stop for aircraft deployed to and from the Aleutian Islands. It was returned to the control of the FAA in 1945.

The Alaska Air Command (AAC) began using the airport in 1948 as a Forward Operating Base. The installation has provided operation and maintenance support of aircraft on alert. KSA was also one of the original ten aircraft control and warning sites constructed as part of a permanent air defense system in Alaska during the early 1950s. KSA became an operational ground controlled intercept site in 1951. It was converted to a North American Aerospace Defense Command (NORAD) Control Center in 1953. The FAA turned the airport over to the State of Alaska in 1959. The State of Alaska continues to operate the airport with the USAF as its major tenant.

Outside communications were initially provided by a high-frequency radio system. A White Alice Communications System, tropospheric scatter, and microwave relay equipment site was activated at KSA in 1957. In 1979, it was deactivated and replaced by a satellite earth terminal owned and operated by ALASCOM.

In 1977, the AAC implemented a base support contract with RCA Services as part of an USAF-wide effort to reduce remote tours as well as personnel. Installation of Joint Surveillance System equipment was completed in 1982, enabling radar and beacon data to be transmitted via satellite to the Region Operations Control Center. This further reduced the number of personnel required at the installation.

KSA was one of the forward operating locations hosting the North American Aerospace Defense Command alert mission, using F-15 Eagles rotated from the 3rd Wing at Elmendorf Air Force Base (AFB) in Anchorage. KSA was manned by the 643rd Support Squadron under the operational control of the 611th Air Control Wing at Elmendorf AFB.

Since the reduction in the perceived air threat from the former Soviet Union, Department of Defense cost-reduction initiatives have been implemented, and the alert mission at KSA has been terminated. The station is on caretaker status, maintained by Chugach Development Corporation in a condition to permit rapid reactivation. The primary activity is building and equipment maintenance. The 611th Civil Engineer Squadron (611th CES) continues to pursue the IRP.

3.2 RAPIDS CAMP HISTORY

Rapids Camp was established in 1952 as part of a USAF program to build facilities for "morale, recreation, and welfare." The facility included boat docks, fish camps, lodging, and a fuel storage area. The camp was permanently closed in 1977. A fire occurred near the boat dock in 1978. All remaining buildings, tanks, and other structures have been removed from the site. Figure 2 is a Rapids Camp site map, illustrating the different areas within the camp. Figure 3 is a cross-section.



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NAKNEK RECREATION CAMP I (RAPIDS CAMP) ROD
King Salmon, Alaska

FIGURE
2

SITE MAP

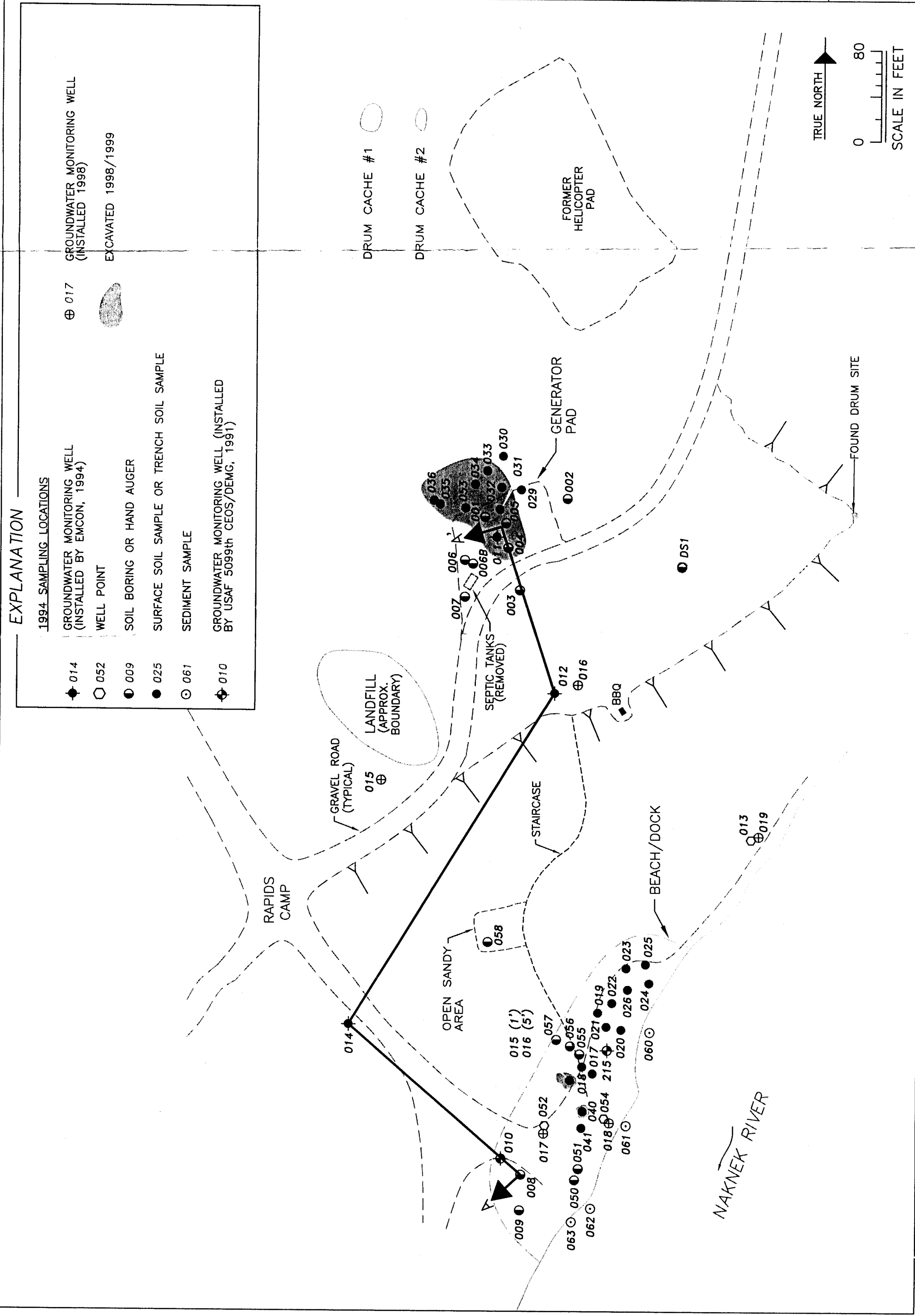


FIGURE 3

NAKNEK RECREATIONAL CAMP 1 (RAPIDS CAMP) ROD
King Salmon, Alaska

CROSS SECTION A-A'

611TH AIR SUPPORT GROUP
ELMENDORF AFB, ALASKA

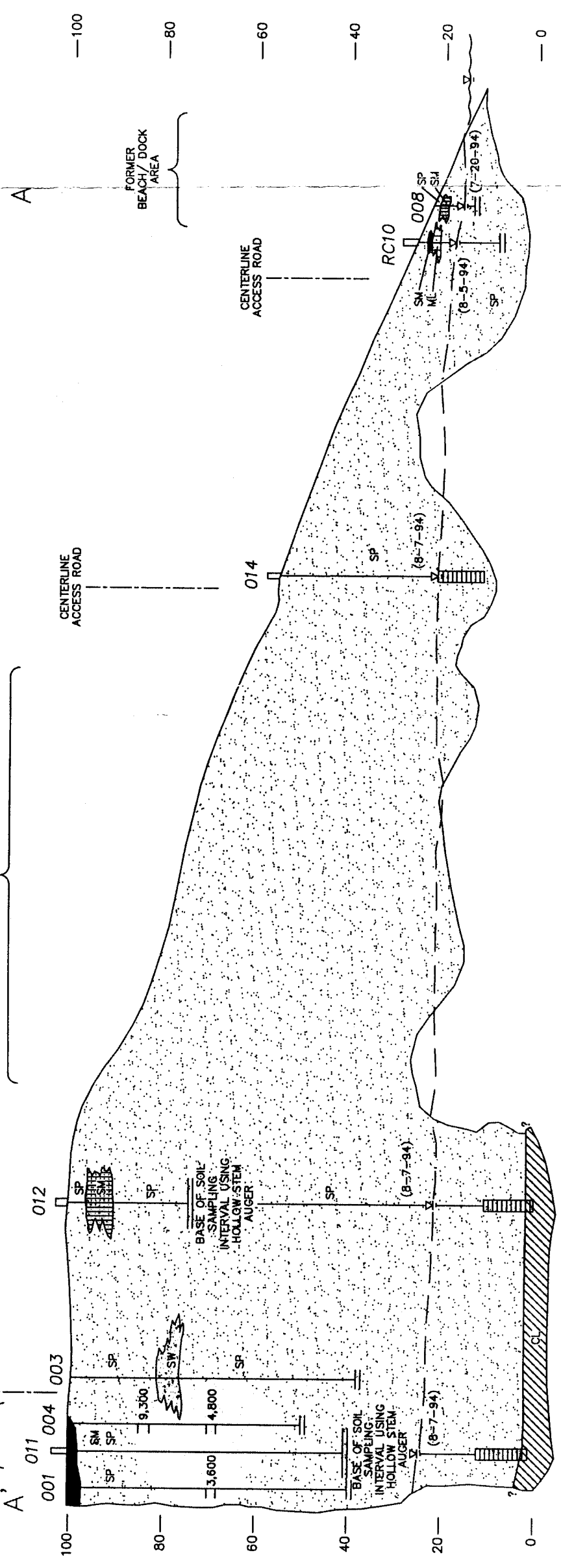


DATE
AUG. 1999
CHKD
i.p.
DRAWN
CDS/LW
PROJ. NO
71-002-02

EXPLANATION

	MONITORING WELL/ SOIL BORING IDENTIFICATION NUMBER
	SCREENED INTERVAL
	MAXIMUM DEPTH OF BORING
	STATIC WATER LEVEL (DATE)
	WELL GRADED SANDS OR GRAVELLY SANDS
	POORLY GRADED SANDS OR GRAVELLY SANDS
	SILTY SANDS, SAND SILT MIXTURES
	INORGANIC SILT
	CLAY
	DRO CONCENTRATION IN mg/kg
	INFERRED EXTENT OF REMAINING DRO CONTAMINATION
	SOIL EXCAVATED 1998

SW = 3,600
SP = 3,600
SM = 3,600
ML = 3,600
CL = 3,600



HORIZ. SCALE IN FEET
0 20 40 60

A Preliminary Assessment (PA) of the camps was completed in June 1988 to determine the nature and extent of potential environmental impact. A site visit was completed as part of the PA, and research was conducted to investigate the use and disposal of hazardous materials at the camps. Waste oils, fuels, and polychlorinated biphenyls (PCBs) were reportedly disposed of at Rapids Camp. The site visit revealed approximately thirty 55-gallon drums, ground surface staining, and steel construction debris.

The USAF performed site investigation activities at Rapids Camp in 1990 and 1991. An electromagnetic conductivity survey was performed at Rapids Camp in August 1990. Several anomalies indicated buried high-conductivity debris (a potential underground storage tank, buried construction debris, and an underground septic system were suspected). The soil gas survey, conducted in July 1991, indicated the presence of petroleum hydrocarbons or solvents in site soils at the generator pad and Quonset Hut areas. A total of 16 soil borings were advanced in July 1991. One boring was converted to a groundwater monitoring well. The field screening results indicated potential contamination by volatile organic compounds (VOCs) in the near surface and subsurface soils [22 ft below ground surface (bgs)] and TPH between 35 and 37 ft bgs.

The USAF completed an RI at Rapids Camp in 1994 to provide information regarding the nature and extent of contamination in site soils and groundwater (EMCON, 1995). Two areas of contamination were identified at the site: the generator pad and the beach/dock areas. Additional water samples were collected in 1996 from surface water and monitoring wells at Rapids Camp. Sediment samples were collected from the beach/dock area as part of the 1995 RI (EMCON, 1995).

Additional site investigations and evaluations were performed from 1996 through 1998 at Rapids Camp. A baseline human health and ecological risk assessment was completed in 1996 (EMCON, 1996). A modeling exercise was conducted to determine the potential for soil contamination to leach to the groundwater (OASIS, 1998). A FS was prepared in 1998 to evaluate remedial alternatives (EMCON, 1998).

A PP for IRA was prepared for Rapids Camp in March 1998. The preferred remedial alternative was selected and implemented in 1998 and 1999. A summary of IRA activities is presented below and detailed in Section 7.

- Contaminated soils in the generator pad area were excavated in 1998 to a depth of five feet and transported to the bioremediation treatment cell at KSA. Following confirmation sampling, the excavated area was capped with 12 inches of clean soil and re-vegetated. Additional excavation of surface soils occurred in 1999.
- One composite sample was collected for PCB analysis from three drums (approximately 1 cubic yard) of excavated surface soil suspected of containing PCBs.
- Surface debris and solid waste littering the area were collected and disposed of.
- Two septic tanks were removed from an area south of the former generator pad.
- A small landfill was capped and re-vegetated.
- Two additional monitoring wells were installed at the site.

- Discretionary surface soil samples were collected from 18 locations at the former helicopter pad, along the former pipeline corridor, and along the beach.
- Surface soil samples were also collected from the drum cache area. This area is not part of Rapids Camp; consequently, it is not addressed in this decision document.

A Fact Sheet was prepared and distributed in June 1999. The Fact Sheet summarized IRA results and explained the plan of action for site closure at Rapids Camp. This Fact Sheet is provided as Appendix B and significant details are summarized below.

- Excavation floor confirmation sampling indicated that no further excavation is warranted in the generator pad area.
- The sample submitted for PBC analysis contained <1 mg/kg, which is less than the regulatory action level. The approximately one cubic yard of uncontaminated soil was spread along the roadway near Rapids Camp.
- Contaminants were not detected in nearshore sediment or surface-water samples collected at the beach/dock area.
- Of the 18 discretionary soil samples, one surface soil sample exceeded diesel-range organics (DRO) cleanup levels. The soil sample collected from location DS-1, approximately 150 feet southeast of the generator pad area had a DRO concentration of 11,000 mg/kg. This area was excavated in 1999.
- Two areas were identified north of the generator pad area that contained many drums (Drum Cache 1 and 2 on Figure 2). A discretionary soil sample collected from Drum Cache 1 (DS-16) exhibited a DRO concentration of 330 mg/kg, which is above the 18 AAC 75 Method Two "Migration to Groundwater" cleanup level, but not the 10,250 mg/kg cleanup level applicable to this site. The Drum Cache areas are outside of the Rapids Camp project boundaries and are not addressed in this decision document.
- No contaminants were detected above cleanup levels in groundwater during sampling events conducted in October 1998 (the most recent event) at the Rapids Camp site.

Residential wells in the vicinity of Rapids Camp were sampled for potential contaminants three times during the previous two years. No contaminants were found in any of the residential wells at levels that might pose a risk to human health.

Groundwater and surface water samples were collected from Rapids Camp in July 1998 to support an Intrinsic Remediation Study (OASIS, 1999). No fuel hydrocarbons (DRO) and no VOCs (including TCE) were detected in samples from the generator pad area. However, TCE, ethylbenzene, toluene, and m,p-xylenes were detected in the sample collected from MW-018 within the beach/dock area. The concentrations of these constituents were below established groundwater cleanup levels.

Additional groundwater and surface water samples were collected from Rapids Camp in October 1998 (OASIS, 1999). No fuel hydrocarbons (DRO) and no VOCs (including TCE) were detected in any samples.

4 COMMUNITY PARTICIPATION

The community relations plan (CRP) and proposed plans for the contaminated sites at KSA, including Rapids Camp, are available for review in the information repositories. The specific requirements for public participation pursuant to CERCLA, as amended by SARA, include releasing the proposed plans to the public. King Salmon Restoration Advisory Board (RAB) members indicated that the Rapids Camp site was a priority. The PP for remedial action for Rapids Camp was released to the public in March 1998 and has been placed in the Administrative Record and information repository. A Fact Sheet documenting the plan of action for site closure for Rapids Camp was released to the public in June 1999. Public comments on the Fact Sheet were accepted through July 1999. No comments were received. Copies of the Proposed Plan and Fact Sheet are available for review at the following locations:

King Salmon Information Repository
King Salmon Air Force Base, Alaska
Point of Contact: Mr. Steve Wilhelmi
USAF Community Relations
(907) 552-8166 or 1-(800) 222-4137
Email: steven.wilhelmi@elmendorf.af.mil

King Salmon Administrative Record
Elmendorf Air Force Base, Alaska
Point of Contact: Mr. Steve Wilhelmi
USAF Community Relations
(907) 552-8166 or 1-(800) 222-4137
Email: steven.wilhelmi@elmendorf.af.mil

The Fact Sheet is also provided as Appendix B of this ROD.

The 611th CES, Environmental Restoration Section has conducted a comprehensive community involvement effort to inform and involve the public in the environmental decision-making process. Community relations activities that have taken place at KSA are described below.

Community Relations Plan. A CRP was completed in 1993 and updated in 1995. The CRP was updated again in 1997 due to community concerns (EMCON, 1997). The CRP was prepared to promote communication between the USAF and the general public during remediation processes at King Salmon. The objective is to provide accurate, straightforward, and up-to-date information about all phases of cleanup activities to public officials, commercial interests, the community, and other interested parties. The CRP is currently being implemented under the direction of the USAF Community Relations Coordinator and Remedial Project Manager.

Restoration Advisory Board. A RAB was formed on March 15, 1995, to serve as a forum for discussion and exchange of information between federal/state agencies and the community regarding the cleanup program at KSA. The RAB provides an opportunity for stakeholders to review cleanup progress, provide input, and participate in dialogue with decision-makers. The RAB is composed of representatives from the local community, the installation, ADEC, and local government. The goal of the RAB is to

increase community understanding of cleanup issues and progress, and provide greater opportunities for communities to participate in the process and impact decisions. RAB meetings are open to the public and can serve as the public meetings for receiving community comments during a comment period.

RAB meetings have been held monthly in King Salmon beginning with the first official meeting on April 20, 1995. Meetings are currently scheduled for the third Tuesday of each month.

Administrative Record. The Administrative Record, as required by CERCLA, has been established at the Chapel Center, Building 9-824 at Elmendorf AFB. A copy is also maintained at the King Salmon Information Repository at King Salmon Airport. The Administrative Record contains the information that has been used to support USAF decision-making and is accessible to the public.

Mailing List. A mailing list of interested parties in the community is maintained and updated regularly by the USAF Community Relations Coordinator. This mailing list is used to provide interested parties copies of the newsletters, fact sheets, and notices of public meetings that pertain to the environmental issues at KSA.

Fact Sheets and Newsletters. A Fact Sheet summarizing the results of remedial action at Rapids Camp and discussing proposed future activities (long-term monitoring and institutional controls) for the site was released to the public in June 1999. The Fact Sheet, which is presented as Appendix B of this document, was distributed and discussed during the June 1999 RAB meeting. No comments were received regarding the Fact Sheet.

Three issues of *The Flying Sockeye* newsletter have been published and circulated (January 1993, October 1994, and July 1995) to interested parties in the community. Articles contained in *The Flying Sockeye* have described the IRP process, identified 17 sites as potentially contaminated with hazardous materials, and designated five zones at KSA. *The Flying Sockeye's* purpose is to describe field work that has been performed, the types of contamination that has been detected, and inform the public about the environmental cleanup of contaminated areas at KSA.

An additional newsletter, *All Around Alaska—King Salmon Edition* was published and circulated (August 1998) to interested parties in the community. This newsletter described ongoing work at KSA, including groundwater sampling and the human health foodchain and wetlands evaluation.

Public Meetings. The USAF held a public meeting on May 17, 1990, to inform area residents of past waste disposal practices and current and planned environmental investigations. The meeting was attended mainly by borough officials. In addition, the USAF held discussions with community members in July and August 1990.

A public meeting to distribute additional copies of the PP for remedial action and discuss the proposed plan was held in King Salmon on April 15, 1998. The Public notices announcing the meeting were posted in the *Bristol Bay Times* and the *Anchorage Daily News* prior to the meeting. The public comment period for the proposed plan was April 1, 1998 to April 30, 1998.

Proposed activities regarding site closure at Rapids Camp were placed on the agenda and discussed during the monthly King Salmon RAB Meetings, which are open to the public. Any public-concern comments received during the RAB meetings were noted and incorporated into this decision document. Consequently, no oral or written comments were received during the formal public comment period, which ran from June to July 1999.

5 SITE CHARACTERISTICS

Site characteristic information for Rapids Camp was summarized from the following sources: *Remedial Action Report, Rapids Camp, King Salmon, Alaska* (Bristol/Nugget, 1998); *Draft Intrinsic Remediation Study, King Salmon Airport, Groundwater Zone 6* (OASIS, 1999); and *Overview of Environmental and Hydrogeologic Conditions at King Salmon, Alaska* (Waythomas, 1994).

5.1 CLIMATE

King Salmon is in a maritime-continental transition climate zone. The mean annual temperature is 33°F, with average summer high temperatures ranging between 50 and 60°F, and winter average lows ranging between -20 and 6°F. Average annual precipitation is approximately 20 inches, including 46 inches of snow. Cloud coverage is frequent, averaging approximately 80 percent. Mountain ranges to the south, east, and west provide uplift for moisture-laden air moving in from nearby open-water areas. As this moisture condenses, it forms low-level clouds and frequent fog in all months of the year. The high moisture content of the air causes substantial accumulations of frost and rime ice.

5.2 REGIONAL GEOLOGY AND HYDROGEOLOGY

The KSA is situated on a segmented volcanic arc of the Aleutian arc-trench system. This arc-trench system continues to form along the collision boundary formed as the northward-moving Pacific tectonic plate is subducted beneath the west/southwest-moving North American tectonic plate. Hence, the entire Alaska-Aleutian Peninsula is in an intensively active seismic zone. Within the eastern Aleutian arc, ten of 22 volcanoes spanning the 336-mile-long volcanic front have erupted in recorded history, and another six exhibit signs of hydrothermal activity. The rugged mountain peaks along the southeastern coast of the Alaska Peninsula are the surface manifestation of volcanic intrusions and distributed sediments from earlier arc-related volcanoes. The lowland areas of the Alaska Peninsula are generally mantled by highly eroded Tertiary volcanic rock, which contributes to the subdued topographic expression of the Nushagak-Bristol Bay Lowland.

The upper few hundred feet of unconsolidated soils in the KSA area consist of glacial sediments deposited during three distinct Pleistocene glacial events. These deposits have been reworked by tidal and fluvial processes. The sediments consist of unconsolidated, poorly to moderately well sorted gravels, sands, silts, and clays typical of fluvial and lacustrine depositional environments.

5.3 SITE GEOLOGY AND HYDROGEOLOGY

Most of the King Salmon area is volcanic material with a silt loam or loam surface. On nearly level terraces bordering the Naknek River, the substrata are generally sand. In low hills, ash may be underlain by gravelly sandy loam to gravelly clay loam glacial till. The soils generally have thick mossy mats and shallow groundwater tables above the permafrost.

Rapids Camp is located on the northern banks of the Naknek River. The surface topography gently slopes from an elevation of approximately 20 feet above mean sea

level (MSL) along the Naknek River to an elevation of approximately 100 feet above MSL at the generator pad area. Two monitoring wells were installed at Rapids Camp in June, 1998, and the well stratigraphy was logged as poorly graded medium to fine silty sand to a depth of 60 feet (Bristol/Nugget, 1998). The 1994 investigation reported surface soils at Rapids Camp of poorly graded sands, with isolated occurrences of silty sands and well graded sands.

Based on the soil borings and well log data collected for the 1995 RI, a single aquifer unit was identified at Rapids Camp (EMCON, 1995). The aquifer is likely recharged by precipitation and influent stream flow. At Rapids Camp monitoring wells MW-011 and MW-6, an aquitard consisting of clay was encountered at a depth of approximately 98 feet bgs (EMCON, 1995). In addition, an isolated lens of inorganic silt was encountered at MW-014, but the lens did not appear to extend into the saturated zone or serve as a barrier to groundwater flow.

5.3.1 Groundwater

The water table depth at Rapids Camp varies from the surface at the Naknek River to 83 feet below the top of the well casing at MW-016. The saturated thickness of the aquifer is at least 15 feet based on the aquitard depth of 98 feet bgs at MW-011 and MW-016. Groundwater flow is southwest toward the Naknek River. EMCON (1995) estimated the groundwater velocity at 0.00037 to 0.00078 centimeters per second.

5.3.2 Surface-Water

Surface water is abundant in the King Salmon area and includes numerous fresh-water lakes, streams, and bogs. The Naknek River is the principal surface-water body in the project area. The river is a major tributary of Kvichak Bay.

5.4 AIR

Air quality at KSA is qualitatively good (Waythomas, 1994). Although air-quality modeling or analyses have not been performed, pollution levels are likely to be low given the remote location and low level of development in the King Salmon area. Potential natural pollutants include forest fire smoke and windblown silt. Anthropogenic sources include petroleum hydrocarbon vapors and combustion emissions from storage tanks, refueling operations, and engine operations.

5.5 WILDLIFE AND VEGETATION

As a result of the relatively mild climate and varied topography, the King Salmon area supports a diverse and productive range of fish, birds, mammals, and plants. Plentiful surface water sustains an abundant community of commercially valuable fish species including rainbow trout, arctic char, arctic grayling, lake trout, whitefish, burbot, northern pike, and all five species of Pacific salmon.

Large populations of waterfowl (ducks, geese, and swans) nest and migrate through the area. Shore and wading birds include arctic and red-throated loons, cranes, parasitic jaegers, mew gulls, and Arctic terns. Land-dwelling bird species that have been observed in the King Salmon area include the spruce grouse, Lapland longspur, snow bunting, swallows, American dipper, Savanna sparrow, and raptors (osprey, short-eared owl, and bald eagle). No raptor nesting sites have been reported within KSA boundaries.

The largest land mammals using the area are brown bear, moose, and caribou. Other land mammals include wolf, wolverine, lynx, arctic and tundra hare, porcupine, and beaver. Beluga whales and river otters have been observed in the Naknek River.

A variety of vegetation, from subarctic forest to moist tundra, can be found throughout the region. Commonly observed vegetation includes lichen, sphagnum heath, crowberry, low birch, and marsh blueberry. Shoreline areas typically are foliated with sedges, cotton grass, willows, grasses, balsam poplar, and alder.

No threatened or endangered species have been observed at the North and South Bluff sites. While peregrine falcons and a variety of marine mammals live near the area, these species are unlikely to use the sites for feeding, nesting, or propagating.

5.6 SOCIOECONOMICS

King Salmon shares close socioeconomic ties with the nearby communities of Naknek and South Naknek. Naknek and King Salmon lie on the north bank of the Naknek River and are connected by a 13-mile long road. South Naknek is located on the southern bank of the Naknek River, opposite Naknek. The three communities share public utility services. Based on information compiled by the Alaska Department of Labor in 1996, the total permanent population of the three communities is approximately 1,250 residents, of which approximately 470 are in King Salmon.

The economic base of the area principally is composed of commercial fishing, fish processing, and transportation services. Fish processing attracts many workers from other areas during the fishing season. Transportation services include air taxi companies and commercial jet aviation (passenger and air cargo). Of the resident population, approximately 24 percent are employed in educational services, 22 percent in public administration, 13 percent in retail trade, 12 percent in transportation, 7 percent in construction, and the remainder in professional services, public utilities, manufacturing, and fisheries (1990 census figures).

6 NATURE AND EXTENT OF CONTAMINATION

The nature and extent of contamination has been evaluated using data presented in previous reports, especially the 1994 RI report (EMCON, 1995), the 1998 Intrinsic Remediation Study (OASIS, 1999), and supplemental sampling conducted between 1994 and 1998. These data show that the primary chemicals of concern (COCs) are petroleum hydrocarbons, including DRO, ethylbenzene, and toluene, and the chlorinated solvent, TCE. Contaminant concentrations exceeding their cleanup levels at the generator pad and beach/dock sites are provided in Tables 1 and 2, respectively.

6.1 BEACH/DOCK AREA

6.1.1 1994 RI Sampling

During the 1994 RI, surface soil, subsurface soil, and groundwater samples were collected throughout the site and analyzed for potential contaminants. In addition, riverbed sediments and surface water were collected from the Naknek River along the beach/dock area. Detections are discussed below with respect to current cleanup levels (18 AAC 75), which had not been established at the time of the RI sampling.

Petroleum hydrocarbons were found at low levels in surface and subsurface soil throughout the beach/dock area. Maximum DRO concentrations of 1,200 (estimated) mg/kg and 420 mg/kg were detected in samples from borings 040 (4 ft bgs) and 015/016 (1 ft bgs), respectively. TCE was detected in one surface soil sample at a concentration exceeding its cleanup level (0.78 mg/kg in the sample from boring 040 at 4 ft bgs). Contaminant concentrations exceeding their cleanup levels are provided in Table 2.

Groundwater was found in wells at the beach/dock area at depths of 7 feet or less, and contamination was detected in one groundwater monitoring well point. DRO and two petroleum hydrocarbon constituents (ethylbenzene and toluene) were detected at concentrations exceeding their cleanup levels in a groundwater sample from one well point (well point 052, with 6.4 mg/L DRO, 0.86 mg/L ethylbenzene, and 4 mg/L toluene). Two chlorinated compounds, trichloroethene (TCE) and one of its degradation products, cis-1,2-dichloroethene, were also detected above applicable cleanup levels in the water sample from well point 052. TCE was detected at 3.4 mg/L, and cis-1,2-DCE was detected at 0.21 mg/L. Contaminant concentrations exceeding their cleanup levels are provided in Table 2. The sources of contamination in this area are thought to be spills from above ground fuel storage tanks used to refuel boats and solvents used in the maintenance of boat motors and equipment.

Four sediment samples were collected from the Naknek River bed. DRO were detected at 14 mg/kg in one of the four samples. No other petroleum hydrocarbons or VOC were detected in the sediment samples. No screening criteria currently exist for DRO in sediments.

6.1.2 1996 Follow-up Sampling

A sampling event performed in 1996 indicated that the TCE concentration in well point 052 had decreased to below detectable levels, while the DRO concentration had decreased to 0.1 mg/L, which is below the applicable cleanup level. In the 1996 sampling event, methylene chloride was detected at 10 micrograms per liter ($\mu\text{g/L}$);

however, this detection was at a similar level commonly detected as a laboratory artifact. In addition, there is no history of methylene chloride use at the site, and it was not detected before or after the 1996 sampling event.

6.1.3 1998 Monitoring

Groundwater and surface water samples were collected from Rapids Camp in July 1998 to support the Intrinsic Remediation Study (OASIS, 1999). Three new microwells were installed, including a replacement for well point 052 (MW-017). Two of the microwells (MW-017 and MW-019) were sampled in July 1998 (the third microwell, MW-018, could not be sampled, due to a blockage). In addition, two surface water samples were collected from the Naknek River. No fuel hydrocarbons (DRO) and no VOCs (including TCE) were detected in the 1998 surface water and groundwater samples from the beach/dock area. Figure 2 shows sampling locations.

Additional groundwater and surface water samples were collected from Rapids Camp in October 1998 to support the continuing Intrinsic Remediation Study (OASIS, 1999). Groundwater samples were collected from MW-018 during this monitoring event. DRO were not detected in any groundwater or surface water samples in this area. VOCs were not detected in groundwater or surface water samples at the beach/dock area with the exception of MW-018. TCE, ethylbenzene, toluene, and m,p-xylenes were detected in the sample collected from MW-018 at concentrations below established cleanup levels.

6.2 GENERATOR PAD/LANDFILL AREA

6.2.1 1994 RI Sampling

During the 1994 RI, surface soil, subsurface soil, and groundwater samples were collected throughout the site and analyzed for potential contaminants. As in the previous Section 6.1.1, detections are discussed below with respect to current cleanup levels (18 AAC 75), which had not been established at the time of the RI sampling.

Surface soils at the generator pad area were contaminated with petroleum hydrocarbons. The source of the contamination is thought to have been diesel spills associated with the operation of diesel powered generators.

In 1994, seven soil borings were completed in the vicinity of the former generator pad to a depth of 60 feet. Surface soil samples were collected from nine additional locations in this area. The soil boring data indicates that petroleum hydrocarbons exceeding cleanup goals were present from the surface to approximately 5 feet bgs. Diesel was detected in surface soil at concentrations ranging from 42 milligrams per kilograms (mg/kg) to 280,000 mg/kg. PCBs were detected in one surface soil sample at a concentration of 11 mg/kg. The sample containing PCBs was collected near several used drums and visible surface staining. Diesel was also detected in this sample at a concentration of 14,000 mg/kg. PCBs were not detected in any other surface or subsurface soil samples, nor were PCBs detected in follow-up sampling conducted in the area in 1998.

Subsurface soil contamination (DRO) was detected in samples from two soil borings. The maximum DRO concentrations detected at the site were 9,300 mg/kg (15-17 feet bgs) and 4,800 mg/kg (30-32 ft bgs) in Boring 004. In Boring 001, DRO were detected

at a concentration of 3,600 mg/kg (30 to 32 feet bgs). These two soil borings were located approximately 35 feet apart near the center of the former generator pad area. In adjacent soil borings (25 to 50 feet away), a maximum subsurface DRO concentration of 1,100 mg/kg was detected.

Groundwater was found at a depth of approximately 80 feet bgs near the generator pad. No contamination was detected in site groundwater. The deepest penetration of contamination into the soil is 35 feet bgs, which is nearly 45 feet above the groundwater.

6.2.2 1998 Modeling to Support Remedial Alternatives

In 1998, SESOIL modeling was performed to evaluate the impact of leaching from the DRO-impacted soil in-place in the generator pad area (OASIS, 1998). The leaching assessment predicted that DRO would not leach to the groundwater within a 50-year modeling timeframe. In summary, the SESOIL modeling does not predict unacceptable risk to site groundwater or the Naknek River as a result of the DRO-impacted soil at the site.

6.2.3 1998 Intrinsic Remediation Study

Groundwater samples were collected from Rapids Camp in July 1998 to support the Intrinsic Remediation Study (OASIS, 1999). Two new monitoring wells were installed and sampled in July 1998 (see Figure 2). No fuel hydrocarbons (DRO) and no VOCs (including TCE) were detected in the 1998 samples from the generator pad area.

Additional groundwater samples were collected from Rapids Camp in October 1998 (OASIS, 1999). DRO and VOCs were not detected in any groundwater samples in this area.

6.3 RESIDENTIAL WELLS

Residential wells in the vicinity of Rapids Camp were sampled for potential contaminants three times during the previous two years. No contaminants attributable to USAF activities were found in any of the residential wells.

7 REMEDIAL ACTION RESULTS

7.1 1998 IRA RESULTS

The objectives of the 1998 IRA were to excavate the remaining soil contamination to a depth of five feet bgs, cap and re-vegetate the landfill and soil excavation areas, remove drums and miscellaneous debris, collect and analyze soil samples across the site, remove a septic tank, and install two new monitoring wells. The IRA addressed near-surface soil contamination at the generator pad area and documented remaining contaminant levels throughout the site with discretionary soil sampling. Soil samples were collected from the excavation floor of the generator pad. Additional surface soil samples were collected in the former Quonset hut area, helicopter pad area, the former pipeline pathway, the beach/dock area, and the drum cache areas. Figure 2 shows the IRA sampling locations.

Activities recommended under the 1998 IRA Proposed Plan that were performed in the summer of 1998 are listed below:

- Contaminated soils were excavated to a depth of five feet in the generator pad area. Approximately 830 cubic yards of excavated soils were transported to the bioremediation treatment cell at King Salmon Air Station. Following confirmation sampling, the excavated area was capped with 12 inches of clean soil and re-vegetated.
- One composite sample was collected for PCB analysis from three drums (approximately 1 cubic yard) of excavated surface soil suspected of containing PCBs.
- Surface debris and solid waste littering the site area was collected and disposed of. This effort included the recovery, characterization, and transport of 58 drums found throughout the Rapids Camp area. In addition, twelve end-dump loads of debris ranging from perforated steel plank to household appliances were transported to the local landfill.
- Two septic tanks, one formerly known as an underground storage tank, were removed from an area south of the former generator pad.
- The area directly adjacent to monitoring well MW-16, which was reportedly an historic small landfill, was capped with 12 inches of clean soil and re-vegetated with grass.
- Two monitoring wells (MW-016 and MW-015) were installed downgradient of the generator pad (see Figure 2). Monitoring well MW-016 replaced former MW-012. MW-015 is also downgradient of the landfill.
- Discretionary surface soil samples were collected from 18 locations at the former helicopter pad, along the former pipeline corridor, and along the beach.
- Surface soil samples were also collected from the drum cache area. This area is not part of Rapids Camp; consequently, it is not addressed in this decision document.

Significant findings from the IRA are listed below:

- Confirmation samples collected from the bottom of the excavation were below cleanup levels. No further excavation is warranted in the generator pad area.

- The sample submitted for PCB analysis contained <1 mg/kg, which is less than the regulatory action level. The approximately one cubic yard of uncontaminated soil was spread along the roadway near Rapids Camp.
- Contaminants were not detected in nearshore sediment or surface-water samples collected at the beach/dock area.
- Of the 18 discretionary soil samples, one surface soil sample exceeded DRO cleanup levels. The soil sample collected from location DS-1, approximately 150 feet southeast of the generator pad area had a DRO concentration of 11,000 mg/kg. This area was excavated in 1999. Confirmation soil samples were below cleanup levels.
- Two areas were identified north of the generator pad area that contained many drums (Drum Cache 1 and 2 on Figure 2). A discretionary soil sample collected from Drum Cache 1 (DS-16) exhibited a DRO concentration of 330 mg/kg, which is above the 18 AAC 75 Method Two "Migration to Groundwater" cleanup level, but not the 10,250 mg/kg cleanup level applicable to this site. The Drum Cache areas are outside of the Rapids Camp project boundaries and are not addressed in this decision document.
- No contaminants were detected in groundwater during sampling events conducted in 1998 (the most recent event) at the Rapids Camp site.

7.2 1999 IRA RESULTS

Based on the RAR and previous investigations, additional excavation activities were conducted in 1999 (Bristol/Nugget, 1998). Soil was excavated from five locations: DS1, 040, 015/016, the found drum site, and the steep access roadway west of DS1 (see Figure 2). The excavations at DS1, the found drum site were initiated based on contamination identified during the 1998 IRA. The excavations at 040 and 015/016 in the beach/dock area were based on low levels of contamination (below cleanup levels) encountered during the 1994 RI sampling. Excavation details for each location are provided in the bullets below.

- The excavation at DS1 started at a location previously surveyed and staked, and continued towards the southeast. The east wall of the excavation extended two feet bgs. The north, south, and west walls of the excavation extended from 5.5 to 6 feet bgs. Confirmation samples collected from each of the sidewalls and from the bottom of the pit were below site cleanup levels.
- Excavation at location 040 continued to three feet bgs in a four-foot by four-foot pit. Two confirmation samples were collected from the southeast side of the pit (the downgradient wall) and the northeast side of the pit. Analytical results were below site cleanup levels.
- The excavation at location 015/016 continued to a depth of three feet bgs in a sixteen-foot by eight-foot excavation. Further excavation was halted when debris (glass bottles, aluminum cans, wood, and other refuse) and a former structural foundation were encountered. No samples were collected from this site per the sampling schedule outlined in the workplan.

- Approximately four inches of soil were removed from the ground surface at found drum site area. Confirmation samples were not collected from this area; however, field-screening results indicated no contamination.
- Approximately one cubic yard of soil was excavated from the steep access roadway west of DS1. Confirmation samples were not collected from this area; however, field-screening results indicated no contamination.

A total of approximately 950 cubic yards of soil was removed from the five locations and transported to a biocell for remediation. Confirmation samples collected from the base and sidewalls of the excavations contained DRO at concentrations below site cleanup levels. The excavations, with the exception of the found drum site and the area along the steep access roadway west of DS1, were backfilled with clean soil.

8 SUMMARY OF SITE RISKS

A baseline human health and ecological risk assessment was completed for the Rapids Camp site in 1996 (EMCON, 1996). The risks reported at this time were one of the driving factors for the IRA. The IRA activities conducted in 1998 and 1999 yielded significantly lower risk levels than originally attributed to the Rapids Camp site in 1996.

8.1 ORIGINAL RISK SUMMARY

The risk assessment assumed a recreational future land-use scenario: Rapids Camp was converted into a campground. The most sensitive receptor was found to be a child resident living on the site while his or her parents work seasonally from May through September.

Noncarcinogenic risk was attributed to dermal contact with soil, incidental ingestion of soil, and ingestion of berries. Two surrogate chemicals of diesel, naphthalene and fluorene, were the primary contaminants of potential concern (COPCs). The surface soil risk-based cleanup level (RBCL) based on noncarcinogenic risk for DRO was 7,900 mg/kg. Carcinogenic risk was primarily associated with ingestion of groundwater. The RBCL (corresponding to a risk of 10^{-5}) for DRO was 12,600 mg/kg.

Exposure to contaminated soil, groundwater, and surface water at the sites would pose a risk to a hypothetical future resident. Soil cleanup to RBCLs was recommended to reduce the risk to generally accepted levels, and an alternative water supply was recommended for drinking water.

8.2 POST IRA/CURRENT RISK SUMMARY

As summarized in previous sections, sampling activities completed recently indicate significantly lower levels of groundwater contamination than were reported in 1994. In addition, near-surface soils contaminated above cleanup levels were removed and treated as part of the IRA. With the implementation of institutional controls, the Rapids Camp site is acceptable for all current and future uses.

A current evaluation of site risks indicates that there are no complete exposure pathways to the remaining soil contamination on-site. The only remaining site contamination is DRO-contaminated soil located between 15 and 35 feet bgs. Due to its burial depth, there is no inhalation or ingestion pathway to this contamination, and modeling indicates that this contamination will not leach to groundwater.

Results from 1996 and July 1998 monitoring indicated that no fuel hydrocarbons (DRO) and no VOCs (including TCE) were detected in samples from the generator pad area. However, TCE, ethylbenzene, toluene, and m,p-xylenes were detected in the July 1998 sample collected from MW-018 within the beach/dock area. These constituents were detected at concentrations below groundwater cleanup levels. Results from the most recent groundwater-sampling event (October 1998) indicate that no contaminants are present in site groundwater. Additionally, no contaminants were found in any of the area residential wells sampled from 1993 through 1997.

9 REMEDIAL ACTION OBJECTIVES

The overall objectives of the remedial actions for the Rapids Camp site are to protect human and ecological receptors from unacceptable exposure to contaminated soils and water and to comply with applicable or relevant and appropriate requirements (ARARs). Remedial action objectives (RAOs) are the goals that the selected remedy is designed to achieve. RAOs include objectives that are applicable to CERCLA sites in general, in addition to objectives specific to Rapids Camp.

As part of the 1998 FS, RAOs were developed for Rapids Camp (EMCON, 1998). The RAOs presented in the FS were developed to protect human health and the environment and comply with ARARs, as defined in current state and federal regulations. Subsequent to preparation of the FS, the ADEC promulgated new regulations for cleanup of hazardous substances (18 AAC 75), containing cleanup levels applicable to site groundwater and soil. Therefore, the RAOs presented in the FS were amended to reflect the updated regulations.

The RAOs appropriate for Rapids Camp are ADEC 18 AAC 75 Tables B1 and B2, Method 2 Soil Cleanup Levels, and Table C Groundwater Cleanup Levels (ADEC, 1999). Specific cleanup levels for chemicals detected in soils and groundwater at the generator pad and beach/dock sites are summarized in Tables 1 and 2, respectively. Note that all RAOs were met for the beach/dock area and Table 2 is presented here for historical reference only. No contamination was found in groundwater at the landfill site; however, annual monitoring will continue to ensure groundwater contaminant concentrations remain below Table C cleanup levels. Monitoring may be discontinued after the five-year review and only with agency and community approval.

Cleanup levels for DRO in soil at the generator pad were revised to reflect cleanup levels calculated under Method Three (ADEC, 1999). Method three allows calculation of site-specific alternative cleanup levels based on "approved site-specific soil data and an approved fate and transport model that demonstrates that alternative soil cleanup levels are protective of the applicable groundwater cleanup levels." The SESOIL modeling completed in 1998 demonstrated, using very conservative assumptions, that the generator pad soil remaining in-place (at concentrations up to 15,000 mg/kg) would not leach to the water table.

Table 1: Remedial Action Objectives for Rapids Camp – Generator Pad

Media	Contaminants of Concern	Maximum Concentration	Maximum Concentration (Post-IRA Sampling)	Screening Concentrations				Cleanup Levels
				Ecological Risk-Based RG	Human Health Risk-Based RG	ARARs Basis		
Surface Soil 0-15 feet bgs mg/kg	DRO	280,000 (1994 smpl 035)	140 (1998 DS-2) ^a	NC	7,900	10,250	18AAC75 ^b	10,250 ^b
Subsurface Soil > 15 feet bgs mg/kg	DRO	9,300 (1994 smpl 004; 15-17' bgs)	964 (1999 DS-1 excavation base)	NC	7,900	12,500	18AAC75 ^c	12,500 ^c

^aDRO were detected at 11,000 mg/kg in a surface soil sample from DS-1 (located 150 ft southwest of the generator pad). However, these soils were excavated in June 1999. The detection shown on the table is the second-highest surface soil detection from 1998 and 1999 sampling.

^bCleanup level of 10,250 mg/kg represents the 18 AAC 75 method two cleanup level for the ingestion pathway. This cleanup level is protective of both the ingestion and inhalation pathways. Site-specific modeling (18 AAC 75 method three) also showed that this cleanup level is protective of the migration to groundwater pathway at the Generator Pad.

^cCleanup level of 12,500 mg/kg represents the maximum allowable DRO concentration under 18 AAC 75 method two. Site-specific modeling (18 AAC 75 Method Three) showed that this cleanup level is protective of the migration to groundwater pathway at the generator pad.

RG - Remediation goal

DRO - Diesel-range organics

Table 2: Remedial Action Objectives for Rapids Camp – Beach/Dock

Media	Contaminants of Concern	Maximum Concentration	Maximum Concentration (Post-IRA sampling)	Screening Concentrations				Cleanup Levels
				Ecological Risk-Based RG ^b	Human Health Risk-Based RG ^c	ARARs Basis		
A-Aquifer Groundwater (µg/L)	Ethylbenzene	860 (1994 smpl 052)	1.09 (MW-018)	NC	NC	700	18AAC75	700
	Toluene	4000 (1994 smpl 052)	1.92 (MW-018)	NC	NC	1000	18AAC75	1,000
	TCE	3,700 (1994 smpl 052)	3.24 (MW-018)	NC	NC	5	18AAC75	5
	cis-1,2-Dichloroethylene	210 (1994 smpl 052)	ND	NC	NC	70	18AAC75	70
	DRO	6,400 (1994 smpl 052)	ND	NC	NC	1,500	18AAC75	1,500 ^d
Surface Soil mg/kg	TCE	0.78J (1994 beach/dock smpl 040)	ND	NC	NC	0.027	18AAC75	0.027
	DRO	420 (1994 smpl 040)	14 (DS11, 1998)	NC	7,900	250 ^e	18AAC75	250 ^e
Subsurface Soil mg/kg	DRO	1,200J (1994 smpl 040, 4 ft bgs)	ND (1999 smpl 040, 2.5 ft bgs)	NC	7,900	250	18AAC75	250 ^e

^a1996 and 1998 sampling events showed no contaminants above Table C groundwater cleanup levels.

^bEcological risk-based RG was calculated only for surface soil. Surface water is regulated by AWQC and ADWS.

^cConcentrations based on 10⁻⁵ risk

^dCleanup level of 1,500 ug/L represents the 18 AAC 75 Method two groundwater cleanup level.

^eCleanup level of 250 mg/kg is based on 18 AAC 75 Method one soil cleanup levels.

Definitions:

NC - Not calculated. Either not a primary risk contributing chemical for this pathway or the chemical was not detected

ND - Chemical not detected

RG - Remediation goal

DRO - Diesel-range organics

TCE - Trichloroethene

10 SELECTED REMEDY

Based on current site conditions and the successful implementation of interim remedial actions, the USAF, ADEC, and the local community have decided that no further remedial actions are necessary at the Rapids Camp site. They have selected the following plan of action for site closure:

- Institutional controls limiting the installation of drinking wells, soil excavation, and construction;
- An inspection and maintenance program for the landfill cap;
- Annual groundwater monitoring; and
- Five-year reviews to ensure that no unacceptable risk or threat to public health or the environment remains at the site.

With the selected remedy in place, the site does not pose an unacceptable risk to human health or the environment. Details of the selected remedy are provided in the following sections.

10.1 INSTITUTIONAL CONTROLS

The USAF will implement institutional controls restricting future land use to ensure that no exposure pathways exist to the contamination remaining on-site at Rapids Camp. The exact areas where the institutional controls apply are specified in the site survey data as generally depicted in Figure 4. The institutional controls agreed to by the USAF, and ADEC are specified below.

- Installation of drinking water wells is prohibited within 100 feet of the boundaries of the former generator pad and landfill.
- Excavation of soils deeper than five feet bgs is prohibited in the area of the former generator pad.
- No excavation or construction will be permitted in the area of the landfill.
- Any future recipient of the property must allow the Air Force right of entry to the property for the purpose of sampling monitoring wells or replacing or adding monitoring wells as needed to ensure protection of human health and the environment.
- It is possible that additional contamination will be identified at the site in the future. Any future recipient of the property must allow the Air Force right of entry to the property for the purpose of investigating the extent and remediating the additional area of contamination as needed to ensure protection of human health and the environment.

The institutional controls will be enforced through the General Plan, 611th ASG Remote Alaska Sites and through orders, as necessary, from the Commander of the King Salmon Air Station. The General Plan will be completed by October 2000. The USAF

plans to maintain ownership of the Rapids Camp property until such time as institutional controls are implemented and site monitoring is not needed to ensure protection of human health and the environment. In the event the USAF transfers this property, restrictions will be imposed on the property as required by CERCLA Section 120, Title 42 USC Section 9620, Paragraph (h).

10.2 LANDFILL CAP INSPECTION AND MAINTENANCE

The Rapids Camp landfill cap will be inspected on a biannual basis. The inspection and maintenance program will follow, as applicable, the plans outlined for the North and South Bluffs (IRP Site OT029) in the bluff's operation, monitoring, and maintenance (Hart Crowser, 1999).

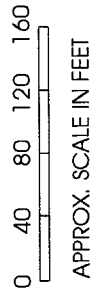
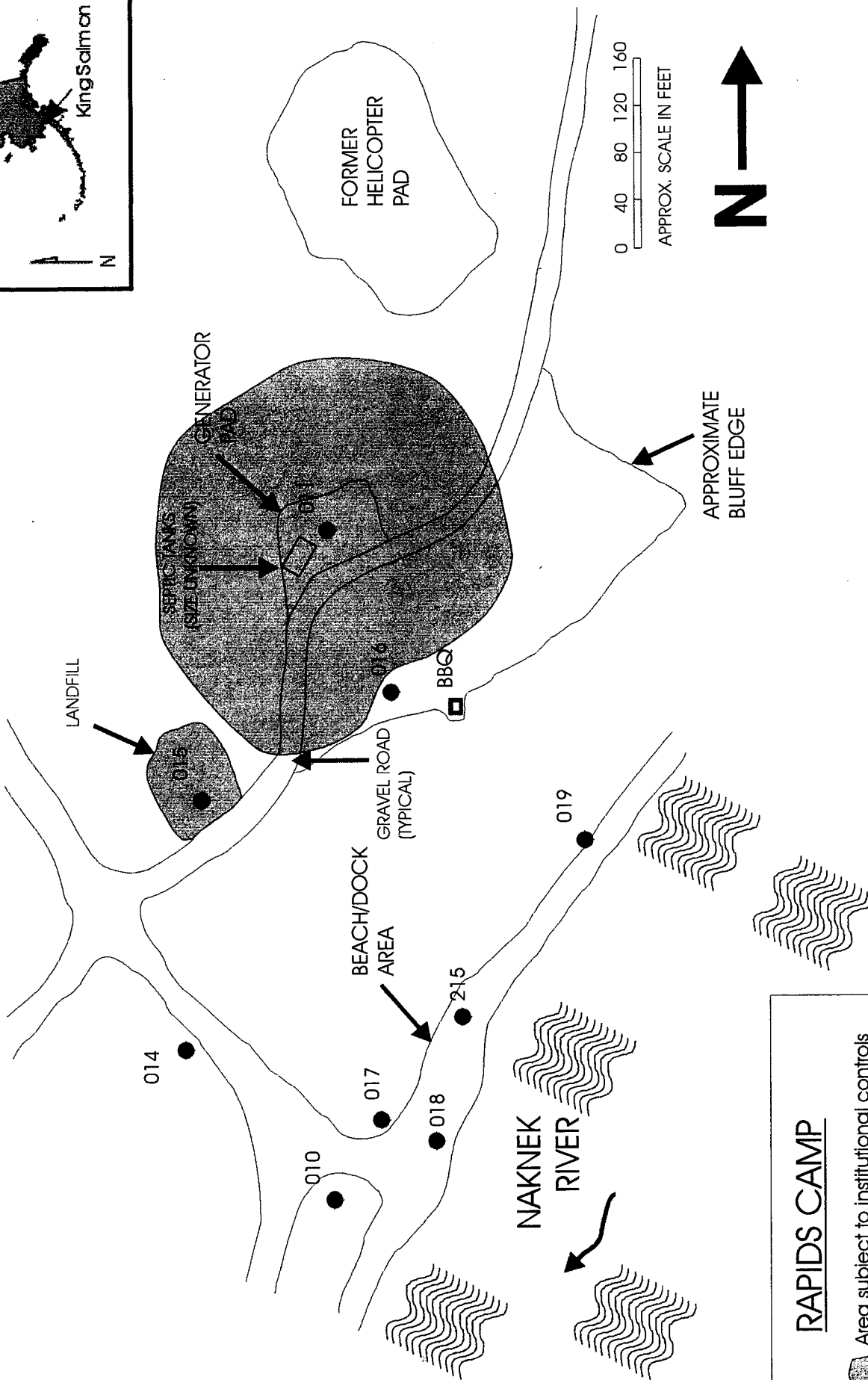
10.3 CONTINUED GROUNDWATER MONITORING

Groundwater monitoring will be performed in the landfill area at the Rapids Camp following procedures presented in the document entitled *Groundwater Monitoring Zones 6 & 7, Addendum to Workplan for Groundwater Monitoring Zone 1, King Salmon, Alaska* (Bristol/OASIS, 1998). Groundwater monitoring activities will continue site to ensure contaminant levels remain below cleanup levels.

Groundwater monitoring will continue on an annual basis beginning in 2000. The data will be reviewed every five years with the first review being conducted by 2005. Monitoring will be suspended only upon agency and community approval.



King Salmon



RAPIDS CAMP

- Area subject to institutional controls
- Groundwater Monitoring Well

DATE:	MARCH 2000
CHECKED BY:	EH
DRAWN:	BWB
PROJECT:	71-002-03
FILE NUMBER:	...



611TH AIR SUPPORT GROUP
611TH CIVIL ENGINEER SQUADRON
ELMENDORF AFB, ALASKA

AREAS OF RAPIDS CAMP SUBJECT TO INSTITUTIONAL CONTROLS
KING SALMON AIRPORT - INSTALLATION RESTORATION PROGRAM
King Salmon, Alaska

FIGURE 4

11 RESPONSIVENESS SUMMARY

Proposed activities regarding site closure at Rapids Camp were placed on the agenda and discussed during the monthly King Salmon RAB Meetings, which are open to the public. Any public-concern comments received during the meetings were noted and incorporated into the final Fact Sheet describing the plan of action for site closure and, subsequently, into this decision document. As a result, no oral or written comments were received during the formal public comment period, which ran from June to July 1999.

APPENDIX A

ADMINISTRATIVE RECORD (PARTIAL LIST)/ REFERENCES

- Alaska Department of Environmental Conservation (ADEC), 1999. *18 AAC 75, Oil and Hazardous Substances Pollution Control Regulations*. January 22.
- Bristol Environmental and Engineering Services Corporation and Nugget Construction Inc. (Bristol/Nugget), 1998. *Remedial Action Report, Rapids Camp, King Salmon, Alaska*. September.
- Bristol Environmental and Engineering Services Corporation and OASIS Environmental, Inc. (Bristol/OASIS), 1998. *Groundwater Monitoring Zones 6 & 7, Addendum to Workplan for Groundwater Monitoring Zone 1, King Salmon, Alaska*. July 1998. 7 pp.
- EMCON Alaska Inc. (EMCON), 1995. *Naknek Recreation Camps, King Salmon, Alaska. Installation Restoration Program Final Remedial Investigation (RI) Report*. June.
- EMCON, 1996. *Naknek Recreation Camps, King Salmon, Alaska, Installation Restoration Program: Baseline Human Health and Preliminary Ecological Risk Assessment*. November.
- EMCON, 1997. *Community Relations Plan for King Salmon Airport and Naknek Recreation Camps 1 and 2, King Salmon, Alaska*.
- EMCON, 1998. *Draft Feasibility Study (FS) Report, Installation Restoration Program, Naknek Recreation Camps*. March.
- Hart Crowser, Inc, 1999. *Draft Operation, Monitoring, and Maintenance Manual, North and South Barrel Bluffs, King Salmon, Alaska*.
- OASIS, 1998. *Rapids Camp and Lake Camp Modeling to Support Remedial Alternatives*. March.
- OASIS, 1999. *Draft Intrinsic Remediation Study, King Salmon Airport, Groundwater Zone 6*. May.
- U.S. Air Force (USAF), 1998. *The Proposed Plan for Remedial Action, Naknek Recreation Camp 1 (Rapids Camp)*. March.
- Waythomas, Christopher, 1994. *Overview of Environmental and Hydrogeologic Conditions at King Salmon, Alaska; U.S. Geological Survey Open-File Report*.

APPENDIX B

**FACT SHEET
NAKNEK RECREATION CAMP 1 (RAPIDS CAMP)
REMEDIAL ACTIONS**



FACT SHEET

Naknek Recreation Camp 1 (Rapids Camp) **REMEDIAL ACTIONS**

611 CES/CEVR Installation Restoration Program, 10471 20th Street, Suite 302, Elmendorf Air Force Base, Alaska 99506-4420

PURPOSE

This Fact Sheet presents a brief discussion of historical investigative and remedial work at the Naknek Recreation Camp 1 (Rapids Camp). Site activities conducted during the 1998 field season are summarized in this Fact Sheet. Ongoing activities include contaminated soil excavation at three locations identified in previous reports, a formal written agreement between the Air Force (AF) and the Alaska Department of Environmental Conservation (ADEC), groundwater monitoring, and inspection and maintenance of the landfill cap. A 5-year review will be completed to re-evaluate site conditions.

After cleanup activities are completed, this year, the AF and ADEC will consider Rapids Camp closed except for periodic groundwater monitoring and inspection and maintenance of the landfill cap.

BACKGROUND

Rapids Camp occupies about 12.5 acres of land adjacent to the Naknek River located roughly 6 miles southeast of King Salmon Air Station (see Figure 1 in the report). This camp was operated by the AF from 1952 to 1977 to support military personnel at King Salmon Air Station. The facility included boat docks, fish camps, lodging, a landfill, a helicopter pad, a generator pad, and fuel storage for recreational activities. A fire occurred near the beach and boat dock area in 1978. All buildings, tanks and other structures have been removed from the entire site.

SUMMARY OF REMEDIAL ACTIVITIES

The AF, ADEC, and the U.S. Environmental Protection Agency (EPA) have been involved in the investigation of contamination and development of the cleanup alternatives at this site. The remedial alternative presented in the March 1998 Proposed Plan was implemented during the summer of 1998.

1998 INTERIM REMEDIAL ACTIONS

The remedial alternative included the excavation and bioremediation of contaminated soils, groundwater monitoring, construction of a vegetative cap on the landfill, installation of monitoring wells and well points, and extensive surface soil sampling.

Specific activities completed in 1998 are listed below:

- Excavation of contaminated soils to a depth of five feet in the generator pad area. Following confirmation sampling, the excavated area was capped with clean soil and re-vegetated.
- Collection and disposal of surface debris and solid waste. This effort included the recovery, characterization, and transport of 58 drums found throughout the Rapids Camp area.
- Removal of two septic tanks from an area south of the former generator pad.
- Capping of the landfill area with a layer of clean soil and re-vegetating the area with grass.
- Installation of groundwater monitoring wells and well points.

- Collection of groundwater samples from all monitoring points and wells.
- Collection of surface soil samples throughout the site area.
- Collection of surface water and sediment samples along the Naknek River beach/dock area.

1999 FOLLOW-ON REMEDIAL ACTIVITIES

To achieve site closure, the AF will excavate soil from two areas identified in the 1998 interim actions. Confirmation samples will be collected to verify that the contamination has been removed. Excavated soil will be treated in existing biocells.

SITE CLOSURE

To obtain site closure, the Air Force and ADEC have agreed to the following plan of action.

- A formal agreement (Record of Decision) between the AF and ADEC will be prepared. This document will summarize all studies/activities conducted at Rapids Camp and provide a roadmap for future site activities.
- Groundwater monitoring will be performed at the landfill.
- An inspection and maintenance program will be developed and implemented for the landfill cap.
- The AF will restrict future installation of drinking water wells and soil excavation near the generator pad and the landfill.
- A 5-year review will be conducted by the AF, ADEC, and the King Salmon Restoration Advisory Board (RAB) to evaluate the results of this plan and current site conditions.

Contaminated soil located 15 to 35 feet deep at the generator pad exceeded ADEC cleanup levels. This soil is being left in place. Extensive studies indicate that this contamination will not impact groundwater. There is no contamination detected in site groundwater or the surface water in the Naknek River.

RESIDENTIAL WELL SAMPLING

Residential wells in the vicinity of Rapids Camp have been sampled for potential contaminants three times during the previous 2 years. No contaminants have been found in any of the residential wells.

QUESTIONS OR COMMENTS

All reports relating to this project have been given to the King Salmon RAB. The RAB usually meets the second Wednesday of every month at the King Salmon Air Station lounge at 7 p.m. The reports are also available at the King Salmon Air Station Information Repository located in the Fire Station. The repository is open to the public Monday to Friday 8 a.m. to 4:30 p.m.

If you have questions contact:

Mr. Steve Wilhelmi, USAF Community Relations, at (800) 222-4137

(email: steven.wilhelmi@elmendorf.af.mil); or

Mr. David Hertzog, USAF Project Manager, at (907) 552-7261

(email: dave.hertzog@elmendorf.af.mil); or

Ms. Gretchen Pikul (ADEC) at (907) 269-3077
(email: gpikul@envircon.state.ak.us).

APPENDIX C
LIST OF TRUSTEES

State Historic Preservation Officer
P.O. Box 107001
Anchorage, AK 99510-7001

Alaska Dept. of Fish & Game, Habitat
Division
ATTN: Wayne Dolezal
333 Raspberry Road
Anchorage, AK 99518-1599

Alaska Resources Library
222 W. Seventh Ave., Box 36
Anchorage, AK 99513-0089

Honorable Tony Knowles
Governor
P.O. Box A
Juneau, AK 99811-0101

Alaska Dept. of Natural Resources
Division of Parks & Outdoor Rec.
P.O. Box 107001
Anchorage, AK 99510-7001

State Director
Bureau of Land Management
222 W. Seventh Ave.
Anchorage, AK 99513

Honorable Don Young (N)
Representative in Congress
222 W. Seventh Ave., Box 3
Anchorage, AK 99513-0018

The Wilderness Society
430 W. Seventh Ave., Box 210
Anchorage, AK 99501-3550

Nat'l Marine Fisheries Service
222 W. Seventh Ave, Box 43
Anchorage, AK 99513-0077

Alaska State Library (5-19)
ATTN: Documents Section
P.O. Box 110571
Juneau, AK 99811-0571

U.S. Fish & Wildlife Service
1101 E. Tudor Road
Anchorage, AK 99503-6199

Alaska Dept. of Natural Resources
Div. of Land & Water Mgmt., Southcentral
Region
P.O. Box 107005
Anchorage, AK 99510-7001

Alaska Center for the Environment
519 W. Eighth Ave., #201
Anchorage, AK 99501-2343

Alaska Department of Commerce
& Economic Development
3601 C Street, Ste. 722
Anchorage, AK 99503

Alaska Dept. of Transp. & Public Facilities
Environmental Section
Pouch 196900
Anchorage, AK 99159-6900

Bureau of Indian Affairs
Juneau Area Office
P.O. Box 25520
Juneau, AK 99801

Coordinator
Office of Coastal Management
Pouch AP
Juneau, AK 99811

Environmental Protection Agency
Region X
1200 Sixth Ave.
Seattle, WA 99801-1128

Office of Environmental Proj. Rev.
Dept. of the Interior
1689 C Street, Rm. 19
Anchorage, AK 99501-5126

Division of Environmental Quality
3601 C Street, #1334
Anchorage, AK 99503

Government Documents
Elmer E. Rasmusen Library
University of Fairbanks
Fairbanks, AK 99701-1044

Dept. of Community & Regional Affairs
Rural Development Division
333 W. 4th Ave., #220
Anchorage, AK 99501-2341

U.S. Environmental Protection Agency
Alaska Operations
222 W. Seventh Ave.
Anchorage, AK 99513

Honorable Frank Murkowski (N)
United States Senator
222 W. Seventh Ave., Box 1
Anchorage, AK 99513-0081

Alaska Div. of Governmental Coord.
Office of the Governor ATTN: Arlene
Murphy
3601 C Street, Ste. 370
Anchorage, AK 99503-5930

Soil Conservation Service
949 East 36th Ave., Ste. 400
Anchorage, AK 99508-4362

National Park Service
2525 Gambell Street, Room 107
Anchorage, AK 99503-2892

Commissioner
AK. Dept. of Natural Resource
400 Willoughby Ave.
Juneau, AK 99805

Div. of Land & Water Mgmt.
SC Region
P.O. Box 107005
Anchorage, AK 99510-7001

Manager
Becharof National Wildlife Refuge
P.O. Box 277
King Salmon, AK 99613

Bristol Bay CRSA Board
P.O. Box 189
Dillingham, AK 99576

Mayor
Bristol Bay Borough
P.O. Box 189
Naknek, AK 99633

Scott Janke, Coastal Program Coord.
Bristol Bay Borough
P.O. Box 189
Naknek, AK 99633

Alaska Dept of Fish & Game
P.O. Box 37
King Salmon, AK 99613

Bristol Bay Native Corporation
P.O. Box 10-220
Anchorage, AK 99501

Paug Vik Incorporated Ltd.
P.O. Box 61
Naknek, AK 99633

Bristol Bay Times
P.O. Box 1129
Dillingham, AK 99576

Bristol Bay Library
P.O. Box 189
Naknek, AK 99633

KTUU Channel 2 News
Assignment Desk
P.O. Box 102880
Anchorage, AK 99510

National Parks & Conservation Assoc.
P.O. Box 202045
Anchorage, AK 99520

Regional Administrator
Federal Aviation Administration
222 W. 7th Ave., Box 14
Anchorage, AK 99513-0081

U.S. Fish & Wildlife Service
Ecol. Serv. & Endangered Species
605 W. 4th Ave., Room 62
Anchorage, AK 99501