



**KALAKAKET CREEK RRS
ALASKA**

**ADMINISTRATIVE RECORD
COVER SHEET**

AR File Number 50

FINAL

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S.M.

AR 50



**Decision Document and
CERCLA Record of Decision
IRP Site LF002 - Landfills**

FINAL

Kalakaket Creek Radio Relay Station, Alaska

Prepared by

**United States Air Force
Pacific Air Forces Command
Elmendorf Air Force Base, AK 99506**

February 2010

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**REVIEW
COMMENTS**

PROJECT: Kalakaket Creek RRS

DOCUMENT: Response to Comments on Draft Final Decision Document LF002/Landfills

USAF 611th CES/CEAR		DATE: 8Feb10 REVIEWER: ADEC PHONE:	Action taken on comments by: CH2M HILL_____		
Item No.	Section/ Page #	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	BACK CHECK REVIEW COMMENTS	Back check by: (Initials)
Changes Requested in Comments Mode					
1	1.3.2, 2nd paragraph, p. 1-7	Keep unrestricted in this DD because of buried waste, rather that (sic) using "applicable"?	A No change "Unrestricted" use is already used in text for LF002.		
2	1.4.1, p. 1-8	In text removal of "petroleum" in bullet 2 regarding restricting access.	A Removal of "petroleum" accepted in bullet 2 (now bullet 3) since the focus of restricting access and limiting exposure is more comprehensive for a landfill than just restricting access to the known petroleum contamination.		

**REVIEW
COMMENTS**

PROJECT: Kalakaket Creek RRS

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3	1.4.1, 1st bullet, p. 1-8	This says for up to 30 years (implying that it will end in 30 years) but at end of bullets below, it says that the selected remedy will proceed until cleanup levels are attained. Why is the 30 years in here?	A "30-year: removed. Revised bullet text: "Visual monitoring of the top cover at each landfill for signs of settlement, subsidence, erosion, or other such events once every 5 years or until ADEC approves discontinuation of visual monitoring"		
4	1.4.2, p. 1-8	Since the landfills contain buried waste and potentially hazardous substances, ICs should remain in place forever, rather than being removed when petroleum attenuates...	A Bullet added to Section 1.4.1: "Institutional controls and the requirements of 18 AAC 60 to remain as long as buried waste remain onsite"		
5	1.4.2, p. 1-9	In text removal of "petroleum" from 2nd bullet (ICs)	No change "Petroleum" remains in the groundwater section (1.4.1).		
6	2.1, paragraph beginning "IRP Site LF002," p. 2-1	Obviously not all were cleaned because there is petroleum contamination.	A Removed the word "cleaned."		
7	2.5.5, p. 2-6; 2.5.6, p. 2-6	(Citations added for reports; added as a result of OT001 discussion.)	A Citations added.		

**REVIEW
COMMENTS**

PROJECT: Kalakaket Creek RRS

DOCUMENT: Response to Comments on Draft Final Decision Document LF002/Landfills

8	2.6.2, 3rd paragraph, p. 2-7	Proposed change to text to expand on why groundwater was not sampled.	Text revised to read: “Groundwater was not encountered at the maximum attainable depth of the soil borings, 26 feet bgs. Soil samples were collected at the maximum depth interval, and laboratory results of contamination concentrations in soil were below the most stringent ADEC Method 2 cleanup levels. Because of the lack of indication of contamination in soil, additional efforts to reach a depth where groundwater may exist was not required, and groundwater was not sampled from LF2.”		
Additional Changes by CH2M HILL					
9	1.3.2, 2nd paragraph, p. 1-7	Clarity change.	Text now reads: “In this DD, the ‘cleanup level’ is subarea-specific, as shown in Table 1-1. The source of the cleanup levels for soil is the State of Alaska cleanup levels for DRO, RRO, and GRO (18 AAC 75.341, Table B2). The source of the cleanup levels for groundwater is the State of Alaska cleanup levels for DRO, RRO, and GRO (18 AAC 75.345, Table C).”		

**REVIEW
COMMENTS**

PROJECT: Kalakaket Creek RRS

DOCUMENT: Response to Comments on Draft Final Decision Document LF002/Landfills

10	2.5, heading, p. 2-4	Clarity change.	Revised heading for greater clarity; now reads: "Summary of Previous Site Characterization and Remediation Activities"		
	2.9.1, 1st paragraph, p. 2-17	Revision to last sentence for clarity.	Sentence now reads: "The petroleum indicator compounds detected at concentrations in the soil and groundwater greater than 1/10th of their respective ADEC cleanup level were included in the cumulative human health risk with all other 18 AAC 75.341, Table B1, and 18 AAC 75.345, Table C, chemicals detected with concentrations greater than 1/10th of their respective ADEC cleanup levels."		
11	2.11.1, p. 2-19	Changes made to Section 1.4.1 and 1.4.2 also made to Section 2.11.	Multiple text changes.		

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Attachments

Attachment 1 – Notice of Document Availability

ANC/cts285/091560001

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Acronyms

°F	degrees Fahrenheit
AAC	<i>Alaska Administrative Code</i>
ADEC	Alaska Department of Environmental Conservation
AF	U.S. Department of the Air Force
AFB	Air Force Base
AFS	Air Force Station
ANCSA	Alaska Native Claims Settlement Act
bgs	below ground surface
BLM	U.S. Department of Interior, Bureau of Land Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CES	Civil Engineer Squadron
CFR	<i>Code of Federal Regulations</i>
DCRA	Alaska Department of Commerce, Community, and Economic Development; Division of Community and Regional Affairs
DD	Decision Document
DERP	Defense Environmental Restoration Program
DOD	U.S. Department of Defense
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency
FR	<i>Federal Register</i>
FS	Feasibility Study
GRO	gasoline-range organics
HI	hazard index
HMTC	Hazardous Materials Testing Center
HQ	hazard quotient
IC	institutional control
ILCR	incremental lifetime cancer risk
IRP	Installation Restoration Program
LF1	Landfill No. 1
LF2	Landfill No. 2
LTM	long-term monitoring
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
LTM	long-term monitoring
NAD	North American Datum
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NPL	National Priorities List
O&M	operations and maintenance
PA	Preliminary Assessment
PCB	polychlorinated biphenyl
PAH	polynuclear aromatic compounds
PLO	Public Land Order

RI	Remedial Investigation
ROD	Record of Decision
RRO	residual-range organics
RRS	Radio Relay Station
SARA	Superfund Amendments and Reauthorization Act
SI	Site Inspection
SSI	Supplemental Site Investigation
USAF	U.S. Air Force
USC	<i>United States Code</i>
VOC	volatile organic compounds

1.0 Declaration

1.1 Site Name and Location

Facility Name: Kalakaket Creek Radio Relay Station (Kalakaket RRS), Alaska

Site Location: Sections 22, 23, 26, and 27, of Township 12 South, Range 10 East, Kateel Meridian

Latitude and Longitude: Landfill No. 1: 64°24'58.03" North, 156°48'25.64" West; Landfill No. 2: 64°26'10.61" North, 156°49'39.13" West (North American Datum of 1983 [NAD83]; projected coordinate system for map figures: NAD83, Alaska State Plane Zone 6, US Foot)

Comprehensive Environmental Response, Compensation, and Liability Information System ID Number: None, Kalakaket is not listed on the National Priorities List (NPL).

Operable Unit/Site: Installation Restoration Program (IRP) Site LF002 – Landfills

Facility Owner and Point of Contact: The facility owner is the United States government. The facility is managed by the AF. Point of Contact is Mr. Charley Peyton, 611th Civil Engineer Squadron (CES), 10471 20th Street, Suite 348, Elmendorf Air Force Base (AFB), Alaska, 99506; phone number: 907-552-9765.

The Kalakaket RRS IRP Site LF002 – Landfills is located near Kalakaket Creek, Alaska. The location of the RRS, shown in Figure 1-1, is approximately 20 miles south of Galena, 270 miles west of Fairbanks, and 310 miles northwest of Anchorage. The RRS covers 302 acres on a low, relatively flat-topped mountain near the northern edge of the Yukon Kuskokwim uplands. Facilities at the station, which have been demolished, consisted of antennas, support buildings, and two water tanks and two fuel storage tanks on top of the mountain. A 4,000-foot-long airstrip is located 1 mile southwest of the mountaintop and is connected to the main station area by a gravel road.

IRP Site LF002 is composed of two subareas, each consisting of a landfill under a solid waste disposal permit (8631-BA008) from the Alaska Department of Environmental Conservation (ADEC). The subarea Landfill No. 1 (LF1) is located north of the east end of the Kalakaket RRS airstrip, and the subarea Landfill No. 2 (LF2) is located north of the RRS, as shown in Figure 1-2.

1.2 Statement of Basis and Purpose

This document presents the Final Selected Remedies for IRP Site LF002, located at Kalakaket RRS, and is issued by the U.S. Department of the Air Force (AF) in accordance with and satisfying the requirements of the Defense Environmental Restoration Program (DERP); Title 10, Section 2701, of the *United States Code* (10 USC 2701) et seq.; Executive Order 12580; 52 FR (*Federal Register*) 2923 (January 23, 1987); the National Contingency Plan (NCP) (Title 40, Section 300, of the *Code of Federal Regulations* [CFR]) and Alaska law, including Title 46 of the *Alaska Statutes*; Title 18, Chapter 75, of the *Alaska Administrative Code* (18 AAC 75); and 18 AAC 60.

The U.S. Environmental Protection Agency (EPA) has chosen to defer to ADEC for regulatory oversight of the Environmental Restoration Program at Kalakaket RRS. This Record of Decision (ROD) is based on the Administrative Record for this site.

1.2.1 CERCLA Statement of Basis and Purpose

IRP Site LF002 requires no further action under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) pursuant to 42 USC 9601(14) as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and to the extent practicable, the NCP. IRP Site LF002 is contaminated only with petroleum, and petroleum is excluded as a CERCLA hazardous substance pursuant to 42 USC 9601(14). Therefore, the petroleum contamination identified at IRP Site LF002 will be addressed under State of Alaska regulations.

1.2.2 Statement of Basis and Purpose Under State of Alaska Regulations

Petroleum contaminants in soil and groundwater are regulated under State of Alaska laws and regulations. IRP Site LF002 is being addressed in compliance with applicable laws and regulations, including, but not limited to, Title 46 of the *Alaska Statutes* and regulations promulgated thereunder.

Although petroleum is excluded as a CERCLA hazardous substance, the AF chose to follow a CERCLA process to evaluate and make decisions about IRP Site LF002. This Decision Document (DD) addressing petroleum contamination at IRP Site LF002 is issued in accordance with and satisfies the requirements of the Alaska Oil and Hazardous Substance Pollution Control Act, 18 AAC 75, revised October 9, 2008.

The AF has selected the remedies. By signing this declaration, ADEC agrees that the selected remedies comply with state law.

1.3 Assessment of Site

Past activities at Kalakaket RRS, such as petroleum and chemical storage, building and mechanical equipment maintenance, use of transformers, sewage disposal, application of herbicides and pesticides and burial and disposal of garbage and debris, have generated hazardous substances and releases into the environment during facility operation.

1.3.1 Assessment Under CERCLA

The Supplemental Site Investigation and Remedial Investigation (SSI/RI; CH2M HILL, 2009) determined that IRP Site LF002 requires no further action under CERCLA.

1.3.2 Assessment Under State of Alaska Regulations

The SSI/RI of IRP Site LF002 determined that the LF2 subarea requires no further remedial action under State of Alaska regulations. However, the SSI/RI did determine that past practices at subarea LF1 of IRP Site LF002 have led to petroleum contamination in soil and groundwater, which will require remedial action under State of Alaska regulations.

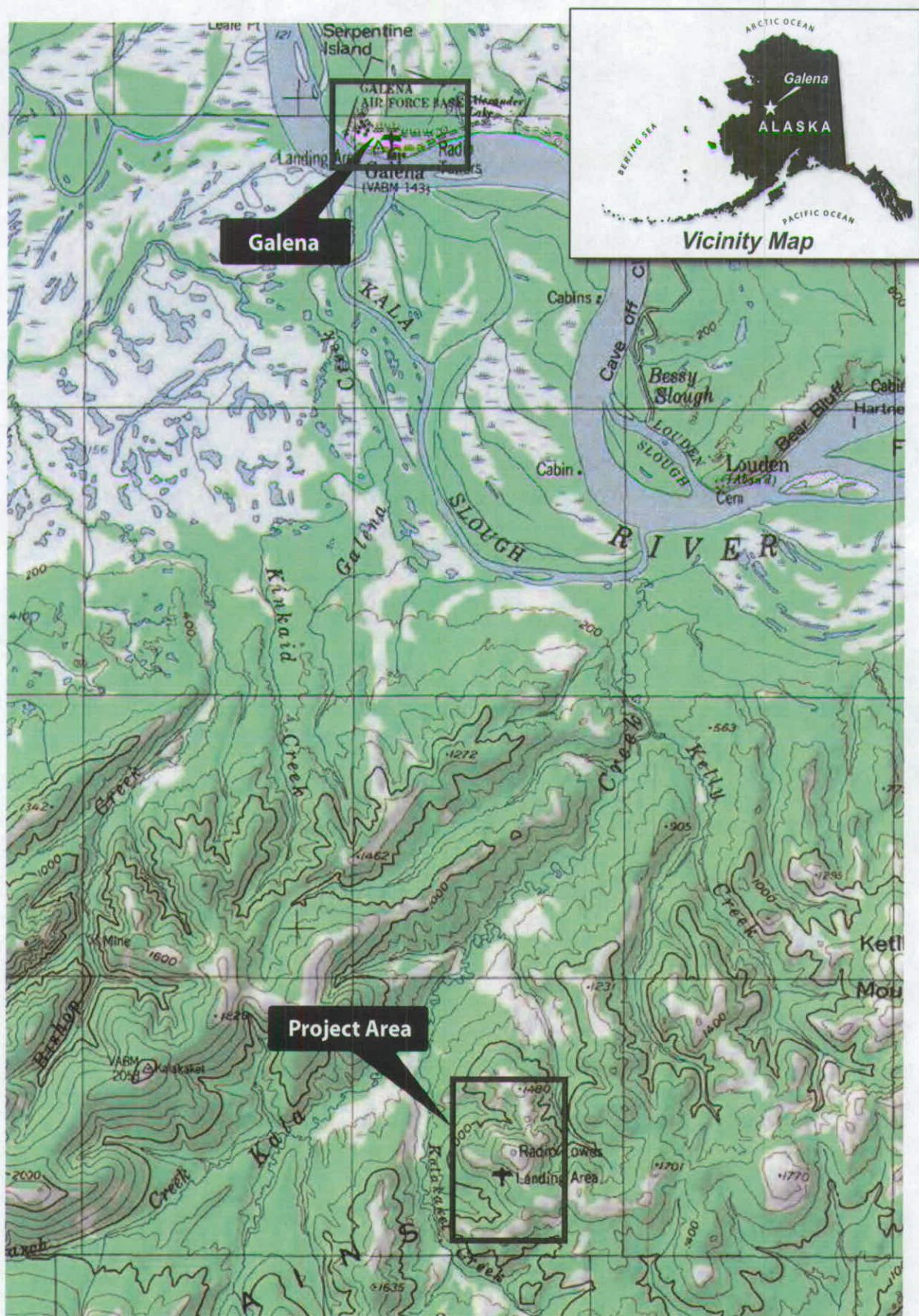


FIGURE 1-1
Vicinity Map
Kalakaket RRS, IRP Site LF002



Notes:

1. Imagery by Aero-Metric flown on 6-14-2000, processed as 1-foot pixels.
2. Projection: Alaska State Plane Zone 6, NAD83, Feet
3. Subarea with groundwater: LF1
4. Subarea without groundwater: LF2

LEGEND

- IRP Site LF002 Subareas
- Land Use Controls

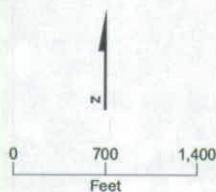


FIGURE 1-2
IRP Site LF002 Subareas
 Kalakaket RRS, IRP Site LF002

The petroleum contamination at LF1 included gasoline-range organics (GRO) and diesel-range organics (DRO) in soil and DRO and residual-range organics (RRO) in groundwater above State of Alaska cleanup levels (18 AAC 75.341, Table B2, and 18 AAC 75.345, Table C, respectively) protective of unrestricted use.

In this DD, the “cleanup level” is subarea-specific, as shown in Table 1-1. The source of the cleanup levels for soil is the State of Alaska cleanup levels for DRO, RRO, and GRO (18 AAC 75.341, Table B2). The source of the cleanup levels for groundwater is the State of Alaska cleanup levels for DRO, RRO, and GRO (18 AAC 75.345, Table C).

**Table 1-1
Soil and Groundwater Petroleum Cleanup Levels**

Chemical of Concern	Soil Cleanup Level (mg/kg)		Groundwater Cleanup Level (mg/L)
	Subareas with Groundwater (LF1)	Subareas without Groundwater (LF2)	
Gasoline-range organics	300	1,400	--
Diesel-range organics	250	10,250	1.5
Residual-range organics	10,000	10,000	1.1

Source of cleanup levels: 18 AAC 75.341, Table B2, under 40 inch zone for soil; 18 AAC 75.345, Table C, for groundwater.
 -- = gasoline-range organics (GRO) in groundwater not a chemical of concern
 mg/kg = milligrams per kilogram
 mg/L = milligrams per liter
 Subareas with groundwater and subareas without groundwater are identified in Figure 1-2.

1.4 Description of Selected Remedies

Remedial alternatives for subarea LF1 of IRP Site LF002 were developed and evaluated in the 2009 Feasibility Study (FS) (CH2M HILL, 2009). The selected alternatives for LF1 fit into the overall Kalakaket RRS cleanup strategy by controlling potential exposure to contaminated soil and groundwater. The selected remedies for LF1 of IRP Site LF002 protect human health and the environment and meets applicable regulatory requirements.

The AF is committed to implementing, monitoring, maintaining, and enforcing all components of the selected remedies to ensure that it remains protective of human health and the environment

1.4.1 Petroleum-contaminated Soil

The selected remedy for soil with petroleum concentrations above State of Alaska cleanup levels (Table 1-1) at subarea LF1 of IRP Site LF002 is institutional controls (ICs) to restrict access and limit exposure to and use of the petroleum-contaminated subsurface soil. ICs will also be applied to subarea LF2 to protect against potential future exposure to unknown contamination emanating from the landfill. Under their existing landfill permit, LF1 and LF2

are still subject to the requirements of 18 AAC 60, which address inherent risk associated with landfills.

Under the selected soil remedy, petroleum-contaminated subsurface soil in LF1 will be allowed to remain in place with exposure to subsurface soil at LF1 and potential exposure to subsurface soil at LF2 limited through ICs. The major components of the selected remedy for soil are as follows:

- Visual monitoring of the top cover at each landfill for signs of settlement, subsidence, erosion, or other such events once every 5 years or until ADEC approves discontinuation of visual monitoring.
- Maintaining the integrity of the final top cover of each landfill to limit exposure to landfill contents and subsurface soils. Maintaining integrity includes making repairs and preventing run-on or run-off from eroding or otherwise damaging the cover material and specific ICs including:
 - Restricting excavation or disturbance of the final top cover at LF1 and LF2
 - Restricting construction on top of LF1 or LF2 without prior concurrence from ADEC
- Restrict access to and limit exposure from contaminated soil at LF1 and potentially contaminated soil at LF2 through additional ICs including:
 - Restricting excavation or disturbance of contaminated soil to prevent further groundwater contamination or placement of contaminated soil in environmentally sensitive areas
 - Restricting movement of contaminated soil without prior ADEC approval (pursuant to 18 AAC 75.325[i])
- Inclusion and documentation of all ICs in AF Real Property Records, Kalakaket RRS General Plan, and 611th CES IRP Records, including information about the following:
 - Current land uses and allowed uses of IRP Site LF002
 - Geographic extent of the IC boundaries (shown in Figure 1-2)
- Maintaining existing administrative controls such as reviews under the National Environmental Policy Act (NEPA), performed during project scoping and approval processes
- Submittal of a Performance Report on ICs to ADEC once every 5 years after implementation of the remedial action
- ICs and the requirements of 18 AAC 60 to remain as long as buried waste remains onsite

1.4.2 Petroleum-contaminated Groundwater

The selected remedy for groundwater at subarea LF1 of IRP Site LF002 with petroleum concentrations above State of Alaska cleanup levels (Table 1-1) is long-term monitoring (LTM) and ICs. The selected remedy does not apply to LF2.

The major components of the selected remedy for groundwater at subarea LF1 of IRP Site LF002 include:

- LTM of petroleum-contaminated groundwater as follows:
 - Sample groundwater monitoring wells at LF1 for GRO, DRO, RRO, volatile organic compounds (VOCs), and polynuclear aromatic compounds (PAHs) at a frequency of not less than annually after implementation of the remedial action. The monitoring frequency may be revised after 5 years by agreement with ADEC.
 - Providing a sampling report annually to ADEC with results of the current groundwater sampling event compared to historical results.
- Specific ICs implemented by the AF to restrict access and limit human and ecological exposure to and use of petroleum-contaminated groundwater in LF1 and to prevent discharge and spread of petroleum contamination, includes the following:
 - Limiting excavation or drilling in areas containing petroleum-contaminated groundwater.
 - If petroleum-contaminated groundwater is used or removed from the site, the groundwater will be characterized and managed by following regulations applicable at the time.
 - Obtaining ADEC approval before removing or disposing of petroleum-contaminated groundwater at the site.
- Inclusion and documentation of ICs in the AF Real Property Records, Kalakaket RRS General Plan, and 611th CES IRP Records including information about the following:
 - Current land uses and allowed uses of IRP Site LF002
 - Geographic boundaries of the ICs (Figure 1-2)
- Maintaining existing administrative controls such as reviews under NEPA, performed during project scoping and approval processes
- An inspection of the site and submittal of a Performance Report on ICs to ADEC once every 5 years after implementation of the remedial action

LTM will proceed until the groundwater contaminant plume is shown to be stable or shrinking and contaminant concentrations are decreasing.

1.5 Data Certification Checklist

The information identified in Table 1-2 is provided in the Decision Summary section of this DD (Section 2). Additional information can be found in the Administrative Record file for IRP Site LF002, Kalakaket RRS, Alaska, at the office of the 611th CES, Elmendorf AFB, Anchorage, Alaska. The Administrative Record file is also available on the Web at <http://www.adminrec.com>.

**Table 1-2
Decision Summary Information**

Topic	Section	Page
Site location and point of contact 18 AAC 75.380(b)(2)(3)(4)	1.1, 2.1	p. 1-1, p. 2-1
CERCLA Applicability Statement 42 USC 9601(14)	1.2.1	p. 1-1
Description of environmental damage and free product recovery 18 AAC 75.380(b)(6)(7)	2.6	p. 2-6
Chemicals of concern and their respective concentrations, site map 18AAC 75.380(b)(5)(6)	2.6	Figure 2-1, p. 2-9 Figure 2-2, p. 2-11
Risk represented by the chemicals of concern 18 AAC 75.325(g)	2.9	p. 2-8
Current and reasonably anticipated future land use assumptions	2.8	p. 2-7
Institutional control 18 AAC 75.375(a)(b)(c)	2.11	p. 2-18
Cleanup levels established for chemicals of concern and the basis for these levels 18 AAC 75.340(a)(2)	1.3	Table 1-1, p. 1-7
Review of cleanup after site closure (Reopener clause) 18 AAC 75.380(d)(1)	1.6	p. 1-11
AAC = <i>Alaska Administrative Code</i> CERCLA = <i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>		

1.6 Authorizing Signatures

This signature sheet documents the decision made for petroleum contamination at IRP Site LF002, Kalakaket Radio Relay Station. This signature sheet documents that petroleum is excluded as a CERCLA hazardous substance pursuant to 42 USC 9601(14) and no further action is required under CERCLA at IRP Site LF002.

Petroleum contamination is being addressed pursuant to Alaska law. By signing this declaration, ADEC concurs that proper implementation of the selected remedy will comply with State of Alaska environmental laws.

This decision will be reviewed and may be modified in the future if information becomes available that indicates the presence of contaminants or exposures that may cause unacceptable risk to human health or the environment. If additional contaminants are discovered, the AF and ADEC will determine the compliance levels for soil and groundwater cleanup actions.

ROBYN M. BURK, Colonel, USAF
Commander, 611th Air Support Group

Date

JOHN HALVERSON, Environmental Program Manager
Federal Facilities Section, Contaminated Sites Program
Alaska Department of Environmental Conservation

Date

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2.0 Decision Summary

The Decision Summary identifies the selected remedies, explains how the remedies fulfill statutory and regulatory requirements, and provides a substantive summary of the Administrative Record file that supports the remedy selection decision.

2.1 Site Name, Location, and Description

Facility Name: Kalakaket Creek RRS, Alaska

Site Location: Sections 22, 23, 26, and 27, of Township 12 South, Range 10 East, Kateel Meridian

Latitude and Longitude: Landfill No. 1: 64°24'58.03" North, 156°48'25.64" West; Landfill No. 2: 64°26'10.61" North, 156°49'39.13" West (NAD83); projected coordinate system for map figures: NAD83, Alaska State Plane Zone 6, U.S. Foot

CERCLIS ID Number: None, Kalakaket is not listed on the NPL.

Operable Unit/Site: IRP Site LF002 – Landfills

Facility Owner and Point of Contact: The facility owner is the United States government. The facility is managed by the AF. Point of Contact is Mr. Charley Peyton, 611th CES, 10471 20th Street, Suite 348, Elmendorf AFB, Alaska, 99506; phone number: 907-552-9765.

Kalakaket RRS IRP Site LF002 – Landfills is located near Kalakaket Creek, Alaska. The location of Kalakaket RRS, shown in Figure 1-1, is approximately 20 miles south of Galena, 270 miles west of Fairbanks, and 310 miles northwest of Anchorage. The RRS covers 302 acres on a low, relatively flat-topped mountain near the northern edge of the Yukon Kuskokwim uplands. The station, labeled “Upper Camp” in Figure 1-2, consists of antennas, support buildings, and two water tanks and two fuel storage tanks on top of the mountain. A 4,000-foot-long airstrip is located 1 mile southwest of the mountain top and is connected to the main station area by a gravel road.

IRP Site LF002 is composed of two subareas, each consisting of a landfill under a solid waste disposal permit (8631-BA008) from ADEC. The closed solid waste landfills are identified as LF1 and LF2, as shown in Figure 1-2. LF1 is northeast of the east end of the Kalakaket RRS airstrip and consists of two burial pits that were excavated in 1984 by the AF for one time use to dispose of miscellaneous debris and crushed drums generated from past site activities. LF2 is north of the Upper Camp and was also constructed for one-time use by the AF in 1984 to dispose of miscellaneous debris and vehicles from the RRS. The landfills were originally granted permit 8431-BA004 in 1984. In 1986 ADEC granted permit 8631-BA008 as a renewal of 8431-BA004. Post-closure inspections of LF1 and LF2 occurred in 2000.

There are no residents at Kalakaket RRS. Galena, the closest community (located approximately 20 miles to the north), has a population of 610 (Alaska Department of Commerce, Community, and Economic Development; Division of Community and Regional Affairs [DCRA], 2007). The RRS has been unoccupied since the late 1970s. Although recreational cabins were present 500 feet south of the airstrip (demolished in 2009), they

have not been in use in recent years because of limited access as a result of the airstrip becoming overgrown with vegetation.

The AF has conducted an environmental investigation at IRP Site LF002 in accordance with CERCLA under DERP, which was established by Section 211 of SARA, and under State of Alaska laws and regulations.

Funding for the RRS is provided by the Defense Environmental Restoration Account, a funding source approved by the U.S. Congress to clean up contaminated sites on U.S. Department of Defense (DOD) installations. ADEC provides primary oversight of the environmental restoration actions at the site, in accordance with the Defense/State Memorandum of Agreement and state environmental regulations.

2.2 Site History and Enforcement Activities

This section provides background information and summarizes the series of investigations that led to the DD at IRP Site LF002. As stated in Section 2.1, IRP Site LF002 consists of two closed solid waste landfills, LF1 and LF2.

The Kalakaket RRS was a combined tropospheric scatter and microwave relay station initially constructed in the 1950s as part of the White Alice Communications System. The station provided links to North River RRS (Unalakleet) and Bear Creek RRS (Tanana) by using two pairs of 60-foot tropospheric scatter billboard antennas, and to Tatalina RRS (McGrath) by using a pair of 30-foot dish antennas. Communications between Campion Air Force Station (AFS) and, later, Galena AFS were established by a microwave link.

The White Alice Era began to wind down in 1967, when the Alaska Communications Disposal Act initiated the process of transferring U.S. government-owned, long-haul communications to private industry. Kalakaket RRS operated continuously until 1973, when it was deactivated and replaced by a satellite communication system.

LF1 and LF2 were constructed in 1984 under permits issued by ADEC by the AF as part of Kalakaket RRS deactivation cleanup activities. The landfills were used only once and were closed after cleanup activities were completed.

2.3 Scope and Role of Response Action

Petroleum concentrations are present in soil and groundwater along the perimeter of the LF1 subarea above State of Alaska cleanup levels. The petroleum contamination will require remedial action including the implementation of ICs to control exposure and access to the petroleum-contaminated soil, LTM of groundwater and implementation of ICs to control exposure to and use of the groundwater. ICs and the requirements of 18 AAC 60 will also remain as long as buried waste remains onsite.

The investigation of the perimeter of the LF2 subarea did not detect contaminant concentrations of petroleum hydrocarbon in soil above the most stringent State of Alaska Method 2 cleanup levels, nor was groundwater encountered, but there still remains the potential of contamination emanating from LF2. ICs are required to prevent potential future exposure to buried solid waste and residual contamination that may be present (due to the

inherent nature of landfills) at levels that do not allow for unrestricted site use. ICs and the requirements of 18 AAC 60 will also remain as long as buried waste remains onsite.

Implementation of the selected remedies will result in IRP Site LF002 being acceptable for "Cleanup Complete with ICs," subject to remaining landfill permit restrictions.

2.4 Site Characteristics

2.4.1 Physiography and Climate

Kalakaket RRS is located on a mountain near the northern edge of the Yukon Kuskokwim uplands. To the south, the topography consists of low-rolling mountains extending to the Kuskokwim River. To the north lies the broad Yukon River lowland. Upper Camp is on a plateau (flat top of the mountain) that drops away sharply in all directions. The Airstrip Area is below and southeast of Upper Camp on a relatively flat shoulder of the mountain running east to west. The shoulder of the mountain gradually tapers off to the north, south, and eventually east into the adjacent river valleys. Subarea LF1 is located north of the east end of the Kalakaket RRS airstrip, and LF2 is north of the RRS, as shown in Figure 1-2.

The climate of the RRS vicinity may be described as subarctic. Climatological data from Galena for the period 1949 through 1993 show average monthly temperatures ranging from a low of about 18°F in January to a high of about 68°F in July (USAF, 1989). Average annual precipitation at Galena is 13.21 inches. The average annual snowfall is 63.4 inches, and the average total snowfall for December is 12.1 inches (USAF, 1989). The prevailing wind direction is from the north. The average wind speed at Galena Airport is 5.4 knots. Because the RRS is approximately 1,900 feet higher than Galena in elevation, it is likely that annual precipitation amounts at the RRS are higher than those on record for Galena Airport.

2.4.2 Geology

Kalakaket RRS is underlain by a greenish-colored greywacke and greenstone bedrock. The bedrock is dense and massive (not extensively fractured) and mantled with overburden material consisting of silt- to cobble-sized material. Test pits excavated at Upper Camp before construction of the RRS in 1956 and during the 2007 SSI/RI (CH2M HILL, 2009) indicate that the overburden material is 2.5 to 7 feet thick. SSI/RI field observations indicate that the overburden thickness at the lower elevations of the mountain, including the airstrip vicinity, ranges up to 20 feet.

2.4.3 Hydrogeology

Groundwater data for the Kalakaket RRS area are limited; however, some general assumptions can be made on the basis of the nature of the soils and geology of the area. Shallow groundwater at the RRS occurs within the soil overlying bedrock, within fractured bedrock, or both. The presence of groundwater above bedrock appears to be seasonal and present during periods of snowmelt and significant rainfall, but absent during winter and dry periods. Where groundwater is present, the shallow groundwater flow is thought to follow the bedrock topography. Most of the shallow groundwater at the summit plateau is interpreted to flow radially away from the hilltop. In the airstrip vicinity, groundwater flow is interpreted to travel generally downslope toward the northeast and southwest.

No water supply wells are known to have been installed in the vicinity of Kalakaket RRS. A water intake gallery was constructed and used as the water supply for the RRS when it was active. The gallery and the facility that housed the equipment, the water pump house, were demolished in 2009.

Previous investigations show that groundwater was encountered at LF1 at 4 feet below ground surface (bgs). This depth was the shallowest water level observed during the 2007 SSI/RI (CH2M HILL, 2009). The groundwater at LF1 generally flows toward the northwest (CH2M HILL, 2009). Groundwater was not encountered at LF2 as deep as 26 feet bgs, which was the limit of the drill rig.

2.4.4 Surface Water Hydrology

Several streams and the Yukon River are located in the vicinity of Kalakaket RRS (Figure 1-1). The RRS is located near the top of a low mountain above any significant surface water features. The closest surface water is a small and unnamed creek approximately 4,000 feet east of the RRS. Another surface water, Kalakaket Creek, is approximately 2 miles west of the RRS. Both the unnamed creek and Kalakaket Creek flow north into Kala Creek, located about 3 miles northwest of the RRS. The unnamed creek previously served as the source for the drinking water intake gallery. Several small, ephemeral tributaries to the unnamed creek and to Kalakaket Creek extend from the valley bottoms up the sideslopes toward the RRS for a short distance. Kala Creek flows northeastward toward the Yukon River and has a low gradient and a meandering course. Kala Creek enters the Yukon about 14 miles north-northeast of the RRS.

Indigenous fish and wildlife are the only known users of surface water in the vicinity of the RRS. Surface water is not believed to be a significant pathway to transfer contaminants from the RRS to consumers. The amount of surface drainage that originates from the facility and flows into the local creeks is believed to be a very small percentage of the total surface-water discharge of the watershed.

2.4.5 Ecology

There are no endangered or threatened species of flora or fauna within a 1-mile radius of Kalakaket RRS, according to the U.S. Fish and Wildlife Service, Alaska Division. Further, there are no federally designated or state-designated critical habitats or wilderness areas within a 1-mile radius of the RRS. Several wetlands lie within a 1-mile radius of the RRS. Local vegetation consists of grasses, shrubs, and trees, including cottonwood, dwarf willow, blueberry, crowberry, sphagnum moss, and lichens. Wildlife species observed at the RRS during the 2007 SSI/RI included moose, black bear, marten, spruce grouse, hawks, and voles (CH2M HILL, 2009).

2.5 Summary of Previous Site Characterization and Remediation Activities

Five environmental investigations or cleanup actions have occurred at Kalakaket RRS since 1984:

- Limited cleanup action in 1984

- Two Preliminary Assessments (PAs), one in 1988 and one in 1993, that were based on records reviews and did not include fieldwork
- Preliminary Assessment/Site Inspection (PA/SI) completed in 1994 that consisted of a field investigation with sampling
- SSI/RI in 2007
- A Clean Sweep action in 2009 to remove buildings and unsafe debris and conduct environmental cleanup

Brief summaries of these characterizations and actions are provided in the following subsections.

2.5.1 1984 Kalakaket RRS Cleanup Action

The 5099th CES Squadron from Elmendorf AFB performed cleanup activities September 28 through November 9, 1984. The following actions were accomplished:

- Waste materials found at the Kalakaket RRS were buried in two one-time-use landfills under solid waste disposal permits from ADEC (LF1 and LF2). Materials buried included carbon dioxide fire extinguisher bottles; three empty and cleaned 1,000-gallon fuel tanks; two International Carryall trucks; one International pickup truck; one Ford cargo truck; two Oshkosh snowplow beds; old dump truck beds; and 3,250 crushed and empty 55-gallon drums.
- Containers found at the RRS were tested for liquid polychlorinated biphenyl (PCB) before disposal. PCB wastes were removed from the site and disposed of through Elmendorf AFB (Hazardous Materials Testing Center [HMTC], 1989).
- Soil contaminated with PCBs at concentrations greater than 50 milligrams per kilogram (mg/kg) was removed, containerized, and disposed of offsite through Elmendorf AFB (HMTC, 1989).

2.5.2 1988 Preliminary Assessment

This PA consisted of a records review of Kalakaket RRS activities and locations.

2.5.3 1993 Preliminary Assessment

A second PA of RRS records was conducted for the Kalakaket RRS in 1993 and provided a summary of historical cleanup and sampling actions. The PA findings were recorded and submitted to EPA and ADEC. Based on the PA results, EPA determined that the RRS did not score high enough to be proposed for inclusion on the NPL (Ader, 1994). ADEC agreed with the conclusion of the PA that the priority for further action is low to moderate, but recommended that verification samples be collected at identified source areas to establish no further action or state closure (Noland, 1994).

2.5.4 1994 Preliminary Assessment/Site Inspection

A PA/SI was conducted at Kalakaket RRS in 1994. Surface soil screening samples and laboratory analytical samples were collected from surface soil at many locations throughout the RRS. The sample results identified contaminants in the surface soil, including petroleum, PCBs, and pesticides (USAF, 1995).

2.5.5 2007 Supplemental Site Investigation and Remedial Investigation

In 2007, an SSI/RI of IRP Site LF002 was completed to ascertain the presence of contamination; assess the nature and extent of the contamination found; and evaluate whether the contamination could possibly harm people, plants, and animals. The SSI/RI included collection and laboratory analysis of subsurface soil and groundwater at locations around the perimeter of the landfills. Soil and water samples collected during the 2007 SSI/RI were analyzed for petroleum, volatile and semivolatile organics, PCBs, pesticides, and metals (CH2M HILL, 2009).

2.5.6 2009 Clean Sweep Action

In 2009, the 611th CES, Elmendorf AFB, performed Clean Sweep actions at Kalakaket RRS. The final report, "Clean Sweep Building Demolition, Debris Removal, Landfill Construction, and Environmental Remediation at Kalakaket Creek RRS Alaska," is pending submittal to ADEC (USAF, 2010, pending).

2.6 Nature and Extent of Contamination

Inspection of both landfill covers has been conducted by the AF to confirm the landfill covers were intact and operating as designed. The cover inspections, however, did not include characterization of subsurface conditions to determine whether contamination was generated and migrating from the landfill. The following subsections describe the intrusive subsurface investigations conducted in each landfill. They provide a summary of the nature and extent of contamination in each subarea at IRP Site LF002. Laboratory test results were compared to the project screening levels, defined as the lowest ADEC Method 2 cleanup levels (18 AAC 75.341, Table B2, and 18 AAC 75.345, Table C; ADEC, 2008b).

2.6.1 Landfill No. 1

During the 2007 SSI/RI, the limits of the LF1 landfill boundary were determined through use of the landfill monuments previously installed by the USAF. The perimeter of the landfill was cleared, and six borings were drilled and soil samples collected around the perimeter of the landfill. Because groundwater was encountered in the area, monitoring wells were completed within selected soil borings. Soil and groundwater contamination was encountered along the northeast corner, and groundwater contamination was encountered in the southern edge and northeast corner of the landfill. One additional, downgradient boring was drilled and finished as a monitoring well downgradient of the northeast corner of the landfill to determine the extent of soil and groundwater contamination.

Soil: Petroleum appears to be originating from LF1, causing contamination in soil (DRO up to 1,070 mg/kg and GRO up to 440 mg/kg) along the perimeter of the landfill. Figure 2-1

shows the extent of petroleum-contaminated soil where DRO and GRO concentrations are above ADEC Method 2 cleanup levels (18 AAC 75.341, Table B2).

Groundwater: Petroleum-contaminated groundwater appears to be originating from LF1. Figure 2-2 shows the location of monitoring wells at LF1 and concentrations of petroleum in groundwater collected during the 2007 SSI/RI. Concentrations of DRO (up to 4.5 milligrams per liter [mg/L]) and RRO (up to 2.5 mg/L) above ADEC cleanup levels (18 AAC 75.345, Table C) were detected in groundwater at the perimeter of LF1. A petroleum odor was noted from groundwater in several wells sampled at LF1 during the 2007 SSI/RI; however, no sheen was reported.

2.6.2 Landfill No. 2

During the 2007 SSI/RI, limits of the LF2 landfill were determined through use of the survey monuments previously installed by the USAF. The perimeter of the landfill was cleared of brush and trees, and subsurface soil samples were collected from six borings drilled at the landfill limits.

Soil: Boring locations and maximum detected concentrations of DRO, RRO, and GRO in soil from subsurface samples collected at the limits of LF2 are shown in Figure 2-3. Laboratory results of contaminant concentrations in soil were below ADEC Method 2 cleanup levels.

Groundwater: Groundwater was not encountered at the maximum attainable depth of soil boring, 26 feet bgs. Soil samples were collected at the maximum depth interval, and laboratory results confirmed that contamination concentrations in soil were below the most stringent ADEC Method 2 cleanup levels. Because of the lack of contamination in soil, additional efforts to reach a depth at which groundwater may exist was not required, and groundwater was not sampled from LF2.

2.7 Conceptual Exposure Model

A conceptual exposure model was developed to depict the potential relationship or exposure pathway between chemical sources and receptors. An exposure pathway describes the means by which a receptor can be exposed to contaminants in environmental media. These pathways are presented in Figure 2-4, which is based on current and reasonably likely future land uses and the potential beneficial use of groundwater and surface water at IRP Site LF002.

2.8 Current and Potential Future Land and Resource Uses

2.8.1 Land Use

Kalakaket RRS is located in a remote and mountainous area of west-central Alaska. The area surrounding IRP Site LF002 is undeveloped and naturally pristine. Access by foot, all-terrain vehicle, or snowmobile is unrestricted. The closest residents live near Galena, approximately 20 miles to the north. Small, nonresidential cabins, demolished in 2009, were situated 500 feet south of the airstrip and recreational, and subsistence hunters and miners may have occupied the cabins for seasonal use on an intermittent basis. Use of the cabins was limited in recent years because the airstrip was unusable due to overgrowth of vegetation.

The current land use of the surrounding land is recreational. The current use of adjacent/surrounding land is expected to remain the same over the foreseeable future.

As the agency with authority to control the future land use at IRP Site LF002, the AF has determined that the future land use of IRP Site LF002 will continue to be recreational until the AF releases the land as indicated by Public Land Order (PLO) 1740.

PLO 1740 was signed in 1958 (23 FR 7893) by the U.S. Department of Interior, Bureau of Land Management (BLM), and the AF for the purpose of withdrawing public lands in Alaska (including Kalakaket RRS) for military purposes. When the AF decides to return the RRS from PLO 1740 back into public domain, Kalakaket RRS will return to BLM management. There are currently no claims for this land, either by the State of Alaska or through the Alaska Native Claims Settlement Act (ANCSA, 43 USC 33).

2.8.2 Groundwater and Surface Water Uses

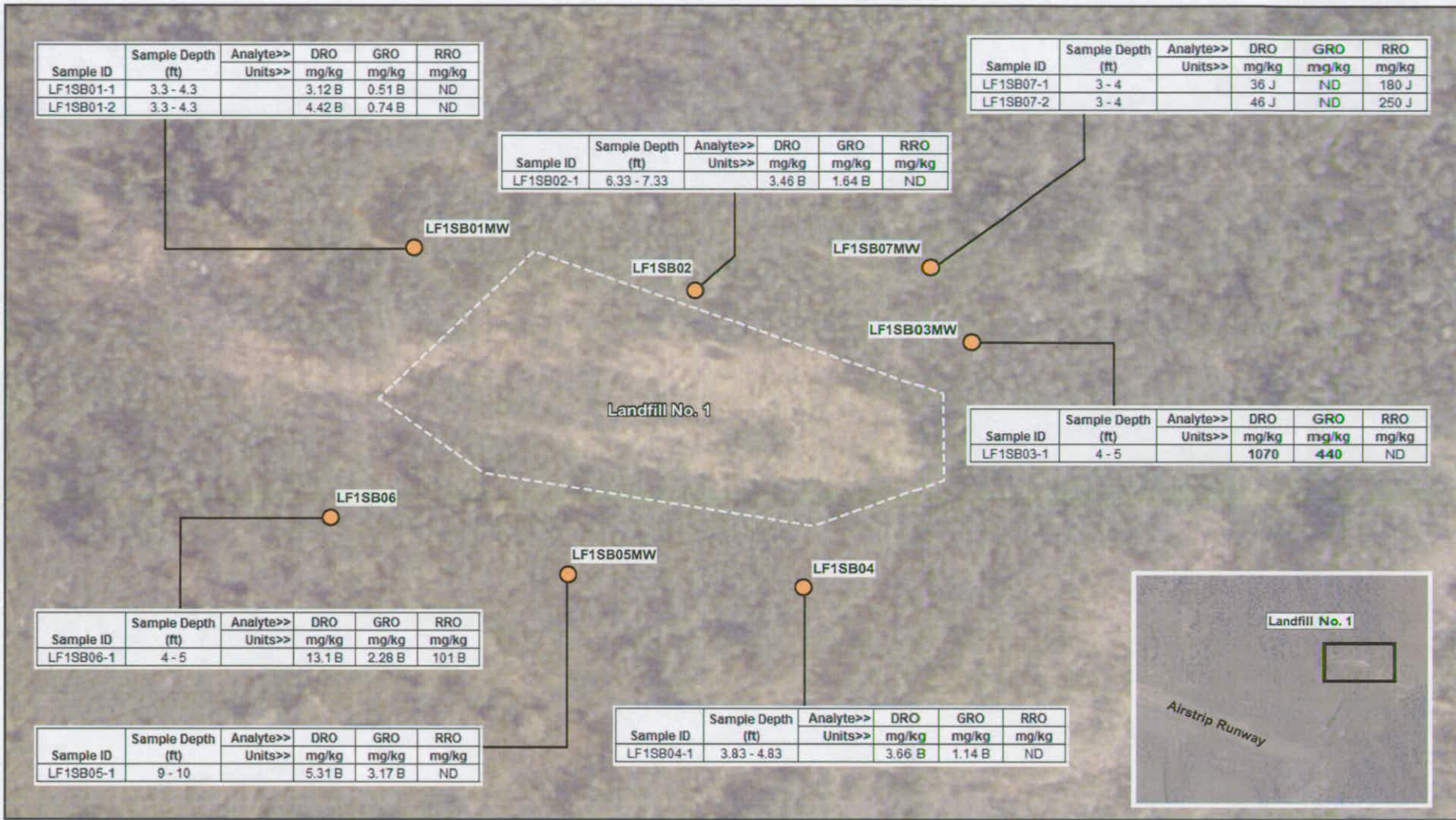
The groundwater beneath and in the vicinity of IRP Site LF002 is described in Section 2.5.3. The groundwater at LF1 is affected by petroleum contamination; however, no drinking water wells are present at Kalakaket RRS. Historically, groundwater was used as a drinking source for the RRS. It was obtained through a horizontal water intake gallery, which is located along the unnamed creek north of LF1 and is no longer operational. The water pump house that provided protection to pumps and piping for the gallery was demolished in 2009. Currently, use of groundwater at the RRS is restricted as a result of AF administrative requirements.

Surface water at and near the RRS is described in Section 2.5.4. Surface water at the RRS is not a drinking water source. However, people could come in contact with local surface waters during recreational activities. Surface water also provides habitat for aquatic insects and small fish and drinking water for wildlife.

2.9 Summary of Site Risks

This section summarizes the human health cumulative risk calculations and ecological risk assessment that were performed for IRP Site LF002. The overall conclusions from the risk assessment are as follows:

- On the basis of current conditions, calculated cumulative human health risk for LF1 soil and groundwater is not greater than cumulative carcinogenic risk standard of 1 in 100,000 (1×10^{-5}) across all exposure pathways and a cumulative noncarcinogenic risk standard at a hazard index (HI) of 1 across all exposure pathways.
- On the basis of current conditions, calculated cumulative human health risk for LF2 soil is not greater than cumulative carcinogenic risk standard of 1 in 100,000 (1×10^{-5}) across all exposure pathways and a cumulative noncarcinogenic risk standard at an HI of 1 across all exposure pathways.
- None of the indicator compounds for petroleum identified in the ADEC *Cumulative Risk Guidance* (ADEC, 2008a) contributes to an unacceptable level of risk in subareas LF1 or LF2.
- Exposure pathways at IRP Site LF002 for ecological receptors are considered incomplete.



Source: Aerial Imagery 6/14/2000

LEGEND

● Soil Boring Location

Definitions:

- ND Not detected
- bold** Detected result exceeds cleanup level
- B The analyte was detected in an associated blank below the reporting limit (RL) as well as in the sample.
- J The analyte was detected; however the result is estimated because of discrepancies in meeting certain analyte-specific quality control criteria.

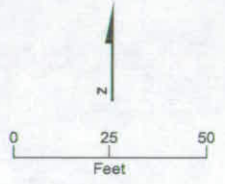
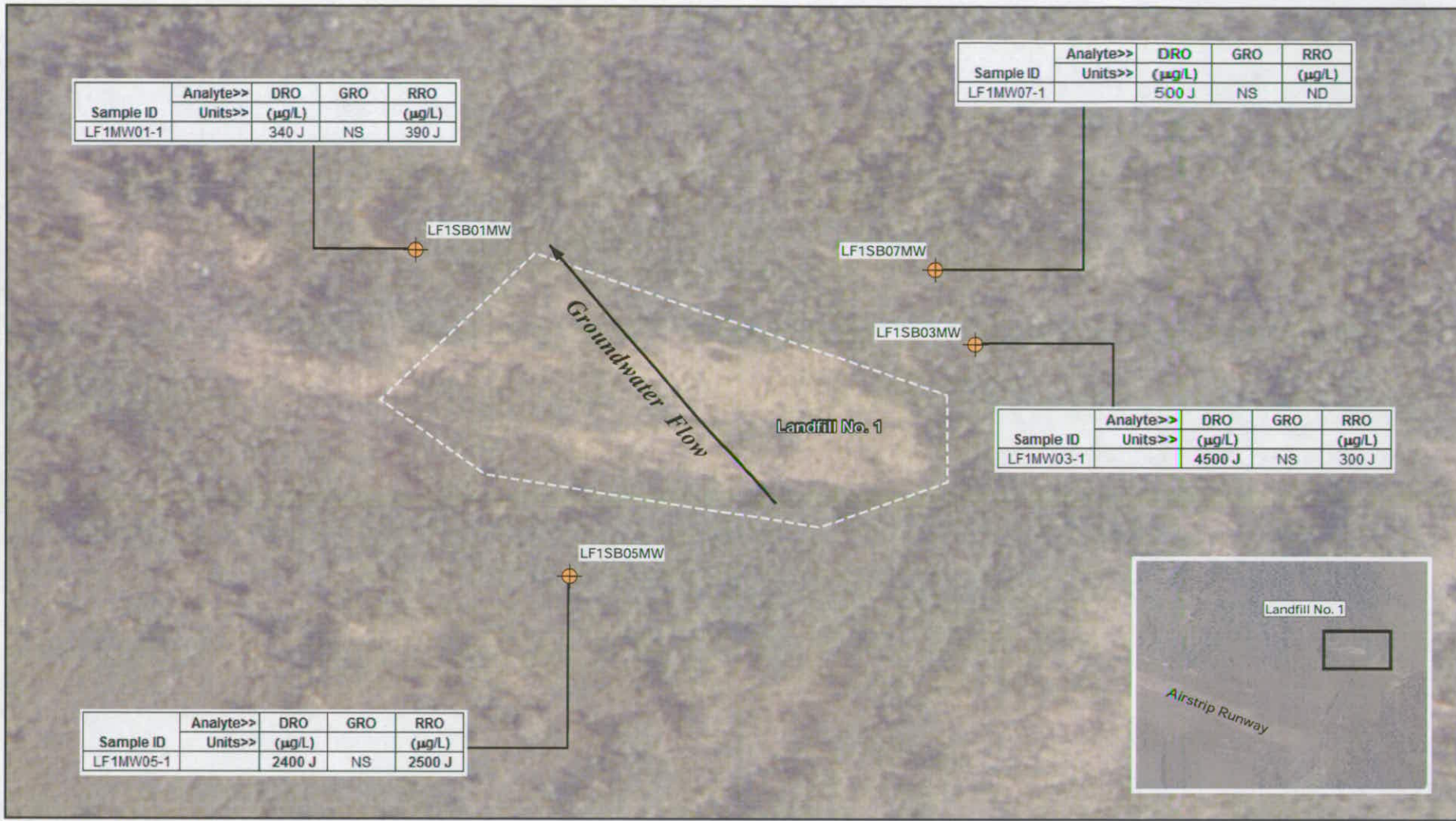


FIGURE 2-1
Landfill No. 1
Petroleum Contamination in Soil
Kalakaket RRS, IRP Site LF002



Source: Aerial Imagery 6/14/2000

Definitions:

LEGEND

Monitoring Well Location

NS Not sampled
 ND Not detected
 bold Detected result exceeds cleanup level
 J The analyte was detected; however the result is estimated because of discrepancies in meeting certain analyte-specific quality control criteria.
 DRO Diesel-Range Organics
 RRO Residual-Range Organics
 ug/L Micrograms per liter

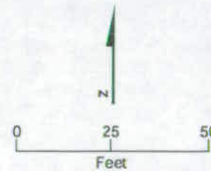
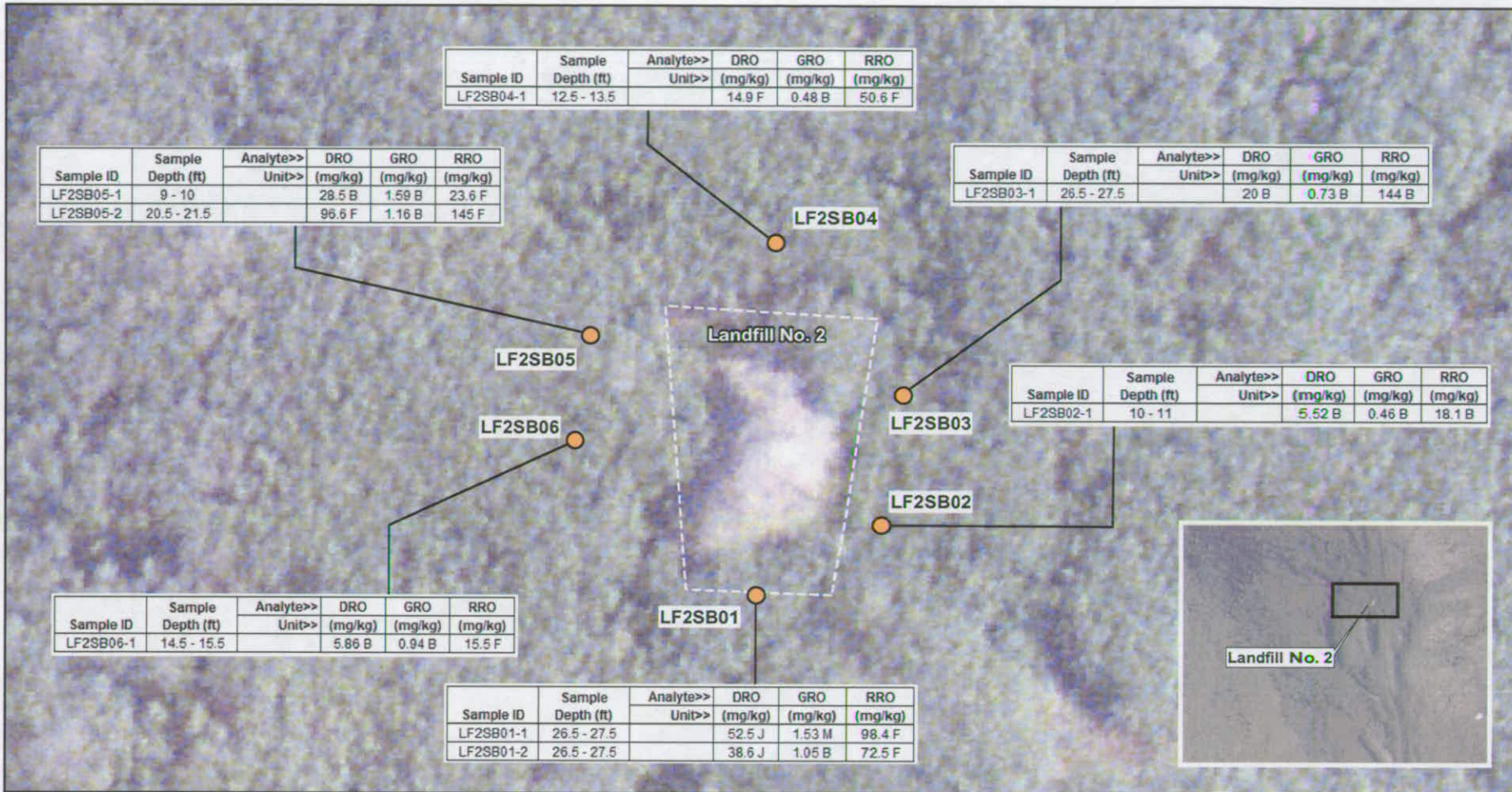


FIGURE 2-2
 Landfill No. 1
 Petroleum Contamination in
 Groundwater
 Kalakaket RRS, IRP Site LF002



Source: Aerial Imagery 6/14/2000

Definitions:

- B The analyte was detected in an associated blank below the reporting limit as well as in the sample.
- F The analyte was positively identified, but the associated concentration is an estimation above the method detection limit and below the reporting limit.
- J The analyte was detected; however, the result is estimated because of discrepancies in meeting certain analyte-specific quality control criteria.
- M The concentration was estimated due to the matrix effect.
- R The data were rejected due to deficiencies in meeting quality control criteria and may not be used for decision-making.
- DRO Diesel-Range Organics
- GRO Gasoline-Range Organics
- RRO Residual-Range Organics

Note:
1. Groundwater not present at LF2.

LEGEND

● Soil Boring Location

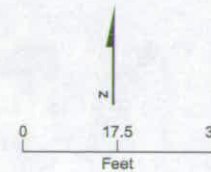


FIGURE 2-3
Landfill No. 2
Petroleum Contamination in Soil
Kalakaket RRS, IRP Site LF002

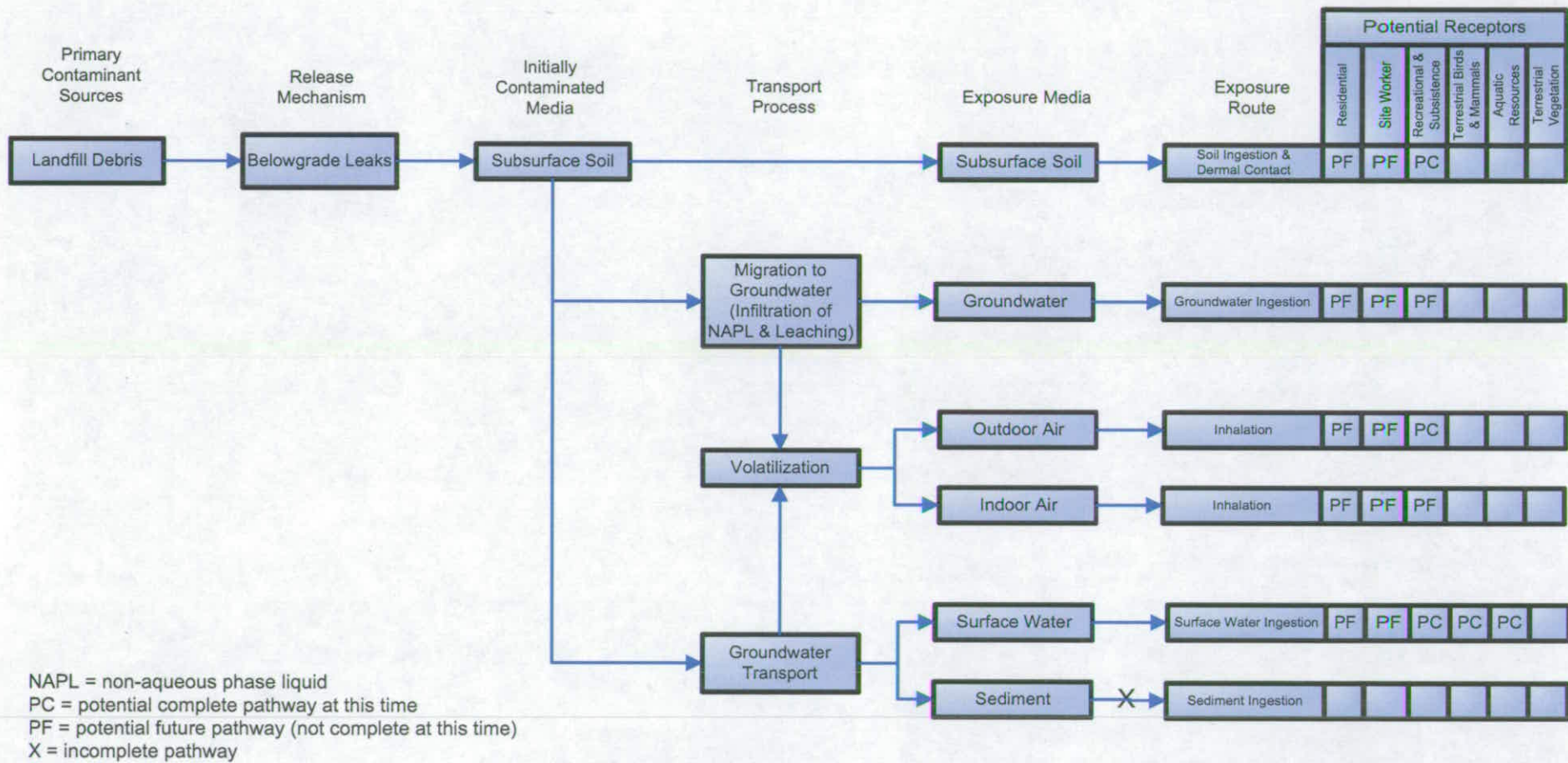


FIGURE 2-4
Conceptual Exposure Model
 Kalakaket RRS, IRP Site LF002

2.9.1 Summary of Human Health Risk Assessment

As stated in the ADEC *Cumulative Risk Guidance* (2008a), GRO, DRO, and RRO are not required to be included in cumulative risk calculations. There are indicator contaminant compounds within petroleum that can be evaluated individually because toxicological information is available. The petroleum indicator compounds detected at concentrations in the soil and groundwater greater than 1/10th of their respective ADEC cleanup level were included in the cumulative human health risk with all other 18 AAC 75.341, Table B1, and 18 AAC 75.345, Table C, chemicals detected with concentrations greater than 1/10th of their respective ADEC cleanup levels.

The cumulative human health risk calculated for each subarea in IRP Site LF002 is presented in the SSI/RI (CH2M HILL, 2009). A summary of the assessment of cumulative human health risk at the LF1 and LF2 subareas, which contain petroleum hydrocarbons, is provided in Table 2-1.

**Table 2-1
Cumulative Human Health Risk Summary**

Subarea	Hazard Index	Incremental Lifetime Cancer Risk	Primary Contributors
LF1	1	4×10^{-6}	1,2,4-trimethylbenzene, soil: HQ = 0.61 1,2,4-trimethylbenzene, GW: HQ = 0.16 1,3,4-trimethylbenzene, soil: HQ = 0.28 Naphthalene, soil: ILCR = 3.2×10^{-6} Benzene, GW: ILCR = 4.3×10^{-7}
LF2	0.00006	2×10^{-6}	1,2,3-trichloropropane, soil: HQ = 0.00006, 1,2,3-trichloropropane, soil: ILCR = 2.4×10^{-6}
GW = groundwater HQ = hazard quotient ILCR = incremental lifetime cancer risk			

2.9.2 Summary of Ecological Risk Assessment

An ecological risk assessment was not conducted for IRP Site LF002 because exposure pathways for both subareas at IRP Site LF002 for ecological receptors are considered incomplete, as exposure of potential ecological receptors to contaminated soil and groundwater is restricted by the landfill cap. In addition, as stated in *Ecoscoping Guidance* (ADEC, 2009), petroleum contamination of limited size poses minimal risk to terrestrial populations. As such, ADEC has established a 0.5-acre de minimis criterion for petroleum-contaminated properties. The total area of petroleum-contaminated soil and groundwater at IRP Site LF002 is less than 0.5 acre.

2.10 Basis for Action

IRP Site LF002 requires no further action under CERCLA of 1980 pursuant to 42 USC 9601(14) as amended by SARA of 1986, and to the extent practicable, the NCP.

IRP Site LF002 is contaminated only with petroleum, and petroleum is excluded as a hazardous substance under CERCLA.

Based on findings of the cumulative human health risk assessment and State of Alaska regulations (18 AAC 75), it was determined that action is needed to protect human health as a result of exposure to petroleum-contaminated soil and groundwater within IRP Site LF002 at Kalakaket RRS and to protect the environment by restricting its use, thereby preventing its placement in an environmentally sensitive area.

2.10.1 Soil

Although the contaminated soil is beneath a landfill cap, ICs will be implemented to protect against exposure and placement of the contaminated soil in environmentally sensitive areas. Since access to the site is extremely difficult and future land use would be restricted by ICs, this remedy ensures ongoing protectiveness.

2.10.2 Groundwater

The remedial action of LTM with ICs to the contaminated groundwater at LF1 is protective of human health and the environment. Implementing ICs will protect against exposure and use of the contaminated groundwater. The ICs would allow the contaminated groundwater to naturally attenuate and the LTM would verify the groundwater contaminant plume is stable or shrinking and contaminant concentrations in the groundwater are decreasing. Because the petroleum contamination is expected to be degrading, access to the site is extremely difficult and future land use would be restricted by ICs, this alternative ensures ongoing protectiveness.

2.10.3 Community Acceptance

During the public comment period, the community expressed its support for natural attenuation and ICs for soil and groundwater because it appeared to them that a large amount of money was being expended to clean up an area where people did not visit. The community comments and questions are included in the Responsiveness Summary (Section 3.0).

2.11 Selected Remedies

The remedy selected for petroleum-contaminated soil at IRP Site LF002 with concentrations above the most stringent State of Alaska Method 2 Cleanup levels (18 AAC 75.341, Table B2) is ICs. The remedy selected for petroleum-contaminated groundwater at IRP Site LF002 with concentrations above State of Alaska cleanup levels (18 AAC 75.345, Table C) is LTM with ICs. These remedies have been selected for soil and groundwater contamination conditions present at IRP Site LF002.

The AF is responsible for implementing, maintaining, and monitoring the remedial action selected and identified in this DD for the duration of the remedies. Concurrence by ADEC is required for any modification of the remedies.

2.11.1 Petroleum-contaminated Soil

The selected remedy for soil with petroleum concentrations above State of Alaska cleanup levels (Table 1-1) at subarea LF1 of IRP Site LF002 is ICs to restrict access and limit

exposure to and use of the petroleum-contaminated subsurface soil. ICs will also be applied to subarea LF2 to protect against potential future exposure to unknown contamination that may be present in the landfill. Under their existing landfill permit, LF1 and LF2 are still subject to the requirements of 18 AAC 60, which address inherent risk associated with landfills.

Under the selected soil remedy, petroleum-contaminated subsurface soil in LF1 will be allowed to remain in place, with exposure to subsurface soil at LF1 and potential exposure to subsurface soil at LF2 limited through ICs. The major components of the selected remedy for soil are as follows:

- Visual monitoring of the top cover at each landfill for signs of settlement, subsidence, erosion, or other such events once every 5 years or until ADEC approves discontinuation of visual monitoring
- Maintaining the integrity of the final top cover of each landfill to limit exposure to landfill contents and subsurface soils. Maintaining integrity includes making repairs and preventing run-on or run-off from eroding or otherwise damaging the cover material and specific ICs including:
 - Restricting excavation or disturbance of the final top cover at LF1 and LF2
 - Restricting construction on top of LF1 or LF2 without prior concurrence from ADEC
- Restricting access to and limiting exposure from contaminated soil at LF1 and potentially contaminated soil at LF2 through additional ICs including:
 - Restricting excavation or disturbance of contaminated soil to prevent further groundwater contamination or placement of contaminated soil in environmentally sensitive areas
 - Restricting movement of contaminated soil without prior ADEC approval (pursuant to 18 AAC 75.325[i])
- Inclusion and documentation of all ICs in AF Real Property Records, Kalakaket RRS General Plan, and 611th CES IRP Records, including information about the following:
 - Current land uses and allowed uses of IRP Site LF002
 - Geographic extent of the IC boundaries (shown in Figure 1-2)
- Maintaining existing administrative controls such as reviews under NEPA, performed during project scoping and approval processes
- Submittal of a Performance Report on ICs to ADEC once every 5 years after implementation of the remedial action
- Institutional controls and the requirements of 18 AAC 60 to remain as long as buried waste remains onsite

2.11.2 Petroleum-contaminated Groundwater

The selected remedy for groundwater at LF1 of IRP Site LF002 with petroleum concentrations above State of Alaska cleanup levels (Table 1-1) is LTM and ICs. The selected remedy does not apply to LF2.

FINAL

The major components of the selected remedy for groundwater at LF1 include:

- LTM of petroleum-contaminated groundwater as follows:
 - Sample groundwater monitoring wells at LF1 for GRO, DRO, RRO, VOCs, and PAHs at a frequency of not less than annually after implementation of the remedial action. The monitoring frequency may be revised after 5 years by agreement with ADEC.
 - Providing a sampling report annually to ADEC, with results of the current groundwater sampling event compared to historical results.
- Specific ICs implemented by the AF to restrict access and limit human and ecological exposure to and use of petroleum-contaminated groundwater in subarea LF1 of IRP Site LF002 and to prevent discharge and spread of petroleum contamination, includes the following:
 - Limiting excavation or drilling in areas containing petroleum-contaminated groundwater.
 - If petroleum-contaminated groundwater is used or removed from the site, the groundwater will be characterized and managed by following regulations applicable at the time.
 - Obtaining ADEC approval before removing or disposing of petroleum-contaminated groundwater at the site.
- Inclusion and documentation of ICs in the AF Real Property Records, Kalakaket RRS General Plan, and 611th CES IRP Records including information about the following:
 - Current land uses and allowed uses of IRP Site LF002
 - Geographic boundaries of the ICs (Figure 1-2)
- Maintaining existing administrative controls such as reviews under NEPA, performed during project scoping and approval processes
- An inspection of the site and submittal of a Performance Report on ICs to ADEC once every 5 years after implementation of the remedial action
- LTM will proceed until the groundwater contaminant plume is shown to be stable or shrinking and contaminant concentrations are decreasing.

2.11.3 Expected Outcomes of Selected Remedies

Passive environmental restoration by LTM of remaining soil and groundwater contaminants is expected to ultimately achieve the cleanup levels (performance standards) (Table 1-1) and allow future use of the LF1 subarea addressed by this DD. In the interim, ICs implemented and administered by the AF to prevent human exposure to contaminants (and potential contaminants) that remain in onsite soil and groundwater will protect the environment by restricting their use and preventing placement in an environmentally sensitive area.

FINAL

Implementation of the selected remedies for soil and groundwater will result in IRP Site LF002 being acceptable for a "Cleanup Complete" or "Cleanup Complete with ICs" determination from ADEC.

2.12 Documentation of Significant Changes

The Proposed Plan for IRP Site LF002 at the Kalakaket RRS was released for public comment on May 11, 2009. The preferred alternative for groundwater in the DD has been revised to LTM instead of monitored natural attenuation.

The AF has reviewed all written comments submitted during the public comment period and determined that the above difference is the only change made to the preferred alternatives as identified in the Proposed Plan.

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FINAL

3.0 Responsiveness Summary

This section summarizes the public and regulatory agency questions and comments received regarding the Proposed Plan for remedial action at Kalakaket RRS. The public comment period was held from May 11, 2009, to July 9, 2009. Approximately 25 people attended the AF sponsored public meeting held at the Galena Community Center on June 2, 2009. Verbal and written comments and questions were received from the public during the public meeting and/or public comment period. The meeting presentation slides, transcript, attendance roster, and copies of written comments are included in the Administrative Record.

3.1 Public Comments and Lead Agency Responses

This section documents comments and questions from the public received during the public meeting on June 2, 2009. Mr. Tommie Baker, 611th CES Community Relations Coordinator, and Ms. Vivian Tokar, CH2M HILL, represented the AF at the public meeting. Ms. Kim DeRuyter, ADEC, was also present at the meeting.

Comments and Questions in general have been paraphrased; quotes are in italic text. Any response given during the public meeting and additional Lead Agency Responses are provided.

3.1.1 Verbal Comments and Questions

1. Comment from Mr. Huntington: Mr. Huntington is concerned about spending taxpayer money for cleanup of a place like Kalakaket which *“could sit there 1,000 years and not hurt anybody”* rather than spending money to protect our troops sacrificing overseas (in Iraq specifically).

Response from Mr. Haas: Mr. Haas was presenting about remedial actions at Galena when Mr. Huntington made this comment, but he responded to the question by agreeing that there should be some visible benefit for cleanup effort.

Additional Response from AF: Kalakaket RRS has essentially been unused for over 30 years and has been scheduled for demolition since the 1990's. The remedial activities being conducted by the U.S. Air Force in Kalakaket are in accordance with state and federal regulations and U.S. Air Force policy. Demolition work and remedial activities are being coordinated to minimize time and costs when appropriate. Funding provided by Congress for remedial activities is separate from funding necessary for other Department of Defense activities, as required by law.

2. Question from Ms. Debbie Koontz: What does “staged” and “manifested” mean with respect to what is happening with contaminated soil and waste at Kalakaket?

Responses from Ms. Tokar and Ms. DeRuyter: Based on State and Federal regulations, different wastes need to be handled in different ways, as far as storage, labeling, transport, and disposal. Staging is following these regulations during temporary storage. “Manifest” refers to requirements for tracking/labeling potentially hazardous material.

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Response from DOT employee in audience: Contaminated soil has rules that must be followed when transporting contamination on roads/by plane and the process of "staging" and "manifesting" reflects those rules.

Additional Response from AF: In the context of hazardous waste, the word "stage" or "staging area" typically refers to the temporary storage or temporary storage area where hazardous waste is placed prior to being moved to another location. For example, when a hazardous material is being prepared for awaiting shipment, it is placed at a centralized staging area. This is to differentiate it from the term "storage" area which has very specific meaning for hazardous waste. A hazardous waste "storage" area has to meet specific requirements such as aisle space and secondary containment. "Manifest" refers to using The Hazardous Waste Manifest System which is a set of forms, reports, and procedures designed to seamlessly track hazardous waste from the time it leaves the generator facility (Kalakaket RRS) where it was produced, until it reaches the off-site waste management facility that will store, treat, or dispose of the hazardous waste (Washington or Oregon). The system allows the waste generator to verify that its waste has been properly delivered, and that no waste has been lost or unaccounted for in the process.

3. Comment from Mr. Koontz: It doesn't seem to make sense to spend the money to remove PCB-contaminated soil that isn't impacting anyone away in a remote, not-visited site to store it somewhere else.

Response from Ms. DeRuyter during meeting: Federal regulations require that certain concentrations be dealt with in specific ways, such as removal. It is important to remove PCBs from the site because they bioaccumulate up the food chain, eventually building up in food animals such as caribou, ptarmigan, etc.

Additional Response from AF: PCBs have been demonstrated to cause cancer, as well as a variety of other adverse health effects on the immune system, reproductive system, nervous system, and endocrine system. Once in the environment, PCBs do not readily break down and therefore may remain for long periods of time in soil. PCBs can accumulate in the leaves and above-ground parts of plants and food crops. They are also taken up into the bodies of small organisms and fish. As a result, people or animals that ingest small organisms or fish may be exposed to PCBs that have bioaccumulated. In most instances, the Air Force is required by State of Alaska regulations to clean-up soil contaminated with PCB at concentration greater than 1 mg/kg (1 part per million [ppm]) to protect human health and the environment.

4. Question from Mr. Phil Koontz: Why not dispose of PCB soils at Kalakaket?

Response from Ms. DeRuyter: Federal regulations require higher concentrations be disposed of offsite and some lower concentrations may be disposed of onsite.

Additional Response from AF: The Air Force must follow State and Federal regulations for the disposal of PCB contaminated soils. Soil contaminated with PCB at concentrations between 1 mg/kg and 10 mg/kg could be disposed of at Kalakaket RRS if the landfill is designed and permitted to accommodate it. However, Kalakaket soil is contaminated with a wide range of PCB concentrations, from 1 mg/kg to over 3,000 mg/kg. The AF has decided that due to the short field season it is not worth the additional effort to identify soil

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contaminated with concentrations between 1 mg/kg and 10 mg/kg for on site disposal. Soil above 50 mg/kg cannot be disposed of in the State of Alaska and must be shipped to facilities in Washington or Oregon.

5. Question from Mr. Demaski: What will the Air Force do to compensate me if there is damage to the native allotment (land) from moving equipment to and from Kalakaket?

Response from Air Force: If you want to file a claim for compensation, contact the Claims Officer, 3WG/JA, 8517 20th St, Suite 330, Elmendorf AFB, AK 99506-2400."

6. Question from Mr. Demanski: What will happen to the cabins? The two cabins south of the airstrip were built by MK construction and no one will miss them but the black cabin closer to the creek is one I use for trapping (Mr. Demanski said he did not own it) and I will be upset if it is demolished.

Response from Ms. Tokar: I will give your phone number to the AF "Clean Sweep" team so they can contact you about the cabins.

Additional Response from Air Force: The two hunting cabins south of the airstrip are scheduled for demolition. No other cabins are scheduled for demolition

7. Question from Ms. Sam: We had 30 days to get comments in, what is time limit on responses?

Response from Mr. Baker: There is not a time limit on responses; it will depend on the number and type of questions. The AF must provide responses before the ROD can be finalized, therefore the AF will address them as quickly as possible.

8. Question from Mr. Bodony: Can comments change the Proposed Plan as far as what will be done?

Response from Ms. Tokar: "Community Acceptance" is an important factor in selection of preferred alternative. The Proposed Plan is specifically for identifying how the AF will clean up contaminated soil and groundwater and comments can change the preferred alternative. However, please note that the demolition of the facilities is not a CERCLA action and the Air Force is not required to have a public comment period on demolition plans.

Response from Ms. DeRuyter: Demolition can begin, but public comments must be addressed before cleanup of contamination can begin.

9. Question from Mr. Bodony: Did community have any input on decision to demolish buildings? For example, above North Pole a radar station was left in place for air navigation purposes.

Response from Mr. Baker: Associated with a Galena BRAC meeting a meeting was held about demolition at Kalakaket where public comments were taken. The demolition does not follow the same process as the formal Remedial Investigation, but the AF did provide opportunity for public to provide input. With respect to what happened at the other site, the AF weighs the structures' value for navigation against liability of someone potentially getting hurt on these structures.

10. Question from unidentified speaker: How will individual questions be responded to?

Response from Ms. Tokar: There are several options: individuals who provided an address at

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sign-in will get copy of the Response Summary document. The Response Summary will be made available at the post office, on PP website (which will stay up through ROD signature), and possibly a local website.

Additional Response from AF: The Response Summary will be included in Section 3 of the ROD.

11. Question from Mr. Demaski: Why is the public comment period happening now after contract has been put out and there is already equipment in place to perform the action? I understand contractors should be allowed to do their jobs, but why hire them to do this in the first place?

Response from Air Force: The AF prefers to have public comment periods before any contracts are awarded; however, the project for the demolition of Kalakaket RRS structures was moved up 1 year and that caused and overlap with the CERCLA process for cleanup of contamination.

12. Question from Ms. Sam: Shouldn't the public comment period be extended since the public meeting was delayed?

Response for Ms. Tokar: The requirement is for a public meeting within the 30-day period, it does not specific exactly when. There is an option for the public to request and extension of the public comment period.

13. Question from Ms. Sam: How many contracting companies will be working at Kalakaket to remove and inspect?

Response from AF: The demolition and clean up of contaminated soil will be accomplished through the 611th Civil Engineering Squadron's "in-house" environmental clean-up personnel. A team of eight 611th CES, supported by approximately three camp support personnel contracted through Marsh Creek will accomplish the work.

14. Question from Ms. Sam: How much effort will be put in hiring local people for the work at Kalakaket?

Response from AF: Since the demolition and clean-up is being accomplished through 611th Civil Engineering Squadron "in-house" environmental clean-up personnel there is limited need for additional local workers. However, the AF encourages any contractors to use local hire as much as possible.

15. Question from Ms. Nollner: Are blueberries at Kalakaket contaminated? There are very large berries near the airstrip.

Response from the AF: The AF did not test the blueberries directly; however the AF looks at the concentrations of contamination in soil and groundwater and evaluates the risk to humans if they directly contact or consume soil or groundwater. By looking directly at soil, the PCB contamination in soil does pose unacceptable risk to humans, and that is why the AF is cleaning it up. While there is PCB contaminated soil identified near the Airstrip warehouse, none was identified near the airstrip itself. The blueberries therefore cannot accumulate PCBs when they are absent from soil in this area.

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3.1.2 Written Comments

1. Comment from Ms. Sam: Extend the comment period to real 30 days. Initial info reviewed June 2, 09 – therefore end July 2, 09.

Response from AF: The public comment period was extended 30 days to July 9, 2009.

2. Comment from Ms. Sam: Contractor use local hire for any labor or work.

Response from AF: Since the demolition and clean-up is being accomplished mainly through 611th Civil Engineering Squadron “in-house” personnel there is limited need for additional local workers. However, the AF encourages any contractors to use local hire as much as possible.

3. Comment from Mr. Bodony: Please extend the public comment period until July 9, 2009 to allow for more opportunities to collect comments. Most Galena residents only learned of a public comment period in late May or at the public meeting on June 2.

Response from AF: The public comment period was extended 30 days to July 9, 2009

4. Comment from Ms. Wanda Attla Lord: Dear Sir or Mam, I am requesting that the Public Comment period be 30 days from June 2, 2009 since this is the time that we were having the meeting we attended. Please give me a response and notification of all answered questions here tonight. Thank you.

Response from AF: The public comment period was extended 30 days to July 9, 2009. A copy of the Response Summary will be mailed to you.

5. Question from Ms. Wanda Attla Lord: Could it be that some of the large number of people who have cancer and died of cancer could have been caused by the Air Force contaminants? What are they doing to find out?

Response from AF: No link of any kind has been shown between contaminants at Kalakaket Creek RRS and health issues among Galena area residents. The cleanup levels required by ADEC regulations are based in part on minimizing future risk of any negative impacts to human health and the environment. Risk assessment is an integral part of the U.S. Air Force's approach to environmental remediation for all sites

6. Question from Ms. Koontz: What efforts will be made to hire as many local people as possible for this project?

Response from AF: Since the demolition and clean-up is being accomplished mainly through 611th Civil Engineering Squadron “in-house” personnel there is limited need for additional local workers. However, the AF encourages any contractors to use local hire as much as possible

7. Comment from Mr. Koontz: This proposed plan should have been presented about a year ago, before the Air Force mobilized all their rented heavy equipment down the Yukon and back up the ice road. Sidney Huntington commented verbally, and I agree, that the spectacle of hauling million of pounds of equipment and thousands of gallons of fuel to an isolated mountaintop in bush Alaska is a bit horrifying in the scope of the waste and expense.

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Response from Air Force: The AF prefers to have public comment periods before any contracts are awarded; however, the project for the demolition of Kalakaket RRS structures was moved up 1 year and that caused an overlap with the CERCLA process for cleanup of contamination.

3.2 Summary of Stakeholder Responses

The Alaska Department of Environmental Conservation (ADEC) provided written statements on the SSI/RI and Proposed Plan during their development. These comments were resolved prior to issuance of Final SSI/RI and Final Proposed Plan.

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**Attachment 1
Notice of Document Availability**

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PUBLIC NOTICE
AIR FORCE ANNOUNCES PROPOSED PLAN FOR REMEDIAL ACTIONS
KALAKAKET CREEK RADIO RELAY STATION (RRS)
KALAKAKET CREEK, ALASKA

The 611th Civil Engineer Squadron (611 CES) at Elmendorf Air Force Base, Alaska, announces the public availability of Proposed Plans and a 30-day public comment period regarding environmental cleanup options and recommendations. Kalakaket Creek Radio Relay Station is located approximately 20 miles south of Galena, and 276 miles west of Fairbanks, AK. Kalakaket Creek RRS was originally constructed as part of the White Alice Communication System in the 1950's; in 1973 the site was deactivated. The Proposed Plan includes descriptions of the site background, summary of site characteristics, summary of site risks and remedial action objectives, summary of remedial alternatives and evaluation of remedial alternatives. The remedial alternatives evaluated for soil include (1) No action, (2) Source removal and natural attenuation of petroleum-contaminated soil with land use controls and onsite/offsite disposal of PCB-, dieldrin-, and 1,2,3-trichloropropane-contaminated soil; and (3) Onsite Low-Temperature Thermal Desorption of petroleum-, PCB-, dieldrin-, and 1,2,3-trichloropropane-contaminated soil. The preferred contaminated soil alternative in the Proposed Plan is Alternative 2, Source removal and natural attenuation of petroleum-contaminated soil with land use controls and onsite/offsite disposal of PCB-, dieldrin-, and 1,2,3-trichloropropane-contaminated soil. The remedial alternatives evaluated for groundwater include (1) No action, and (2) Land use controls with natural attenuation. The preferred contaminated groundwater alternative in the Proposed Plan is Alternative 2, Land use controls with natural attenuation. The selected alternatives will satisfy the following Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requirements: be protective of human health and the environment, comply with applicable remedial action requirements; be cost-effective; utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and satisfy the preference for treatment as a principle element, or explain why the preference for treatment will not be met.

The Proposed Plan is a document that the Air Force is required to issue to fulfill the requirements of CERCLA. The public is encouraged to participate in the decisionmaking process regarding the site. You may comment on the proposed cleanup alternatives presented in the Proposed Plan during the 30-day public comment period, from May 11 to June 9, 2009. There is a public meeting to discuss the Proposed Plan to be held at the Galena Community Center 7pm on Monday, May 11, 2009. During this meeting, the public will be given the chance to submit both oral and written comments. The Proposed Plan is available at <http://projects.ch2m.com/kalakaket/> and copies can be obtained by contacting Mr. Tommie Baker at the address or phone numbers listed below. You may submit your comments through written letter, fax, email or telephone to:

Mr. Tommie Baker Community Solutions Coordinator
16471 20th Street, Suite 500
Cheney-Wadsworth AFB, AK 99706-2206
1-(800)-222-4137 toll-free
(907)-552-4396 direct line
e-mail: tommie.baker@us.af.mil

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