

# UNITED STATES AIR FORCE 611th Air Support Group 611th Civil Engineer Squadron

JOINT BASE ELMENDORF-RICHARDSON, ALASKA

## DRIFTWOOD BAY RADIO RELAY STATION

UNALASKA ISLAND, ALASKA

**RECORD OF DECISION: SITE LF006 OLD DISPOSAL AREA AND ELECTRONIC DEBRIS AREA** 

FINAL MARCH 2013

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## ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ARAR	applicable or relevant and appropriate requirements
AST	aboveground storage tank
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
COC	contaminant of concern
CSM	conceptual site model
су	cubic yard
DERP	Defense Environmental Restoration Program
DRO	diesel-range organics
EPA	U.S. Environmental Protection Agency
ERP	Environmental Restoration Program
GRO	gasoline-range organics
HAZWOPER	Hazardous Waste Operations and Emergency Response
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NCP	National Contingency Plan
OSHA	Occupational Safety and Health Association
РАН	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
POL	petroleum, oil, and lubricants
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RRO	residual-range organics

## ACRONYMS AND ABBREVIATIONS (Continued)

RRS	Radio Relay Station
RTK	real-time kinematic
SARA	Superfund Amendments and Reauthorization Act
TCLP	Toxicity Characteristic Leaching Procedure
USAF	U.S. Air Force
USC	United States Code
UST	underground storage tank
VOC	volatile organic compound

#### **PART 1: DECLARATION**

#### 1.1 NAME AND LOCATION

Site LF006 is part of the Driftwood Bay Radio Relay Station (RRS), located on Unalaska Island, Alaska (Figure 1). Unalaska Island is part of the Aleutian Island chain, approximately 800 air miles from Anchorage, Alaska, and 13.5 air miles northwest of Dutch Harbor. The location of this Environmental Restoration Program (ERP) site at the Driftwood Bay RRS is shown on Figure 2.

The Driftwood Bay RRS is located on the northwest portion of Unalaska Island and is divided into two distinct settings: Lower Camp and Top Camp (Figure 2). Site LF006 is located at Lower Camp, which is in the Driftwood Bay Valley and bounded by mountains on three sides with several waterfalls and streams flowing into the valley. Top Camp is located west of Lower Camp and is approximately 1,400 feet higher in elevation.

Site LF006 comprises two areas: the Old Disposal Area and the Electronic Debris Area (Figure 3). These areas have different contaminants of concern (COC) that are regulated separately, but the remedies selected for each area are the same across Site LF006. Residual-range organics (RRO) and select polycyclic aromatic hydrocarbons (PAH) are the COCs at the Old Disposal Area. Lead is the COC at the Electronic Debris Area.

#### 1.1.1 LF006 Old Disposal Area

Facility Name:	Old Disposal Area, Driftwood Bay Radio Relay Station
Site Location:	Dutch Harbor, Alaska; Section 9; Township 072 South; Range 119 West; Seward Meridian
Latitude and Longitude:	52°58'32"N, 168°54'17"W
CERCLIS ID Number:	AK3570028644
ADEC Contaminated Sites Hazard ID Number:	95 (site status is active)
Operable Unit/Site:	LF006 (formerly AOC08)

#### 1.1.2 LF006 Electronic Debris Area

Facility Name:	Electronic Debris Area, Driftwood Bay Radio Relay Station
Site Location:	Dutch Harbor, Alaska; Section 9; Township 072 South; Range 119 West; Seward Meridian
Latitude and Longitude:	53°57'26"N, 166°50'58"W
CERCLIS ID Number:	AK3570028644
ADEC Contaminated Sites Hazard ID Number:	95 (site status is active)
Operable Unit/Site:	LF006 (formerly AOC08)

#### 1.2 STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedy for Site LF006. The remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986; the National Contingency Plan (NCP) to the extent practicable; and in accordance with State of Alaska laws and regulations. Documentation pertinent to this ROD can be found in the Administrative Record file, which can be accessed publicly at the following Internet address:

http://www.adminrec.com/TOC.asp?Base=Driftwood&Command=PACAF



#### 1.2.1 Statement of Basis and Purpose under CERCLA

As the lead agency, the U.S. Air Force (USAF) is issuing this document. USAF is managing remediation at Site LF006 Electronic Disposal Area in accordance with CERCLA as required by the Defense Environmental Restoration Program (DERP). This ROD is issued in accordance with and satisfies requirements of DERP, United States Code (USC) Title 10, Section 2701 et seq. (10 USC 2701); CERCLA 42 USC 9601 et seq.; Executive Order 12580, Federal Register Title 52, Section 2923 (23 January 1987); and the NCP, Code of Federal Regulations (CFR) Title 40, Chapter 300 (40 CFR 300).

Under its lead agency authority, USAF has selected the remedy for Site LF006. The Alaska Department of Environmental Conservation (ADEC) concurs that the selected remedy, if properly implemented, complies with State of Alaska regulatory requirements (USAF 2007). The U.S. Environmental Protection Agency (EPA) was consulted regarding these sites and the other Driftwood Bay RRS sites, consistent with the requirements of 10 USC 2705. In 2007, EPA Region 10 reviewed the *Preliminary Assessment/Site Investigation* for the Driftwood Bay RRS sites (USAF 2005). Using the EPA Hazard Ranking System, the EPA determined that the Driftwood Bay RRS sites' status was No Further Remedial Action Planned with respect to the National Priorities List listing and further response actions. Subsequently, the EPA deferred regulatory oversight at the Driftwood Bay RRS to ADEC.

#### 1.2.2 Statement of Basis and Purpose under State of Alaska Regulations

As the lead agency, the USAF has selected the remedy for Site LF006 Old Disposal Area. Petroleum compounds and associated PAHs are not regulated under CERCLA pursuant to the petroleum exclusion rule, but they are still considered COCs under State of Alaska regulations including, but not limited to, the cleanup levels promulgated under Alaska Administrative Code (AAC) Title 18, Chapter 75 (18 AAC 75) and Title 46 of the Alaska Statutes. The remedy for Site LF006 Old Disposal Area is being addressed consistent with applicable laws and regulations, and ADEC agrees that proper implementation of the selected remedy will comply with State of Alaska regulatory requirements.

#### 1.3 ASSESSMENT OF SITES

CERCLA-regulated hazardous substances and non-CERCLA-regulated petroleum compounds are present at Site LF006 in two distinct areas. CERCLA-regulated and non-CERCLAregulated COCs are not comingled at Site LF006. Table 1 presents the COCs for each area at Site LF006 and the respective regulatory authorities depending on the type of contamination present.

 Table 1

 Soil Contaminants of Concern and Applicable Regulatory Authority

Site Name	Area	COCs Remaining Onsite	Regulatory Authority
LF006	Old Disposal Area	RRO, benzo(a)anthracene, benzo(b) fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenzo(a,h) anthracene, and indeno(1,2,3-cd)pyrene	ADEC/18 AAC 75
LF006	Electronic Debris Area	Lead	CERCLA

Notes:

<sup>1</sup> Although not a COC, solid waste is commingled with the fuel COCs at the Old Disposal Area. For definitions, see the Acronyms and Abbreviations section.

### 1.3.1 Assessment of Sites under CERCLA

Past activities at the Driftwood Bay RRS have resulted in the release of lead, which is considered a hazardous substance under CERCLA. Lead has been detected at the Site LF006 Electronic Debris Area at concentrations above 18 AAC 75 soil cleanup levels. Therefore, a response action is necessary to meet soil cleanup standards promulgated in 18 AAC 75, which are considered protective of human health and the environment, and the response action selected in this ROD is necessary to protect public health, and welfare, and the environment from actual or threatened releases of hazardous substances.



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#### 1.3.2 Assessment of Sites under State of Alaska Regulations

The response action selected in this ROD is necessary under State of Alaska regulations to protect public health and welfare, or the environment from actual or threatened releases of hazardous substances. RRO and the PAHs benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene, have been detected at the Site LF006 Old Disposal Area above 18 AAC 75 soil cleanup levels. Solid waste and other potentially hazardous materials are commingled with the COCs.

#### 1.4 DESCRIPTION OF THE SELECTED REMEDY

#### 1.4.1 LF006 Old Disposal Area

Under CERCLA Sections 101(14) and 101(33), petroleum products, to include any fractions or derivatives of crude oil, are excluded from the definitions of hazardous substances, pollutants, or contaminants. Remedial alternatives for RRO, select PAHs, and solid waste at the Old Disposal Area were not developed or evaluated during the Feasibility Study (USAF 2011b) or the 2011 *Proposed Plan for Sites DA013, LF006, and OT001* (USAF 2011a) because fuel contamination is not regulated under CERCLA. The *Remedial Investigation Report* (USAF 2009b) recommended the implementation of institutional controls to manage the RRO, PAHs, and solid waste at the Site LF006 Old Disposal Area. The selected remedy for the Old Disposal Area – Removal and Offsite Disposal of petroleum contamination above ADEC cleanup levels and commingled solid waste – was chosen based on public comments (USAF 2011a).

Although the Site LF006 Old Disposal Area is not regulated under CERCLA, a list of Applicable or Relevant and Appropriate Requirements (ARAR) have been developed for both areas at Site LF006 and were used when comparing the remedial alternatives for Site LF006.

The major components of the selected remedy for the Site LF006 Old Disposal Area are as follows:

- Containerize and stage contaminated soil above ADEC cleanup levels and solid waste for offsite shipment.
- Perform analytical sampling for waste stream characterization.
- Collect and analyze confirmation samples to ensure that cleanup levels have been met.
- Backfill the excavations with locally available material after contaminated soil in excess of ADEC cleanup levels and solid waste have been removed from the site.

The selected remedy for Site LF006 Old Disposal Area satisfies the remedial action objective (RAO) for this site, which is to prevent the ingestion, inhalation, and offsite migration of contamination exceeding risk-based cleanup levels. Table 2 presents the maximum fuel concentrations present at Site LF006 Old Disposal Area as well as ADEC Method Two cleanup criteria.

сос	Maximum Detected Concentration (mg/kg)	ADEC Method Two Cleanup Level (mg/kg) <sup>1</sup>
RRO	9,500	8,300
benzo(a)anthracene	120	3.6
benzo(b)fluoranthene	77	4
benzo(k)fluoranthene	80	40
benzo(a)pyrene	100	0.4
dibenzo(a,h) anthracene	20	0.4
indeno(1,2,3-cd)pyrene	71	4
Lead	154,000	400
	COC RRO benzo(a)anthracene benzo(b)fluoranthene benzo(k)fluoranthene benzo(a)pyrene dibenzo(a,h) anthracene indeno(1,2,3-cd)pyrene Lead	COCMaximum Detected Concentration (mg/kg)RRO9,500benzo(a)anthracene120benzo(b)fluoranthene77benzo(k)fluoranthene80benzo(a)pyrene100dibenzo(a,h) anthracene20indeno(1,2,3-cd)pyrene71Lead154,000

 Table 2

 Soil Contaminants of Concern and Cleanup Levels

Notes:

<sup>1</sup> ADEC Method Two cleanup levels, over 40-inch zone, most conservative pathway (ADEC 2012) For definitions, see the Acronyms and Abbreviations section.

#### 1.4.2 LF006 Electronic Debris Area

Remedial alternatives for lead at the Site LF006 Electronic Debris Area were developed and evaluated in the Feasibility Study (USAF 2011b) and further discussed in the 2011 Proposed Plan (USAF 2011a). Based on the results of the Feasibility Study, Removal and Offsite Disposal was selected as the remedy for the Site LF006 Electronic Debris Area. This remedial action will remove all hazardous contaminants above 18 AAC 75 soil cleanup levels. Table 2 presents maximum detected COC concentrations present at the Electronic Debris Area.

The selected remedy satisfies the RAO for this site (see Section 2.8), which is to prevent the ingestion, inhalation, and offsite migration of soil exceeding risk-based cleanup levels lilsted in 18 AAC 75.341, Table B1 (lead in excess of 400 milligrams per kilogram [mg/kg]).

The major components of the selected remedy for the Site LF006 Electronic Debris Area are to:

- Containerize and stage contaminated soil above ADEC cleanup level for lead (400 mg/kg) for offsite shipment;
- Perform analytical sampling for waste stream characterization;
- Ship lead-contaminated soil to Subtitle C landfill in the contiguous U.S.;
- Collect and analyze confirmation samples to ensure that cleanup levels have been met; and
- Backfill the excavations with locally available material after contaminated soil in excess of ADEC cleanup levels has been removed from the site.

No additional remedies are required under State of Alaska regulations. The USAF has selected a CERCLA remedy for the site that meets all applicable requirements of the State of Alaska including, but not limited to, 18 AAC 75.

## **1.5 STATUTORY DETERMINATIONS**

The selected remedy for Site LF006 is protective of human health and the environment, comply with promulgated requirements that are applicable or relevant and appropriate to the

remedial actions, and are cost-effective. The selected remedies represent the maximum extent to which permanent solutions can be used in a practicable manner at Site LF006.

The NCP establishes the expectation that treatment will be used to address the principal threats posed by a site whenever practicable [40 CFR, Section 300.430(a)(1)(iii)(A)]. However, treatment was deemed to be impractical due to the remote nature of Driftwood Bay RRS, which lacks available infrastructure, equipment, or specialists. Specifically, no adequate electrical source, transportation, or other infrastructure necessary to implement, operate, and maintain a treatment system exists at this site. Therefore, the selected remedies for Site LF006 do not satisfy the statutory preference for treatment as a principal element of the remedy because excavation and offsite disposal will be applied to control exposure pathways and minimize risk without treatment. Land-use controls will not be required because the USAF intends to remove all debris, wastes, and contaminated soils associated with the landfill.

Under Section 121 of CERCLA, five-year reviews are required when the implementation of a selected remedy results in contamination being left onsite above risk-based cleanup levels. These five-year reviews are necessary to ensure that the selected remedy remains protective of human health and the environment over the long-term, and that any land-use controls or other protective measures are properly implemented and maintained. Because this remedy will not result in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, a five-year review will not be required as part of the selected remedies for Site LF006.

No source materials constituting principal threats are known to exist at Site LF006.

## **1.6 DATA CERTIFICATION CHECKLIST**

The following information is included in the Decision Summary section of this ROD:

- List of COCs and their respective concentrations (Table 2).
- Human health and ecological risk evaluation represented by the COCs (Section 2.7).
- Cleanup levels established for COCs (Table 2).

- How source materials constituting principal threat wastes will be addressed (Section 2.11).
- Current and reasonably anticipated future land-use assumptions and beneficial uses incorporated in baseline risk calculations and the ROD (Section 2.6.1).
- Potential land and groundwater use that will be available at the site as a result of the selected remedy (Section 2.6).
- Estimated total costs for the selected remedy (Table 7). Note that the selected remedy does not include projected operations and maintenance costs over multiple years because no hazardous substances, pollutants, or contaminants will remain at the site above ADEC cleanup levels.
- Key factors that determined the selection of the remedy (description of how the selected remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision) (Section 2.10, Section 2.12).

Additional information can be found in the Administrative Record files for Site LF006 at the

Driftwood Bay RRS, Alaska, which can be accessed at the following Internet address:

http://www.adminrec.com/TOC.asp?Base=Driftwood&Command=PACAF

#### **1.7 AUTHORIZING SIGNATURES**

This signature sheet documents the USAF approval of the remedy selected in this Record of Decision for Site LF006, the Old Disposal Area and Electronic Debris Area, at Driftwood Bay RRS, Alaska.

By signing this declaration, the Alaska Department of Environmental Conservation concurs that proper implementation of the selected remedy for Site LF006 will comply with State environmental laws. These decisions 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.

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

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

#### **PART 2: DECISION SUMMARY**

The Decision Summary identifies the selected alternatives, explains how the overall site remedy fulfills statutory and regulatory requirements, and provides a substantive summary of the Administrative Record files that support the remedy selection decision.

#### 2.1 SITE NAME, LOCATION, AND DESCRIPTION

Site LF006 is among 14 sites at Driftwood Bay RRS, located on Unalaska Island, Alaska, in the Aleutian Island chain, approximately 800 air miles from Anchorage, Alaska (Figure 1). The Driftwood Bay RRS is located on the north side of Unalaska Island, approximately 13.5 miles northwest of Dutch Harbor, in Sections 3, 4, 6, and 9, Township 72 South, Range 119 West, Seward Meridian. Driftwood Bay RRS is an inactive USAF installation established on land withdrawn from public domain for military purposes by a Public Land Order. Site LF006 is located outside this Public Land Order withdrawal on property owned by the Ounalashka Corporation.

As the lead agency for remedial activities, the USAF has conducted environmental restoration and characterization at the Driftwood Bay RRS in accordance with CERCLA as amended by SARA of 1986, and to the extent practicable with the NCP, as well as Alaska State laws and regulations. As the regulatory agency, ADEC provides primary oversight of the environmental restoration actions in accordance with CERCLA and Alaska State laws and regulations.

Funding for remedial activities is provided by the Defense Environmental Restoration Account, a funding source approved by U.S. Congress to clean up contaminated sites on Department of Defense installations.

#### 2.1.1 LF006 Old Disposal Area

Facility Name:	Old Disposal Area, Driftwood Bay Radio Relay Station
Site Location:	Dutch Harbor, Alaska; Section 9; Township 072 South; Range 119 West; Seward Meridian
Latitude and Longitude:	52°58'32"N, 168°54'17"W
CERCLIS ID Number:	AK3570028644
ADEC Contaminated Sites Hazard ID Number:	95 (site status is active)
Operable Unit/Site:	LF006 (formerly AOC08)
Point of Contact:	Mr. Steve Hunt, USAF Remedial Project Manager Steve.Hunt@elmendorf.af.mil USAF 611 CES/CEAR 10471 20 <sup>th</sup> Street, Suite 302 Joint Base Elmendorf-Richardson, AK 99506

Investigation activities at Site LF006 Old Disposal Area in 2007 identified the presence of fuel contamination and ash containing elevated concentrations of PAHs. Fuel and PAH contamination identified in the soil does not appear to be migrating offsite, based on downgradient groundwater sampling of monitoring wells sampled to the northeast of site LF006 in July of 2007.

Ground-penetrating radar and an electromagnetic survey were used to delineate the bounds of the Site LF006 Old Disposal Area (USAF 2009b) with the exception of the ponded area could not be surveyed by GPR. The Feasibility Study alternatives considered suitable for the Old Disposal Area are institutional controls, excavation/offsite disposal, and no action (for comparative purposes); however, investigative studies conducted during the remedial investigation focused on ensuring that landfill wastes were not leaching to groundwater, and that the landfill did not contain drums or other items that could affect groundwater in the future. Unknowns could be encountered during removal of this landfill and will require characterization and confirmation sampling during removal activities. Two separate grids were surveyed to adequately cover the potential area of the landfill The grid areas were approximately 130 feet by 95 feet, and 175 feet by 125 feet. Two test pits were also excavated at the Old Disposal Area (Figure 4). Soil sample results from an ash layer from within Test Pit 1 indicated cleanup level exceedances for PAH, RRO, and arsenic; however, the arsenic results were below background concentrations and presumed to be naturally occurring. Arsenic has not been retained as a COC for the site (USAF 2009b). All groundwater, surface water, and sediment sample results were below ADEC cleanup criteria. Since non-CERCLA-regulated fuel constituents are present in soil above applicable cleanup levels, the site poses a current or future unacceptable risk to human health. Remedial action is required for PAH and RRO contamination, and will be achieved through Removal and Offsite Disposal.



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#### 2.1.2 LF006 Electronic Debris Area

Facility Name:	Electronic Debris Area, Driftwood Bay Radio Relay Station
Site Location:	Dutch Harbor, Alaska; Section 9; Township 072 South; Range 119 West; Seward Meridian
Latitude and Longitude:	53°57'26"N, 166°50'58"W
CERCLIS ID Number:	AK3570028644
ADEC Contaminated Sites Hazard ID Number:	95 (site status is active)
Operable Unit/Site:	LF006 (formerly AOC08)
Point of Contact:	Mr. Steve Hunt, USAF Remedial Project Manager <u>Steve.Hunt@elmendorf.af.mil</u> USAF 611 CES/CEAR 10471 20th Street, Suite 302 Joint Base Elmendorf-Richardson, AK 99506

The Site LF006 Electronic Debris Area (Figure 5) was discovered during 2007 Site Characterization activities (USAF 2009b). A pile of electronic debris including capacitors, transformers, and batteries, was found in the southern portion of this area of concern. A location devoid of vegetation, previously called the distressed area, with several lead battery plates was found in the northern portion of this area of concern. Niton<sup>®</sup> field screening and analytical results for lead indicated surficial lead contamination in the area. Five batteries and more than 30 capacitors and audio transformers were removed from this site during the 2007 Remedial Investigation (USAF 2009b).

Analytical results for polychlorinated biphenyls (PCB) in soil samples collected from the southern portion of the Electronic Debris Area were below the ADEC Method Two cleanup level of 1 mg/kg, with a maximum detected concentration of 0.167 mg/kg (USAF 2009b). Two PCB samples were collected beneath the capacitor/transformer pile at ground surface, and one additional PCB sample was collected in a test pit 6 inches bgs on the mound upon which the electronic debris was located. Therefore, PCBs are not considered COCs for the Electronic Debris Area.

In 2009, hydroxyapatite, a phosphate-based chemical stabilization compound, was applied to lead-contaminated soils at the distressed area as part of a pilot test. Previous battery locations BAT01, BAT02, BAT03, and BAT05 were relocated during 2009 fieldwork, and a hot spot removal of lead-contaminated soil was conducted. Contamination remained at all battery locations after the limited removal action in 2009. The extents of locations BAT01, BAT02, and BAT03 were fairly well defined through field surveying, while the extent of BAT05 was not well defined.

In 2010, surface and subsurface soil samples were collected from the "Lima Bean" and the former BAT05 location to evaluate the effects of hydroxyapatite prior to further application, and delineate the boundaries of residual contamination at BAT05. Toxicity Characteristic Leaching Procedure (TCLP) results indicated that the application of hydroxyapatite at the distressed area resulted in the reduction of the mobility and potential exposure of lead contamination in the soil at concentrations exceeding ADEC method two cleanup levels. TCLP results also indicated that this area could be considered non-hazardous if a removal action were to occur in the future, however lead contamination still remains in the soil (USAF 2010). If remedial activities at BAT05 generated soil waste for offsite transport, it would be categorized as hazardous if left untreated (USAF 2010). Soil removal was deemed unnecessary at this area. However, total lead results at BAT05 ranged from 3.17 mg/kg to 20,700 mg/kg, and TCLP lead results ranged from 0.127 to 297 milligrams per liter (mg/L). Two out of five results for TCLP lead were greater than the Resource Conservation and Recovery Act (RCRA) maximum concentration for toxicity characteristic for lead of 5.0 mg/L. These data indicate that if remedial activities at BAT05 generated soil waste for transport offsite, it would be categorized as hazardous if left untreated (USAF 2010).

The extent of contamination identified at the distressed area measures approximately 66 feet by 25 feet and extends an estimated 3 feet below ground surface (bgs). The extent of contamination associated with the four battery locations is 7 feet by 7 feet at BAT05 and 20 feet by 5 feet for the area surrounding BAT01, BAT02, and BAT03. Because CERCLA constituents are present above applicable ADEC Method Two regulatory limits, the Electronic Debris Area poses a current or future unacceptable risk to human health. Remedial action is required and will be achieved through the selected remedy, Removal and Offsite Disposal.


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### 2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

This section provides background information and summarizes the series of previous site activities and investigations that preceded this ROD.

# 2.2.1 Site History

Driftwood Bay RRS was initially one of 18 Distant Early Warning Line stations constructed in Alaska between 1950 and 1959. It became operational in 1961 to provide reliable communications for the Distant Early Warning Line. Originally known as White Alice Communications Systems facilities, these facilities were re-designated by the Alaska Air Command as RRSs in 1969. In 1977, Driftwood Bay RRS was deactivated; in 1991, all facility buildings and structures, with the exception of concrete building foundations and portions of the fuel pipeline, were demolished or removed (USAF 2009b). A 3,500-foot dirt runway is still present at the Lower Camp portion of the facility. As part of the demolition in 1991, a permitted landfill was developed to contain building debris and asbestos.

Dutch Harbor, the closest community to Driftwood Bay RRS, is located approximately 13.5 air miles to the southeast (Figures 1 and 2). USAF currently holds most of the land under a Public Land Order. Land surrounding the facility is part of the Alaska Maritime National Wildlife Refuge and is managed by the U.S. Fish and Wildlife Service (USAF 2005). Site LF006 is located on Ounalashka Corporation property, and bordered by land administered by the U.S. Fish and Wildlife Service. The landfill has not been surveyed.

# 2.2.2 History of Investigations and Removal Actions

The activities listed below have been performed at Driftwood Bay RRS (Sites OT001, WP003, LF006, SS007, SS010, and DA013) since the 1977 facility deactivation; further details about these investigations and activities are provided in the sections that follow:

- 1984: USAF 5099th Civil Engineering Squadron began environmental investigation and remediation activities (USAF 2000).
- 1985: U.S. Army Corps of Engineers performed a site inspection, including composite soil and water samples (USAF 1996).

- 1991: All facility buildings and structures, with the exception of foundations and pipeline, were demolished (USAF 2009a). A permitted landfill was developed to contain building debris and asbestos.
- 1995: USAF completed a preliminary assessment/site investigation consisting of surface soil sampling.
- 2000: USAF conducted a site/landfill inspection and collected environmental samples (USAF 2001).
- 2005: USAF completed a preliminary assessment/site investigation, collected data at known contamination source areas, and conducted road maintenance (USAF 2005).
- 2007: A Site Characterization (USAF 2009a) and Remedial Investigation (USAF 2009b) were completed at all known areas of contamination.
- 2009/2010: USAF conducted a lead removal action and hydroxyapatite pilot test (USAF 2009d).
- 2010: ADEC provided a determination of final compliance for petroleum-contaminated sites at Driftwood Bay RRS (Appendix B).

# 1985 Site Investigation

- **OT001:** PCB analysis was conducted on seven soil samples around the foundation of the former Composite Building, with detections up to 6.7 mg/kg at the northwest corner. Diesel-range organics (DRO) were detected at 1,100 mg/kg; volatile organic compounds (VOC) were also detected (USAF 1996).
- **WP003:** Trace levels of VOCs and PCBs were detected in a composite soil sample from the drain outfall area (USAF 1996).
- **SS007:** Trace metals were detected in two soil samples collected in the vicinity of the former 250,000-gallon aboveground storage tanks (AST). Neither PCBs nor VOCs were detected (USAF 1996).

# 1991 Demolition and Removal Actions

- **OT001:** All structures were demolished and moved to a landfill southwest of the remaining Composite Building foundation. Two 20,000-gallon underground storage tanks (UST) and a 110-gallon AST were removed from northwest of the Composite Building foundation (USAF 2000).
- **SS007:** Petroleum, oil, and lubricants (POL)-contaminated soil was removed from the foundations of two 250,000-gallon ASTs during demolition activities and moved to a landfill. Total petroleum hydrocarbon and DRO samples collected from the removed soils had concentrations of 27,000 mg/kg and 1,930 mg/kg, respectively.

### 1995 Preliminary Assessment/Site Investigation

- **OT001:** PCB analysis was conducted on three soil samples from the vicinity of two former feedhorn antenna locations. PCB concentrations in all three samples were nondetect. Two additional soil samples were collected from the vicinity of the former Composite Building, and another surface soil sample was collected from the gravel road east of the former building for PCB analysis. PCBs were not detected at the former Composite Building or the gravel road. One surface soil sample was collected at 1,300 mg/kg.
- **LF006:** A surface soil and surface water sample were collected at the intersection of the road and Humpy Creek. Soil samples contained concentrations of total petroleum hydrocarbons and DRO at 37 mg/kg and 30 mg/kg, respectively. Arsenic, barium, chromium, lead, and selenium were all detected above the minimal risk levels established for development of contaminants of potential concern. Low-level VOCs were detected in concentrations below the minimal risk levels. The surface water sample analyses had nondetect results for total petroleum hydrocarbons, gasoline-range organics (GRO), DRO, metals, pesticides, and PCBs. VOCs were detected in low concentrations in the surface water analyzed and also detected in the method blank.

# 2005 Preliminary Assessment/Site Investigation

- **OT001:** Two composite samples were collected from the four antennas. DRO concentrations ranged from 244 to 770 mg/kg, with the southwestern antennas having the highest composite concentration. Two surface soil samples were collected and analyzed from the southwest and southeast perimeter of the Composite Building foundation. DRO concentrations from these two samples ranged from 307 to 3,030 mg/kg with the highest concentration found southwest of the foundation. Two test pits were dug southwest of the foundation and sampled at depths of 3 and 10 feet bgs. Concentrations of DRO ranged from 168 to 662 mg/kg at 3 and 10 feet bgs, respectively. PCBs in all locations were detected below 1 mg/kg.
- WP003: Four soil samples were collected around the floor drainpipe outfall. DRO concentrations ranged from 2,880 to 9,380 mg/kg and RRO concentrations ranged from 337 to 29,800 mg/kg. PCBs were not detected. Arsenic and lead concentrations were within background levels. Contamination was highest in the surface soil at the pipe outfall.
- **LF006:** Two soil samples and two surface water samples were collected. Arsenic marginally exceeded background levels. No additional analytes, including PCBs, PAHs, and DRO, exceeded cleanup criteria.

- **SS007:** Four soil samples were collected. DRO was present in all samples ranging in concentrations from 37.4 to 13,700 mg/kg. PAHs were detected in two of the samples up to a concentration of 2.37 mg/kg. The highest concentrations at the site were found at the north side of the former pump house.
- **SS010:** Two soil samples were collected from one location near the former water supply pump house. DRO was found in concentrations ranging from 7,570 to 8,640 mg/kg.
- **DA013:** One soil sample was collected at this location. DRO and RRO were found below Method Two cleanup levels in concentrations of 98.5 and 506 mg/kg, respectively. PCBs were not detected. Lead was found above Method Two cleanup levels (400 mg/kg) in concentration of 76,600 mg/kg and arsenic was within background levels.

# 2007 Site Characterization and Remedial Investigation

The 2007 Site Characterization included soil organic carbon characterization and efforts to determine the presence and depth of groundwater. These efforts were used to more accurately assess risks presented by contamination and develop site-specific cleanup criteria. The investigation determined that groundwater was not present at the Upper Camp locations and was found at variable depths within the Lower Camp. Total organic carbon levels were used to estimate the fraction of organic carbon at all site locations providing insight into organic contaminant transport, and thus more appropriate cleanup criteria.

- **OT001-Former Antenna Arrays and Tanks:** PAHs were found in concentrations up to 1.5 mg/kg at the former tanks area. DRO concentrations ranged up to 8,100 mg/kg. Fuel odors were observed around the southwestern antenna pads, results from samples collected were all below Method Two direct contact/ingestion criteria. Contamination around the antennas was attributed to the former tanks rather than the antenna locations themselves.
- **OT001-Former Composite Building:** PCBs were found in concentrations up to 4.5 mg/kg at the perimeter of the former Composite Building. PCB contamination was generally isolated to the northeast and southwest of the Composite Building foundation.
- **WP003:** Twenty soil samples were collected; three of them exceeded the ADEC Method Two direct contact criterion for DRO with concentrations ranging from 11,000 to 17,000 mg/kg, and one sample exceeded the ADEC criterion for RRO with a concentration of 17,000 mg/kg. The volume of fuel-contaminated soil was estimated at 160 cubic yards (cy) within the area directly beneath the pipe outfall.
- **LF006 Old Disposal Area:** Two soil samples indicated PAHs and RRO in concentrations greater than ADEC Method Two migration to groundwater criteria associated with an ash layer approximately 1 foot bgs.

- **LF006 Electronic Debris Area:** Electronic debris including five batteries and 30 capacitors and transformers were removed from the site. Concentrations of lead greater than the ADEC Method Two criterion (400 mg/kg) ranged from 3,880 mg/kg to 89,900 mg/kg. Lead contamination was found to a depth of 1 foot bgs.
- **SS007:** In 2007, 34 soil borings were advanced. Of the 29 soil borings sampled for fuel contamination, all but four had DRO concentrations exceeding the Method Two migration to groundwater criterion and ranged from 250 to 3,400 mg/kg. Groundwater was sampled at six temporary well points. Of the groundwater samples submitted for analytical analysis, five exceeded the ADEC Method Two Table C groundwater criterion for DRO (1.5 mg/L); results ranged from 1.9 mg/L to 82 mg/L.
- **SS010:** A geophysical survey, using an electromagnetic survey and ground-penetrating radar, was conducted to the west of the former pump house where historic as-builts had placed the USTs. The tank locations could not be confirmed. Groundwater was observed across the site, within 1 foot of the soil surface. Four soil samples were collected and analyzed for fuel contamination, two of which exceeded ADEC Method Two migration to groundwater criterion for DRO. DRO results ranged from 490 to 5,300 mg/kg.
- **DA013:** An estimated 10 cy of lead-contaminated soil was identified following the removal of all surface debris at DA013. Lead exceedances ranged from 530 to 11,000 mg/kg. Calcium hydroxyapatite was applied to reduce the mobility of the lead contamination, and post-treatment TCLP results showed a reduction in mobility.

# 2009/2010 Hot Spot Removal and Hydroxyapatite Pilot Test

• **LF006 Electronic Debris Area:** Approximately 200 pounds of lead-contaminated soil associated with battery debris identified during the 2007 site investigation was re-located. The treated soil at the Electronic Debris Area was generally left in place with the exception of that removed in 2009 which was transported for offsite disposal. Confirmation soil samples collected at the extents of the excavation indicated that the lead contamination was still present onsite above cleanup levels (USAF 2009d).

# 2010 Determination of Final Compliance

ADEC issued a determination of final compliance for 13 petroleum-contaminated sites at the Driftwood Bay RRS in 2010. Site LF006 was not included in this determination; other sites addressed in the determination have been addressed in the *CERCLA Records Of Decision:* . OT001 Former Composite Building, DA013 Burned Battery Area (USAF 2012).

### 2.2.3 Enforcement History

No enforcement activities, notices of violation, or lawsuits have pertained to Site LF006.

# 2.3 COMMUNITY PARTICIPATION

NCP Section 300.430(f)(3) establishes requirements for notification and document availability of Proposed Plans for review by the public. A Proposed Plan was published in August 2011 (USAF 2011a), and USAF has participated in several public meetings in the community of Dutch Harbor on Unalaska. The public meeting in 2007 gathered community feedback regarding site usage. Feedback was then used to complete a community risk assessment, part of the overall site risk assessment (USAF 2009c). Another public meeting held on 25 August 2011 presented the *Proposed Plan for Sites DA013, LF006, and OT001*. The public comment period on the Proposed Plan was 22 August to 22 September 2011; public comments received are provided in Section 3.0 Responsiveness Summary. After the 2011 Proposed Plan and public meeting it has since been determined that Site LF006 is located on land owned by the Ounalashka Corporation. The USAF has since chosen the alternative excavation and offsite disposal for both the Old Disposal Area and Electronic Debris Area. Documentation pertinent to this ROD can be found in the Administrative Record file for each site, which can be accessed via the Internet at:

# http://www.adminrec.com/TOC.asp?Base=Driftwood&Command=PACAF

Regulatory comments from ADEC have been incorporated into this document. The ADEC was also given an opportunity to comment on the draft version of this ROD.

# 2.4 SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

Site LF006 is among the 14 ERP sites located at the former Driftwood Bay RRS. Environmental restoration at Driftwood Bay RRS is being conducted under CERCLA authority. In addition, certain cleanup activities, including those in areas with petroleum contamination and solid waste, are being conducted in accordance with State of Alaska regulations (18 AAC 60, 75, and 78) and ADEC guidance (ADEC 2012).

The Remedial Investigation (USAF 2009b), Feasibility Study (USAF 2011b), and Proposed Plan (USAF 2011a) phases of the CERCLA process have been executed for Site LF006. The Feasibility Study alternatives considered suitable for the Old Disposal Area are institutional controls, excavation/offsite disposal, and no action (for comparative purposes); however, investigative studies conducted during the Remedial Investigation focused on ensuring that landfill wastes were not leaching to groundwater, and that the landfill did not contain drums or other items that could affect groundwater in the future. Unknowns could be encountered during removal of this landfill, which will require characterization and confirmation sampling during removal activities. The selected remedy outlined in this ROD is intended to achieve RAOs at Site LF006 as part of an overall cleanup effort. The RAOs for contaminated sites at Driftwood Bay RRS are presented in Section 2.8.

# 2.5 SITE CHARACTERISTICS

The Driftwood Bay RRS is located on the northwest portion of Unalaska Island and is divided into two distinct settings: Lower Camp and Top Camp (Figure 2). Site LF006 is located at Lower Camp, which is in the Driftwood Bay Valley and bounded by mountains on three sides with several waterfalls and streams flowing into the valley. Top Camp is located west of Lower Camp and is approximately 1,400 feet higher in elevation. Top Camp is situated on a broad sloping flank to Makushin Volcano. The flank terminates to the west in an abrupt cliff edge that falls to the Bering Sea.

Lower Camp is located in the wide, steep-sided Driftwood Bay Valley. The rocky ridges to both the west and east of the valley provide significant protection from the typical harsh Aleutian weather. Vegetation in the valley is abundant and varied, due to snowmelt, shallow groundwater, and ample runoff flowing into the valley from surrounding slopes. All groundwater in the Driftwood Bay Valley ultimately flows northward into the Bering Sea.

# 2.5.1 Climate

The Driftwood Bay RRS is located within a cold maritime climate with annual temperatures ranging from -8 to 80 degrees Fahrenheit. Average summer temperature between June and

August is 50 °F, and average winter temperature between November and February is 34 °F. Average precipitation is 58 inches; snowfall can reach up to 50 inches in the winter months (USAF 2002). Overall snow accumulation rates are not abnormally high, but strong wind redeposition of snow into topographic lows can create snowpack greater than the 50-inch average. The winter of 2006-2007 deposited a deep snowpack that persisted at Top Camp throughout the 2007 summer season. Snow depth at a ravine just east of Top Camp measured approximately 10 feet deep in July 2007.

Both Lower Camp and Top Camp frequently have high winds, light rain, mist, and low cloud ceilings resulting from frequent cyclonic storms crossing from the Northern Pacific and the Bering Sea. Top Camp has consistently cooler temperatures with cloud and fog cover. Lower Camp has less frequent precipitation than Top Camp and seems to be protected by the surrounding mountains from the same storm events that occur at Top Camp.

# 2.5.2 Soil

The Driftwood Bay RRS is located to the northwest of Makushin Volcano, and soils encountered in the area are primarily coarse gravels to fine sands composed of the breakdown products of basalts. The majority of the soil is a result of till deposition from glaciations, volcanism, and fluvial deposits in Driftwood Bay Valley. Chemical and mechanical weathering varies across the site, with strong freeze-thaw cycles at Top Camp and dense vegetative cover at Lower Camp.

Surface soils encountered at Lower Camp are generally grayish brown to dark brown with organic clay in sands and gravels. An organic mat approximately 6-inches thick covers the surface soil at Lower Camp. Below approximately 6 feet bgs, the soils consist primarily of sandy gravel to gravelly sand that range from light gray to dark reddish brown.

# 2.5.3 Geology

Unalaska Island is composed mainly of volcanic rocks associated with the Makushin Volcano, located approximately 6.5 miles from the Driftwood Bay RRS. Bedrock is predominantly

basalt and andesitic lava overlain by volcanic till and ash layers. Bedrock outcrops exist at Top Camp and across the Driftwood Bay RRS along valley edges and near the bay. Soil borings and test pits have shown till from 5 to 20 feet deep in the vicinity of the RRS. Bedrock exists anywhere between the surface and approximately 20 feet bgs. Large, rounded boulders of basalt and andesite line the beach area approximately 30 feet from mean high tide lines. No permafrost was observed during soil borings or test pitting at the Driftwood Bay RRS.

# 2.5.4 Hydrogeology

The Driftwood Bay Valley is drained by permanent and intermittent streams that empty into Driftwood Bay, including Humpy Creek, which runs along the east side of the Driftwood Bay Valley, and Snuffy Creek, which runs along the west side of the runway and portions through culverts underneath the runway before emptying into Driftwood Bay. Several additional small, unnamed drainages extend from the mountainous regions of the facility to the Driftwood Bay Valley into one of these two dominant stream systems and into the Bering Sea.

In general, surface water flows from the west and southwest to the east and northeast. Surface water flow patterns at Site LF006 suggest that surface water may occasionally flow across the site from south to north. The valley floor is generally flat and quickly becomes flooded during periods of high precipitation or snowmelt. A small pond sits at the southern end adjacent to the Old Disposal Area. Some disturbed areas are evident, but revegetation occurs quickly, and generally only the roads and airstrip remain obvious. Surface flow was generally channelized, and surface flooding had distinct flow direction at Lower Camp. Snuffy Creek and surrounding waterfalls are relatively close to site LF006, but are not within the site boundaries.

The site is located in a valley that is bounded on the south, east, and west by large mountains. All groundwater in the Driftwood Bay Valley ultimately flows northward into the Bering Sea. In order to assess the direction of groundwater flow, measurement of perennial surface water elevations were collected using a real-time kinematic global positioning system, and depth-to-groundwater was measured in soil borings and SP16 points. Depth-to-groundwater in the vicinity of Lower Camp was reported in soil boring descriptions at approximately 3 to 32 feet bgs. Variations in groundwater depth were a result of a shallow, leaky aquitard near the bay and surface water recharge in other areas of Lower Camp. Groundwater has the same general flow direction as surface water across the site, with some localized anomalies due to aquitards resulting from lithologic variations and groundwater mounding from surface water recharge.

#### 2.5.5 Ecology

Several species of small mammals are indigenous to Unalaska Island, including tundra vole, shrew, collared lemming, and red fox. Introduced species include Arctic ground squirrel, blue-phased arctic fox, and Norway rat (USAF 1996). Aquatic environments in the Driftwood Bay area include marine coastal water of the Bering Sea and freshwater drainages of Humpy Creek and Snuffy Creek. Wildlife in and around the Bering Sea in the vicinity of Driftwood Bay includes several salmon species, halibut, rockfish, Pacific herring, sea lions, sea otters, geese, ducks, 21 known seabird populations, and bald eagles. Pink salmon are known to spawn in Humpy Creek (USAF 1996). Of the wildlife listed, the following were observed at the site during the 2007 field season: vole, shrew, fox, ground squirrel, salmon, halibut, sea lion, seabirds, bald eagle, and whales some distance off shore. Four known endangered species have ranges that span the vicinity of Unalaska Island: short-tailed albatross, humpback whales, right whales, and blue whales (USAF 2005). The sea otter, also found in the vicinity of Unalaska Island, is listed as a threatened species.

Aleutian tundra grasses, shrubs, and riparian vegetation were observed at Lower Camp. Top Camp appears similar to an alpine zone, with minimal vegetative cover consisting mainly of lichens, mosses, and some tundra grasses. The majority of the surface at Top Camp is sparsely vegetated and mixed with gravel, and sand. Silt is exposed in barren areas.

### 2.5.6 Previous Site Characterization Activities

Two primary field efforts have led to the current understanding of contamination at Driftwood Bay RRS. In 2005, a preliminary assessment/site inspection (USAF 2005) was completed to ascertain site surface COCs and the location of all sites within the RRS. During this field effort, site observations were made and surface soil and water samples were collected. The results of this field effort led to an additional effort aiming to characterize the extent of contamination. In 2007, a Site Characterization (USAF 2009a) and Remedial Investigation (USAF 2009b) field effort at 14 sites within the Driftwood Bay RRS aimed to characterize the nature and extent of contamination. Additionally, supplemental lead investigations conducted in 2009 and 2010 have better defined the extent of contamination at Site LF006.

# 2.5.7 Nature and Extent of Contamination

Following the series of investigations previously outlined, Table 3 outlines the quantities of affected soil estimated at the Driftwood Bay RRS:

Site Name	Location	COCs	Soil Volume (cy)
LF006 Old Disposal Area		Select PAHs	30
	Lower Camp	Solid Waste	1850
LF006 Electronic Debris Area	Lower Camp	Lead <sup>1</sup>	230

Table 3 Driftwood Bay RRS LF006 Sites

Notes:

<sup>1</sup>One of the samples is unbounded. The extent for this sample is estimated to be similar to other exceedance boundaries. For definitions, see the Acronyms and Abbreviations section.

# 2.5.8 Conceptual Site Model

Based on data collected during the 2007 field activities, a conceptual site model (CSM) for potential and future exposure pathways at Driftwood Bay RRS Site LF006 was developed.

Surface water samples from Snuffy Creek and a pond adjacent to Site LF006 were collected and analyzed for pH, conductivity, temperature, turbidity, dissolved oxygen, and oxidationreduction potential. These measurements were compared to the water quality standards presented in 18 AAC 70; no standards exist for conductivity or oxidation-reduction potential. Table 4 presents the measurement range and average.

Range	рН	Temperature (°C)	Turbidity (nephelometric turbidity units)	Dissolved Oxygen (mg/L) <sup>1</sup>	
Standard	6.5 -8.5	$13^2$ to $15^3$	< 25	> 7	
Snuffy Creek Surface Water Parameters					
Minimum	6.37	3.23	0.72	23.96	
Maximum	6.72	4.28	9.18	186.7	
Average	6.5	3.7	2.7	129.1	
LF006 Downgradient Pond Surface Water Parameters					
Minimum	6.48	14.14	0.53	13.05	
Maximum	6.66	14.61	0.62	13.7	
Average	6.6	14.3	0.56	13.4	

Table 4Surface Water Parameters

Notes:

Field observations of Snuffy Creek showed multiple waterfalls just above the sample site. This, along with the creek's cold temperature, explains the high Dissolved Oxygen values.

<sup>2</sup> Standard is the maximum for spawning areas and egg and fry incubation and is applicable to Snuffy Creek.

<sup>3</sup> Standard is the maximum for migration routes and rearing areas and is applicable to the pond.

°C = degrees celsius

For definitions, see the Acronyms and Abbreviations section.

Possible secondary release and transport mechanisms at Site LF006 include migration or leaching to subsurface, migration or leaching to groundwater, volatilization, uptake by plants or animals, groundwater flow to surface water body, groundwater flow to sediment, sediment re-suspension, runoff, or erosion, all of which could result in contamination of potential contact media such as soil, groundwater, air, surface water, sediment, and biota.

Potential exposure routes include incidental soil ingestion, dermal absorption of contaminants from soil, ingestion of groundwater, dermal absorption of contaminants in groundwater, inhalation of outdoor air, inhalation of fugitive dust, ingestion of surface water, dermal absorption of contaminants in surface water, direct contact with sediment, and ingestion of wild foods. Potential current and future receptors of these exposure routes include site visitors, trespassers, recreational users, and unforeseen future user groups. Residential use is

unlikely because site access is limited to boat or plane. Subsistence hunting or gathering is unlikely, although harvesting of small game and vegetation, such as berries, may occur on a limited basis. The CSM for potential current and future exposure pathways at Site LF006 is shown on Figure 6. (intentionally blank)



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#### 2.6 CURRENT AND POTENTIAL FUTURE LAND AND WATER USES

#### 2.6.1 Land Use

Dutch Harbor is the closest community to Driftwood Bay RRS and is located approximately 13.5 air miles to the southeast. Driftwood Bay RRS is an inactive USAF installation established on land withdrawn from public domain for military purposes by a Public Land Order. No residents live near the former facility. A public meeting in 2007 gathered community feedback regarding site usage, and that information was used to complete a community risk assessment, which was part of the overall site risk assessment (USAF 2009c). After consideration of community feedback; observations during Site Characterization; and the results of interviews with community members, pilots, USAF representatives, U.S. Fish and Wildlife Service employees, boat charter companies, Dutch Harbor outfitters, and members of Native Corporations, it was determined that the current land use at the Driftwood Bay RRS is primarily recreational. Residential use is conservatively assumed as a potential future use of the area.

#### 2.6.2 Groundwater and Surface Water Uses

Surface water and groundwater were encountered at Site LF006 at both the Electronic Debris Area and the Old Disposal Area. There is no known current use for surface water or groundwater. Cleanup levels at the site are designed to be protective of residential use of surface and groundwater.

# 2.7 SUMMARY OF SITE RISKS

This section summarizes the human health and ecological risk evaluations that have been performed for Site LF006. The COCs associated with unacceptable site risk are identified, as well as the potentially exposed populations and exposure pathways of primary concern.

Though a formal risk assessment was conducted at Driftwood Bay RRS, the RAOs presented in this document were developed using 18 AAC 75 risk-based screening criteria. Therefore, human health and ecological risks were assessed based on a comparison of analytical data collected during the Site Characterization (USAF 2009a) and Remedial Investigation (USAF 2009b) with risk-based RAOs.

# 2.7.1 Human Health Risks

While analyses presented in the *Risk Assessment Report* (USAF 2009c) were based upon a recreational land-use scenario, all samples collected during Site Characterization (USAF 2009a) and Remedial Investigation (USAF 2009b) activities were screened against risk-based cleanup levels for residential site users—ADEC Method Two cleanup levels (18 AAC 75)—in response to Proposed Plan comments received from ADEC, U.S. Fish and Wildlife Service, and discussions with Ounalashka Corporation. These comments indicated that a residential land-use scenario is required to meet current landowner requests. Using the risk-based screening criteria provided under 18 AAC 75, contaminants associated with unacceptable site risks were identified, as well as local populations that could be affected and exposure pathways of primary concern.

This section of the ROD summarizes some of the information gathered and data computed during the risk assessment (USAF 2009c); however, note that compliance with ADEC Method Two cleanup levels provide the basis for action at Site LF006, and the RAOs for Site LF006 presented in Section 2.8 were developed in accordance with this risk-based criteria.

# Identification of Chemicals of Concern

This section identifies those chemicals associated with unacceptable risk at the site, and that are the basis for the proposed remedial actions. The COCs for Site LF006 Old Disposal Area and Electronic Debris Area are lead, RRO, and select PAHs. Symptoms of exposure for each COC are listed below:

• Common symptoms of lead poisoning are loss of appetite, nausea, vomiting, stomach cramps, constipation, difficulty sleeping, fatigue, moodiness, headache, joint or muscle aches, and anemia. Chronic exposure can result in severe damage to the blood, nervous system, urinary system, and reproductive system. Chronic exposure can result in death.

- Common symptoms of exposure to RROs are irritation of the skin and eyes, and respiratory system. Chronic exposure can result in severe damage to the skin, eyes, and respiratory system.
- Common symptoms of exposure to PAHs are irritation of the skin and eyes, bronchitis, dizziness, drowsiness, and nausea. Chronic exposure can result in severe damage to the nervous system, urinary system, and reproductive system.

During the Site Characterization (USAF 2009a) and Remedial Investigation (USAF 2009b), levels of COCs were screened against 18 AAC 75 Method Two migration to groundwater cleanup levels for the over 40-inch zone. It was established that the risks associated with No Action exceed the acceptable risk levels.

### Exposure Assessment

Because ADEC risk-based cleanup levels were used as screening criteria to assess the COCs, a quantitative exposure assessment is not presented here. Exposure pathways and populations are assessed using risk-based cleanup levels that assume a worst-case scenario of exposure frequency and duration. Future land use scenarios selected for both the Electronic Debris Area and the Old Disposal Area are residential. Populations at Site LF006 may also be exposed during recreational land use and less likely through subsistence harvesting (direct contact).

#### Toxicity Assessment

The quantitative toxicity assessment is not presented in this ROD because risk-based cleanup levels were used as screening criteria to assess the COCs. Detailed toxicity information may be found in the Risk Assessment Report (USAF 2009c).

# Risk Characterization

The risk-based cleanup levels listed under 18 AAC 75 are based upon a lifetime cancer risk threshold of  $1 \times 10^{-5}$  and a non-cancer hazard index of 1. Since concentrations of contamination are above risk-based levels at Site LF006, action is required under CERCLA (for lead) and State Regulations (for fuels) to protect human health and the environment.

#### 2.7.2 Ecological Risks

During preliminary ecological screening and development of the CSM, the risk to ecological receptors was deemed low due to the relatively small surface areas of the site compared to the roaming range of the animals. Although known potential risks to ecological receptors are currently deemed low, there are potential unknowns that, if encountered, will need to be addressed during the removal of the landfill for the purpose of eliminating exposure risk(s). One known ecological concern is the pond near the proposed area to be excavated. The results of the detailed ecological risk assessment are available in the *Risk Assessment Report* (USAF 2009c) and the CSM in Section 2.5.8.

#### 2.7.3 Summary of Site Risks

RRO and select PAHs at Site LF006 Old Disposal Area exceeded their respective cleanup levels under 18 AAC 75.341. Lead concentrations at Site LF006 Electronic Debris Area exceed cleanup levels under 18 AAC 75.341. Therefore, remedial action is required at Site LF006 under State regulations and CERCLA to protect human health and the environment.

#### 2.7.4 Basis for Action

The response action selected in this ROD is necessary to protect public health or welfare and the environment from actual or threatened releases of hazardous substances into the environment due to exceedances of risk-based cleanup levels at Site LF006.

# 2.8 REMEDIAL ACTION OBJECTIVES

RAOs provide a general description of what a remedial action will accomplish. These goals typically serve as the design basis for the remedial alternatives, which will be presented in the next section. The RAOs for Driftwood Bay RRS, detailed below, are designed to be protective of human health and the environment.

# LF006 Old Disposal Area

- Prevent ingestion, inhalation, and offsite migration of soil containing RRO in excess of 8,300 mg/kg; benzo(a)anthracene in excess of 4.0 mg/kg; benzo(b)fluoranthene in excess of 4.0 mg/kg; benzo(a)pyrene in excess of 0.4 mg/kg; dibenzo(a,h)anthracene in excess of 0.4 mg/kg; and indeno(1,2,3-cd)pyrene in excess of 4.0 mg/kg.
- Prevent exposure to and release of potential contamination associated with buried solid waste by removal from environmentally sensitive areas.

# LF006 Electronic Debris Area

- Prevent ingestion, inhalation, and offsite migration of soil containing lead in excess of 400 mg/kg.
- Prevent exposure to and release of potential contamination associated with buried solid waste by removal from environmentally sensitive areas.

As explained in Section 2.7.1, the site-specific RAOs for all sites were developed based on potential future residential land use. In order to achieve RAOs, the selected remedial actions for Site LF006 will eliminate human or environmental exposure to contamination through Removal and Offsite Disposal.

# 2.9 DESCRIPTION OF ALTERNATIVES

The remedial alternatives for CERCLA contamination were considered for several sites at the Driftwood Bay RRS in the 2011 Feasibility Study (USAF 2011b). The remedial alternatives for Site LF006 Old Disposal Area were not developed or evaluated during the Feasibility Study (USAF 2011b) because this area did not contain CERCLA hazardous substances. The final remedy for Site LF006 Old Disposal Area was chosen following the public comment period on the Proposed Plan, which requested that any remedial action conducted at Site LF006 must also include the RRO and PAH contamination as well as buried solid waste at Site LF006 Old Disposal Area. Only the remedial alternatives for CERCLA-regulated contamination at the Site LF006 Electronic Disposal Area are described in the following subsections with the exception of the cost estimates in Table 7. The remedial alternatives considered for soils contaminated with lead at the Site LF006 Electronic Debris Area are summarized in Table 5.

 Table 5

 Summary Remedial Alternatives Evaluated for Site LF006 Electronic Debris Area

Alternative	Description	Key Assumptions	Advantages	Disadvantages	Cost Estimate (in Millions)
1	No Action	No action planned	<ul> <li>Easy to implement</li> <li>No cost</li> </ul>	<ul> <li>Not protective</li> </ul>	\$0
2	Chemical Stabilization and Land-Use Controls	Fence needed to restrict access	<ul> <li>Easy to implement</li> <li>Low cost</li> </ul>	<ul> <li>Not effective if controls do not work</li> </ul>	\$0.45
3	Removal and Offsite Disposal	RCRA hazardous soil generated	<ul> <li>Highly effective</li> </ul>	<ul><li> Difficult to implement</li><li> Higher cost</li></ul>	\$1.0
4	Chemical Stabilization and Offsite Disposal	Not subject to RCRA hazardous waste regulation after stabilization	<ul> <li>Highly effective</li> </ul>	<ul><li>Difficult to implement</li><li>Higher cost</li></ul>	\$1.1
5	Chemical Stabilization and Onsite Disposal and Land Use Controls	Soil capped in place	<ul> <li>Effective and moderate cost</li> </ul>	Requires     maintenance and     land-use controls	\$0.72

#### Note:

<sup>1</sup> Costs estimates for Site LF006 Old Disposal Area are discussed in Table 7.

*No Action:* No remedial activities would be undertaken to treat lead-contaminated soils or prevent exposure to lead soil concentrations above 18 AAC 75 cleanup levels. The No Action alternative is required for consideration by the NCP, and provides a baseline against which the other alternatives can be compared.

*Chemical Stabilization and Land-Use Controls:* Soil contaminated with lead above the ADEC Method Two cleanup level (400 mg/kg) would be treated with a chemical stabilization product and land-use controls would be placed on the site. Calcium hydroxyapatite (or an equivalent stabilizer) would be placed on the soil in situ to increase stabilization and prevent leaching of lead. This action would limit the migration of lead from the site. Method Four cleanup levels indicate that potential exposures to lead at Site LF006 could pose an unacceptable hazard to land use under current and reasonably anticipated land use; therefore,

land-use controls restricting site access would be required to prohibit future access to leadcontaminated soil at the site. Section 121 of CERCLA as amended by SARA and the NCP require that remedial actions resulting in any hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to ensure protection of human health and the environment. Therefore, CERCLA five-year reviews would be required and future land use would be restricted.

*Removal and Offsite Disposal:* Soil contaminated with lead above the Method Two cleanup level (400 mg/kg) would be excavated, staged, manifested, and transported for disposal to a permitted landfill capable of managing RCRA-regulated lead-contaminated soil. Soil would be excavated and containerized onsite prior to transport. Analytical samples would be collected from the staged soil for waste profiling purposes.

*Chemical Stabilization and Offsite Disposal:* Soil contaminated with lead above the Method Two cleanup level (400 mg/kg) would be treated with a chemical stabilization product, then excavated, staged, manifested, and transported for disposal to a chemical waste landfill capable of managing lead-contaminated soil. Calcium hydroxyapatite (or equivalent stabilizer) would be placed on the soil in situ to limit leaching of lead and reduce the likelihood of a RCRA waste stream being generated. Soil would then be excavated and containerized onsite prior to transport. Samples would be collected from the staged soil for waste profiling. All excavated soil would then be manifested, and transported for disposal to a permitted landfill.

*Chemical Stabilization with Onsite Disposal and Land-Use Controls:* Soil contaminated with lead above Method Two cleanup levels (400 mg/kg) would be treated with a chemical stabilization product, disposed of onsite, and a 2-foot soil cap would be placed over the site. First, calcium hydroxyapatite (or equivalent stabilizer) would be placed on the soil in situ to increase stabilization and prevent leaching of lead. This action would limit the migration of lead from the site. After stabilization, the onsite disposal cap would consist of a geotextile

liner to prevent migration to groundwater and 2 feet of cover material to prevent direct contact and erosion. CERCLA five-year reviews would be required.

# 2.10 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

The USAF is committed to implementing, monitoring, maintaining, and enforcing all components of the selected alternatives to ensure that they remain protective of human health and the environment.

In accordance with the NCP, the alternatives for sites at Driftwood Bay RRS were evaluated using the nine criteria described in Section 121(a) and (b) of CERCLA and 40 CFR 300.430 (e)(9)(i), as cited in NCP 300.430(f)(5)(i). These criteria are classified as threshold criteria, balancing criteria, and modifying criteria.

**Threshold criteria** are standards that an alternative must meet to be eligible for selection as a remedial action. There is little flexibility in meeting the threshold criteria—the alternative must meet them or it is unacceptable. The following are classified as threshold criteria:

- Overall protection of human health and the environment
- Compliance with, or an applicable waiver of applicable or relevant and appropriate requirements (ARAR)

**Balancing criteria** weigh the tradeoffs between alternatives. These criteria represent the standards upon which the detailed evaluation and comparative analysis of alternatives are based. In general, a high rating on one balancing criterion can offset a low rating on another balancing criterion. Five of the nine criteria are considered balancing criteria:

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, and volume through treatment
- Short-term effectiveness
- Implementability
- Cost

**Modifying criteria** may be considered to the extent that information is available during the Feasibility Study, but can be fully considered only after public and regulator comments, are as follows:

- Community acceptance
- State/support agency acceptance

This section summarizes how well each alternative satisfies each evaluation criterion and indicates how each alternative compares to the other alternatives under consideration. The *Driftwood Bay RRS Feasibility Study* (USAF 2011b) screened and developed several remedial alternatives for lead contamination at the Site LF006 Electronic Debris Area. Five of these alternatives were retained for further analysis. Table 6 provides a summary of the alternatives comparison for the Site LF006 Electronic Debris Area.

Table 6Comparison of Alternatives for LF006 Electronic Debris Area

Evaluation Criteria	LF006 Alternative 1: No Action	LF006 Alternative 2: Chemical Stabilization and Land- Use Controls	LF006 Alternative 3: Removal and Offsite Disposal	LF006 Alternative 4: Chemical Stabilization and Offsite Disposal	LF006 Alternative 5: Chemical Stabilization and Onsite Disposal
Overall Protection of Human Health and the Environment	Fail	Fail	Pass	Pass	Pass
Compliance with ARARs	Fail	Pass	Pass	Pass	Pass
Long-Term Effectiveness and Permanence	0	2	5	5	4
Reduction in Toxicity, Mobility, and Volume Through Treatment	0	0	0	1	0
Short-Term Effectiveness	0	3	3	3	2
Implementability	0	4	4	3	3
Cost (in millions) <sup>1</sup>	\$0	\$0.45	\$1.0	\$1.1	\$0.72

Notes:

<sup>1</sup> Cost estimates are based on the 2011 Driftwood Bay RRS Feasibility Study. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost.

For definitions, see the Acronyms and Abbreviations section.

The numerical scoring system rates the effectiveness of each alternative with 0 being the least effective and 5 being very effective.

#### Overall Protection of Human Health and the Environment

The concentrations of lead at Site LF006 Electronic Debris Area are above State of Alaska standards and pose a potential threat to human health. This section describes how each alternative would protect human health and the environment and describes how risks posed would be eliminated, reduced, or controlled.

With the exception of the No Action, and the Chemical Stabilization and Land-Use Controls alternatives, all alternatives are considered protective of human health and the environment.

The Chemical Stabilization and Land-Use Controls alternative proposes to leave leadcontaminated soil in place with the addition of a chemical stabilizer to limit migration. This alternative requires restriction of access to the site to protect human health and the environment under any land-use scenario. RAOs would only be achieved by prohibiting access and mitigating exposure to the site.

The Removal and Offsite Disposal alternative proposes to remove lead-contaminated soil from the installation, effectively protecting human health and the environment. RAOs would be achieved at project completion.

The Chemical Stabilization and Offsite Disposal alternative proposes to remove leadcontaminated soil from the facility, effectively protecting human health and the environment. RAOs would be achieved at project completion.

The Chemical Stabilization and Onsite Disposal alternative proposes to leave leadcontaminated soil in place with the addition of a chemical stabilizer to limit migration, and the construction of a permeable cap and implementation of excavation restrictions to prevent direct contact. If properly maintained, this alternative protects human health and the environment. RAOs would be achieved by limiting access to the site and thus exposure to contaminated soil.

#### Compliance with Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA and NCP Section 300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites must, at a minimum, meet legally applicable or relevant and appropriate federal and State requirements, standards, criteria, and limitations which are collectively referred to as ARARs, unless such ARARs are waived under CERCLA Section 121(d)(4). ARARs can be chemical-specific, location-specific, or action-specific.

<u>Applicable requirements</u> refer to the cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or State environmental or facility citing laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. State standards that are identified by the State in a timely manner and that are more stringent than federal requirements may be applicable.

**Relevant and appropriate requirements** are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental, State environmental, or facility-citing laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site (relevant), and that their use is well-suited (appropriate) to the particular site. Only those State standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and appropriate.

Compliance with ARARs addresses whether an alternative will meet all of the applicable or relevant and appropriate requirements of other federal and State environmental statutes or provides a basis for invoking a waiver. Because the No Action alternative lacks land-use controls, human or ecological receptors could be exposed to site contaminants at concentrations above the ADEC cleanup level. Thus, this alternative fails to comply with chemical-specific ARARs. All other alternatives would comply with all chemical-, location-, and action-specific ARARs if properly maintained where applicable.

#### ARARs for Site LF006 are presented in Appendix A.

### Long-Term Effectiveness and Permanence

Long-term effectiveness and permanence refers to expected residual risk and the ability of an alternative to maintain reliable protection of human health and the environment over time, once cleanup levels have been met. This criterion includes the consideration of residual risk that will remain onsite following remediation and the adequacy and reliability of controls.

Under the No Action alternative, lead-contaminated soil above human health cleanup levels would remain onsite. Concentrations of fuel contaminants would decrease slowly over time through biodegradation. Without action, the RAOs would not be achieved within a reasonable timeframe. Lead is relatively immobile and the concentration is not expected to decrease over time without some type of remedial action. This alternative would not be effective as a remedy for lead-contaminated soil.

The long-term effectiveness of the Chemical Stabilization and Land-Use Controls alternative is highly dependent on maintenance of land-use controls. The site-specific risk assessment shows that concentrations of lead at the site are not protective of human health and the environment under any land-use scenario. Because physical barriers are the primary means of preventing exposure to the contamination, they must be installed and maintained as well as administrative control enforced and monitored to allow this alternative to be effective. Contamination at concentrations above the ADEC cleanup levels will remain onsite for more than five years. CERCLA five-year reviews will be required until concentrations are below cleanup levels.

The Offsite Disposal alternative would be highly effective for addressing site contamination because lead-contaminated soil exceeding applicable cleanup levels would be removed from the site.

The long-term effectiveness of the Onsite Disposal alternative is dependent upon the permeable cap remaining intact, as lead-contaminated soil will remain onsite. Land-use controls would be required to ensure that the cap is not disturbed.

### Reduction of Toxicity, Mobility, or Volume through Treatment

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedial alternative. None of the alternatives presented herein would satisfy the statutory preference for treatment as a principal element. Though chemical stabilization reduces the mobility of lead, the treatment does not reduce lead concentrations in soil.

# Short-Term Effectiveness

Short-term effectiveness addresses the period of time needed to implement the alternative and any adverse impacts that may be posed to workers, the community, or the environment during construction and execution of the selected remedy until cleanup levels are achieved.

Although the No Action alternative would not achieve the RAOs, it would not expose workers to adverse impacts.

The Chemical Stabilization and Land-Use Controls alternative would not require soil excavation and handling operations using heavy machinery; personnel implementing the alternative would conduct a site survey that would entail only limited exposure to contaminants, if any.

Removal of lead-contaminated soil would be highly effective in the short term. Because much of the site has been previously developed, anticipated impacts to the environment are not considered significant. Soil excavation and containerization would expose site workers to the contamination as well as to hazards associated with working in and around excavations. These hazards would be addressed by best management practices outlined in federal Occupational Safety and Health Administration (OSHA) and Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements.

Implementation of the Onsite Disposal alternative would not involve intrusive activities. Implementation would not have negative impacts on community or worker health and safety, or environmental quality; however, natural processes would not reduce contaminants to concentrations below applicable cleanup levels within a reasonable timeframe.

### Implementability

Implementability addresses the technical and administrative feasibility of a remedial alternative from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

The No Action alternative has no technical or logistical constraints, but does have considerable administrative constraints that would affect implementability—it will not be selected because it does not pass threshold criteria. It is neither protective of human health and the environment nor complies with federal and State regulations; administrative approval is unlikely.

Implementation of the Chemical Stabilization and Land-Use Controls alternative is relatively straightforward. The greatest challenge is in the logistics of mobilizing the chemical stabilizer and fencing materials to the site. Chemical stabilizer is generally applied at a rate of 2.5 percent by weight. For the Site LF006 Electronic Debris Area, approximately 9 tons of stabilizer would be required. Mobilization of stabilizer and fencing to the site would be most cost-effective using a helicopter sling load from Dutch Harbor to the site in Super Sacks<sup>®</sup> or bundles (approximately 650 pounds each to allow for lift). This would avoid the need to mobilize heavy equipment to the site. A crew would also mobilize via helicopter directly to the site and would hand-spread the chemical stabilizer. It is estimated that this action could be performed in five days; however, the administrative approval is challenging for this

alternative because contamination above ADEC cleanup levels would be left onsite; this alternative does not allow for unrestricted land use, and requires administrative control to ensure protectiveness.

Implementation of the Removal and Offsite Disposal alternative is logistically challenging. Equipment and personnel are not readily available in the area; therefore, mobilization to the installation would be required. Mobilization of equipment to the site would require barge transport (likely from Anchorage due to the limited availability of equipment in Dutch Harbor). Once barged to Driftwood Bay, equipment would need to be transported to the site along an unmaintained road. Mobilization of other supplies, and personnel could be achieved through air transport to Dutch Harbor, followed by small boat or air transport to the Driftwood Bay RRS. Demobilization of soil, equipment, and surplus supplies would be handled similarly to mobilization. Controls would be required in order to avoid spreading contamination during excavation and containerization activities. No additional activities would be required for lead-contaminated soil if this alternative were implemented. Administrative approval should be easily attained.

Implementation of the Chemical Stabilization and Offsite Disposal alternative would also be logistically challenging. The greatest complexity is in the logistics of mobilizing the necessary equipment and chemical stabilizer to the site. This alternative would combine the logistical challenges of the Chemical Stabilization and Offsite Disposal alternative described above.

Implementation of the Chemical Stabilization and Onsite Disposal alternative is moderately challenging. The greatest complexity is in the logistics of mobilizing the necessary equipment and chemical stabilizer to the site. Chemical stabilizer is generally applied at a rate of 2.5 percent by weight. For the Site LF006 Electronic Debris Area, approximately 9 tons of stabilizer would be required. Mobilization of stabilizer and equipment to the site would require a barge (likely from Anchorage due to the limited availability of equipment in Dutch Harbor). Once barged to Driftwood Bay, equipment would need to be transported along an unmaintained road. Mobilization of other supplies and personnel could be achieved through air transport to Dutch Harbor, followed by small boat or air transport to the Driftwood Bay

RRS. Clean soil is available at the site and may be used to construct the soil cover. It is estimated that this action could be performed in one week including mobilization and demobilization of equipment and site workers. Administrative approval should be possible, though more challenging because contaminated soil remains onsite.

#### Cost

A comparison of costs associated with each alternative is presented in Table 6.

There are no costs associated with the No Action alternative, but this alternative would not achieve the RAOs for Site LF006.

Cost estimates for the Chemical Stabilization and Land-Use Controls alternative include planning, coordination, site visit, and preparation of land-use maps involved with implementing land-use controls.

Cost estimates for Offsite Disposal are based on the assumption that 2,110 cy (3,165 tons) of soil and solid waste would require offsite disposal. Costs include excavation, containerization, shipment, and disposal of RRO-, PAH-, and lead-contaminated soil and solid waste.

Costs associated with Onsite Disposal are based on the assumption that 2,110 cy of cover material would be required to implement the permeable cap. Costs include containerization, chemical stabilization, and shipment of cover material.

#### State/Support Agency Acceptance

ADEC expressed a preference for an offsite disposal alternative. U.S. Fish and Wildlife Service expressed a preference for remediating petroleum contamination concurrent with the Lead Removal and Offsite Disposal being performed under CERCLA.

#### Community Acceptance

Ounalashka Corporation expressed a preference for an offsite disposal alternative. Site LF006 is located on land owned by the Ounalashka Corporation. The Corporation is unlikely to concur with any remedial alternative that does not involve offsite disposal. In addition to LF006, the Heavy Equipment Storage Area could also be situated on land outside the Public Land Order withdrawal. The Heavy Equipment Storage Area was previously investigated by the USAF and recommended for no further action, cleanup complete (USAF 2009a). This site, along with other sites that have alternative cleanup levels may require further remedial work prior to relinquishing or divesting.

# 2.11 PRINCIPAL THREAT WASTES

The NCP expects that treatment that reduces the toxicity, mobility, or volume of the principal threat wastes will be used to the extent practicable. The principal threat concept refers to the source materials at a CERCLA site considered highly toxic or highly mobile that generally cannot be reliably controlled in place or present a significant risk to human health or the environment should exposure occur. A source material is material that contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, or air, or that acts as a source for direct exposure. No principal threat wastes are present at Site LF006 because concentrations of lead presented total Hazard Index risks of less than 1 and total cancer risks less than 10<sup>-5</sup> as detailed in the risk assessment (ADEC 2009c).

#### 2.12 SELECTED REMEDY

The primary indicator of remedial action performance will be satisfying the site RAOs and protecting human health and the environment. Remedy selections are based on detailed evaluation of remedial alternatives against threshold, balancing, and modifying criteria. It is expected that the selected remedy will remain in effect for as long as site contaminants pose an unacceptable risk to residents by exposure to contaminant concentrations which exceed ADEC cleanup levels.

USAF has selected Removal and Offsite Disposal as the preferred alternative for both the Old Disposal Area and the Electronic Debris Area at Site LF006. The selected remedy will reduce risks, provide overall protection of human health and the environment, and will be cost-effective. This remedy also has State and community acceptance.

CERCLA Section 121 states:

Remedial actions in which treatment that permanently and significantly reduces the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants as a principal element, are to be preferred over remedial actions not involving such treatment. The offsite transport and disposal of hazardous substances or contaminated materials without such treatment should be the least-favored alternative remedial action where practicable treatment technologies are available.

While an alternative that includes treatment as a principal element of the remedy would comply with the statutory preference for remedial actions, treatment was not considered further given the remote location, prevailing meteorological conditions, and level and type of contamination at the Driftwood Bay RRS ERP sites. Substantial logistical, administrative, and operational constraints and elevated costs relative to the preferred alternatives are inherent to this remote site.

# **2.12.1** Summary of the Rationale for the Selected Remedy

The selected remedial alternatives for the Driftwood Bay RRS contaminated sites are as follows:

- LF006 Old Disposal Area Removal and Offsite Disposal
- LF006 Electronic Debris Area Removal and Offsite Disposal

Based on the comparative analysis performed in the 2011 Feasibility Study (USAF 2011b), the USAF has determined that the selected alternatives meet the threshold criteria and provide the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. Additional feedback from comments on the Proposed Plan (USAF 2011a) confirmed that the selected overall remedy for Site LF006 is the best option for addressing the
type and volume of contamination present. The Removal and Offsite Disposal alternative ranks highest in long-term effectiveness in the balancing criteria, and is also the primary interest of stakeholders, including the State of Alaska and the local community, as expressed in the modifying criteria.

### 2.12.2 Description of the Selected Remedy

Remedial alternatives for Site LF006 Old Disposal Area were not developed or evaluated during the Feasibility Study (USAF 2011b). The remedy for Site LF006 Old Disposal Area was selected following the public comment period on the 2011 Proposed Plan (USAF 2011).

Removal and Offsite Disposal is the selected alternative for both areas at Site LF006. The boundaries of contamination characterized for Site LF006 during the 2008 Remedial Investigation will be used to guide excavation activities initially, and will be followed by confirmation sampling at rates detailed under ADEC Field Sampling Guidance (ADEC 2010). Unknowns could be encountered during removal of this landfill, which will require characterization and confirmation sampling during removal activities. Removed soils and buried solid waste will be containerized at the time of excavation. The containers will be shipped offsite to an appropriate treatment, storage, and disposal facility.

Removal and Offsite Disposal will remove the possibility for human or environmental exposure to contamination, and eliminate the opportunity for further spread of contamination.

### 2.12.3 Summary of Estimated Remedy Costs

The cost of the implementation of the selected remedial alternatives at Site LF006 is estimated at \$4.7 million (Appendix B). This estimate includes the additional costs for the chosen alternative for Site LF006 Old Disposal Area, which was not evaluated in the Driftwood Bay RRS Feasibility Study (USAF 2011b), but was added following the public comment period in the 2011 Proposed Plan (USAF 2011a). These costs estimates do not account for efficiencies in conducting multiple removal actions in the same mobilization. The estimated cost elements of the alternatives are shown in Table 7.

Site	Cost			
LF006 Old Disposal Area	\$	3,870,000		
LF006 Electronic Debris Area	\$	790,000		
Total	\$	4,660,000		

# Table 7 Summary of Costs for Remedial Alternatives

Note:

This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost.

The information in this cost estimate summary is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative.

### 2.12.4 Expected Outcomes of Selected Remedy

Upon completion of the selected remedy, Driftwood Bay RRS Site LF006 will be in compliance with CERCLA and the State of Alaska environmental statutes. No contamination above ADEC Method Two soil cleanup levels identified in 18 AAC 75.341 Method Two for the over 40-inch zone will remain at Site LF006. The RAOs will be achieved and this site will be eligible for unrestricted use and unrestricted exposure.

# 2.13 STATUTORY DETERMINATIONS

The selected remedies for Site LF006 meet the following requirements:

- Be protective of human health and the environment
- Comply with ARARs unless a waiver is provided
- Be cost-effective
- Use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable

### 2.13.1 Protection of Human Health and the Environment

Contamination at Site LF006 poses a potential risk to human health due to potential contact with lead, RRO, and select PAHs in soil, as well as buried solid waste. Under the selected remedy, the complete removal and offsite disposal of contaminated soils above ADEC cleanup levels and buried solid waste will protect human health and the environment. Implementation of the selected remedy will not pose unacceptable short-term risks or crossmedia impacts.

### 2.13.2 Compliance with Applicable or Relevant and Appropriate Requirements

The selected remedy for Site LF006 complies with all ARARs presented in Appendix A. The implementation of the selected remedy is required to meet the substantive portions of these requirements at agreed-upon points of compliance and is exempt from administrative requirements such as permitting and notifications.

### 2.13.3 Cost Effectiveness

It is the judgment of USAF that the selected remedy is cost-effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness" [40 CFR 300.430(f)(1)(ii)(D)]. Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness). The relationship of the overall effectiveness of the selected remedy was determined proportional to their costs.

# 2.13.4 Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The selected remedy represents a permanent solution to address contamination at Site LF006. CERCLA five-year reviews would not be required following completion of the selected

remedy since hazardous substances will not remain in place above levels that allow for unlimited use and unrestricted exposure.

While the implementation of the selected remedy is logistically challenging, it would be the most effective to address site contamination. The necessary equipment, supplies, and personnel can be mobilized to the sites utilizing existing road-, air-, or waterways, and mobilized resources and containerized contaminated soil can be demobilized from the sites along the same transportation pathways. Contaminated soil and solid waste will be removed from the site for a high degree of long-term and short-term effectiveness. While excavation of large volumes of soil could negatively impact the environment, the potential impacts are not considered significant due to the extent of disturbance and development already present onsite. Any potential dangers to site workers from exposure to contaminants through soil excavation or containerization, or dangers associated with soil transport, would be mitigated by applying federal OSHA HAZWOPER requirements. Confirmation that all contaminated soil and contaminants have been removed to concentrations that are below ADEC Method Two Cleanup Levels will be achieved with analytical laboratory testing. Once the criteria listed in the RAOs are attained, no additional actions will be required.

Use of alternative treatment technologies was evaluated for the Site LF006 Electronic Debris Area during development of the Driftwood Bay RRS Feasibility Study (USAF 2011b).. However, due to the remote nature of the site, prevailing meteorological conditions, and the type and quantity of COCs present, the use of alternative treatment technologies was not deemed practical.

### 2.13.5 Preference for Treatment as a Principal Element

The NCP establishes the expectation that treatment will be used to address the principal threats posed by a site wherever practicable [40 CFR 300.430(a)(1)(iii)(A)]. Although preference is given to remedies that employ treatments that permanently and significantly reduce the volume, toxicity, or mobility of contaminants as a principal element, treatment is neither implementable nor cost-effective at this remote site given the lack of infrastructure

and the type and quantity of contamination present. The selected remedy for Site LF006 does not satisfy the statutory preference for treatment as a principal element of the remedy, but are preferred because of the greater constraints to implementability and higher disproportionate costs associated with the other treatment alternatives considered.

### 2.13.6 Five-Year Review Requirements

CERCLA five-year reviews will not be required at this site following implementation of the selected remedial actions. No CERCLA hazardous substances, pollutants, or contaminants will remain onsite above levels that allow for unlimited use and unrestricted exposure.

### 2.14 DOCUMENTATION OF SIGNIFICANT CHANGES

Changes to the preferred alternatives specified in the Proposed Plan (USAF 2011a) were made based upon State and community acceptance of the remedial alternative and comments received during the public comment period. The final selected remedy for Site LF006 has been expanded to include Removal and Offsite Disposal for solid waste and soil contaminated with petroleum contaminants, rather than solely the CERCLA contaminant (lead) as originally planned for this site.

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### PART 3: RESPONSIVENESS SUMMARY

On 25 August 2011, a public meeting was held at the Unalaska Council Chambers in Dutch Harbor, Alaska. A public review and comment period was open for the Proposed Plans from 22 August through 22 September 2011.

### **3.1 PUBLIC COMMENTS**

No public comments were received at the public meeting or were submitted during the public comment period from 25 July to 25 August 2011. After the Proposed Plan (USAF 2011b) was released, Ounalashka Corporation (the landowner) requested additional copies of the Proposed Plan to present to the Board. Since that time, the Chief Executive Officer (who acted as the primary point of contact throughout this project) has been replaced. The new Chief Executive Officer has been contacted, but no additional input has been received from the landowner. During systematic project planning meetings held in 2007, the position of Ounalashka Corporation was that State of Alaska cleanup levels should be met before accepting land relinquished by the USAF. For this reason it is presumed that any alternative in which contamination remains at Site LF006 would preclude Ounalashka Corporation from concurring with such an alternative.

### 3.2 STAKEHOLDER COMMENTS AND LEAD AGENCY RESPONSES

The U.S. Fish and Wildlife Service, as a key stakeholder, commented on the Proposed Plan (USAF 2011b); USAF responses to their comments are presented below. Based on these comments, petroleum contamination at Site LF006 will be addressed along with the CERCLA contamination.

### 3.2.1 U.S. Fish and Wildlife Service Comments

Comments from the U.S. Fish and Wildlife Service are comprehensive, addressing all of the sites at Driftwood Bay RRS. These comments are not exclusively related to LF006.

**Comment:** Both lots are surrounded by Ounalashka Corporation land. It is our understanding that acquisition of these lots is a priority of the Corporation.

**Response:** Comment noted.

**Comment:** Petroleum contamination above ADEC levels remain at Site SS007 located within Lot 37. Our understanding is that monitoring wells will be put in place and that groundwater contamination will be evaluated periodically. We understand that the Air Force expects that attenuation of the contaminants may occur within approximately 10 years. Final cleanup levels and sampling results will need to be reviewed and accepted by the U.S. Fish and Wildlife Service prior to relinquishment of this lot.

**Response:** The current preferred alternative for addressing DRO in groundwater at Site SS007 is Monitored Natural Attenuation. Monitoring wells will be installed and monitored until DRO concentrations are below the ADEC groundwater criterion of 1.5 mg/L DRO.

DRO and benzo(a)pyrene in soil were found at maximum concentrations of 3,400 mg/kg and 0.61 mg/kg respectively. These concentrations exceed the ADEC Method Two criterion. Method 4 evaluation of these contaminants found that the cancer risk associated with them did not exceed 1 in 100,000. No unacceptable risk to human health or ecological receptors was found at this site.

**Comment:** We understand that contaminants found at Sites SS005 and SS008 within Lot 39 are below ADEC cleanup levels; however, it is unclear if these were Method Two cleanup levels, alternative (Method Three) cleanup levels, or risk-based cleanup levels. Cleanup levels will need to be reviewed and accepted by the Service prior to relinquishment of this lot. We would also need to evaluate past sampling efforts including (but not limited to) Site Inspection and Remedial Investigation reports to ensure that the site has been properly characterized to our satisfaction.

**Response:** Site SS005 was not included in the Site Characterization (USAF 2009a) or Remedial Investigation (USAF 2009b). The preliminary assessment/site investigation conducted for Site SS005 in 2005 found no evidence of any contamination within the area of the former MOGAS AST.

Sites SS008, SS004, and SS011 are located within Lot 39. Site SS008 contained DRO concentrations in excess of ADEC Method Two criteria. The 95 percent Upper Confidence Limit calculated for DRO at the site was below ADEC Method Two criteria adjusted only for total organic carbon content of the soil.

**Comment:** This lot is within the Alaska Maritime National Wildlife Refuge and will remain federal public land managed by the Service.

**Response:** Comment noted.

**Comment:** There are five contaminant sites within Lot 40: DA013, WP003, FL009, OT001, and SS0002.

**Response:** Correct. Site OT001 has two distinct sources of contamination. PCBs surrounding doorways at the former Composite Building and fuel contamination associated with USTs at the Antenna Arrays.

**Comment:** DA013 has lead contamination. We understand that contrary to what was presented in the 2011 Proposed Plan for Sites DA013, LF006, and OT001, Driftwood Bay Radio Relay Station, Alaska (Proposed Plan), that the Air Force now proposes cleanup and offsite disposal of lead contamination at this location.

**Response:** Correct. Removal and Offsite Disposal is now the preferred alternative for Site DA013.

**Comment:** WP003 contains POL contaminants (DRO and RRO) above ADEC Method Two cleanup levels. The Proposed Plan indicates that a site-specific risk assessment was conducted at this site and that cumulative risk at the site is below ADEC maximum values. It is unclear if this was a human health risk assessment (RA), an ecological RA, or both. Because we have not reviewed the RA, nor the quality and completeness of data used within the RA to assess risk, we cannot conclude that we would agree with the RA's risk determinations. The USAF proposes designating this site as Cleanup Complete with Land-Use Controls. As mentioned below, we would not accept relinquishment of sites that have land-use controls and similar land-use restrictions.

**Response:** The RA performed for Driftwood Bay RRS included both human health and ecological risk evaluation. Site WP003, located at Top Camp, was not evaluated for ecological risk based on the lack of habitat and absence of potential receptors in the area. The human health assessment performed at this site concluded that there is no unacceptable risk to human health from DRO and RRO contaminants remaining at the site.

Because removal action is now planned for Site DA013 and land-use controls would prohibit land at WP003 from being relinquished, Removal and Offsite Disposal of fuel contamination is now the preferred alternative for Site WP003.

**Comment:** FL009 possibly contains DRO contaminants but well below ADEC levels (less than 1/10th ADEC Method Two criteria). FL009 is located at the septic tank. Has the septic field ever been located? We would be concerned with potential contamination of the septic field, as these areas are often contaminated with contaminants such as metals, POL, PCBs, and/or chlorinated solvents.

**Response:** In 2007, a geophysical survey of the septic area was performed to locate the septic tank and outfall. The septic line originating from the former Composite Building was traced to a location approximately 150 feet from the building, re-located shortly from that point and traced to two manholes approximately 500 feet from the former Composite Building and finally traced to a discharge point in a ravine 300 feet from the last manhole. The location 150

feet from the Composite Building was excavated in an attempt to locate the septic tank. During excavation, no tank was uncovered. However, two transite piping lengths were found spaced approximately 15 feet apart. It is assumed that the septic tank was once in this location.

Because it could not be demonstrated that the tank did not hold hazardous materials, samples were collected from borings advanced to bedrock every 75 feet along the pipeline, at the septic line outfall, and downgradient of the outfall location. The samples were analyzed for DRO, RRO, GRO, PAHs, VOCs, PCBs, lead, chromium, and mercury. All samples were well below the ADEC Method Two criteria for ingestion and inhalation. Cumulative risk was not calculated for this site because all results were less than 1/10<sup>th</sup> ADEC Method Two criteria.

**Comment:** OT001 has PCB contamination. We would require removal of all PCB contamination above default ADEC residential cleanup standards, prior to relinquishment of this site.

**Response:** Removal and Offsite Disposal is now the preferred alternative for PCB contamination at Site OT001.

**Comment:** SS002 is a landfill site established under ADEC permit dated December 26, 1989. It is unclear to us if this was a lined landfill, as it is described as a "pit in a scraped water storage vault." Was the landfill lined, and if so, with what material? The U.S. Army Corps of Engineers deposited debris from demolition of buildings and other facilities on the withdrawal. The landfill contains, but is not limited to the following, 3,300 pounds of asbestos and the above ground sections of the 3-mile long fuel supply line that ran between the lower and Upper Camps. We also note that the landfill contains debris from various buildings including the Composite Building (White Alice Building). Based on our past experience with White Alice sites, they often were contaminated with PCBs and other contaminants. Was the building debris characterized for hazardous substances such as PCBs prior to disposal?

**Response:** The permit information indicates that the landfill at Site SS002 was unlined. Asbestos was placed with the water cistern already located within the landfill boundaries.

Removal of PCB-contaminated equipment and fluid was performed as an interim removal action at the former Composite Building in 1984. The demolition and landfilling of the building was performed in 1991.

During the 2005 Preliminary Assessment/Site Investigation (USAF 2005), soil at Site SS002 was screened for PCB contamination and the highest two screening results were sent to an analytical laboratory. Results indicated that samples were below the ADEC Method Two criteria of 1 mg/kg.

**Comment:** We also understand that POL-contaminated soils were burned at the SS002 location and that confirmation sampling has not been conducted to ensure that no residual contamination remains at this site (e.g., polycyclic aromatic hydrocarbons or PAHs). If PCBs were present in the soils, then incomplete combustion of the soils may have created dioxins/furans. Adequate sampling should be conducted at the burn area to ensure that potential hazards have been properly characterized, and remediated if necessary

**Response:** During the 1996 Preliminary Assessment/Site Investigation (USAF 2005), samples were collected at Site SS002 to determine fuel concentrations in soil. The maximum detected value of TPH was found to be 16,000 parts per million.

During the 2005 Preliminary Assessment/Site Investigation a 200-foot by 100-foot screening grid was established across the landfill site. Volatile organics and solvent screening was performed on 50-foot spacing. Samples from the two highest screening results were sent to an offsite laboratory for analysis. Results were below ADEC Method Two levels for DRO/RRO, PCBs, pesticides, herbicides, and RCRA metals.

**Comment:** The Project Area Map attached to the 1989 Solid Waste Management Permit (Permit No. 8921-BA009) is difficult to read, however it appears to show Ammunition

Supply Building or area. Has sufficient screening been conducted at this site to rule out the existence of munitions concerns? Was a firing range present at this location?

**Results:** Site reconnaissance at the Ammunition Supply Building was performed during the 2005 PA/SI (USAF 2005). There were no indications of contamination at that time so no samples collected.

**Comment:** The U.S. Fish and Wildlife Service will not agree to the relinquishment of Lot 40 until all of the contaminants, including the contents of landfill SS002, have been remediated and/or removed to Service standards. We would also need to evaluate past sampling efforts including Site Inspection and Remedial Investigation reports to ensure that the site has been properly characterized to our satisfaction.

**Response:** Comment noted. Site SS002 was not included in the Site Characterization (USAF 2009a) or Remedial Investigation (USAF 2009b) reports.

**Comment:** The U.S. Fish and Wildlife Service is unwilling to accept withdrawn lands that are burdened by land-use controls and/or sites that will require maintenance in perpetuity including landfills and other similar disposal sites.

**Response:** Comment noted. The preferred alternative for Sites DA013, WP003, FL009, and OT001 are Removal and Offsite Disposal. Site SS002 is designated as a closed landfill by the ADEC Solid Waste Program. It is noted that the U.S. Fish and Wildlife Service would be unwilling to accept withdrawn lands encompassing a closed solid waste landfill.

### 3.2.2 ADEC Comments 2011 Proposed Plan

**Comment 1:** (Site LF006) Is there solid waste remaining at Site LF006? More information should have been included in the document regarding the history of the landfill as well as previous investigations (removal actions, site and Remedial Investigations, etc.). If buried wastes remain, institutional controls should be established to document the location and the

need to manage it properly and to apprise future landowners since the Air Force does not intend to retain ownership of the land/site.

**Response 1:** Yes, solid waste remains at Site LF006. Detailed discussion of the investigation of solid waste is documented in Section 6.4 of the Final Remedial Investigation (RI) Report (USAF 2009b). A geophysical survey (including electromagnetic (EM) and ground-penetrating radar [GPR] techniques) was performed to define the extent of the landfill. The site was divided into northern and southern landfill grids because of a pond physically divided the two areas. The northern grid was 175 feet by 125 feet. The southern grid was 130 feet by 95 feet. A map depicting results of the EM survey is attached. Total debris area appears to be approximately 100 feet by 100 feet. Geophysical survey results were used to select locations of test pits and samples at the site. Test pits found contents of the landfill to be primarily burned building material, scrap metal, and a RCRA empty drum.

**Comment 8:** (Site LF006) Is the site a landfill or dumpsite with buried waste remaining in place? See also Comment 1 above.

**Response 8:** Site LF006 is a landfill with remaining solid waste. Detailed discussion of the investigation of solid waste is documented in Section 6.4 of the Final RI Report (USAF 2009b). A geophysical survey (including EM and GPR techniques) was performed to define the extent of the landfill. The site was divided into northern and southern landfill grids because of a pond physically divided the two areas. The northern grid was 175 feet by 125 feet. The southern grid was 130 feet by 95 feet. A map depicting results of the EM survey is attached. Total debris area appears to be approximately 100 feet by 100 feet. Geophysical survey results were used to select locations of test pits and samples at the site. Test pits found contents of the landfill to be primarily burned building material, scrap metal, and an RCRA empty drum

**Comment 9:** (Site LF006) It states that PAHs and lead may pose unacceptable risks to ecological receptors at LF006. However, PAHs are not addressed elsewhere in the Proposed

Plan (not listed as a COC, not included in RAOs, unclear how ecological risk would be addressed).

**Response 9:** The Air Force has chosen Alterative 3, Removal and Offsite Disposal, for Site LF006. This alternative was chosen following the public response period of the Proposed Plan. Implementing this alternative will ensure the site meets ADEC minimum risk levels, and will be listed for unrestricted use.

**Comment 10:** (Site LF006) This paragraph states, "The USAF would...acquire the LF006 land." This is the first place the plan indicates a portion of the site is not on Air Force-managed land. Further clarification on land ownership is needed and land owner concurrence with the proposed remedial action.

Response 10: Site LF006 is located on Native Corporation-owned land

**Comment 11:** (Sites DA013-BBA and LF006) What is the soil cleanup level RAO (at DA013)? Alternative 2 does not comply with the chemical-specific ARAR since contamination is being proposed to be left on site that exceeds cleanup levels. The soil treatment being proposed makes the contaminant less available/mobile; however, it does not change/reduce the concentrations of the contaminant. Details on implementation of institutional controls would need to be worked out prior to ADEC concurrence with the proposed remedy.

**Response 11:** The Air Force has chosen Alternative 3, removal and offsite disposal, for sites LF006 and DA013-BBA. This alternative was chosen following the public response period of the Proposed Plan. Implementing this alternative will ensure the sites meets ADEC minimum risk levels, and will be listed for unrestricted use.

**Comment 12:** (Sites DA013-BBA and LF006) Why is Alternative 2 being chosen/preferred for Site BBA (DA013) although Alternative 3 is preferred for Site LF006? The overall life cycle costs for maintaining the institutional controls and conducting the five-year reviews in

perpetuity versus a one-time removal and offsite disposal action should be reevaluated by the Air Force.

**Response 12:** The Air Force has chosen Alternative 3, removal and offsite disposal for Sites DA013-BBA and LF006. This alternative was chosen following the public response period of the Proposed Plan. Implementing this alternative will ensure the sites meet ADEC minimum risk levels, and will be listed for unrestricted use.

**Comment 13:** (Sites OT001 and LF006) Why is Alternative 2 being chosen/preferred for Site OT001-Former Composite Building although Alternative 3 is preferred for Site LF006? The overall life cycle costs for maintaining the institutional controls and conducting the five-year reviews in perpetuity versus a one-time removal and offsite disposal action should be reevaluated by the Air Force.

**Response 13:** The Air Force has chosen Alternative 3, Removal and Offsite Disposal, for both Sites OT001 and LF006. This alternative was chosen following the public response period of the Proposed Plan. Implementing this alternative will ensure the sites meets ADEC minimum risk levels, and will be listed for unrestricted use.

### ADEC Comments 21 October 2011

**Comment 1:** (Site LF006) Is there solid waste remaining at Site LF006? More information should have been included in the document regarding the history of the landfill as well as previous investigations (removal actions, site and Remedial Investigations, etc.). If buried wastes remain, institutional controls should be established to document the location and the need to manage it properly and to apprise future landowners since the Air Force does not intend to retain ownership of the land/site. See also Comment 6 below.

**Response 1:** Yes, solid waste remains at Site LF006. Detailed discussion of the investigation of solid waste is documented in Section 6.4 of the Final RI Report (USAF 2009b). A geophysical survey (including EM and GPR techniques) was performed to define the extent of

the landfill. The site was divided into northern and southern landfill grids because a pond physically divided the two areas. The northern grid was 175 feet by 125 feet. The southern grid was 130 feet by 95 feet. A map depicting results of the EM survey is attached. Total debris area appears to be approximately 100 feet by 100 feet. Geophysical survey results were used to select locations of test pits and samples at the site. Test pits found contents of the landfill to be primarily burned building material, scrap metal, and an RCRA empty drum (see attached photo).

**Comment 8:** (Site LF006) Is the site a landfill or dumpsite with buried waste remaining in place? See Comment 1 above.

**Response 8:** Yes. Please see response to Comment 1.

**Comment 9:** (Site LF006) It states that PAHs and lead may pose unacceptable risks to ecological receptors at LF006. However, PAHs are not addressed elsewhere in the Proposed Plan (not listed as a COC, not included in RAOs, unclear how ecological risk would be addressed).

**Response 9:** PAHs at Site LF006 are buried approximately 2 feet bgs. An unacceptable risk to ecological receptor is present if exposure to PAHs at the current concentration occurs. However, because the PAHs are buried and institutional controls are planned for the site, no unacceptable risk is present while PAHs remain buried.

**Comment 10:** (Site LF006) This paragraph states, "The USAF would...acquire the LF006 land." This is the first place the plan indicates a portion of the site is not on Air Force-managed land. Further clarification on land ownership is needed and land owner concurrence with the proposed remedial action.

**Response 10:** Site LF006 is located on land administered by the U.S Fish and Wildlife Service according to public land status records.

**Comment 12:** (Sites LF006 and DA013-BBA) Why is Alternative 2 being chosen/preferred for Site DA013-BBA although Alternative 3 is preferred for Site LF006? The overall lifecycle costs for maintaining the institutional controls and conducting the five-year reviews in perpetuity vs. a one-time removal and offsite disposal action should be reevaluated by the Air Force.

**Response 12:** The concentrations and exposure scenarios at the two sites (DA013-BBA and LF006) are different, resulting in different levels of risk and preferred alternatives. The management costs for institutional controls and removal will be reevaluated by the Air Force.

### **PART 4: REFERENCES**

- ADEC. 2012 (April). Oil and Other Hazardous Pollution Control Regulations-Discharge Reporting, Cleanup, and Disposal of Oil and Other Hazardous Substances. 18 AAC 75.
- ADEC (Alaska Department of Environmental Conservation). 2010 (May). Draft Field Sampling Guidance. Division of Spill Prevention and Response. Contaminated Sites Program.
- USAF (U.S. Air Force). 2012 (July). Draft CERCLA Records Of Decision: OT001 Former Composite Building, DA013 Burned Battery Area. Prepared by Jacobs Engineering Group Inc.
- USAF. 2011a (August). Proposed Plan for Sites DA013, LF006, and OT001 Driftwood Bay Radio Relay Station, Alaska. Prepared by Jacobs Engineering Group Inc.
- USAF. 2011b (July). Feasibility Study, Driftwood Bay Radio Relay Station, Unalaska Island, Alaska. Final. Prepared by Jacobs Engineering Group Inc.
- USAF. 2010 (October). *Findings of the Data Gap Sample Collection at LF006, Driftwood Bay RRS.* Draft Technical Memorandum. Prepared by Jacobs Engineering Group Inc.
- USAF. 2009a (September). *Site Characterization Report, Driftwood Bay Radio Relay Station, Driftwood Bay, Alaska*. Final. Prepared by Jacobs Engineering Group Inc.
- USAF. 2009b (September). *Remedial Investigation Report, Driftwood Bay Radio Relay Station, Driftwood Bay, Alaska.* Final. Prepared by Jacobs Engineering Group Inc.
- USAF. 2009c (September). Baseline Risk Assessment Report, Driftwood Bay Radio Relay Station, Driftwood Bay, Alaska. Final. Prepared by Jacobs Engineering Group Inc.
- USAF. 2009d (September), *Findings of Additional investigative Activities at the Driftwood Bay RRS Electronic Debris Area*. Technical Memorandum. Prepared by Jacobs Engineering Group Inc.
- USAF. 2007 (July). *Driftwood Bay RRS ECL-115*. Region 10 Environmental Protection Agency Environmental Cleanup Office.
- USAF. 2005 (December). Preliminary Assessment/Site Investigation, Driftwood Bay RRS, Alaska.
- USAF. 2002 (September). Management Action Plan, Driftwood Bay RRS, Alaska.
- USAF. 2001 (April). Preliminary Site Inspection for Closed Solid Waste Landfills at Various Remote Air Force Installations in Alaska

USAF. 2000 (June). Site Investigation, Driftwood Bay RRS, Alaska.

USAF. 1996 (January). Final Preliminary Assessment/Site Investigation, Radio Relay Station, Driftwood Bay, Unalaska Island, Alaska.

### **APPENDIX A**

Applicable or Relevant and Appropriate Requirements

Туре	Media/ Description	Authority	Requirements	Status	Synopsis of Requirement/Rationale	Action to be Taken to Attain Requirements	
Chemical- Specific	Soil	State Regulatory Requirement	18 AAC 75.341 – Tables B1 and B2	Applicable	Provides PRGs for specific contaminants.	The selected remedy will comply with these	
		Federal Regulatory Requirement	40 CFR 761	Applicable	Provides federal regulations on sampling and analytical protocols and PRGs for PCBs.	regulations through remedial actions and follow-up monitoring.	
Chemical- Specific	Groundwater	State Regulatory Requirement	18 AAC 75.345 – Table C	Applicable	Provides PRGs for specific contaminants in groundwater.	The selected remedy will comply with these	
		State Regulatory Requirement	18 AAC 70	Relevant and Appropriate	Establishes water quality standards for protection of surface water in Alaska.	regulations through remedial actions and follow-up monitoring.	
Location- Specific	Protect wetlands	Federal Regulatory Requirement	Clean Water Act Section 404; 40 CFR 230, 33 CFR320-330, 40 CFR 6, Appendix A	Applicable	Requires consideration of impacts to wetlands in order to minimize their destruction or degradation and to preserve/enhance wetland values. Applicable to activities that would affect wetlands.	If wetlands are encountered, the selected remedy will comply with these regulations during remedy implementation.	

Appendix A Applicable or Relevant and Appropriate Requirements

### Appendix A Applicable or Relevant and Appropriate Requirements (Continued)

Туре	Media/ Description	Authority	Requirements	Status	Synopsis of Requirement/Rationale	Action to be Taken to Attain Requirements
Location- Specific	Coordinate fish and wildlife	Federal Regulatory Requirement	Fish and Wildlife Coordination Act (16 USC 661, et seq.); 40 CFR 6.302	Relevant and Appropriate	Applies to fish or wildlife resources that may be affected by actions resulting in control or modification of	If necessary, U.S. Fish and Wildlife Service will be contacted while implementing the selected remedy.
			Fish and Wildlife Conservation Act (PL 99-645)		any natural stream or water body that should be protected. Federal agencies taking such actions must consult with the U.S. Fish and Wildlife Service.	
			Rivers and Harbors Act of 1899, Section 10 (33 USC 403)			
		State Regulatory Requirement	Protection of Fish and Game Alaska Stature (AS) 16.05.870; 5 AAC 95.010			
Action- Specific	ADEC has the authority for specifying soil, surface water, and groundwater cleanup levels resulting from the discharge of oil or a hazardous substance.	State Regulatory Requirement	Alaska Spill Reporting and Notification (18 AAC 75.300)	Applicable	18 AAC 75.360 lists requirements for cleanup work plans.	The appropriate agency will be notified if the implementation of the selected remedy results in a discharge or an oil or hazardous substance.
Action- Specific	Governs the packaging, marking, labeling, recordkeeping,	Federal Regulatory Requirement	U.S. Department of Transportation Regulations (49 CFR 170-199; 40 CFR 263)	Applicable	Monitoring samples or contaminated media are transported from the project area.	Waste management will be preformed in a manner that

### Appendix A Applicable or Relevant and Appropriate Requirements (Continued)

Туре	Media/ Description	Authority	Requirements	Status	Synopsis of Requirement/Rationale	Action to be Taken to Attain Requirements
	transportation, and transporters of hazardous materials.	State Regulatory Requirement	Alaska Hazardous Waste Regulations (18 AAC 62)			complies with the applicable transportation regulations.
Action- Specific	Regulates hazardous waste identification, classification, generation, management, and disposal.	Federal Regulatory Requirement	Resource Conservation and Recovery Act (40 CFR 260)	Applicable	Hazardous waste is expected to be generated at LF006.	Waste management will be performed in a manner that complies with the applicable regulations.
Action- Specific	Prohibits discharge of dredged or fill material into wetlands without a permit. Obtain certification for any discharge into a waterway that may be considered a pollutant.	Federal Regulatory Requirement	Clean Water Act [33 USC 1251(404); 33 CFR 323; 40 CFR 230; 33 USC 1341(401); 33 CFR 320-330; AS 46.03; 18 AAC 15; 18 AAC 70; 18 AAC 72]	Applicable	The pond separating the two areas within the Old Disposal and the surrounding tundra and marshy areas need to be considered.	The selected remedy will not impact wetlands.
Action- Specific	Governs the management of solid wastes generated during remedial activity. Specifies restrictions on land disposal of	Federal Regulatory Requirement	Solid Waste Management Regulations (40 CFR 257, 40 CFR 264, 49 CFR 265, 40 CFR 266, 40 CFR268, 40 CFR 270, 40 CFR 261, 40 CFR 262)	Applicable	Excavated soils and monitoring samples will be generated from the project area. The chosen remedial alternative will create contaminated media to be removed from the site.	Work conducted for the selected remedy will comply with these regulations.

# Appendix A Applicable or Relevant and Appropriate Requirements (Continued)

Туре	Media/ Description	Authority	Requirements	Status	Synopsis of Requirement/Rationale	Action to be Taken to Attain Requirements
	specific types of hazardous waste based on levels achievable by current technology.	State Regulatory Requirement	Alaska Solid Waste Management Regulations (18 AAC 60, 18 AAC 75, 18 AAC 62)			

#### Notes:

AAC = Alaska Administrative Code ADEC = Alaska Department of Environmental Conservation

CFR = Code of Federal Regulations PCB = polychlorinated biphenyl PRG = preliminary remediation goal TBC = To Be Considered

USC = U.S. Code

# **APPENDIX B**

### **Cost Estimates**

### Appendix B

#### Removal and Offsite Disposal - LF006 Electronic Debris Area

	Number of							
	ltem	Unit Rate	Units	Quantity	Resources	Cost	Cost Subtotal Basis of Estimate	
Mobilizatio	on/Demobilization							
	Planning	\$75	hr	320	2	\$48,000	Work plan prep, meetings, & coordination	
	Procurements/Purchasing Labor	\$75	hr	120	2	\$18,000	Secure equipment & supplies, contractural	
	·						Based on historic pricing, 7 days each for mobilization	
	Landing Craft with state rooms Mob/Demob	\$105,000	trip	1	1	\$105,000	and demobilization	
	Mobilization Labor	\$75	hr	24	8	\$14,400	6 people, 2 12 hour days	
	Airfare	\$1,200	trip	1	8	\$9,600	Based on Pen Air 2-week advance purchase	
	Per Diem	\$102	man-day	2	8	\$1,632	JTR rates	
	Lodging (Camp)	\$3,037	day	16	1	\$48,592	Assumes camp mob/demob at Old Disposal Area	
	Equipment							
	Track Excavator	\$750	day	14	1	\$10,500	Based on historic data	
	Flatbed Truck	\$55	day	14	1	\$770	Based on historic data	
	Forklift/Loader	\$1,700	day	14	1	\$23,800	Based on historic data	
	GPS	\$115	day	14	1	\$1,610	Based on historic data	
	Misc. Tools and Supplies (EPL)	\$30,000	LS	1	1	\$30,000	\$311,904 Based on historic pricing for similar efforts	
Site Work								
	Duration = 1 day for site setup, 9 days for excavation, containeria	ation, and tran	sportation, 2	days for site	restoration, 4 da	ays for waste to	transfer to Dutch Harbor = 16 days total	
	Site Manager	\$95	hr	192	1	\$18,240	16 days at 12 hours per day	
	Safety Officer/CQC	\$75	hr	192	1	\$14,400	16 days at 12 hours per day	
	Sampler	\$75	hr	192	1	\$14,400	16 days at 12 hours per day	
	Operator	\$100	hr	192	2	\$38,400	16 days at 12 hours per day	
	Driver	\$100	hr	192	1	\$19,200	16 days at 12 hours per day	
	Laborer	\$80	hr	192	2	\$30,720	16 days at 12 hours per day	
	Equipment							
	Landing Craft with state rooms	\$15,000	day	0	1	\$0	Assumes equipment mob/demob at Old Disposal Area	
	Track Excavator	\$750	day	16	1	\$12,000	16 working days	
	Flatbed Truck	\$550	day	16	1	\$8,800	16 working days	
	Forklift/Loader	\$1,700	day	16	1	\$27,200	16 working days	
	GPS	\$115	day	16	1	\$1,840	<i>\$185,200</i> 16 working days	
Waste								
	Pre-shipment Preparation and Submittals	\$650	LS	1	1	\$650	Based on historic data	
	Prepare and Submit Complete Manifest Packages	\$95	ea	18	1	\$1,710	Based on historic data	
	Waste Container Management and Tracking	\$375	LS	1	1	\$375	Based on historic data	
	Non-hazardous Lead-Contaminated Soil Disposal	\$85	ton	258	1	\$21,930	Quantity estimate	
	RCRA hazardous Lead-Contaminated Soil Disposal	\$275	ton	87	1	\$23,925	Quantity estimate	
	Open top container rental - non-hazardous	\$75	month	3	13	\$2,925	Assumes 20 tons per container	
	Open top container rental - RCRA hazardous	\$75	month	3	5	\$1,125	Assumes 20 tons per container	
	Non-hazardous Origination Charge - Dutch Harbor	\$ 9,500	container	13	1	\$123,500	Based on historic data	
	RCRA hazardous Origination Charge - Dutch Harbor	\$ 9,500	container	5	1	\$47,500	\$223,640 Based on historic data	
Laborator	у 	<b>.</b>						
	Lead (total) - 6020	\$17	ea	30	1	\$510	Based on average from ID/IQ pricing	
	Lead (TCLP) - 1311/6020	\$110	ea	18	1	\$1,980	Based on average from ID/IQ pricing	
-	Cooler shipments	\$100	ea	3	1	\$300	Based on historic data; assumes 20 samples per cooler	
Reporting		·				<b>*</b> ***		
	Dratt and Final Report	\$75	hr	220	2	\$33,000	\$33,000 Draft and Final Removal Action Report	
Managem	ent and Support							
		<b>.</b>		100		<b>A</b> AC <b>A</b> AC	Assumes management and support will be 15% of	
	Protessional Services	\$75	hr	400	1	\$30,000	\$30,000 professional services hours	

Total, Capital Costs

\$783,744

### Appendix B

#### Removal and Offsite Disposal - LF006 Old Disposal Area

	Item	Unit Rat	e Unit	s Quantity	Number of Resources	Cost	Cost Subtotal	Basis of Estimate
Mobilizati	on/Demobilization							
	Planning	\$	75 hr	320	2	\$48,000	Work p	olan prep, meetings, & coordination
	Procurements/Purchasing Labor	\$	75 hr	120	2	\$18,000	Secure Based	e equipment & supplies, contractural on historic pricing. 7 days each for mobilization
	Landing Craft with state rooms Mob/Demob	\$105.0	00 trip	2	1	\$210.000	and de	emobilization
	Mobilization Labor	\$	75 hr	24	8	\$14,400	6 peop	ble. 2 12 hour days
	Airfare	\$1.2	00 trip	3	8	\$28.800	Based	on Pen Air 2-week advance purchase
	Per Diem	\$1	02 man-0	lav 52	8	\$42,432	JTR ra	ites
	Equipment	÷.				+,		
	Track Excavator	\$7	50 day	52	1	\$39.000	Based	on historic data
	Flatbed Truck	\$	55 day	52	1	\$2,860	Based	on historic data
	Forklift/Loader	\$17	00 day	52	1	\$88,400	Based	on historic data
	GPS	\$1	15 day	52	1	\$5,980	Based	on historic data
	Misc. Tools and Supplies (EPL)	\$30.0	00 LS	1	1	\$30,000	\$527.872 Based	on historic pricing for similar efforts
Camp (Lo	odaina)	+,-			-	+,	<i>+</i>	
p (	Mobilization and Demobilization	\$264.3	78 LS	1	1	\$264.378	Based	on historic data. Includes mob/demob. internet, and EMT supplys
	FMT	\$25.5	07 Mon	th 2	1	\$51 014	EMTI	abor (Level III)
	Operational Cost	\$3.0	37 Dav	/ <u>5</u> 2	1	\$157,924	Based	on Historic data
	- F	+-,-				<b>*</b> ···,·=·	\$473.316	
Site Work							· · · · ·	
	Duration = 2 day for site setup, 30 days for excavation, con	tainerization. and	transporta	ion. 15 dav for s	site restoration.	5 dav for waste tr	ansfer to Dutch Harbor = 5	i2 davs total
	Site Manager	\$	95 hr	624	1	\$59.280	52 day	/s at 12 hours per day
	Safety Officer/CQC	\$	75 hr	624	1	\$46.800	52 day	/s at 12 hours per day
	Sampler	\$	75 hr	624	1	\$46,800	52 day	/s at 12 hours per day
	Operator	\$1	00 hr	624	2	\$124,800	52 day	/s at 12 hours per day
	Driver	\$1	00 hr	624	1	\$62,400	52 day	/s at 12 hours per day
	Laborer	\$	80 hr	624	2	\$99.840	52 day	vs at 12 hours per day
	Equipment					. ,	5	
	Landing Craft with state rooms	\$15,0	00 day	2	1	\$30,000	2 work	ing days
	Track Excavator	\$7	50 day	52	1	\$39,000	52 wor	rking days
	Flatbed Truck	\$5	50 day	52	1	\$28,600	52 wor	rking days
	Forklift/Loader	\$1,7	00 day	52	1	\$88,400	52 wor	rking days
	GPS	\$1	15 day	52	1	\$5,980	\$631,900 52 wor	rking days
Waste								
	Pre-shipment Preparation and Submittals	\$6	50 LS	1	1	\$650	Based	on historic data
	Prepare and Submit Complete Manifest Packages	\$	95 ea	188	1	\$17,860	Based	on historic data
	Waste Container Management and Tracking	\$3	75 LS	1	1	\$375	Based	on historic data
	Non-hazardous Fuel-Contaminated Soil Disposal	\$	85 tor	2820	1	\$239,700	Quanti	ity estimate
	Open top container rental - non-hazardous	\$	75 mon	th 4	188	\$56,400	Assum	nes 15 tons per container
	Non-hazardous Origination Charge - Dutch Harbor	\$ 9,50	0 contai	ner 188	1	\$1,786,000	\$2,100,985 Based	on historic data
Laborator	y C							
	SVOCs-SW8270	\$4	70 ea	85	1	\$39,950	Based	on average from ID/IQ pricing
	Cooler shipments	\$1	00 ea	5	1	\$500	\$40,450 Based	on historic data; assumes 20 samples per cooler
Reporting								
	Draft and Final Report	\$	75 hr	220	2	\$33,000	\$33,000 Draft a	and Final Removal Action Report
Managem	ient and Support							·
-							Assum	nes management and support will be 15% of
	Professional Services	\$	75 hr	789	1	\$59,175	\$59,175 profess	sional services hours

Total, Capital Costs

\$3,866,698

# APPENDIX C

Site LF006 Photographs



Photo 1 – 06/05/2007 Site LF006 Old Disposal Area looking south.



Photo 2 – 06/05/2007 Site LF006 Old Disposal Area looking north at remnants of an airplane.



Photo 3 – 07/05/2007 LF006 Electronic Debris Area looking at debris in the southern area.



Photo 4 – 07/05/2007 Site LF006 from the southern area looking at capacitors and transformers.



Photo 5 – 16/05/2009 Site LF006 Electronic Debris Area view looking north at supersacks and helicopter.



Photo 6 – 16/05/2009 Sampling location at site LF006 Electronic Debris Area.



Photo 7 – 16/05/2009 Site LF006 looking south at a super sack being lifted off.



Photo 8 – 16/05/2009 Site LF006 Electronic Debris Area lead testing sample location BAT06.

# APPENDIX D

**Comments and Responses** 

# STATE OF ALASKA

### **DEPT. OF ENVIRONMENTAL CONSERVATION**

### DIVISION OF SPILL PREVENTION AND RESPONSE CONTAMINATED SITES PROGRAM

### SEAN PARNELL, GOVERNOR

555 Cordova Street Anchorage, AK 99501 PHONE: (907) 269-3053 FAX: (907) 269-7649 www.dec.state.ak.us

File: 2541.38.001

February 08, 2010

611 CES/CEAR ATTN: Steve Hunt 10471 20<sup>th</sup> Street, Suite 348 Elmendorf AFB AK 99506-2200

DIECIENVIED

Re: ADEC Determination of Final Compliance for Driftwood Bay Radio Relay Station (RRS) Sites

Dear Mr. Hunt:

The Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Program has completed its review of 611 CES' written request (dated September 24, 2009) for determination of final compliance for 13 sites addressed in the Final Site Characterization Report - Driftwood Bay Radio Relay Station, September 2009. These sites had petroleum compounds as contaminants of potential concern and did not have CERCLA hazardous substance contamination, thus the sites are being addressed under the Alaska site cleanup rules found in18 AAC 75.

One site (SS007 – Tank Farm) is recommended for Monitored Natural Attenuation with Institutional controls (ICs). The site is a former fuel tank farm with residual DRO contamination in soil and groundwater. Groundwater at the site is shallow and is not a current or likely future drinking water source and it discharges into the adjacent Snuffy Creek and Driftwood Bay. Sampling and field observations did not identify any adverse impacts to the surface waters. ICs are proposed to document the location of residual contamination and that the groundwater should not be used as a drinking water source. Monitored Natural Attenuation is proposed to document whether DRO plume in groundwater is shrinking and the concentrations are decreasing.

Three sites (OT001 – USTs and Antennas, SS010 – Water Supply Pump House, and WP003 – Waste Pit) are recommended for cleanup complete with Institutional Controls (ICs). ICs are proposed on these three sites for the following reasons: 1) document the location and extent of residual contamination, 2) limit land use solely to very limited/remote recreational use (as outlined in the risk assessment), and 3) to document the need to properly manage residual contamination in accordance with applicable regulations.

The remaining sites were characterized and determined to meet applicable cleanup levels and are proposed for no further action – cleanup complete. The Heavy Equipment Storage Area
had alternative migration to groundwater soil cleanup levels of 1.6 mg/kg pentachlorophenol and 8,000 mg/kg DRO. Site SS008 – Pipeline had an alternative soil cleanup level of 8,300 mg/kg DRO, based on migration to groundwater. SS004 – Drum Storage Area had an alternative migration to groundwater soil cleanup level of 8,000 mg/kg DRO. These method three alternative cleanup levels were based on total organic carbon content of samples collected from the site and were approved by DEC. The rest of the sites (FL009-Spill/Leak No. 1 at the Septic Tank; SS004-Construction Camp; SS004-Wooden Storage Building; SS004-500 Gal AST; SS011-Spill/Leak No.3; and Quarry Area) where shown to meet the applicable method 2 soil cleanup levels and Table C groundwater cleanup levels, where applicable.

DEC concurs with the recommendations for each of the sites as described above. The sites that were proposed for Cleanup Complete will be updated accordingly in the DEC contaminated sites database.

Please continue to coordinate with us on development and implementation of the ICs for sites OT001, SS010, and SP003 and the work plan and ICs for site SS007. Once the ICs are in place for sites OT001, SS010 and SP003, the status of these sites will be changed to Cleanup Complete with ICs. After ICs are in place and the groundwater contaminant plume at SS007 is shown to be attenuating the status of that site will also be changed to Cleanup Complete with ICs.

Also, note that 18 AAC 75.325(i) requires a responsible person to obtain DEC approval before disposing of soil or groundwater from a site that is subject to the site cleanup rules or for which the department has issued a cleanup complete determination under 18 AAC 75.380(d)(1).

The decisions described above may be reviewed and revised, in accordance with 18 AAC 75.380(d)(2), if new information becomes available that indicates contaminants or wastes at the site may pose an unacceptable risk to human health or the environment.

I look forward to working with you in completing the necessary work at the Driftwood Bay site. Please contact me at 269-3053 or by e-mail at <u>curtis.dunkin@alaska.gov</u> if you have any questions regarding this letter.

Sincerely,

) Herr,

Curtis Dunkin Environmental Program Specialist

Cc: John Halverson, ADEC (via email) Marty Brewer, ADEC (via email) Stephen Witzmann, Jacobs Glen Verplanke, AFCEE

## Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Program **Document Reviewed:** Draft July 2012 Driftwood Bay RRS LF006 ROD **Commenter:** Curtis Dunkin-ADEC; John Halverson-ADEC; Jennifer Currie-ADOL **Date Submitted:** February 05, 2013

#	Page #	Section	ADEC Comment	Response
1.			Additional ADEC Comments on the Draft 2012 Driftwood Bay LF006 ROD	
2.	11	1.2.1	EPA's 2007 NPL determination (i.e. letter) should be referenced in the second paragraph of this section and it should be included in the References section	Agreed. This letter will be included as
	10	TT 11 1	De la contra de la contra de mended in the References section.	requested.
3.	12	Table I	Regulatory Authority for the Old Disposal Area (ODA) should be changed from	Agreed. Table 1 will be revised to
			CERCLA 10 ADEC/18 AAC 75	indicate ADEC as the Regulatory
				Authority per 18 AAC 75.
4.	21	2.1	First sentence of the second paragraph of this section, omit 'as applicable since 1985'.	Agreed. 'as applicable since 1985' will
				be omitted from the sentence.
5.	22	2.1.1	Reference the document which demonstrates the background concentrations for arsenic.	The reference "(USAF 2009b)" for the
				Remedial Investigation Report will be
				added to the sentence that mentions the
				background concentrations for arsenic.
6.	38	2.5.7	Revise the first statement of this section to state: 'at the Driftwood Bay RRS LF006	Agreed. The sentence will be revised to
			and are listed in Table 3.'.	state 'at the Driftwood Bay RRS
			Insert 'LF006' after 'RRS' in the title of Table 3.	LF006 and are listed in Table 3.'
				Agreed. 'LF006' will be inserted after
				'RRS' in the title of Table 3.

Page 1 of 2

March 11, 2013

#	Page #	Section	ADEC Comment	Response
7.	43	2.6.1	State and discuss land ownership in the beginning of this section.	Agreed. A statement will be added to the
				beginning of this section stating
				'Driftwood Bay RRS is an inactive
				USAF installation established on land
				withdrawn from public domain for
				military purposes by a Public Land
				Order.'
8.	49	2.9	Chem. Stabilization w/ Onsite Disposal and LUCs: insert the statement at the end that	Agreed. 'Therefore, CERCLA 5-year
			CERCLA Five-year reviews would be required.	reviews would be required.' Will be
				inserted in to the end of the paragraph.
9.	50	Table 6	Both the Evaluation Criteria for the Short-term Effectiveness and the Implementability	Agreed. The requested changes will be
			should be changed from 2 to 0 for the No Action alternative.	made.
10	52	2.10	ARAR discussion should only pertain to lead and not include the POL sites since the	Agreed. Discussions regarding the ODA
			alternatives are for lead only. Discussion related to the POL sites in this section should	will be relocated to section 1.4.1
			be relocated to section 1.4.1.	
11.			End of ADEC Comments	

## Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Program **Document Reviewed:** Draft July 2012 Driftwood Bay RRS LF006 ROD **Commenter:** Curtis Dunkin-ADEC; John Halverson-ADEC; Jennifer Currie-ADOL **Date Submitted:** February 01, 2013

#	Page #	Section	ADEC Comment	Response
1.	7	1.1	Omit the word 'primary' in the last two sentences of this section discussing the COC's.	Agreed. The word 'primary' will be
			The use of the word primary insinuates there are secondary COCs.	omitted from this section.
2.	11	1.2.2	Second sentence of this section, correct sentence to state 'but they [are] still' and omit	Agreed. The sentence will be revised to
			the word 'Chapter' to state 'Alaska Administrative Code (AAC)'.	read 'but they are still'
				And the word 'chapter' will be omitted.
3.	12	Table 1	Replace CERCLA with 18 AAC 75 as the Regulatory Authority for the Old Disposal	Agreed. 'CERCLA' will be replaced
			Area (ODA).	with '18 AAC 75' as the Regulatory
				Authority for the ODA in Table 1.
4.	13	Figure 2	Should include different colored lines to depict property boundaries and land ownership	Agreed. The figure will be updated.
			status. Air Force land withdrawal boundary should be a different color than gray.	
5.	15	1.3.2	First paragraph of this section should be relocated to a more applicable location since it	Agreed. The paragraph will be moved to
			should apply to the overall remedy for both the Electronic Debris Area (EDA) and the	section 2.10.
			ODA - not just specifically to sites assessed under State of Alaska (SOA) regulations.	
				The last sentence of the second
			Revise the last sentence of the second paragraph of this section to state: 'Solid waste	paragraph will be revised to state 'Solid
			[and potentially other hazardous materials] are comingled with the COCs.'.	waste and potentially other hazardous
				materials are comingled with the COCs'
6.	16	1.4.1	Omit 'State of Alaska' from and rephrase the last sentence in the paragraph preceding	Agreed. The sentence will be revised to
			Table 2. Table 2 presents the maximum concentrations of fuel contaminants detected in	read 'Table 2 presents the maximum fuel
			soils at Site LF006 Old Disposal Area. The table also includes the ADEC method Two	concentrations present at Site LF006 Old
			cleanup criteria.	Disposal Area as well as ADEC Method
1				Two cleanup criteria.'

Page 1 of 18

#	Page #	Section	ADEC Comment	Response
7.	18	1.5	Rephrase the last statement of this section to state 'threats [are known] to exist'. State in this section that Land Use Controls will not be required since the Air Force intends to remove all of the debris, wastes, and contaminated soils that are associated with the landfill.	Agreed. The statement will be rephrased to state 'No source materials constituting principal threats are known to exist at Site LF006.'
				Agreed. A statement will be added to this section stating 'Land Use Controls will not be required since the Air Force intends to remove all of the debris, wastes, and contaminated soils that are associated with the landfill.'
8.	22	2.1.1	Second paragraph on this page, be more specific regarding the actual locations and dates of the referenced 'down gradient groundwater sampling' in order better demonstrate that migration has not occurred. Third paragraph on this page needs to include discussion of the ponded area which is located in the center of the LF006 site and that the electromagnetic survey was not conducted over the ponded surface area. State that the old disposal area portion of site LF006 was not included in the 2011 Feasibility Study. Brief statement should be added re: the fact that unknowns could be encountered during removal of this landfill which will require characterization and confirmation sampling during removal activities.	Agreed. The sentence will be revised to be more specific stating 'Fuel and PAH contamination identified in the soil does not appear to be migrating offsite, based on downgradient groundwater sampling of monitoring wells sampled to the northeast of site LF006 in July of 2007.' A discussion will be added regarding the ponded area located in the center of the LF006 site and how the electromagnetic survey was not conducted over the pond area. The FS alternatives considered suitable for the Old Disposal Area are institutional controls, excavation/offsite

Page 2 of 18

#	Page #	Section	ADEC Comment	Response
				purposes). However, investigative
				studies conducted during the remedial
				investigation focused on ensuring that
				landfill wastes were not leaching to
				groundwater, and that the landfill did not
				contain drums or other items that could
				affect groundwater in the future.'
				A statement will be added stating
				'unknowns could be encountered during
				removal of this landfill which will
				require characterization and confirmation
				sampling during removal activities.'
9.	23	Figure 3	It appears that the area depicted in this figure only pertains to the known area(s) of RRO-	A note will be added to the legend
			and/or PAH-contaminated soils. This should be clarified in the legend.	indicating the figure only pertains to the
				known area(s) of RRO- and PAH-
			Another figure should be added that depicts the entire footprint and features (i.e. pond)	contaminated soil.
			associated with the ODA, and also depicts the proximity of the old disposal area to the	
			electronic debris area.	An additional figure will be added to
				illustrate these features.
			Aerial images should be imposed on all figures for reference.	
				High resolution aerial images are not
				available for site LF006.
10	. 24	Figure 4	Same as comment #9 above regarding Figure 3 revision requests.	A note will be added to the legend
				indicating the figure only pertains to the
				known area(s) of lead-contaminated soil.

#	Page #	Section	ADEC Comment	Response
11	24	2.1.2	Third paragraph on this page re: discussion of the analytical results for PCBs in soil, it	Agreed. A statement will be added
			should be briefly stated how many samples had detections of PCBs and what was the	stating 'Two PCB samples were
			range of sampling depth.	collected beneath the
				capacitor/transformer pile at ground
				surface, and one additional PCB sample
				was collected in a test pit 6 inches bgs on
				the mound upon which the electronic
				debris was located.'

Page 4 of 18

March 12, 2013

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#	Page #	Section	ADEC Comment	Response
12	26	2.1.2	First complete paragraph on this page, re: the statement that '…rendered the waste…non-hazardous', state what is meant by non-hazardous and revise to clarify. The last sentence of this paragraph does not make sense. How would previous remedial activities have generated waste that was 'untreated'; considering that remedial activities actually involved treatment w/ the hydroxyapatite?	Agreed. The sentence will be revised to state 'Toxicity Characteristic Leaching Procedure (TCLP) results indicated that the application of hydroxyapatite at the distressed area resulted in the reduction of the mobility and potential exposure of lead contamination in the soil at concentrations exceeding ADEC method two cleanup levels. TCLP results also indicated that this area could be considered non-hazardous if a removal action were to occur in the future, however lead contamination still remains in the soil (USAF 2010)."
				The statement is describing the waste which would be involved with future excavation of the area not treated with hydroxyapatite in 2009.The statement will be revised to clarify that soil from the areas not treated with hydroxyapatite would be considered hazardous. 'If remedial activities at BAT05 generated soil waste for offsite transport, it would be categorized as hazardous if left untreated (USAF 2010)'
13	29	2.2.1	Is the ODA landfill surveyed and documented in the Air Force's land records?	The text will be updated to state that the
14	31	2.2.2	Last sentence of the last bullet bottom of this page, revise typo: 'sight' to 'site'.	Agreed. The typo will be revised.

Page 5 of 18

March 12, 2013

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#	Page #	Section	ADEC Comment	Response
15	32	2.2.2	<ul> <li>First bullet section under 2007 SC and RI: 1) How can fuel odors be below Method 2 cleanup levels? Revise statement(s) and discuss the screening and laboratory analysis results associated with the contaminant concentrations.</li> <li>2) Revise the statement 'Contamination aroundwas attributed [to releases that originated from the former tanks] rather than'.</li> </ul>	Agreed. The section will be revised to state 'Fuel odors were observed around the southwestern antenna pads, results from samples collected were all below Method Two direct contact/ingestion criteria.'
			Revise formatting of the word 'composite' in the second bullet of this section. Last bullet on this page omit the words 'migration to groundwater' since lead cleanup levels are not based on this pathway.	2) Agreed. The sentence will be revised to state 'Contamination around antennas was attributed to releases that originated from the former tanks rather than the antenna locations themselves.'
				Formatting of the word 'Composite' will be revised.
				Agreed. 'migration to groundwater' will be omitted.
16	33	2.2.2	09/10 Hot Spot Removal: elaborate on what is meant when stating 'relocated' in this and other sections where applicable.	The treated soil at the EDA was generally left in place with the exception of that removed in 2009 which was transported for offsite disposal. This will
				be clarified in the document.

#	Page #	Section	ADEC Comment	Response
17.	34	2.3	This section should include a brief summary of the significant changes in the remedial objectives that have resulted since the 2011 Proposed Plan and public meeting after determining that LF006 was not on land owned by the USAF.	Agreed. A statement will be added stating 'After the 2011 Proposed Plan and public meeting it has since been determined site LF006 is located on land
			Last sentence of this section, state who is inferred by 'These entities'?	owned by the Ounalashka Corporation. The USAF has since chosen the alternative excavation and offsite disposal for both the ODA and EDA.'
				The sentence will be revised to clarify that the USAF and ADEC are the entities being referenced.
18	34 and 73	2.4 and Part 4: Reference s	Last sentence of the first paragraph of this section, the reference to ADEC 2000a does not correlate to the listing in the References section. In the Reference section, change the 2008 (October) date for 18 AAC 75 to April 2012.	Agreed. The reference section will be updated to ADEC 2012. ADEC 2000a was the incorrect reference; it will be changed to ADEC 2012.
19.	34	2.4	Revise the second sentence of the first paragraph of this section to state: 'In addition, certain cleanup activities including those in areas with petroleum'. See also comment #8 above re: the significant changes to the RAOs for the Old Disposal Area that should be explained in this and other sections where applicable.	Agreed. The sentence will be revised to state 'In addition, certain cleanup activities including those in areas with petroleum' See response to comment #8.
20	36	2.5.3	Is the general geology information applicable site wide; i.e. is soil at the top camp observed to be 20 feet bgs?	Yes. The general geology information is applicable site wide. However, while the depth of soil varies largely throughout the entire site, the observed exposed bedrock was much greater at the Top Camp area. This will be clarified in the document.

#	Page #	Section	ADEC Comment	Response
21	36	2.5.4	Section should include more specific information re: the known hydrological conditions in the area(s) specifically associated with the ODA and the EDA.	Agreed. Details regarding waterfalls near LF006, Snuffy creek, and the pond adjacent to LF006 will all be listed within this section. A statement will be added stating 'A
				small pond sits at the southern base of the Old Disposal Area and is likely the result of seasonal snow melt.'
				A statement will be added stating 'Snuffy Creek and surrounding waterfalls are relatively close to site LF006, but are not within the site
22.	37	2.5.5	Which species are inferred by 'other seabird populations'?	boundaries.' The sentence will be revised to state 'Wildlife in and around the Bering Sea in the vicinity of Driftwood Bay includes several salmon species, halibut, rockfish, Pacific herring, sea lions, sea otters, geese, ducks, 21 known seabird populations, and bald eagles.'
23	38	2.5.7	Title of Table 3 should be revised to 'Driftwood Bay RRS LF006 Sites'. First sentence of this section, replace the word 'identified' with 'estimated'.	Agreed. The title of Table 3 will be revised to 'Driftwood Bay RRS LF006 Sites'. The word 'identified' will be replaced with 'estimated'.

#	Page #	Section	ADEC Comment	Response
24.	39-41	2.5.8	The discussion, statements and titles etc. that are currently referred to as 'Lower Camp' should be revised to specifically refer to LF006 and/or ODA and EDA for clarity. All of the receptors for the currently selected pathways should be notated as 'future' for both the Electronic Debris Area and the Old Disposal Area due to the fact that the future land use scenario is residential.	Agreed. The discussion, statements and titles that are currently referred to as 'Lower Camp' will be revised to specifically refer to LF006 and/or ODA and EDA for clarity.
				All of the receptors for the currently selected pathways will be notated as 'future' for both the EDA and the ODA.
25.	43	2.6.2	Surface and groundwater characteristics and issues vary across the greater Lower Camp site. Discussion and details should be specific to and reference LF006 and the two areas of concern (ODA and EDA).	Agreed. The sentence will be revised to reference LF006 specifically.
26	45	2.7.1	Exposure Assessment: This and other sections were applicable, refer specifically to the LF006 sites. Should also be revised to state that the future land use scenarios selected for both the ODA and EDA are residential.	Agreed. The section will be revised to refer specifically to the LF006 sites. The section will also be revised to state 'Future land use scenarios selected for both the ODA and EDA are residential'.

#	Page #	Section	ADEC Comment	Response
27.	45	2.7.2	Although the known areas of exceedances of the cleanup levels for RRO and PAH concentrations in soils do represent a relatively small surface area ADEC does not consider the ODA to be a small surface area. It should be stated that although known potential risks to ecological receptors are currently deemed low, there are potential unknowns that, if encountered, will need to be addressed during the removal of the landfill for the purpose of eliminating exposure risk(s). The removal action work plan will need to include characterization sampling and screening. The ponded area is also a concern to ADEC due to the geophysical anomalies that appear to border it. The remedy should not exclude addressing the ponded area.	Agreed. The section will be revised to state 'Although known potential risks to ecological receptors are currently deemed low, there are potential unknowns that, if encountered, will need to be addressed during the removal of the landfill for the purpose of eliminating exposure risk(s).' A statement will be added stating 'One known ecological concern is the pond near the proposed area to be excavated.'
28	46	2.8	Revise the RAOs for the EDA to reflect those stated in the first bullet for the ODA (prevent ingestion, inhalation, and offsite migration)	Agreed. The EDA RAOs will reflect those in the ODA, to include: 'inhalation, and offsite migration', and state 'Prevent exposure to and release of potential contamination associated with buried solid waste by removal from environmentally sensitive areas'.
29	48	2.9	Are the entire footprints of the ODA and the EDA on Ounalashka Corporation property? If so then residential needs to be referred to as a/the future land use whenever discussing current and future receptors; i.e. Chemical Stabilization and Land Use Controls section specifies only adult recreational receptors.	Yes, Site LF006 is located outside this Public Land Order withdrawal on property owned by the Ounalashka Corporation. Residential will be referred to as a/the future land use whenever discussing current or future land receptors. This will be clarified in the document.

#	Page #	Section	ADEC Comment	Response
30.	50	2.10	Table 6: Evaluation criteria for Alternative 2 Overall Protection of HH and the Env. should be changed from Pass to Fail. Short-term effectiveness score for alternative 2 should be changed to 3 and long-term effectiveness score should be changed to 2. The only difference of implementability between the alternatives 3 and 4 is the RCRA handling and disposal requirement and/or the treatment/chemical stabilization – which to ADEC's understanding occurred or partially occurred in 2009. The implementability scores for alternatives 3 and 4 should be revised from to 2 and 4 respectively to 4 and 3 respectively (or at a minimum to 3 and 2 respectively).	Agreed. The requested changes to Table 6 will be made.
31.	51	2.10	<ul> <li>Revise the second paragraph on this page since Alternative 2 is not protective under a residential land use scenario. Any scenario which involves leaving the contamination in place would require at a minimum to be capped in order to achieve protectiveness.</li> <li>Last sentence of third paragraph should be revised since land use controls themselves do not prohibit exposure.</li> <li>Last sentence of the last paragraph should be revised to state 'limiting access to the site and thus exposure to the contaminated soil.'</li> </ul>	Agreed. The paragraph will be revised to read 'With the exception of the No Action, and the Chemical Stabilization and Land-Use Controls alternatives all alternatives are considered protective of human health and the environment.' Agreed. The sentence will be revised to state 'RAOs would only be achieved by prohibiting access and mitigating exposure to the site.' Agreed. The sentence will be revised to state 'limiting access to the site and thus exposure to the contaminated soil.'
32.	52	2.10	Revise last complete sentence on this page to state 'site contaminants [which are] at concentrations'.	Agreed. The sentence will be revised to state 'Because the No Action alternative lacks land-use controls, human or ecological receptors could be exposed to site contaminants at concentrations above the ADEC cleanup levels.'

Page 11 of 18

#	Page #	Section	ADEC Comment	Response
33.	53	2.10	Revise last sentence of second paragraph of Long-Term Effectiveness section by	Agreed. The word 'treatment' will be
			changing the word treatment to remedy.	changed to 'remedy.'
			Second to last paragraph on this page, rephrase the sentence beginning w/ 'Because land-	Agreed. The sentence will be revised to
			use controls' to state that the physical barriers are the primary means of preventing	state 'Because physical barriers are the
			exposure; not the land-use controls as stated.	primary means of preventing exposure to
				the contamination, they must be installed
			Rephrase the last sentence on this page to state The Offsite Disposal alternatives would	and maintained as well as administrative
			be highly effective'.	control enforced and monitored to allow
				this alternative to be effective.
				Agreed. The sentence will be revised to
				state 'The Offsite Disposal alternatives
				would be highly effective'
34	55	2.10	In regards to discussion involving the application of a chemical stabilizer in this and	Hydroxyapatite was applied to lead-
			other sections, ADEC's understanding is that the chemical stabilizer hydroxyapatite was	contaminated soils in 2009 at the EDA
			already applied to the EDA in 2009; as is also stated on page 25.	distressed area, however this application
				was part of a pilot test and the site as a
				whole has not been treated.

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#	Page #	Section	ADEC Comment	Response
35.	56	2.10	First paragraph on this page revise sentence beginning with 'Care would' to state: 'Controls would be required in order to avoid'.	Agreed. The sentence will be revised to state 'Controls would be required in order to avoid approaching contamination
			Last sentence of the second paragraph on this page replace 'Chemical Stabilization and Offsite Disposal' with 'Removal and Offsite Disposal'. Note, based on landowner preference, only the alternatives involving removal and offsite disposal should be	during excavation and containerization activities.'
			considered as an option for both the ODA and the EDA. This should be clarified in all sections that do not involve removal and offsite disposal; i.e. the last sentence on this page, although 'Administrative approval should be possible' this alternative is not acceptable to the landowner because 'contaminated soil remains onsite.	This section is describes the implementability of the different alternatives, it is not meant to imply the alternative has either been accepted or rejected by the landowner
36	57	2.10	Last sentence on this page does not make sense and should be revised; i.e. 'Site LF006 is located on land currently owned by the Ounalashka Corp. which is unlikely to concur with any remedial alternative that does not involve offsite disposal.'. Are any of the other Driftwood Bay RRS sites known to be on land that is not owned by the USAF? This should be stated somewhere in the ROD for clarity.	Agreed. The sentence will be revised to state 'Site LF006 is located on land currently owned by the Ounalashka Corp. OC is unlikely to concur with any remedial alternative that does not involve offsite disposal.' The following sentence will be added: 'In addition to LF006, the Heavy Equipment Storage Area could also be situated on land outside the Public Land Order withdrawal. The Heavy Equipment Storage Area was previously investigated by the Air Force and recommended for no further action, cleanup complete (USAF 2009a).'

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#	Page #	Section	ADEC Comment	Response
37	58	2.11	Re: what is or is not considered a principal threat waste, similar to comments that ADEC	The sentence will be revised for
			submitted on the draft 2012 O1001 and DA013 ROD, the lead contamination would be	
			classified as a principal threat waste under the definition stated in this section which	No principal threat wastes are present at
			states 'or present a significant risk to human health or the environment should	site LF006 because concentrations of
			exposure occur.'.	lead presented total HI risks of less than
				1 and total cancer risks less than 10-5 as
				detailed in the risk assessment (ADEC
				2009c)."
38	58	2.12	Omit or revise the last sentence of the first paragraph of this section since the	Agreed. The sentence will be revised to
			preferred/selected remedies are to remove all contamination which exceeds ADEC	state 'It is expected that the selected
			Method 2 cleanup levels.	remedy will remain in effect for as long
			Revise last sentence of first paragraph on this page to state: 'exposure to contaminant	as site contaminants pose an
			concentrations which exceed ADEC cleanup levels.'.	unacceptable risk to residents by
				exposure to contaminant concentrations
				which exceed ADEC cleanup levels.'
39	59	2.12.2	Section should include a statement as requested in comments #8 and 19 above regarding	A statement will be added stating
			potentially necessary remedial actions to address unknown contamination which may be	'unknowns could be encountered during
			encountered during removal activities at the ODA.	removal of this landfill which will
				require characterization and confirmation
				sampling during removal activities.'

#	Page #	Section	ADEC Comment	Response
40	62	2.13.4	Revise second sentence of first paragraph of this section to state: 'CERCLA five-year reviews would not be required'.	Agreed. The sentence will be revised to state 'CERCLA five-year reviews would not be required'
			would be the most] effective for'.	Agreed. The sentence will be revised to state 'challenging [it would be the
			Second to last sentence on this page, revise to state: 'Confirmation that all contaminated soil and contaminants have been removed to concentrations that are below ADEC	most] effective for'
			Method 2 Cleanup Levels will be achieved with analytical laboratory testing.'.	Agreed. The sentence will be revised to state 'Confirmation that all contaminated soil and contaminants have been
				removed to concentrations that are below ADEC Method 2 Cleanup Levels will be
				testing.'
41	63	2.13.4	First paragraph on this page, state that technologies were evaluated specifically for the EDA.	Agreed. The sentence will be revised to state 'In development of the Driftwood Bay RRS Feasibility Study, use of alternative treatment technologies was evaluated specifically for LF006 EDA.'
42.	65	3.2.1	ADEC submitted two rounds of comments on the draft 2011 Proposed Plan which were dated August 05, 2011 and October 20, 2011. ADEC's comments on the draft PP were comprehensive for all of the sites associated with the Driftwood Bay RRS however those comments and responses specific to the EDA and the ODA should be included in this section. It should also be noted for clarity that USFWS' comments were similarly comprehensive, addressing all of the sites at Driftwood Bay RRS and not exclusively related to LF006.	Agreed. The requested comments will be added to this section with the note added as follows: USFWs' comments are similarly comprehensive, addressing all of the sites at Driftwood Bay RRS and not exclusively related to LF006.

#	Page #	Section	ADEC Comment	Response
43.	68	3.2.1	What were the two manholes discussed in the response to USFW's comment beginning with 'FL009 possibly contains'? At other WACS the septic tanks did have two manhole type access points. Were samples collected from the manholes and from the area stated to be 150 ft. from the former building where there was a gap between the lines? This issue should also be revisited in the revised draft final 2012 ROD for OT001 and DA013.	The pipeline was located within the manholes and was comprised of a nonmetallic material, appearing to be cement-asbestos pipe. Samples were taken from pipes within the two manhole locations and tested for asbestos. Field screening results from samples collected within the manhole locations did not indicate asbestos to be present.
				Borings were placed every 75 feet along the pipeline and were drilled until bedrock was encountered. Field screening results from samples collected along the pipeline were all very low and did not indicate elevated levels of petroleum hydrocarbons in the samples. Results from along the pipeline were all below ADEC Method Two direct contact/ingestion and inhalation criteria for all COCs analyzed.
				Correspondence received from ADEC and dated January 30, 2013 indicated ADEC approval for finalizing the ROD for OT001/DA013. Based on this correspondence, the ROD has been finalized and is currently in routing for

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#	Page #	Section	ADEC Comment	Response
44.	1of3	Appendix A	Change the word 'removal' to 'remedial' in the top two boxes in the 'Action to be Take to Attain Requirements' column. Also correct typo 'Action to be Take[n]'	Agreed. The word 'removal' will be replaced with 'remedial.' The typo will be corrected.
			Last row on this page, TBCs are for guidance and policies that are not promulgated and do not apply to laws/regulations which are 'applicable' or 'relevant and appropriate' or neither.	The status will be changed to 'relevant and appropriate'
45.	2of3	Appendix A	Revise the second row on this page to adequately clarify that two separate 'applicable' requirements are involved. ADEC's notification requirements are in 18 AAC 75.300 and the cleanup operations requirements are in 18 AAC 75.360.	Agreed. The requested revision will be made.
			Revise the statement in the Synopsis box of the bottom row of this page to state: 'Hazardous waste is expected to be generated a LF006.'.	The statement will be revised to state that 'excavated lead-contaminated soils excavated from the site may possibly exceed regulatory levels for toxicity characteristic hazardous waste, and would therefore be managed as hazardous waste during offsite transport and disposal.'
46	3of3	Appendix A	First row on this page, see comment #44 above regarding TBCs. Revise the statement in the Synopsis box of the last row on this page as it states that excavated soils, monitoring samples, and contaminated media may be generated/may be created. The remedies for both the ODA and the EDA are to excavate, conduct confirmation and/or further characterization sampling, and offsite disposal.	Agreed. The status will be changed to 'applicable.' Agreed. The synopsis box will be revised to state 'Excavated soils and monitoring samples will be generated from the project area. The chosen remedial alternative will create contaminated media to be removed from the site.'

#	Page #	Section	ADEC Comment	Response
47		Appendix B	Re: the 3 combined landing craft trips which are estimated, does this involve two trips to transport contaminated soil offsite, and one trip for the mob/demob?	No. This is an estimated trip total which assumes efforts for areas EDA and ODA are combined. Two single day landing craft trips are listed under the equipment section which allows for the offsite transportation of waste from Driftwood Bay to Dutch Harbor.
48		Photo Log	Photos that depict the current status of the EDA should be included; i.e. from the 2010 sampling event.	Agreed. Photos depicting the 2009 EDA Ecobond event which is documented in the 2010 reference will be added.
49			End of ADEC Comments	