THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

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File No: 360.38.002

May 26, 2015

Lori Roy
AFCE/OLAR
18291 Tarabrooke Drive
Gulfport, MS 39503

Stacie McIntosh
BLM – Arctic Field Office
1150 University Avenue
Fairbanks, AK 99709

Decision Document: Wainwright DEW Line/LIZ-3/Landfill LF006 Cleanup Complete Determination

Dear Ms. Roy and Ms. McIntosh:

The Alaska Department of Environmental Conservation (DEC) has reviewed the environmental records for the Wainwright Distant Early Warning (DEW) Line LIZ-3 Landfill LF006 site near Wainwright, Alaska. This decision letter memorializes the site history, cleanup actions, and standard conditions for long-term site management. No further remedial action is required.

Site Name and Location
Wainwright Short Range Radar Station (SRRS), Old Landfill LF006
Kuk River on the Chukchi Sea, 4.5 miles southeast of the village of Wainwright

Responsible Party
United States Air Force

Landowner
United States Department of the Interior, Bureau of Land Management

DEC Site Identifiers
File No: 360.38.002 Hazard ID: 25245

Regulatory Authority for Determination
18 AAC 75

Site Description and Background

The Wainwright SRRS is located on federal lands within the National Petroleum Reserve-Alaska (NPR-A), approximately 4.5 miles southeast of the village of Wainwright. The Wainwright SRRS was constructed as a DEW Line Station in 1953 and was an active manned station until 1989. It was converted into an unmanned SRRS in 1994. The station was closed by the U.S. Air Force in 2008. The Air Force contractor completed site demolition activities in 2013. The Technical Services Building and the Radar Building/Radar Antenna remain on site. All other buildings have been demolished and all tanks and fuel pipelines have been removed.

Landfill LF006 was located south of the SRRS property boundary along the southeastern edge of a lagoon connected to the Wainwright Inlet. LF006 was used from 1957 to 1974.

Record of Decision

The Air Force prepared a Record of Decision (ROD) for LF006 in 2011, selecting landfill removal and off-site disposal as the final remedy. Because LF006 had eroded into the lagoon, potentially impacted media included soil, sediment, and surface water. The ROD developed media specific cleanup levels for all contaminants detected at LF006, which are presented in the attached Cleanup Levels for Analytes Detected at LF006. The table below presents the contaminants of concern and their established cleanup levels for this site.

Contaminants of Concern and Cleanup Levels

Contaminant	Media	Cleanup Level
DRO	soil	200 mg/kg
RRO	soil	2000 mg/kg
PCBs	soil	1 mg/kg
ethylbenzene	soil	110 mg/kg
toluene	soil	220 mg/kg
total xylenes	soil	63 mg/kg
1,2,4-trimethylbenzene	soil	49 mg/kg
1,3,5-trimethylbenzene	soil	49 mg/kg
n-propylbenzene	soil	42 mg/kg
lead	soil	400 mg/kg
lead	sediment	112 mg/kg

mg/kg = milligrams per kilogram

Characterization and Cleanup Activities

A site visit in 1989 discovered drums and other metallic debris at the surface of the landfill, indicating that the landfill was actively eroding into the lagoon. A 2007 Remedial Investigation (RI) identified crushed drums, lead-acid batteries, heavy equipment parts, tires, cables and wires, insulation, glass, and plastic at LF006. As part of the 2007 RI geophysical survey was conducted and several off-shore debris fields were identified in the lagoon south of LF006. Sampling in 2007 showed that diesel and residual range organics (DRO and RRO) and polychlorinated biphenyls (PCBs) were above the established cleanup levels.

In 2009, another RI was performed, and 20 soil boring were drilled and sampled near the exposed debris. Analytical results showed DRO, RRO, PCBs above the established cleanup levels in several locations. One boring also had several volatile organic compounds (VOCs) above the cleanup levels.

An Interim Removal Action was conducted in the winter of 2010 to remove the landfill contents and contaminated soil. Approximately 4,350 cubic yards of petroleum, PCB, and lead contaminated soil; 150 tons of inter metal debris; and 38 drums of solid waste were removed from the site and transported off-site for proper disposal. Confirmation samples from the limits of the excavation were all below cleanup levels for DRO, GRO, PCBs, VOCs, and lead. An additional removal action was performed in August of 2010 to remove debris that was under ice during the winter removal action. Approximately 16 cubic yards of metal debris and 80 pounds of lead-acid batteries and plates were removed and transported off-site for disposal. One sample collected near a lead-acid battery contained lead above the established cleanup level.

Two additional mobilization activities occurred in 2012 to remove the lead contaminated soil identified in 2010 and additional metal debris. A total of 1,327 pounds of inert metal debris and 28 pounds of lead plates were removed. Confirmation sample results are all below cleanup levels.

Cumulative Risk Evaluation

Pursuant to 18 AAC 75.325(g), when detectable contamination remains on-site following a cleanup, a cumulative risk determination must be made that the risk from hazardous substances does not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways and does not exceed a cumulative noncarcinogenic risk standard at a hazard index of one across all exposure pathways.

Based on a review of the environmental record, ADEC has determined that residual contaminant concentrations do not pose a cumulative human health risk.

Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using ADEC's Exposure Tracking Model (ETM). Exposure pathways are the conduits by which contamination may reach human or ecological receptors. ETM results show all pathways to be one of the following: De-Minimis Exposure, Exposure Controlled, or Pathway Incomplete. A summary of this pathway evaluation is presented below.

Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	De Minimis	The landfill and associated contaminated soil have been removed. Contaminant concentrations remaining in soil are below the applicable cleanup levels.
Sub-Surface Soil Contact	De Minimis	The landfill and associated contaminated soil have been removed. Contaminant concentrations remaining in soil are below the applicable cleanup levels.
Inhalation – Outdoor Air	Pathway Incomplete	The landfill and associated contaminated soil have been removed. Contaminants of concern are not volatile, and

		remaining concentrations are below applicable cleanup levels.
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	The landfill and associated contaminated soil have been removed. Contaminants of concern are not volatile, and remaining concentrations are below the applicable cleanup levels. No buildings are present at the site.
Groundwater Ingestion	Pathway Incomplete	The ADEC has made a general determination that the presence of continuous permafrost in the Arctic Zone acts as a barrier for soil contaminant migration to a groundwater zone of saturation (ADEC Guidance No. SPAR 99-3, Policy for Establishing Cleanup Levels for Sites in the Arctic Zone in Accordance with 18 AAC 75, Article 3)
Surface Water Ingestion	Pathway Incomplete	The landfill and associated contaminated soil have been removed. Contaminant concentrations remaining in soil are below the applicable cleanup levels. The lagoon adjacent to the former landfill is brackish water and unlikely to be a potential drinking water source.
Wild and Farmed Foods Ingestion	De Minimis	The landfill and associated contaminated soil have been removed. Contaminant concentrations remaining in soil are below the applicable cleanup levels.
Exposure to Ecological Receptors	De Minimis	The landfill and associated contaminated soil have been removed. Contaminant concentrations remaining in soil are below the applicable cleanup levels.

Notes to Table 2: "De-Minimis Exposure" means that in ADEC's judgment receptors are unlikely to be affected by the minimal volume or concentration of remaining contamination. "Pathway Incomplete" means that in ADEC's judgment contamination has no potential to contact receptors. "Exposure Controlled" means there is an administrative mechanism in place limiting land or groundwater use, or a physical barrier in place that deters contact with residual contamination.

ADEC Decision

The contents of landfill LF006 were removed and transported off-site for disposal. Remaining contamination in soil is below approved cleanup levels. This site will receive a "Cleanup Complete" designation on the Contaminated Sites Database, subject to the following standard conditions.

Standard Conditions

1. Any proposal to transport soil or groundwater off-site requires ADEC approval in accordance with 18 AAC 75.325. A "site" [as defined by 18 AAC 75.990 (115)] means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership.

2. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.

This determination is in accordance with 18 AAC 75.380 and does not preclude ADEC from requiring additional assessment and/or cleanup action if future information indicates that this site may pose an unacceptable risk to human health or the environment.

Appeal

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410

Willoughby Avenue, Suite 303, Juneau, Alaska 99811-1800, within 15 days after receiving the department's decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99811-1800, within 30 days after the date of issuance of this letter, or within 30 days after the department issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

If you have questions about this closure decision, please feel free to contact me at (907) 451-5175 or melody.debenham@alaska.gov.

Sincerely,

Melody Debenham
Environmental Program Specialist

Attachments: Figure 1-1, Location and Vicinity Map (Jacobs, 2013)
Figure 2-1, LF006 Debris Locations and Excavations, 2010 to 2012 (Jacobs, 2013)
Cleanup Levels for Analytes Detected at LF006 (Jacobs, 2013)

All Locations Are Approximate

0 1 2 3 4

Miles

NAD 1983 UTM Zone 4N

LOCATION AND VICINITY MAP

WAINWRIGHT SRRS, ALASKA

JACOBS	DATE:	PROJECT MANAGER:	FIGURE NO:
	18 JAN 2013	J. LADEGARD	1-1

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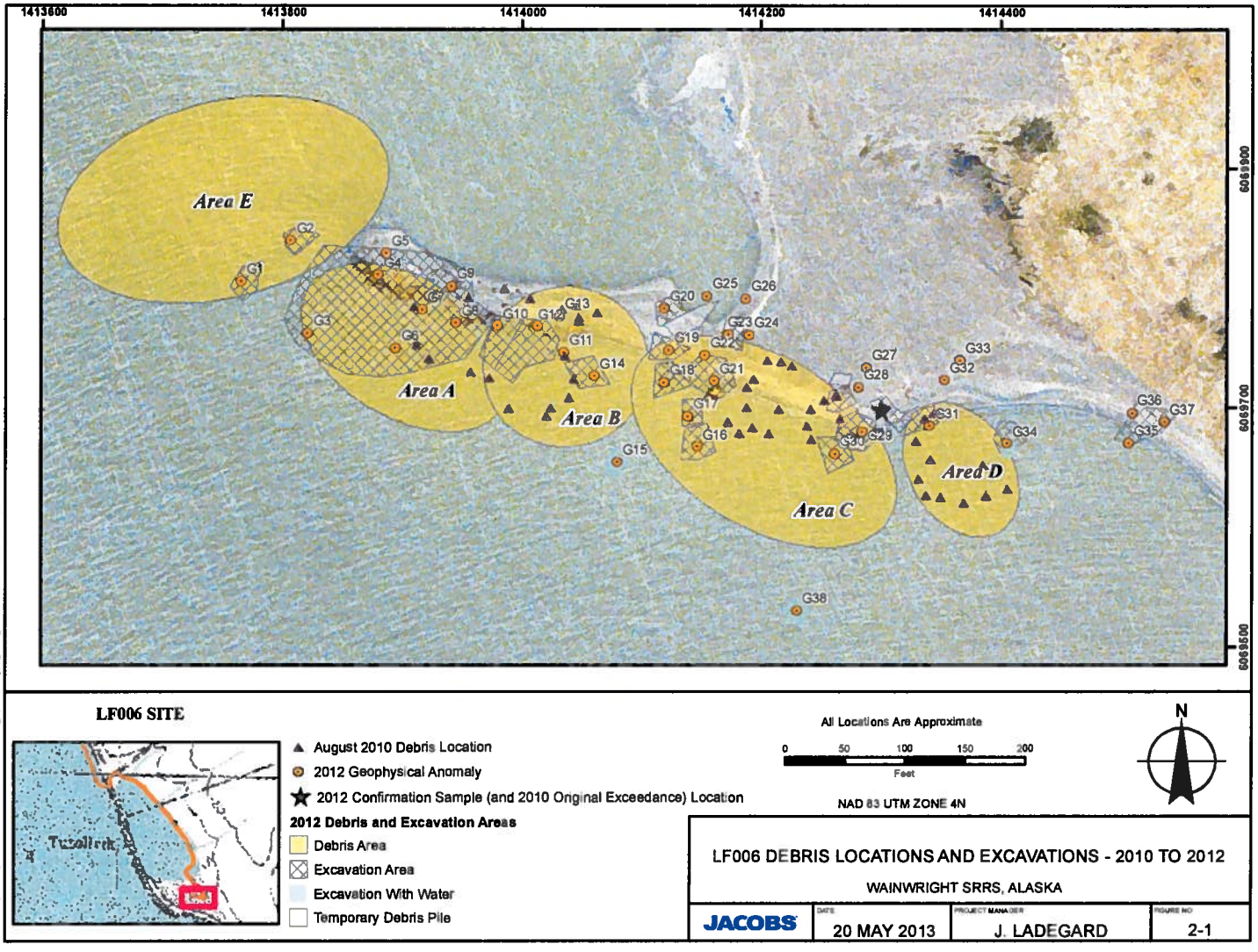

LF006 DEBRIS LOCATIONS AND EXCAVATIONS - 2010 TO 2012

WAINWRIGHT SRRS, ALASKA

JACOBS	DATE: 20 MAY 2013	PROJECT MANAGER: J. LADEGARD	FIGURE NO: 2-1

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Cleanup Levels for Analytes Detected at LF006

Media	Analyte[1]	Action Levels					
		18 AAC 75 Method One Cleanup Level (Arctic Zone) for Soil[2]	18 AAC 75 Method Two Cleanup Level (Arctic Zone) for Soil[3]	NOAA SQuiRT for Freshwater Sediment[4]	NOAA SQuiRT for Marine Sediment[5]	18 AAC 70 Alaska Water Quality Standards[6]	NOAA SQuiRT for Fresh Surface Water[7]
Soil (mg/kg)	**Fuels**						
	GRO	100	1,400	-	-	-	-
	DRO	200	12,500	-	-	-	-
	RRO	2,000	13,700	-	-	-	-
	VOCs						
	1, 1, 1-Trichloroethane	-	360	-	-	-	-
	1, 1-Dicholorethane	-	900	-	-	-	-
	1, 2, 4-Trimethylbenzene	-	49	-	-	-	-
	1, 3, 5-Trimethylbenzene	-	42	-	-	-	-
	2-Butanone (MEK)	-	23,300	-	-	-	-
	4-Isopropyltoluene	-	-	-	-	-	-
	Benzene	-	17	-	-	-	-
	Ethylbenzene	-	110	-	-	-	-
	Isopropylbenzene (Cumene)	-	62	-	-	-	-
	Methylene chloride	-	240	-	-	-	-
	Naphthalene	-	42	-	-	-	-
	n-Butylbenzene	-	42	-	-	-	-
	n-Propylbenzene	-	42	-	-	-	-
	o-Xylene	-	-	-	-	-	-
	P & M-Xylene	-	-	-	-	-	-
	sec-Butylbenzene	-	41	-	-	-	-
	tert-Butylbenzene	-	70	-	-	-	-
	Tetrachloroethene	-	15	-	-	-	-
	Toluene	-	220	-	-	-	-
	Trichloroethene	-	0.85	-	-	-	-
	Total Xylene	-	63	-	-	-	-
	PAHs						
	1-Methylnaphthalene	-	380	-	-	-	-
	2-Methylnaphthalene	-	380	-	-	-	-
	Acenaphthene	-	3,800	-	-	-	-
	Anthracene	-	27,800	-	-	-	-
	Benzo(a)Anthracene	-	6.6	-	-	-	-
	Benzo(b)Fluoranthene	-	6.6	-	-	-	-
	Chrysene	-	660	-	-	-	-
	Fluoranthene	-	2,500	-	-	-	-
	Fluorene	-	3,200	-	-	-	-
	Naphthalene	-	42	-	-	-	-
	Phenanthrene	-	27,800	-	-	-	-
	Pyrene	-	1,900	-	-	-	-

Cleanup Levels for Analytes Detected at LF006 (Continued)

Media	Analyte[1]	Action Levels					
		18 AAC 75 Method One Cleanup Level (Arctic Zone) for Soil[2]	18 AAC 75 Method Two Cleanup Level (Arctic Zone) for Soil[3]	NOAA SQuiRT for Freshwater Sediment[4]	NOAA SQuiRT for Marine Sediment[5]	18 AAC 70 Alaska Water Quality Standards[6]	NOAA SQuiRT for Fresh Surface Water[7]
Soil (mg/kg)	**RCRA Metals**						
	Arsenic	-	6.1	-	-	-	-
	Barium	-	27,400	-	-	-	-
	Cadmium	-	110	-	-	-	-
	Chromium	-	410	-	-	-	-
	Lead	-	400	-	-	-	-
	Selenium	-	680	-	-	-	-
	Silver	-	680	-	-	-	-
	Mercury	-	26	-	-	-	-
	PCBs						
	Aroclor 1254	-	-	-	-	-	-
	Total PCBs	-	1	-	-	-	-
Sediment (mg/kg)	**RCRA Metals**						
	Arsenic	-	-	17	41.6	-	-
	Barium	-	-	-	-	-	-
	Cadmium	-	-	3.53	4.21	-	-
	Chromium	-	-	90	160	-	-
	Lead	-	-	91.3	112	-	-
	Selenium	-	-	-	-	-	-
	Silver	-	-	-	1.77	-	-
	Mercury	-	-	0.486	0.7	-	-
	PCBs						
	Total PCBs	-	1	-	0.189	-	-
Surface Water (µg/L)	**Metals**						
	Barium	-	-	-	-	2,000	4
	Chromium, Total	-	-	-	-	100	-
	Lead	-	-	-	-	15	2.5
	Selenium	-	-	-	-	5	5

Notes:
[1]-The only analytes shown are those which have been detected at the LF006 site during the 2007 and 2009 investigations.
[2]-Method One cleanup levels are applicable to contaminated sites susceptible to erosion.
[3]-Method Two cleanup levels show the lowest value of direct contact or inhalation shown from 18 AAC 75.341.
[4]-NOAA SQuiRT value is the probably effects level (PEL) for freshwater values indicated (NOAA 2008)
[5]-Primary screening criteria values are from 18 AAC 70.020
[6]-NOAA SQuiRT values shown for fresh water criteria continuous concentration (CCC) unless otherwise indicated (NOAA 2008).