THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

555 Cordova Street
Anchorage, Alaska 99501
Phone: 907.269.7503
Fax: 907.269.7649
dec.alaska.gov

File No: 2107.26.010

September 9, 2014

Chris & Deborah Hudson
14111 West Lake Ridge Drive
Eagle River, AK 99577

Re: Decision Document: Fire Lake Flying Club
Corrective Action Complete Determination

Dear Mr. and Ms. Hudson;

The Alaska Department of Environmental Conservation (ADEC) has reviewed the environmental records for the Fire Lake Flying Club site, located along the southeast bank of Fire Lake in Eagle River, 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:
Fire Lake Flying Club
14111 West Lake Ridge Drive
Eagle River, Alaska 99577

Name and Mailing Address of Contact Party:
Chris & Deborah Hudson
14111 West Lake Ridge Drive
Eagle River, AK 99577

DEC Site Identifiers:
File No: 2107.26.010
Hazard ID: 24733

Regulatory Authority for Determination:
18 AAC 75 and 18 AAC 78

Site Description and Background
Two adjacent 3,000-gallon gasoline underground storage tanks (USTs) were removed from the Fire Lake Flying Club property in May 1995 and November 1997, respectively. Following removal activities, confirmation soil sample results showed that gasoline range organics (GRO), lead, and benzene, toluene, ethylbenzene, and xylenes (BTEX) remained in the subsurface soils at this site above the ADEC migration-to-groundwater (MTG) cleanup levels.

Contaminants of Concern
The following petroleum contaminants of concern, those above ADEC cleanup levels, were identified during the course of the site investigations summarized in the Characterization and Cleanup Activities section of this decision letter.

- Gasoline Range Organics (GRO)
- Diesel Range Organics (DRO)
- Benzene
- Toluene
- Ethylbenzene
- Xylenes
- Lead

Cleanup Levels

Lead, DRO, GRO, and BTEX were present in soil above the MTG cleanup levels for the under 40-inch precipitation zone, established in 18 AAC 75.341, Tables B1 and B2. Lead and benzene were identified in the groundwater at concentrations exceeding 18 AAC 75.345, Table C.

Table 1 – ADEC Cleanup Levels

Contaminant	Soil – MTG (mg/kg)	Soil – Ingestion (mg/kg)	Soil – Inhalation (mg/kg)	Groundwater (mg/L)	Soil - Remaining Concentration on-site (mg/kg)	GW- Remaining Concentration on-site (mg/L)
GRO	300	1,400	1,400	2.2	24.9	ND
DRO	250	10,250	12,500	1.5	155	ND
Benzene	0.025	11	150	0.025	**0.513**	0.000240
Toluene	6.5	8,100	220	1	0.169	ND
Ethylbenzene	6.9	10,100	110	0.7	ND	ND
Xylenes	63	20,300	63	10	1.33	ND
Lead	400	400	NA	0.015	60	ND

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = not applicable
ND = not detected over laboratory detection limits
Bold = exceeds MTG cleanup level

Characterization and Cleanup Activities

In 2004, a limited soil boring investigation was performed to delineate the nature and extent of remaining contamination. Sampling results showed that GRO, DRO, BTEX, and lead were prevalent in one area, located generally southwest of the onsite drinking water well (DWW). To address the remaining subsurface soil contamination, 68 tons of impacted soil were removed and treated in 2006, and three groundwater monitoring well points (LOC-01, LOC-02, and LOC-03) were installed to evaluate the groundwater conditions. Soil and groundwater data confirmed that contamination remained in the subsurface soil and groundwater above ADEC cleanup levels.

An additional 651 tons of contaminated soil were removed in 2007. Confirmation soil samples were collected from the base and sidewalls of the excavation and were analyzed for GRO, DRO, and BTEX. Analytical results revealed that benzene was the only analyte remaining in the subsurface soil above the MTG cleanup level. During the 2007 excavation, Well Points LOC-01, LOC-02, and LOC-03 were removed; however, following the excavation, the well points were replaced with Monitoring Wells MW3, MW2, and MW1, respectively. Four groundwater sampling events were

completed between 2007 and 2009 (results are shown in Table 2). By June of 2008, all sample results from MW1, MW2, and MW3 were below MTG cleanup levels.

In 2011, three soil borings were advanced to further define the down-gradient edge of benzene contamination. Analytical results (for these borings) showed that benzene was present in the subsurface soil below the MTG cleanup level. Several groundwater monitoring events were completed between 2006 and 2011, and are displayed below in Table 2. Based on the groundwater results below, Monitoring Wells MW1, MW2, and MW3 were decommissioned in August 2011.

Table 2 – Groundwater Monitoring Results (2006-2011)

Well Number	Date Sampled	DRO (mg/L)	GRO (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Lead (mg/L)
MW1	June 2006	ND	ND	ND	ND	**0.204**
MW1	October 2007	ND	ND	ND	ND	**0.0750**
MW1	June 2008	ND	ND	ND	ND	ND
MW1	May 2009	ND	ND	ND	ND	ND
MW1	June 2011	ND	ND	0.000240	ND	ND
MW2	June 2006	ND	ND	ND	ND	**0.269**
MW2	October 2007	ND	ND	0.000200	0.00123	0.00320
MW2	June 2008	ND	ND	ND	ND	ND
MW2	December 2008	ND	ND	ND	ND	ND
MW2	May 2009	ND	ND	ND	ND	ND
MW2	June 2011	ND	ND	ND	ND	ND
MW3	October 2004	**5.0**	**78.0**	**0.760**	**21.0**	**0.81**
MW3	June 2006	**1.88**	**30.7**	**0.407**	**8.96**	**0.0674**
MW3	October 2007	0.531	0.149	0.00288	0.000803	**0.106**
MW3	June 2008	ND	0.0563	0.000700	ND	ND
MW3	December 2008	ND	0.0700	0.00092	ND	ND
MW3	May 2009	ND	0.0701	ND	ND	ND
MW3	June 2011	ND	ND	ND	ND	ND
DWW	November 2005	ND	ND	ND	ND	0.0104
DWW	October 2007	ND	ND	ND	ND	0.00196
DWW	June 2008	ND	NS	ND	ND	0.00307
DWW	December 2008	ND	ND	ND	ND	0.00256
DWW	May 2009	ND	ND	ND	ND	ND
DWW	June 2011	ND	ND	ND	ND	ND
ADEC Cleanup Criteria (mg/L)	N/A	1.5	2.2	0.005	1.0	0.015

Note: ***Monitoring Wells MW1, MW2, and MW3 were formerly identified as Monitoring Well Points LOC-03, LOC-02, and LOC-01, respectively.***

mg/L = **milligrams per liter**
ND = **not detected above the laboratory detection limits**
NS = **not analyzed**
Bold = **result exceeded the Table C cleanup levels**

Cumulative Risk Evaluation

Pursuant to 18 AAC 78.600(d), 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 non-carcinogenic 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 included in Table 3.

Table 3 – Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	Pathway Incomplete	Contamination was excavated, and is no longer present in surface soil (0 to 2 feet below ground surface).
Sub-Surface Soil Contact	De-Minimis Exposure	Contamination remains in the sub-surface, but is below ingestion/direct contact cleanup levels.
Inhalation – Outdoor Air	De-Minimis Exposure	Contamination remains in the sub-surface, but is below inhalation cleanup levels.
Inhalation – Indoor Air (vapor intrusion)	De-Minimis Exposure	The source has been removed and the remaining volume of benzene contamination is very limited and capped with clean fill. Therefore risk via this pathway is considered insignificant.
Groundwater Ingestion	De-Minimis Exposure	Contamination remains in the groundwater, but is below the Table C groundwater cleanup levels.
Surface Water Ingestion	Pathway Incomplete	Surface water is not contaminated, and not used as a drinking water source.
Wild and Farmed Foods Ingestion	Pathway Incomplete	Contamination is not in an area that would be reasonably used for foraging activities.
Exposure to Ecological Receptors	Pathway Incomplete	There are no complete exposure pathways to ecological receptors at this site.

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

This site will receive a "Closed" 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 78.600(h). 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 78.276(f) 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) 269-7691.

Sincerely,

Joshua Barsis
Environmental Program Specialist

cc: Gary Droubay
RFA via email at dec.spar.cr@alaska.gov
Kamie Willis, DOL