THE STATE of ALASKA
GOVERNOR BILL WALKER

Department of Environmental Conservation
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program
610 University Avenue
Fairbanks, AK 99709-3643
Phone: 907-451-2143
Fax: 907-451-2155
www.dec.alaska.gov

File: 180.38.007

September 6, 2018

Ray Gipson
Livengood, LLC.
13634 N. Hidden Rock Place
Marana, AZ, 85658

Re: Decision Document: Tower Hill Mines - Livengood Camp Cleanup Complete Determination

Dear Ms. Gipson:

The Alaska Department of Environmental Conservation (ADEC), Contaminated Sites Program has completed a review of the environmental records associated with the Livengood Camp located at Milepost 74 of the Elliot Highway. Based on the information provided to date, it has been determined that the contaminant concentrations remaining on site do not pose an unacceptable risk to human health or the environment, and no further remedial action will be required as long as no new information becomes available that indicates residual contamination poses an unacceptable risk.

This Cleanup Complete determination is based on the administrative record for the Tower Hill Mines – Livengood Camp site which is located in the offices of the ADEC in Fairbanks, Alaska. This decision letter summarizes the site history, cleanup actions, regulatory decisions, and specific conditions required to effectively manage remaining contamination at this site.

Site Name and Location:
Tower Hill Mines – Livengood Camp
MP 74 Elliott Highway, Alaska

Name and Mailing Address of Contact Party:
Ray Gipson
Livengood LLC
13634 N. Hidden Rock Place
Marana, AZ 85658

ADEC Site Identifiers:
File No.: 180.38.007
Hazard ID.: 25969

Regulatory Authority for Determination:
18 AAC 75

Site Description and Background

The Livengood Camp, located at milepost 74 of the Elliott Highway was built in the 1970s to support construction of the Trans Alaska Pipeline System (TAPS). Since construction of the TAPS concluded the camp has been used intermittently for supporting mining operations in the Livengood mining district. In April 2012 cleanup was initiated as a result of two heating oil releases from piping servicing the camp's housing units. As cleanup progressed it became clear that there were a number of previously unknown historical petroleum releases which had impacted the subsurface soils. Cleanup activities removed 600 cubic yards (cy) of contaminated soils for thermal remediation. Some subsurface contaminated soils could not be removed without jeopardizing existing structures and were left in place.

Contaminants of Concern

During the site investigation and cleanup activities at this site, samples collected from soil and groundwater were analyzed for gasoline range organics (GRO), diesel range organics (DRO), benzene, toluene, ethylbenzene, and xylenes (BTEX), and polycyclic aromatic hydrocarbons (PAHs). Based on these analyses, the following contaminants were detected above the applicable cleanup levels and are considered Contaminants of Concern at this site:

- GRO
- DRO
- Benzene
- Ethylbenzene
- Xylenes

Cleanup Levels

Gasoline range organics, DRO and benzene were detected in soil above the approved Method 2 migration to groundwater cleanup levels for the under 40-inch precipitation zone. Gasoline range organics were also detected in soil above the approved Method 2 ingestion and inhalation cleanup levels. Method 2 soil cleanup levels are established 18 AAC 75.341(c), Table B1 and 18 AAC 75.341(d), Table B2. No contaminants were detected in groundwater above the approved groundwater cleanup levels established in 18 AAC 75.345 Table C.

Table 1 – Approved Cleanup Levels

Contaminant	Soil (mg/kg)	Groundwater (ug/L)
GRO	300	1.5
DRO	250	1.1
Benzene	0.022	4.6
Ethylbenzene	0.13	15
Xylenes	1.5	190

mg/L = milligrams per liter
ug/L = micrograms per liter

Characterization and Cleanup Activities

Cleanup efforts were initiated in response to two small heating oil releases in April 2012. An estimated 30 gallons of heating oil were released from piping servicing the 700 wing housing unit at the Livengood camp. Heating oil was released due to a faulty one way valve on the heating oil fuel lines.

Half of a cubic yard of contaminated soil was removed, then cleanup activities were suspended until the ground thawed. In May 2012 heavy machinery was mobilized to the site to finish excavating contaminated soil. As excavation continued it became clear that there were historic petroleum releases impacting the surface and subsurface soils down to 15 feet below ground surface (ft bgs). In total 600 cy of contaminated soils were removed from the site and thermally remediated at OIT, Inc. in North Pole, Alaska. An unknown volume of GRO-contaminated soil was left in place near the heating oil line due to structural concerns and the proximity of existing buildings.

Groundwater was encountered at 15 ft. bgs during excavation. Monitoring well 1 (MW-1) was installed while backfilling the excavation in 2012 but was installed with a bent casing making it impossible to sample with the bailer they had at the time. In 2014, two more monitoring wells were installed downgradient from MW-1 and one was installed upgradient from MW-1. Groundwater samples from these wells were below all cleanup levels in 2014 and 2015.

In 2017 a soil boring was advanced near the location where contamination remained in the former excavation sidewall. This soil boring was completed as MW-5 to better characterize possible contamination. Analytical soil sample results from the MW-5 boring indicated that remaining petroleum contamination is limited to a small area south of the former excavation at a depth of 8-15 ft bgs.

Using data collected from the excavation limits in 2012 and the 2017 soil boring, ADEC calculated mean soil concentrations for the impacted area, Mean soil concentrations were calculated at a 95% upper confidence limit (UCL) as described in 18 AAC 75.380(c)(1). The mean GRO concentration was 526 mg/kg and was the only contaminant to exceed soil cleanup levels.

Though soil remains in the subsurface above the migration to groundwater cleanup levels at this site, groundwater samples collected from Monitoring wells 1 through 5 in 2014, 2015, and 2017 were below the groundwater cleanup levels. Three years of sampling results indicate that contamination is not migrating to groundwater at concentrations exceeding groundwater cleanup levels. A final mobilization occurred in July of 2018 to decommission the monitoring wells.

Remaining contamination is in the subsurface overlain by several feet of clean fill and all buildings on site are a post and pad construction with open air between the ground and the building floor. Vapor intrusion to indoor air is not considered a significant pathway for this release.

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 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 meet the human health cumulative risk criteria for residential land use.

Table 2 – Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	De Minimis Exposure	Surface soils meets the applicable direct contact cleanup levels.
Sub-Surface Soil Contact	De Minimis Exposure	Subsurface soils meet the applicable direct contact cleanup levels.

Inhalation – Outdoor Air	De Minimis Exposure	Subsurface soils meet the applicable inhalation cleanup levels.
Inhalation – Indoor Air (vapor intrusion)	De Minimis Exposure	Petroleum contamination remains in the subsurface but all buildings on site are post and pad construction.
Groundwater Ingestion	De Minimis Exposure	Groundwater throughout the site meets the groundwater cleanup levels.
Surface Water Ingestion	Pathway Incomplete	The nearest surface water is the West Fork Tolovana River located 500 ft. away, contamination is not expected to migrate.
Wild and Farmed Foods Ingestion	Pathway Incomplete	Remaining contamination is limited to subsurface soils beneath a mining camp.
Exposure to Ecological Receptors	Pathway Incomplete	Remaining contamination is not expected to impact any ecological receptors.

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.

ADEC Decision

Soil and groundwater contamination at the site have been cleaned up to concentrations below the approved cleanup levels suitable for residential land use. Groundwater on site meets the applicable soil cleanup levels; therefore, ADEC has determined the residual soil contamination does not pose an unacceptable migration to groundwater concern. This site will receive a "Cleanup Complete" designation on the Contaminated Sites Database, subject to the following standard conditions:

Standard site closure conditions that apply to all sites include:

1. ADEC approval is required prior to moving any soil or groundwater off any site that is, or has been, subject to the site cleanup rules (see 18 AAC 75.325(i)). 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. In the future, if soil will be excavated it must be characterized and managed following regulations applicable at that time and ADEC approval must be obtained before moving the soil off the property.
2. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.
3. Groundwater throughout Alaska is protected for use as a water supply for drinking, culinary and food processing, agriculture including irrigation and stock watering, aquaculture, and industrial use. Contaminated site cleanup complete determinations are based on groundwater being considered a potential drinking water source. In the event that groundwater from this site is to be used for other purposes in the future, such as aquaculture, additional characterization and treatment may be required to ensure the water is suitable for its intended use.

This determination is in accordance with 18 AAC 75.380 and does not preclude ADEC from requiring additional assessment and/or cleanup action if new information indicates that contaminants at 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: Division Director, 555 Cordova Street, Anchorage, Alaska, 99501-2617, within 20 days after receiving the department's decision reviewable under this section. Adjudicatory hearing requests must be delivered to: Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, P.O. Box 111800, 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) 451-5174 or email at michael.hooper@alaska.gov.

Sincerely,

Michael Hooper
Project Manager

cc (via email): Spill Prevention and Response, Cost Recovery Unit