



THE STATE  
of **ALASKA**  
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION &  
RESPONSE  
Contaminated Sites Program

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File No: 1525.38.018

December 4, 2013

Mr. William Corbus  
AJT Mining Properties, Inc.  
5601 Tonsgard Court  
Juneau, Alaska 99801

RE: Decision Document: Thane Bunker Fuel Tanks  
Cleanup Complete Determination

Dear Mr. Corbus,

The Alaska Department of Environmental Conservation, Contaminated Sites Program (DEC) has completed a review of the environmental records associated with the contaminated site named Thane Bunker Fuel Tanks. Based on the information provided to date, the DEC has determined that the contaminant concentrations remaining on site do not pose an unacceptable risk to human health or the environment, and this site will be closed.

This decision is based on the Thane Bunker Fuel Tanks Contaminated Site administrative record, which is located in the offices of the DEC in Juneau, Alaska. This letter summarizes the decision process used to determine the environmental status of this site and provides a summary of the regulatory issues considered in the Cleanup Complete Determination.

**Site Name and Location**

Thane Bunker Fuel Tanks  
0 Thane Road  
Juneau, Alaska 99801  
Parcel No. 1B0401000030

**Address of Contact Party**

Mr. William Corbus  
2601 Tonsgard Court  
Juneau, Alaska 99801

**DEC Site Identifiers**

Hazard ID 899  
File: 1513.38.018  
Source Area ID 71878

**Regulatory Authority**

Title 18 Alaska Administrative Code 75

## Site Description and Background

The Alaska-Juneau Gold Mine (AJ) operated in Juneau from 1912-1944 producing more than \$80 million in gold. Sometime in the early 1900's the AJ mine installed two 115'-diameter steel fuel tanks to store and supply Bunker-C fuel oil for the mine's operation and the delivery into town. The tanks were placed on a bedrock bench leveled with shot rock from the mill. It is separated from Thane Road by a steep embankment that extends approximately 200' above the roadway to the tank site.

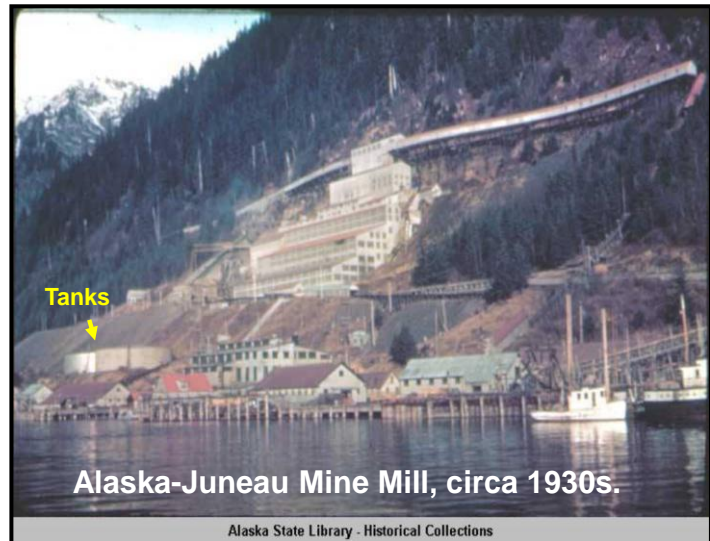


Figure 1: Early AJ Mine Photo with Tanks

The Gastineau Channel tidelands are located 260' on the west side of Thane Road and to the east side of the fuel tank site is a steep hillside where the AJ mill had been located. All the mill structures have been removed with the exception of the AJ mine complex ruins which are set in the hillside of Mt. Roberts. The Site is located south of downtown Juneau. A booming, tourist-driven waterfront area is across Thane Road, west of the Site, and is the current location for the cruise ship docks and many light industrial and commercial operations. The Site, at this time, is undeveloped and situated on a portion of properties zoned for mixed use and rural reserve. Small seasonal drainages run through and converge at a point on site and then drain toward the Gastineau Channel.

By the time the mill closed in the 1940's, the southern-most tank had been abandoned and removed except for the tank bottom and backfilled with clean soil. The circular steel wall protruded a few inches above the ground surface. The northern-most tank remained in place partially full of Bunker-C fuel oil. The north tank remained largely intact until its roof collapsed in the winter of 1971-72. In later years the walls of the tank were eventually cut to approximately 4 feet from its bottom: however, fuel continued to remain in the tank.

The Contaminated Sites Program (CSP) has written records back to 1990 detailing the efforts to clean up this site. Over the last two decades, both the DEC and the Spill Prevention and Response Division have undergone reorganization and some of the original programs that had provided cleanup oversight no longer exist today. The documented record begins in 1990 when the Juneau District Office (JDO) responded to a citizen complaint. Thirteen drums and oil-stained soils were found around the north tank, but no active spill was reported. The Southeast Regional Office (SERO) Contaminated Site Program (CSP) project manager began a dialog with the owner of the property requesting them to restrict public access, submit an onsite assessment, and a cleanup work plan. The site was then listed on the CSP contaminated sites database in July 1990. In an attempt to clean up the site, the CSP project manager requested funding from the Oil and Hazardous Substance Release Response Fund (OHSRRF).

The request was approved but rescinded with a new incoming administration. No active work was pursued until a spill was reported in February of 1993. The SERO Regional Administrator authorized spending from the OHSRRF to respond to the active oil spill. The U.S. Coast Guard (USCG) also responded. At this time, the USCG issued a letter of Federal Interest in their attempt to secure a cleanup plan from the RP, Chuck Keen, who was the landowner at the time.

### **Contaminants of Concern**

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

Diesel Range Organics (DRO)  
Residual Range Organics (RRO)

### **Cleanup Levels**

#### Soil

The cleanup criteria for soil for this site was approved by DEC in June 2008. The human health-related ingestion levels are applicable at this site. RRO and DRO were detected in soil above the approved Method 2 Ingestion cleanup levels for the over 40-inch precipitation zone, established in 18 AAC 75.341 (d), Table B2.

<u>Contaminant</u>	<u>Cleanup Level (mg/kg)</u>
RRO	8,300 mg/kg
DRO	8,250 mg/kg

#### Groundwater and Surface Water

As the site features consist of soil over fractured bedrock, groundwater at the site is not a viable source for drinking water and the human health pathway is incomplete. Additionally, the area is served by the Juneau City and Borough's municipal water supply system. However, surface water percolating the through fractured bedrock can eventually make contact with marine waters. Therefore, the surface water pathway is the potential route of concern, and the standards under 18 AAC 70 are the applicable criteria.

<u>Contaminant</u>	<u>Surface Water Regulatory Criteria (18 AAC 70)</u>
Total Aromatic Hydrocarbons (TAH)	10ug/L
Total Aqueous Hydrocarbons (TAqH)	15ug/L

## Characterization and Cleanup Activities



Figure 2. Southwest side of the tank showing the intercept ditch and drain valve installed in February 1993. Note the ditch construction debris which was placed in the tank.

In 1994, DEC and the U.S. Coast Guard initiated a cleanup operation where woodchips were added to the north tank in an attempt to solidify the oil and then incinerate the solid oil wastes. The cleanup was not completed and the north tank was left with a mixture of Bunker-C fuel, water, wood chips, contaminated soil, and other debris.

In 1995, the Alaska Department of Transportation and Public Facilities (ADOT&PF) came forward with the Thane Road

Reconstruction Project. A 1996 Preliminary Site Investigation (PA/SI) was prepared for ADOT&PF in anticipation of the road construction project to determine the extent contaminated soils migrated toward the road and project site. The PA/SI was conducted by Easton Environmental and included the first record of laboratory sampling at the site. Lab results revealed that the petroleum hydrocarbons present were 20 percent (by weight) diesel range and 80 percent residual range. Sample analyses of the product in the north tank were: 140,000 mg/kg Diesel Range Organics (DRO) and 470,000 mg/kg Residual Range Organics (RRO) and the south tank: 130,000 mg/kg DRO and 480,000 mg/kg RRO. Four test pits were excavated; two near Thane Road along an overflow route and two between the north tank and the top of the embankment. Samples were collected at the surface and at 2-foot interval depths to a maximum depth of 8-feet. Test pit locations can be seen in Figure 4. Laboratory analysis indicated areas of petroleum hydrocarbon contamination between the north tank and the top of the embankment leading down toward the road. The contamination appeared to be shallow and decreased with distance from the tank. One of the four test pits (TP1-1) indicated a total petroleum hydrocarbon concentration of 33,000 mg/kg above the DEC Leaking Underground Storage Tank Program cleanup standard of 2000 mg/kg. All other test pit analyses were below the DEC levels of concern. Approximately 65 tons of contaminated soil located in the ADOT&PF project area was removed but its final location is unknown.



Figure 3. The northern tank prior to removing the collapsed roof. May 7, 1994.



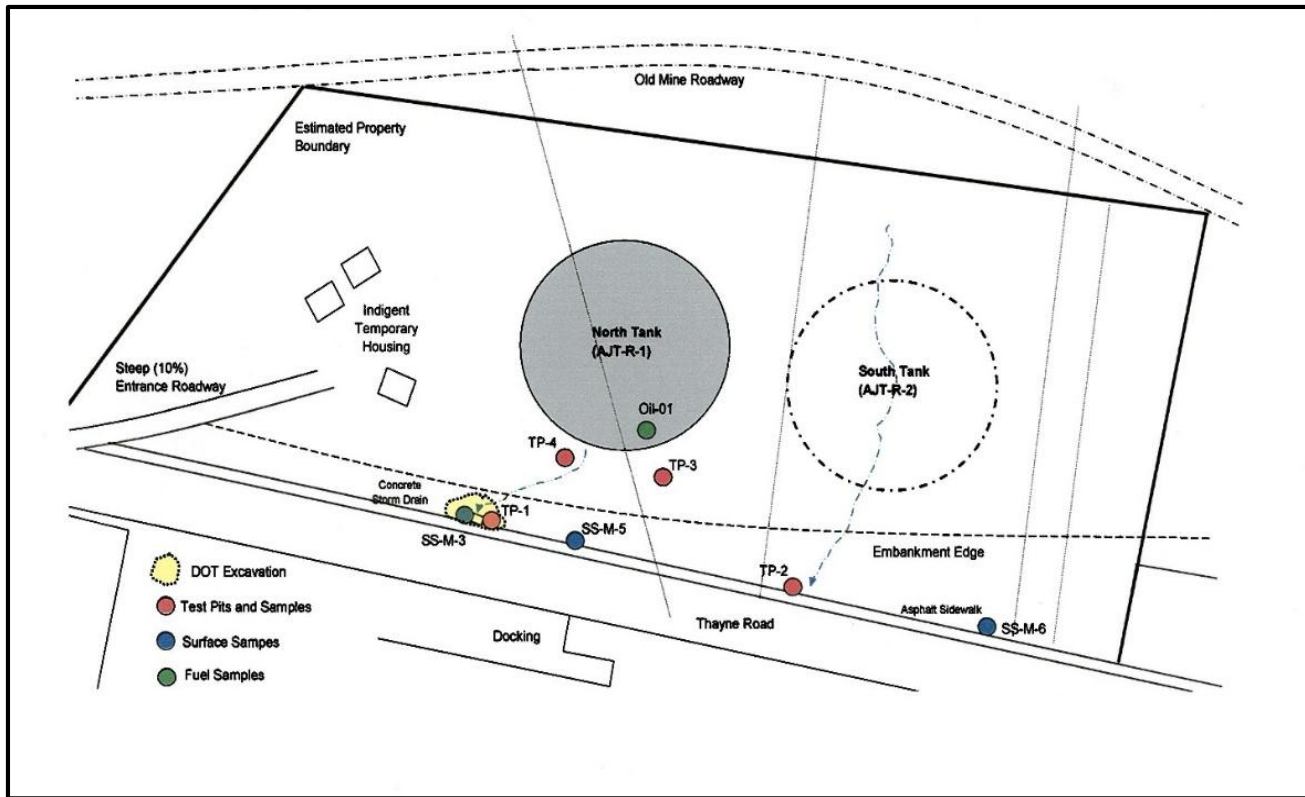


Figure 4: Test Pit locations from the 1996 Easton Environmental Report prepared for ADOT&PF

Cooperative efforts to develop and implement a cleanup plan between interested potentially responsible parties (PRPs) and DEC's Southeast Area Response Team (SART) during the 1996-1997 seasons were unsuccessful. By 1997, it had been five years since there was a reported spill from the tank and as such was no longer viewed as an imminent or substantial threat. It was then determined that SART, as the section tasked with response to active oil discharges, would not continue work on this site. Management of the site was transferred back to the Contaminated Sites Remediation Program. Following a number of years of inactivity, during which time the current owner, Chuck Keen, passed away (April 2003), DEC Contaminated Sites Program approved a cleanup work plan submitted by the landowners' consultant, DMC Technologies of Rexburg, Idaho, in August 2005. This marked the first significant clean up activity that had taken place, however; it was left incomplete. The partial cleanup was completed between September and November 2005. Cleanup entailed removing the south tank walls below grade, plus on-site incineration of some of the oil and mixed debris in the north tank. The project was shut down at the end of November 2005 due to technical difficulties and freezing conditions. Due to financial limitations of the current landowners (inheritors to the estate of Chuck Keen), no cleanup activity occurred at the site in 2006.

In early 2007, DEC contacted the PRPs by letter and held a meeting on June 12, 2007. They were given until mid-August 2007 to discuss options for disposing the oil, sludge, and potentially contaminated water as an interim removal action under 18 AAC 75.330. In July 2007, NORTECH Environmental

Engineering, Health and Safety (Nortech), on behalf of the PRPs, measured the north tank's contents and collected a water sample for laboratory analysis. Nortech reported the tank contained a 1/4-inch thick layer of oil estimated at 1,700 gallons, a 12-inch thick layer of water estimated at 80,000 gallons, and a 13-inch thick layer of sludge estimated at 85,000 gallons. Debris piles consisting of concrete, garbage, lumber, steel, and wood were also present within the tank. In addition, Nortech reported four 3,000-gallon and three 5,000-gallon steel tanks containing Bunker-C oil were present at the site. One water sample was collected from the north tank and analyzed for volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), PCBs, total metal concentrations, inorganic anions, and pH. VOCs were not detected and acenaphthylene was the only PAH detected at a very low concentration and well below the applicable DEC cleanup criterion. Low concentrations of zinc were detected, but below regulatory criteria. PCB compounds were not detected.

With technical input from DEC, Bureau Veritas Inc. of Pleasantville, California was ultimately chosen by the PRPs to complete the interim removal project. In August 2007, Bureau Veritas completed the removal of the north tank's oil, sludge, water, and debris. The solidified sludge was transported on barges for disposal in lined containers and sent to Rabanco's Roosevelt Regional Landfill in Roosevelt, Washington. The inert solid waste materials were also shipped to Rabanco. The riveted 4-foot high steel perimeter walls and the tank bottom, along with the associated tanks filled with Bunker-C oil left behind by DMC Technologies Inc. were all removed. DEC determined that Bureau Veritas met the requirements for the interim removal actions they conducted and no further action was required pursuant to the approved plan. Cleanup levels were planned to be established during the next phase of the project as part of the work plan development and approval process.

In 2008, Southeast Management Services (SMS) prepared a cleanup plan to remove known and suspected areas of oil-contaminated soil in both the north and south tank sites and the adjacent parking/turnaround area. The cleanup plan proposed to excavate all contaminated soil to the approved cleanup criteria set at a human health ingestion level of 8,250 mg/kg for diesel range organics (DRO) and 8,300 mg/kg for residual range organics (RRO). Confirmation soil sampling was performed to verify that all contaminated soils were discovered and excavated. Laboratory analysis verified that the concentrations of PAHs in soil were all nondetect. Four bioremediation cells were created in the areas of the old north and south fuel tanks. Bioremediation of the contaminated soils began in the late summer of 2008 and continued into the fall until the bioremediation cells were covered. The bioremediation cells were uncovered in May of 2009 to re-initiate treatment, yet at this point in time, a lack of financial resources on the part of the landowner prevented any follow-up tilling for the 2009 field season and no further remediation activity took place.

On August 24, 2012, DEC received Nortech's report titled *Site Assessment Report for the Alaska Juneau Gold Mine Bunker Fuel Tanks Site*, presenting the results of sampling activities completed to characterize the levels of contamination in the various cells and stockpiles at the Site. However, Nortech failed to comply with 18 AAC 75.335(b), which requires that a site characterization workplan be submitted to DEC for approval prior to conducting work at a site. As a result, the report failed to address all remaining data gaps at the site and therefore was not sufficient to achieve regulatory closure. After this report was

received, DEC staff performed a field visit to find the condition of the bioremediation cells and stockpile to be poor. Soils were saturated and the cells and stockpile were only partly lined. In October of 2012, DEC contacted AEL&P, one of the known PRPs responsible for cleanup and requested they complete the additional site work necessary to bring closure to this site. DEC did consider the data in Nortech's report, under the agreement that future work at the Site must have a workplan reviewed and approved by DEC before work may commence. Ultimately, the 2012 Nortech report confirmed the presence of four existing bioremediation cells across the north and south tank sites and a stockpile that existed in the parking turnaround area (figure 5). Four of the five bioremediation cells were assessed by advancing soil borings and collecting field screening samples and laboratory analysis samples. Shallow surface soils were hand-excavated adjacent to the bioremediation cells and in the surrounding drainage pathway to evaluate leaching from the cells. The work Nortech completed in August 2012 did not address the outstanding issues necessary for achieving site closure; therefore, DEC requested Nortech to conduct additional assessment to address and manage these data gaps that remained.

**Table 1: Nortech's August 2012 Soil Sample Laboratory Results**

Stockpile Number	Laboratory Sample ID	Sample Depth (feet bgs)	DRO Concentration (mg/kg)	RRO Concentration (mg/kg)
Stockpile 1	S1-3*	2	706	2400
	12-1032 Dup*	2	723	2140
	S1-4	2	849	2720
	S1-6	2	466	1350
Stockpile 2	S2-3	2	728	3420
	S2-4	2	1660	802
	S2-7	2	802	3650
Stockpile 3	SP3-4	1	2370	5470
	SP3-6	2	160	367
	SP3-7**	2	490	1220
	Dup-2**	2	1490	3520
	SP3-10	1	3190	6580
	SP3-13	1.5	5220	<b>10100</b>
Stockpile 4	SP3-15	1.8	2620	5260
	S4-1	1	989	2960
	S4-2	1.5	4550	<b>10900</b>
	S4-6***	1.5	22.3 U	67.2
Test Pits	Dup-4***	1.5	41.5	125
	TP-1	1	24.1 U	24.1 U
	TP-2	surface	4660	<b>9680</b>
	TP-3	0.5	166	883

Notes: Results in **BOLD** exceed DEC Site cleanup levels

Shortly after DEC's request to AEL&P, Nortech submitted a Corrective Action Plan (CAP) in November 2012 to continue the bioremediation treatment implemented by SMS in 2008-2009. A revised CAP was received by DEC in February 2013 and the additional site assessment work began in April 2013.

Table 1 shows that bioremediation cells 1 and 2 had contaminant concentrations below DEC cleanup criteria; these were not excavated for further treatment. Bioremediation cell 4 was relocated to the former South Tank footprint where the soil was integrated with bioremediation cell 3 (refer to Figure 5). The parking turnaround stockpile was also relocated to bioremediation cell 3 (bio-cell 3) in addition to two locations within the parking turnaround area (Ex1 and Ex2) that were identified in the SMS Report (2012) as having contamination above cleanup levels. The sediment within the existing sump adjacent to bio-cell 3 was excavated and also placed in the cell for treatment.

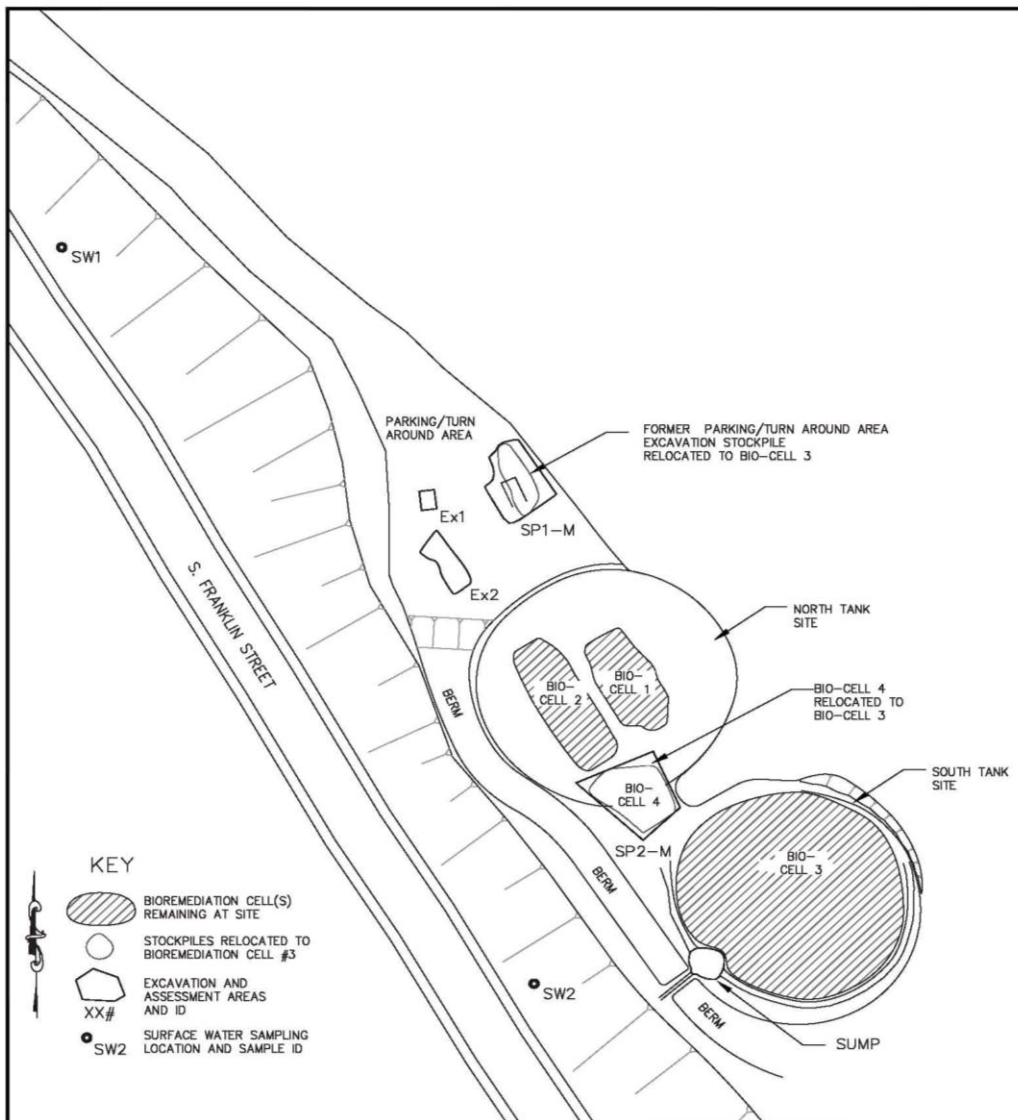


Figure 5: Bioremediation Cells locations 2013- Nortech Site Assessment and Remediation Report, 2013



Upon completion of excavation, the sump was field screened and sampled, a new liner was placed in the sump, and sorbent booms were installed at the outfall of the sump. The soil within bio-cell 3 was turned and mixed after assessment activities were completed.

DEC required that the additional site assessment activities include the collection of surface water samples for total aromatic hydrocarbons (TAH) and total aqueous hydrocarbons (TAQH). The TAH and TAQH criteria must be met in water samples collected from surface runoff and downgradient seeps or water bodies that are recharged by surface water infiltrating the contaminated site in order to show that the migration to surface water pathway is protected. The potential for off-site contaminant migration via surface water run-off was questioned by DEC because this pathway had not been evaluated during previous investigations and past releases from the site had migrated to nearby surface water.

During the June 2013 site assessment effort three surface water samples were collected and analyzed. The water quality standard is 10 ug/L for TAH and is defined as the sum of the BTEX volatile monoaromatic hydrocarbon compounds. The water quality standard is 15 ug/L for TAQH and is defined as the sum of the concentration of TAH and the PAHs listed in EPA Method 6270D. Surface water results were non-detect for all water samples with the exception of SW2. Toluene was detected in sample SW2 at a concentration of 1.45 micrograms per liter ( $\mu\text{g/L}$ ), but this is below the applicable criteria. Toluene was not detected in sample SW3 which is the duplicate sample of SW2.

Nortech proposed to assess the effectiveness of the bioremediation treatment at the site using the department's Multi-Incremental (MI) sampling technique. This was approved by DEC based on 18 AAC 75.380(c)(1), which allows the department to determine compliance using the mean soil concentration at the 95<sup>th</sup> percent upper confidence limit at the discretion of data quality.

Bio-cell 3 was assessed as a single decision unit, however, Nortech failed to follow the DEC Draft *Guidance on Multi Increment Soil Sampling* (March 2009) and the data for the bioremediation cell was consider invalid. At the request of DEC, Nortech resampled the Site in order to meet the triplicate sample requirement and to verify the MI sample for DRO and RRO represented the decision unit. The 95% UCL for DRO was calculated to be 1792 mg/kg and for RRO it is 2787mg/kg. These values are below the designated cleanup levels for the Site, and meet the final reporting requirements found in 18 AAC 75.

### **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, DEC has determined that residual contaminant concentrations do not pose a cumulative human health risk.

**Pathway Evaluation**

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using DEC’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 2.

**DEC Table 2 – Exposure Pathway Evaluation**

<b>Pathway</b>	<b>Result</b>	<b>Explanation</b>
Surface Soil Contact	Exposure Controlled	Cleanup occurred in fall 2007. Surface stains were cleaned up beneath the tank when it was cut up for removal. in 2013, MI sample results for soil samples were found to be below human health ingestion levels
Sub-Surface Soil Contact	Exposure Controlled	MI Sampling results are below Method two Table B2 ingestion levels. It is reported that the samples were collected at depth from 1-3' bgs
Inhalation – Outdoor Air	Pathway Incomplete	There are no volatile compounds present at the site
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	Currently, there are no buildings at the site. DRO and RRO levels are below the commercial/residential levels for risk exposure
Groundwater Ingestion	Pathway Incomplete	There are no public drinking water systems or private drinking water wells within the immediate proximity or within 100ft downslope of the site.
Surface Water Ingestion	Pathway Incomplete	Surface water hydraulically connected to the site is not of sufficient quality or quantity for a potable water source.
Wild Foods Ingestion	Pathway Incomplete	The site and the surrounding urban area are not a wild foods harvest area. Surface water drainage has the potential to reach the Gastineau Channel, however, cleanup at the site has eliminated this pathway and there is no potential for contaminants to bioaccumulate in flora or fauna.
Exposure to Ecological Receptors	Pathway Incomplete	Although bears and bald eagles frequent the area around the site, no evidence of stress to ecological receptors from levels of petroleum contamination in soil has been identified. With the removal of the open tanks of free product, a significant hazard to ecological receptors has been mitigated.

Notes to Table 1: “Pathway incomplete” means that in DEC’s judgment contamination has no potential to contact receptors. “Exposure controlled” means there is an administrative mechanism in place



cc: Sally Schlichting, SE Field Ops Unit Manager, via electronic mail  
William Janes, CS, Program Manager, via electronic mail  
Ruth Hamilton Heese, Senior Assistant Attorney General, Alaska Department of Law, via electronic mail  
Jason Ginter, NORTECH Environmental Engineering, via electronic mail  
DEC SPAR Cost Recovery via electronic mail

limiting land or groundwater use, or a physical barrier in place that deters contact with residual contamination.

### **DEC Decision**

DEC appreciates the continued efforts of AEL&P's endeavor to help coordinate the cleanup of the Thane Bunker Fuel Tank Site. It is because of this and the remedial actions completed that have served to adequately excavate and remove contaminated soil from the site. Based on the information available, DEC has determined there is no longer a risk to human health or the environment and no further assessment or cleanup action is required. This site will be designated as closed on the Department's database.

### **Standard Conditions**

1. Any proposal to transport soil or groundwater off-site requires DEC 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. (See attached site figure.)
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 in the state of Alaska is protected for aquaculture use. In the event that an aquaculture facility uses groundwater from this site in the future, additional testing may be required to ensure that aquatic life criteria under 18 AAC 70 are not exceeded.

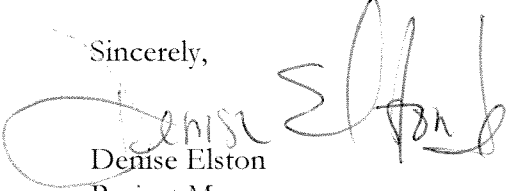
This determination is in accordance with 18 AAC 75.380 and does not preclude DEC from requiring additional assessment and/or cleanup action if future information indicates that this site may pose an unacceptable risk to human health or the environment.

### **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 99801, 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 99801, 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 the DEC project manager, Denise Elston at (907) 465-5207.

Sincerely,

  
Denise Elston  
Project Manager