



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

**Department of
Environmental Conservation**

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

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ADEC File #: 2425.38.003

Certified Mail, Return Receipt Requested
7017 2400 0000 6055 2371

December 4, 2018

Richard John
Kwigillingok IRA Council
P.O. Box 90
Kwigillingok, AK 99622

Re: Decision Document: Kwigillingok Pipeline Spill
Cleanup Complete Determination

Dear Mr. John,

The Alaska Department of Environmental Conservation, Contaminated Sites Program (ADEC) has completed a review of the environmental records associated with the Kwigillingok Pipeline Spill site, which is located about 500 feet west of Kwigillingok School in Kwigillingok. 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 unless new information becomes available that indicates residual contaminants may pose an unacceptable risk.

This Cleanup Complete determination is based on the administrative record for the Kwigillingok Pipeline Spill site which is located in the offices of the ADEC in Juneau, 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:

Kwigillingok Pipeline Spill
500 feet west of Kwigillingok school
Kwigillingok, AK 99622

ADEC Site Identifiers:

File # 2425.38.003
Hazard ID: 3381

Name and Mailing Address of Contact Party:

Richard John
Kwigillingok IRA Council
P.O. Box 90
Kwigillingok, AK 99622

Regulatory Authority for Determination:

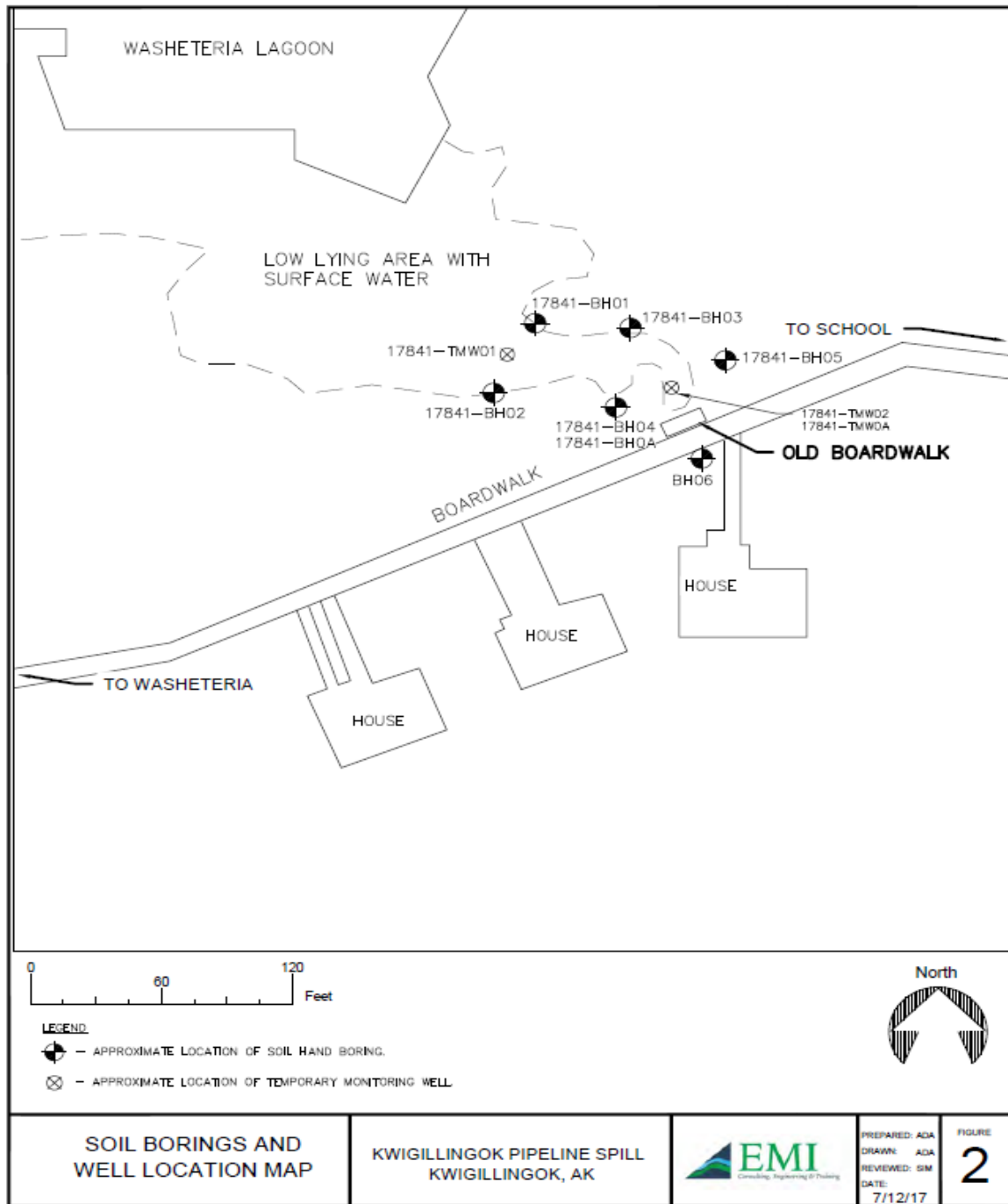
18 AAC 75

Site Description and Background

The site is located approximately 500 feet west of the Kwigillingok School and approximately 500 feet southeast of the Kwigillingok Washeteria, adjacent the boardwalk between both buildings. Soil conditions consist of organic-rich marsh integrated with sandy silt towards an upper permafrost boundary at approximately three feet below ground surface (bgs). Groundwater is found atop this permafrost boundary and surface water can be seasonally found pooled atop the organic-rich marsh surface in warmer months. The site is located south and hydrologically-upgradient of the Washeteria Lagoon.

A diesel spill was noticed by residents during a fuel delivery by river barge on September 9, 1999. This spill incident was reported to the Central Alaska Response Team (CART) the next day. Initial spill volume was estimated at 1,000 gallons, but revised to 384 gallons following a fuel tank reading. Approximately 250 gallons of product were recovered from the fuel-stained marsh area and placed back into the diesel tank.





Contaminants of Concern

During the site investigation activities at this site, soil and groundwater samples were collected and analyzed for the analytes listed below. Based on these analyses, the following contaminants were detected above the applicable cleanup levels and are considered Contaminants of Concern at this site:

- Diesel Range Organics (DRO)
- Gasoline Range Organics (GRO)
- Residual Range Organics (RRO)
- Toluene
- Total Xylenes

Cleanup Levels

DRO and RRO were detected in soil above the Method Two Migration to Groundwater soil cleanup levels for the under 40-inch precipitation zone, established in 18 AAC 75.341 (d), Table B2. RRO was detected in groundwater above the Table C Groundwater cleanup level established in 18 AAC 75.345 Table C.

Table 1 – Approved Cleanup Levels

Contaminant	Soil (mg/kg)	Groundwater (mg/L)
DRO	250	1.5
GRO	300	2.2
RRO	11000	1.1
Toluene	6.7	1.1
Total Xylenes	1.5	0.19

mg/kg = milligrams per kilogram
mg/L = milligrams per liter

Characterization and Cleanup Activities

A Site Reconnaissance was conducted in October 2000 by Bristol Environmental & Engineering Services Corporation (Bristol). According to the January 2001 report, a spill of approximately 1,000 gallons of diesel was reported to the Central Alaska Response Team (CART) on September 10, 1999. Based upon the Washeteria's fuel tank readings, the estimated spill quantity was revised to 384 gallons. Approximately 250 gallons of that was recovered during cleanup and placed back into the tank. The Kuskokwim River, approximately one-half mile away, was not affected.

Staining and fuel odors were noted in the spill area during the October effort. As such, six soil borings were advanced in the vicinity of the spill to a depth of six inches bgs. Samples were collected from each boring and were field screened using a photoionization detector (PID). PID readings ranged from 0 ppm to 234 ppm. The soil sample with the highest PID reading (collected from Soil Boring SB5) was submitted for laboratory analysis of DRO, GRO, and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Sample results for Boring SB5 were as follows: DRO at 90,700 mg/kg, GRO at 480 mg/kg, ethylbenzene at 1.58 mg/kg, and total xylenes at 22.9 mg/kg. All other soil results were below the most stringent soil cleanup levels.

Surface water was observed to flow generally north, towards the Washeteria lagoon. As such, it was also assumed that groundwater flows to the north, in the topographically downgradient direction.

Additional characterization was performed in May of 2017 in an effort to further characterize the nature of the release, as well to determine the extent of contamination in soil and groundwater. The field effort was completed on May 31st and included the installation of six soil boring and two groundwater monitoring wells. Although a third monitoring well was planned, shallow permafrost (encountered between at 10 and 18 inches bgs) prevented the installation of the third well. A total of seven soil samples, including a duplicate, were collected for laboratory analysis from the six soil borings. A total of three groundwater samples, including a duplicate, were collected from the two monitoring wells.

Soil conditions consisted of a combination of peat and organic rich silty-sand. Groundwater, or rather porewater, was present at about one foot bgs. Because of the high organic content in the soil it was anticipated that biogenic interference may contribute to elevated concentration; thus, all of the soil samples destined for analysis of DRO and RRO were analyzed with and without silica gel.

Results of the 2017 sampling event are shown below in Tables 2 and 3. In soil, DRO was present in all six borings at concentrations ranging from 231 mg/kg to 1,020 mg/kg before silica gel analysis. After silica gel analysis, all DRO results (except from Sample 17841-BH02) were below the most stringent migration to groundwater cleanup level of 230 mg/kg. Sample 17841-BH02 exhibited a concentration of DRO at 321 mg/kg following silica gel analysis. All soil RRO results after silica gel analysis were below the most stringent migration to groundwater cleanup level. For groundwater, only RRO (2.46 mg/l) was confirmed above the Table C groundwater cleanup level of 1.1 mg/L.

Table 2: Soil Boring Sample Results

Soil Boring Samples - Kwigillingok Pipeline Spill									
Analyte	ADEC Cleanup Level*	Boreholes							Quality Control
		17841-BH01	17841-BH02	17841-BH03	17841-BH04	17841-BH0A ~	17841-BH05	17841-BH06	Trip Blank
Field Headspace - ppmv	-	0.6	0.7	9.7	1.3	1.3	1.2	1.1	
Depth - feet bgs	-	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0.5-1	
GRO - mg/kg	300	11.4 U	37.4 U	29.4 U	32.4 U	22.1 J	30.3 U	25.7 U	1.94 U
DRO - mg/kg	250	461	1020 J	393	273	231 J	929	552	-
DRO Silica Gel - mg/kg	250	26.5 J	321 U	65.5 U	93.8 J	117 U	99.5 U	56.5 U	-
RRO - mg/kg	11,000	3840	13000	4190	1480	1150	7830	5630	-
RRO Silica Gel - mg/kg	11,000	290	1420	360	292	177 J	456	452	-
VOC									
Benzene - ug/kg	22	57.0 U	187 U	147 U	162 U	161 U	152 U	129 U	9.68 U
Toluene - ug/kg	6,700	246	374 U	1560	324 U	322 U	1670	1770	19.4 U
Ethylbenzene - ug/kg	130	114 U	374 U	294 U	324 U	322 U	303 U	257 U	19.4 U
Xylenes - ug/kg	1,500	228 U	750 U	590 U	645 U	645 U	605 U	515 U	11.6 U
PAH	varies	-	-	-	ND**	-	-	-	-

Table 2 Legend: GRO: gasoline range organics; DRO: diesel range organics; RRO: residual range organics; VOCs: volatile organic compounds; PAHs: polycyclic aromatic hydrocarbons; ppmv: parts per million by volume; bgs: below ground surface; ADEC: Alaska Department of Environmental Conservation; mg/kg: milligrams per kilogram; µg/kg: micrograms per kilogram; U: analyte was not detected at a concentration above the laboratory limit of detection; J: estimated value; light shaded: limit of detection exceeds the applicable cleanup level; dark shaded: result exceeds applicable cleanup level.

Table 3: Groundwater Sample Results

Groundwater Samples - Kwigillingok Pipeline Spill					
Analyte	ADEC Cleanup Level***	Groundwater Samples			Quality Control
		17841-TMW01	17841-TMW02	17841-TMW0A~	Trip Blank
Water Depth - feet bgs	-	0.50	0.50	0.50	
GRO - mg/L	2.2	0.205	0.0463 J	0.0468 J	0.100 U
DRO - mg/L	1.5	1.2	0.991	1.16	-
RRO - mg/L	1.1	1.00	1.71	2.46	-
VOC					
Benzene - ug/L	4.6	0.25 U	0.25 U	0.25 U	0.500 U
Toluene	1,100	47.5	7.47	8.4	1.00 U
Ethylbenzene - ug/L	15	0.5 U	0.5 U	0.5 U	1.00 U
Xylenes - ug/L	190	1.67	0.860 J	0.930 J	2.00 U

Table 3 Legend: GRO: gasoline range organics; DRO: diesel range organics; RRO: residual range organics; VOCs: volatile organic compounds; bgs: below ground surface; ADEC: Alaska Department of Environmental Conservation; mg/l: milligrams per liter; µg/l: micrograms per liter; U: analyte was not detected at a concentration above the laboratory limit of detection; J: estimated value; light shaded: limit of detection exceeds the applicable cleanup level; dark shaded: result exceeds applicable cleanup level.

Based on a review of the chromatograms, it was determined that the RRO concentrations present in soil and groundwater were elevated due to biogenic interference. As such, post-silica gel analysis is considered representative of current contaminant concentrations remaining on site. All post-silica gel soil sample results are below risk-based cleanup levels and do not pose an unacceptable risk to persons walking by on the nearby boardwalk. Additionally, there are no remaining visual or olfactory signs of remaining contamination at the site.

In addition to being influenced by biogenics, the water sample is not considered to be representative of a source aquifer that could be consistently used. The sample was collected from water that is perched above the permafrost, and from an area that is subject to seasonal flooding. Drinking water is currently derived from a lake reservoir location 3,000 feet away from this site, is treated, and hauled by residents from the washeteria.

Impacts to human and/or ecological receptors from this spill site are unlikely.

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.

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 or Pathway Incomplete. A summary of this pathway evaluation is included in Table 2.

Table 4 – Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	De-Minimis Exposure	Petroleum contamination remains in the surface soils, but below ingestion cleanup levels. Additionally, the contamination is present within marshy, organic-rich soils below a boardwalk, which limits presence onsite.
Subsurface Soil Contact	De-Minimis Exposure	Petroleum contamination remains in the subsurface soils, but below ingestion cleanup levels.
Inhalation – Outdoor Air	De-Minimis Exposure	Petroleum contamination remains in the surface and subsurface soils, but below inhalation cleanup levels.
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	Site is marsh, and is adjacent to wooden boardwalk to the Washeteria. There are no planned or reasonably expected buildings. Additionally, any building would be constructed on pilings because of the marshy soils and shallow permafrost.
Groundwater Ingestion	Pathway Incomplete	Drinking water is currently derived from a lake reservoir (3,000 feet away), is treated, and hauled by residents from the washeteria. The school operates its own surface water treatment facility, but shares a sewage lagoon with the washeteria. Homes are not plumbed. Honey buckets are disposed of by residents. Infrastructure improvements are underway to develop a new community system. Site is upgradient of Washeteria lagoon. The porewater at the site cannot be consistently used due to low volume.
Surface Water Ingestion	Pathway Incomplete	Drinking water is currently derived from a lake reservoir, is treated, and hauled by residents from the washeteria. This reservoir is located 3,000 feet from the spill site. Although this site is subject to seasonal flooding, the surface water is not a sustainable source for drinking water. Sheens were not observed on surface water and surface water was not impacted.
Wild and Farmed Foods Ingestion	Pathway Incomplete	Site is marsh, and is adjacent to the wooden boardwalk to the Washeteria. The site is upgradient of the Washeteria lagoon and is seasonally flooded with surface water. Subsistence gathering does not currently, and is not expected to occur at this site. Remaining contaminants are not bioaccumulative.

Exposure to Ecological Receptors	Pathway Incomplete	Site is marsh, and is adjacent to the wooden boardwalk to the Washeteria. The site is upgradient of the Washeteria lagoon and is seasonally-flooded with surface water. Although some limited unknown terrestrial routes may be present, there are no critical habitats that are affected by this contamination and the footprint of contamination is relatively small.
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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

Petroleum contamination remains onsite; however, the levels of contamination are not considered a risk to human or ecological receptors. This site will receive a “Cleanup Complete” designation on the Contaminated Sites Database, subject to the following standard conditions:

Standard Conditions

1. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.
2. 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 testing 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 future information indicates that contaminants at this site may pose an unacceptable risk to human health, safety, or welfare or to 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, 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 the 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) 465-5368 or email at amy.rodman@alaska.gov.

Sincerely,



Amy Rodman
Project Manager

Note: This letter is being transmitted to you in electronic format only. If you require a paper copy, let us know and we will be happy to provide one to you. In the interest of reducing file space, the Division of SPAR/Contaminated Sites Program is transitioning to electronic transmission of project correspondence.

cc: ADEC Division of Spill Prevention and Response, Cost Recovery Unit