



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Department of Environmental
Conservation

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

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File: 2569.38.019.07

June 25, 2020

Stephen Krause
AFCEC/CZOP
10471 20th St, Ste 348
JBER, AK 99506-2201

Re: Decision Document: King Salmon AS GWZ 5 SA036
Cleanup Complete Determination

Dear Mr. Krause:

The Alaska Department of Environmental Conservation, Contaminated Sites Program (ADEC) has completed a review of the environmental records associated with the King Salmon AS GWZ 5 SA036 site located in King Salmon. 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 King Salmon AS GWZ 5 SA036, which is located in the ADEC office in Anchorage, Alaska. This decision letter summarizes the site history, cleanup actions and levels, and standard site closure conditions that apply.

Site Name and Location:

SA036
Groundwater Zone 5
King Salmon Divert
King Salmon, AK 99613

Name and Mailing Address of Contact Party:

Stephen Krause
AFCEC/CZOP
10471 20th St, Ste 348
JBER, AK 99506-2201

DEC Site Identifiers:

File No.: 2569.38.019.07
Hazard ID.: 4527

Regulatory Authority for Determination:

18 AAC 75

Site Description and Background

Site SA036 is located in Groundwater Zone 5 at the King Salmon Divert. This site consists of drum storage areas; solid waste, trenches, stained soil, and drums were visible from aerial photographs from 1951 to 1982. Parts of the site were historically used by FAA/DOT as parking areas for planes and as

contaminated soil treatment cells. Groundwater flow direction varies across the site, but is often toward Red Fox Creek and the adjacent wetlands. The 'Characterization and Cleanup Activities' section below details the characterization and cleanup of areas DR9, DR9A, DR9B, and DR13 at site SA036.



Figure 1: Aerial view of groundwater zones at King Salmon AS, with SA036's location identified.



Figure 2: Aerial view of SA036, with focus on DR9, DR9A, and DR9B.



Figure 3: Aerial view of SA026, with focus on DR13.



Figure 4: 2012 photograph detailing excavations at SA036-DR9.



Figure 5: 2015 photograph detailing excavations at SA036-DR13.

Contaminants of Concern

During the site characterization and cleanup activities at this site, samples were collected from soil and groundwater and analyzed for Gasoline Range Organics (GRO), Diesel Range Organics (DRO), Residual Range Organics (RRO), Volatile Organic Compounds (VOCs), Polynuclear Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), pesticides, and metals. 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)
- Residual Range Organics (RRO)
- Trichloroethylene (TCE)
- Methylene Chloride

Cleanup Levels

Soil cleanup levels for this site are the more restrictive of either the Method Two human health or migration to groundwater cleanup levels found in 18 AAC 75.341(c) Table B1 and 18 AAC 75.341(d) Table B2, for the under 40 inches precipitation zone. The groundwater cleanup levels applicable to this site are found in 18 AAC 75.345 Table C.

Table 1 – Approved Cleanup Levels

Contaminant	Soil (mg/kg)	Groundwater (mg/L)
DRO	250	1.5
RRO	10,000	1.1
TCE	0.011	0.0028
Methylene Chloride	0.33	0.11

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Characterization and Cleanup Activities

Characterization and cleanup activities conducted under the regulatory authority of the Contaminated Sites Program began in 2006. These activities are described below.

DR9

SA036-DR9 is a former drum storage area located approximately 1,000 feet south of Fire Training Area No. 1. This area has intermittent vegetation; some areas containing little or no vegetation and other areas containing small shrubs and trees. Several empty and partially full, intact drums were found in June 2006 at DR9. Some of the drums were leaking a black substance with a hydrocarbon odor; the words “asphalt” and “pavement” were marked on some of the drums. In September 2006, a surface soil sample was taken below a layer of asphalt spilling from a drum. The results were above cleanup levels for DRO (344 mg/kg). A second sample was taken from the same location at 24 inches below ground surface (bgs) and the sample was nondetect for DRO.

In 2009, additional surface soil samples were collected and field screened to delineate the lateral extent of soil contamination in the vicinity of the 2006 soil sample exceedance. One surface soil sample was selected from the field screening samples to evaluate the boundary between “clean” and “contaminated” soil; DRO and RRO were detected at low concentrations in this sample (7.9 mg/kg and 160 mg/kg, respectively). One soil boring was advanced to a depth of approximately 5 feet bgs beneath an asphalt layer that had leaked out of one of the drums; two samples were collected from this borehole, one at 1.5 feet and one at 5 feet bgs. DRO and RRO were detected at low concentrations in both of the soil samples collected from this borehole (up to 1.3 mg/kg DRO and 16 mg/kg RRO).

Removal work at this site started in 2012. Thirteen drums were found scattered at seven separate locations; many of the drums had a solidified, tar-like substance that had partially seeped out. The drums were collected and removed from the site. Six drum areas were excavated to a depth of two feet and one

was excavated to a depth of three feet. Approximately 38 cubic yards of petroleum-contaminated soil were excavated and removed from the site. The chunks of solidified tar that were left behind from the drums were collected and removed. A total of 21 confirmation samples were taken from the walls and floors of the excavations and sampled for DRO, RRO, and PAHs. All samples were below cleanup levels; the maximum concentrations left onsite for DRO and RRO are 131 mg/kg and 487 mg/kg, respectively. The excavations were backfilled to their original grade with uncontaminated soil in October 2012.

DR9A

SA036-DR9A contained a large amount of metal and wood debris, several intact and empty drums, two empty fire extinguishers, and rolls of old fire hose when the site was discovered in 2006. No stained soil or other evidence of contamination was identified. A surface soil sample was taken in September 2006 beneath the drums. Low levels of DRO, RRO, 4,4-DDT, and four PAHs were detected below cleanup levels.

In 2009, one additional surface soil sample was collected from soil in the vicinity of the 2006 sample to further assess possible contamination in the vicinity of the drum pile. DRO (28 mg/kg), RRO (160 mg/kg), toluene (9 µg/kg), and chrysene (0.74 µg/kg) were detected in this sample below cleanup levels.

DR9B

SA036-DR9B was discovered just south of DR9A during September 2006; a magnetic survey revealed an area of buried drums approximately 150 by 30 feet. Some of the drums had rusted through, leaving up to 4 foot deep holes in an area with sparse vegetation. One sample was collected from the surface next to a crushed drum on the edge of the sparsely vegetated clearing just south of DR9A; DRO, RRO, 4,4-DDT and eleven PAHs were detected below cleanup levels. A second sample was collected by an auger extended to 6.5 feet into a hole caused by a rusted drum; DRO, RRO, 4,4-DDT, and eleven PAHs were detected below cleanup levels.

In 2009, surface soil samples were collected and field screened; two surface soil samples were selected from the location exhibiting the highest field screening results and submitted for laboratory analyses. DRO, RRO, and several PAHs were detected in both surface soil samples well below the applicable cleanup levels (DRO 6.4 mg/kg, RRO 65 mg/kg). One borehole was advanced to groundwater, 13.5 feet bgs. One subsurface soil sample was collected at the soil-groundwater interface, and one was selected from the depth exhibiting the highest field screening results. DRO (7.1 mg/kg) and RRO (51 mg/kg) were detected in the sample at 9 feet bgs, and RRO (2.2 mg/kg) was detected in the sample at 13 feet bgs. A groundwater monitoring well was installed in the borehole and one sample was collected; DRO (0.13 mg/L), several VOCs, and several PAHs were detected in groundwater below cleanup levels.

DR13

SA036-DR13 was discovered during a June 2006 site visit; two intact but empty drums were found in the trees along the northern and eastern perimeter of this location. One sample was collected in September 2006 from the surface under one of the drums labeled "Lube Oil ICE Heavy Duty..". GRO, DRO, RRO, three PAHs, toluene, and methylene chloride were detected in the sample; methylene chloride was the only contaminant above cleanup levels (sample result exceeded the cleanup level applicable at the time, but does not exceed the current cleanup level). Three additional drums were found

in the trees along the southwestern edge of the site. One of these drums had the markings “Trichloroethylene Tech Type II” on it. This drum was intact and partially full. Several tires, automobile parts, pieces of electrical equipment, and four oil reservoirs were also found in this area in June 2006. Two samples were collected in the vicinity of the TCE drum. One from the surface soil beneath the drum, and one from 24 inches beneath the drum. Both samples exceeded cleanup levels for DRO, RRO, and TCE at concentrations up to 47,000 mg/kg DRO, 236,000 mg/kg RRO, and 2.64 mg/kg TCE. One sample was collected at the surface underneath one of the oil reservoirs; the sample exceeded cleanup levels for DRO (93,800 mg/kg) and RRO (20,300 mg/kg).

In 2009, surface soil samples were collected in the vicinity of the “Lube Oil Ice” drum and field screened; one surface soil sample was selected from this area for laboratory analysis. DRO and RRO were detected beneath the cleanup levels in this sample (140 mg/kg and 380 mg/kg, respectively). In addition, soils were field screened and one surface soil sample was collected from soils in the vicinity of the G&E oil reservoirs; DRO (190 mg/kg) and RRO (760 mg/kg) were detected below cleanup levels. PCBs were not detected in this sample. One borehole was advanced below the TCE drum to a depth of 20 feet bgs, the depth to groundwater. One subsurface laboratory sample was collected at 4 feet bgs and one at the soil-groundwater interface. DRO and RRO were detected at low concentrations in both samples (up to 13 mg/kg DRO and 110 mg/kg RRO). TCE was detected above the cleanup level at 4 feet bgs (48 µg/mg), but was not detected in the sample at 20 feet bgs. A groundwater monitoring well was installed in the borehole; DRO (0.035 mg/L) and chloroform (0.15 µg/L) were detected below the applicable cleanup levels in groundwater.

Excavation activities started in 2012 at the TCE drum. The TCE drum was cleaned and taken to the landfill, and eight cubic yards of TCE-contaminated soil from beneath the drum were excavated and shipped offsite for disposal. Additionally, approximately 13 cubic yards of petroleum-contaminated soil were removed from the excavation and taken to the biocell for treatment. Battery pieces found at this site were shipped offsite in a drum. Oil from two pairs of oil reservoirs were characterized with negative results for PCBs and halogenated oil. The oil was turned over to Chugach for disposal; the reservoirs were cleaned and disposed in the local landfill. After confirmation samples indicated residual contamination was below cleanup levels, the excavations were backfilled to the original grade with uncontaminated soil. The maximum concentrations left in place were 31 mg/kg DRO, 150 mg/kg RRO, 0.0053 mg/kg TCE, 5.5 mg/kg lead.

In October 2015, approximately 24 cubic yards of POL-contaminated soil were excavated from the area where the oil switches were once located, and taken to the landfarm for treatment. Dispersed throughout the excavation were debris consisting of six empty, crushed drums, large tires, oil filters, lumber, empty buckets marked “adhesive”, and large chunks of black, viscous material that had a creosote-like odor. The tarlike substance was containerized in two 55-gallon drums and removed from the site. While removing debris from the excavation, battery pieces fell out of the upper section of the southwest corner sidewall. All battery pieces and surrounding soil were shoveled into a 55-gallon drum, and lead was added to the analytical suite. Three confirmation samples were collected from the floor, and four samples were collected from the sidewalls. DRO, RRO, PAHs, and lead were detected in samples below cleanup levels; the highest remaining concentrations are 56 mg/kg DRO, 330 mg/kg RRO, and 14 mg/kg lead. All encountered debris was taken to the landfill, and the excavation was backfilled to the original grade with uncontaminated soil.

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

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 2.

Table 2 – Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	De-Minimis Exposure	Contamination remains in surface soil, but is below the most conservative 18 AAC 75.341(c) and (d) cleanup levels.
Sub-Surface Soil Contact	De-Minimis Exposure	Contamination remains in the sub-surface, but is below the most conservative 18 AAC 75.341(c) and (d) 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)	Pathway Incomplete	No buildings are present within 30 feet of the site. Remaining concentrations of volatile contaminants are not expected to cause vapor intrusion.
Groundwater Ingestion	De-Minimis Exposure	Contaminants detected in groundwater are below 18 AAC 75.345 cleanup levels.
Surface Water Ingestion	Pathway Incomplete	Surface water is not used as a drinking water source in the vicinity of the site. The nearest surface water is 800 feet from the site.
Wild and Farmed Foods Ingestion	De-Minimis Exposure	Remaining soil contamination includes lead, which has the potential to bioaccumulate in plants or animals, however the lead contamination detected in soil was at concentrations below EPA's "Ecological Soil Screening Levels for Lead", dated March 2005, for plants, mammals, and invertebrates.

Exposure to Ecological Receptors	De-Minimis Exposure	Terrestrial exposure routes may be present in the vicinity of this site, however remaining contaminant concentrations are considered de-minimis and are not expected to affect terrestrial receptors.
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Notes to Table 2: “De-Minimis Exposure” means that in ADEC’s judgment receptors are unlikely to be adversely 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 institutional control in place limiting land or groundwater use and there may be a physical barrier in place that prevents contact with residual contamination.

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. 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 from a site that is subject to the site cleanup rules or for which a written determination from the department has been made under 18 AAC 75.380(d)(1) that allows contamination to remain at the site above method two soil cleanup levels or groundwater cleanup levels listed in Table C requires DEC approval in accordance with 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.
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 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) 269-0298, or email at sammi.castle@alaska.gov.

Sincerely,

Sammi Castle

Sammi Castle
Project Manager

cc: Spill Prevention and Response, Cost Recovery Unit
Melinda Brunner, ADEC