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: 310.38.010

December 24, 2012

Penny Adler
Airport Leasing Specialist
Alaska Department of Transportation and Public Facilities (ADOT&PF)
2301 Peger Road
MS-2550
Fairbanks, Alaska 99709

Re: Decision Document; MarkAir - Barrow
Cleanup Complete – Institutional Controls

Dear Ms. Adler:

The Alaska Department of Environmental Conservation (ADEC), Contaminated Sites Program, has completed a review of the environmental records associated with the MarkAir - Barrow. Based on the information provided to date and the administrative record, the ADEC has determined that the contaminant concentrations remaining on site do not pose an unacceptable risk to human health or the environment. No further remedial action will be required as long as the site is in compliance with established institutional controls.

This decision is based on a review of the project files for the subject site, which are available for public review in the ADEC offices at 555 Cordova Street, Anchorage, 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 – Institutional Controls (CC-IC) Determination.

**Introduction**

Site Name and Location:
MarkAir - Barrow
Barrow Airport
Lots 4 and 5, Block 100
Barrow, Alaska 99723

Name and Mailing Address of Contact Party:
Penny Adler
Airport Leasing Specialist, ADOT&PF
2301 Peger Road
MS-2550
Fairbanks, Alaska 99709

ADEC Site Identifiers:
ADEC Reckey: 1994310900301
File: # 310.38.010
Hazard ID: 2325

Regulatory authority under which the site is being cleaned up:
18 AAC 75

**Background**
This site has historically been used for airline services including passenger and cargo operations, fuel storage, vehicle maintenance, and airplane fueling. The terminal was constructed in 1978 then destroyed by fire in 2005. The site consisted of a passenger and cargo terminal, restaurant, a metal shop building, a fuel aboveground storage tank farm (AST), two fuel cabinets, a 55-gallon drum fuel dispensing station, and an unpaved parking area and a gravel ramp.

The primary area of concern is the AST farm located on the northwest quadrant of Lot 4. This historic 80 by 100 foot unlined bermed fuel storage tank farm area consisted of the following: one 20,000 gallon aviation gasoline AST; one 20,000 gallon Jet A AST; and one 200,000 gallon Jet A AST with associated piping and dispensers. The ASTs and associated piping were removed between 1997 and 2002. Currently, the site consists of an asphalt apron, the new Frontier Air Hangar and the historic metal shop building.

This site is located in the Arctic Zone, and the public drinking water source for Barrow is a surface water body located 4500 ft. from the airport. This surface water body has not been impacted by contamination from the subject site, and is not expected to be impacted in the future by contamination remaining at the site. Therefore, risk via the surface water pathway is considered incomplete.

**Contaminants of Concern**
During the investigation at this site, soil samples were analyzed for the following: metals; gasoline range organics (GRO); diesel range organics (DRO); residual range organics (RRO); and volatile organic compounds (VOCs) including benzene, toluene, ethylbenzene, and xylenes (BTEX). Based on these analyses and knowledge of the source area, the following Contaminants of Concern (COCs) were identified:

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

**Cleanup Levels**
The cleanup levels for petroleum hydrocarbon-contaminated soil in the Arctic Zone are established in 18 AAC 75.341 Method One, Table A2 and 18 AAC 75.341 Method Two Tables B1 and B2.

A number of factors are considered by ADEC when evaluating site specific cleanup levels in the Arctic Zone including:

- human health (ingestion/inhalation);
- ecological impacts (contamination impacting ecological species other than humans);
- groundwater and surface water quality;
- presence of free phase product; and
- any other factors that might cause a deleterious impact to the environment.

In the Arctic Zone, the migration to surface water pathway is evaluated as the primary migration pathway because the migration to groundwater pathway is not considered applicable due to the presence of continuous permafrost. Impacted surface water can adversely affect both human and ecological receptors, depending on the location of the contaminant source, its proximity to surface waters, and water usage in the impacted area. Therefore the migration to surface water pathway is evaluated as a possible risk to human health (drinking water source) and/or for compliance with Alaska Water Quality standards (18 AAC 70).

In addition, the migration to surface water is evaluated as a possible exposure pathway for ecological receptors because of the tundra wetland ecosystem that exists throughout the Arctic region. Potential future use of the property must also be taken into account when determining closure status. Differentiating between a "Cleanup Complete" and a "Cleanup Complete with Institutional Controls" determination will be based on site specific conditions and exposure pathways as determined by ADEC.

**Site Characterization and Cleanup**
The tank farm area, located in the northwestern quadrant of Lot 4, was evaluated as part of an environmental assessment in 1996. Four surface soil samples collected from this area contained, diesel range petroleum hydrocarbons (DRPH, roughly equivalent to DRO) up to 15,500 mg/kg, and gasoline range petroleum hydrocarbons (GRPH, roughly equivalent to GRO) up to 1,830 mg/kg. One soil boring was advanced to the northeast of the 200,000 gallon Jet A Fuel AST. Frozen soil was encountered at 4.5 feet below ground surface (bgs). Water present above the ice had a heavy foamy sheen. A soil sample collected 3.5 feet bgs contained DRPH at 1,520 mg/kg and GRPH at 874 mg/kg. A soil sample collected 4.5 feet bgs contained DRPH at 2,350 mg/kg and GRPH at 1,190 mg/kg. It was reported that the 200,000 gallon AST was removed from the property between 1997 and 2001.

In an effort to delineate the extent of contamination, 17 soil borings were advanced in 2001. A total of 34 soil samples were collected from the 17 soil borings at a depth of 2 to 2.5 feet bgs and 4 to 5 feet bgs. Borings within the bermed AST area contained the following: GRO up to 4,370 mg/kg; DRO up to 14,800 mg/kg; toluene up to 254 mg/kg; and xylenes up to 219 mg/kg. Borings along the pipeline and at the Jet-A dispenser contained GRO up to 1,540 mg/kg; toluene up to 295 mg/kg; and xylenes up to 98.9 mg/kg. The soil sample collected at the Avgas dispenser

and 55-gallon drum dispenser contained GRO up to 7,530 mg/kg, benzene up to 70.4 mg/kg; toluene up to 857 mg/kg; and xylenes up to 158 mg/kg.

Four additional soil borings were advanced and sampled at areas with elevated benzene concentrations for comparison with Resource Conservation and Recovery Act (RCRA) hazardous waste regulations using the toxicity characteristic leaching procedure (TCLP). None of the samples exceed RCRA regulatory levels.

Investigation and bioremediation activities occurred at the tank farm area in 2003. Field activities included removing the two 20,000-gallon ASTs and associated pipelines, advancing two soil borings, and excavating 930 cubic yards of contaminated soil from the AST area and former Avgas dispenser. Excavated soil was amended with nutrients to encourage biodegradation then returned to the excavation. Pore water was generally encountered 3 to 4 feet bgs with frozen ground located at a depth of 4 feet bgs. Petroleum odors were noted in all the excavations and the borings. Soil samples were collected from the boreholes and from under the former pipeline at 2 to 3 feet bgs. Samples contained detectable concentrations of contaminants, but results were below cleanup levels.

Approximately 130 cubic yards of soil were excavated to a depth of 3 feet bgs from near the former Avgas dispenser and an additional 10 cubic yards were excavated to a depth of 5 feet bgs from a hotspot encountered during 2001 sampling. Three soil samples collected at the bottom of the excavation contained GRO up to 1,990 mg/kg and xylenes up to 104 mg/kg. At the AST containment area, 300 cubic yards of soil were excavated. Nine soil samples collected at the bottom of the excavation contained GRO up to 1,690 mg/kg, DRO up to 26,400 mg/kg, toluene up to 316 mg/kg, and xylenes up to 104 mg/kg.

Additional characterization was conducted between 2004 and 2006. Twenty six soil borings were advanced 3 to 4 feet bgs to the pore water interface. Ten soil samples collected from the amended soil area contained GRO up to 2,060 mg/kg, and toluene up to 438 mg/kg. Ten soil samples collected from outside the treatment area contained GRO up to 1,840 mg/kg and xylenes up to 75.6 mg/kg.

Prior to soil excavation for the new Frontier Air hanger building, six soil samples were collected from the proposed excavation area in 2010. These soil samples contained detectable concentrations of contaminants, but were below cleanup levels. A new hangar building with a hydrocarbon resistant liner was constructed on Lot 5 extending into Lot 4 in 2011.

Characterization activities conducted between 1996 and 2010 indicate that the highest contaminant concentrations may still remain at the former tank farm and near the former avgas dispenser on the northwest side of Lot 4 as depicted in attachment C. However, this area was covered with asphalt in 2011 and 2012 which will serve to cap the remaining contamination thereby mitigating exposure via this pathway. (See Attachment B.)

**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 1.

| Pathway | Result | Explanation |
|---|---|---|
| Surface Soil Contact | De Minimis Exposure | Contaminated soil has been capped by asphalt or new buildings which will mitigate exposure via this pathway. |
| Sub-Surface Soil Contact | De Minimis Exposure | Contaminated soil has been capped by asphalt or new buildings which will mitigate exposure via this pathway. |
| Inhalation – Outdoor Air | De Minimis Exposure | Contaminated soil is frozen for much of the year and has been capped by asphalt or new buildings that will mitigate exposure via this pathway. |
| Inhalation – Indoor Air (vapor intrusion) | De Minimis Exposure | The only building at this site was constructed with a sub slab vapor barrier therefore exposure via this pathway is considered de minimis |
| Groundwater Ingestion | Pathway Incomplete | Groundwater is not a current or future drinking water source in the Arctic Zone, therefore this pathway is incomplete. |
| Surface Water Ingestion | Pathway Incomplete | A surface water intake for public water is located 4,500 feet away; however, it has not been impacted by contamination at this site, nor expected to be impacted in the future. |
| Wild Foods Ingestion | Pathway Incomplete | Contaminants of concern do not have the potential to bioaccumulate in plants or animals. This area is not used for harvesting wild foods. |
| Exposure to Ecological Receptors | Pathway Incomplete | There are no complete exposure pathways to ecological receptors at this site. |

Notes to Table 1: "De minimis exposure" means that in ADEC's judgment receptors are unlikely to be affected by the minimal volume 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

There is contamination remaining above established cleanup levels at the MarkAir – Barrow, but ADEC has determined there is no unacceptable risk to human health or the environment therefore this site will be granted a Cleanup Complete- Institutional Controls Determination subject to the following:

1. Any future change in land use may impact the exposure assumptions cited in this document. If land use and/or ownership changes, current institutional controls may not be protective and ADEC may require additional remediation and/or institutional controls. Therefore, ADOT&PF will report to ADEC every five years to document land use, or as soon as ADOT&PF becomes aware of any change in land ownership and/or use.

**The report can be sent to the local ADEC office or electronically to DEC.ICUnit@alaska.gov**

2. Any proposal to transport soil or groundwater off site requires ADEC 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 (see Attachment C).

3. Any ground disturbing activities or facility construction must be coordinated with and approved by the ADEC Contaminated Sites Program.

4. Movement or use of potentially contaminated soil in a manner that results in a violation of 18 AAC 70 water quality standards is unlawful.

5. The asphalt cap must be maintained by ADOT&PF to prevent exposure to contaminated soil.

This determination is in accordance with 18 AAC 75.380(d) 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 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 contact the ADEC Project Manager, Grant Lidren at (907) 269-8685.

Approved By,

Linda Nuechterlein
Environmental Manager

Recommended By,

Grant Lidren
Environmental Program Specialist

cc: Sam Myers, MNO Northern Region – DOT Environmental

## *Attachment A: Cleanup Complete-ICs Agreement and Signature Page**

ADOT&PF agrees to the terms of this Cleanup Complete with Institutional Controls determination as stated in this Closure Decision Document dated **December 24, 2012** for the MarkAir - Barrow site. Failure to comply with the terms of this agreement may result in ADEC reopening this site and requiring further remedial action in accordance with 18 AAC 75.380(d).

Penelope Adler, Chief Northern Region Aviation Leasing Statewide Aviation
Signature of Authorized Representative, Title
ADOT&PF

Penelope Adler
Printed Name of Authorized Representative, Title
ADOT&PF

**Note to Responsible Person (RP):**
**After making a copy for your records, please return a signed copy of this form to the ADEC project manager at the address on this correspondence within 30 days of receipt of this letter.**

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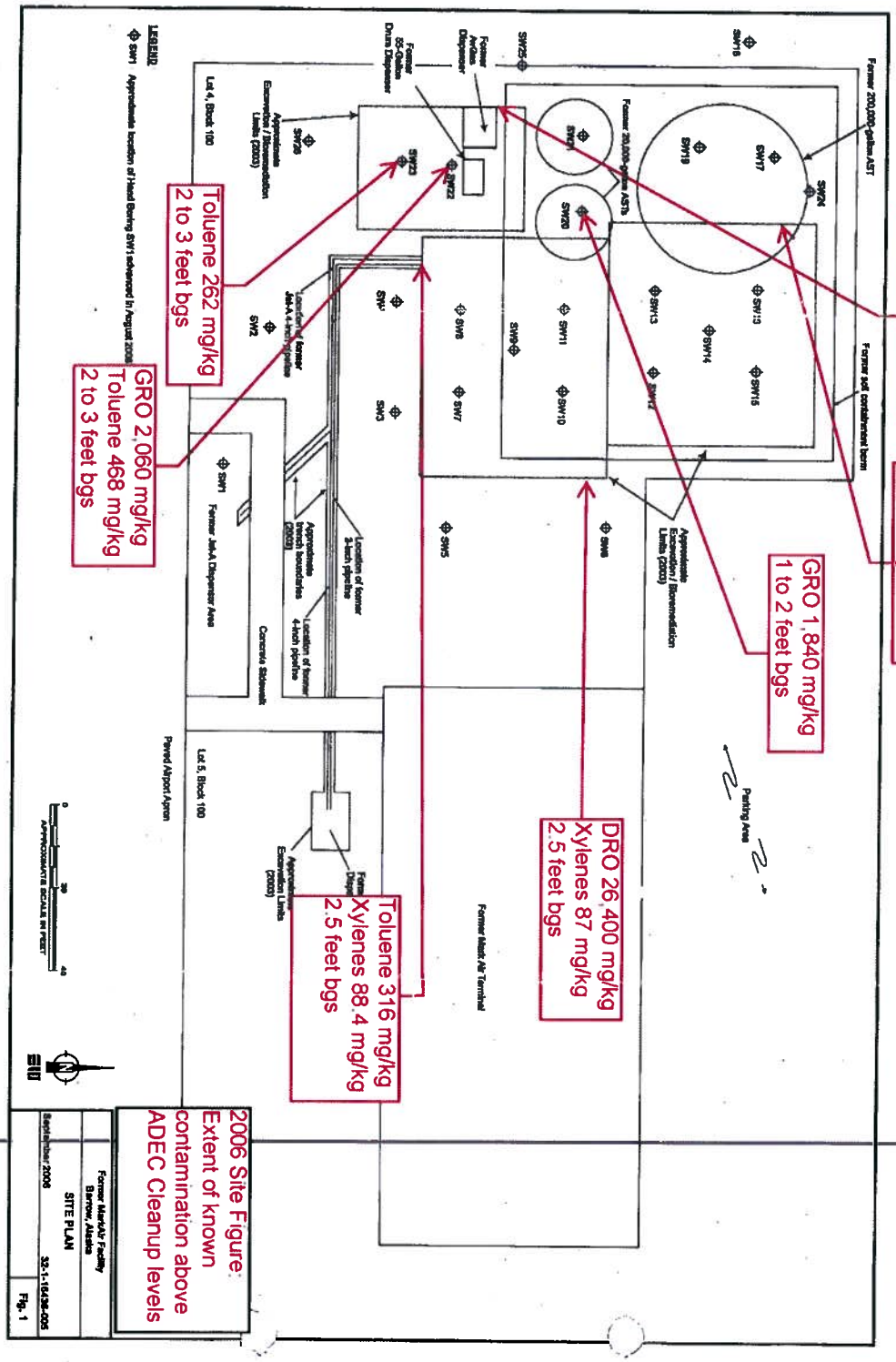
ADEC File:# 310.38.010
Hazard ID: 2325
ADEC Project Manager: Grant Lidren

**For Internal Use Only**

***Attention ADEC Administration Staff:** Please follow the procedure below after Attachment A is signed/returned to ADEC.

1. Log-in and Date Stamp *Attachment A*
2. Scan *and* Save to the appropriate electronic folder on the network Drive
3. File the hard copy in the appropriate project/site file Correspondence Folder (blue in Anchorage).
4. Provide the Correspondence folder (with the filed *Attachment A* hard copy) to the ADEC Project Manager so that the PM can update the CS database.

## ***Attachment B: Site Photographs taken of paved cap by ADOT&PF***

## *Attachment C: Site Figure*