

FINAL

RECORD OF DECISION FEDERAL AVIATION ADMINISTRATION FORMER CAMPBELL LAKE RADIO RANGE STATION RESOLUTION POINTE, ANCHORAGE, ALASKA

OCTOBER 2015

Prepared For:



Federal Aviation Administration Western Service Area 1601 Lind Ave SW AAQ-530-ANM Acquisition Group Renton, Washington 98057

Prepared By: Ahtna Engineering Services, LLC 110 West 38th Avenue, Suite 200A Anchorage, Alaska 99503



APPROVAL PAGE

The following record of decision for the site characterization and remediation conducted at the Former Campbell Lake Radio Range Station located at Resolution Pointe in Anchorage, Alaska has been prepared by Ahtna Engineering Services, LLC (Ahtna). The following people have reviewed and approved this report:

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October 2015

ACRONYMS AND ABBREVIATIONS

AAC	.Alaska Administrative Code
ADEC	.Alaska Department of Environmental Conservation
Ahtna	.Ahtna Environmental Services, LLC
AOC	.Area of concern
bgs	.below ground surface
BTEX	.benzene, toluene, ethylbenzene, and xylenes
CY	.cubic yard
	.diesel range organics
	.Environmental Protection Agency
FAA	.Federal Aviation Administration
GRO	.gasoline range organics
	.Joint Base Elmendorf Richardson
MEI	.Mass Excavation, Inc.
	.Montauk Environmental Engineering
mg/kg	.Milligrams per kilogram
mg/L	.milligrams per liter
PAH	.polynuclear aromatic hydrocarbon
PCB	.polychlorinated biphenyls
PID	.photoionization detector
RCRA	.Resource Conservation Recovery Act
ROD	.Record of Decision
RRO	residual range organics.
SIM	.selective ion monitoring
SPAR	.Spill Prevention and Response
SW	.Solid Waste
VOC	.volatile organic compound

ADEC Hazard ID: 26126

ADEC File Number: 2100.38.544

1.0 INTRODUCTION

This document presents a Record of Decision (ROD) and information necessary to support a decision regarding the cleanup status of one area of concern (AOC) located at the Federal Aviation Administration (FAA) Former Campbell Lake Radio Range Station, Anchorage, Alaska. The cleanup status for this AOC shall be Closed as Cleanup Complete with no institutional controls. This ROD was developed in accordance with the Alaska Department of Environmental Conservation (ADEC) *Guidance on Decision Documentation under the Site Cleanup Rules (18 Alaska Administrative Code [AAC] 75.325 – 18 AAC 75.390*), dated July 1999 and ADEC *Site Closure Memorandum* (2009). Most of the site specific information provided in this document can be found in the *Draft Final Cleanup Report* prepared by Ahtna Engineering Services (Ahtna), dated March 2014.

2.0 SITE DESCRIPTION AND BACKGROUND

The Former Campbell Lake Radio Range Station site is located at approximately 61°07'41.15" North latitude and -149°57'22.95" West longitude, within the Resolution Pointe subdivision, Anchorage, Alaska (Figures 1 and 2, Appendix A). This property is owned by the Hickel Investment Company of Anchorage, Alaska. The FAA occupied the project site (via a lease agreement with Hickel Investment Company) from approximately 1955 to 1976, during which time they constructed and operated a four-course radio range navigation facility (Montauk Environmental Engineering [Montauk], 2013).

The formerly leased land is currently undergoing development for residential housing. On August 10, 2013, Mass Excavation, Inc. (MEI), the housing development project's general contractor, was attempting to install a water main within the housing development project area. During installation, stained subsurface soils with a petroleum hydrocarbon odor were observed by MEI personnel. The stained soils were encountered when a trench was excavated to a depth of approximately 12 feet below ground surface (bgs). Ponded water with a visible sheen was observed within the trench as noted by the environmental contractor first present at the site (Montauk, 2013). The spill was reported to the ADEC SPAR division on August 15, 2013, where it received the designation of Spill Report No. 13239922704. On September 17, 2013, this site was added to the ADEC Contaminated Sites Database and assigned File ID 2100.38.544 and Hazard ID 26126.

3.0 REGULATORY SETTING

3.1 Contaminants of Concern

Contaminants of concern in soil at this site were based on analytical results for samples collected during the characterization phase of this removal action. Contaminants of concern identified in soil included diesel-range organics (DRO), gasoline-range organics (GRO), 1- and 2-methylnaphthalene, and volatile organic compounds (VOCs).

The contaminants of concern in groundwater were limited to analytes that were previously detected in the accumulated water in the open excavation. Contaminants of concern identified in groundwater included DRO; GRO; 1- and 2-methylnaphthalene; and benzene, toluene, ethylbenzene, and total xylenes (BTEX).

3.2 Cleanup Levels

The most stringent ADEC Method Two soil cleanup levels and Table C groundwater cleanup levels are applicable to this site. The contaminants of concern and their associated cleanup levels for soil and groundwater are identified in Table 1.

TABLE 1: CONTAMINANTS OF CONCERN AND CLEANUP LEVELS

Contaminant	Soil Cleanup Level ¹	Groundwater Cleanup Level ²
Contaminant	(mg/kg)	(mg/L)
	Petroleum Hydrocarbons	
DRO	250	1.5
GRO	300	2.2
	Polynuclear Aromatic Hydrocarl	
1-Methylnaphthalene	6.2	0.15
2-Methylnaphthalene	6.1	0.15
	Volatile Organic Compounds	
1,1,1-Trichloroethane	0.82	-
1,1,2,2-Tetrachloroethane	0.017	-
1,1,2-Trichloroethane	0.018	-
1,1-Dichloroethane	25	-
1,1-Dichloroethene	0.030	-
1,2,3-Trichloropropane	0.00053	-
1,2,4-Trichlorobenzene	0.85	-
1,2,4-Trimethylbenzene	23	-
1,2-Dibromoethane	0.00016	-
1,2-Dichlorobenzene	5.1	-
1,2-Dichloroethane (EDC)	0.016	-
1,2-Dichloropropane	0.018	-
1,3,5-Trimethylbenzene	23	-
1,3-Dichlorobenzene	28	-
1,3-Dichloropropane	0.033	-
1,4-Dichlorobenzene	0.64	-
Acetone	88	-
Benzene	0.025	0.005
Bromodichloromethane	0.044	-
Bromoform	0.34	-
Bromomethane	0.16	-
Carbon disulfide	12	-
Carbon tetrachloride	0.023	-
Chlorobenzene	0.63	-
Chloroethane	23	-
Chloroform	0.46	-
Chloromethane	0.21	-
cis-1,2-Dichloroethene	0.24	-
Dichlorodifluoromethane	140	-
Ethylbenzene	6.9	0.7

Contaminant	Soil Cleanup Level ¹ (mg/kg)	Groundwater Cleanup Level ² (mg/L)
Hexachlorobutadiene	0.12	-
Isopropylbenzene	51	-
Methyl tert-butyl ether	1.3	-
Methylene chloride	0.016	-
Naphthalene	20	-
n-Butylbenzene	15	-
n-Propylbenzene	15	-
sec-Butylbenzene	12	-
Styrene	0.96	-
tert-Butylbenzene	12	-
Tetrachloroethene	0.024	-
Toluene	6.5	1.0
trans-1,2-Dichloroethene	0.37	-
Trichloroethene	0.02	-
Trichlorofluoromethane	86	-
Vinyl chloride	0.0085	-
Xylenes (total)	63	10.0

Kev:

4.0 WORK PERFORMED

Montauk personnel conducted emergency response removal action activities on August 15, 2013, and continued the soil excavation activities on September 12, 2013. Ahtna personnel conducted additional soil excavation activities at the site from September 18 to September 25, 2013; groundwater monitoring well installation and groundwater assessment activities from February 24 to February 26, 2014; and a second round of groundwater assessment activities on August 7, 2014.

4.1 Characterization Activities

A total of seven soil characterization samples were collected for offsite laboratory analysis. Samples were submitted to an ADEC-approved laboratory for the following analyses:

- Gasoline-range organics (GRO) by Alaska Method (AK) 101;
- Diesel-range organics (DRO) by AK 102;
- Residual-range organics (RRO) by AK 103;
- Volatile organic compounds (VOCs) full suite by United States Environmental Protection Agency (EPA) Solid Waste (SW) Method 8260B;
- Polynuclear aromatic hydrocarbons (PAHs) by EPA SW8270C selective ion monitoring (SIM);
- Pesticides by EPA SW8081A;
- Polychlorinated biphenyls (PCBs) by EPA SW8082A; and
- Resource Conservation Recovery Act (RCRA) metals (8) by EPA SW6020 (arsenic, barium, cadmium, chromium, lead, mercury, nickel, and vanadium).

¹ Based on ADEC Method Two, Under 40-Inch Zone cleanup levels provided in 18 AAC 75, Tables B1 and B2

² Based on ADEC cleanup levels provided in 18 AAC 75, Table C

DRO, GRO, 1- and 2- methylnaphthalene, and eight different VOCs were detected at concentrations greater than established ADEC cleanup levels and were therefore considered the contaminants of concern for the site. Arsenic and chromium were also detected above cleanup levels, but the levels were determined to be consistent with the mean averages for these metals in soil background data collected from nearby Joint Base Elmendorf-Richardson (JBER; ADEC SPAR, April, 2001). As such, metals were not identified as a contaminant of concern.

4.2 Cleanup Activities

4.2.1 Excavation and Soil Sampling

Contaminated soil was excavated and removed to lined stockpiles from September 12 to September 25, 2013. The final excavation measured approximately 90 feet by 105 feet (approximately 9,450 square feet). Approximately 3,665 cubic yards (CY) of soil was excavated with approximately 2,600 CY of petroleum-contaminated soil transported to Alaska Soil Recycling location in Anchorage, Alaska for thermal treatment and disposal.

Soil field screening samples were collected using heated headspace procedures in accordance with ADEC's *Draft Field Sampling Guidance* (ADEC, 2010). A total of 26 PID field screening samples were collected from the excavation sidewalls approximately 10 feet apart. Thirteen analytical samples and two duplicates were collected from the highest PID locations. All sidewall sample results were non-detect.

A total of 104 PID field screening samples were collected from the excavation base. Twenty analytical samples and two duplicates were collected from the highest PID locations. Four samples contained benzene at concentrations greater than the ADEC Method Two, Migration to Groundwater cleanup level of 0.025 mg/kg. Approximately 1.5 to 3 cubic yards (CY) of soil was removed from each of these locations and a second analytical sample was collected. The results of the second set of samples collected were all less than the most stringent ADEC Method Two cleanup level.

4.2.2 Groundwater Assessment

A groundwater assessment was performed to characterize the potential hydrocarbon impacts to groundwater. Three monitoring wells were installed and groundwater was sampled once at low water level and once at high water level. Two monitoring wells were installed within the previously excavated source area, located at areas of highest soil contaminant concentrations prior to excavation. One monitoring well was installed at the presumed down-gradient location from the source area, still within the previous excavation boundaries. Groundwater monitoring well installation, well development, and the first groundwater sampling event were completed in February 2014; the second sampling event was conducted in August 2014.

All groundwater monitoring wells were developed, using a Mini-Typhoon pump, 24 hours after installation and prior to sample collection. Well development (surging and purging) was continued until ten well casing volumes were removed. The field team waited 24 hours after development to sample the wells to allow for turbidity to decrease.

Each monitoring well was sampled during two separate events: the first event occurred during the approximate mean seasonal high groundwater level (February) and the second event occurred during seasonal low groundwater level (August). Groundwater monitoring wells were purged and sampled using a peristaltic pump and the EPA low-flow (minimal drawdown) purge and sample collection technique (EPA, 2010) and in accordance with the ADEC *Draft Field Sampling Guidance* (ADEC, 2010).

A water quality meter with flow-through cell was connected to the peristaltic pump discharge line for collection of water quality parameters during purging. Once stability of the parameters was achieved, then sampling was commenced. A total of four groundwater samples, one per well and one duplicate, were collected. All groundwater samples were analyzed for GRO by AK101, DRO by AK102, RRO by AK103, and BTEX by EPA SW8260B. The monitoring well located within the area of highest soil contaminant concentrations prior to the excavation conducted in September 2013 (MW-1) was analyzed for PAHs by EPA SW8270C- SIM (including 1- and 2-methylnaphthalene).

During the first sampling event in February, 2014, low levels of benzene, DRO, and RRO were detected in MW-1, and ethylbenzene was detected in the duplicate but not the primary. RRO was detected in MW-2. DRO and RRO were detected in MW-3. All detections were at levels below the reporting limit and well below ADEC groundwater cleanup levels.

During the second sampling event in August, 2014, all results were non-detect except naphthalene, which was detected in MW-1 at a concentration more than two orders of magnitude less than the cleanup level.

5.0 CUMULATIVE RISK EVALUATION

Method Two cleanup levels are used at the site to evaluate if cleanup is complete, however since benzene levels in soil are greater than $1/10^{th}$ of the cleanup level, ADEC's Method Three Cumulative Risk Calculator was used to ensure acceptable risk levels exist at the site. Maximum concentrations of all detected chemicals in soil were input into the calculator. ADEC's *Monitoring Well Guidance* (2013) states that water quality in a well becomes more reliable over time, therefore the results from the latest sampling event were used for chemicals in groundwater. The overall cumulative cancer risk is 9×10^{-8} (which does not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways) and the overall cumulative hazard index is 0.06 (which does not exceed a cumulative noncarcinogenic risk standard at a hazard index of one across all exposure pathways). The Method Three Calculator printout is included in Appendix B.

5.1 Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure pathways were evaluated. All pathways were determined to be incomplete. A summary of the pathway evaluation is included in Table 2.

surface.

Pathway Result Explanation No contamination is present in surface soil (0 to 2 feet below Surface Soil Contact Pathway Incomplete ground surface). Contamination is below ingestion cleanup levels. Sub-Surface Soil Contact Pathway Incomplete Inhalation – Outdoor Air Contamination is below inhalation cleanup levels. Pathway Incomplete Inhalation – Indoor Air (vapor Pathway No buildings are present or plan to be built within 30 feet of intrusion) Incomplete the contamination. Groundwater contamination is not present. Groundwater Ingestion Pathway Incomplete Surface Water Ingestion Pathway No surface water exists near the site. Incomplete Wild and Farmed Foods Pathway Contaminants of concern do not have the potential to Incomplete Ingestion bioaccumulate in plants or animals. Exposure to Ecological Receptors Pathway Contamination is below cleanup levels and limited to the sub-

TABLE 2: EXPOSURE PATHWAY EVALUATION

6.0 CONCLUSION

Analytical results for soil and groundwater samples collected at the Former Campbell Lake Radio Range Station AOC indicate that contaminant concentrations are less than the ADEC Method Two, Under 40 Inch Zone, Migration to Groundwater cleanup levels and are determined to be within acceptable cumulative risk using the ADEC Method Three Calculator.

Therefore, this AOC is requested to be granted a Cleanup Complete determination with no institutional controls, in accordance with 18 AAC 75.380(d)(1).

In addition, this AOC is subject to the following conditions:

Incomplete

- Under 18 AAC 75.380(d)(1), ADEC may require additional site characterization or cleanup action if new information is discovered which leads ADEC to make a determination that the cleanup described in this ROD is not protective of human health, safety, and welfare or the environment.
- Any proposal to transport soil or groundwater off-site requires ADEC approval in accordance with 18 AAC 75.325. A "site" [as defined by 18 AAC 75.990 (115)] means an area that is contaminated, including areas contaminated by the migration of hazardous substance from a source area, regardless of property ownership.
- Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited.

Following the finalization of this document, a work plan will be developed to decommission the three monitoring wells at the site. After the completion of the proposed work, a well decommissioning report will be submitted to ADEC.

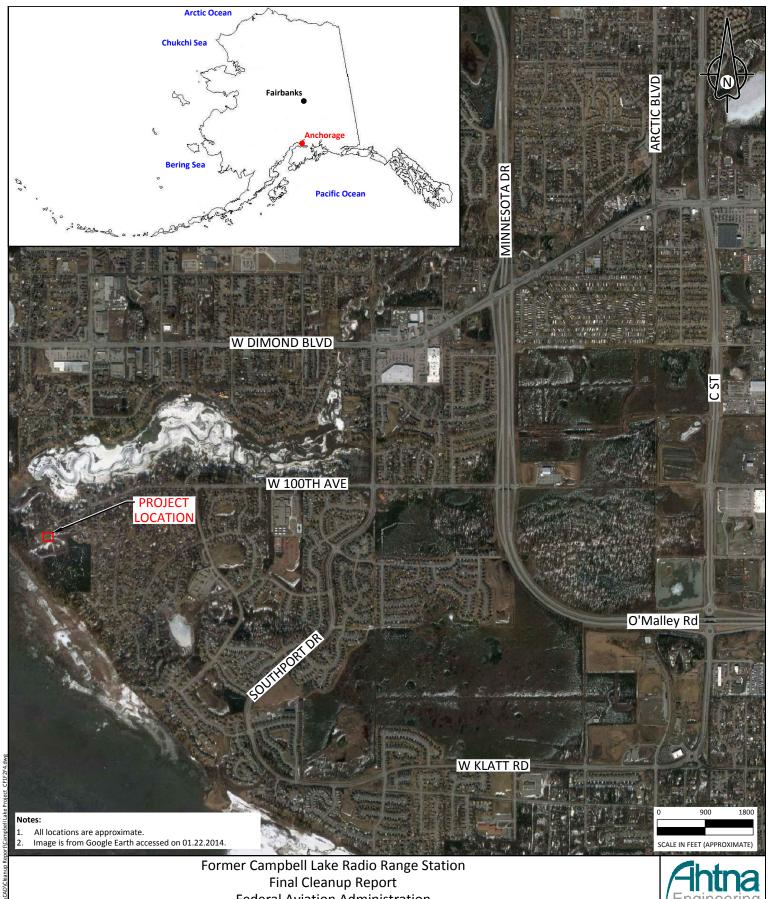
7.0 REFERENCES

- Alaska Department of Environmental Conservation (ADEC), 2013. *Monitoring Well Guidance*, September 2013.
- ADEC, 2012. Title 18 Alaska Administrative Code 75 Oil and Other Hazardous Substances Pollution Control, April 8.
- ADEC, 2010. Draft Field Sampling Guidance, May 2010.
- ADEC, 2009. Site Closure Memorandum, July 24.
- ADEC, 2001. Record of Decision Regarding Cleanup Levels USGS Government Hill Site. April.
- ADEC, 1999. Guidance on Decision Documentation under the Site Cleanup Rules (18 Alaska Administrative Code [AAC] 75.325 18 AAC 75.390), July.
- Ahtna Environmental Services, 2015. Draft Final Cleanup Report, Federal Aviation Administration, Former Campbell Lake Radio Range Station, Resolution Pointe, Anchorage, Alaska, March.
- Environmental Protection Agency (EPA), 2010. Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, January 2010.
- Montauk Environmental Engineering (Montauk), 2013. Resolution Pointe Housing Development Spill Cleanup Plan. September 10.



APPENDIX A

SITE FIGURES



Federal Aviation Administration Anchorage, Alaska

State and Site Vicinity Maps



Drafted By:

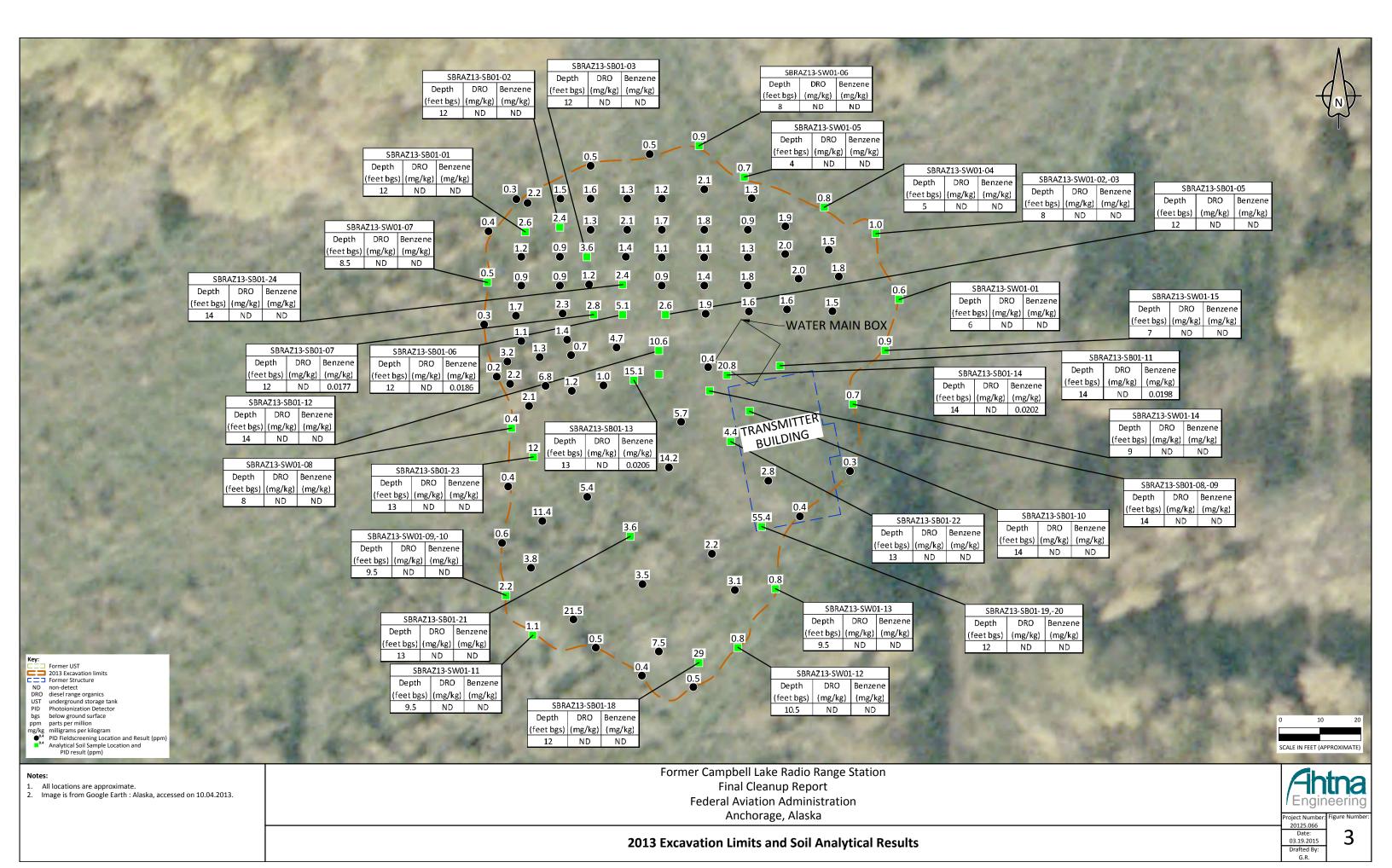


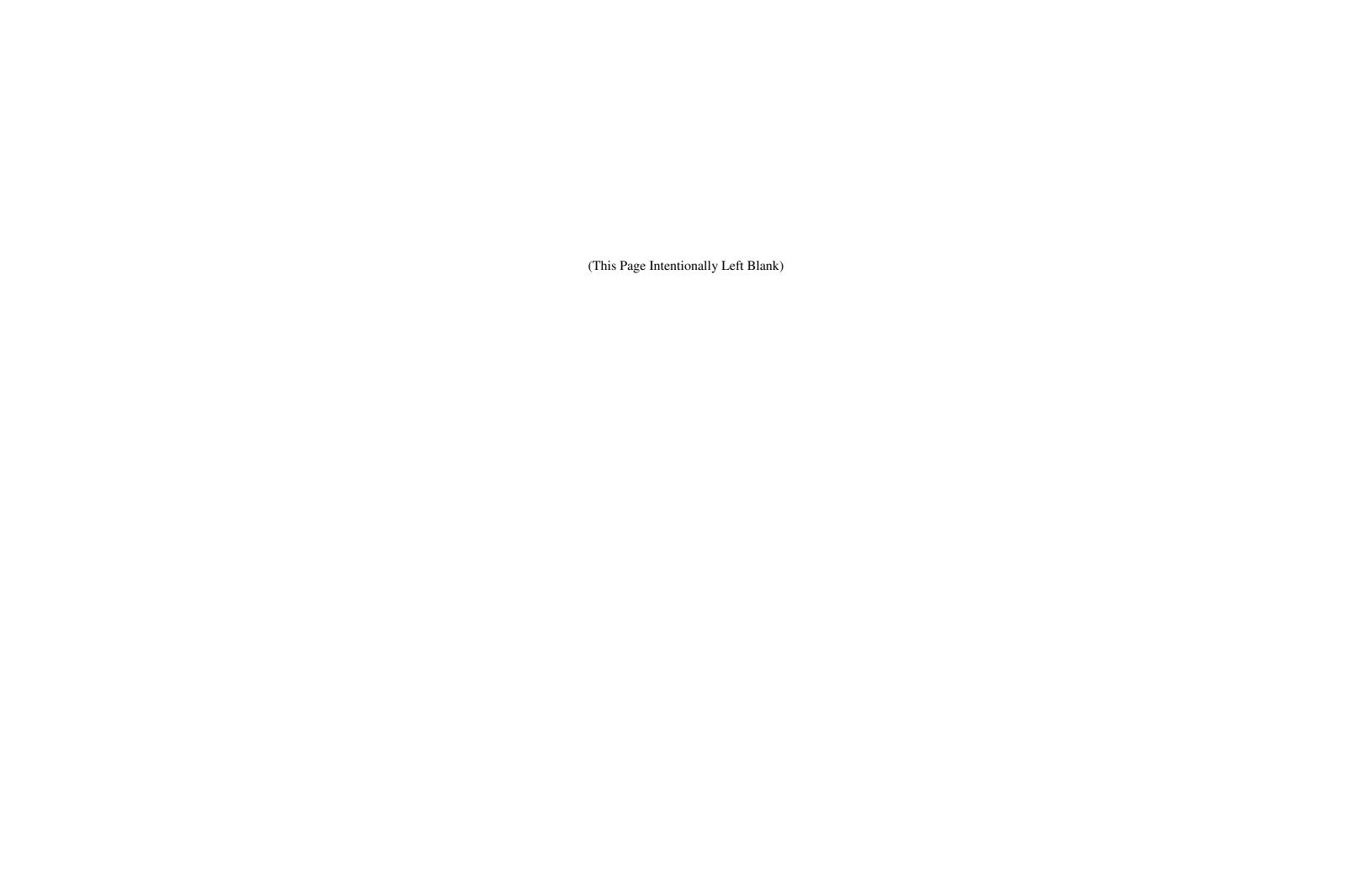


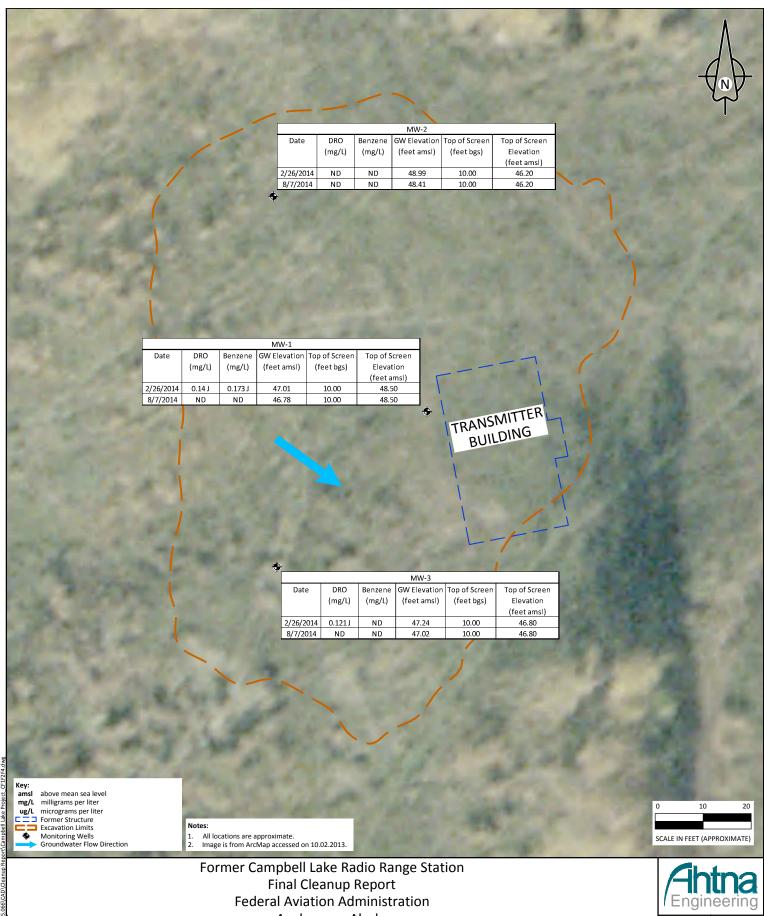
Site Plan

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Anchorage, Alaska

Groundwater Analytical Results and Elevations

roject Number 20125.066 Date:

Drafted By:

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APPENDIX B

METHOD 3 CALCULATOR PRINTOUT

Method Three & Cumulative Risk Calculator

Former Campbell Lake Radio Relay Station

The following are cumulative cancer risks and hazard quotients by chemical.

Note that petroleum ranges (GRO, DRO, and RRO) are not included in cumulative risks. Also, if PCBs or dioxins are present at the site, the cumulative risks associated with these chemicals may also need to be considered; please contact the ADEC project manager for your site for information on how to address these chemicals.

Chemicals in red are carcinogenic.

Direct Contact Risks

Chemical	Soil Concentration (mg/kg)	Cancer Risk	Hazard Quotient
Acenaphthene	0.0404	0	0.000014
Benzene	0.0206	0.000000014	0.00005
Benzo(k)fluoranthene	0	0	0
Benzo(g,h,i)perylene	0	0	0
Benzo(a)pyrene	0	0	0
Dibenzo(a,h)anthracene	0	0	0
Ethylbenzene	0.248	0	0.000025
Indeno(1,2,3-c,d)pyrene	0	0	0
1-Methylnaphthalene	0.246	0	0.00088
2-Methylnaphthalene	0.333	0	0.0012
Naphthalene	0.127	0	0.000091
Phenanthrene	0.116	0	0.0000056
Xylenes (total)	0.246	0	0.000012

Inhalation Risks

Soil Concentration (mg/kg)	Cancer Risk	Hazard Quotient
0.0404	0	0
0.0206	0.00000019	0.00019
0	0	0
0	0	0
0	0	0
0	0	0
0.248	0.000000023	0.000049
0	0	0
0.246	0	0.00032
0.333	0	0.00044
0.127	0.000000045	0.0011
0.116	0	0
	(mg/kg) 0.0404 0.0206 0 0 0 0 0 0 0.248 0 0.246 0.333	(mg/kg) Cancer Risk 0.0404 0 0.0206 0.000000019 0 0 0 0 0 0 0 0 0.248 0.000000023 0 0 0.246 0 0.333 0 0.127 0.000000045

10/20/2014

Xylenes (total) 0.246 0 0.00046

Groundwater Risks

Chemical	Groundwater Concentration (mg/L)	Cancer Risk	Hazard Quotient
Acenaphthene	0	0	0
Benzene	0	0	0
Benzo(k)fluoranthene	0	0	0
Benzo(g,h,i)perylene	0	0	0
Benzo(a)pyrene	0	0	0
Dibenzo(a,h)anthracene	0	0	0
Ethylbenzene	0	0	0
Indeno(1,2,3-c,d)pyrene	0	0	0
1-Methylnaphthalene	0	0	0
2-Methylnaphthalene	0	0	0
Naphthalene	0.044	0	0.06
Phenanthrene	0	0	0
Xylenes (total)	0	0	0

Cumulative Risk

Cumulative Cancer Risk	0.00000009
Cumulative Hazard Index	0.06

APPENDIX H

ADEC RESPONSE TO COMMENTS AND FINAL APPROVAL LETTER



Department of Environmental Conservation

Division of Spill Prevention and Response Contaminated Sites Program

> 610 University Ave. Fairbanks, Alaska 99709-3643 Main: 907.451.2131 Fax: 907.451.5105

File No: 2100.38.544

September 24, 2015

Jon Schleder FAA Alaska Region 222 West 7th Ave., #14 Anchorage, AK 99513-7587

Subject: DEC Approval of the Cleanup Report and Record of Decision, FAA Former Campbell Lake Radio Range Station (RRS), Resolution Pointe, Anchorage, Alaska

Dear Mr. Schleder:

The Alaska Department of Environmental Conservation (DEC) has completed review of the Draft Final Cleanup Report, FAA Former Campbell Lake Radio Range Station (RRS), Resolution Pointe, Anchorage, Alaska, on April 24, 2015. A response to comments (RTC) was received on September 21, 2015. This report summarized the removal actions and groundwater assessments completed at the Campbell Lake RRS site. Included as an appendix to this report is a draft Record of Decision (ROD) recommending a "Cleanup Complete with no ICs" determination for this site.

Provided that the proposed changes in the RTC are incorporated into the final document, DEC has no further issues with the Cleanup Report or Record of Decision. Therefore, the Cleanup Report, FAA Former Campbell Lake Radio Range Station (RRS), Resolution Pointe, Anchorage, Alaska, is approved. Once the finalized ROD has been signed, this site will be closed with a "Cleanup Complete with no ICs" determination, with the conditions outlined in the ROD. The DEC Contaminated Sites Program database will then be updated to reflect this determination.

As stated in the Record of Decision, FAA will follow the finalization of this document with the submission of a work plan to decommission the three monitoring wells at the site. After the completion of the proposed work, a well-decommissioning report will be submitted to DEC.

If you have any questions, please do not hesitate to contact me at (907) 451-2131, or by email at monte.garroutte@alaska.gov.

Sincerely,

Recommended By

Monte Garroutte

Environmental Program Specialist

Approved By

Fred Vreeman Program Manager

Enclosure: DEC_RTCResponse_CleanupReport_CampbellLake.docx