



**UNITED STATES AIR FORCE
BARTER ISLAND LONG RANGE RADAR STATION,
ALASKA**

INSTALLATION RESTORATION PROGRAM

**DECISION DOCUMENT FOR
POL Tanks (SS017)**

FINAL

September 2007

Part I DECLARATION

SITE NAME AND LOCATION

POL Tanks (SS017) – Non-CERCLA Site
Barter Island Long Range Radar Station, Alaska
Region X

Barter Island Long Range Radar Station (LRRS) is located adjacent to the village of Kaktovik on the Arctic Coastal Plain at 70°07'49"N latitude and 143°38'03"W longitude North American Datum of 1983 (NAD83). The POL Tanks site (SS017) is one of 15 sites located at the Barter Island LRRS being addressed under the U.S. Air Force (USAF) Environmental Restoration Program (ERP). The Alaska Department of Environmental Conservation (ADEC) contaminated site record key (reckey) number is 198931X102584. Barter Island LRRS is not listed on the National Priorities List.

Site SS017 is located northeast of Module Train D and west of the POL Catchment (LF003) at 70°07'54"N and 151°38'09"W. These are the coordinates of sample point ST10, located near the approximate center of the site. Arctic-grade diesel was the only petroleum oil and lubricant (POL) product stored at Site SS017. The site contained six approximately 200,000-gallon above ground storage tanks (ASTs) and associated piping, each within a lined containment berm. The six ASTs located at Site SS017 were demolished and removed from the site in August, 2006 as part of the Clean Sweep Program.

POINT OF CONTACT

Barter Island Remedial Project Manager
611 CES/CEVR
10471 20th Street, Suite 302
Elmendorf Air Force Base AK 99506-2200

STATEMENT OF BASIS AND PURPOSE

This decision document presents the Air Force's decision that no action is necessary under CERCLA. No CERCLA action is being proposed or selected. This decision document was developed in accordance with the Defense Environmental Restoration Program, 10 United States Code (USC) 2701, consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601 (*et seq.*); Executive Order 12580, 52 Federal Register 2923, and to the extent practicable, with Title 40, Part 300 of the Code of Federal Regulations (CFR): National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Under CERCLA section 101(14): "petroleum, including crude oil or any fraction thereof," are substances excluded from CERCLA. At SS017, petroleum (or fuel-related) compounds are the sole contaminants; therefore, the cleanup, and closure of the site is being addressed in accordance with State of Alaska laws and regulations.

This decision is based on the Administrative Record file for this site. The Administrative Record can be accessed by the public by contacting the Community Relations Coordinator at (907) 552-8166 or (800) 222-4137, or at the following web site:
<http://www.adminrec.com/PACAF.asp?Location=Alaska>

The USAF and the State of Alaska, through the ADEC, agree with the decision of no further action under CERCLA.

DESCRIPTION OF SELECTED REMEDY UNDER CERCLA

No remedy has been proposed or selected under CERCLA, as releases at the site are excluded from the CERCLA definitions of hazardous substances, pollutants or contaminants.

STATUTORY DETERMINATIONS

Because only fuel and related substances are associated with this site, no action is required under CERCLA. Petroleum is excluded from the definition of hazardous substances and pollutants and contaminants under 42 USC § 9601 (14) and (33). The release of petroleum products at this site will be addressed under State of Alaska laws and regulations.

DESCRIPTION OF SELECTED REMEDY UNDER STATE LAW

The risk attributed to the concentrations of petroleum and related substances detected at SS017 has been determined to be insignificant to human health and the environment in its present location. The detected substances were all below risk thresholds established by ADEC.

Because soil remains with residual levels of petroleum contaminants above the most stringent cleanup levels, approval from DEC is required prior to disposing or transporting soil from the site (*18 AAC 75.341, Table B2, Over 40-inch Zone, Migration to Groundwater*). In addition, soil may not be disposed in surface water or other environmentally sensitive areas. A notice will be included in the Base Master Plan noting the requirement for DEC approval prior to disposal or transport of the soil and this restriction will be included in the real estate transfer documents if the land is transferred. When it is demonstrated that all contaminants are below the prescribed cleanup levels the site may be closed. The following is the selected remedy for site SS017 under state law:

- Site boundaries shall be surveyed to document the location diesel range organics above 230 mg/Kg.
- The Base Master Plan for Barter Island will include a statement that ADEC approval is required prior to off-site transportation or disposal of soil containing diesel range organics above 230 mg/Kg.
- If the site is transferred, the statement that ADEC approval is required prior to off-site transportation or disposal of site SS017 soil containing diesel range organics above 230 mg/Kg will be included in the property transfer documents.

AUTHORIZING SIGNATURES

These signatures document the USAF and ADEC approval of the remedy selected in this Record of Decision for site SS017 at the Barter Island LRRS.

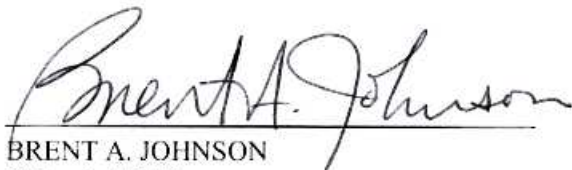
This decision may be reviewed and modified in the future if new information becomes available which indicates the presence of contamination or exposure that may pose an unacceptable risk to human health or the environment.



JOHN HALVERSON
DoD Cleanup Unit Lead
Federal Facilities Environmental Restoration
Alaska Department of Environmental Conservation

8/30/07

Date



BRENT A. JOHNSON
Colonel, USAF
Commander, 611th Air Support Group

10/07

Date

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Part II

DECISION SUMMARY

This decision summary provides an overview of Environmental Restoration Program (ERP) Site SS017 (POL Tanks) located at Barter Island Long Range Radar Station (LRRS), Alaska. The site description, history, regulatory activities, contamination, risk evaluation, summary of investigations and remedial actions, and the rationale for the no action decision are summarized in this section. The no action decision satisfies the requirements of the Defense Environmental Restoration Program, 10 United States Code (USC) 2701, consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601 (*et seq.*), Executive Order 12580, the National Contingency Plan (NCP), and the State of Alaska 18 Alaska Administrative Code (AAC) 75, Article 3 regulations.

1 SITE DESCRIPTION

1.1 Regional Setting

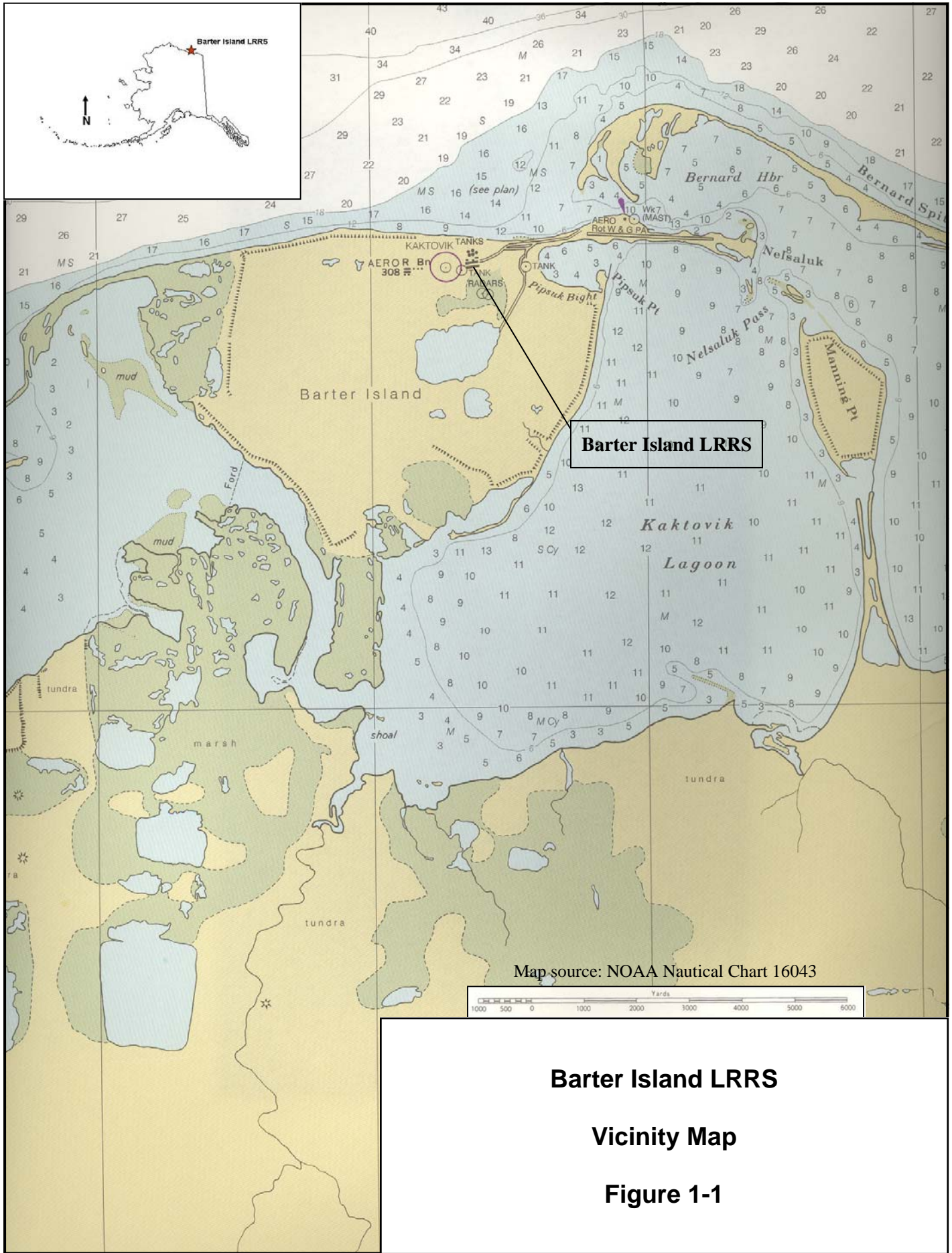
Barter Island LRRS is located at latitude 70°07'49"N, longitude 143°38'03"W (NAD83), approximately 75 miles west of the Canadian Border on the Arctic Coastal Plain adjacent to the village of Kaktovik, Alaska (Figure 1-1). The installation consists of 641 acres of low-lying tundra on the northern boundary of the Arctic National Wildlife Refuge. It is located approximately 646 miles north of Anchorage and 389 miles north of Fairbanks. Air travel provides the only year-round access while marine travel provides late summer access. The general location of the Barter Island LRRS is shown on the inset in Figure 1-1.

The average annual precipitation recorded at Barter Island from 1949 to 1988 was 6.19 inches per year, and 41.8 inches of snowfall (Western Regional Climate Center 2003). Average daily minimum and maximum temperatures in July were 34.8 degrees Fahrenheit (°F) and 45.4°F, respectively. In December, these average temperatures were -18.3 °F and -5.8 °F, respectively. The extreme recorded temperatures are -56 °F and 78 °F. Low cloud cover and fog are common in the summer.

Barter Island is predominately covered by a thin layer of peaty, organic soil (tundra mat). The tundra vegetation is typical of the region and characterized by low growing plants including mosses, lichens, sedges and grasses. Beneath the tundra mat is approximately 2 to 3 feet of sand and loess (wind-blown silt). Underlying these deposits are lenses and layers of marine and alluvial clay, silt, sand, and sandy gravel of the Meade River Unit of the Gubik Formation. Coastal erosion rates reportedly average between 5 and 8 feet per year (Grantz et al. 1980, 1982; U.S. Army Corps of Engineers [USACE] 1998; and Hoefler Consulting Group [HCG] 2004). Permafrost in the station area is up to 1,300 feet thick (Osterkamp and Payne 1981). The seasonal active zone layer typically varies between 2 to 5 feet in thickness.

Small streams, discharging into the Beaufort Sea, drain the lakes and wetlands surrounding the Barter Island LRRS. The largest lake on the island, Fresh Water Lake, is approximately 0.8 miles south of the station. This 9-foot-deep lake, which freezes to approximately 8 feet in winter, is used as a year-round potable water source (NPRA Task Force 1978a, 1978b; Alaska Department of Community and Economic Development 2003).

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Barter Island LRRS

Vicinity Map

Figure 1-1

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Land uses at Barter Island LRRS include industrial activities associated with the operation and maintenance of a radar installation and aircraft runway. Portions of the installation, in particular the beach and roads, may be used for subsistence or recreation, or both, by residents of the nearby City of Kaktovik or the occasional tourist. Current land uses on surrounding properties include industrial and residential activities associated with the City of Kaktovik, as well as subsistence and recreational activities.

Future land use is anticipated to be similar with potentially less industrial use and greater recreational or subsistence activities as the installation reduces in size. Residential use is also possible at some sites if the USAF transfers a portion of the property to another party. The village of Kaktovik was once located on a portion of the installation.

1.2 Facility History

Barter Island LRRS, also known as BAR-M, was the prototype Distant Early Warning (DEW) Line station with a White Alice Communications System (WACS). In 1947, the U.S. Navy constructed the airfield. The main installation was constructed between 1952 and 1953. In 1957, the site was activated and put into operation by the USAF. The WACS was deactivated in 1979, and a contractor operated an earth station at the facility. In the mid-1980s, a Minimally Attended Radar was installed, which still operates today. Two contract personnel are currently stationed at Barter Island LRRS. The contract personnel are responsible for maintenance and management of real property facilities, which include the buildings, roads, grounds, aircraft facilities, antenna structures, and utility plants.

Prior to demolition, the Barter Island facility consisted of four module trains, rotating radar, and facilities to provide full logistical support for the rest of its sector. The remaining A-Train houses a variety of facilities including electronic equipment and work areas; the radar tower (radome); personnel quarters; administration offices; a mechanical room with emergency boiler and associated fuel storage; and a personnel support module with water storage, shower, and toilets. Adjacent to this structure, and connected by corridors, are the power plant and vehicle maintenance building. B-Train, demolished in August 2006 under the Clean Sweep Program, was the main living and personnel support area through the 1970s.

Under the USAF ERP and its predecessor the Installation Restoration Program, environmental investigations have been conducted at the Barter Island LRRS since 1981. These investigations included a preliminary assessment in 1981, additional site assessments in 1986, 1987, and 1992, and a remedial investigation (RI) in 1990. Environmental samples were collected at Barter Island LRRS in 1993 as part of a Remedial Investigation/Feasibility Study (RI/FS) at 14 sites (ICF 1993). Based on this previous work, the USAF conducted a second RI/FS at 15 ERP sites in 2003. These sampling activities and results were published in the *Final Remedial Investigation/Feasibility Study Report for 15 Sites, Barter Island LRRS* (HCG 2004). Additional environmental sampling occurred in 2004 to fill data gaps at six sites on Barter Island (HCG 2005a). Eleven Barter Island LRRS ERP sites were included in the 2006 proposed plans. The remaining sites are still under evaluation.

Past activities potentially resulting in contaminant release at the Barter Island LRRS include:

- Spills during the transfer of fuels in and out of storage tanks;
- Leaks from fuel lines and tanks;
- Spills or leaks of fuel, lubricants, or solvents during vehicle and equipment maintenance activities;

- Spills or leaks from transformers or other electrical equipment containing polychlorinated biphenyls (PCBs); and
- Disposal of wastes and other discarded material containing hazardous substances.

Some of the contaminants encountered during investigations at Barter Island LRRS are benzene, toluene, ethylbenzene, and total xylenes compounds (BTEX); diesel range organics (DRO); gasoline range organics (GRO); polynuclear aromatic hydrocarbons (PAHs); PCBs; petroleum, oil, lubricants (POL); residual range organics (RRO); semi-volatile organic compounds (SVOCs); metals; and volatile organic compounds (VOCs). Most of these contaminants are the result of fuel or oil spills.

2 SITE HISTORY AND ENVIRONMENTAL ACTIVITIES

The following subsections describe the site history of SS017, including environmental investigations and regulatory activities.

2.1 Site Background

This site is located north of the module trains at 70° 07' 54" North latitude, 151° 38' 09" West longitude (NAD 83) (The approximate location of Soil Sample 10 (ST10) located near the center of SS017 (Figure 2-1). Prior to the demolition of the POL tanks, the site was an inactive bulk fuel storage area for arctic-grade diesel fuels located north of the module trains (Figure 2-2). The POL tanks were demolished as part of the Clean Sweep Program in September 2006.

2.2 Site Description

The roughly 11,000 square foot site contained six approximately 200,000-gallon above ground storage tanks (ASTs) and associated piping, each within a lined containment berm. The tank farm is built on a four to five foot thick gravel pad overlaying native tundra and a containment liner is covered with an additional six to twelve inches of gravel. A pump house is located in an unlined area on the south side of the tank farm between two of the tanks. The site is surrounded by tundra to the north, west and south. The gravel pad on which the LRRS facilities are located is to the south of SS017. The nearest residential buildings are in the village of Kaktovik 2,100 feet to the south. The six ASTs located at SS017 were demolished and removed from the site in September 2006 as part of the Clean Sweep Program.

2.2.1 Topography and Stratigraphy

Prior to demolition, the gravel pad at SS017 was flat with the exception of the containment berms surrounding the tank pads. Relief at the site is approximately 5 feet from the top of the berms to the bottom of the main gravel pad, increasing to roughly 10 feet where the two eastern-most POL tanks meet the POL Catchment basin. Soils are generally sandy gravel. Elevation at the pumphouse was 36.6 feet above mean sea level (AMSL) and elevation ranges from 33.4 to 38.1 feet AMSL in the tank berms. Following demolition of the tanks, the containment berms that were clean were removed from the site and used as fill material at other locations on Barter Island. The current topography of the site is generally level with no gradient.

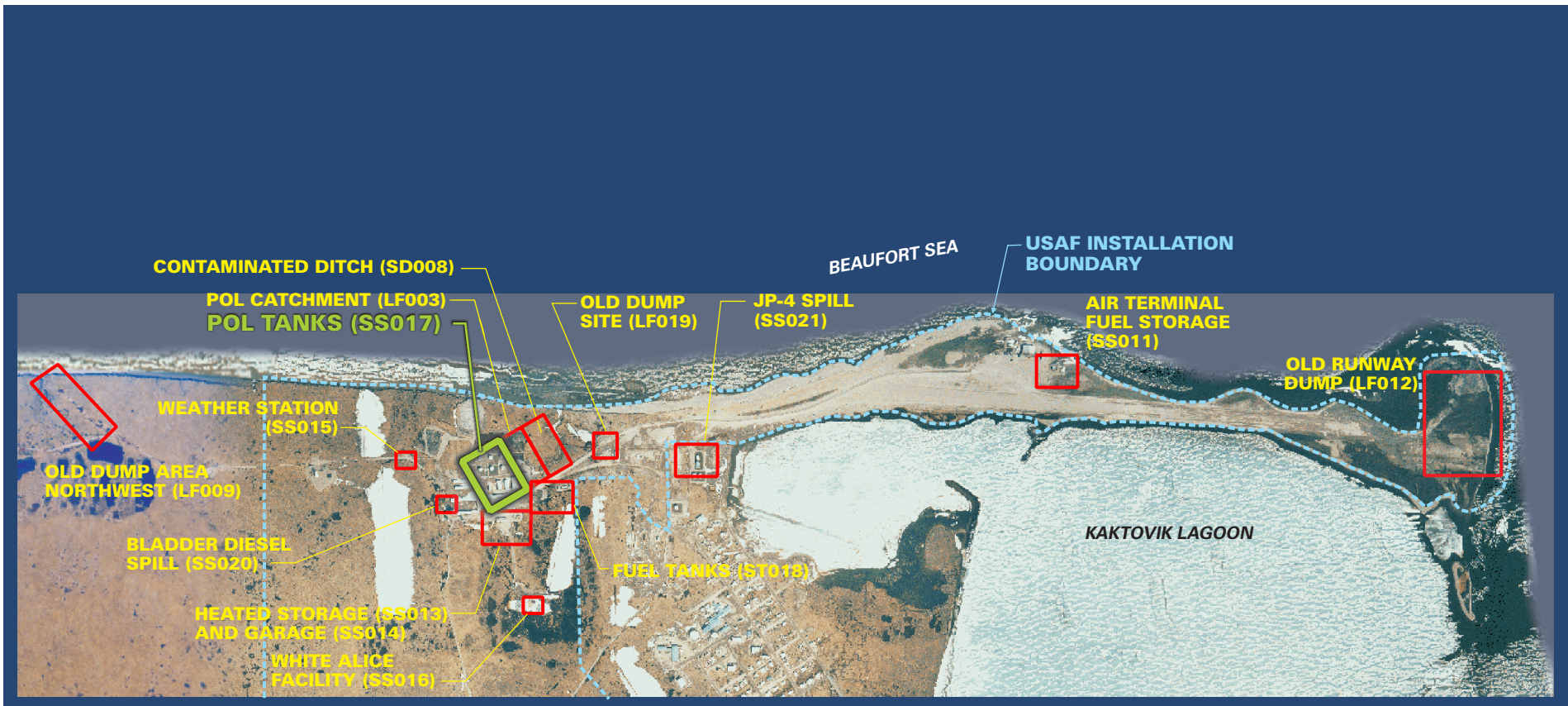
2.2.2 Surface and Subsurface Hydrology

Prior to the removal of the Tanks from SS017, precipitation and snowmelt in the bermed containment area was confined within each lined compartment. The berms were drained by a network of pipes, which were blocked for some years prior to the site being decommissioned. Water either evaporated from the lined area or was drained after inspection for spills. Following

the removal of the tanks from SS017, the containment berms were leveled and most of the fill removed from the site. Surface water no longer is likely to collect and pond at the site. The primary direction of surface flow is towards the east and the POL Catchment (LF003). The POL Catchment is an artificial impoundment designed to contain runoff from the tank farm. Drainage from the POL Catchment generally ran northeast toward the Contaminated Ditch (SD008). Subsurface water was encountered 3 feet below ground surface (bgs) next to the pumphouse, and 1 foot bgs between the pumphouse and main gravel pad (HCG 2004). Active zone transport probably occurs between the top of the water table and the permafrost. However, the transport is likely slow since the surface gradient is low.

During the 2005 investigation, six sample borings encountered active zone water at a depth ranging from 3.5 to 5 feet bgs. Permafrost was not found at the site in September 2005. However, permafrost is likely present within 1 foot of the water table. The only surface water body immediately adjacent to SS017 is the POL Catchment basin on the east side of the tank farm.

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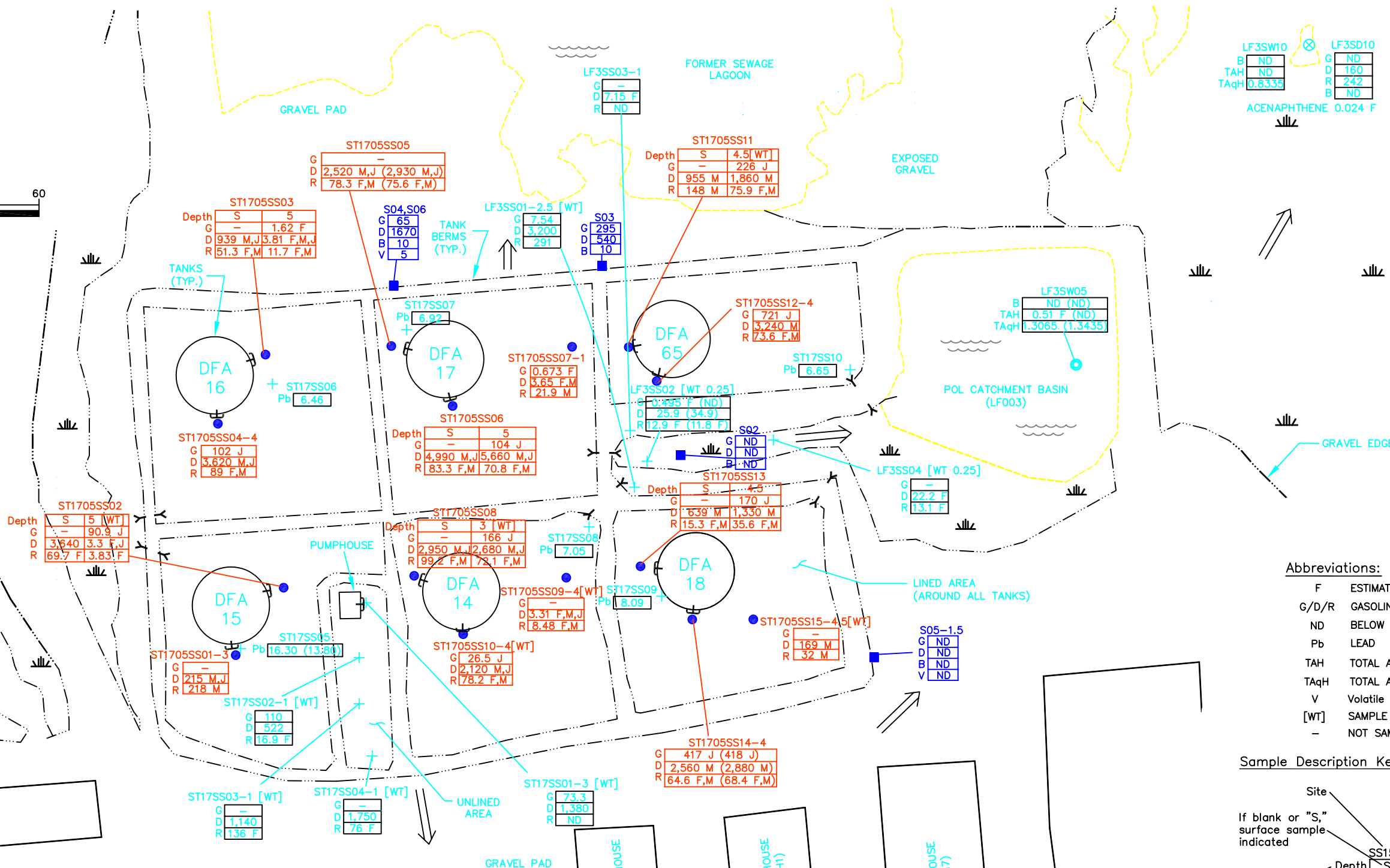
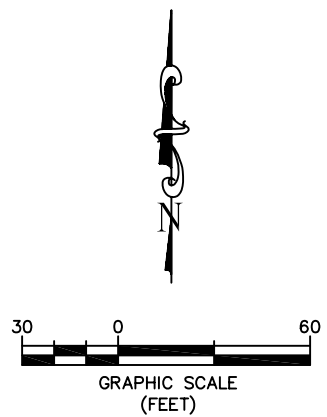
BARTER ISLAND LRRS
ERP SITES MAP
SS017 (POL Tanks) / ST018 (Fuel Tanks)
BARTER ISLAND, ALASKA

PROJECT NO: 9702-041

DATE: 12-14-06

FIGURE NO: **2-1**

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Abbreviations:

- F ESTIMATED VALUE (<PQL BUT >MDL)
- G/D/R GASOLINE, DIESEL, AND RESIDUAL RANGE ORGANICS
- ND BELOW DETECTION LIMIT
- Pb LEAD
- TAH TOTAL AROMATIC HYDROCARBONS
- TAqH TOTAL AQUEOUS HYDROCARBONS
- V Volatile Organic Compounds
- [WT] SAMPLE WAS COLLECTED AT TOP OF WATER TABLE
- NOT SAMPLED

Sample Description Key

Site: SS=Soil, SD=Sediment, SW=Surface Water

Sample Location: SS15 SS 01 -2

Depth in feet, bottom interval: S 2 [WT], G 4920, D 26.8, R 2260, B 982F

Depth in feet, top interval: S 5, G 939 M, J 3.81 F, M, J, R 51.3 F, M, 11.7 F, M

[WT] or [P] indicates sample collection at water table or permafrost

Analyte: Concentration, mg/Kg for soils or µg/L for water (Number in parentheses indicates replicate sample value)

Bold indicates exceedance of Method Two screening criteria.

NOTES: EDGE OF WATER, EDGE OF GRAVEL AND BUILDING LOCATIONS SHOWN ARE BASED ON A COMBINATION OF 9/24/05 FIELD SURVEY AND 2000 AERIAL PHOTOGRAPHY.

ALL 2005 SAMPLES TAKEN BELOW LINER.
S01 SAMPLE NOT SHOWN ON 1993 FIGURE.

LEGEND:

- SEPTEMBER 2005 SOIL SAMPLE
- + 2003 RI SOIL SAMPLE (HCG 2004)
- ⊗ 2003 RI WATER AND SEDIMENT SAMPLE (HCG 2004)
- 2003 RI WATER SAMPLE (HCG 2003)
- 1993 RI WATER SAMPLE (ICF 1993)
- - - WATER EDGE
- - - GRAVEL EDGE
- ⬆ TUNDRA
- ⇒ SURFACE DRAINAGE DIRECTION
- F VALVE AND FLANGE
- Y CULVERT



SITE MAP AND SAMPLE LOCATIONS AT POL TANKS (SS017)

BARTER ISLAND LRRS, ALASKA

PROJECT NO: 9702-041 (2005-712)
DATE: 10-11-06
SHEET SIZE: 11x17
FIGURE NO: 2-2

2.2.3 Ecology

This site is surrounded by tundra on three sides and a gravel pad on one side. The tundra immediately adjacent to the site has been disturbed by the construction of the former sewage lagoon to the north, the Old Landfill to the northwest, a gravel road to the west, and the POL Catchment basin to the east. The Old Landfill and POL Catchment basin are both ERP sites. This disturbed tundra eventually grades into undisturbed tundra with ponded wetland areas characteristic of the region. The gravel pad to the south located between the tanks and warehouse buildings receives some vehicle traffic from site workers and residents.

2.3 Summary of Investigations and Remedial Actions

Remedial investigations of SS017 were conducted in 1993, 2003, and 2005 (Figure 2-2). As part of the 1993 RI, SS017 was investigated as a possible source area of fuel contamination for the downgradient POL Catchment (LF003) site. During the RI, no samples were collected within the lined containment areas because the tank farm was active. Four soil samples were collected from drainage pathways downgradient of the tank farm. The samples were analyzed for contaminants associated with petroleum products since the site was used as a fuel storage and distribution facility. The samples collected at SS017 during the 1993 RI were analyzed for GRO, DRO, RRO, and BTEX, and one soil sample was analyzed for VOCs and SVOCs (Table 2-1). The highest sample results (295 mg/Kg for GRO and 1,670 mg/Kg for DRO) indicate that the site was not significantly impacted by petroleum hydrocarbons. The RI concluded no remedial action of the site was necessary while the tank farm remained active.

During the 2003 RI, soil, sediment and surface water samples were collected from SS017 and in the vicinity of downgradient of LF003. Soil samples were collected from above the liner within SS017 and near the pumphouse. The samples were analyzed for contaminants associated with petroleum products including GRO, DRO, RRO, BTEX, and lead. Sampling below the liner was deferred until it could be concluded that soils above the liner were clean. The sample results indicated that the concentrations of petroleum hydrocarbons and lead in the soil were below ADEC Method Two cleanup levels for the Arctic zone. Surface water samples collected downgradient of SS017 analyzed for PAHs and BTEX were found to be below detectable limits and Alaska Water Quality Standards (18 AAC 70). The 2003 RI report concluded the current conditions at the site posed no risk to human health or the environment. No further action was recommended until the liner and tanks were removed and gravel below could be inspected.

As part of the 2005 RI, samples were collected from below the liner at SS017. Samples were collected and analyzed for GRO, DRO, and RRO. No contaminants were found to exceed the Method Two soil cleanup levels for the Arctic zone. The highest recorded DRO sample was 5,660 mg/Kg collected at a depth of 5 feet bgs below a tank valve. The maximum GRO and RRO detections of 721 and 218 mg/Kg were considerably lower indicating that the site was primarily impacted by diesel fuel. Based on the results of the 2005 RI and previous RIs, the site was recommended for No Further Action (NFA) and closure.

In 2006, the gravel containment berms were removed from the site. Prior to removal from the site the berms were field screened using a photo-ionization detector (PID) instrument for the presence of fuel related compounds. Berms where PID readings were greater than 50 ppm were considered contaminated material, left in place and graded into the surface of the site. Berm material where the PID readings were less than 50 ppm were considered clean and used as backfill material in other areas of the installation.

2.4 Regulatory Enforcement Activities

There are no Federal Facility Agreements or state agreements for the Barter Island LRRS. No sites are listed on the National Priorities List. Hazardous substances regulated under CERCLA have not been detected at SS017. There have been no regulatory enforcement activities at the site.

Table 2-1 Summary of Soil Sample Results at SS017

Media	Analyte ¹	Screening Criteria		1993 RI/FS Maximum Concentration ^{4,5}	2003 RI/FS Maximum Concentration ^{4,5}	2005 RI/FS Maximum Concentration ^{4,5}	2005 RI/FS Frequency of Detections ⁶
		18 AAC 75 Cleanup Level (Arctic Zone) for Soil ²	Full Closure Criteria ³				
Soil (mg/Kg)	Fuels⁷						
	GRO/GRPH	1,400	260	295	110 J	721 J	11/11
	DRO/DRPH	12,500	230	1,670	1,750	5,660 J,M	21/21
	RRO/RRPH	13,700	9,700	NS	136 F	218 M	21/21
	VOCs (Methods 8021/8260)						
	Benzene	13	0.02	ND (0.06)	ND (0.018)	0.13	2/11
	Toluene	180	4.8	1	0.167	0.218 F	3/11
	Ethylbenzene	89	5	0.4	1.11 J	1.48	9/11
	Xylene (total)	81	69	0.6	4.44	7.83	10/11
	1,2,4-Trimethylbenzene	--	--	0.511	NS	NS	NS
	Metals						
	Lead	400	400	NS	16.3	NS	NS

Notes:

- 1 - Only detected compounds or compounds of interest are shown.
- 2 - The Method Two soil cleanup levels for the Arctic Zone corresponds to the lowest value for ingestion as listed in 18 AAC 75.341, Tables B1 and B2. Method Two cleanup levels are protective of human health under a residential scenario.
- 3 - To achieve full closure instead of conditional closure, the most stringent Method Two soil cleanup levels must be achieved. These levels are listed in 18 AAC 75.341, Tables B1 and B2 for the Over 40 Inch Zone, Migration to Groundwater pathway.
- 4 - For Soil: highest detected values are shown. Maximum concentration is the maximum detection or highest PQL if all samples were U.
- 5 - 1993 data taken from the Final RI/FS, Vol. 1 and 2, Barter Island Radar Installation, Alaska (ICF, 1996). 2003 data taken from the Final RI/FS Study Report for 15 Sites, Barter Island LRRS, Alaska (USAF, 2004).
- 6 - The frequency of detections is the number of times the analyte was detected in the samples collected at the site. Frequencies do not include replicate samples collected.
- 7 - Methods used in 1993 were GRPH, DRPH, and RRP, which are comparable to current AK Methods for GRO, DRO, RRO.

Abbreviations

"--"	Screening criteria did not exist for this compound	J	Estimated value
CMC	Continuous Maximum Concentration	mg/Kg	Milligrams per Kilogram
F	Estimated quantity below the PQL	GRO	Diesel Range Organics
NS	Not Sampled	DRO	Diesel Range Organics
NA	Not Applicable	RRO	Residual Range Organics
ND	Compound not detected (with PQL in adjacent parentheses)	RCRA	Resource Conservation and Recovery Act.

Table 2-2 Summary of Sediment and Surface Water Sample Results at SS017

Media	Analyte ¹	Screening Criteria			1993 RI/FS Maximum Concentration ^{5,6}	2003 RI/FS Maximum Concentration ^{5,7}	2005 RI/FS Maximum Concentration	2005 RI/FS Frequency of Detection
		NOAA SQiRT for Freshwater Sediment ²	18 AAC 70 MCL for Surface Water ³	NOAA SQiRT for Fresh Surface Water ⁴				
Sediment (mg/Kg)	VOCs (Method 8021)							
	Ethylbenzene	--	--	32	0.982	0.059F	NS	NS
	Xylene (total)	--	--	--	5.3	0.306	NS	NS
	1,2,4-Trimethylbenzene	--	--	--	0.12J	NS	NS	NS
	1,3,5-Trimethylbenzene	--	--	--	0.379J	NS	NS	NS
	Methylene Chloride	--	--	--	0.225J	NS	NS	NS
	n-Butylbenzene	--	--	--	0.12	NS	NS	NS
	Tetrachloroethane	--	--	--	5.42	NS	NS	NS
	SVOCs/PAHs (Method 8270C SIM)							
	Naphthalene	--	--	--	NS	6.82	NS	NS
	Surface Water (mg/L)	VOCs (Method 8021)						
Benzene		--	5	5,300	2.7	ND (0.5)	NS	NS
Toluene		--	--	17,500 ^{CMC}	ND (1)	ND(2)	NS	NS
Ethylbenzene		--	700	32,000 ^{CMC}	19	ND (2)	NS	NS
Xylene (total)		--	10,000	--	38.4	0.51F	NS	NS
1,2,4-Trichlorobenzene		--	--	--	19	NS	NS	NS
1,3,5-Trimethylbenzene		--	--	--	13	NS	NS	NS
Isopropylbenzene		--	--	--	2.9	NS	NS	NS
n-Butylbenzene		--	--	--	2.4	NS	NS	NS
n-Propylbenzene		--	--	--	3.6	NS	NS	NS
sec-Butylbenzene		--	--	--	1	NS	NS	NS
p-Isopropyltoluene		--	--	--	2.1	NS	NS	NS
PAH (Method 8270C SIM)								
Naphthalene		--	--	620	35	0.054	NS	NS

Notes:

- 1-Only detected compounds or compounds of interest are shown.
- 2-NOAA SQiRT values is the probable effects level (PEL) for freshwater values indicated.
- 3-18 AAC 70 Maximum Contaminant Level (ADEC 2003).
- 4-NOAA SQiRT values shown for fresh water criteria continuous screening concentrations (CCC) unless otherwise indicated (NOAA 1999). Criteria maximum concentration (CMC) shown if no COC available.
- 5-For soil/sediment: highest detected values shown. Maximum concentration is the maximum detection or the highest PQL if all samples were U. For water: highest detected values shown.
- 6-1993 data taken from the Final RI/FS (ICF 1996). 2003 data taken from the Final RI/FS Study Report for 15 Sites, Barter Island LRRS, Alaska (USAF 2005).
- 7-Sediment and surface water data is from site LF003 located downgradient from SS017.

Abbreviations

--	Screening criteria did not exist for this compound	PQL	Practical Quantitation Limit
CMC	Continuous Maximum Concentration	PAH	Polynuclear Aromatic Hydrocarbons
F	Estimated quantity below the PQL	µg/L	Micrograms per Liter
NS	Not Sampled	VOC	Volatile Organic Compounds
NA	Not Applicable	SVOC	Semivolatile Organic Compounds
ND	Compound not detected (with PQL in adjacent parentheses)	U	Compound not detected w/PQL in adjacent parentheses
J	Estimated value	mg/Kg	Milligrams per Kilogram

3 COMMUNITY PARTICIPATION

Public participation has been an important component of the CERCLA process at Barter Island LRRS. All decisions made for SS017 were based on information contained in the administrative record. Activities aimed at informing and soliciting public input regarding cleanup activities for the site are as follows:

Proposed Plan. A proposed plan that presented the cleanup alternatives proposed by the Air Force for Barter Island LRRS was submitted for public review on October 17, 2006. A public meeting was also held at that time.

Public Comment Period. The public comment period for the proposed plan was October 17, 2006 through November 16, 2006. If any comments were received, they would have been included in Appendix A, but no written or verbal public comments were received on the proposed plan.

Public Meetings. The Air Force held a public meeting in Kaktovik on October 17, 2006 to discuss the proposed plan and record verbal comments. Responses to all comments received on the proposed plan are included in Appendix A of this decision document. Additional community involvement activities for Barter Island LRRS include Restoration Advisory Board (RAB) meetings. The RAB consists of representatives from the community, ADEC and the USAF. A RAB was formed in Kaktovik in 1998 and meets quarterly. RABs provide a forum for discussion

and exchange of information among federal and state agencies and the community regarding cleanup of a military site. The RAB plays an important role in the decision-making process.

Responsiveness Summary. No public comments were received during the public comment period for SS017.

Updated Mailing List and Mailing Events. A mailing list of interested parties is maintained and updated regularly by the Air Force Community Relations Coordinator.

Administrative Record. The administrative record, located at the 611 Civil Engineering Squadron (CES) office at Elmendorf Air Force Base, Alaska, is continually updated. The administrative record for the Barter Island LRRS contains the information used to support this decision and is accessible to the public. An index of documents is included in Appendix B. A website with the administrative record current up to 2003 is also available to the public at: <http://www.adminrec.com/PACAF.asp?Location=Alaska>

Information Repository. The information repository is a file containing newsletters, fact sheets, and community relations documents relating to proposed plans and response actions for all of the ERP sites at Barter Island LRRS. Four information repositories are located in Kaktovik: the mayor's office, the school library, the Native Village of Kaktovik, and the Kaktovik Inupiat Corporation.

Management Action Plan. The Management Action Plan (MAP) is updated periodically and made available to the public in order to provide a summary of all restoration activities in one document. The most recent MAP was published in 2003 (USAF 2003) and is part of the Administrative Record.

4 SITE CONTAMINATION AND CHARACTERISTICS

4.1 Nature and Extent of Contamination

4.1.1 Known or Suspected Sources

Based on the findings of the 1993, 2003, and 2005 investigations at SS017, low-level petroleum hydrocarbons contamination is present both above and below the liner material in the former tank farm. Small leaks from valves and flanges associated with the ASTs are the likely source of this contamination.

4.1.2 Types of Contamination and the Affected Media

Table 2-1 summarizes the maximum concentration of detected contaminants or highest practical quantitation limit (PQL) if samples were not detected. Figure 2-2 shows the location of samples collected in 1993, 2003, and 2005 at SS017. Results of the 1993, 2003, and 2005 RIs indicated that the concentrations of contaminants were below the risk-based screening criteria (see Table 6-1) established for soil at SS017; therefore, there are no Contaminants of Concern (COCs) present at this site.

4.1.3 Known or Potential Routes of Migration

The primary mode of contaminant transport is overland flow over the gravel pad from snowmelt during breakup and from rain. The primary mode of contaminant transport at SS017 was from petroleum-laden precipitation and snow melt overflowing the containment berms on to the surrounding tundra. The highest contamination is present in subsurface soils, so surface water runoff should not be a significant transport mechanism. Contaminants could also be transported

in subsurface water, but this is unlikely because the ground is frozen during breakup, and the gradient at the site is low. Vertical migration is limited by the presence of permafrost.

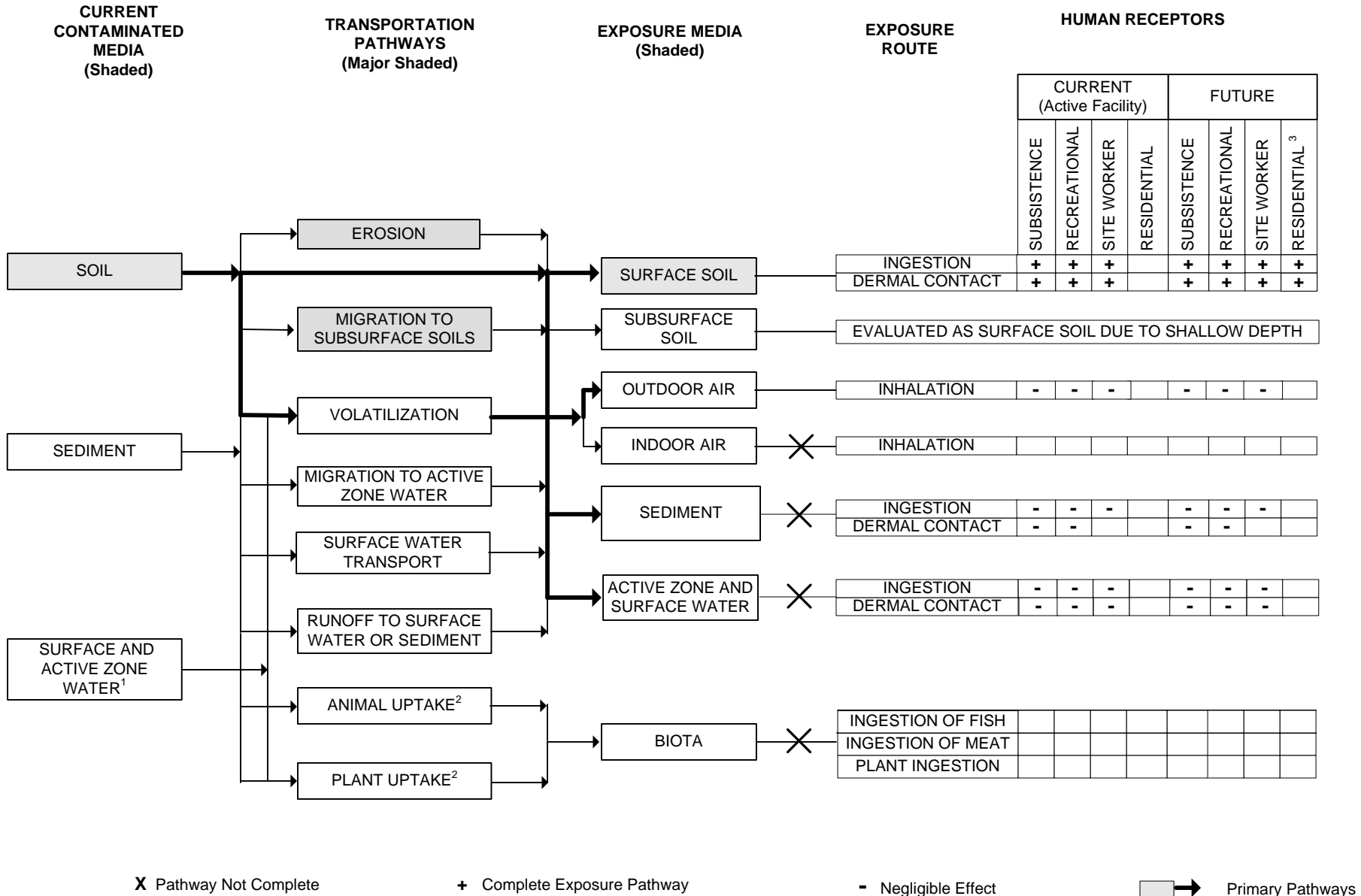
4.2 Conceptual Site Model for Human Health and Ecological Receptors

As part of the 1993, 2003, and 2005 RI/FS, conceptual site models were developed for human and ecological exposure pathways to illustrate complete and incomplete exposure pathways at SS017. For purposes of evaluating exposure pathways, it was assumed there are no residents at Barter Island LRRS. There may be occasional use by site workers, and recreational and subsistence users. Future exposure pathways assume the facility is inactive. Future land uses could include subsistence, recreational and residential. Sites without contaminants were not considered to have potential exposure pathways. Graphical site-specific conceptual site models for human and ecological receptors have been developed depicting known exposure pathways for SS017 (Figures 4-1 and 4-2).

The accidental ingestion or dermal contact with contaminated soil is considered the most probable exposure pathway at SS017 for human and ecological receptors. Although these are considered complete exposure pathways, the concentration of contaminants in surface soils is below risk-based screening criteria (Table 6-1) indicating the effects of exposure are considered to be negligible. Surface water is not present at SS017 and downgradient surface water at POL Catchment site LF03 is not a source of drinking water and contained only trace levels of petroleum related contamination when tested. Therefore, ingestion of surface water on or downgradient from SS017 is not considered to be a complete exposure pathway. Inhalation is not considered a significant pathway since the low concentration of contaminants in the soils and the generally low air temperatures tends to inhibit volatilization. Consuming plants and animals harvested adjacent to SS017 would not lead to exposures since there were no compounds identified that tend to bioaccumulate in the environment. In general, the site is poor ecological habitat and not likely to be frequented by residents or local fauna. Groundwater is not a current or future source of drinking water at Barter Island. In addition, the vertical migration of potential contaminants is limited by the presence of permafrost.

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Figure 4-1 Human Health Conceptual Site Model for Sites SS017 (POL Tanks)



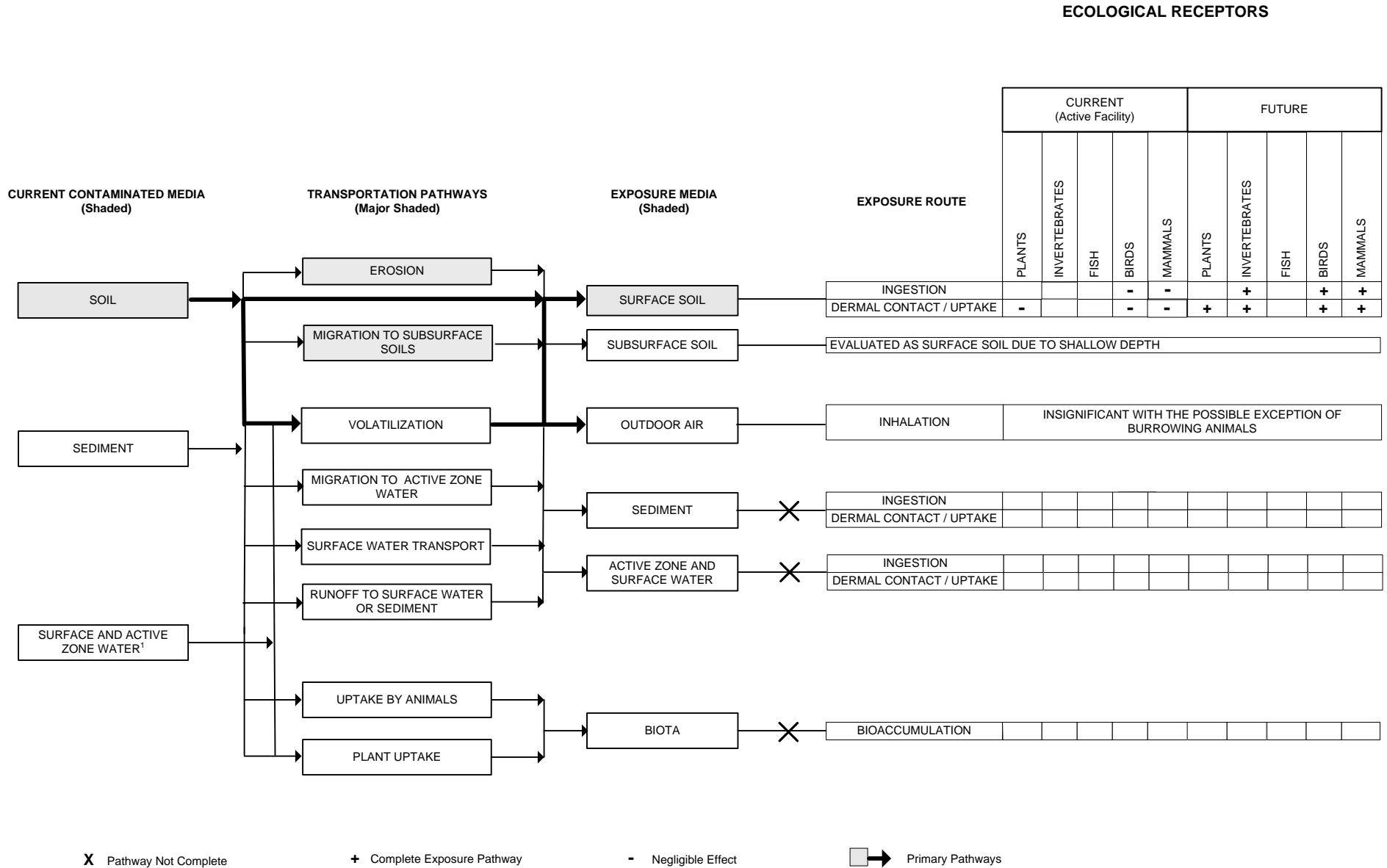
¹ Surface water includes active zone water located in subsurface soils above the permafrost. There is no "groundwater" at the site.

² Concentrations may increase due to bioaccumulation.

³ There are no current plans for residential use of the site. An interest does exist in using the site in the future as a staging area for the oil and gas industry.

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Figure 4-2 Ecological Conceptual Site Model for Sites SS017 (POL Tanks)



¹ Surface water includes active zone water located in subsurface soils above the permafrost. There is no "groundwater" at the site.

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5 CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

5.1 Land Uses

The POL Tank area was removed from active service sometime between the late 1980s and 1997 and the tanks were demolished in September 2006 as part of the Clean Sweep Program. There is currently no planned land use for this site and no observed or reported uses of the site by the local residents. The Air Force plans to retain the property after SS017 has been decommissioned. Future land use at the site is anticipated to be similar to current use with a shift away from industrial uses and toward greater recreational and subsistence activities. There may be residential land use at nearby areas if the USAF relinquishes use of the site or nearby areas. Residential expansion may occur in the future since developable land on Barter Island is limited, although none is currently planned.

5.2 Ground and Surface Water Uses

Groundwater is not a current or future source of drinking water at Barter Island. Surface water near the site is limited to small areas of standing water typical of ponded wetlands in the area and there are no large bodies of water that could be used as a drinking water source.

6 SITE RISKS

6.1 Site Screening Criteria

The sampling results from the remedial investigations conducted at SS017 were compared against screening criteria to determine whether there were COCs that require remedial actions to protect human health and the environment. Table 6-1 contains the primary regulatory and risk-based screening criteria used to identify COCs and evaluate risk.

These screening criteria are protective of human health and the environment. They were selected in accordance with the current and projected land use at the site as described in Section 5. Criteria protective of people using the site for residential purposes were used to screen the data, even though there is no current or planned residential land use at the site.

The primary soil screening criteria are derived from 18 AAC 75, specifically the cleanup levels defined by Methods One or Two for the Arctic zone. The Method One cleanup levels are conservative, non-risk based cleanup levels that have been established for petroleum hydrocarbons (DRO, GRO, RRO). Method One cleanup levels are more stringent than the Method Two cleanup levels. Method Two cleanup levels have been established for specific chemicals (listed in 18 AAC 75.341, Tables B1 and B2) and are protective of long-term exposures under residential land use scenarios. Method Two cleanup levels are risk-based cleanup levels based on a cancer risk management standard of 1 in 100,000 (1×10^{-5}) and a non-carcinogenic risk standard or hazard index of 1.0, set forth in 18 AAC 75.325(h). Method Two cleanup levels were the primary soil screening criteria used for petroleum hydrocarbons at SS017 because they were determined to be appropriate based on the site conditions, in accordance with 18 AAC 75.340(c). There were no surface water bodies near the site, and the petroleum hydrocarbons in the pad do not appear to be migrating based on the 1993 and 2003 sample results.

When applying Method Two cleanup levels for a site, 18 AAC 75.325(g) states that the risk from hazardous substances can not exceed a cumulative carcinogenic risk of 1 in 100,000 and a cumulative non-carcinogenic hazard index of 1.0. Chemicals that are detected at greater than or equal to 1/10th of the Method Two ingestion or inhalation cleanup levels must be included when calculating cumulative risk. Therefore, as part of the screening process, contaminants exceeding 1/10th the ADEC Method Two cleanup levels from the most recent RI (2005), were identified and their maximum concentration used to calculate the cumulative human health risk in accordance with ADEC guidelines (ADEC 2002). Per this ADEC guidance, lead, GRO, DRO and RRO are not included in cumulative risk calculations.

Water and sediment sample results from down gradient areas were screened against the National Oceanic and Atmospheric Administration (NOAA) Screening Quick Reference Tables (SQuiRT) (NOAA 1999). The SQuiRTs were developed for internal use by the Coastal Protection and Restoration (CPR) Division of NOAA. The CPR Division identifies potential impacts to coastal resources and habitats likely to be affected by hazardous waste sites. The SQuiRT values are intended for screening purposes only; they do not represent official NOAA policy and do not constitute cleanup levels (NOAA 1999). Permissible Exposure Limits (PELs) are criteria that have been developed by NOAA for various contaminants that represent levels above which adverse effects in ecological receptors are expected. Surface water samples were also compared to the 18 AAC 70 Alaska Water Quality Standards, which include criteria protective of human health (referred to as maximum contaminant levels [MCL]) and ecological receptors in both marine and fresh waters.

A chemical was considered a COC if it exceeded the screening criteria, unless further evaluation indicated the contaminants posed little risk. At sites where COCs were identified during the 1993 RI, including SS017, a baseline human health and ecological risk assessment was performed (ICF 1996c). The baseline human health risk assessment evaluated both industrial and residential exposure groups (DEW line installation worker, native adult and child inhabitant). Table 6-1 summarizes the screening criteria that were used to identify COCs and evaluate risk for site SS017.

Table 6-1 Primary Regulatory and Risk-Based Screening Criteria for SS017

Media	Screening Criteria (Chemical ARAR)
Soil (including tundra, beach sands, and gravel pads)	<ul style="list-style-type: none"> 18 AAC 75.341, Tables B1 and B2, Arctic zone (i.e., ADEC Method Two Soil cleanup levels for the Arctic zone), Ingestion and Inhalation¹
Sediment (from aquatic habitats)	<ul style="list-style-type: none"> National Oceanic and Atmospheric Association SQuiRT Probable Effects Levels for freshwater or marine sediment²
Surface Water	<ul style="list-style-type: none"> 18 AAC 70 (Alaska Water Quality Standards) Alaska Water Quality Criteria Manual for Toxic and other Deleterious and Inorganic Substances SQuiRT for aquatic life criteria continuous concentration.
<p>Notes:</p> <p>¹ Referred in this document as "Method Two cleanup levels." ² Samples collected from permanent water bodies or ephemeral drainages judged to be viable aquatic habitat were classified as sediment and screened against sediment criteria. The criterion is also considered secondary for soils that have a high likelihood to erode into freshwater or marine environments.</p> <p>Key: AAC = Alaska Administrative Code ADEC = Alaska Department of Environmental Conservation</p>	

6.2 RISK EVALUATION

6.2.1 Contaminants of Concern

After evaluating the risk assessment (USAF 1996c) and subsequent sampling results obtained during the RIs (ICF 1996b, HCG 2004 and 2005), there were no COCs identified at SS017. Soil contamination at the site is not impacting surface water or downgradient areas. The contamination at the site is historical and appears to be degrading in place.

6.2.2 Summary of Site Risks

Based on findings of the previous RIs and the baseline risk assessment, no remedial action is necessary at SS017 to ensure protection of human health and the environment. No further action and closure under CERCLA and conditional closure under Alaska State laws and regulations is recommended. The following sections detail the basis for this no further action decision.

6.2.2.1 Evaluation of Site Risks

Sampling and analysis during the 1993 RI found no significant contamination at SS017 (ICF, 1996a). Neither of the potential COCs identified for the site, GRO or DRO, were detected in soil samples collected from POL Tank site. Sediment samples collected from the adjacent sewage lagoon contained elevated levels of GRO and DRO. However, none of the Method Two cleanup levels for GRO (1,400 ppm) and DRO (12,500 ppm) were exceeded in samples collected from the sewage lagoon during the 1993 RI. Non-cancer hazards and carcinogenic risk for the SS017 were determined to be below acceptable regulatory thresholds. Potential cancer and hazard risks for the 1993 RI were calculated using the maximum concentrations detected at each site using a residential exposure scenario. Risk calculations for SS017 were based on samples collected from the sewage lagoon. Cancer risk associated with DRO and GRO was calculated to be $<10^{-7}$ and the non-cancer hazard was calculated to be 0.001 and 0.027.

As part of the 2003 RI/FS, additional samples of sediment and surface water were collected from SS017 and down gradient at LF003. Soil samples were collected within the lined area of SS017 and adjacent to the pumphouse. Sediment samples and surface water samples were collected from LF03 and surface water samples were collected from the tundra downgradient from LF03. No exceedances of NOAA SQuiRT PELs or ADEC Method Two soil cleanup levels were detected at any of the sediment or surface water sampling locations. Based on the results of the 2003 sampling it was concluded that SS017 posed no current risk to human health or the environment.

In 2005, soil samples were collected from beneath the liner of the POL Tanks site. Samples were collected from below each of the areas that had been previously identified as being contaminated. Sample results from the 2005 RI showed no exceedances of ADEC Method Two soil cleanup levels.

6.2.2.2 ADEC Cumulative Risk Calculations

Sample results from both RIs conducted at SS017 indicated that there were no applicable contaminants exceeding Method Two soil cleanup levels for the Arctic zone, or $1/10^{\text{th}}$ the cleanup levels. Therefore, cumulative risk calculations were not necessary to quantify the risk, per 18 AAC 75.340(k). The current site conditions meet the ADEC risk management standards (risk from hazardous substances does not exceed a cumulative carcinogenic risk of 1 in 100,000 and a cumulative non-carcinogenic hazard index of 1.0) for residential land use.

6.3 Conclusion

Remedial investigations (RIs) have been conducted at SS017 since 1993. Based on the findings of these investigations and the baseline risk assessment, no remedial action is necessary to ensure protection of human health and the environment. The site is acceptable for all current and projected future land uses, including residential land use. No remedy has been proposed or selected under CERCLA. However, residual levels of petroleum contaminants remain at SS017 above the most stringent Method Two soil cleanup levels (18 AAC 75.341, Table B2, Over 40-inch Zone, Migration to Groundwater) (Table 6-2). Therefore ADEC has determined conditional closure under state laws and regulations are appropriate for this site. ADEC approval is required prior to disposing or transporting soil from the site (18 AAC 75.325(i)). In addition, soil may not be disposed in surface water or other environmentally sensitive areas. A notice will be included in the Base Master Plan noting the requirement for DEC approval prior to disposal or transport of the soil and this restriction will be included in the Real Estate transfer documents if the land is transferred.

In summary, based on the current concentrations of petroleum contaminants remaining at SS017, the site has been selected for no further action and conditional closure under Alaska State Laws and regulations. No public comments were received, therefore there were no changes required in response to public comment. The site boundaries shall be surveyed and included in the Base Master Plan along with a statement that ADEC approval is required prior to off-site transportation or disposal of soil containing residual contaminants.

Table 6-2 Site Specific Closure Criteria for SS017 as determined by ADEC

Parameters	Method 2 (Over 40 Inch Non-Arctic) ¹	1993 RI/FS Maximum Concentration	2003 RI/FS Maximum Concentration	2005 RI/FS Maximum Concentration	2005 RI/FS Frequency of Detections
Fuels					
GRO/GRPH	260	295	110 J	721 J	11/11
DRO/DRPH	230	1,670	1,750	5,660 J,M	21/21
RRO/RRPH	9700	NS	136 F	218 M	21/21
VOCs					
Benzene	0.02	ND (0.06)	ND (0.018)	0.13	2/11
Toluene	4.8	1	0.167	0.218 F	3/11
Ethylbenzene	5	0.4	1.11 J	1.48	9/11
Xylene (total)	69	0.6	4.44	7.83	10/11
Metals					
Lead	400	NS	16.3	NS	NS

Notes:

1- 18 AAC 75.341, Table B2, over 40-inch Zone, Migration to Groundwater Soil Cleanup Levels. Offsite disposal of soils above these levels other than a Class II landfill requires ADEC approval. Bold cells in this column indicates exceedences.

2-Lead value represents site specific cleanup level based on residential land use (18 AAC 75.340).

3-Highest detected values shown

4-Total xylenes exceedences is localized in one sample and therefore not considered a risk to human health and the environment

Abbreviations

J Estimated value
M Matrix effect Noted

NS Not sampled

COC = Contaminant of Concern

PQL Practical Quantitation Limit

MDL Method Detection Limit

mg/Kg Milligrams per Kilogram

Shaded cell indicates soil concentration > Method Two cleanup level.

7 STATUTORY AUTHORITY FINDING

The U.S. Environmental Protection Agency has declined to comment and deferred regulatory authority to the ADEC. Only fuel and related substances are associated with this site. No action is necessary under CERCLA because petroleum is excluded from the definition of hazardous substances and pollutants and contaminants under USC § 9601 (14) and (33). The release of fuel and related substances in Alaska are regulated by Alaska State Statute Title 46, Water, Air, Energy and Environmental Conservation which is consistent with CERCLA and the NCP. Releases of petroleum and related substances identified at SS017 will be addressed in accordance with State of Alaska laws and regulations. No action at site SS017 is necessary to ensure protection of human health. However, restrictions on the relocation of soils are necessary to ensure protection of the environment, specifically water quality. The remedy will result in no

hazardous substances or contaminants remaining at site SS017 above levels that allow for unlimited use and unrestricted exposure; therefore, no five-year review is required.

8 DOCUMENTATION OF SIGNIFICANT CHANGES

The proposed plan for two ERP Sites at Barter Island LRRS including SS017 was released for public comment on October 17, 2006. The proposed plan identified no further action and closure under CERCLA and conditional closure under Alaska State laws and regulations as the proposed action. No written or verbal comments were received by the Air Force during the public comment period. Therefore, it was determined that no significant changes to the proposed action, as originally identified in the proposed plan, were necessary or appropriate.