APPENDIX R

Landfills, Mines, and Spill/Release Sites near the Project Area

APPENDIX R, LANDFILLS, MINES, AND SPILL/RELEASE SITES NEAR THE PROJECT AREA

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					TAE	BLE R-1								
	Summary of Landfills, Mines, and Spill/Release Sites near the Gas Treatment Facilities ^a													
Location	Site Name	Type of Site ^b	Regulatory Agency/ Program	Regulatory Status °	Inside Project Footprint	Direction from Project Footprint	Distance to Project Footprint (feet)	Depth to Groundwater (ft bgs) d,e	Estimated Groundwater Flow Direction ^{f,e}	Estimated Surface Flow Direction ^{9,e}	Relative Likelihood for Encountering Contamination h			
Gas Treatme	nt Plant													
Near CGF road	BPX Central Gas Facility Therminol Spill	Therminol	ADEC/CSRP	Open	No	East	1,121	Seasonal 1.5 - 3 ft Arctic Zone- permafrost: surface water migration only	NA	Surface water flow is south into lake at former pad or east into Prudhoe Bay.	Less likely			
Near new haul road	BPX Term Well A	Drilling mud release	ADEC/CSRP	Cleanup Complete with Institutional Controls	No	West	69	Seasonal 1.5 - 3 ft Arctic Zone- permafrost: surface water migration only	NA	Surface water flow is north and northeast into ponds bordering former pad.	Less likely			
Near expanded module haul road	BPX Abel State 1	Diesel spill	ADEC/CSRP	Cleanup Complete	No	Southeast	439	Seasonal 1.5 - 3 ft Arctic Zone- permafrost: surface water migration only	NA	Surface water flow is north and northeast into tundra wetlands bordering former pad.	Less likely			
Near CGF road	BPX Central Gas Facility Therminol Spill	Therminol spill	ADEC/CSRP	Open	No	Northeast	424	Seasonal 1.5 - 3 ft Arctic Zone- permafrost: surface water migration only	NA	Surface water flow is west and south off pad into tundra wetland.	More likely			

					TABLE	R-1 (cont'd)								
	Summary of Landfills, Mines, and Spill/Release Sites near the Gas Treatment Facilities ^a													
Location	Site Name	Type of Site ^b	Regulatory Agency/ Program	Regulatory Status °	Inside Project Footprint	Direction from Project Footprint	Distance to Project Footprint (feet)	Depth to Groundwater (ft bgs) d,e	Estimated Groundwater Flow Direction ^{f,e}	Estimated Surface Flow Direction ^{g,e}	Relative Likelihood for Encountering Contamination h			
PTTL (Neare	est Milepost)													
0.0	Exxon Point Thomson Exploration Unit 1	Diesel spill	ADEC/CSRP	Cleanup Complete	No	North	1,068	Seasonal 1.5 - 6 ft Arctic Zone- permafrost: surface water migration only	NA	Surface water either sheet- flows off pad into Prudhoe Bay or surrounding tundra wetlands or ponds on site.	Less likely			
0.2	Exxon Point Thomson State C1 Pad	Petroleum release	ADEC/CSRP	Open	No	Northeast	927	Seasonal 1.5 – 6 ft Arctic Zone- permafrost: surface water migration only	NA	Surface water either sheet-flows off pad into Prudhoe Bay or surrounding tundra wetlands or ponds on site depending on season and if inside bermed areas of pad.	Less likely			
54.1	BPX Hot Water Plant	Petroleum release	ADEC/CSRP	Open	No	Southwest	700	Seasonal 1.5 - 6 ft Arctic Zone- permafrost: surface water migration only	Northwest, south, and southwest	Surface water ponds or sheet- flows east off pad into Sag River.	Less likely			
54.2	BPX Drill Site Maintenance Warm Storage Facility	Petroleum release	ADEC/CSRP	Cleanup Complete with Institutional Controls	No	Northeast	1,079	Seasonal 1.5 - 6 ft Arctic Zone- permafrost: surface water migration only	Northwest and southwest	Surface water ponds on site or sheet-flows northwest, west, and southwest into tundra wetlands and Sag River.	Less likely			

TABLE R-1 (cont'd)

Summary of Landfills, Mines, and Spill/Release Sites near the Gas Treatment Facilities ^a

Location	Site Name	Type of Site ^b	Regulatory Agency/ Program	Regulatory Status ^c	Inside Project Footprint	Direction from Project Footprint	Distance to Project Footprint (feet)	Depth to Groundwater (ft bgs) d,e	Estimated Groundwater Flow Direction f,e	Estimated Surface Flow Direction ^{g,e}	Relative Likelihood for Encountering Contamination h
54.3	BPX Drill Site Maintenance Pad Shop Site	Petroleum and solvent release	ADEC/CSRP	Open	No	Northeast	945	Seasonal 1.5 - 6 ft Arctic Zone- permafrost: surface water migration only	Northwest and southwest	Surface water ponds on site or sheet-flows northwest, west, and southwest into tundra wetlands and Sag River.	Less likely
54.3	BPX South Hangar Pad	Petroleum spill	ADEC/CSRP	Cleanup Complete with Institutional Controls	No	North	870	Seasonal 1.5 – 6 ft Arctic Zone- permafrost: surface water migration only	Northwest and southwest	Surface water ponds on site or sheet-flows northwest, west, and southwest into tundra wetlands and Sag River.	Less likely

Sources: ADEC, 2016c, 2017e, 2018b; ADNR, 2014d, 2015a,e,g, 2017h; BLM, 2016b; EPA, 2017a, 2017c, 2018d; USGS, 2015a, 2016b

ADEC = Alaska Department of Environmental Conservation; ADNR = Alaska Department of Natural Resources; bgs = below ground surface; BPX = British Petroleum Exploration; CGF = Central Gas Facility; CSRP = Contaminated Sites Remediation Program; ft = feet; GIS = geographic information system; NA = data not available; PBTL = Prudhoe Bay Unit Gas Transmission Line: PTTL = Point Thomson Unit Gas Transmission Line: USGS = United States Geological Survey

- Includes all landfills and spill/release sites within 0.25 mile of the Gas Treatment Plant, West Dock Causeway, gravel mine, water reservoir, camps, and PTTL centerline: none were identified within 0.25 mile of the PBTL. No mines were identified that would affect these facilities.
- The types of sites are based on terminology provided by the agency databases to describe the site and associated releases. Note: petroleum is a general term that could indicate a number of products, such as diesel fuel, gasoline, and fuel oil (see section 4.9.6.1).
- The regulatory agency or program designates a site's regulatory status (see section 4.9.6.1 for definitions).
- d Groundwater Well Depth Sources: ADNR Alaska Well Log Tracking System (WELTS), accessed November 2018; and USGS Groundwater Stations (2016b), accessed November 2018.
- Depth to groundwater and flow direction and surface water flow directions at contaminated sites are subject to change over time and with the seasons. During construction, the Project would adhere to the Unanticipated Contamination Plan guidelines and BMPs when conducting ground-disturbing activities.
- NA = Groundwater flow direction not available in database records. Groundwater flow direction sources: ADEC Division of Spill Prevention and Response, Contaminated Sites Program, Contaminated Site Database (CSD), accessed November 2018; ADEC Drinking Water Protection Areas drinking water protection areas with groundwater and surface water zones: Zone A (Time of Travel in Months and surface water sources 1,000-foot buffer) and Zone B (2-year Time of Travel and surface water sources 1-mile buffers), accessed November 2018.
- Estimated surface water flow direction, if not provided in CSD reports, was visually interpreted using Project GIS webmapper contour layers and elevation data. Sources: ADNR Division of Geological & Geophysical Surveys (AK DGGS) LiDAR, 2018; USGS 3D Elevation Program (3DEP).
- Contamination potential is based on the evaluation in section 4.9.6.3, which considers a site's proximity, hydrogeologic setting, facility type, and regulatory status.

						TABLE R	-2				
			Summary	of Landfills,	Mines, and	d Spill/Relea	se Sites ne	ear the Mainline Fa	cilities ^a		
Pipeline Milepost	Site Name	Type of Site ^b	Regulatory Agency/ Program	Regulatory Status ^c	Inside Project Footprint	Direction from Project Footprint	Distance to Project Footprint (feet)	Depth to Groundwater (ft bgs) ^{d,e}	Estimated Groundwater Flow Direction f,e	Estimated Surface Flow Direction ^{9,e}	Relative Likelihood for Encountering Contamination h
5.0	Alyeska PS 01 Tank 111	Petroleum release from AST	ADEC/CSRP	Cleanup Complete with Institutional Controls	No	Southeast	1,232	Seasonal 1.5 –3 ft Arctic Zone- permafrost: surface water migration only	NA	Surface water flow is south and southeast off pad directly into tundra wetlands.	Less likely
5.3	Alyeska Pump Station #1	Landfill	ADEC/SWP	Retired	No	East	727	Seasonal 1.5 –3 ft Arctic Zone- permafrost: surface water migration only	NA	Surface water flow is south and southeast off pad directly into tundra wetlands.	Less likely
5.3	Alyeska PS 01 Back 40 Staging Area	Petroleum release	ADEC/CSRP	Cleanup Complete with Institutional Controls	No	East	625	Seasonal 1.5 – 3 ft Arctic Zone- permafrost: surface water migration only	NA	Surface water flow is south and southeast off pad directly into tundra wetlands.	Less likely
14.2	ConocoPhillips Hemi Springs 3	Petroleum release	ADEC/CSRP	Cleanup Complete with Institutional Controls	No	West	1,211	Seasonal 1.5 – 3 ft Arctic Zone- permafrost: surface water migration only	NA	Surface water flow is north and west and southwest southeast off pad into tundra wetlands.	Less likely
43.7	Alyeska Franklin Bluffs Camp	Diesel spill	ADEC/CSRP	Cleanup Complete with Institutional Controls	Yes	NA	0	Seasonal 1.5 – 3 ft Arctic Zone- permafrost: surface water migration only	NA	Surface water flow is east toward Sagavanirktok River.	More likely
43.7	Alyeska Franklin Bluffs Camp	Landfill	ADEC/SWP	Retired	Yes	NA	0	Seasonal 1.5 – 3 ft Arctic Zone- permafrost: surface water migration only	NA	Surface water flow is east toward Sagavanirktok River.	More likely
85.7	Alyeska Happy Valley Camp East	Petroleum release	ADEC/CSRP	Cleanup Complete with Institutional Controls	No	South	175	Seasonal 1.5 – 3 ft Arctic Zone- permafrost: surface water migration only	NA	Surface water flow is north and east toward Sagavanirktok River.	Less likely

TABLE R-2 (cont'd) Summary of Landfills, Mines, and Spill/Release Sites near Mainline Facilities a Estimated Relative Direction Distance Regulatory Inside from to Project Depth to Groundwater Likelihood for **Pipeline** Type of Agency/ Regulatory Project Project Footprint Groundwater Flow **Estimated Surface** Encountering Direction f,e Milepost Site Name Site b Program Status c Footprint Footprint (feet) (ft bas) d,e Flow Direction g,e Contamination 1 ADNR Arctic 85.7 Petroleum ADEC/CSRP Cleanup Yes NA 0 Seasonal 1.5 -NA Surface water flow is More likely Wilderness release Complete 3 ft Arctic Zoneeast toward Lodge with permafrost: Sagavanirktok River. surface water Institutional Controls migration only 85.8 Alveska Petroleum ADEC/CSRP Cleanup Yes NA 0 Seasonal 1.5 -NA Surface water flow is More likely Happy Valley release Complete 3 ft Arctic Zonenortheast and east to Camp West with Happy Valley Creek permafrost: Institutional surface water down-gradient of site. Controls migration only 90.3 Alyeska Dan Petroleum ADEC/CSRP Cleanup No Northeast 778 Seasonal 1.5 -NA Surface water flow is Less likely Creek Spill release Complete 3 ft Arctic Zonewest into Dan Creek permafrost: down-gradient from surface water site. migration only 113.5 Alyeska Petroleum ADEC/CSRP Cleanup No Southeast 970 Seasonal 1.5 -NA Surface water flow is Less likely Milepost 108.1 release Complete 3 ft Arctic Zonenortheast toward permafrost: unnamed tributary to surface water Sagavanirktok River migration only east of site. 113.8 Sag River Landfill ADEC/SWP Yes NA 0 Seasonal 1.5 -NA Surface water flow is Retired More likely Maintenance 3 ft Arctic Zonenortheast off pad Camp permafrost: toward containment surface water pond. migration only 130.2 Alveska Landfill ADFC/SWP Active Yes NA 0 Seasonal 1.5 -NA Surface water flow is More likely Pipeline Site 3 ft Arctic Zonenorth and northeast 117-1B Camp permafrost: directly into wetlands surface water draining into East migration only Fork Kuparuk River 0.2 miles east and down-gradient from site. 141.6 Alveska Petroleum ADEC/CSRP Cleanup Yes NA 0 3.5 - 4 ft basNA Surface water flow off Less likely suprapermafrost Galbraith release Complete pad is east into

meltwater,

monitoring wells

wetlands bordering

runway and pad.

Airport

Generator

TABLE R-2 (cont'd) Summary of Landfills, Mines, and Spill/Release Sites near Mainline Facilities a Estimated Relative Direction Distance Regulatory Inside from to Project Depth to Groundwater Likelihood for Project Project **Pipeline** Type of Agency/ Regulatory Footprint Groundwater Flow **Estimated Surface** Encountering Direction f,e Milepost Site Name Site b Program Status c Footprint Footprint (feet) (ft bas) d,e Flow Direction g,e Contamination 1 141.7 Alyeska Diesel spill ADEC/CSRP Cleanup Yes NA 0 3.5 - 4 ft bqsNA Surface water flow off More likely Galbraith Complete suprapermafrost the pad west toward Airport Diesel with meltwater, road entrance and Institutional monitoring wells drainage ditches into tundra wetlands. Controls 143.0 **BLM Alyeska** Diesel spill ADEC/CSRP Cleanup Yes NA 0 3.5 - 4 ft bgsNA Surface water flow More likely Galbraith Complete suprapermafrost ponds on gravel pad Camp with meltwater, site in a low spot on monitoring wells Institutional pad or flows east and Controls northeast toward tundra wetlands. 149.0 Alyeska Pump Landfill ADEC/SWP Retired Yes NA 0 142 ft bgs NA Surface water flow is More likely Station #4 north and northwest toward unnamed lake or northeast toward unnamed tributary and Tee Lake inlet. 197.2 ADEC/CSRP 699 1.7 - 4.1 ft bgs Alyeska Petroleum Cleanup Nο Southwest NA Surface flow is Less likely Remote Gate release Complete monitoring well northwest toward Valve 35A Dietrich River downgradient from site. Alyeska Surface water flow is 205.9 Petroleum ADEC/CSRP Open Yes NA 0 3.4 to 10.3 ft bgs NA More likely Dietrich Camp release old monitoring northwest toward water well on site Dietrich River from site. 218.7 Linda Creek Mine BI M Inactive Yes NA 0 NA NA NA More likely 229.2 ADNR/BLM 6,700 f NA Minnie Creek Mine Inactive No Northeast NA NA Less likely BLM 239.3 Clara Creek Mine Active No Northeast 4.900 f NA NA Surface water flow is More likely toward the Project area. 241.0 Slate Creek Mine **ADNR** Inactive No Southeast 6.700 f NA NA NA Less likely 241.1 Coldfoot Petroleum ADEC/CSRP 0 Surface water flow is Cleanup Yes NA 11 ft bgs old East More likely Services release Complete water well on site south toward ponds with bordering pad. Institutional

Controls

	TABLE R-2 (cont'd)													
			Summa	ry of Landfill	s, Mines, a	nd Spill/Rel	ease Sites	near Mainline Faci	lities ^a					
Pipeline Milepost	Site Name	Type of Site ^b	Regulatory Agency/ Program	Regulatory Status ^c	Inside Project Footprint	Direction from Project Footprint	Distance to Project Footprint (feet)	Depth to Groundwater (ft bgs) ^{d,e}	Estimated Groundwater Flow Direction f,e	Estimated Surface Flow Direction ^{g,e}	Relative Likelihood for Encountering Contamination h			
241.1	Coldfoot Camp Generator Release	Diesel spill	ADEC/CSRP	Open	No	Northwest	107	11 ft bgs old water well on site	East	Surface water flow is south toward ponds at edge of pad.	More likely			
241.1	Coldfoot Camp Crew Quarters Fuel Line	Petroleum release	ADEC/CSRP	Open	No	Southwest	161	11 ft bgs old water well on site	East	Surface water flow is south toward ponds at edge of pad.	More likely			
260.9	South Fork Koyukuk River	Mine	BLM	Inactive	No	Northeast	28,000 ^f	NA	NA	NA	Less likely			
264.2	ADOT&PF Dalton Highway Mile 152.7	Petroleum release	ADEC/CSRP	Cleanup Complete	Yes	NA	0	NA	NA	Site is in former material site. Surface water flow is north and northeast into wetlands and unnamed tributary of Elwood Creek.	Less likely			
271.7	Jim River Landfill ADOT&PF	Landfill	ADEC/SWP	Retired	No	North	310	NA	NA	Site is in former landfill surface flow toward center of gravel pit.	Less likely			
271.9	ADOT&PF Dalton Highway Mile 145	Petroleum release	ADEC/CSRP	Cleanup Complete	No	North	250	NA	NA	Site is in former material site surface flow toward center of pit.	Less likely			
272.0	Alyeska Pump Station #5	Landfill	ADEC/SWP	Retired	No	South	582	NA	NA	Site is in former landfill site surface water flow is toward center of landfill pit.	Less likely			
278.7	ADOT&PF Jim River Maintenance and Operations Station	Petroleum release	ADEC/CSRP	Cleanup Complete	No	Northeast	831	7 ft bgs monitoring well	West and northwest	Surface water flow is northwest off pad toward Jim River.	Less likely			

TABLE R-2 (cont'd) Summary of Landfills, Mines, and Spill/Release Sites near Mainline Facilities a Relative Direction Distance Estimated Regulatory Inside from to Project Depth to Groundwater Likelihood for Agency/ Groundwater **Pipeline** Type of Regulatory Project Project Footprint Flow **Estimated Surface** Encountering Direction f,e Milepost Site Name Site b Program Status c Footprint Footprint (feet) (ft bgs) d,e Flow Direction g,e Contamination 1 278.7 ADOT&PF Jim Diesel spill ADEC/CSRP Cleanup No Northeast 758 12 ft bgs drinking West and Surface water flow is Less likely River Complete water well northwest north off pad toward Jim River. Maintenance Camp 278.8 ADEC/CSRP Prospect Diesel spill Open Yes NA 0 43 ft bgs water Northwest Surface water flow More likely Airport Lease well at Prospect south off pad into Lot 1 camp west of site wetland pond. Cleanup 279.2 Alyeska PS 05 Petroleum ADEC/CSRP No North 516 38-48 ft bgs old Northwest Surface water flow is Less likely Fuel Island water wells on release Complete toward secondary Spill 1 containment on pad. site Alyeska PS 05 279.2 Petroleum ADEC/CSRP Cleanup No North 516 38-48 ft bgs old Northwest Surface water flow is Less likely Fuel Island release Complete water wells on toward secondary Spill 2 with site containment. Institutional Controls 279.2 Alyeska PS 05 Therminol ADEC/CSRP No North 516 38-48 ft bgs old Surface water flow is Less likely Cleanup Northwest Tank Farm Complete water wells on release toward secondary with site containment. Institutional Controls 279.2 Alyeska PS 05 Petroleum ADEC/CSRP Cleanup No North 506 38-48 ft bgs old Northwest Surface water flow is Less likely Well House release Complete water wells on toward secondary Spill site containment. 279.2 38-48 ft bgs old Alveska PS 05 Petroleum ADEC/CSRP Cleanup No North 506 Northwest Surface water flow is Less likely Turbine Fuel release Complete water wells on toward secondary Spill with site containment. Institutional Controls Northwest 279.2 Alyeska PS 05 Petroleum ADEC/CSRP Cleanup No North 424 38-48 ft bgs old Surface water flow is Less likely 20RBO Valve release Complete water wells on toward secondary Release with site containment. Institutional Controls 281.5 Prospect BLM 8,300 f NA NA NA Mine Inactive No Southeast Low

Creek

TABLE R-2 (cont'd) Summary of Landfills, Mines, and Spill/Release Sites near Mainline Facilities a Estimated Relative Direction Distance Regulatory Inside from to Project Depth to Groundwater Likelihood for **Estimated Surface Pipeline** Type of Agency/ Regulatory Project Project Footprint Groundwater Flow Encountering Direction f,e Milepost Site Name Site b Program Status c Footprint Footprint (feet) (ft bgs) d,e Flow Direction g,e Contamination 1 305.9 Alyeska Old Landfill ADEC/SWP Retired Yes NA 0 2-6 ft bgs South and Surface water flow More likely Man monitoring well west less likely is south Camp 87-1 toward center of pit. 312.7 Alaska West Methanol ADEC/CSRP Cleanup No Northeast 278 NA NA Surface water flow is Less likely Transport spill Complete south and southeast to an unnamed tributary of Olson Lake Creek. 351.6 ADEC/CSRP Northeast 480 Permafrost: Surface water flow is Alyeska Five Petroleum Cleanup No NA Less likely Mile Airstrip Complete surface water south and southeast release migration only toward Dalton Hwy ditch and wetlands. 358.3 Alyeska PS 06 ADEC/CSRP 387 Surface water flow is Petroleum Cleanup No Southwest 6.68-10.44 ft bgs East Less likely Former release Complete old monitoring north and northeast Mainline well off pad toward wetlands. **Turbine Sump** 358.3 Alyeska PS 06 Petroleum ADEC/CSRP Cleanup 685 6.68-10.44 ft bgs Surface water flow is No Southwest East Less likely Former release Complete old monitoring north and northeast Turbine Fuel with well off pad toward Loading Institutional wetlands. Controls ADEC/CSRP 358.3 Alyeska PS 06 Petroleum Open No South 397 10-19 ft bgs old East Surface water flow is Less likely Leach release monitoring well north and northeast Field/Fuel off pad toward Island wetlands. Alyeska PS 06 ADEC/CSRP Surface water flow is 358.3 Therminol Cleanup No South 397 6.68-10.44 ft bgs East Less likely Therminol Spill spill Complete old monitoring north and northeast Site with wells off pad toward Institutional wetlands. Controls Alyeska PS 06 ADEC/CSRP 6.68-10.44 ft bgs: Surface water flow is 358.4 Petroleum Cleanup No Southwest 129 East Less likely JP4 Fueling release Complete a closed well had north and northeast Facility 600 ft bgs off pad toward wetlands.

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TABLE R-2 (cont'd) Summary of Landfills, Mines, and Spill/Release Sites near Mainline Facilities a Distance Estimated Relative Direction Regulatory Inside from to Project Depth to Groundwater Likelihood for Project Type of Project Pipeline Agency/ Regulatory Footprint Groundwater Flow **Estimated Surface** Encountering Śite ^b Direction f,e Milepost Site Name Program Status c Footprint Footprint (feet) (ft bas) d,e Flow Direction g,e Contamination 1 358.4 Alyeska PS 06 Petroleum ADEC/CSRP Cleanup No Southwest 129 6.68-10.44 ft bgs East Surface water flow is Less likely Jet Shed release Complete monitoring well northeast and east. with Institutional Controls 358.8 Alyeska PS 06 Landfill ADEC/SWP Retired No Southwest 536 6.68-10.44 ft bgs East Surface water flow is Less likely (DS 77-3) northwest and west. well about 1,300 ft north 365.1 Yukon Landfill ADEC/SWP Yes NA 0 NA NA Site is in former Retired More likely Ventures landfill. Surface water flow is toward center of landfill pit. 394.5 Dalton ADEC/CSRP No West 400 NA NA Surface water flow is Diesel spill Cleanup Less likely Highway Mile Complete south and southwest Post 7 Tanker with toward Dalton Hwy. Rollover Institutional Controls 401.1 Tower Hill Petroleum ADEC/CSRP Open Yes NA 0 15 ft bgs water Northwest Surface water flow is More likely Mines release well at site south off pad toward Livengood West Fork Tolovana Camp River. 402.0-Tolovana **ADNR** NA NA Mines Inactive Yes NA 0 NA More likely 409.0 River 440.5 **PCB** NA Murphy Dome ADEC/CSRP Open No North 1.058 NA Seasonal More likely AFS White groundwater flow is release Alice Station north and south following site topography. Surface water flow is south towards Dawson Creek or a tributary of Keystone Creek. 440.5 ADEC/LUST NA Murphy Dome Petroleum Cleanup No North 1,148 Same site Same site Less likely AFS White release Complete Alice Station (LUST) Bldg. 1001

TABLE R-2 (cont'd) Summary of Landfills, Mines, and Spill/Release Sites near Mainline Facilities a Estimated Relative Direction Distance Regulatory Inside from to Project Depth to Groundwater Likelihood for Regulatory **Pipeline** Type of Agency/ Project Project Footprint Groundwater Flow **Estimated Surface** Encountering Śite ^b Direction f,e Milepost Site Name Program Status c Footprint Footprint (feet) (ft bgs) d,e Flow Direction g,e Contamination 1 444.6 Murphy Dome Landfill ADEC/SWP Retired No East 353 NA NA Site is level: no Less likely AFS Landfill surface flow, ponded No. 2 water only. Regional surface water flow is south and southeast. 445.2 Tank Rollover Diesel spill ADEC/CSRP Cleanup No Northwest 831 3.46 ft bgs, 16.4 ft NA Flow is south toward Less likely Spill Complete bgs old wetlands. monitoring wells 445.6 ARRC Dunbar ADEC/CSRP 1,221 Shallow: NA Surface water flow is Petroleum Cleanup No Northeast Less likely Siding release Complete discontinuous northeast toward permafrost at site pond and Goldstream Creek. 471.9 Nenana Landfill ADEC/SWP No 777 8 ft bgs water well Site is an old landfill. Retired Southeast Southeast Less likely about 1 mile Landfill Surface water ponds south of site on site or flows west toward railroad and highway. 501.9 AT&T Petroleum ADEC/CSRP Cleanup No West 1,119 NA NA Site is on hill. Less likely Alascom Birch release Complete Surface flow is east Creek toward wetlands and Parks Highway ditch. Repeater 525.6 Healy Small ADEC/CSRP Petroleum Open No North 1,015 40 ft bgs water NA Surface flow is east Less likely well about 744 ft Tracts release toward wetlands. Subdivision north of site Usibelli Coal ADEC/LUST 528.9 Petroleum Cleanup No East 589 25 ft bgs and 20 ft Southwest Surface water flow is Less likely Mine release Complete bas old northeast toward the (LUST) with monitoring wells Nenana River. Institutional on site Controls 536.3 Petroleum ADEC/LUST 38 ft bas on-site Surface flow is west Tesoro Lynx Cleanup No South 765 East Less likely Creek Complete water well north toward Parks release (LUST) corner of site and Highway drainage ditch. 65 ft bgs water well about 250 ft west

TABLE R-2 (cont'd) Summary of Landfills, Mines, and Spill/Release Sites near Mainline Facilities a Estimated Relative Direction Distance Regulatory Inside from to Project Depth to Groundwater Likelihood for Project Project Regulatory **Pipeline** Type of Agency/ Footprint Groundwater Flow **Estimated Surface** Encountering Direction f,e Milepost Site Name Site b Program Status c Footprint Footprint (feet) (ft bas) d,e Flow Direction g,e Contamination 1 566.0 **ARRC** Petroleum ADEC/LUST Cleanup No Northeast 426 18 ft bgs water West Surface water flow is Less likely Cantwell release Complete well about south into wetland Section (LUST) 1.060 ft north of ponds east of site Cantwell PSY. 566.0 **ARRC** ADEC/CSRP Cleanup Surface water flow is Petroleum No Northwest 249 18 ft bgs water West Less likely Cantwell release Complete well about 670 ft south into wetland Section House north of site and ponds east of upgradient of site Cantwell PSY. 566.3 Cantwell Landfill ADEC/SWP 15 ft bgs water Surface water flow is Retired No East 100 East Less likely ADOT&PF well is about west and southwest. Inert Waste 1,400 ft west and Landfill down-gradient of site 566.3 ADOT&PF Petroleum ADEC/LUST 10 to 12 ft bgs old Surface flow is west Less likely Cleanup No Northwest 100 East Cantwell release Complete monitoring wells toward old (LUST) Maintenance at site. 15 ft bgs Anchorage-Fairbanks Station water well about Highway. 750 ft north of site 566.6 Cantwell ADEC/SWP Surface water flow is Landfill Retired No West 344 Groundwater West Less likely Landfill spring near Jack northwest toward River about Jack River. 2.100 ft northwest of site 568.5 **FAA Summit** ADEC/CSRP NA NA NA Petroleum Open No North 488 More likely Air Navigation releases Site 568.5 Cantwell UAF Landfill ADEC/SWP 978 18 ft bgs about Surface flow is east Retired No North West Less likely Inert Landfill 446 ft northeast of site into unnamed and upgradient of tributary of Jack River or southeast toward site Denali Highway drainage ditch.

	TABLE R-2 (cont'd)													
			Summa	ry of Landfill	s, Mines, a	nd Spill/Rel	ease Sites	near Mainline Faci	lities ^a					
Pipeline Milepost	Site Name	Type of Site ^b	Regulatory Agency/ Program	Regulatory Status ^c	Inside Project Footprint	Direction from Project Footprint	Distance to Project Footprint (feet)	Depth to Groundwater (ft bgs) ^{d,e}	Estimated Groundwater Flow Direction ^{f,e}	Estimated Surface Flow Direction ^{g,e}	Relative Likelihood for Encountering Contamination h			
575.4	FAA Former Summit NDB/RCO	Petroleum release	ADEC/CSRP	Open	No	Southeast	1,169	9 ft bgs old monitoring well at site, 30 ft bgs old USGS groundwater station at site, and 51 ft bgs old USGS groundwater station about 1,600 ft northeast of site	North and northwest	Surface water is east toward Parks Highway drainage ditch.	More likely			
575.5	FAA Former Summit Gasoline Pumphouse	Petroleum release	ADEC/CSRP	Open	No	Southeast	180	NA	NA	NA	More likely			
575.5	FAA Former Summit Housing North	Petroleum release	ADEC/CSRP	Open	No	East	25	NA	NA	NA	More likely			
575.5	FAA Former Summit Housing South	Petroleum release	ADEC/CSRP	Open	No	East	85	NA	NA	NA	More likely			
575.5	ARRC Summit Siding	Petroleum release	ADEC/CSRP	Open	No	Northeast	830	51 ft bgs old USGS groundwater station about 1,600 ft northeast of site	South	Surface water flow from site is east toward Parks Highway drainage ditch.	Less likely			
583.6	ARRC Broad Pass Railroad Station	Petroleum release (LUST)	ADEC/LUST	Cleanup Complete with Institutional Controls	Yes	NA	0	7 ft bgs at excavation site	South	Site is generally level; surface flow is west and southwest.	More likely			

	TABLE R-2 (cont'd)														
	Summary of Landfills, Mines, and Spill/Release Sites near Mainline Facilities a														
Pipeline Milepost	Site Name	Type of Site ^b	Regulatory Agency/ Program	Regulatory Status ^c	Inside Project Footprint	Direction from Project Footprint	Distance to Project Footprint (feet)	Depth to Groundwater (ft bgs) ^{d,e}	Estimated Groundwater Flow Direction ^{f,e}	Estimated Surface Flow Direction ^{9,e}	Relative Likelihood for Encountering Contamination h				
591.9	ADOT&PF Chulitna Wayside	Petroleum release (LUST)	ADEC/LUST	Cleanup Complete with Institutional Controls	No	Northeast	717	NA	NA	NA	Less likely				
593.0	ADOT&PF East Fork Maintenance Station	Petroleum release (LUST)	ADEC/LUST	Cleanup Complete with Institutional Controls	No	West	470	1.5 ft bgs – 6 ft bgs old monitoring wells, 11.3 ft bgs old water well might have perched aquifer at monitoring wells and deeper aquifer at old drinking well.	Southwest	Surface flow is west toward East Fork of Chulitna River bordering site.	Less likely				
606.9	ARRC Hurricane Former UST	Petroleum release (LUST)	ADEC/LUST	Open	No	Southwest	726	Ranges 2.9 to 8 ft bgs old monitoring wells. A former 60 ft bgs artesian drinking water well was 75 ft from site. The artesian well's static water level was over the casing top.	Northwest	Surface flow is southwest toward railroad and drainage ditch.	More likely				
609.0	Lynden Transport Vehicle Accident	Diesel spill	ADEC/CSRP	Cleanup Complete	No	Northwest	129	NA	NA	Surface flow is southwest along the north side of Parks Highway into wetlands.	Less likely				
627.7	Denali Air McKinley Airstrip	Diesel spill	ADEC/CSRP	Cleanup Complete	No	Southeast	136	NA	NA	NA	Less likely				

TABLE R-2 (cont'd) Summary of Landfills, Mines, and Spill/Release Sites near Mainline Facilities a Estimated Relative Direction Distance Regulatory Inside from to Project Depth to Groundwater Likelihood for Project Project Regulatory **Pipeline** Type of Agency/ Footprint Groundwater Flow **Estimated Surface** Encountering Śite ^b Direction f,e Milepost Site Name Program Status c Footprint Footprint (feet) (ft bgs) d,e Flow Direction g,e Contamination 1 636.2 AT&T Petroleum ADEC/LUST Cleanup No Northeast 774 NA NA Site is on hill; surface Less likely Alascom release Complete flow is south and (LUST) **Byers Creek** southwest toward Parks Highway. Repeater 658.0 ADOT&PF EPA/CERCLA Volatile Closed No East 343 NA NA NA Less likely Chulitna organic Maintenance compounds, ADEC/CSRP NA Open No East 343 NA NA Less likely metals, and Station Injection Well petroleum releases 658.3 ADOT&PF Petroleum ADEC/LUST Cleanup No East 300 20-60 ft bgs South and Surface water flow is Less likely Chulitna release Complete former drinking east toward Parks southwest (LUST) water well about Maintenance with Highway. Institutional 50 ft south of site. Controls 6-7 ft former Class V well was in shop at site. 676.3 Sunshine ADEC/SWP Surface flow would Landfill Retired No Northeast 61 26 ft bgs water East and Less likely Landfill well about 328 ft northeast pond; site is a landfill east of site pit. 709.8 Kwik Kard Gas Petroleum ADEC/CSRP No South 657 Ranges from 27 Northwest, Surface flow is east Cleanup Less likely Station release Complete to 29 ft bgs old southwest. toward Parks with monitoring well and east Highway. and old drinking Institutional Controls water well about 400 ft northeast of spill site ADEC/CSRP 97 ft and 131 ft 798.8 Nikiski Airstrip Unauthor-Cleanup No North 119 North, Surface water flow is Less likely Complete west and northwest. ized dump bgs old northwest. with monitoring wells and southeast Institutional Controls 799.6 Marathon East Petroleum ADEC/CSRP Cleanup No North 620 None West Surface flow is west Less likely Forelands release Complete encounteredtoward bluff and Cook Flare Pit drilled 127 ft Inlet.

TABLE R-2 (cont'd) Summary of Landfills, Mines, and Spill/Release Sites near Mainline Facilities a Estimated Relative Direction Distance Regulatory Inside from to Project Depth to Groundwater Likelihood for **Pipeline** Type of Agency/ Regulatory Project Project Footprint Groundwater Flow **Estimated Surface** Encountering Śite ^b Direction f,e Milepost Site Name Program Status c Footprint Footprint (feet) (ft bgs) d,e Flow Direction g,e Contamination 1 800.1 Shell Western Petroleum ADEC/CSRP Cleanup No West 933 137 ft bgs old West Surface flow is Less likely Middle Ground drum site Complete water well northwest toward Shoal bluff and Cook Inlet. 800.1 Tesoro KPL Petroleum ADEC/CSRP Open No West 824 137 ft bgs old West Surface flow is Less likely Middle Ground water well northwest toward release Shoal bluff and Cook Inlet. Middle Ground 800.1 Petroleum ADEC/CSRP Open No West 919 137 ft bgs old West Surface flow is Less likely Shoals release water well northwest toward Onshore Frac bluff and Cook Inlet. Shell Onshore ADEC/CSRP 485 137 ft bgs old Site is a gravel pit; 800.1 Petroleum Cleanup No West West Less likely water well about Facility release Complete surface water would Landfarm 400 ft upgradient infiltrate or pond on at middle ground site. sites 800.5 **AMOCO East** Petroleum ADEC/CSRP Cleanup No Northwest 593 54 ft bgs, 214 ft West Surface flow is east Less likely Forelands Complete bgs, 84 ft bgs, toward pond east of release Facility and 101.6 ft bgs site or west into pond old monitoring/ west of site. commercial water wells on site 801.3 Alascom Petroleum ADEC/LUST Cleanup No Southeast 1,065 57 ft bgs water Northwest Surface flow is north Less likely Nikishka release Complete well on site and west and northwest toward Repeater (LUST) pond. 804.1 Schlumberger Petroleum ADEC/CSRP Cleanup No East 309 40 and 42 ft bas NA Surface flow is east Less likely Wireline and solvent Complete monitoring wells toward Bernice Lake. Services release TBE Machine 804.3 Petroleum ADEC/CSRP Open No East 333 Ranges 44 to Southeast Surface flow is Less likely and solvent 47 ft bas several southeast toward old monitoring release Bernice Lake. wells 804.3 TBF Machine Petroleum ADEC/LUST Cleanup No East 245 Ranges 44 to Southeast Surface flow is Less likely 47 ft bas several southeast toward release Complete (LUST) old monitoring Bernice Lake. wells

TABLE R-2 (cont'd) Summary of Landfills, Mines, and Spill/Release Sites near Mainline Facilities a Estimated Relative Direction Distance Regulatory Inside from to Project Depth to Groundwater Likelihood for Project Project **Pipeline** Type of Agency/ Regulatory Footprint Groundwater Flow **Estimated Surface** Encountering Śite ^b Direction f,e Milepost Site Name Program Status c Footprint Footprint (feet) (ft bas) d,e Flow Direction g,e Contamination 1 804.3 Bernice Lake **PCB** ADEC/CSRP Cleanup No West 538 57 ft bgs water West Surface flow is south Less likely well and 60 ft bas Power Plant release Complete toward unnamed monitoring well stream. 804.3 Chevron USA Petroleum ADEC/CSRP Open No South 673 Ranges from 5 to West and Surface flow is Less likely Refinery release 80 ft bas 20 southwest toward southwest Nikiski water. bluff and Cook Inlet. commercial, and monitoring wells on site Beaver Creek ADEC/CSRP 804.4 Petroleum Open No Southwest 432 Ranges from 44 Southwest Surface flow is west Less likely Lact Unit release to 77 ft bgs 30 old toward unnamed water and creek bordering site. monitoring wells 804.5 Dresser Atlas Petroleum ADEC/LUST No 143 30 ft bgs 8 old Surface flow is west Less likely Cleanup North Northwest release Complete monitoring wells toward Kenai Spur (LUST) Highway ditch. with Institutional Controls 804.5 ADOT&PF 10 and 30 ft bgs Surface flow is east Petroleum ADEC/LUST Cleanup Yes NA 0 East Less likely toward Bernice Lake. Bernice Lake release Complete 2 water wells on Maintenance (LUST) site Facility 804.6 Tesoro KPL ADEC/LUST Surface flow is west Petroleum Open No Southwest 1.268 83 ft bgs 4 old West Less likely monitoring wells Bernice Lake release and south into Plume (LUST) retaining pond. Kenai Pipeline ADEC/CSRP Surface flow is north 804.6 Petroleum Open No Southwest 1,318 27.5 ft bgs old West Less likely Oily Water release drinking water toward retaining Sewer System well pond.

Pipeline

Milepost

Site Name

Type of

Site b

Agency/

Program

TABLE R-2 (cont'd) Summary of Landfills, Mines, and Spill/Release Sites near Mainline Facilities a Direction Distance Estimated Regulatory Inside from to Project Depth to Groundwater Likelihood for

Footprint

(feet)

Groundwater

(ft bas) d,e

Flow

Direction f,e

Estimated Surface

Flow Direction g,e

Encountering

Contamination 1

Sources: ADEC, 2016c, 2017d, 2018b; ADNR, 2014d, 2015a,e,q, 2017h; BLM, 2016b; EPA, 2017a, 2017c, 2018d; USGS, 2015a, 2016b

Project

Regulatory

Status c

ADEC = Alaska Department of Environmental Conservation; ADNR = Alaska Department of Natural Resources; ADOT&PF = Alaska Department of Transportation and Public Facilities; AFS = Air Force Station; ARRC = Alaska Railroad Corporation; AST = aboveground storage tank; bgs = below ground surface; BLM = Bureau of Land Management; BPX = BP Exploration; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CSRP = Contaminated Sites Remediation Program; DS = drill site; EPA = United States Environmental Protection Agency; FAA = Federal Aviation Administration; ft = feet; GIS = geographic information system; KPL = Kenai Pipeline Company; LUST = leaking underground storage tank; NA = data not available; NDB/RCO = Non-directional Beacon and Radio Communications Outlet; PCB = polychlorinated biphenols; PS = pump station; PSY = Pipe Storage Yard; SWP = Alaska Solid Waste Program; TBE = TBE Machine (business name); UAF = University of Alaska Fairbanks; USGS = United States Geological Survey; UST = underground storage tank

Project

Footprint Footprint

- Includes all landfills and spill/release sites within 0.25 mile of the Mainline Facilities. Includes mines identified by AGDC that could affect the Project due to proximity and other factors.
- The types of sites are based on terminology provided by the agency databases to describe the site and associated releases. Note: petroleum is a general term that could indicate a number of products, such as diesel fuel, gasoline, and fuel oil (see section 4.9.6.1).
- The regulatory agency or program designates a site's regulatory status (see section 4.9.6.1 for definitions).
 - Groundwater well depth sources: ADNR Alaska Well Log Tracking System (WELTS), accessed November 2018; and USGS Groundwater Stations (2016b), accessed November 2018.
- Depth to groundwater and flow direction and surface water flow directions at contaminated sites are subject to change over time and with the seasons. During construction, the Project would adhere to the Unanticipated Contamination Plan guidelines and BMPs when conducting ground-disturbing activities.
 - Groundwater flow direction sources: ADEC Division of Spill Prevention and Response, Contaminated Sites Program, Contaminated Site Database (CSD), accessed November 2018; ADEC Drinking Water Protection Areas-drinking water protection areas with groundwater and surface water zones: Zone A (Time of Travel in Months and surface water sources 1.000-foot buffer) and Zone B (2-year Time of Travel and surface water sources 1-mile buffers), accessed November 2018.
- Estimated surface water flow direction, if not provided in CSD reports, was visually interpreted using Project GIS webmapper contour layers and elevation data. Sources: ADNR Division of Geological & Geophysical Surveys (AK DGGS) LiDAR, 2018; USGS 3D Elevation Program (3DEP).
- Contamination potential is based on the evaluation in section 4.9.6.3, which considers a site's proximity, hydrogeologic and topographic setting, facility type, and regulatory status.

	TABLE R-3												
		Sı	ımmary of Land	lfills, Mines, aı	nd Spill/Rel	ease Sites	near the Liq	uefaction Faci	lities ^a				
Location	Site Name	Type of Site ^a	Regulatory Agency/ Program	Regulatory Status ^b	Inside Project Footprint	Direction from Project Footprint	Distance to Project Footprint (feet)	Depth to Groundwater (ft bgs) d,e	Estimated Groundwater Flow Direction ^{f,e}	Estimated Surface Flow Direction ^{g,e}	Relative Likelihood to Encounter Contamination ^h		
LNG Construction Camp	Unocal Chemical/ Cabin Lake Drum Site	Illegal drum disposal	ADEC/CSRP	Cleanup Complete	No	Northeast	220	22 ft bgs old water well	East	Surface flow is south into Cabin Lake ponds.	Less likely		
LNG Operations Area	Unocal Chemical Diesel Spill	Diesel spill	ADEC/CSRP	Open	No	West	1,266	Ranges 57 – 100 ft bgs, 14+ old monitoring wells on site	West	Surface flow is west and northwest toward Cook Inlet bluff.	Less likely		
LNG Operations Area	Unocal Chemical Drain	Petroleum spill	ADEC/CSRP	Open	No	West	1,117	Ranges 57 – 100 ft bgs, 14+ old monitoring wells on site	West	Surface flow is west and northwest toward Cook Inlet bluff.	Less likely		
LNG Operations Area	Unocal Chemical Sulfinol Spill	Chemical spills	ADEC/CSRP	Open	No	West	1,117	Ranges 57 – 100 ft bgs, 14+ old monitoring wells on site	West	Surface flow is west and northwest toward Cook Inlet bluff.	Less likely		
LNG Operations Area	Unocal Ammonia Plant	Ammonia spill	ADEC/CSRP	Open	No	West	1,117	Ranges 57 – 100 ft bgs, 14+ old monitoring wells on site	West	Surface flow is west and northwest toward Cook Inlet bluff.	Less likely		
LNG Operations Area	Unocal/ Agrium Ammonia Urea Plant	Ammonia and other chemical spills	ADEC/CSRP	Open	No	West	1,167	Ranges 57 – 100 ft bgs, 14+ old monitoring wells on site	West	Surface flow is west and northwest toward Cook Inlet bluff.	Less likely		
LNG Operations Area	Tesoro South Terminal	Petroleum release (LUST)	ADEC/LUST	Cleanup Complete	No	West	83	94.5 ft bgs monitoring well	West	Surface flow is south toward Kenai Spur Highway drainage ditch.	Less likely		

TABLE R-3 (cont'd) Summary of Landfills, Mines, and Spill/Release Sites near the Liquefaction Facilities ^a Direction Distance Estimated Relative Regulatory Inside from to Project Depth to Groundwater Estimated Likelihood to Regulatory Agency/ Project Project Footprint Groundwater Flow Surface Flow Encounter Direction f,e Location Site Name Type of Site a Program Status b Footprint Footprint (feet) (ft bgs) d,e Direction g,e Contamination h LNG Tesoro Petroleum ADEC/LUST Cleanup Yes NA 0 89 ft bgs West Surface flow is More likely Operations Northshore release Complete with monitoring west toward #201 (LUST) Institutional well Area bluffs and Cook Controls Inlet. LNG Nikiski Plant Surface soil ADEC/CSRP Open Yes NA 0 NA NA NA More likely Operations APN petroleum Area 01505045 contamination LNG Nikiski Plant ADEC/CSRP Surface soil Open Yes NA 0 NA NA NA More likely Operations APN petroleum Area 01506004 contamination LNG Nikiski Plant ADEC/CSRP 0 NA Surface soil Open Yes NA NA NA More likely Operations APN petroleum Area 01504064 contamination LNG Nikiski Plant 0 NA Petroleum ADEC/LUST Cleanup Yes NA NA NA Less likely APN Operations release complete Area 01515019 (LUST) LNG Nikiski Plant Illegal drum ADEC/CSRP Open Yes NA 0 NA NA NA More likely disposal and Operations APN Area 01512012 surface soil petroleum contamination LNG Nikiski Plant Petroleum ADEC/LUST Cleanup Yes NA 0 NA NA NA Less likely Operations APN0150201 complete release (LUST) Area 0

TABLE R-3 (cont'd) Summary of Landfills, Mines, and Spill/Release Sites near the Liquefaction Facilities a Direction Relative Distance Estimated Regulatory Inside from to Project Depth to Groundwater Estimated Likelihood to Agency/ Regulatory Project Project Footprint Groundwater Flow Surface Flow Encounter Location Site Name Type of Site a Program Status b Footprint Footprint (feet) (ft bgs) d,e Direction f,e Direction g,e Contamination h

Sources: ADEC, 2016c, 2017e, 2018b; ADNR, 2014d, 2015a,e,q, 2017h; BLM, 2016b; EPA, 2017a, 2017c, 2018d; USGS, 2015a, 2016b

ADEC = Alaska Department of Environmental Conservation; ADNR = Alaska Department of Natural Resources; APN = Assessor Parcel Number; bgs = below ground surface; CSRP = Contaminated Sites Remediation Program; ft = feet; GIS = geographic information system; LNG = liquid natural gas; LUST = leaking underground storage tank; NA = data not available; USGS = United States Geological Survey

- Includes all landfills and spill/release sites within 0.25 mile of the Liquefaction Facilities. No mines were identified that would affect the Liquefaction Facilities.
- The types of sites are based on terminology provided by the agency databases to describe the site and associated releases. Note: petroleum is a general term that could indicate a number of products, such as diesel fuel, gasoline, and fuel oil (see section 4.9.6.1).
- The regulatory agency or program designates a site's regulatory status (see section 4.9.6.1 for definitions).
- NA = No groundwater encountered on site or groundwater well depth(s) was not available. Groundwater well depth sources: ADNR Alaska Well Log Tracking System (WELTS), accessed November 2018; and USGS Groundwater Stations (2016b), accessed November 2018.
- Depth to groundwater and flow direction and surface water flow directions at contaminated sites are subject to change over time and with the seasons. During construction, the Project would adhere to the Unanticipated Contamination Plan guidelines and BMPs when conducting ground-disturbing activities.
 - NA = Groundwater flow direction not available in database records. Groundwater flow direction sources: ADEC Division of Spill Prevention and Response, Contaminated Sites Program, Contaminated Site Database (CSD), accessed November 2018; ADEC Drinking Water Protection Area -drinking water protection areas with groundwater and surface water zones: Zone A (Time of Travel in Months and surface water sources 1,000-foot buffer) and Zone B (2-year Time of Travel and surface water sources 1-mile buffers), accessed November 2018.
- Estimated surface water flow direction, if not provided in CSD reports, was visually interpreted using Project GIS webmapper contour layers and elevation data. Sources: ADNR Division of Geological & Geophysical Surveys (AK DGGS) LiDAR, 2018; USGS 3D Elevation Program (3DEP).
- Contamination potential is based on the evaluation in section 4.9.6.3, which considers a site's proximity, hydrogeologic setting, facility type, and regulatory status.