

ATTACHMENT E

Alaska Department of Fish & Game
Donlin Pipeline Analysis Contribution



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

State Pipeline Coordinator's Section

Department of Fish and Game

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MEMORANDUM

TO: Jeff Bruno, DNR/DOG State Pipeline Coordinator
FROM: Lee McKinley, ADF&G SPCS Liaison *LM*
DATE: October 15, 2018
SUBJECT: ADF&G Donlin Pipeline Analysis Contribution

The Alaska Department of Fish and Game (ADF&G) has reviewed the Donlin Gold proposed natural gas pipeline project description, and associated maps and provide the following comments in support of DNR's Analysis Summary:

The proposed project is to construct a 14" diameter 315-mile buried gas pipeline and fiber optic cable from the Beluga Gas Field (30 miles NW of Anchorage) to the Donlin Gold Mine Site in Southwest Alaska. The total length on state lands and the scope of this application is estimated at 206.6 miles. In addition, the first five miles of the proposed line as well as a compressor station are planned to be sited in the Susitna Flats State Game Refuge (SFSGR), managed by ADF&G and ADNRR.

The proposed route begins near the settlement of Beluga on the north end of Cook Inlet within the SFSGR. The route crosses multiple Cook Inlet drainages and then moves northwest towards the headwaters of the Skwentna River. From there, the route enters the Alaska Range and crosses the divide into the Kuskokwim River drainage. Once in the Kuskokwim River drainage, the route continues northwest following the South Fork Kuskokwim River. After exiting the Alaska range near pipeline milepost (PLMP) 150, the route turns west/southwest and proceeds another 163 miles, ending at Donlin Creek mine site at PLMP 315 (Figure 1).



Figure 1. Proposed Donlin Gas Pipeline

The first five miles of the pipeline route is co-located with an existing dirt road, however the rest of the 313-mile route transverses remote lands with virtually no existing development. There are relatively few fish and wildlife historical studies for specific areas along this route and much of the recent specific data we have comes from data collected by Donlin Gold LLC's contractors.

Request to ADF&G for support of DNR's Analysis Summary:

1. Description of fish and wildlife in the area

Fish

The proposed pipeline route traverses across hundreds of streams ranging from numerous small headwater streams to large rivers. Many of the rivers, lakes, perennial and intermittent streams along the route provide seasonal or year-round fish habitat including spawning, foraging, rearing, refuge and/or migratory use. Stream crossings would occur through four major drainages: the Cook Inlet, Yentna River, Skwentna River and the Kuskokwim River. Consultants for Donlin Gold, LLC identified fish presence in 174 of the 576 stream crossing sites assessed across the entire proposed pipeline route (Ottetail, 2014). The proposed pipeline route also transverses several streams identified in the Alaska Department of Fish and Game's Anadromous Waters Catalog (AWC) (Johnson and Blossom, 2017).

Cook Inlet Drainages

Major Cook Inlet drainages and watersheds that the proposed pipeline will cross include Pretty Creek, Theodore River, Lewis River and Alexander Creek. Fish species found within these Cook Inlet drainages include chinook, pink, chum, coho and sockeye pacific salmon, rainbow trout, Dolly Varden char, eulachon, humpback whitefish, slimy sculpin, coastrange sculpin, pacific lamprey, three-spine and nine-spine stickleback (ADF&G 2018).

Skwentna Drainages

Major Skwentna drainages and watersheds the proposed pipeline will cross include mainstem crossings of the Skwentna River as well as the Eightmile Creek, Shell Creek, and Threemile Creek. The proposed route also parallels the Happy River and crosses two of its tributaries, Moose Creek and Threemile Creek. Fish species found within these Skwentna drainages include chinook, pink, chum, coho and sockeye pacific salmon, rainbow trout, Dolly Varden char, Arctic grayling, burbot, eulachon, humpback whitefish, round whitefish, Bering cisco, longnose sucker, slimy sculpin, coastrange sculpin, pacific lamprey, Arctic lamprey, northern pike, and three-spine stickleback (ADF&G 2018).

Yentna Drainages

The proposed pipeline only crosses three tributaries to Red Creek in the Johnson Creek watershed. All crossings are upstream of any documented anadromous habitat (Johnson and Blossom, 2017).

Kuskokwim Drainages

Most the proposed pipeline, approximately 163 miles, goes through the Kuskokwim River drainage. Within the Kuskokwim drainage area, the proposed pipeline route transverses the watersheds of the South Fork Kuskokwim River, Windy Fork Kuskokwim River, Middle Fork Kuskokwim River, Big River, Tatlawiksuk River, mainstem Kuskokwim River, Nunsatuk River, Moose Creek, and the George River. Fish species found within this drainage area include chinook, pink, chum, coho and sockeye pacific salmon, rainbow trout, lake trout, Dolly Varden, Arctic Grayling, sheefish, burbot, humpback whitefish, broad whitefish, round whitefish, Bering cisco, least cisco, longnose sucker, slimy sculpin, coastrange sculpin, Alaska blackfish, Arctic lamprey, Alaskan brook lamprey, pond smelt, northern pike, and nine-spine stickleback (ADF&G 2018).

Wildlife

The ADF&G has management responsibility for all wildlife except marine mammals. The entire state is divided into 26 Game Management Units (GMUs) that are further broken down to sub-units for management and regulations (Figure 2). The proposed pipeline corridor begins in the Susitna Flats State Game refuge in GMU 16B and continues Northwest to the Alaska Range. The pipeline route then enters GMU 19C, moves west into GMU 19D and ends at the proposed mine site in GMU 19A. The following are wildlife species known to occur within the proposed pipeline route.

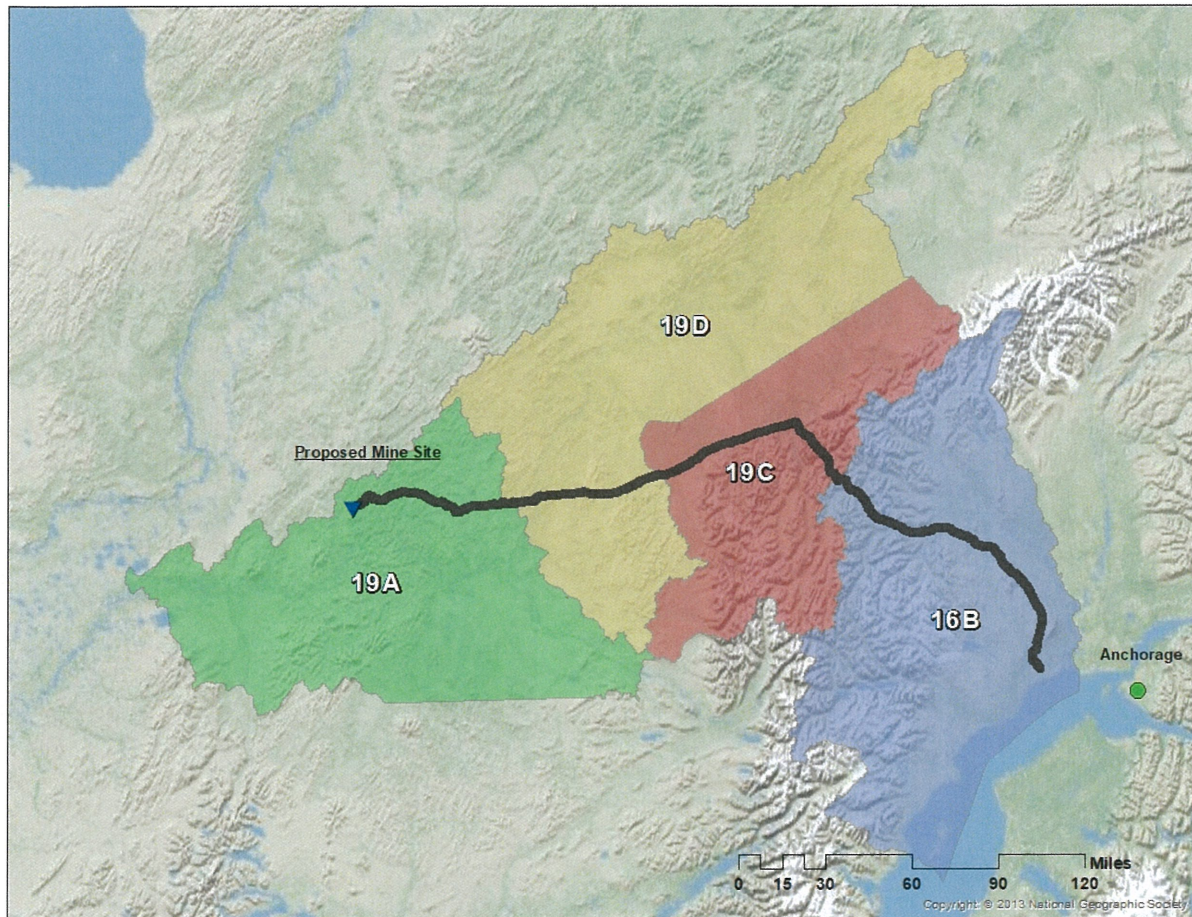


Figure 2. Game Management Units (GMUs) along proposed Donlin pipeline route.

Moose (*Alces alces*)

Moose are potentially present throughout the proposed pipeline route. They can be especially abundant along major rivers, transitional timberline habitat and in recently burned areas that have generated dense stands of willow, aspen, and birch shrubs. Suitable moose habitat exists throughout the pipeline route.

Populations of moose can vary widely depending on several factors such as predation and winter conditions. The ADF&G moose population management objective for the middle portion of GMU 16B where part of the proposed pipeline route transverses is between 3,120-3,600 animals (Peltier, 2017). The moose population management objectives for GMU 19D is 6,000-8,000 animals and for GMU 19A is 7,600-9,300 (Seavoy, 2008). There are currently no reports on moose population in GMU 19C.

Caribou (*Rangifer tarandus*)

Caribou are only present in a limited range of the proposed pipeline route. ADF&G recognizes six herds of caribou in unit 19: Rainy Pass Herd, Big River-Farewell Herd, Tonzona Herd, Sunshine Mountain Herd, Beaver Mountain Herd, and Mulchatna Herd (Peirce 2009). The pipeline route crosses the range of two of these herds; the Big River-Farewell herd and the Rainy Pass herd. There is limited survey information regarding these herds, the last population estimate (2009) for the Big River-Farewell Herd was 750 to 1,500 animals, and the last population estimate for the Rainy Pass herd was 1,500 to 2,000 animals. In 2011, approximately 200 caribou were also observed on the unit 16B side of Rainy Pass believed to be part of the Rainy Pass herd (Peltier 2018, personal communication). There is considerable uncertainty in these estimates and information from hunters regarding lack of caribou indicate that the population is much lower (Peirce 2009). The range of the largest herd in the region—the Mulchatna, with a population estimated at 45,000 animals—is generally south of the western portion of the pipeline route in GMU 19A.

Dall Sheep (*Ovis dalli dalli*)

The pipeline route crosses the Alaska Range from approximate milepost 50 through 180, and suitable habitat for Dall sheep is adjacent to the pipeline route in this area. There are no ADF&G published population estimates for Dall sheep in this area of the Alaska Range.

There is a mineral lick southwest of Farewell mountain near but not on the pipeline route that Dall sheep along with bison have been observed using.

Bison (*Bison bison*)

The proposed pipeline transects an area utilized by the Farewell herd of plains bison between approximate PLMP 150 and 165. The Farewell herd inhabits the Farewell area of the drainages flowing into the Kuskokwim River in GMU 19C and 19D. It was established by a translocation of 18 animals from the Delta Bison Herd in 1965, supplemented by an additional transplant of 20 bison (also from the Delta Herd) in 1968. The 2014 ADF&G survey counted about 400 bison in this herd.

Brown Bear (*Ursus arctos*) and Black Bear (*Ursus americanus*)

Brown and black bears are potentially present throughout the proposed pipeline route. In spring, both brown and black bears are usually found on low elevation south-facing slopes, and in riparian forests and wetlands for early green vegetation and moose. During summer, brown and black bears are most commonly found in mid-elevation herbaceous habitats, in low elevation river bottoms and fluvial benches for early berries, and in high elevation burns and openings for berries. In some areas, they also focus on anadromous waters for salmon. In fall, brown and black bears are most commonly found on large rivers with salmon and associated riparian forest

areas for roots, late berries and fruits. In the Interior, bears focus on alpine and subalpine berry patches. In winter, most brown bears are in hibernation dens in alpine and sub-alpine areas; most black bears are in dens in forests (ADF&G 2018b). Suitable brown and black bear habitat exists throughout the proposed pipeline route. Brown and black bear populations in all the GMUs crossed by the pipeline route are considered healthy.

Furbearers

Wolf (*Canis lupus*)

Wolves are potentially present throughout the proposed pipeline route. Wolves in Alaska are managed as both a big game animal and a furbearer as they are both hunted and trapped. There are also predator control programs in place to reduce the number of wolves to increase moose populations. Wolf populations in Alaska have never been threatened or endangered. Population estimates for GMU 16 was 61-106 wolves in 2010 (Brockman and Peltier 2018). Population estimates for GMU 19 was 404-478 for regulatory years 2005-2006 (Seavoy 2006).

Other Furbearers

Other furbearers widely dispersed across the pipeline route include beaver, wolverine, lynx, coyote, marmot, snowshoe hare, ermine, marten, mink, muskrat, red fox, river otter, red squirrel, Arctic ground squirrel, and northern flying squirrel (ADF&G 2018b). There are no survey data for these species and populations can only be inferred by analyzing harvest reporting numbers. Some of the species do not have reporting requirements.

Birds

Over a hundred species of birds are known to occur along the proposed pipeline route. Species of waterfowl, seabirds, loons, shorebirds, raptors, ptarmigan, and passerines are likely to be within or in proximity to the project area.

The USFWS, under the Migratory Bird Treaty Act of 1918 (16 USC 703-712), has regulatory authority for migratory birds and should review the project pursuant to this authority. In addition, it is advised that the USFWS review the project with respect to the Bald Eagle Protection Act (16 USC 668-668c) and the Endangered Species Act of 1973 (as amended).

The first five miles of the proposed pipeline route as well a compressor station are located in the SFSGR known for its spring and fall concentrations of migrating waterfowl and shorebirds. Peak densities are reached in early May when as many as 100,000 waterfowl are using the refuge to feed, rest, and conduct their final courtship prior to nesting (ADF&G 2018c). Most of these birds

are concentrated on the sedge meadows, marshes, and intertidal areas of the SFSGR and not in the forested areas where the pipeline route is proposed.

2. Description of sport fishing in the vicinity

The waters along the entire pipeline route are remote and accessible only by airplane or boat and there is limited infrastructure to support sport fishing along most of the proposed corridor. ADF&G manages these sport fisheries. ADF&G management areas that cover the proposed route for streams that eventually flow into Cook Inlet are within the North Cook Inlet Management Area and in particular the West Cook Inlet Unit (WCIMU) and the Westside Susitna Management Unit (WSMU). The Kuskokwim River and streams that eventually flow into it along the proposed pipeline route are covered under the Upper Kuskokwim Management Area.

West Cook Inlet Management Unit

Minor sport fisheries occur on Alexander Creek, Lewis River, and Pretty Creek for salmon and resident species. The most significant stream utilized for sportfishing, relative to the other WCIMU streams that the proposed pipeline route crosses is the Theodore River. Potential species that could be targeted by sport fishers are chinook, coho, and pink salmon as well as rainbow trout, Dolly Varden char and northern pike. According to ADF&G Sport Fishing Surveys, about 500 coho salmon were harvested and about 500 rainbow trout were caught and released in the Theodore River in 2016 (Ivey 2018, personal communication).

Westside Susitna Management Unit

The pipeline corridor within the WSMU crosses the Skwentna River as well as several anadromous tributaries including Eightmile Creek and Shell Creek. There is limited sportfishing data on these particular tributaries however there are multiple sportfishing lodges located near the proposed crossing of the Skwentna River, particularly around the nearby Talachulitna River. Eightmile Creek is popular among residents of Skwentna and local cabin owners for chinook salmon fishing. An average of about 200 chinook were caught here 2012-2016 (Ivey 2018, personal communication).

The corridor also parallels the Happy River within the WSMU and crosses two of its tributaries, Moose Creek and Threemile Creek. There is limited sportfishing data on the remote Happy River or its tributaries.

Species likely targeted in sport fisheries in the WSMU include chinook, pink, chum, coho and sockeye pacific salmon, rainbow trout, Dolly Varden char, and Arctic grayling.

Upper Kuskokwim Management Area

Sport fisheries within the Upper Kuskokwim Management Area are typically limited to clear water tributaries of the Kuskokwim River. Major clear water Kuskokwim River tributaries that the proposed pipeline corridor crosses are the Big River, Tatlawiksuk, and multiple crossings of the George River. The proposed tributary crossings are a significant distance from the Kuskokwim River.

Species likely targeted in sport fisheries in the Upper Kuskokwim Management Area include chinook, pink, chum, coho and sockeye pacific salmon, rainbow trout, Dolly Varden, Arctic grayling, sheefish, burbot, humpback whitefish, broad whitefish, round whitefish, and northern pike.

3. Description of commercial fishing in the vicinity

There are no commercial fisheries in the immediate vicinity of the proposed pipeline corridor, however the corridor crosses multiple fish streams that contribute directly to commercial fisheries downstream.

4. Description of subsistence use in the vicinity

The proposed pipeline route transverses through 313 miles of rural Alaska. Many rural Alaskan communities rely heavily on traditional subsistence hunting and fishing. While the proposed buried pipeline does not directly go through any rural community, the route will go through several areas known to be used for traditional subsistence activities.

Donlin Gold commissioned subsistence harvest studies undertaken by ADF&G, Division of Subsistence, in various Kuskokwim River communities throughout the potentially affected region between 2010 and 2014 (Brown 2012, Brown 2013, Ikuta 2014, Ikuta 2016). ADF&G, Division of Subsistence also has conducted harvest studies in various communities near streams that flow into Cook Inlet and are near the proposed pipeline (Holen 2012, Stanek 2007). While there is a potential for potential subsistence harvest anywhere along the entire proposed pipeline corridor, these studies, in addition to their broader scope, described some specific areas along the route recently used for traditional subsistence harvest.

Traditional subsistence use by communities near the proposed pipeline, as documented by these studies included harvest, consumption and use of a variety of anadromous and resident fish, birds, bird eggs and mammals as well as plants and berries.

Beluga, Tyonek and Skwentna

These communities are on the eastern side of the Alaska Range and are near the proposed pipeline route. ADF&G has documented recent subsistence harvest locations by some of the residents that overlap portions of the proposed pipeline. Specifically, subsistence harvest areas for moose, black bear, or caribou as well as migratory and upland birds have been recently documented along the Theodore River (Pretty Creek Road), adjacent to the first five miles of the proposed pipeline as well as along the Skwentna River near pipeline milepost (PLMP) 50-65. Subsistence harvest areas for salmon have been recently documented along the Skwentna River near PLMP 50-60. Subsistence harvest areas for berries and plants have been recently documented near the pipeline origin (PLMP 0) as well as in a small area along the Skwentna River near PLMP 60-65.

McGrath, Nikolai and Takotna (Upper Kuskokwim)

ADF&G has documented recent subsistence harvest locations by some residents of these Upper Kuskokwim area communities that overlap portions of the proposed pipeline. Specifically, subsistence harvest areas for moose, black bear or caribou have been recently documented along the South Fork of the Kuskokwim River near Farewell around PLMP 148, along the western face of the Alaska Range near the Windy River from PLMP 170-180 and along the Kuskokwim River near PLMP 241. No subsistence salmon harvest areas have been recently documented by these specific communities in the immediate vicinity of the proposed pipeline.

Crooked Creek, Sleetmute, Stony River (Central Kuskokwim)

ADF&G has documented recent subsistence harvest locations by some residents of these Central Kuskokwim area communities that overlap portions of the proposed pipeline. Specifically, subsistence harvest areas for moose, black bear and caribou have been recently documented along the Kuskokwim River near PLMP 241 and the George River and its tributaries from approximate PLMP 270-290. Subsistence harvest areas for migratory and upland birds as well as harvest areas for berries and plants have been recently documented along the Kuskokwim River at PLMP 241.

The ADF&G, Subsistence Division develops community profiles for towns and villages around the state to quantify utilization of subsistence resources. The estimated harvest and use of fish, mammal, bird, and plant resources by residents of several communities near the proposed pipeline are presented in Tables 1 - 8.

Table 1. Subsistence Harvest in Beluga by Resource, 2006

	Percent of Households Harvesting Resources	Reported Number Harvested	Estimated Pounds Harvested	Average Pounds Harvested per Household	Per Capita Pounds Harvested
Fish	85.7	1,258	4,905	327	123.7
Salmon	85.7	544	3,471	231.5	87.6
Non-Salmon Fish	71.4	714	1,433	95.6	36.2
Land Mammals	42.9	270	2,408	160.6	60.8
Large Land Mammals	35.7	10	2,403	160.2	60.6
Small Land Mammals	35.7	278	5	.4	.1
Moose	21.4	3	1,735	115.7	43.8
Birds and Eggs	78.6	260	266	17.8	6.7
Vegetation	92.9	165	227	29.3	11.1

Source: ADF&G Community Profile Database Tyonek and Beluga Subsistence Harvest Update

Table 2. Subsistence Harvest in Tyonek by Resource, 2013

	Percent of Households Harvesting Resources	Reported Number Harvested	Estimated Pounds Harvested	Average Pounds Harvested per Household	Per Capita Pounds Harvested
Fish	83.7	14,443.54	18,628.7	327	130.53
Salmon	81.6	12,994.74	16,765.5	231.5	117.47
Non-Salmon Fish	40.8	1,448.8	1,863.2	95.6	13.05
Land Mammals	16.3	40.5	3,610.9	25.30	25.3
Large Land Mammals	12.2	7.7	3,471.4	24.32	24.32
Small Land Mammals	6.1	32.8	139.5	.98	.1
Moose	12.2	6	3,471.4	24.32	43.8
Birds and Eggs	78.6	129	165.9	1.16	6.7
Vegetation	83.7	1,040.72	1,351	9.47	11.1

Source: ADF&G Community Profile Database Tyonek and Beluga Subsistence Harvest Update

Table 3. Subsistence Harvest in Skwentna by Resource, 2012

	Percent of Households Harvesting Resources	Reported Number Harvested	Estimated Pounds Harvested	Average Pounds Harvested per Household	Per Capita Pounds Harvested
Fish	86.6	1,140	4,559.3	130.2	73.74
Salmon	76.6	603	3,355.9	95.8	54.27
Non-Salmon Fish	66.6	537	1,203.3	34.3	19.46
Land Mammals	46.6	198	4,528.4	129.3	73.24
Large Land Mammals	36.6	17	4,440.9	126.8	71.82
Small Land Mammals	26.6	181	87.5	2.5	1.42
Moose	23.3	7	3675	105	59.43
Birds and Eggs	66.6	297	260.3	7.4	4.21
Vegetation	96.6	434.4	486.6	13.9	7.87

Source: ADF&G Community Profile Database Skwentna Subsistence Harvest Update

Table 4. Subsistence Harvest in McGrath by Resource, 2011

	Percent of Households Harvesting Resources	Reported Number Harvested	Estimated Pounds Harvested	Average Pounds Harvested per Household	Per Capita Pounds Harvested
Fish	72.22	5,898	32,645.68	229.90	91.62
Salmon	40.74	2,707	23,517.32	165.61	66
Non-Salmon Fish	68.52	3,191	9,128.35	64.28	25.62
Land Mammals	57.41	1,171	43,255.43	304.62	121.40
Large Land Mammals	50	92	40,964.37	288.48	114.97
Small Land Mammals	31.48	1079	2,291.06	16.13	6.43
Moose	46.3	58	38,129.63	268.52	107.01
Birds and Eggs	61.11	1,772	3,235.64	7.4	4.21
Vegetation	92.59	1,581.76	5,054.86	35.6	14.19

Source: ADF&G Community Profile Database McGrath Subsistence Harvest Update

Table 5. Subsistence Harvest in Takotna by Resource, 2011

	Percent of Households Harvesting Resources	Reported Number Harvested	Estimated Pounds Harvested	Average Pounds Harvested per Household	Per Capita Pounds Harvested
Fish	50	173	511.55	23.25	9.86
Salmon	14.29	6	71.40	3.25	1.38
Non-Salmon Fish	50	167	440.14	20.01	8.49
Land Mammals	57.14	425	7,086.45	322.11	136.65
Large Land Mammals	57.14	12	6,803.60	309.25	131.20
Small Land Mammals	21.43	413	282.86	12.86	5.45
Moose	57.14	8	6,439.02	292.68	124.17
Birds and Eggs	50	337	558.56	25.39	10.77
Vegetation	78.57	81.31	225.5	10.25	4.35

Source: ADF&G Community Profile Database Takotna Subsistence Harvest Update

Table 6. Subsistence Harvest in Crooked Creek by Resource, 2009

	Percent of Households Harvesting Resources	Reported Number Harvested	Estimated Pounds Harvested	Average Pounds Harvested per Household	Per Capita Pounds Harvested
Fish	81.82	19,022.7	23,058	576.44	200.24
Salmon	75.76	2,556	19,698	492.45	171.06
Non-Salmon Fish	60.61	2,771.7	3,360	83.99	29.17
Land Mammals	42.42	3,064	3,714	92.84	32.25
Large Land Mammals	18.18	2,420	2,933	73.33	25.47
Small Land Mammals	33.33	644	781	19.51	6.78
Moose	9.09	3	1,964	49.09	17.05
Birds and Eggs	33.33	175.45	213	5.32	1.85
Vegetation	93.94	1,031.81	1,251	31.27	10.86

Source: ADF&G Community Profile Database Crooked Creek Subsistence Harvest Update

Table 7. Subsistence Harvest in Sleetmute by Resource, 2009

	Percent of Households Harvesting Resources	Reported Number Harvested	Estimated Pounds Harvested	Average Pounds Harvested per Household	Per Capita Pounds Harvested
Fish	81.25	25,746.61	29,770	804.58	330.08
Salmon	75	3,473	24,991	675.43	277.10
Non-Salmon Fish	75	4,132.89	4,779	129.15	52.99
Land Mammals	50	4,600.98	5,320	143.78	58.99
Large Land Mammals	34.37	3,424.52	3,960	107.02	43.90
Small Land Mammals	43.75	1,176.47	1,360	36.76	15.08
Moose	15.62	5	3,122	84.37	34.62
Birds and Eggs	65.62	438.90	507	13.72	5.63
Vegetation	87.5	821.42	950	25.67	10.53

Source: ADF&G Community Profile Database Sleetmute Subsistence Harvest Update

Table 8. Subsistence Harvest in Stony River by Resource, 2009

	Percent of Households Harvesting Resources	Reported Number Harvested	Estimated Pounds Harvested	Average Pounds Harvested per Household	Per Capita Pounds Harvested
Fish	58.33	17,419.92	29,033	1,451.66	458.42
Salmon	58.33	2,240.27	23,179	1,158.96	365.99
Non-Salmon Fish	50	3,512.4	5,854	292.7	92.43
Land Mammals	50	2,240	3,733	186.67	58.95
Large Land Mammals	25	770	1,283	64.17	20.26
Small Land Mammals	41.67	1,470	2,450	122.5	38.68
Moose	8.33	1	900	45	14.21
Birds and Eggs	66.67	203.23	339	16.94	5.35
Vegetation	83.33	372.18	620	31.01	9.79

Source: ADF&G Community Profile Database Stony River Subsistence Harvest Update

5. Description of hunting in the vicinity

The proposed pipeline corridor begins in the Susitna Flats State Game refuge in GMU 16B and continues northwest to the Alaska Range. The pipeline route then enters GMU 19C, moves west into GMU 19D and ends at the proposed mine site in GMU 19A. The lands along the proposed pipeline route are remote and most of the route is not easily accessible. The easiest access for hunting is likely along major rivers, near remote airstrips as well as the Pretty Creek road which parallels the first five miles of the route. There are also hunting guide camps that operate near the proposed pipeline route. Specific hunting use data along this proposed pipeline corridor is limited.

ADF&G collects hunting harvest reports as a condition for taking some large game species in the GMUs that the proposed pipeline route transects.

Game Management Unit 16B

According to 2016 hunting harvest reports in GMU 16B, 1,169 people reported hunting moose and 29.8% were successful. Twenty-five people reported hunting Dall sheep in GMU 16B and 32% were successful (ADF&G 2018c). Annual harvest of caribou in GMU 16B is 8.1 animals +/- 2.9 (Peltier 2018, personal communication). GMU 16B has also been part of intensive management for moose with wolf, black bear and brown bear predation control. Harvest data for wolves, black bears and brown bears have been collected for GMU 16B as a result of these efforts. According to 2013 harvest data, 3 wolves, 138 black bears and 84 brown bears were harvested in GMU 16B (ADF&G 2015).

Game Management Unit 19C

According to 2016 hunting harvest reports in GMU 19C, 225 people reported hunting moose and 57.8% were successful, 30 people reported hunting bison and 80% were successful, and 181 people reported hunting Dall sheep and 55.2% were successful (ADF&G 2018c).

Game Management Unit 19D

According to 2016 hunting harvest reports in GMU 19D, 285 people reported hunting moose and 60.4% were successful and 6 people reported hunting for Dall sheep and 16.7% were successful. GMU 19D has also been part of an intensive management for moose with wolf, black bear and brown bear predation control, however the program was limited to an area surrounding the Upper Kuskokwim villages of McGrath, Takotna, Medfra and Nikolai (ADF&G 2015b). The proposed pipeline route does not transverse this intensive management area.

Game Management Unit 19A

According to 2016 hunting harvest reports in GMU 19A, 190 people reported hunting for moose and 61.6% were successful (ADF&G 2018c). No caribou harvest reports were collected for any these GMUs in 2016.

6. Potential impacts on the resources

Potential Impacts on Fish-Construction

Stream crossings

Construction of the proposed pipeline will require buried crossings of hundreds of streams ranging from numerous small headwater streams to large rivers. Many of the rivers, perennial and intermittent streams along the route, provide seasonal or year-round fish habitat including spawning, foraging, rearing, refuge and/or migratory use. The proposed pipeline will cross most of these stream through an open cut trench in the stream bed. Potential impacts to fish and fish habitat include, stream sedimentation, bank erosion, disruption to migration, mortality to fish eggs in the gravel, loss of riparian vegetation, and changes to overwintering areas.

Some of the larger streams will be crossed by horizontal directional drilling (HDD). If the HDD goes as planned there should only be minimal impact to fish, however in some cases HDD drilling muds have been known to propagate into a watercourse (frac-out) because of excessive drilling pressures and site-specific geology. If a frac-out occurs, temporary impacts to fish would be from excess sedimentation and turbidity from the drilling muds.

Water withdrawal/disposal

Large amounts of water will be needed for several aspects of pipeline construction for activities such as ice road and ice pad construction, hydrostatic testing, camp use, and general maintenance. Possible impacts to fish include loss of habitat and impingement or entrainment of fish in water withdrawal equipment.

In addition to water withdrawal, large amounts of water may need to be disposed of from within the buried ditch and after pipeline hydrotesting. This could lead to increased downstream erosion, sedimentation and turbidity in fish streams.

Blasting

Blasting activities near fish streams can cause both direct injury and mortality to both fish and fish eggs from pressure waves and vibrations. In addition, blasting can drive fish away from optimal habitat and refuge from predators.

Bridges/culverts

Construction and operations of the proposed pipeline will require numerous temporary culverts, and manufactured bridges for equipment access. Possible impacts from these activities include temporary or long term blockage to fish passage, sedimentation, excess downstream erosion, loss of riparian habitat, and possible mortality to fish eggs in the gravel if pile driving is necessary.

Since much of the construction will be in the winter, numerous ice bridges across streams will be needed as well. Potential impacts of ice bridges include damming or ponding upstream during spring break-up. This in turn could lead to excess downstream erosion and impacts to fish passage.

Potential Impacts on Fish-Post Construction

Backfilled Pipeline Trench Stabilization

Stabilization of the backfilled pipeline trench could be problematic especially in thaw unstable soils (permafrost) following construction. The pipeline ditch can intercept overland flow that may erode backfill material from the pipeline ditch and potentially serve as a canal carrying water with a high sediment load into nearby streams or wetlands. The interception of stream flow and changes to wetland cross drainage, particularly in areas of continuous and discontinuous permafrost in rolling or mountainous terrain rehabilitation, especially in ice-rich soils, may require extensive, repeated ditch maintenance and long-term thermal stabilization activities before the habitat can return to its former stability and productivity. This could be particularly difficult since there is no access road planned along the pipeline route.

Vehicle Crossings

A cleared right-of way (ROW) will need to be maintained following initial pipeline construction for inspections and access. Access for brushing the ROW and for anticipated ditch maintenance activities may require equipment crossings of fish streams. Vehicle stream crossings could lead to rutting, loss of riparian vegetation, erosion and stream sedimentation. In addition, having a cleared ROW will likely result in increased public ATV use and access.

Potential Impacts to Birds/Wildlife-Construction

Pipeline construction will involve multiple activities that have the potential to adversely impact birds/wildlife through noise, vibration, lighting, disruption of movements, attraction to artificial food sources, and human presence/interaction.

Noise

Noise will be associated with many aspects of pipeline construction from heavy equipment, human presence, camp activities, blasting, and project related aircraft. Noise can disrupt animal movements, force animals to abandon existing habitat, awaken hibernating bears and can both make animals more susceptible to predation as well as make it harder for predators to hunt. Sudden noise can also impact animals during sensitive times such as calving and spring lambing.

Pipeline stringing

Construction of the pipeline will involve clearing vegetation and overburden, digging a trench, laying strings of pipeline, and then burial. Excessive strings of pipeline prior to burial could lead to disruptions to wildlife movement and open trenches could lead to both a barrier to movement as well as a hazard for entrapment.

Remote Construction Camps

Construction of the pipeline will involve multiple 300-person remote construction camps. Camp activities that could adversely affect birds/wildlife include improper storage of food and putrescible waste, lights, noise and human presence/interaction.

Potential Impacts to Wildlife/Birds-Post-Construction

ROW Access

The pipeline ROW will continue to be occasionally utilized for access for brushing, maintenance and inspection overflights. Potential impacts to birds/wildlife from this increased access include increased noise, as well as potential human/wildlife interaction. In addition, the public may utilize this cleared ROW for increased hunting access. This is not limited to temporary impacts, since the results of increased access may result in long-term changes in patterns of hunting use and increased user conflict.

Compressor Station

As part of the pipeline project, a proposed compressor station is planned to be located within the Susitna Flats State Game Refuge. This compressor station will be operated remotely, however, it will require regular access for maintenance. Potential impacts to birds/wildlife include increased noise as well as potential human/wildlife interaction.

Transitional Habitat

As the proposed pipeline route enters the northern face of the Alaska Range (PLMP 150-194) it transverses a narrow area of transitional habitat which is important to a wide variety of wildlife. Transitional habitat is the area at an elevation near the tree line where the trees transition to an area more dominated by lichens, moss, shrubs as well as grasses and sedges. These areas typically have less snow and offer better foraging for large mammals. Alaskan long winters and short summers are limiting for many species of wildlife and these habitats become snow free earlier in the spring defining the beginning of the growing season. Every wildlife species using this area benefits from the effect. During certain times of the year, animals are known to concentrate in these habitats. Potential impacts include short term displacement of animals during construction as well as long term changes in hunting patterns due to a cleared ROW through this habitat.

Invasive Species

The proposed pipeline route transverses largely pristine tracts of Alaska with few documented invasive species. Construction projects that disturb native soils can be vectors for the introduction and spread of invasive species. When non-native species are introduced into an ecosystem in which they did not evolve their populations sometimes explode in numbers which can disrupt natural communities and ecological processes.

7. ADF&G proposed mitigation measures

Fish

Stream crossings

All pipeline crossings of fish streams will require a Title 16 Fish Habitat Permit from ADF&G. The pipeline should be buried below scour depth to prevent exposure and impediments to spawning and fish passage. For open-cut trenching, techniques should be employed to minimize in-water work and resultant sedimentation. Streambanks should be stabilized with approved bio-engineered and/or engineered techniques and revegetated as soon as practical. Fish streams with

known salmon spawning should either be crossed using HDD or during typical work windows of May 15-July 15. Open-cut trenching through wetlands should be done in the winter to minimize sedimentation. A Stabilization, Rehabilitation, and Reclamation and Monitoring plan should be developed and approved to ensure the streambank stabilization and revegetation is successful post construction.

For HDD crossings, a mud management plan should be submitted for review and approval that covers techniques to both detect a frac-out and options for mitigation if drilling muds enter the stream. The HDD drilling mud management plan should also outline steps to go forward in case of a frac-out such as alternative crossing depths, locations or techniques. Sections of pipeline that are HDD should undergo hydrotesting prior to installation.

Water withdrawal/disposal

Water withdrawal from fish lakes, ponds and streams will require a Title 16 Fish Habitat Permit from ADF&G. These permits will have winter withdrawal limits and fish screen water intake requirements to ensure protection of fish resources in these waterbodies.

Water should be released in a manner that minimizes erosion and sedimentation in waterbodies that contain fish.

Bridges/culverts

Culverts and bridges in fish streams will require a Title 16 Fish Habitat Permits from ADF&G. These structures should be designed, installed and maintained for the efficient passage of fish both upstream and downstream after installation. They should also be of sufficient size to handle expected high water events over the course of their service life without downstream erosion. If bridge pilings are necessary a vibratory hammer should be used for installation. A timing window may be necessary for driving piles in fish streams with known spawning to avoid impacts to eggs.

Once temporary culverts and bridges are removed, the stream banks should be stabilized and revegetated with approved techniques.

Ice roads at stream crossings during construction or operations should be breached or weakened following completion of use before breakup occurs to reduce potential impacts to stream banks and to minimize disruption of movements of fish. This will be a condition on ADF&G Fish Habitat Permits issued for construction of the ice bridges across streams along the pipeline alignment.

Backfilled Pipeline Trench Stabilization

Techniques should be employed to ensure stabilization of the backfilled trench, particularly in areas of ice-rich thaw unstable slopes. A Stabilization, Rehabilitation, and Reclamation and

Monitoring plan should be developed and approved to timely detect and address areas of erosion along the backfilled trench and restore these areas. Restoration at stream crossings will be covered by the Fish Habitat Permits from ADF&G.

Blasting

Blasting near fish streams may require a Title 16 Permit from ADF&G. Prior to blasting near fish streams, a blasting plan should be submitted to both ADF&G and the appropriate land owner for review and approval. The blasting plan should follow the latest Alaska Blasting Standard for the Proper Protection of Fish maintained by ADF&G.

Vehicle Crossings

Equipment fords of fish streams will require a Fish Habitat Permit from ADF&G. Vehicle crossings are preferable during frozen conditions when ice is at a sufficient thickness to support the vehicle. Summer crossings should be made during low flows at areas with gently sloping banks. Any significant damage to streambanks should be repaired and revegetated as soon as practical in consultation with ADF&G.

Wildlife/Birds-Construction

The USFWS, under the Migratory Bird Treaty Act of 1918 (16 USC 703-712), has regulatory authority for migratory birds and should review the project pursuant to this authority. In addition, it is advised that the USFWS review the project with respect to the Bald Eagle Protection Act (16 USC 668-668c) and the Endangered Species Act of 1973 (as amended).

Noise

Most construction noise will be unavoidable and relatively short term in nature. If practical, efforts should be made to reduce or minimize excess and unnecessary noise during construction.

Prior to blasting, a blasting plan should be submitted to both ADF&G and the appropriate land owner for review and approval. Blasting should avoid sensitive life stages of wildlife (e.g., Dall sheep lambing, raptor nesting, and bear denning).

Since most of the construction is planned for the winter, potential disturbance to migratory birds should be minimized.

Pipeline stringing

Ditching and pipe stringing operations should consider wildlife movements. Extensive lengths of ditch or pipe either awaiting welding or laying, can deflect or form barriers to wildlife movement (moose migration between summer and winter range; caribou seasonal migrations). In the worst case, open ditch could result in animal entrapment. Cross-right-of-way access should be maintained for resident animals during non-migratory periods.

Remote Construction Camps

A Wildlife Avoidance and Human Encounter/Interaction Plan should be developed and submitted for approval that outlines policies to minimize and avoid wildlife interactions. Remote camps should be fenced (preferably electric), putrescible wastes incinerated and food should be properly stored to avoid access by birds and wildlife. Policies should be implemented that prohibits feeding of wildlife consistent with state law. Outdoor camp lights should have shielding that directs light towards the ground.

Invasive Species

The applicant has committed to developing an Invasive Species Prevention and Management Plan to reduce or eliminate the spread of invasive species along the ROW and at offsite locations. Seed mixes if used for revegetation and reclamation of cleared areas should be carefully formulated and controlled during production to reduce the potential for invasive species from these sources. Care should be taken when transporting equipment to the ROW to clean foreign plant materials from the equipment before shipment. The plan should provide details of the measures to be used to prevent and control invasive plants through appropriate inspection, cleaning, site preparation, monitoring, and allowing revegetation of disturbed areas with native species. The plan should be developed in conjunction with their proposed Stabilization, Rehabilitation and Reclamation Plan and would emphasize early detection and rapid response in addressing invasive species.

Wildlife/Birds-Post-Construction

Compressor Station

Construction and operations of the compressor station will require a separate Special Area Permit from ADF&G since it will be located within the SFSGR. The compressor station should be designed and operated to minimize noise from the compressors. Permanent outdoor lights should have shielding to direct light towards the ground.

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