UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
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OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

AUG 29 2017

Colonel Michael Brooks
Alaska District Engineer
U.S. Army Corps of Engineers
P.O. Box 6898
JBER, Alaska 99506-0898

Dear Colonel Brooks:

The U.S. Environmental Protection Agency Region 10 has reviewed the above-referenced Public Notice, which describes the Alaska Gasline Development Corporation's proposal to discharge fill for the construction of an in-state gas supply pipeline, known as the Alaska Stand Alone Pipeline. The proposal was submitted under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.[1] The proposed project includes a 733-mile-long, 36-inch diameter natural gas transmission mainline extending from Prudhoe Bay to an existing pipeline system in Southcentral Alaska. The project also includes a natural gas conditioning facility in Prudhoe Bay capable of producing an annual average of 500 million standard cubic feet per day of utility-grade natural gas at peak capacity. Approximately 8,907 acres of wetlands would be directly impacted. This includes approximately 7,573 acres of permanent wetland loss, 1,161 acres of temporary impacts via the discharge of gravel for construction pads or building of ice pads, 1 acre of permanent intertidal loss, and 171 acres of subtidal impact, as a result of the pipeline, aboveground facilities, permanent access roads, and marine dredge fill. The project also includes 312 stream crossings, including 64 crossings of anadromous waters, as well as impacts to the Yukon, Tanana, Nenana, and Susitna Rivers. Approximately 1,037 acres of wetlands underlain by permafrost would also be subject to degradation from the proposed project.

The Army Corps of Engineers Alaska District made the Public Notice available for comment concurrently with the release of a Draft Supplemental Environmental Impact Statement, for which the Corps serves as lead federal agency. In addition to reviewing the Public Notice, the EPA has actively participated as a cooperating agency in the National Environmental Policy Act process for the ASAP project, including the 2012 Final EIS, and the 2017 Draft SEIS. Following the 2012 Final EIS, the applicant made changes to the project that were not evaluated in that document, including changes related to the location of material sites, access roads, and other project infrastructure. Changes also included changes to the diameter of the pipeline, location of dredging and disposal work, and pipeline routing. These changes led to preparation of the 2017 Draft Supplemental EIS. Throughout the NEPA process, we have participated in agency work groups and have provided extensive comments on prior versions of the EIS. Our comments reflect the EPA's ongoing experience with the ASAP project and the anticipated impacts.

The EPA understands and supports Alaska's desire to develop its energy resources in a responsible way that addresses the needs of Alaskans while also safeguarding the State's exceptional natural resources. We are also aware that the proposed project would provide a source of cleaner energy to the Fairbanks

[1] 33 U.S.C.§ 1344, 33 U.S.C. § 304.

area, whose air quality is adversely affected by widespread combustion of wood and coal. We have certain concerns, however, regarding the information provided to date and offer the following comments to ensure that the ASAP project can be reviewed in an expeditious manner that complies with the Clean Water Act's Section 404(b)(1) Guidelines.

The Public Notice on the proposed ASAP project did not include information required by both the EPA's and the Corps' regulations on how impacts associated with the proposed activity are to be avoided, minimized, and compensated for, a troubling omission for a project of this scope and scale.[2] We note, however, that a Draft Compensatory Mitigation Plan prepared by the applicant was subsequently posted on the Corps' website along with the Draft SEIS. According to the Draft CMP, of the approximately 8,907 acres of direct wetland impacts, the project proponent is proposing to provide compensatory mitigation for impacts to approximately 104.97 acres (approximately 1 percent of the impacted wetland area). The Draft CMP proposes to provide this compensatory mitigation by securing an appropriate number of credits from approved mitigation banks.

Based on our review of the Public Notice, the Draft SEIS, and the applicant's Draft CMP, the EPA is concerned that the proposed project may not comply with the Guidelines. Specifically, it is not clear that the proposed project's direct, secondary, and cumulative impacts on aquatic resources have been adequately evaluated to support the factual determinations required by the Guidelines.[3] It is also not clear that all appropriate and practicable steps have been taken to ensure that impacts to aquatic resources have been avoided, minimized, and compensated for, consistent with the Guidelines.[4]

The Guidelines direct that no discharge of dredged or fill material shall be permitted if the discharge will cause or contribute to significant degradation of waters of the United States.[5] Determinations regarding significant degradation are made based on an analysis of the direct, secondary, and cumulative impacts of the proposed project on the aquatic ecosystem. The proposed ASAP would traverse 60 watersheds (as defined by the USGS 10-digit Hydrologic Unit Code or HUC-10) in Alaska's Northern, Interior, and Southcentral ecosystems. Although the project would adversely impact wetlands, streams, and other aquatic resources in all 60 watersheds, the Draft CMP uses a novel approach to summarily dismiss potential impacts on the aquatic ecosystem in all but two of these watersheds as "insignificant." This conclusion is particularly remarkable since the Draft SEIS assigns some of these same wetland impacts (e.g., wetland loss and fragmentation) a "major" or "moderate" negative effects ratings. The Draft CMP argues that the only ecologically significant impacts to wetlands would be those that occur in watersheds that have experienced greater than 7.5 percent anthropogenic disturbance. Thus, of the approximately 8,907 acres of potential direct wetland impacts estimated for ASAP, the Draft CMP identifies only 104.97 acres as ecologically significant, and does not consider the indirect losses from permafrost degradation at all. All of the impacts to the remaining 8,802 acres of wetlands are dismissed as insignificant regardless of the existing quality of these wetlands, the functions they provide in the landscape, the degree to which those functions would be impacted, the duration of those impacts, or the likely ecological consequences. The EPA is not aware of any other case in which this approach has been used in the context of an impacts analysis pursuant to the Guidelines. The EPA is particularly concerned about employing such a novel approach without independent evaluation for a project that involves the scope and scale of impacts to aquatic resources anticipated for ASAP. In light of these gaps and

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[2] *See* 40 C.F.R. § 230.94(b), 33 C.F.R. § 332.4(b).
[3] *See* 40 C.F.R. §§ 230.5, 230.11, 230.12.
[4] *See* 40 C.F.R. §§ 230.10(a), 230.10(d), 230.91 – 230.98,
[5] 40 C.F.R. § 230.10(c)

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inconsistencies in the impacts analysis the EPA is concerned that there is insufficient information to make a reasonable judgment as to whether the proposed discharges will comply with the Guidelines.

The Draft CMP identifies measures taken to avoid and minimize adverse impacts to wetlands, streams, and other aquatic resources as part of ASAP's planning and design. These include avoiding open water areas and higher value wetlands by routing the pipeline through uplands or areas with fewer wetlands and by using construction methods designed to result in only temporary impacts. Nevertheless, there appear to be additional appropriate and practicable avoidance and minimization measures that could further reduce potential aquatic resource impacts. For example, the DSEIS indicates that potentially thousands of acres of impacts could be avoided by elevating the pipeline on using vertical support members in wetland areas underlain by permafrost, similar to the existing Trans-Alaska Pipeline. The EPA believes that opportunities to elevate the pipeline should be more thoroughly evaluated to determine if they could reduce the impacts to wetlands underlain by permafrost. We also recommend evaluating the use of Dock Head 4 at West Dock and removal of gravel in the construction right-of-way as potential opportunities to minimize impacts to resources. Such additional evaluations are critical to adequately identify the least environmentally damaging practicable alternative under the Guidelines.[6]

The EPA also has a number of concerns regarding the adequacy of the proposed compensatory mitigation. Compensatory mitigation involves the restoration, establishment, enhancement, and/or in certain circumstances preservation of wetlands, streams, and other aquatic resources for the purpose of offsetting unavoidable adverse impacts that remain after all appropriate and practicable avoidance and minimization has been achieved.[7] Compliance with the Guidelines may require compensatory mitigation to reduce the magnitude or severity of certain discharges to avoid the potential for significant degradation. Compliance with the Guidelines may also require compensatory mitigation when such measures are appropriate and practicable – *i.e.,* appropriate to the scope and degree of the impacts and practicable in terms of cost, existing technology, and logistics in light of overall project purposes. In this case, because of the lack of information in the Draft CMP regarding the direct, secondary, and cumulative impacts of the proposed discharges on approximately 99 percent of the potentially affected wetland acreage discussed above, sufficient information does not exist to determine if additional compensation would be required to avoid causing or contributing to significant degradation. For the same reason, sufficient information does not exist to determine if there are appropriate and practicable compensation measures that would be required by the Guidelines to address some or all of the remaining approximately 8,802 acres of wetland impacts where compensation is not currently proposed. In addition, for the 104.97 acres of wetland impacts that the permit applicant has identified as needing compensation, the EPA is concerned that the assessment method utilized to evaluate the type and levels of functions these wetlands provide inappropriately undervalues their current functional capacity. Overall, the EPA believes that such extensive, unmitigated destruction and degradation of wetlands and aquatic resources, particularly in aquatic resources underlain by permafrost, may not comply with the Guidelines.

The EPA has previously raised concerns with the Alaska District at the staff level, with the Statewide Interagency Review Team, and at the management level over identified lack of compensatory mitigation or inadequate compensatory mitigation for recently permitted projects, and has questioned these projects' compliance with the Guidelines, particularly the 2008 Final Rule. We note, as previously stated, that the applicant's proposal may not comply with the Guidelines for similar reasons, and we

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[6] *See* 40 C.F.R. § 230.10(a).
[7] *See* 40 C.F.R. § 230.92.

believe that separate discussions of the larger policy issues between our agencies are needed to address our concerns.

Based on our review of currently available information and the concerns articulated above and in our attached comments, and pursuant to Part IV, paragraph 3(a) of the 1992 Clean Water Act Section 404(q) Memorandum of Agreement between the EPA and Department of the Army, the EPA is hereby notifying the Alaska District that the proposed discharges may result in substantial and unacceptable impacts to aquatic resources of national importance, including the wetlands and waters of the Yukon River basin. Notably, many of the aquatic resources along the proposed pipeline route are of outstanding natural resource value and occur in systems whose ecological functions are intact. In particular, the EPA concludes that the Yukon River basin, with its associated tributaries and wetlands, and adjacent wetland systems, is an aquatic resource of national importance according to the criteria identified in the Section 404(q) MOA. Aquatic resources that are underlain by permafrost are of particular concern, since these resources provide unique functions in addition to the general functions that wetlands provide. They are fragile, easily damaged, and do not recover from damage in less than one generation, if at all. Furthermore, the wetlands and streams of the Yukon basin provide important functions that help to maintain the basin's ability to support and maintain anadromous fish, particularly salmonids, which are of both commercial and subsistence imporance. In accordance with paragraph IV(3)(b) of the Section 404(q) MOA, EPA will provide further comments on this matter within 25 calendar days after the end of the extended comment period. Because that date falls on a weekend, that letter would be due no later than September 25, 2017.

Thank you for the opportunity to provide comments on the proposed ASAP project. I appreciate the attention that you and your staff have provided to this project, and EPA Region 10 looks forward to discussing our concerns. In the meantime, my staff is working to identify ways in which we can work together to ensure that any unavoidable impacts are adequately offset with appropriate and practicable compensatory mitigation. Should you have any questions about this letter, please do not hesitate to contact me or have your staff contact Mark Douglas at (907) 271-1217, or by email at douglas.mark@epa.gov.

Sincerely,

R. David Allnutt, Director
Office of Environmental Review and Assessment

Attachment

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Attachment 1: The Wetlands and Streams of the Yukon River Basin are an Aquatic Resource of National Importance

The Yukon River is the third longest river, and the longest free-flowing river, in North America, flowing northwest from the Coastal Range mountains of northern British Columbia, through the Yukon Territory and Alaska to the Bering Sea. The river is 1,980 miles long and empties into the Bering Sea at the Yukon-Kuskokwim Delta. It drains a total watershed area of 321,500 mi^2, of which 126,300 mi^2 is in Canada, and is the fourth largest basin in North America. It is also the fifth largest contributor of freshwater to the Arctic Ocean. Its contributing rivers drain a number of different biogeographic regions, from the Arctic, to the Alaska Range, and include a variety of both glaciated and unglaciated systems.

Background and History

Humans have inhabited the Yukon basin for thousands of years, and may it be one of the oldest settlements of humans on the continent. Those that did not trade with the coastal Tlingit people remained culturally isolated until the 19th century (Brabets *et al*, 2000). Exploration of the Yukon during the earlier part of the 19th century was geared toward developing the fur trade. Following the purchase of Alaska in 1867, when fur trading was the primary commercial activity, the Alaska Commercial Company constructed several posts at various locations on the Yukon River. In the 1870's, Leroy McQuesten, Arthur Harper, and Alfred Mayo, established a number of trading posts up and down the Yukon River. They also began prospecting during the summers, and recognizing the mineral potential of the area, changed the trading posts from primarily serving native and fur trading populations to serving miners' needs. Several strikes of placer gold between 1885-1893 were fairly small claims; the Klondike discoveries at Dawson in 1897 precipitated an enormous in-migration of people to the area during the 1896–1903 Klondike Gold Rush. During this time, and until the completion of the Klondike Highway in the 1950's, the river was the primary means of transportation in this portion of the world.

Environmental Characteristics

The discharge of the river close to its mouth has been measured as an average flow of 227,000 ft^3/s; however, much of this flow occurs during the summer months as a combination of snowmelt, glacial melt, and rainfall (Brabets *et al*, 2000). There are thirteen major drainage basins systems which contribute flow into the Yukon River. Of those major rivers, the Tanana and the Nenana rivers are also proposed to be impacted, along with the Yukon. Crossings of the Yukon and Tanana would be accomplished by Horizontal Directional Drilling; however, the Nenana would be crossed in two locations by open cut. In addition, trenching and filling of wetlands within the construction right-of-way, material site source impacts and placement of gravel for access roads would result in impacts to wetlands for the construction of the Alaska Stand Alone Pipeline. Wetlands account for about 30 percent of the Yukon River Basin (Brabets *et al*, 2000).

Owing to its history and its location within drainages of mining sites, the Yukon has had considerable disturbance from anthropogenic activity. Mining activity was and still is an important economic activity in the Yukon River Basin. Although modern mining practices are designed to reduce pollution and limit discharges, many historic, abandoned mines remain within the basin. The Coal Creek watershed, for example, which is now part of the Yukon-Charley Rivers National Preserve, was mined extensively in the early 1900's and the mining practices had a severe impact on the watershed. The Coal Creek Mining District was identified as a priority and in 1990, the National Park Service began a multi-year project to restore the ecological health of the watershed, which was funded by and administered through the Superfund response authority of the NPS. The major cleanup effort began in 1994, and was finally completed with the close of the field season in 1998 (Allan, 2015).

The U.S. Geological Survey (USGS), working in cooperation with the Yukon River Inter-Tribal Watershed Council,[1] has been evaluating hydrology and water quality of the Yukon River since the early 2000's. Water-quality samples have been collected at more than 400 sites in the Yukon River Basin by the USGS. While water quality in some areas shows evidence of human-induced historic disturbance, water quality data from the USGS generally indicate relatively good levels of turbidity, metals, and dissolved oxygen throughout the river, and the Yukon River has not been listed as an impaired water body. The water quality of the Yukon River Basin is important for many reasons. Residents who live along the main stem of the Yukon or its tributaries use the surface water for drinking. Salmon and other fish species require adequate water quality for their survival as does the abundant wildlife present in the basin.

In addition to relying on the Yukon River and its tributaries for drinking water, residents who live along the Yukon River have a long history of reliance on fish as a dietary staple, as food for dogs, and for other uses. This includes both salmon and non-salmon species; however, salmon traditionally comprise the bulk of the subsistence harvest within the Yukon River drainage (Alaska Department of Fish and Game, 2017). Fish other than salmon are also important to the subsistence way of life for Yukon area residents in biologically, historically, and culturally significant ways. In 1987 (and reconfirmed in 1993), the Alaska Board of Fisheries made a positive customary and traditional use determination for freshwater fish species in the Yukon area, including other salmonid species such as sheefish, whitefishes, Arctic grayling and Arctic char, as well as Arctic lampreys, burbot, longnose suckers, and northern pike (ADF&G, 2017). At the Yukon Delta National Wildlife Refuge, the U.S. Fish & Wildlife Service lists 44 species of fishes supported in the delta (USFWS, 2017).

Chinook salmon, summer and fall Chum salmon, and Coho salmon comprise the majority of harvests in the Yukon River drainage. The Alaska Department of Fish and Game regulates the harvests of these fish, with the goal of managing for a sustainable harvest. There are limited commercial harvests of salmon within the lower Yukon; however, subsistence harvests typically surpass commercial, sport, and personal use harvests combined (ADF&G, 2017). Within the Yukon drainage, Chinook salmon have been declining since 1998, and in 2010, the U.S. Department of Commerce declared the Chinook fishery in the Yukon a failure (U.S. Department of Commerce, 2010), prompting Congress to approve federal funding for fishery relief in 2012-2013. No harvest other than subsistence has been permitted in the last several years (ADF&G, 2016, 2017). The reasons for the decline in Chinook runs is not known; however, with the exception of a few bumps within the aforementioned timeframe, the strength of Chinook runs has continued to decline in the Yukon. Widespread shortfalls in other river systems in Alaska, beginning in 2007, prompted the Alaska Department of Fish and Game to initiate a research plan to address key research questions, which began in 2013.

In addition to fishing and subsistence activities, the Yukon River basin supports important recreational activities. While most of the basin is wilderness, in the Alaska portion of the basin, there are four national parks; namely, Wrangell-St. Elias National Park, Denali National Park, Yukon-Charley Rivers National Preserve, and Gates of the Arctic National Park. Eight National Wildlife Refuges are also located within the basin. Portions of the Arctic National Wildlife Refuge, and the entirety of the Yukon Flats, Tetlin, Nowitna, Kanuti, Innoko, Koyukuk, and Yukon Delta Refuges are located within the basin. These parks and refuges support significant economic and recreational activities.

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[1] The Yukon River Inter-Tribal Watershed Council, a cooperative effort of 70 First Nations and tribes in Alaska and Canada, has the goal of making the river and its tributaries safe to drink from again by supplementing and scrutinizing Government data.

Tanana River

The Tanana River, which the Alaska Stand Alone Pipeline also proposes to cross, is the second largest tributary basin to the Yukon River and drains approximately 45,000 square miles (ADF&G, 2017). From its headwaters in the Alaska Range, the Tanana River flows 590 river miles to the Yukon River, where it accounts for a 37% increase in the streamflow of the Yukon (Brabets and Schuster, 2008). The Tanana River produces approximately 25% of the Yukon River Chinook salmon, a stock of international importance for commercial, subsistence and sport fisheries in Alaska and Canada (Eiler et al., 2006).

The Tanana River supports eighteen species of fish, three anadromous, and fifteen resident species (ADF&G, 2017; Johnson and Blanche, 2010). In addition, the Tanana River is a major spawning area for whitefish, which are an important subsistence food for rural Alaskans. The U.S. Fish & Wildlife Service has indicated whitefish may travel over 1,000 miles from the mouth of the Yukon to spawn in the Tanana River. Subsistence continues in the present day to be the most valued source of both nutrition and cultural identity for residents of Dot Lake, Tanacross, Tok, Tetlin and Northway (Marcotte, 1991; Martin, 1983). Subsistence harvest comprises a substantial portion of village residents' diets, with most of the harvest consisting of moose, four different species of whitefish, and waterfowl (Marcotte, 1991; Martin, 1983; Andersen and Jennings, 2001).

The Tanana River and its adjacent lands provide residents and tourists with a variety of recreational opportunities such as hunting, fishing, trapping, camping, hiking, dog mushing, cross-country skiing, wildlife viewing, flightseeing, snow machining, gold panning, boating, and berry picking (ADNR, 2017; ADF&G, 2006). The Tanana River flows for 200 miles through the 1.81 million acre Tanana Valley State Forest. At the headwaters of the Tanana River, the 682,602 acre Tetlin National Wildlife Refuge is host to 160 migratory and 30 resident bird species, 42 species of mammals, 15 fish species, one amphibian, and an unknown number of invertebrate species. The Refuge is located in a major migration corridor through which up to 200,000 sandhill cranes, representing about one half of the world population, annually migrate. The Refuge was established primarily for its unique waterfowl values, and produces an estimated 35,000 to 65,000 ducklings annually (USFWS, 2010).

Nenana River

The Nenana River is a tributary of the Tanana River, approximately 140 miles (230 km) long, in central Alaska. It drains an area on the north slope of the Alaska Range on the south edge of the Tanana Valley southwest of Fairbanks. It issues from the Nenana Glacier in the northern Alaska Range, southwest of Mount Deborah, approximately 100 mi (160 km) south of Fairbanks. It flows briefly southwest, then west, then north, forming the eastern boundary of Denali National Park and Preserve. It emerges from the mountains onto the broad marshy Tanana Valley, joining the Tanana River from the south at Nenana, Alaska, approximately 35 miles (56 km) southwest of Fairbanks. The Tanana River continues to its confluence with the Yukon River.

The Nenana supports populations of three species of salmon (coho, king and chum salmon), six other species of salmonids (humpback whitefish, round whitefish, broad whitefish, sheefish, Arctic grayling, least cisco), and seven non-salmonid fishes, viz., lake chubs, burbot, longnose suckers, northern pike, Alaska blackfish, Arctic lamprey, and slimy sculpins (Hander and Legere, 2013). In addition, major archaeological sites located in the valley include Broken Mammoth and Swan Point, of late Pleistocene age (Holmes, 2001).

The Nenana is one of the most popular destinations for boating and whitewater rafting in Alaska. Thousands of users, some on commercial cruises and others on private trips, travel on the river each year. The proximity of the both the Denali Highway and the Parks Highway, which follow various portions of the river, makes the river accessible at many places. For whitewater rafting and kayaking, there are stretches of the river that are rated as Class I, Class II, or Class IV on the International Scale of difficulty. Personal and other water craft are frequently found on the waters of the Nenana.

Wetland Functions in the Yukon Basin

Wetlands in the Yukon basin support the health of the river in a variety of other ways. Wetlands support the physical integrity of the river and its tributaries by acting as sediment traps and by slowing and storing floodwaters, and by providing later releases of stored water during low water periods, which is especially important in maintaining baseflow in headwater and low-order stream systems. They support the chemical integrity of the river and its tributaries by taking up nutrients and sequestering carbon as well as a number of other pollutants, making them unavailable to the aquatic ecosystem. Finally, they support the biological integrity of the river and its tributaries in a number of ways. First, by removing pollutants and excess nutrients from the water column, wetlands ensure that good water quality, which is critical for both fish habitat and human uses, is maintained. Second, they provide breeding grounds for aquatic insects which are critical to the food chain of these waters. Finally, they also provide direct habitat benefits for a number of fish and mammal species. Coho salmon in particular are directly dependent on wetlands as rearing habitat prior to migration to sea, and maintenance of wetlands within the floodplain of the river and its tributaries is critical to maintaining healthy runs of this species.

Permafrost

Permafrost is ground that maintains a temperature below 32^0 F (0^0 C) continuously for a period of two years. Permafrost is present to a large extent in the Yukon River Basin; a number of authors have designated six regions of permafrost in the Yukon River Basin, and the U.S. Geological Survey has identified the percentage of each region: (1) generally underlain by continuous permafrost—16 percent, (2) generally underlain by discontinuous permafrost—40 percent, (3) generally underlain by moderately thick to thin permafrost (50 to 600 ft)—24 percent, (4) underlain by discontinuous permafrost—6 percent, (5) generally underlain by numerous isolated masses of permafrost—5 percent, and (6) sporadic masses of permafrost—9 percent (Brabets *et al*, 2000). The presence of permafrost can drive the formation of wetland areas, since frozen ground is not generally permeable to liquid water, and thus causes water to perch at the surface for long periods of time during the growing season. These areas often develop organic mats and organic soils, which sequester carbon and adsorb and filter dissolved contaminants. Permafrost conditions also contribute to the natural 75- to 120-year cycle of fire in Interior Alaska, which orders the succession of major plant communities.

The presence of permafrost is significant in identifying impacts from development activities. Wetlands occurring in permafrost areas are ecologically fragile and easily disturbed, and do not recover from disturbance quickly, if at all. Brabets *et al* (2000) state:

> If permafrost melts, the upper layers of soil become drier and well aerated. Even if permafrost remains as temperatures increase, the shallow soils that thaw and freeze each year (the active layer) thaw more deeply and develop a thicker unsaturated zone. Soil microbes increasingly oxidize the organic carbon sequestered in the soils. This increased respiration releases carbon, in the form of dissolved carbon, into a stream and the atmosphere. Changes in dissolved organic carbon (DOC) could affect stream aquatic communities at all trophic levels that rely on DOC as a food source. The melting of the permafrost may increase recharge of aquifers, thus increasing base flow in streams. By increasing summer recharge, melting of permafrost will also decrease summer peak flows. Wetlands, which occupy about 30 percent of the Yukon River Basin (fig. 14), could be affected and in turn affect waterfowl habitat in the Yukon Flats and Yukon Delta areas.

Consequently, impacts to wetlands underlain by permafrost can have far-reaching effects on the aquatic ecosystem.

Given the importance of Yukon basin wetlands and water resources for the support of fisheries, wildlife, and subsistence, commercial and recreational uses by humans, the EPA concludes that these resources are Aquatic Resources of National Importance for the purposes of the 1992 Section 404(q) of the Clean Water Act Memorandum of Agreement between the EPA and Department of the Army.

References

Alaska Department of Fish and Game (ADF&G). 2006. Our Wealth Maintained: A Strategy for Conserving Alaska's Diverse Wildlife and Fish Resources. Alaska Department of Fish and Game, Juneau, Alaska, xviii+824 pp.

Alaska Department of Fish and Game. 2017. Sport Fish, Management Areas, Lower Tanana Management Area. http://www.adfg.alaska.gov/index.cfm?adfg=ByAreaInteriorTanana.fishingInfo#brochure Downloaded August 24, 2017

Alaska Department of Fish and Game, 2017. Yukon River Area Subsistence Fishing. http://www.adfg.alaska.gov/index.cfm?adfg=ByAreaSubsistenceYukon.fishingInfo. Downloaded August 23, 2017.

Alaska Department of Fish and Game, Division of Commercial Fisheries. 2017. 2017 Yukon River Fall Salmon Fishery News Release # 34, district 2, Commercial Period 8. August 15, 2017. Alaska Department of Fish and Game, Emmonak, Alaska.

Alaska Department of Fish and Game, Division of Commercial Fisheries, 2017. 2017 Yukon River Fall Salmon Fishery News Release # 35, district 2, Commercial Period 8. August 15, 2017. Alaska Department of Fish and Game, Emmonak, Alaska.

Alaska Department of Natural Resources (ADNR), Division of Forestry. 2017. *Alaska's State Forests, Tanana Valley State Forest.* http://forestry.alaska.gov/stateforests#tanana . Downloaded August 23, 2017.

Allan, C. 2015. A history of National Park Service clean-up efforts at the historic Coal Creek Mining District, Yukon-Charley Rivers National Preserve. Natural Resource Report NPS/YUCH/NRR—2015/1099. National Park Service, Fort Collins, Colorado.

Andersen, David B., and Gretchen Jennings. 2001. The 2000 Harvest of Migratory Birds on Seven Upper Tanana River Communities, Alaska. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 269, 21 p.

Brabets, T. and P. Schuster. 2008. Transport of Water, Carbon, and Sediment Through the Yukon River Basin. U.S. Geological Survey, Fact Sheet 2008-3005, 4 p.

Brabets, T., B. Wang, and R. Meade. 2000. Environmental and Hydrologic Overview of the Yukon River Basin, Alaska and Canada. U. S. Geological Survey, Water-Resources Investigations Report 99-4204. Anchornge, AK.

Eiler, J.H., T.R. Spencer, J.J. Pella, and M.M. Masuda. 2006. Stock Composition, Run Timing, and Movement Patterns of Chinook Salmon Returning to the Yukon River Basin in 2004. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National marine Fisheries Service, Alaska Fisheries Science Center, NOAA Technical Memorandum NMFS-AFSC-165, 107 p.

Hander, R. and N. Legere. 2013. Inventory of Resident Fish Species in Tributaries to the Nenana River along the Western Denali Highway, Alaska, 2010. Alaska Fisheries Data Series Number 2013-11, July 2013.U.S. Fish and Wildlife Service. https://www.fws.gov/alaska/fisheries/fish/Data_Series/d_2013_11.pdf. Downloaded August 24, 2017.

Holmes, Charles E. Tanana River Valley Archaeology Circa 14,000 to 9000 B.P. *Arctic Anthropology* 38.2 (2001): 154.

Howard, Kathrine G., Steve J. Hayes, and Danielle F. Evenson. 2009. Yukon River Chinook Salmon Stock Status and Action Plan 2010; a Report to the Alaska Board of Fisheries. Alaska Department of Fish and Game, Divisions of Sport Fish and Commercial Fisheries, Special Publication No. 09-26, Anchorage, Alaska, 52 p.

Johnson, J. and P. Blanche. 2010. Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes – Interior Region, Effective June 1, 201*0.* Alaska Department of Fish and Game, Divisions of Sport Fish and Habitat, Special Publication No. 10-05, Anchorage, Alaska, 141 p.

Marcotte, James R. 1991. Wild Fish and Game Harvest and Use by Residents of Five Upper Tanana Communities, Alaska, 1987-88. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 168, Juneau, Alaska, 200 p.

Martin, Gayle. 1983. Use of Natural Resources by the Residents of Dot Lake, Alaska. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 19, Fairbanks, Alaska, 103 p.+maps.

Walker, C. 1976. Studies on the Freshwater and Anadromous Fishes of the Yukon River within Canada. PAC T/76-7. Department of the Environment Fisheries and Marine Service Vancouver, B. C.

U.S. Fish and Wildlife Service (USFWS). 2010. Tetlin National Wildlife Refuge. https://www.fws.gov/refuge/tetlin/ Downloaded August 23, 2017.

U.S. Department of Commerce, 2010. Press Release: Commerce Secretary Gary Locke Announces "Fishery Failure" Determination for Alaska Chinook Salmon. January 15, 2010, Washington, DC. http://2010-2014.commerce.gov/news/press-releases/2010/01/15/commerce-secretary-gary-locke-announces-fishery-failure-determination.html. Downloaded August 23, 2017.

U.S. Fish and Wildlife Service, 2017. Fish List – Yukon Delta. https://www.fws.gov/refuge/yukon_delta/wildlife_and_habitat/fishlist.html. Downloaded August 24, 2017.

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AND ASSESSMENT

AUG 29 2017

Sandy P. Gibson, Project Manager
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Elmendorf AFB, Alaska 99506-0898

Dear Ms. Gibson:

The U.S. Environmental Protection Agency has reviewed the Draft Supplemental Environmental Impact Statement prepared by the U.S. Army Corps of Engineers for the Alaska Stand Alone Pipeline Project (CEQ No. 20170000; EPA Project Number 09-054-DOD). Our review was conducted in accordance with the EPA's responsibilities under Section 102 of the National Environmental Policy Act and Section 309 of the Clean Air Act.

Alaska Gasline Development Corporation proposes to transport natural gas from the North Slope of Alaska to an existing natural gas distribution system that serves the southcentral portion of the state, using a 733-mile-long buried pipeline, and includes a lateral connecting line to Fairbanks. The Draft SEIS analyzes the proposed action; an action alternative with variations regarding elevation of a portion of the pipeline, alignment through Denali National Park and Preserve, barge access, and Yukon river crossing; and a no-action alternative.

Following the 2012 Final EIS, the applicant made changes to the project that were not evaluated in that document, including changes related to the location of material sites, access roads, and other project infrastructure; diameter of the pipeline; location of dredging and disposal work; and pipeline routing. These changes led to preparation of the 2017 Draft SEIS. The EPA is a cooperating agency with the Corps for development of the SEIS. Throughout the NEPA process, we have participated in agency work groups and have provided extensive comments on prior versions of the EIS. For the supplemental analysis, the EPA has participated in numerous cooperating agency meetings, provided scoping comments to the Corps on October 14, 2014, and reviewed and commented on several preliminary documents. Our comments reflect the EPA's ongoing experience with the ASAP project and the anticipated impacts.

The Draft SEIS contains an improved analysis relative to the 2012 EIS, and addresses many of the EPA's previous concerns. We commend the Corps for its efforts to work with the EPA and other cooperating agencies to revise the proposed action and alternatives to reduce certain environmental impacts, and to improve several aspects of the analysis. The EPA acknowledges that the Draft SEIS incorporates a new alignment for the Fairbanks Lateral Line that reduces impacts to Goldstream Creek, an impaired waterbody. It also includes improved discussion of potential impacts to the designated Fairbanks air quality non-attainment area as well as a more detailed analysis of potential impacts related to ancillary facilities. We are particularly encouraged to see that, by making natural gas available to Fairbanks, the proposed project has the potential to improve air quality in an existing $PM_{2.5}$ non-attainment area, by allowing a transition from wood stoves and coal generators for heat and electricity.

While we recognize the revisions and efforts to improve the analysis, the EPA continues to be concerned about the potential for significant impacts to wetlands and the lack of disclosure of measures to avoid, minimize and mitigate those impacts. According to the Draft SEIS, a total of approximately 8,907 acres of wetlands would be permanently or temporarily impacted by the pipeline, aboveground facilities, permanent access roads, and marine dredge fill. By comparison, the 2012 Final EIS projected approximately 5,400 acres of wetland impacts. The project also includes 312 stream crossings, including 64 crossings of anadromous waters, as well as impacts to the Yukon, Tanana, Nenana, and Susitna Rivers. Approximately 1,037 acres of wetlands underlain by permafrost would also be subject to degradation from the proposed project.

We recommend that the Corps and the applicant continue to identify opportunities to reduce and mitigate the project's impacts to aquatic resources between now and the Final SEIS. Notably, Council on Environmental Quality regulations implementing NEPA require a discussion of mitigation measures, including compensatory mitigation. Our enclosed detailed comments also identify additional aquatic resource and mitigation information that will be required by the Clean Water Act Section 404 permitting process, which is further discussed in the EPA's separate comments to the Corps on the Section 404 Public Notice. To ensure that the NEPA analysis sufficiently addresses measures to mitigate adverse environmental impacts from the proposed project, as well as to facilitate an efficient permitting process, we recommend that this information be included in the Final SEIS. Specifically, while the document makes general statements about alignment refinements that have reduced wetland impacts, additional information is needed to support these statements. In addition, to reduce wetland impacts in permafrost areas, we recommend increased consideration of vertical support members through the continuous permafrost region. Incorporating the use of VSMs appears to be environmentally preferable, and may be the Least Environmentally Damaging Practicable Alternative, as required by 40 C.F.R. § 230.10(a). Finally, we recommend that the Final SEIS include a revised revegetation plan to restore disturbed wetlands as well as a compensatory mitigation plan to compensate for unavoidable loss of wetlands.

Additionally, the EPA recommends that the Final SEIS include additional analysis of potential air quality impacts from the proposed Gas Conditioning Facility, a Title I major source. The EPA recommends that near-field air quality modeling be conducted for the proposed Gas Conditioning Facility to assess project impacts on local air quality and PSD increment consumption, and that mitigation measures be identified and discussed if adverse impacts are projected. Additional air quality comments related to background air pollutant concentrations and mitigation measures are provided in the enclosure to this letter.

The enclosed detailed comments also discuss our recommendations related to dredged material management, drinking water protection, and ensuring that an appropriate and consistent level of mitigation is applied along the full length of the pipeline right-of-way and associated disturbances.

Pursuant to Section 309 of the Clean Air Act, it is the EPA's responsibility to provide an independent review and evaluation of the potential environmental impacts of this project. Based on our review and evaluation of the adequacy of the information and the potential environmental impacts of the action alternatives, the EPA is rating the Draft SEIS as Environmental Objections – Insufficient Information (EO-2). The EO rating indicates that the EPA review has identified significant environmental impacts to wetlands that should be avoided, as well as a need to consider additional means to mitigate those impacts, in order to adequately protect the environment. The "2" rating indicates that the EPA has identified additional information, data, analyses, or discussion as outlined in the enclosed comments that

we recommend for inclusion in the Final SEIS. An explanation of the EPA's rating system is enclosed along with our detailed comments.

We appreciate the opportunity to review the Draft SEIS for the ASAP Project, and look forward to working with you as you prepare the Final SEIS. If you have questions concerning our comments, please contact Molly Vaughan of my staff in Anchorage, at (907) 271-1215 or vaughan.molly@epa.gov, or you may contact me at (206) 553-2581 or allnutt.david@epa.gov.

Sincerely,

R. David Allnutt, Director
Office of Environmental Review and Assessment

Enclosures:

1. U.S. Environmental Protection Agency Alaska Stand Alone Pipeline Project Draft SEIS Detailed Comments
2. U.S. Environmental Protection Agency Rating Sheet for Draft Environmental Impact Statements

cc: Colonel Michael Brooks, Alaska District Engineer, U.S. Army Corps of Engineers

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U.S. Environmental Protection Agency
Alaska Stand Alone Pipeline Project Draft SEIS
Detailed Comments

Wetlands

Wetlands Impacts:
The EPA recommends that the Final SEIS include an analysis of the change in the amount and associated type of wetland impacts that have resulted from changes made to the proposed project since publication of the Final EIS in 2012. For example, the proposed pipeline diameter has increased, and many refinements have been made to the proposed pipeline route. According to the Draft SEIS, the refinements were to accomplish a variety of goals including shifting away from populated areas, reducing visual impacts, reducing pipeline length, avoiding native allotments and private land, and reducing impacts to aquatic resources. The Draft SEIS states that the revised project proposal has reduced the overall wetland impacts, however, it does not include sufficient information to evaluate the full extent to which wetland impacts have been avoided and minimized.

Potential impacts to Minto Flats were identified as a key area of concern in the EPA's 2012 Draft EIS comments, because it is one of the highest quality waterfowl nesting, breeding and staging habitats in Alaska. The Draft SEIS states that the impacts to Minto Flats have been reduced due to realignment. However, the maps provided in Appendix E of the Draft SEIS generally show the alignment to have potentially shifted further into the Minto Flats State Game Refuge. We recommend that the Final SEIS include additional detail to support the conclusion that impacts to wetlands in the Minto Flats area have been reduced.

Permafrost issues:
The EPA is concerned about the potential impacts to wetlands underlain by permafrost, which comprise a large portion of the pipeline alignment as it passes through the interior of Alaska. Modeling included in the Draft SEIS disclosed potential thaw impacts in discontinuous permafrost, potentially leading to an expansion of the active layer extending out from the pipe centerline. This could potentially result in hundreds of miles of frost-heave displacement and soil subsidence associated with the pipeline, leading to hydrologic impacts in drainages crossed by the proposed project, altering of hydrologic regimes of the wetland complexes along the route, and changes to the functions and type of wetlands. While the modeling of permafrost thaw provided an important disclosure of potential impact in the Draft SEIS, the impacts were not accounted for in quantification of projected wetland impacts. The EPA recommends that these additional impacts be accounted for in the Final SEIS as permanent impacts to the wetland complexes along the alignment.

Revegetation Plan and Classification of Temporary vs. Permanent Impacts:
A key factor in minimizing the extent of permafrost thaw and minimizing overall project impacts to wetlands is the success of the revegetation plan. We are concerned that revegetation plans in the Draft SEIS do not appear to be as proactive as those proposed in the 2012 Final EIS, and recommend that the Final SEIS provide a more robust and detailed revegetation plan to ensure successful revegetation. In the 2012 FEIS, the applicant had proposed to separate the topsoil layer along the alignment and replace it when possible to promote revegetation and recovery of land disturbance. The Draft SEIS Revegetation Plan calls for separating the topsoil from subsoil or other spoil fill only within designated agricultural lands, which are a small percentage of the proposed project's footprint. For the majority of the pipeline, topsoil will be mixed with the subsoil and potentially the additional fill spoil sourced from material sites

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when backfilling the pipeline trench. The disturbed lands would then be left to naturally revegetate, rather than being re-seeded, except for sensitive areas which are not identified or defined. Additional measures will occur if a reclamation standard of 30% ground cover within three years is not met, in which case the applicant would then add fertilizer and/or seeds. This approach would potentially increase the impacts compared to the 2012 Final EIS, as the disturbed area would have less seed base and organic matter at the surface to revegetate as discussed below. This may further the development of thaw as the vegetative mat would no longer provide insulation to the permafrost.

It is unclear from the information presented in the Draft SEIS whether the impacts of pads used in the construction phase of the proposed project have been classified as permanent or temporary. The Revegetation Plan states the compacted area of the gravel work pad would be ripped to mitigate the compaction, graded for drainage, and scarified to allow for natural revegetation by native plants. These impacts appear to be permanent in that the fill is placed and not fully removed and restored. We recommend that these impacts be analyzed as permanent impacts in the Final SEIS, and that mitigation for these impacts be considered.

In addition, the Revegetation Plan proposes to spread excess ditch subsoil spoil across the construction corridor. It is not clear from the information provided whether or not these impacts are captured in either the temporary impacts or permanent impacts. If fill material is discharged to wetlands along the alignment, it should be considered as a permanent impact unless the fill will subsequently be removed and the impacted areas restored.

Alternatives Analysis and LEDPA:
The proposed project (Alternative 1) includes burial of the pipeline throughout its length. Typically, the pipeline would be with a minimum cover of 30 inches and a bottom depth of six to eight feet allowing for bedding, pipe installation, and overburden backfill. Alternative 2 contains the variation of elevating the pipeline on Vertical Support Members (VSMs) upon leaving the Gas Conditioning Facility through MP 62 in the Arctic Coastal Plain. Elevating the pipeline on VSMs would reduce organic layer removal from the pipeline corridor, reduce excavation of the pipeline route, reduce the acreage of land impacted by material sites, decrease the disposal of soil removed from the trenching, and reduce impacts to permafrost. Alternative 2 would significantly reduce the impacts to wetlands in the continuous permafrost of the Arctic Coastal Plain, which are difficult, if not impossible, to mitigate. Extending the VSMs to approximately MP 168, the end of the continuous permafrost region, could potentially further reduce the impacts to wetlands as identified in Table 2.4-1. Of total wetland resources proposed to be impacted in the right-of-away, over 44% are located within the continuous permafrost portion of the project. Elevating the pipeline could significantly reduce the overall impacts to aquatic resources resulting from the project. The EPA recommends that the Final SEIS analyze the impacts associated with extending the use of VSMs to MP 168. We further recommend that the Corps consider selecting an alternative that incorporates the use of VSMs in regions of continuous permafrost, as it appears to be an environmentally preferable alternative, and may be the least environmentally damaging practicable alternative (LEDPA) for purposes of the Clean Water Act Section 404 permitting.[1]

[1] The Clean Water Act Section 404(b)(1) Guidelines, the substantive environmental criteria for evaluating activities regulated under Section 404 of the Clean Water Act, require that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." 40 C.F.R. § 230.10(a).

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Compensatory Mitigation:
The Draft SEIS does not include a compensatory mitigation plan for unavoidable wetland impacts, although a draft compensatory mitigation plan is available on the applicant's webpage. In accordance with the joint EPA-Corps Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, any final mitigation plan associated with a Section 404 permit, should a permit be issued, must include compensatory mitigation sufficient to replace lost aquatic resource functions and values, to the extent practicable.[2] Similarly, CEQ regulations implementing NEPA require that the alternatives and impacts analysis address mitigation measures, including measures that compensate for impacts.[3]

To ensure a complete NEPA analysis that sufficiently addresses direct, indirect, and cumulative impacts from the proposed project, the EPA recommends that the Final SEIS include a compensatory wetland and stream mitigation package, including the wetlands impacts characterized as temporary and the indirect impacts modeled from permafrost degradation. This should also include biological, chemical and physical success criteria of the stream channels and wetlands mitigation. Additionally, the mitigation package should include monitoring and an adaptive management plan containing corrective actions if the mitigation efforts are not meeting success criteria. If onsite mitigation is not practicable to fully replace the functions and values of the impacts, alternative site mitigation should be considered.

Dredged Material Management

The EPA recommends that the Final SEIS include an analysis of a sub-alternative that includes building a new Dock Head 4 at the seaward end of West Dock (instead of using existing Dock Head 3, dredging a navigation channel and disposing of the dredged material in Prudhoe Bay). This variation on the proposed action would minimize the need for dredging and disposal of dredged material. The EPA requested consideration of this alternative dock head previously and the Draft SEIS considers it briefly, but does not carry it forward for detailed analysis because:

> Using the existing STP as a makeshift dock is engineering prohibitive because it would require installing multiple large berths, new pilings, new bulkhead, new permanent bridge, and ocean fill to widen the road. This would likely also disrupt ongoing use of the facility by other entities.

However, the Alaska Liquefied Natural Gas Pipeline Project recently included this Dock Head 4 alternative as the proposed action in its application to the Federal Energy Regulatory Commission. Thus, a Dock Head 4 alternative appears to be both reasonable and practicable. Although a Dock Head 4 alternative would pose some environmental tradeoffs (i.e., less dredged material, but more fill material), the environmental review process is designed to weigh such tradeoffs. Please note that the EPA is not endorsing this alternative as environmentally preferable or as the least environmentally damaging practicable alternative at this time. Rather, we are recommending that it be included in the Final SEIS for detailed analysis as a reasonable alternative.

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[2] 33 C.F.R. Parts 325 and 332; 40 C.F.R. Part 230, Subpart J).
[3] 40 C.F.R. §§ 1502.14, 1502.16, 1508.20.

Drinking Water Protection

Construction of the proposed pipeline presents the potential for sediment mobilization or hydrological disturbances that could result in impacts to water quality or quantity. Because the proposed project will pass very near a large number of public and private drinking water sources, the EPA recommends the use of additional analysis and on-site mitigation in order to reduce potential impacts to drinking water along the proposed pipeline route. We appreciate the additional information that is presented in the Draft SEIS related to drinking water use and source water protection, which is responsive to the EPA's comments on the 2012 Draft EIS. Tables are included in the Draft SEIS showing public and private drinking water wells in proximity to the pipeline, as well as a large-scale map displaying public water systems along the pipeline route. We recommend that finer-scale maps be included in the Final SEIS to show areas in which designated Source Water Protection Areas, for groundwater or surface water intakes, are intersected by the proposed ROW. The EPA has previously noted the importance of ensuring that the applicant consults with the appropriate state and/or local authorities for public water systems before performing any construction activities within a Source Water Protection Area. Providing more detailed maps will assist AGDC in performing this consultation and complying with recommendations to avoid impacts to the quality or quantity of the water supply.

According to tables presented in Draft SEIS, many of the identified private drinking water wells in proximity to the proposed right-of-way are very shallow. Construction and operation of the pipeline could affect the quantity and/or quality of shallow drinking water sources by altering hydrology. We recommend that the applicant commit to avoiding construction in close proximity to private drinking water wells to the maximum extent practicable by making any available adjustments to trench location within the right-of-way. In addition, we recommend that AGDC compensate for any unavoidable impacts to quantity or quality of drinking water (e.g., drilling a new drinking water well if needed).

Air Quality

Analysis of Impacts from Gas Conditioning Facility:
As previously recommended in our comments on the 2012 Draft EIS, the EPA recommends that the Final SEIS include an air quality modeling analysis to assess possible air quality impacts from the proposed Gas Conditioning Facility. The Draft SEIS infers that the National Ambient Air Quality Standards and applicable prevention of significant deterioration increments will be protected because an air quality analysis will be required in the future as part of the State of Alaska's air permitting process. However, including the modeling analysis results in the Final SEIS will provide important information that is needed to inform decision-making, as required by NEPA.

Background Air Quality:
Given that the project will involve construction of a new major source on the North Slope, a thorough evaluation of background air quality is very important to assess cumulative air quality impacts. The background design values provided for Prudhoe Bay are based on a single year (2010) of monitoring at a location very near to the proposed Gas Conditioning Facility. Although the location appears appropriate, the age of the dataset and length of record raises concerns that the dataset may not be representative. There may be more representative or more modern datasets publically available. Also, Table 3.18.6 contains blank entries for $PM_{2.5}$ and CO, and is missing background design values for 1-hour average NO_2 and 1-hour average SO_2. The EPA recommends re-evaluating background air quality to see if more recent and sizeable datasets are available, preferably a three-year dataset. For $PM_{2.5}$ and CO, a more distant dataset, such as the Nuiqsut 2012-2014 dataset, may be reasonable to use if no other dataset is

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available. If possible, a background design value should be reported for each of the criteria air pollutants. It would also be helpful to note where values listed in table 3.18-6 do not follow the same calculation as the NAAQS. For example, the ozone value listed for Denali is based on one year of data rather than three years.

Air Quality Mitigation:
We recommend that the Final SEIS include additional discussion of mitigation measures that will be implemented to reduce air emissions from the proposed action. It is also important that mitigation commitments include all controls that were applied in developing the emissions inventory. For example, the emissions calculations to date assumed 50 percent control of fugitive dust. We recommend that the Final SEIS list specific fugitive dust control measures, such as speed limits and frequency of watering during non-winter months, that will be used to achieve this level of control.

Appendix U:
Appendix U provides the emissions inventories and emission factors upon which these inventories were based. Some of these emission factors were produced using models such as MOVES for mobile vehicle emissions. To assist in interpretation of the emissions data, we recommend that the Final SEIS include a list of inputs in Appendix U, such as RunSpec files from each MOVES run, to show what settings were used to produce the emission factors where models were used.

Mitigation

A large number of applicant-proposed design features, mitigation measures, best management practices, and project management plans listed in the Draft SEIS contain the language, "In areas where a lease is required from the SPCS or a federal grant of ROW is required from BLM..." These measures generally represent a best management approach that we recommend using to the maximum extent possible along the entire pipeline route, while acknowledging the outstanding need to complete coordination with private landowners.

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U.S. Environmental Protection Agency Rating System for
Draft Environmental Impact Statements
Definitions and Follow-Up Action*

Environmental Impact of the Action

LO – Lack of Objections
The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC – Environmental Concerns
EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO – Environmental Objections
EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU – Environmentally Unsatisfactory
EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 – Adequate
EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 – Insufficient Information
The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 – Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting The Environment _February, 1987

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To: Whitley, Annie[Whitley.Annie@epa.gov]; Martin, Gayle[Martin.Gayle@epa.gov]; Curtis, Jennifer[Curtis.Jennifer@epa.gov]
Cc: LaCroix, Matthew[LaCroix.Matthew@epa.gov]; Peak, Tracy[Peak.Tracy@epa.gov]
From: Douglas, Mark
Sent: Tue 8/29/2017 11:31:10 PM
Subject: ASAP comment letters
ASAP 3a letter.final.pdf
ASAP DSEIS.20170829..pdf

Attached are the ASAP 404 and NEPA letters.

Mark Douglas

Aquatic Resources Unit

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OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

AUG 29 2017

Colonel Michael Brooks
Alaska District Engineer
U.S. Army Corps of Engineers
P.O. Box 6898
JBER, Alaska 99506-0898

Dear Colonel Brooks:

The U.S. Environmental Protection Agency Region 10 has reviewed the above-referenced Public Notice, which describes the Alaska Gasline Development Corporation's proposal to discharge fill for the construction of an in-state gas supply pipeline, known as the Alaska Stand Alone Pipeline. The proposal was submitted under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.[1] The proposed project includes a 733-mile-long, 36-inch diameter natural gas transmission mainline extending from Prudhoe Bay to an existing pipeline system in Southcentral Alaska. The project also includes a natural gas conditioning facility in Prudhoe Bay capable of producing an annual average of 500 million standard cubic feet per day of utility-grade natural gas at peak capacity. Approximately 8,907 acres of wetlands would be directly impacted. This includes approximately 7,573 acres of permanent wetland loss, 1,161 acres of temporary impacts via the discharge of gravel for construction pads or building of ice pads, 1 acre of permanent intertidal loss, and 171 acres of subtidal impact, as a result of the pipeline, aboveground facilities, permanent access roads, and marine dredge fill. The project also includes 312 stream crossings, including 64 crossings of anadromous waters, as well as impacts to the Yukon, Tanana, Nenana, and Susitna Rivers. Approximately 1,037 acres of wetlands underlain by permafrost would also be subject to degradation from the proposed project.

The Army Corps of Engineers Alaska District made the Public Notice available for comment concurrently with the release of a Draft Supplemental Environmental Impact Statement, for which the Corps serves as lead federal agency. In addition to reviewing the Public Notice, the EPA has actively participated as a cooperating agency in the National Environmental Policy Act process for the ASAP project, including the 2012 Final EIS, and the 2017 Draft SEIS. Following the 2012 Final EIS, the applicant made changes to the project that were not evaluated in that document, including changes related to the location of material sites, access roads, and other project infrastructure. Changes also included changes to the diameter of the pipeline, location of dredging and disposal work, and pipeline routing. These changes led to preparation of the 2017 Draft Supplemental EIS. Throughout the NEPA process, we have participated in agency work groups and have provided extensive comments on prior versions of the EIS. Our comments reflect the EPA's ongoing experience with the ASAP project and the anticipated impacts.

The EPA understands and supports Alaska's desire to develop its energy resources in a responsible way that addresses the needs of Alaskans while also safeguarding the State's exceptional natural resources. We are also aware that the proposed project would provide a source of cleaner energy to the Fairbanks

[1] 33 U.S.C.§ 1344, 33 U.S.C. § 304.

area, whose air quality is adversely affected by widespread combustion of wood and coal. We have certain concerns, however, regarding the information provided to date and offer the following comments to ensure that the ASAP project can be reviewed in an expeditious manner that complies with the Clean Water Act's Section 404(b)(1) Guidelines.

The Public Notice on the proposed ASAP project did not include information required by both the EPA's and the Corps' regulations on how impacts associated with the proposed activity are to be avoided, minimized, and compensated for, a troubling omission for a project of this scope and scale.[2] We note, however, that a Draft Compensatory Mitigation Plan prepared by the applicant was subsequently posted on the Corps' website along with the Draft SEIS. According to the Draft CMP, of the approximately 8,907 acres of direct wetland impacts, the project proponent is proposing to provide compensatory mitigation for impacts to approximately 104.97 acres (approximately 1 percent of the impacted wetland area). The Draft CMP proposes to provide this compensatory mitigation by securing an appropriate number of credits from approved mitigation banks.

Based on our review of the Public Notice, the Draft SEIS, and the applicant's Draft CMP, the EPA is concerned that the proposed project may not comply with the Guidelines. Specifically, it is not clear that the proposed project's direct, secondary, and cumulative impacts on aquatic resources have been adequately evaluated to support the factual determinations required by the Guidelines.[3] It is also not clear that all appropriate and practicable steps have been taken to ensure that impacts to aquatic resources have been avoided, minimized, and compensated for, consistent with the Guidelines.[4]

The Guidelines direct that no discharge of dredged or fill material shall be permitted if the discharge will cause or contribute to significant degradation of waters of the United States.[5] Determinations regarding significant degradation are made based on an analysis of the direct, secondary, and cumulative impacts of the proposed project on the aquatic ecosystem. The proposed ASAP would traverse 60 watersheds (as defined by the USGS 10-digit Hydrologic Unit Code or HUC-10) in Alaska's Northern, Interior, and Southcentral ecosystems. Although the project would adversely impact wetlands, streams, and other aquatic resources in all 60 watersheds, the Draft CMP uses a novel approach to summarily dismiss potential impacts on the aquatic ecosystem in all but two of these watersheds as "insignificant." This conclusion is particularly remarkable since the Draft SEIS assigns some of these same wetland impacts (e.g., wetland loss and fragmentation) a "major" or "moderate" negative effects ratings. The Draft CMP argues that the only ecologically significant impacts to wetlands would be those that occur in watersheds that have experienced greater than 7.5 percent anthropogenic disturbance. Thus, of the approximately 8,907 acres of potential direct wetland impacts estimated for ASAP, the Draft CMP identifies only 104.97 acres as ecologically significant, and does not consider the indirect losses from permafrost degradation at all. All of the impacts to the remaining 8,802 acres of wetlands are dismissed as insignificant regardless of the existing quality of these wetlands, the functions they provide in the landscape, the degree to which those functions would be impacted, the duration of those impacts, or the likely ecological consequences. The EPA is not aware of any other case in which this approach has been used in the context of an impacts analysis pursuant to the Guidelines. The EPA is particularly concerned about employing such a novel approach without independent evaluation for a project that involves the scope and scale of impacts to aquatic resources anticipated for ASAP. In light of these gaps and

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[2] *See* 40 C.F.R. § 230.94(b), 33 C.F.R. § 332.4(b).
[3] *See* 40 C.F.R. §§ 230.5, 230.11, 230.12.
[4] *See* 40 C.F.R. §§ 230.10(a), 230.10(d), 230.91 – 230.98,
[5] 40 C.F.R. § 230.10(c)

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inconsistencies in the impacts analysis the EPA is concerned that there is insufficient information to make a reasonable judgment as to whether the proposed discharges will comply with the Guidelines.

The Draft CMP identifies measures taken to avoid and minimize adverse impacts to wetlands, streams, and other aquatic resources as part of ASAP's planning and design. These include avoiding open water areas and higher value wetlands by routing the pipeline through uplands or areas with fewer wetlands and by using construction methods designed to result in only temporary impacts. Nevertheless, there appear to be additional appropriate and practicable avoidance and minimization measures that could further reduce potential aquatic resource impacts. For example, the DSEIS indicates that potentially thousands of acres of impacts could be avoided by elevating the pipeline on using vertical support members in wetland areas underlain by permafrost, similar to the existing Trans-Alaska Pipeline. The EPA believes that opportunities to elevate the pipeline should be more thoroughly evaluated to determine if they could reduce the impacts to wetlands underlain by permafrost. We also recommend evaluating the use of Dock Head 4 at West Dock and removal of gravel in the construction right-of-way as potential opportunities to minimize impacts to resources. Such additional evaluations are critical to adequately identify the least environmentally damaging practicable alternative under the Guidelines.[6]

The EPA also has a number of concerns regarding the adequacy of the proposed compensatory mitigation. Compensatory mitigation involves the restoration, establishment, enhancement, and/or in certain circumstances preservation of wetlands, streams, and other aquatic resources for the purpose of offsetting unavoidable adverse impacts that remain after all appropriate and practicable avoidance and minimization has been achieved.[7] Compliance with the Guidelines may require compensatory mitigation to reduce the magnitude or severity of certain discharges to avoid the potential for significant degradation. Compliance with the Guidelines may also require compensatory mitigation when such measures are appropriate and practicable – *i.e.,* appropriate to the scope and degree of the impacts and practicable in terms of cost, existing technology, and logistics in light of overall project purposes. In this case, because of the lack of information in the Draft CMP regarding the direct, secondary, and cumulative impacts of the proposed discharges on approximately 99 percent of the potentially affected wetland acreage discussed above, sufficient information does not exist to determine if additional compensation would be required to avoid causing or contributing to significant degradation. For the same reason, sufficient information does not exist to determine if there are appropriate and practicable compensation measures that would be required by the Guidelines to address some or all of the remaining approximately 8,802 acres of wetland impacts where compensation is not currently proposed. In addition, for the 104.97 acres of wetland impacts that the permit applicant has identified as needing compensation, the EPA is concerned that the assessment method utilized to evaluate the type and levels of functions these wetlands provide inappropriately undervalues their current functional capacity. Overall, the EPA believes that such extensive, unmitigated destruction and degradation of wetlands and aquatic resources, particularly in aquatic resources underlain by permafrost, may not comply with the Guidelines.

The EPA has previously raised concerns with the Alaska District at the staff level, with the Statewide Interagency Review Team, and at the management level over identified lack of compensatory mitigation or inadequate compensatory mitigation for recently permitted projects, and has questioned these projects' compliance with the Guidelines, particularly the 2008 Final Rule. We note, as previously stated, that the applicant's proposal may not comply with the Guidelines for similar reasons, and we

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[6] *See* 40 C.F.R. § 230.10(a).
[7] *See* 40 C.F.R. § 230.92.

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believe that separate discussions of the larger policy issues between our agencies are needed to address our concerns.

Based on our review of currently available information and the concerns articulated above and in our attached comments, and pursuant to Part IV, paragraph 3(a) of the 1992 Clean Water Act Section 404(q) Memorandum of Agreement between the EPA and Department of the Army, the EPA is hereby notifying the Alaska District that the proposed discharges may result in substantial and unacceptable impacts to aquatic resources of national importance, including the wetlands and waters of the Yukon River basin. Notably, many of the aquatic resources along the proposed pipeline route are of outstanding natural resource value and occur in systems whose ecological functions are intact. In particular, the EPA concludes that the Yukon River basin, with its associated tributaries and wetlands, and adjacent wetland systems, is an aquatic resource of national importance according to the criteria identified in the Section 404(q) MOA. Aquatic resources that are underlain by permafrost are of particular concern, since these resources provide unique functions in addition to the general functions that wetlands provide. They are fragile, easily damaged, and do not recover from damage in less than one generation, if at all. Furthermore, the wetlands and streams of the Yukon basin provide important functions that help to maintain the basin's ability to support and maintain anadromous fish, particularly salmonids, which are of both commercial and subsistence imporance. In accordance with paragraph IV(3)(b) of the Section 404(q) MOA, EPA will provide further comments on this matter within 25 calendar days after the end of the extended comment period. Because that date falls on a weekend, that letter would be due no later than September 25, 2017.

Thank you for the opportunity to provide comments on the proposed ASAP project. I appreciate the attention that you and your staff have provided to this project, and EPA Region 10 looks forward to discussing our concerns. In the meantime, my staff is working to identify ways in which we can work together to ensure that any unavoidable impacts are adequately offset with appropriate and practicable compensatory mitigation. Should you have any questions about this letter, please do not hesitate to contact me or have your staff contact Mark Douglas at (907) 271-1217, or by email at douglas.mark@epa.gov.

Sincerely,

R. David Allnutt, Director
Office of Environmental Review and Assessment

Attachment

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Attachment 1: The Wetlands and Streams of the Yukon River Basin are an Aquatic Resource of National Importance

The Yukon River is the third longest river, and the longest free-flowing river, in North America, flowing northwest from the Coastal Range mountains of northern British Columbia, through the Yukon Territory and Alaska to the Bering Sea. The river is 1,980 miles long and empties into the Bering Sea at the Yukon-Kuskokwim Delta. It drains a total watershed area of 321,500 mi^2, of which 126,300 mi^2 is in Canada, and is the fourth largest basin in North America. It is also the fifth largest contributor of freshwater to the Arctic Ocean. Its contributing rivers drain a number of different biogeographic regions, from the Arctic, to the Alaska Range, and include a variety of both glaciated and unglaciated systems.

Background and History

Humans have inhabited the Yukon basin for thousands of years, and may it be one of the oldest settlements of humans on the continent. Those that did not trade with the coastal Tlingit people remained culturally isolated until the 19th century (Brabets *et al*, 2000). Exploration of the Yukon during the earlier part of the 19th century was geared toward developing the fur trade. Following the purchase of Alaska in 1867, when fur trading was the primary commercial activity, the Alaska Commercial Company constructed several posts at various locations on the Yukon River. In the 1870's, Leroy McQuesten, Arthur Harper, and Alfred Mayo, established a number of trading posts up and down the Yukon River. They also began prospecting during the summers, and recognizing the mineral potential of the area, changed the trading posts from primarily serving native and fur trading populations to serving miners' needs. Several strikes of placer gold between 1885-1893 were fairly small claims; the Klondike discoveries at Dawson in 1897 precipitated an enormous in-migration of people to the area during the 1896–1903 Klondike Gold Rush. During this time, and until the completion of the Klondike Highway in the 1950's, the river was the primary means of transportation in this portion of the world.

Environmental Characteristics

The discharge of the river close to its mouth has been measured as an average flow of 227,000 ft^3/s; however, much of this flow occurs during the summer months as a combination of snowmelt, glacial melt, and rainfall (Brabets *et al*, 2000). There are thirteen major drainage basins systems which contribute flow into the Yukon River. Of those major rivers, the Tanana and the Nenana rivers are also proposed to be impacted, along with the Yukon. Crossings of the Yukon and Tanana would be accomplished by Horizontal Directional Drilling; however, the Nenana would be crossed in two locations by open cut. In addition, trenching and filling of wetlands within the construction right-of-way, material site source impacts and placement of gravel for access roads would result in impacts to wetlands for the construction of the Alaska Stand Alone Pipeline. Wetlands account for about 30 percent of the Yukon River Basin (Brabets *et al*, 2000).

Owing to its history and its location within drainages of mining sites, the Yukon has had considerable disturbance from anthropogenic activity. Mining activity was and still is an important economic activity in the Yukon River Basin. Although modern mining practices are designed to reduce pollution and limit discharges, many historic, abandoned mines remain within the basin. The Coal Creek watershed, for example, which is now part of the Yukon-Charley Rivers National Preserve, was mined extensively in the early 1900's and the mining practices had a severe impact on the watershed. The Coal Creek Mining District was identified as a priority and in 1990, the National Park Service began a multi-year project to restore the ecological health of the watershed, which was funded by and administered through the Superfund response authority of the NPS. The major cleanup effort began in 1994, and was finally completed with the close of the field season in 1998 (Allan, 2015).

The U.S. Geological Survey (USGS), working in cooperation with the Yukon River Inter-Tribal Watershed Council,[1] has been evaluating hydrology and water quality of the Yukon River since the early 2000's. Water-quality samples have been collected at more than 400 sites in the Yukon River Basin by the USGS. While water quality in some areas shows evidence of human-induced historic disturbance, water quality data from the USGS generally indicate relatively good levels of turbidity, metals, and dissolved oxygen throughout the river, and the Yukon River has not been listed as an impaired water body. The water quality of the Yukon River Basin is important for many reasons. Residents who live along the main stem of the Yukon or its tributaries use the surface water for drinking. Salmon and other fish species require adequate water quality for their survival as does the abundant wildlife present in the basin.

In addition to relying on the Yukon River and its tributaries for drinking water, residents who live along the Yukon River have a long history of reliance on fish as a dietary staple, as food for dogs, and for other uses. This includes both salmon and non-salmon species; however, salmon traditionally comprise the bulk of the subsistence harvest within the Yukon River drainage (Alaska Department of Fish and Game, 2017). Fish other than salmon are also important to the subsistence way of life for Yukon area residents in biologically, historically, and culturally significant ways. In 1987 (and reconfirmed in 1993), the Alaska Board of Fisheries made a positive customary and traditional use determination for freshwater fish species in the Yukon area, including other salmonid species such as sheefish, whitefishes, Arctic grayling and Arctic char, as well as Arctic lampreys, burbot, longnose suckers, and northern pike (ADF&G, 2017). At the Yukon Delta National Wildlife Refuge, the U.S. Fish & Wildlife Service lists 44 species of fishes supported in the delta (USFWS, 2017).

Chinook salmon, summer and fall Chum salmon, and Coho salmon comprise the majority of harvests in the Yukon River drainage. The Alaska Department of Fish and Game regulates the harvests of these fish, with the goal of managing for a sustainable harvest. There are limited commercial harvests of salmon within the lower Yukon; however, subsistence harvests typically surpass commercial, sport, and personal use harvests combined (ADF&G, 2017). Within the Yukon drainage, Chinook salmon have been declining since 1998, and in 2010, the U.S. Department of Commerce declared the Chinook fishery in the Yukon a failure (U.S. Department of Commerce, 2010), prompting Congress to approve federal funding for fishery relief in 2012-2013. No harvest other than subsistence has been permitted in the last several years (ADF&G, 2016, 2017). The reasons for the decline in Chinook runs is not known; however, with the exception of a few bumps within the aforementioned timeframe, the strength of Chinook runs has continued to decline in the Yukon. Widespread shortfalls in other river systems in Alaska, beginning in 2007, prompted the Alaska Department of Fish and Game to initiate a research plan to address key research questions, which began in 2013.

In addition to fishing and subsistence activities, the Yukon River basin supports important recreational activities. While most of the basin is wilderness, in the Alaska portion of the basin, there are four national parks; namely, Wrangell-St. Elias National Park, Denali National Park, Yukon-Charley Rivers National Preserve, and Gates of the Arctic National Park. Eight National Wildlife Refuges are also located within the basin. Portions of the Arctic National Wildlife Refuge, and the entirety of the Yukon Flats, Tetlin, Nowitna, Kanuti, Innoko, Koyukuk, and Yukon Delta Refuges are located within the basin. These parks and refuges support significant economic and recreational activities.

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[1] The Yukon River Inter-Tribal Watershed Council, a cooperative effort of 70 First Nations and tribes in Alaska and Canada, has the goal of making the river and its tributaries safe to drink from again by supplementing and scrutinizing Government data.

Tanana River

The Tanana River, which the Alaska Stand Alone Pipeline also proposes to cross, is the second largest tributary basin to the Yukon River and drains approximately 45,000 square miles (ADF&G, 2017). From its headwaters in the Alaska Range, the Tanana River flows 590 river miles to the Yukon River, where it accounts for a 37% increase in the streamflow of the Yukon (Brabets and Schuster, 2008). The Tanana River produces approximately 25% of the Yukon River Chinook salmon, a stock of international importance for commercial, subsistence and sport fisheries in Alaska and Canada (Eiler et al., 2006).

The Tanana River supports eighteen species of fish, three anadromous, and fifteen resident species (ADF&G, 2017; Johnson and Blanche, 2010). In addition, the Tanana River is a major spawning area for whitefish, which are an important subsistence food for rural Alaskans. The U.S. Fish & Wildlife Service has indicated whitefish may travel over 1,000 miles from the mouth of the Yukon to spawn in the Tanana River. Subsistence continues in the present day to be the most valued source of both nutrition and cultural identity for residents of Dot Lake, Tanacross, Tok, Tetlin and Northway (Marcotte, 1991; Martin, 1983). Subsistence harvest comprises a substantial portion of village residents' diets, with most of the harvest consisting of moose, four different species of whitefish, and waterfowl (Marcotte, 1991; Martin, 1983; Andersen and Jennings, 2001).

The Tanana River and its adjacent lands provide residents and tourists with a variety of recreational opportunities such as hunting, fishing, trapping, camping, hiking, dog mushing, cross-country skiing, wildlife viewing, flightseeing, snow machining, gold panning, boating, and berry picking (ADNR, 2017; ADF&G, 2006). The Tanana River flows for 200 miles through the 1.81 million acre Tanana Valley State Forest. At the headwaters of the Tanana River, the 682,602 acre Tetlin National Wildlife Refuge is host to 160 migratory and 30 resident bird species, 42 species of mammals, 15 fish species, one amphibian, and an unknown number of invertebrate species. The Refuge is located in a major migration corridor through which up to 200,000 sandhill cranes, representing about one half of the world population, annually migrate. The Refuge was established primarily for its unique waterfowl values, and produces an estimated 35,000 to 65,000 ducklings annually (USFWS, 2010).

Nenana River

The Nenana River is a tributary of the Tanana River, approximately 140 miles (230 km) long, in central Alaska. It drains an area on the north slope of the Alaska Range on the south edge of the Tanana Valley southwest of Fairbanks. It issues from the Nenana Glacier in the northern Alaska Range, southwest of Mount Deborah, approximately 100 mi (160 km) south of Fairbanks. It flows briefly southwest, then west, then north, forming the eastern boundary of Denali National Park and Preserve. It emerges from the mountains onto the broad marshy Tanana Valley, joining the Tanana River from the south at Nenana, Alaska, approximately 35 miles (56 km) southwest of Fairbanks. The Tanana River continues to its confluence with the Yukon River.

The Nenana supports populations of three species of salmon (coho, king and chum salmon), six other species of salmonids (humpback whitefish, round whitefish, broad whitefish, sheefish, Arctic grayling, least cisco), and seven non-salmonid fishes, viz., lake chubs, burbot, longnose suckers, northern pike, Alaska blackfish, Arctic lamprey, and slimy sculpins (Hander and Legere, 2013). In addition, major archaeological sites located in the valley include Broken Mammoth and Swan Point, of late Pleistocene age (Holmes, 2001).

The Nenana is one of the most popular destinations for boating and whitewater rafting in Alaska. Thousands of users, some on commercial cruises and others on private trips, travel on the river each year. The proximity of the both the Denali Highway and the Parks Highway, which follow various portions of the river, makes the river accessible at many places. For whitewater rafting and kayaking, there are stretches of the river that are rated as Class I, Class II, or Class IV on the International Scale of difficulty. Personal and other water craft are frequently found on the waters of the Nenana.

Wetland Functions in the Yukon Basin

Wetlands in the Yukon basin support the health of the river in a variety of other ways. Wetlands support the physical integrity of the river and its tributaries by acting as sediment traps and by slowing and storing floodwaters, and by providing later releases of stored water during low water periods, which is especially important in maintaining baseflow in headwater and low-order stream systems. They support the chemical integrity of the river and its tributaries by taking up nutrients and sequestering carbon as well as a number of other pollutants, making them unavailable to the aquatic ecosystem. Finally, they support the biological integrity of the river and its tributaries in a number of ways. First, by removing pollutants and excess nutrients from the water column, wetlands ensure that good water quality, which is critical for both fish habitat and human uses, is maintained. Second, they provide breeding grounds for aquatic insects which are critical to the food chain of these waters. Finally, they also provide direct habitat benefits for a number of fish and mammal species. Coho salmon in particular are directly dependent on wetlands as rearing habitat prior to migration to sea, and maintenance of wetlands within the floodplain of the river and its tributaries is critical to maintaining healthy runs of this species.

Permafrost

Permafrost is ground that maintains a temperature below 32^0 F (0^0 C) continuously for a period of two years. Permafrost is present to a large extent in the Yukon River Basin; a number of authors have designated six regions of permafrost in the Yukon River Basin, and the U.S. Geological Survey has identified the percentage of each region: (1) generally underlain by continuous permafrost—16 percent, (2) generally underlain by discontinuous permafrost—40 percent, (3) generally underlain by moderately thick to thin permafrost (50 to 600 ft)—24 percent, (4) underlain by discontinuous permafrost—6 percent, (5) generally underlain by numerous isolated masses of permafrost—5 percent, and (6) sporadic masses of permafrost—9 percent (Brabets *et al*, 2000). The presence of permafrost can drive the formation of wetland areas, since frozen ground is not generally permeable to liquid water, and thus causes water to perch at the surface for long periods of time during the growing season. These areas often develop organic mats and organic soils, which sequester carbon and adsorb and filter dissolved contaminants. Permafrost conditions also contribute to the natural 75- to 120-year cycle of fire in Interior Alaska, which orders the succession of major plant communities.

The presence of permafrost is significant in identifying impacts from development activities. Wetlands occurring in permafrost areas are ecologically fragile and easily disturbed, and do not recover from disturbance quickly, if at all. Brabets *et al* (2000) state:

> If permafrost melts, the upper layers of soil become drier and well aerated. Even if permafrost remains as temperatures increase, the shallow soils that thaw and freeze each year (the active layer) thaw more deeply and develop a thicker unsaturated zone. Soil microbes increasingly oxidize the organic carbon sequestered in the soils. This increased respiration releases carbon, in the form of dissolved carbon, into a stream and the atmosphere. Changes in dissolved organic carbon (DOC) could affect stream aquatic communities at all trophic levels that rely on DOC as a food source. The melting of the permafrost may increase recharge of aquifers, thus increasing base flow in streams. By increasing summer recharge, melting of permafrost will also decrease summer peak flows. Wetlands, which occupy about 30 percent of the Yukon River Basin (fig. 14), could be affected and in turn affect waterfowl habitat in the Yukon Flats and Yukon Delta areas.

Consequently, impacts to wetlands underlain by permafrost can have far-reaching effects on the aquatic ecosystem.

Given the importance of Yukon basin wetlands and water resources for the support of fisheries, wildlife, and subsistence, commercial and recreational uses by humans, the EPA concludes that these resources are Aquatic Resources of National Importance for the purposes of the 1992 Section 404(q) of the Clean Water Act Memorandum of Agreement between the EPA and Department of the Army.

References

Alaska Department of Fish and Game (ADF&G). 2006. Our Wealth Maintained: A Strategy for Conserving Alaska's Diverse Wildlife and Fish Resources. Alaska Department of Fish and Game, Juneau, Alaska, xviii+824 pp.

Alaska Department of Fish and Game. 2017. Sport Fish, Management Areas, Lower Tanana Management Area. http://www.adfg.alaska.gov/index.cfm?adfg=ByAreaInteriorTanana.fishingInfo#brochure Downloaded August 24, 2017

Alaska Department of Fish and Game, 2017. Yukon River Area Subsistence Fishing. http://www.adfg.alaska.gov/index.cfm?adfg=ByAreaSubsistenceYukon.fishingInfo. Downloaded August 23, 2017.

Alaska Department of Fish and Game, Division of Commercial Fisheries. 2017. 2017 Yukon River Fall Salmon Fishery News Release # 34, district 2, Commercial Period 8. August 15, 2017. Alaska Department of Fish and Game, Emmonak, Alaska.

Alaska Department of Fish and Game, Division of Commercial Fisheries, 2017. 2017 Yukon River Fall Salmon Fishery News Release # 35, district 2, Commercial Period 8. August 15, 2017. Alaska Department of Fish and Game, Emmonak, Alaska.

Alaska Department of Natural Resources (ADNR), Division of Forestry. 2017. *Alaska's State Forests, Tanana Valley State Forest.* http://forestry.alaska.gov/stateforests#tanana . Downloaded August 23, 2017.

Allan, C. 2015. A history of National Park Service clean-up efforts at the historic Coal Creek Mining District, Yukon-Charley Rivers National Preserve. Natural Resource Report NPS/YUCH/NRR—2015/1099. National Park Service, Fort Collins, Colorado.

Andersen, David B., and Gretchen Jennings. 2001. The 2000 Harvest of Migratory Birds on Seven Upper Tanana River Communities, Alaska. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 269, 21 p.

Brabets, T. and P. Schuster. 2008. Transport of Water, Carbon, and Sediment Through the Yukon River Basin. U.S. Geological Survey, Fact Sheet 2008-3005, 4 p.

Brabets, T., B. Wang, and R. Meade. 2000. Environmental and Hydrologic Overview of the Yukon River Basin, Alaska and Canada. U. S. Geological Survey, Water-Resources Investigations Report 99-4204. Anchornge, AK.

Eiler, J.H., T.R. Spencer, J.J. Pella, and M.M. Masuda. 2006. Stock Composition, Run Timing, and Movement Patterns of Chinook Salmon Returning to the Yukon River Basin in 2004. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National marine Fisheries Service, Alaska Fisheries Science Center, NOAA Technical Memorandum NMFS-AFSC-165, 107 p.

Hander, R. and N. Legere. 2013. Inventory of Resident Fish Species in Tributaries to the Nenana River along the Western Denali Highway, Alaska, 2010. Alaska Fisheries Data Series Number 2013-11, July 2013.U.S. Fish and Wildlife Service. https://www.fws.gov/alaska/fisheries/fish/Data_Series/d_2013_11.pdf. Downloaded August 24, 2017.

Holmes, Charles E. Tanana River Valley Archaeology Circa 14,000 to 9000 B.P. *Arctic Anthropology* 38.2 (2001): 154.

Howard, Kathrine G., Steve J. Hayes, and Danielle F. Evenson. 2009. Yukon River Chinook Salmon Stock Status and Action Plan 2010; a Report to the Alaska Board of Fisheries. Alaska Department of Fish and Game, Divisions of Sport Fish and Commercial Fisheries, Special Publication No. 09-26, Anchorage, Alaska, 52 p.

Johnson, J. and P. Blanche. 2010. Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes – Interior Region, Effective June 1, 201*0.* Alaska Department of Fish and Game, Divisions of Sport Fish and Habitat, Special Publication No. 10-05, Anchorage, Alaska, 141 p.

Marcotte, James R. 1991. Wild Fish and Game Harvest and Use by Residents of Five Upper Tanana Communities, Alaska, 1987-88. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 168, Juneau, Alaska, 200 p.

Martin, Gayle. 1983. Use of Natural Resources by the Residents of Dot Lake, Alaska. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 19, Fairbanks, Alaska, 103 p.+maps.

Walker, C. 1976. Studies on the Freshwater and Anadromous Fishes of the Yukon River within Canada. PAC T/76-7. Department of the Environment Fisheries and Marine Service Vancouver, B. C.

U.S. Fish and Wildlife Service (USFWS). 2010. Tetlin National Wildlife Refuge. https://www.fws.gov/refuge/tetlin/ Downloaded August 23, 2017.

U.S. Department of Commerce, 2010. Press Release: Commerce Secretary Gary Locke Announces "Fishery Failure" Determination for Alaska Chinook Salmon. January 15, 2010, Washington, DC. http://2010-2014.commerce.gov/news/press-releases/2010/01/15/commerce-secretary-gary-locke-announces-fishery-failure-determination.html. Downloaded August 23, 2017.

U.S. Fish and Wildlife Service, 2017. Fish List – Yukon Delta. https://www.fws.gov/refuge/yukon_delta/wildlife_and_habitat/fishlist.html. Downloaded August 24, 2017.

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OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

AUG 29 2017

Sandy P. Gibson, Project Manager
U.S. Army Corps of Engineers
P.O. Box 6898 (CEPOA-RD-S)
Elmendorf AFB, Alaska 99506-0898

Dear Ms. Gibson:

The U.S. Environmental Protection Agency has reviewed the Draft Supplemental Environmental Impact Statement prepared by the U.S. Army Corps of Engineers for the Alaska Stand Alone Pipeline Project (CEQ No. 20170000; EPA Project Number 09-054-DOD). Our review was conducted in accordance with the EPA's responsibilities under Section 102 of the National Environmental Policy Act and Section 309 of the Clean Air Act.

Alaska Gasline Development Corporation proposes to transport natural gas from the North Slope of Alaska to an existing natural gas distribution system that serves the southcentral portion of the state, using a 733-mile-long buried pipeline, and includes a lateral connecting line to Fairbanks. The Draft SEIS analyzes the proposed action; an action alternative with variations regarding elevation of a portion of the pipeline, alignment through Denali National Park and Preserve, barge access, and Yukon river crossing; and a no-action alternative.

Following the 2012 Final EIS, the applicant made changes to the project that were not evaluated in that document, including changes related to the location of material sites, access roads, and other project infrastructure; diameter of the pipeline; location of dredging and disposal work; and pipeline routing. These changes led to preparation of the 2017 Draft SEIS. The EPA is a cooperating agency with the Corps for development of the SEIS. Throughout the NEPA process, we have participated in agency work groups and have provided extensive comments on prior versions of the EIS. For the supplemental analysis, the EPA has participated in numerous cooperating agency meetings, provided scoping comments to the Corps on October 14, 2014, and reviewed and commented on several preliminary documents. Our comments reflect the EPA's ongoing experience with the ASAP project and the anticipated impacts.

The Draft SEIS contains an improved analysis relative to the 2012 EIS, and addresses many of the EPA's previous concerns. We commend the Corps for its efforts to work with the EPA and other cooperating agencies to revise the proposed action and alternatives to reduce certain environmental impacts, and to improve several aspects of the analysis. The EPA acknowledges that the Draft SEIS incorporates a new alignment for the Fairbanks Lateral Line that reduces impacts to Goldstream Creek, an impaired waterbody. It also includes improved discussion of potential impacts to the designated Fairbanks air quality non-attainment area as well as a more detailed analysis of potential impacts related to ancillary facilities. We are particularly encouraged to see that, by making natural gas available to Fairbanks, the proposed project has the potential to improve air quality in an existing $PM_{2.5}$ non-attainment area, by allowing a transition from wood stoves and coal generators for heat and electricity.

While we recognize the revisions and efforts to improve the analysis, the EPA continues to be concerned about the potential for significant impacts to wetlands and the lack of disclosure of measures to avoid, minimize and mitigate those impacts. According to the Draft SEIS, a total of approximately 8,907 acres of wetlands would be permanently or temporarily impacted by the pipeline, aboveground facilities, permanent access roads, and marine dredge fill. By comparison, the 2012 Final EIS projected approximately 5,400 acres of wetland impacts. The project also includes 312 stream crossings, including 64 crossings of anadromous waters, as well as impacts to the Yukon, Tanana, Nenana, and Susitna Rivers. Approximately 1,037 acres of wetlands underlain by permafrost would also be subject to degradation from the proposed project.

We recommend that the Corps and the applicant continue to identify opportunities to reduce and mitigate the project's impacts to aquatic resources between now and the Final SEIS. Notably, Council on Environmental Quality regulations implementing NEPA require a discussion of mitigation measures, including compensatory mitigation. Our enclosed detailed comments also identify additional aquatic resource and mitigation information that will be required by the Clean Water Act Section 404 permitting process, which is further discussed in the EPA's separate comments to the Corps on the Section 404 Public Notice. To ensure that the NEPA analysis sufficiently addresses measures to mitigate adverse environmental impacts from the proposed project, as well as to facilitate an efficient permitting process, we recommend that this information be included in the Final SEIS. Specifically, while the document makes general statements about alignment refinements that have reduced wetland impacts, additional information is needed to support these statements. In addition, to reduce wetland impacts in permafrost areas, we recommend increased consideration of vertical support members through the continuous permafrost region. Incorporating the use of VSMs appears to be environmentally preferable, and may be the Least Environmentally Damaging Practicable Alternative, as required by 40 C.F.R. § 230.10(a). Finally, we recommend that the Final SEIS include a revised revegetation plan to restore disturbed wetlands as well as a compensatory mitigation plan to compensate for unavoidable loss of wetlands.

Additionally, the EPA recommends that the Final SEIS include additional analysis of potential air quality impacts from the proposed Gas Conditioning Facility, a Title I major source. The EPA recommends that near-field air quality modeling be conducted for the proposed Gas Conditioning Facility to assess project impacts on local air quality and PSD increment consumption, and that mitigation measures be identified and discussed if adverse impacts are projected. Additional air quality comments related to background air pollutant concentrations and mitigation measures are provided in the enclosure to this letter.

The enclosed detailed comments also discuss our recommendations related to dredged material management, drinking water protection, and ensuring that an appropriate and consistent level of mitigation is applied along the full length of the pipeline right-of-way and associated disturbances.

Pursuant to Section 309 of the Clean Air Act, it is the EPA's responsibility to provide an independent review and evaluation of the potential environmental impacts of this project. Based on our review and evaluation of the adequacy of the information and the potential environmental impacts of the action alternatives, the EPA is rating the Draft SEIS as Environmental Objections – Insufficient Information (EO-2). The EO rating indicates that the EPA review has identified significant environmental impacts to wetlands that should be avoided, as well as a need to consider additional means to mitigate those impacts, in order to adequately protect the environment. The "2" rating indicates that the EPA has identified additional information, data, analyses, or discussion as outlined in the enclosed comments that

we recommend for inclusion in the Final SEIS. An explanation of the EPA's rating system is enclosed along with our detailed comments.

We appreciate the opportunity to review the Draft SEIS for the ASAP Project, and look forward to working with you as you prepare the Final SEIS. If you have questions concerning our comments, please contact Molly Vaughan of my staff in Anchorage, at (907) 271-1215 or vaughan.molly@epa.gov, or you may contact me at (206) 553-2581 or allnutt.david@epa.gov.

Sincerely,

R. David Allnutt, Director
Office of Environmental Review and Assessment

Enclosures:

1. U.S. Environmental Protection Agency Alaska Stand Alone Pipeline Project Draft SEIS Detailed Comments
2. U.S. Environmental Protection Agency Rating Sheet for Draft Environmental Impact Statements

cc: Colonel Michael Brooks, Alaska District Engineer, U.S. Army Corps of Engineers

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U.S. Environmental Protection Agency
Alaska Stand Alone Pipeline Project Draft SEIS
Detailed Comments

Wetlands

Wetlands Impacts:
The EPA recommends that the Final SEIS include an analysis of the change in the amount and associated type of wetland impacts that have resulted from changes made to the proposed project since publication of the Final EIS in 2012. For example, the proposed pipeline diameter has increased, and many refinements have been made to the proposed pipeline route. According to the Draft SEIS, the refinements were to accomplish a variety of goals including shifting away from populated areas, reducing visual impacts, reducing pipeline length, avoiding native allotments and private land, and reducing impacts to aquatic resources. The Draft SEIS states that the revised project proposal has reduced the overall wetland impacts, however, it does not include sufficient information to evaluate the full extent to which wetland impacts have been avoided and minimized.

Potential impacts to Minto Flats were identified as a key area of concern in the EPA's 2012 Draft EIS comments, because it is one of the highest quality waterfowl nesting, breeding and staging habitats in Alaska. The Draft SEIS states that the impacts to Minto Flats have been reduced due to realignment. However, the maps provided in Appendix E of the Draft SEIS generally show the alignment to have potentially shifted further into the Minto Flats State Game Refuge. We recommend that the Final SEIS include additional detail to support the conclusion that impacts to wetlands in the Minto Flats area have been reduced.

Permafrost issues:
The EPA is concerned about the potential impacts to wetlands underlain by permafrost, which comprise a large portion of the pipeline alignment as it passes through the interior of Alaska. Modeling included in the Draft SEIS disclosed potential thaw impacts in discontinuous permafrost, potentially leading to an expansion of the active layer extending out from the pipe centerline. This could potentially result in hundreds of miles of frost-heave displacement and soil subsidence associated with the pipeline, leading to hydrologic impacts in drainages crossed by the proposed project, altering of hydrologic regimes of the wetland complexes along the route, and changes to the functions and type of wetlands. While the modeling of permafrost thaw provided an important disclosure of potential impact in the Draft SEIS, the impacts were not accounted for in quantification of projected wetland impacts. The EPA recommends that these additional impacts be accounted for in the Final SEIS as permanent impacts to the wetland complexes along the alignment.

Revegetation Plan and Classification of Temporary vs. Permanent Impacts:
A key factor in minimizing the extent of permafrost thaw and minimizing overall project impacts to wetlands is the success of the revegetation plan. We are concerned that revegetation plans in the Draft SEIS do not appear to be as proactive as those proposed in the 2012 Final EIS, and recommend that the Final SEIS provide a more robust and detailed revegetation plan to ensure successful revegetation. In the 2012 FEIS, the applicant had proposed to separate the topsoil layer along the alignment and replace it when possible to promote revegetation and recovery of land disturbance. The Draft SEIS Revegetation Plan calls for separating the topsoil from subsoil or other spoil fill only within designated agricultural lands, which are a small percentage of the proposed project's footprint. For the majority of the pipeline, topsoil will be mixed with the subsoil and potentially the additional fill spoil sourced from material sites

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when backfilling the pipeline trench. The disturbed lands would then be left to naturally revegetate, rather than being re-seeded, except for sensitive areas which are not identified or defined. Additional measures will occur if a reclamation standard of 30% ground cover within three years is not met, in which case the applicant would then add fertilizer and/or seeds. This approach would potentially increase the impacts compared to the 2012 Final EIS, as the disturbed area would have less seed base and organic matter at the surface to revegetate as discussed below. This may further the development of thaw as the vegetative mat would no longer provide insulation to the permafrost.

It is unclear from the information presented in the Draft SEIS whether the impacts of pads used in the construction phase of the proposed project have been classified as permanent or temporary. The Revegetation Plan states the compacted area of the gravel work pad would be ripped to mitigate the compaction, graded for drainage, and scarified to allow for natural revegetation by native plants. These impacts appear to be permanent in that the fill is placed and not fully removed and restored. We recommend that these impacts be analyzed as permanent impacts in the Final SEIS, and that mitigation for these impacts be considered.

In addition, the Revegetation Plan proposes to spread excess ditch subsoil spoil across the construction corridor. It is not clear from the information provided whether or not these impacts are captured in either the temporary impacts or permanent impacts. If fill material is discharged to wetlands along the alignment, it should be considered as a permanent impact unless the fill will subsequently be removed and the impacted areas restored.

Alternatives Analysis and LEDPA:
The proposed project (Alternative 1) includes burial of the pipeline throughout its length. Typically, the pipeline would be with a minimum cover of 30 inches and a bottom depth of six to eight feet allowing for bedding, pipe installation, and overburden backfill. Alternative 2 contains the variation of elevating the pipeline on Vertical Support Members (VSMs) upon leaving the Gas Conditioning Facility through MP 62 in the Arctic Coastal Plain. Elevating the pipeline on VSMs would reduce organic layer removal from the pipeline corridor, reduce excavation of the pipeline route, reduce the acreage of land impacted by material sites, decrease the disposal of soil removed from the trenching, and reduce impacts to permafrost. Alternative 2 would significantly reduce the impacts to wetlands in the continuous permafrost of the Arctic Coastal Plain, which are difficult, if not impossible, to mitigate. Extending the VSMs to approximately MP 168, the end of the continuous permafrost region, could potentially further reduce the impacts to wetlands as identified in Table 2.4-1. Of total wetland resources proposed to be impacted in the right-of-away, over 44% are located within the continuous permafrost portion of the project. Elevating the pipeline could significantly reduce the overall impacts to aquatic resources resulting from the project. The EPA recommends that the Final SEIS analyze the impacts associated with extending the use of VSMs to MP 168. We further recommend that the Corps consider selecting an alternative that incorporates the use of VSMs in regions of continuous permafrost, as it appears to be an environmentally preferable alternative, and may be the least environmentally damaging practicable alternative (LEDPA) for purposes of the Clean Water Act Section 404 permitting.[1]

[1] The Clean Water Act Section 404(b)(1) Guidelines, the substantive environmental criteria for evaluating activities regulated under Section 404 of the Clean Water Act, require that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." 40 C.F.R. § 230.10(a).

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Compensatory Mitigation:
The Draft SEIS does not include a compensatory mitigation plan for unavoidable wetland impacts, although a draft compensatory mitigation plan is available on the applicant's webpage. In accordance with the joint EPA-Corps Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, any final mitigation plan associated with a Section 404 permit, should a permit be issued, must include compensatory mitigation sufficient to replace lost aquatic resource functions and values, to the extent practicable.[2] Similarly, CEQ regulations implementing NEPA require that the alternatives and impacts analysis address mitigation measures, including measures that compensate for impacts.[3]

To ensure a complete NEPA analysis that sufficiently addresses direct, indirect, and cumulative impacts from the proposed project, the EPA recommends that the Final SEIS include a compensatory wetland and stream mitigation package, including the wetlands impacts characterized as temporary and the indirect impacts modeled from permafrost degradation. This should also include biological, chemical and physical success criteria of the stream channels and wetlands mitigation. Additionally, the mitigation package should include monitoring and an adaptive management plan containing corrective actions if the mitigation efforts are not meeting success criteria. If onsite mitigation is not practicable to fully replace the functions and values of the impacts, alternative site mitigation should be considered.

Dredged Material Management

The EPA recommends that the Final SEIS include an analysis of a sub-alternative that includes building a new Dock Head 4 at the seaward end of West Dock (instead of using existing Dock Head 3, dredging a navigation channel and disposing of the dredged material in Prudhoe Bay). This variation on the proposed action would minimize the need for dredging and disposal of dredged material. The EPA requested consideration of this alternative dock head previously and the Draft SEIS considers it briefly, but does not carry it forward for detailed analysis because:

> Using the existing STP as a makeshift dock is engineering prohibitive because it would require installing multiple large berths, new pilings, new bulkhead, new permanent bridge, and ocean fill to widen the road. This would likely also disrupt ongoing use of the facility by other entities.

However, the Alaska Liquefied Natural Gas Pipeline Project recently included this Dock Head 4 alternative as the proposed action in its application to the Federal Energy Regulatory Commission. Thus, a Dock Head 4 alternative appears to be both reasonable and practicable. Although a Dock Head 4 alternative would pose some environmental tradeoffs (i.e., less dredged material, but more fill material), the environmental review process is designed to weigh such tradeoffs. Please note that the EPA is not endorsing this alternative as environmentally preferable or as the least environmentally damaging practicable alternative at this time. Rather, we are recommending that it be included in the Final SEIS for detailed analysis as a reasonable alternative.

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[2] 33 C.F.R. Parts 325 and 332; 40 C.F.R. Part 230, Subpart J).
[3] 40 C.F.R. §§ 1502.14, 1502.16, 1508.20.

Drinking Water Protection

Construction of the proposed pipeline presents the potential for sediment mobilization or hydrological disturbances that could result in impacts to water quality or quantity. Because the proposed project will pass very near a large number of public and private drinking water sources, the EPA recommends the use of additional analysis and on-site mitigation in order to reduce potential impacts to drinking water along the proposed pipeline route. We appreciate the additional information that is presented in the Draft SEIS related to drinking water use and source water protection, which is responsive to the EPA's comments on the 2012 Draft EIS. Tables are included in the Draft SEIS showing public and private drinking water wells in proximity to the pipeline, as well as a large-scale map displaying public water systems along the pipeline route. We recommend that finer-scale maps be included in the Final SEIS to show areas in which designated Source Water Protection Areas, for groundwater or surface water intakes, are intersected by the proposed ROW. The EPA has previously noted the importance of ensuring that the applicant consults with the appropriate state and/or local authorities for public water systems before performing any construction activities within a Source Water Protection Area. Providing more detailed maps will assist AGDC in performing this consultation and complying with recommendations to avoid impacts to the quality or quantity of the water supply.

According to tables presented in Draft SEIS, many of the identified private drinking water wells in proximity to the proposed right-of-way are very shallow. Construction and operation of the pipeline could affect the quantity and/or quality of shallow drinking water sources by altering hydrology. We recommend that the applicant commit to avoiding construction in close proximity to private drinking water wells to the maximum extent practicable by making any available adjustments to trench location within the right-of-way. In addition, we recommend that AGDC compensate for any unavoidable impacts to quantity or quality of drinking water (e.g., drilling a new drinking water well if needed).

Air Quality

Analysis of Impacts from Gas Conditioning Facility:
As previously recommended in our comments on the 2012 Draft EIS, the EPA recommends that the Final SEIS include an air quality modeling analysis to assess possible air quality impacts from the proposed Gas Conditioning Facility. The Draft SEIS infers that the National Ambient Air Quality Standards and applicable prevention of significant deterioration increments will be protected because an air quality analysis will be required in the future as part of the State of Alaska's air permitting process. However, including the modeling analysis results in the Final SEIS will provide important information that is needed to inform decision-making, as required by NEPA.

Background Air Quality:
Given that the project will involve construction of a new major source on the North Slope, a thorough evaluation of background air quality is very important to assess cumulative air quality impacts. The background design values provided for Prudhoe Bay are based on a single year (2010) of monitoring at a location very near to the proposed Gas Conditioning Facility. Although the location appears appropriate, the age of the dataset and length of record raises concerns that the dataset may not be representative. There may be more representative or more modern datasets publically available. Also, Table 3.18.6 contains blank entries for $PM_{2.5}$ and CO, and is missing background design values for 1-hour average NO_2 and 1-hour average SO_2. The EPA recommends re-evaluating background air quality to see if more recent and sizeable datasets are available, preferably a three-year dataset. For $PM_{2.5}$ and CO, a more distant dataset, such as the Nuiqsut 2012-2014 dataset, may be reasonable to use if no other dataset is

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available. If possible, a background design value should be reported for each of the criteria air pollutants. It would also be helpful to note where values listed in table 3.18-6 do not follow the same calculation as the NAAQS. For example, the ozone value listed for Denali is based on one year of data rather than three years.

Air Quality Mitigation:
We recommend that the Final SEIS include additional discussion of mitigation measures that will be implemented to reduce air emissions from the proposed action. It is also important that mitigation commitments include all controls that were applied in developing the emissions inventory. For example, the emissions calculations to date assumed 50 percent control of fugitive dust. We recommend that the Final SEIS list specific fugitive dust control measures, such as speed limits and frequency of watering during non-winter months, that will be used to achieve this level of control.

Appendix U:
Appendix U provides the emissions inventories and emission factors upon which these inventories were based. Some of these emission factors were produced using models such as MOVES for mobile vehicle emissions. To assist in interpretation of the emissions data, we recommend that the Final SEIS include a list of inputs in Appendix U, such as RunSpec files from each MOVES run, to show what settings were used to produce the emission factors where models were used.

Mitigation

A large number of applicant-proposed design features, mitigation measures, best management practices, and project management plans listed in the Draft SEIS contain the language, "In areas where a lease is required from the SPCS or a federal grant of ROW is required from BLM..." These measures generally represent a best management approach that we recommend using to the maximum extent possible along the entire pipeline route, while acknowledging the outstanding need to complete coordination with private landowners.

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U.S. Environmental Protection Agency Rating System for
Draft Environmental Impact Statements
Definitions and Follow-Up Action*

Environmental Impact of the Action

LO – Lack of Objections

The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC – Environmental Concerns

EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO – Environmental Objections

EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU – Environmentally Unsatisfactory

EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 – Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 – Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 – Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting The Environment _February, 1987

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To: Gibson, Sandy P CIV USARMY CEPOA (US)[Sandy.P.Gibson@usace.army.mil]
From: Douglas, Mark
Sent: Tue 8/29/2017 11:24:50 PM
Subject: FW: Letter regarding ASAP
ASAP 3a letter.final.pdf

Sandy,

I'm calling your office number and am getting a busy tone. Please call me when you get a chance.

Mark Douglas

Aquatic Resources Unit

Office of Environmental Review & Assessment

U.S. Environmental Protection Agency

Alaska Operations Office

222 W. 7th Avenue, Box 19

Anchorage, AK 99513-7588

Phone (907) 271-1217

From: Douglas, Mark
Sent: Tuesday, August 29, 2017 3:21 PM
To: 'Gibson, Sandy P CIV USARMY CEPOA (US)' <Sandy.P.Gibson@usace.army.mil>
Subject: FW: Letter regarding ASAP

Sandy,

Attached is EPA's comment letter for the PN for POA-2009-651.

Thank you,

Mark Douglas

Aquatic Resources Unit

Office of Environmental Review & Assessment

U.S. Environmental Protection Agency

Alaska Operations Office

222 W. 7th Avenue, Box 19

Anchorage, AK 99513-7588

Phone (907) 271-1217

From: Kelly, Christine M
Sent: Tuesday, August 29, 2017 3:19 PM
To: Michael.S.Brooks2@usace.army.mil
Cc: Allnutt, David <Allnutt.David@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: Letter regarding ASAP

Colonel Brooks,

Please find attached a letter regarding the Public Notice Reference No. POA-2009-651, Alaska Stand Alone Pipeline (ASAP) Project

Applicant: Alaska Gasline Development Corporation.

Christine Kelly, Administrative Specialist

Office of Environmental Review and Assessment

U.S. EPA, Region 10

1200 Sixth Avenue, Suite 900, Mail Stop OERA-140

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
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OFFICE OF
ENVIRONMENTAL REVIEW
AND ASSESSMENT

AUG 29 2017

Colonel Michael Brooks
Alaska District Engineer
U.S. Army Corps of Engineers
P.O. Box 6898
JBER, Alaska 99506-0898

Dear Colonel Brooks:

The U.S. Environmental Protection Agency Region 10 has reviewed the above-referenced Public Notice, which describes the Alaska Gasline Development Corporation's proposal to discharge fill for the construction of an in-state gas supply pipeline, known as the Alaska Stand Alone Pipeline. The proposal was submitted under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.[1] The proposed project includes a 733-mile-long, 36-inch diameter natural gas transmission mainline extending from Prudhoe Bay to an existing pipeline system in Southcentral Alaska. The project also includes a natural gas conditioning facility in Prudhoe Bay capable of producing an annual average of 500 million standard cubic feet per day of utility-grade natural gas at peak capacity. Approximately 8,907 acres of wetlands would be directly impacted. This includes approximately 7,573 acres of permanent wetland loss, 1,161 acres of temporary impacts via the discharge of gravel for construction pads or building of ice pads, 1 acre of permanent intertidal loss, and 171 acres of subtidal impact, as a result of the pipeline, aboveground facilities, permanent access roads, and marine dredge fill. The project also includes 312 stream crossings, including 64 crossings of anadromous waters, as well as impacts to the Yukon, Tanana, Nenana, and Susitna Rivers. Approximately 1,037 acres of wetlands underlain by permafrost would also be subject to degradation from the proposed project.

The Army Corps of Engineers Alaska District made the Public Notice available for comment concurrently with the release of a Draft Supplemental Environmental Impact Statement, for which the Corps serves as lead federal agency. In addition to reviewing the Public Notice, the EPA has actively participated as a cooperating agency in the National Environmental Policy Act process for the ASAP project, including the 2012 Final EIS, and the 2017 Draft SEIS. Following the 2012 Final EIS, the applicant made changes to the project that were not evaluated in that document, including changes related to the location of material sites, access roads, and other project infrastructure. Changes also included changes to the diameter of the pipeline, location of dredging and disposal work, and pipeline routing. These changes led to preparation of the 2017 Draft Supplemental EIS. Throughout the NEPA process, we have participated in agency work groups and have provided extensive comments on prior versions of the EIS. Our comments reflect the EPA's ongoing experience with the ASAP project and the anticipated impacts.

The EPA understands and supports Alaska's desire to develop its energy resources in a responsible way that addresses the needs of Alaskans while also safeguarding the State's exceptional natural resources. We are also aware that the proposed project would provide a source of cleaner energy to the Fairbanks

[1] 33 U.S.C.§ 1344, 33 U.S.C. § 304.

area, whose air quality is adversely affected by widespread combustion of wood and coal. We have certain concerns, however, regarding the information provided to date and offer the following comments to ensure that the ASAP project can be reviewed in an expeditious manner that complies with the Clean Water Act's Section 404(b)(1) Guidelines.

The Public Notice on the proposed ASAP project did not include information required by both the EPA's and the Corps' regulations on how impacts associated with the proposed activity are to be avoided, minimized, and compensated for, a troubling omission for a project of this scope and scale.[2] We note, however, that a Draft Compensatory Mitigation Plan prepared by the applicant was subsequently posted on the Corps' website along with the Draft SEIS. According to the Draft CMP, of the approximately 8,907 acres of direct wetland impacts, the project proponent is proposing to provide compensatory mitigation for impacts to approximately 104.97 acres (approximately 1 percent of the impacted wetland area). The Draft CMP proposes to provide this compensatory mitigation by securing an appropriate number of credits from approved mitigation banks.

Based on our review of the Public Notice, the Draft SEIS, and the applicant's Draft CMP, the EPA is concerned that the proposed project may not comply with the Guidelines. Specifically, it is not clear that the proposed project's direct, secondary, and cumulative impacts on aquatic resources have been adequately evaluated to support the factual determinations required by the Guidelines.[3] It is also not clear that all appropriate and practicable steps have been taken to ensure that impacts to aquatic resources have been avoided, minimized, and compensated for, consistent with the Guidelines.[4]

The Guidelines direct that no discharge of dredged or fill material shall be permitted if the discharge will cause or contribute to significant degradation of waters of the United States.[5] Determinations regarding significant degradation are made based on an analysis of the direct, secondary, and cumulative impacts of the proposed project on the aquatic ecosystem. The proposed ASAP would traverse 60 watersheds (as defined by the USGS 10-digit Hydrologic Unit Code or HUC-10) in Alaska's Northern, Interior, and Southcentral ecosystems. Although the project would adversely impact wetlands, streams, and other aquatic resources in all 60 watersheds, the Draft CMP uses a novel approach to summarily dismiss potential impacts on the aquatic ecosystem in all but two of these watersheds as "insignificant." This conclusion is particularly remarkable since the Draft SEIS assigns some of these same wetland impacts (e.g., wetland loss and fragmentation) a "major" or "moderate" negative effects ratings. The Draft CMP argues that the only ecologically significant impacts to wetlands would be those that occur in watersheds that have experienced greater than 7.5 percent anthropogenic disturbance. Thus, of the approximately 8,907 acres of potential direct wetland impacts estimated for ASAP, the Draft CMP identifies only 104.97 acres as ecologically significant, and does not consider the indirect losses from permafrost degradation at all. All of the impacts to the remaining 8,802 acres of wetlands are dismissed as insignificant regardless of the existing quality of these wetlands, the functions they provide in the landscape, the degree to which those functions would be impacted, the duration of those impacts, or the likely ecological consequences. The EPA is not aware of any other case in which this approach has been used in the context of an impacts analysis pursuant to the Guidelines. The EPA is particularly concerned about employing such a novel approach without independent evaluation for a project that involves the scope and scale of impacts to aquatic resources anticipated for ASAP. In light of these gaps and

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[2] *See* 40 C.F.R. § 230.94(b), 33 C.F.R. § 332.4(b).
[3] *See* 40 C.F.R. §§ 230.5, 230.11, 230.12.
[4] *See* 40 C.F.R. §§ 230.10(a), 230.10(d), 230.91 – 230.98,
[5] 40 C.F.R. § 230.10(c)

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inconsistencies in the impacts analysis the EPA is concerned that there is insufficient information to make a reasonable judgment as to whether the proposed discharges will comply with the Guidelines.

The Draft CMP identifies measures taken to avoid and minimize adverse impacts to wetlands, streams, and other aquatic resources as part of ASAP's planning and design. These include avoiding open water areas and higher value wetlands by routing the pipeline through uplands or areas with fewer wetlands and by using construction methods designed to result in only temporary impacts. Nevertheless, there appear to be additional appropriate and practicable avoidance and minimization measures that could further reduce potential aquatic resource impacts. For example, the DSEIS indicates that potentially thousands of acres of impacts could be avoided by elevating the pipeline on using vertical support members in wetland areas underlain by permafrost, similar to the existing Trans-Alaska Pipeline. The EPA believes that opportunities to elevate the pipeline should be more thoroughly evaluated to determine if they could reduce the impacts to wetlands underlain by permafrost. We also recommend evaluating the use of Dock Head 4 at West Dock and removal of gravel in the construction right-of-way as potential opportunities to minimize impacts to resources. Such additional evaluations are critical to adequately identify the least environmentally damaging practicable alternative under the Guidelines.[6]

The EPA also has a number of concerns regarding the adequacy of the proposed compensatory mitigation. Compensatory mitigation involves the restoration, establishment, enhancement, and/or in certain circumstances preservation of wetlands, streams, and other aquatic resources for the purpose of offsetting unavoidable adverse impacts that remain after all appropriate and practicable avoidance and minimization has been achieved.[7] Compliance with the Guidelines may require compensatory mitigation to reduce the magnitude or severity of certain discharges to avoid the potential for significant degradation. Compliance with the Guidelines may also require compensatory mitigation when such measures are appropriate and practicable – *i.e.,* appropriate to the scope and degree of the impacts and practicable in terms of cost, existing technology, and logistics in light of overall project purposes. In this case, because of the lack of information in the Draft CMP regarding the direct, secondary, and cumulative impacts of the proposed discharges on approximately 99 percent of the potentially affected wetland acreage discussed above, sufficient information does not exist to determine if additional compensation would be required to avoid causing or contributing to significant degradation. For the same reason, sufficient information does not exist to determine if there are appropriate and practicable compensation measures that would be required by the Guidelines to address some or all of the remaining approximately 8,802 acres of wetland impacts where compensation is not currently proposed. In addition, for the 104.97 acres of wetland impacts that the permit applicant has identified as needing compensation, the EPA is concerned that the assessment method utilized to evaluate the type and levels of functions these wetlands provide inappropriately undervalues their current functional capacity. Overall, the EPA believes that such extensive, unmitigated destruction and degradation of wetlands and aquatic resources, particularly in aquatic resources underlain by permafrost, may not comply with the Guidelines.

The EPA has previously raised concerns with the Alaska District at the staff level, with the Statewide Interagency Review Team, and at the management level over identified lack of compensatory mitigation or inadequate compensatory mitigation for recently permitted projects, and has questioned these projects' compliance with the Guidelines, particularly the 2008 Final Rule. We note, as previously stated, that the applicant's proposal may not comply with the Guidelines for similar reasons, and we

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[6] *See* 40 C.F.R. § 230.10(a).
[7] *See* 40 C.F.R. § 230.92.

believe that separate discussions of the larger policy issues between our agencies are needed to address our concerns.

Based on our review of currently available information and the concerns articulated above and in our attached comments, and pursuant to Part IV, paragraph 3(a) of the 1992 Clean Water Act Section 404(q) Memorandum of Agreement between the EPA and Department of the Army, the EPA is hereby notifying the Alaska District that the proposed discharges may result in substantial and unacceptable impacts to aquatic resources of national importance, including the wetlands and waters of the Yukon River basin. Notably, many of the aquatic resources along the proposed pipeline route are of outstanding natural resource value and occur in systems whose ecological functions are intact. In particular, the EPA concludes that the Yukon River basin, with its associated tributaries and wetlands, and adjacent wetland systems, is an aquatic resource of national importance according to the criteria identified in the Section 404(q) MOA. Aquatic resources that are underlain by permafrost are of particular concern, since these resources provide unique functions in addition to the general functions that wetlands provide. They are fragile, easily damaged, and do not recover from damage in less than one generation, if at all. Furthermore, the wetlands and streams of the Yukon basin provide important functions that help to maintain the basin's ability to support and maintain anadromous fish, particularly salmonids, which are of both commercial and subsistence imporance. In accordance with paragraph IV(3)(b) of the Section 404(q) MOA, EPA will provide further comments on this matter within 25 calendar days after the end of the extended comment period. Because that date falls on a weekend, that letter would be due no later than September 25, 2017.

Thank you for the opportunity to provide comments on the proposed ASAP project. I appreciate the attention that you and your staff have provided to this project, and EPA Region 10 looks forward to discussing our concerns. In the meantime, my staff is working to identify ways in which we can work together to ensure that any unavoidable impacts are adequately offset with appropriate and practicable compensatory mitigation. Should you have any questions about this letter, please do not hesitate to contact me or have your staff contact Mark Douglas at (907) 271-1217, or by email at douglas.mark@epa.gov.

Sincerely,

R. David Allnutt, Director
Office of Environmental Review and Assessment

Attachment

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Attachment 1: The Wetlands and Streams of the Yukon River Basin are an Aquatic Resource of National Importance

The Yukon River is the third longest river, and the longest free-flowing river, in North America, flowing northwest from the Coastal Range mountains of northern British Columbia, through the Yukon Territory and Alaska to the Bering Sea. The river is 1,980 miles long and empties into the Bering Sea at the Yukon-Kuskokwim Delta. It drains a total watershed area of 321,500 mi^2, of which 126,300 mi^2 is in Canada, and is the fourth largest basin in North America. It is also the fifth largest contributor of freshwater to the Arctic Ocean. Its contributing rivers drain a number of different biogeographic regions, from the Arctic, to the Alaska Range, and include a variety of both glaciated and unglaciated systems.

Background and History

Humans have inhabited the Yukon basin for thousands of years, and may it be one of the oldest settlements of humans on the continent. Those that did not trade with the coastal Tlingit people remained culturally isolated until the 19th century (Brabets *et al*, 2000). Exploration of the Yukon during the earlier part of the 19th century was geared toward developing the fur trade. Following the purchase of Alaska in 1867, when fur trading was the primary commercial activity, the Alaska Commercial Company constructed several posts at various locations on the Yukon River. In the 1870's, Leroy McQuesten, Arthur Harper, and Alfred Mayo, established a number of trading posts up and down the Yukon River. They also began prospecting during the summers, and recognizing the mineral potential of the area, changed the trading posts from primarily serving native and fur trading populations to serving miners' needs. Several strikes of placer gold between 1885-1893 were fairly small claims; the Klondike discoveries at Dawson in 1897 precipitated an enormous in-migration of people to the area during the 1896–1903 Klondike Gold Rush. During this time, and until the completion of the Klondike Highway in the 1950's, the river was the primary means of transportation in this portion of the world.

Environmental Characteristics

The discharge of the river close to its mouth has been measured as an average flow of 227,000 ft^3/s; however, much of this flow occurs during the summer months as a combination of snowmelt, glacial melt, and rainfall (Brabets *et al*, 2000). There are thirteen major drainage basins systems which contribute flow into the Yukon River. Of those major rivers, the Tanana and the Nenana rivers are also proposed to be impacted, along with the Yukon. Crossings of the Yukon and Tanana would be accomplished by Horizontal Directional Drilling; however, the Nenana would be crossed in two locations by open cut. In addition, trenching and filling of wetlands within the construction right-of-way, material site source impacts and placement of gravel for access roads would result in impacts to wetlands for the construction of the Alaska Stand Alone Pipeline. Wetlands account for about 30 percent of the Yukon River Basin (Brabets *et al*, 2000).

Owing to its history and its location within drainages of mining sites, the Yukon has had considerable disturbance from anthropogenic activity. Mining activity was and still is an important economic activity in the Yukon River Basin. Although modern mining practices are designed to reduce pollution and limit discharges, many historic, abandoned mines remain within the basin. The Coal Creek watershed, for example, which is now part of the Yukon-Charley Rivers National Preserve, was mined extensively in the early 1900's and the mining practices had a severe impact on the watershed. The Coal Creek Mining District was identified as a priority and in 1990, the National Park Service began a multi-year project to restore the ecological health of the watershed, which was funded by and administered through the Superfund response authority of the NPS. The major cleanup effort began in 1994, and was finally completed with the close of the field season in 1998 (Allan, 2015).

The U.S. Geological Survey (USGS), working in cooperation with the Yukon River Inter-Tribal Watershed Council,[1] has been evaluating hydrology and water quality of the Yukon River since the early 2000's. Water-quality samples have been collected at more than 400 sites in the Yukon River Basin by the USGS. While water quality in some areas shows evidence of human-induced historic disturbance, water quality data from the USGS generally indicate relatively good levels of turbidity, metals, and dissolved oxygen throughout the river, and the Yukon River has not been listed as an impaired water body. The water quality of the Yukon River Basin is important for many reasons. Residents who live along the main stem of the Yukon or its tributaries use the surface water for drinking. Salmon and other fish species require adequate water quality for their survival as does the abundant wildlife present in the basin.

In addition to relying on the Yukon River and its tributaries for drinking water, residents who live along the Yukon River have a long history of reliance on fish as a dietary staple, as food for dogs, and for other uses. This includes both salmon and non-salmon species; however, salmon traditionally comprise the bulk of the subsistence harvest within the Yukon River drainage (Alaska Department of Fish and Game, 2017). Fish other than salmon are also important to the subsistence way of life for Yukon area residents in biologically, historically, and culturally significant ways. In 1987 (and reconfirmed in 1993), the Alaska Board of Fisheries made a positive customary and traditional use determination for freshwater fish species in the Yukon area, including other salmonid species such as sheefish, whitefishes, Arctic grayling and Arctic char, as well as Arctic lampreys, burbot, longnose suckers, and northern pike (ADF&G, 2017). At the Yukon Delta National Wildlife Refuge, the U.S. Fish & Wildlife Service lists 44 species of fishes supported in the delta (USFWS, 2017).

Chinook salmon, summer and fall Chum salmon, and Coho salmon comprise the majority of harvests in the Yukon River drainage. The Alaska Department of Fish and Game regulates the harvests of these fish, with the goal of managing for a sustainable harvest. There are limited commercial harvests of salmon within the lower Yukon; however, subsistence harvests typically surpass commercial, sport, and personal use harvests combined (ADF&G, 2017). Within the Yukon drainage, Chinook salmon have been declining since 1998, and in 2010, the U.S. Department of Commerce declared the Chinook fishery in the Yukon a failure (U.S. Department of Commerce, 2010), prompting Congress to approve federal funding for fishery relief in 2012-2013. No harvest other than subsistence has been permitted in the last several years (ADF&G, 2016, 2017). The reasons for the decline in Chinook runs is not known; however, with the exception of a few bumps within the aforementioned timeframe, the strength of Chinook runs has continued to decline in the Yukon. Widespread shortfalls in other river systems in Alaska, beginning in 2007, prompted the Alaska Department of Fish and Game to initiate a research plan to address key research questions, which began in 2013.

In addition to fishing and subsistence activities, the Yukon River basin supports important recreational activities. While most of the basin is wilderness, in the Alaska portion of the basin, there are four national parks; namely, Wrangell-St. Elias National Park, Denali National Park, Yukon-Charley Rivers National Preserve, and Gates of the Arctic National Park. Eight National Wildlife Refuges are also located within the basin. Portions of the Arctic National Wildlife Refuge, and the entirety of the Yukon Flats, Tetlin, Nowitna, Kanuti, Innoko, Koyukuk, and Yukon Delta Refuges are located within the basin. These parks and refuges support significant economic and recreational activities.

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[1] The Yukon River Inter-Tribal Watershed Council, a cooperative effort of 70 First Nations and tribes in Alaska and Canada, has the goal of making the river and its tributaries safe to drink from again by supplementing and scrutinizing Government data.

Tanana River

The Tanana River, which the Alaska Stand Alone Pipeline also proposes to cross, is the second largest tributary basin to the Yukon River and drains approximately 45,000 square miles (ADF&G, 2017). From its headwaters in the Alaska Range, the Tanana River flows 590 river miles to the Yukon River, where it accounts for a 37% increase in the streamflow of the Yukon (Brabets and Schuster, 2008). The Tanana River produces approximately 25% of the Yukon River Chinook salmon, a stock of international importance for commercial, subsistence and sport fisheries in Alaska and Canada (Eiler et al., 2006).

The Tanana River supports eighteen species of fish, three anadromous, and fifteen resident species (ADF&G, 2017; Johnson and Blanche, 2010). In addition, the Tanana River is a major spawning area for whitefish, which are an important subsistence food for rural Alaskans. The U.S. Fish & Wildlife Service has indicated whitefish may travel over 1,000 miles from the mouth of the Yukon to spawn in the Tanana River. Subsistence continues in the present day to be the most valued source of both nutrition and cultural identity for residents of Dot Lake, Tanacross, Tok, Tetlin and Northway (Marcotte, 1991; Martin, 1983). Subsistence harvest comprises a substantial portion of village residents' diets, with most of the harvest consisting of moose, four different species of whitefish, and waterfowl (Marcotte, 1991; Martin, 1983; Andersen and Jennings, 2001).

The Tanana River and its adjacent lands provide residents and tourists with a variety of recreational opportunities such as hunting, fishing, trapping, camping, hiking, dog mushing, cross-country skiing, wildlife viewing, flightseeing, snow machining, gold panning, boating, and berry picking (ADNR, 2017; ADF&G, 2006). The Tanana River flows for 200 miles through the 1.81 million acre Tanana Valley State Forest. At the headwaters of the Tanana River, the 682,602 acre Tetlin National Wildlife Refuge is host to 160 migratory and 30 resident bird species, 42 species of mammals, 15 fish species, one amphibian, and an unknown number of invertebrate species. The Refuge is located in a major migration corridor through which up to 200,000 sandhill cranes, representing about one half of the world population, annually migrate. The Refuge was established primarily for its unique waterfowl values, and produces an estimated 35,000 to 65,000 ducklings annually (USFWS, 2010).

Nenana River

The Nenana River is a tributary of the Tanana River, approximately 140 miles (230 km) long, in central Alaska. It drains an area on the north slope of the Alaska Range on the south edge of the Tanana Valley southwest of Fairbanks. It issues from the Nenana Glacier in the northern Alaska Range, southwest of Mount Deborah, approximately 100 mi (160 km) south of Fairbanks. It flows briefly southwest, then west, then north, forming the eastern boundary of Denali National Park and Preserve. It emerges from the mountains onto the broad marshy Tanana Valley, joining the Tanana River from the south at Nenana, Alaska, approximately 35 miles (56 km) southwest of Fairbanks. The Tanana River continues to its confluence with the Yukon River.

The Nenana supports populations of three species of salmon (coho, king and chum salmon), six other species of salmonids (humpback whitefish, round whitefish, broad whitefish, sheefish, Arctic grayling, least cisco), and seven non-salmonid fishes, viz., lake chubs, burbot, longnose suckers, northern pike, Alaska blackfish, Arctic lamprey, and slimy sculpins (Hander and Legere, 2013). In addition, major archaeological sites located in the valley include Broken Mammoth and Swan Point, of late Pleistocene age (Holmes, 2001).

The Nenana is one of the most popular destinations for boating and whitewater rafting in Alaska. Thousands of users, some on commercial cruises and others on private trips, travel on the river each year. The proximity of the both the Denali Highway and the Parks Highway, which follow various portions of the river, makes the river accessible at many places. For whitewater rafting and kayaking, there are stretches of the river that are rated as Class I, Class II, or Class IV on the International Scale of difficulty. Personal and other water craft are frequently found on the waters of the Nenana.

Wetland Functions in the Yukon Basin

Wetlands in the Yukon basin support the health of the river in a variety of other ways. Wetlands support the physical integrity of the river and its tributaries by acting as sediment traps and by slowing and storing floodwaters, and by providing later releases of stored water during low water periods, which is especially important in maintaining baseflow in headwater and low-order stream systems. They support the chemical integrity of the river and its tributaries by taking up nutrients and sequestering carbon as well as a number of other pollutants, making them unavailable to the aquatic ecosystem. Finally, they support the biological integrity of the river and its tributaries in a number of ways. First, by removing pollutants and excess nutrients from the water column, wetlands ensure that good water quality, which is critical for both fish habitat and human uses, is maintained. Second, they provide breeding grounds for aquatic insects which are critical to the food chain of these waters. Finally, they also provide direct habitat benefits for a number of fish and mammal species. Coho salmon in particular are directly dependent on wetlands as rearing habitat prior to migration to sea, and maintenance of wetlands within the floodplain of the river and its tributaries is critical to maintaining healthy runs of this species.

Permafrost

Permafrost is ground that maintains a temperature below 32^0 F (0^0 C) continuously for a period of two years. Permafrost is present to a large extent in the Yukon River Basin; a number of authors have designated six regions of permafrost in the Yukon River Basin, and the U.S. Geological Survey has identified the percentage of each region: (1) generally underlain by continuous permafrost—16 percent, (2) generally underlain by discontinuous permafrost—40 percent, (3) generally underlain by moderately thick to thin permafrost (50 to 600 ft)—24 percent, (4) underlain by discontinuous permafrost—6 percent, (5) generally underlain by numerous isolated masses of permafrost—5 percent, and (6) sporadic masses of permafrost—9 percent (Brabets *et al*, 2000). The presence of permafrost can drive the formation of wetland areas, since frozen ground is not generally permeable to liquid water, and thus causes water to perch at the surface for long periods of time during the growing season. These areas often develop organic mats and organic soils, which sequester carbon and adsorb and filter dissolved contaminants. Permafrost conditions also contribute to the natural 75- to 120-year cycle of fire in Interior Alaska, which orders the succession of major plant communities.

The presence of permafrost is significant in identifying impacts from development activities. Wetlands occurring in permafrost areas are ecologically fragile and easily disturbed, and do not recover from disturbance quickly, if at all. Brabets *et al* (2000) state:

> If permafrost melts, the upper layers of soil become drier and well aerated. Even if permafrost remains as temperatures increase, the shallow soils that thaw and freeze each year (the active layer) thaw more deeply and develop a thicker unsaturated zone. Soil microbes increasingly oxidize the organic carbon sequestered in the soils. This increased respiration releases carbon, in the form of dissolved carbon, into a stream and the atmosphere. Changes in dissolved organic carbon (DOC) could affect stream aquatic communities at all trophic levels that rely on DOC as a food source. The melting of the permafrost may increase recharge of aquifers, thus increasing base flow in streams. By increasing summer recharge, melting of permafrost will also decrease summer peak flows. Wetlands, which occupy about 30 percent of the Yukon River Basin (fig. 14), could be affected and in turn affect waterfowl habitat in the Yukon Flats and Yukon Delta areas.

Consequently, impacts to wetlands underlain by permafrost can have far-reaching effects on the aquatic ecosystem.

Given the importance of Yukon basin wetlands and water resources for the support of fisheries, wildlife, and subsistence, commercial and recreational uses by humans, the EPA concludes that these resources are Aquatic Resources of National Importance for the purposes of the 1992 Section 404(q) of the Clean Water Act Memorandum of Agreement between the EPA and Department of the Army.

References

Alaska Department of Fish and Game (ADF&G). 2006. Our Wealth Maintained: A Strategy for Conserving Alaska's Diverse Wildlife and Fish Resources. Alaska Department of Fish and Game, Juneau, Alaska, xviii+824 pp.

Alaska Department of Fish and Game. 2017. Sport Fish, Management Areas, Lower Tanana Management Area. http://www.adfg.alaska.gov/index.cfm?adfg=ByAreaInteriorTanana.fishingInfo#brochure Downloaded August 24, 2017

Alaska Department of Fish and Game, 2017. Yukon River Area Subsistence Fishing. http://www.adfg.alaska.gov/index.cfm?adfg=ByAreaSubsistenceYukon.fishingInfo. Downloaded August 23, 2017.

Alaska Department of Fish and Game, Division of Commercial Fisheries. 2017. 2017 Yukon River Fall Salmon Fishery News Release # 34, district 2, Commercial Period 8. August 15, 2017. Alaska Department of Fish and Game, Emmonak, Alaska.

Alaska Department of Fish and Game, Division of Commercial Fisheries, 2017. 2017 Yukon River Fall Salmon Fishery News Release # 35, district 2, Commercial Period 8. August 15, 2017. Alaska Department of Fish and Game, Emmonak, Alaska.

Alaska Department of Natural Resources (ADNR), Division of Forestry. 2017. *Alaska's State Forests, Tanana Valley State Forest.* http://forestry.alaska.gov/stateforests#tanana . Downloaded August 23, 2017.

Allan, C. 2015. A history of National Park Service clean-up efforts at the historic Coal Creek Mining District, Yukon-Charley Rivers National Preserve. Natural Resource Report NPS/YUCH/NRR—2015/1099. National Park Service, Fort Collins, Colorado.

Andersen, David B., and Gretchen Jennings. 2001. The 2000 Harvest of Migratory Birds on Seven Upper Tanana River Communities, Alaska. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 269, 21 p.

Brabets, T. and P. Schuster. 2008. Transport of Water, Carbon, and Sediment Through the Yukon River Basin. U.S. Geological Survey, Fact Sheet 2008-3005, 4 p.

Brabets, T., B. Wang, and R. Meade. 2000. Environmental and Hydrologic Overview of the Yukon River Basin, Alaska and Canada. U. S. Geological Survey, Water-Resources Investigations Report 99-4204. Anchornge, AK.

Eiler, J.H., T.R. Spencer, J.J. Pella, and M.M. Masuda. 2006. Stock Composition, Run Timing, and Movement Patterns of Chinook Salmon Returning to the Yukon River Basin in 2004. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National marine Fisheries Service, Alaska Fisheries Science Center, NOAA Technical Memorandum NMFS-AFSC-165, 107 p.

Hander, R. and N. Legere. 2013. Inventory of Resident Fish Species in Tributaries to the Nenana River along the Western Denali Highway, Alaska, 2010. Alaska Fisheries Data Series Number 2013-11, July 2013.U.S. Fish and Wildlife Service. https://www.fws.gov/alaska/fisheries/fish/Data_Series/d_2013_11.pdf. Downloaded August 24, 2017.

Holmes, Charles E. Tanana River Valley Archaeology Circa 14,000 to 9000 B.P. *Arctic Anthropology* 38.2 (2001): 154.

Howard, Kathrine G., Steve J. Hayes, and Danielle F. Evenson. 2009. Yukon River Chinook Salmon Stock Status and Action Plan 2010; a Report to the Alaska Board of Fisheries. Alaska Department of Fish and Game, Divisions of Sport Fish and Commercial Fisheries, Special Publication No. 09-26, Anchorage, Alaska, 52 p.

Johnson, J. and P. Blanche. 2010. Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes – Interior Region, Effective June 1, 201*0.* Alaska Department of Fish and Game, Divisions of Sport Fish and Habitat, Special Publication No. 10-05, Anchorage, Alaska, 141 p.

Marcotte, James R. 1991. Wild Fish and Game Harvest and Use by Residents of Five Upper Tanana Communities, Alaska, 1987-88. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 168, Juneau, Alaska, 200 p.

Martin, Gayle. 1983. Use of Natural Resources by the Residents of Dot Lake, Alaska. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 19, Fairbanks, Alaska, 103 p.+maps.

Walker, C. 1976. Studies on the Freshwater and Anadromous Fishes of the Yukon River within Canada. PAC T/76-7. Department of the Environment Fisheries and Marine Service Vancouver, B. C.

U.S. Fish and Wildlife Service (USFWS). 2010. Tetlin National Wildlife Refuge. https://www.fws.gov/refuge/tetlin/ Downloaded August 23, 2017.

U.S. Department of Commerce, 2010. Press Release: Commerce Secretary Gary Locke Announces "Fishery Failure" Determination for Alaska Chinook Salmon. January 15, 2010, Washington, DC. http://2010-2014.commerce.gov/news/press-releases/2010/01/15/commerce-secretary-gary-locke-announces-fishery-failure-determination.html. Downloaded August 23, 2017.

U.S. Fish and Wildlife Service, 2017. Fish List – Yukon Delta. https://www.fws.gov/refuge/yukon_delta/wildlife_and_habitat/fishlist.html. Downloaded August 24, 2017.

To: Gibson, Sandy P CIV USARMY CEPOA (US)[Sandy.P.Gibson@usace.army.mil]
From: Douglas, Mark
Sent: Tue 8/29/2017 11:21:26 PM
Subject: FW: Letter regarding ASAP
ASAP 3a letter.final.pdf

Sandy,

Attached is EPA's comment letter for the PN for POA-2009-651.

Thank you,

Mark Douglas

Aquatic Resources Unit

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Cc: Allnutt, David <Allnutt.David@epa.gov>; Szerlog, Michael <Szerlog.Michael@epa.gov>; Douglas, Mark <douglas.mark@epa.gov>
Subject: Letter regarding ASAP

Colonel Brooks,

Please find attached a letter regarding the Public Notice Reference No. POA-2009-651, Alaska Stand Alone Pipeline (ASAP) Project

Applicant: Alaska Gasline Development Corporation.

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