

**SA2 – Alaska Department of Natural Resources and Others (cont'd)**

Comment			
Lingcod ( <i>Ophiodon elongatus</i> ) is a marine species. A common name for burbot ( <i>Lota lota</i> ) is lingcod.	SA2-208	SA2-208	Section 4.7.1.2 of the final EIS has been updated to address this comment.
Rainbow trout are stocked in lakes in the Tanana River drainage, not streams.	SA2-209	SA2-209	Section 4.7.1.2 of the final EIS has been updated to address this comment.
Lynx Creek is not an identified anadromous fish stream. When examined in August 2013, it was dry with a very steep gradient that likely only had flow from snow melt. (Alaska Department of Fish and Game. 2013. Supplemental Fish Stream Sampling along the Alaska Stand Alone Pipeline Mainline and Fairbanks Lateral Alignments, 2013. Prepared for AGDC by ADF&G, Division of Habitat.	SA2-210	SA2-210	Due to adoption of the Denali Alternative, Lynx Creek is no longer crossed by the Project. See the update to section 4.7.1.2 of the final EIS.
Eulachon and Arctic lamprey are also common in the Susitna watershed.	SA2-211	SA2-211	Section 4.7.1.2 of the final EIS has been updated to address this comment.
Many of the species listed are salmonids (Dolly Varden, Bering cisco, humpback whitefish). Change "salmonids" to "species of salmon". Also, rainbow trout should be added as they are an important sport fishing species that frequent the Chulitna River drainage. Bering cisco are very rare and may not warrant mentioning here. Longfin smelt are generally a marine species and should not be included in this list.	SA2-212	SA2-212	Section 4.7.1.2 of the final EIS has been updated to address this comment.
This sentence does not seem relevant here. The paragraph is talking about the Coast Mountain Boreal Ecoregion, but the sentence is talking about the Alaska Range Ecoregion. There are many species of resident fish in the Alaska Range Ecoregion and pond smelt and pygmy whitefish may be the least common of all and are almost certainly not impacted by the project. Suggest removing this sentence.	SA2-213	SA2-213	Section 4.7.1.2 of the final EIS has been updated to address this comment.
This paragraph could use some clarifying. The first sentence appears to summarize drainages on the north Kenai Peninsula and should use the plural form of drainages. Drainages on the north Kenai Peninsula include all five pacific salmon species. Longfin smelt are likely mischaracterized as eulachon since longfin smelt are very rare but eulachon are abundant. Also, few pacific lamprey are here, but Arctic lamprey are abundant. Also, sockeye salmon are only one species of salmon that are abundant and sensitive here. The spawning timeframe could be removed as it is covered in other parts of the DEIS.	SA2-214	SA2-214	Section 4.7.1.2 of the final EIS has been updated to address this comment.

CC-333

**SA2 – Alaska Department of Natural Resources and Others (cont'd)**

CC-334

Comment	SA2-215	SA2-215	This information was provided by traditional knowledge survey participants.
Drift fishermen in this case should be clarified as to what it is referencing. Is the intent to reference commercial drift gillnet fishermen (also referenced on page 4-404) or is the intent to reference sport fishermen that use a drift technique with their line and hook to 'floss' fish in the river channels. Commercial drift gillnet fishermen are not allowed to fish in the river channels.			
There are no species of bullhead (which are a catfish) in Alaska. This is likely referring to either slimy sculpin (very small) which can handle brackish water or various species of marine sculpin which will inhabit river mouths. We are not aware of any fish population declines attributable to deadfall trees. Deadfall trees are an exceptionally valuable natural habitat attribute that supports fish populations across Alaska.	SA2-216	SA2-216	This information was provided by traditional knowledge survey participants.
This list leaves out adult migration to spawning grounds during spring through fall. It also leaves out juvenile outmigration to the ocean typically during spring and early summer.	SA2-217	SA2-217	Section 4.7.1.3 of the final EIS has been updated to address this comment.
This table splits out rearing into multiple years for coho, Chinook and sockeye. Recommend simplifying this to just be a single row for rearing and have it in dark gray for the entire year since there is variability for each of these species in terms of total juvenile freshwater residence time. Similarly some of the species have multiple rows for juvenile migration; simplify this to a single row spanning the whole year (with the winter months being shown in light gray). It really does not matter what age the juvenile is or why its migrating - the bottom line is that juvenile coho and Chinook are moving around the drainages year-round. Also, there is no distinction between the light and dark gray cells within the table.	SA2-218	SA2-218	Table 4.7.1-2 of the final EIS has been updated to address this comment.
The term "salmonids" refers to the family Salmonidae (or salmonid) of which Arctic grayling and whitefish are a member. To make this more accurate, replace "salmonids" with salmon. Same for the first paragraph on the next page.	SA2-219	SA2-219	Section 4.7.1.5 of the final EIS has been updated to address this comment.
Within the general area of the GTP, Dolly Varden and the occasional least or Arctic cisco would be the only species of fish expected to be caught by anglers.	SA2-220	SA2-220	Section 4.7.1.5 of the final EIS has been updated to address this comment.
Streams along the P TTL have limited access (essentially by air only) except for the West Channel Sagavanirktok River. As a result, there is limited fishing on these rivers. As such, it would be hard to consider these streams to have recreational fisheries. They are available for sport, personal use, and subsistence fishing. The reference (Johnson and Blossom, 2017 a,b,c) is incorrectly cited here as the AWC does not establish or describe recreational fisheries.	SA2-221	SA2-221	See the update to section 4.7.1.5 of the final EIS. Recreational fisheries, as defined earlier in this section, include sport and personal use fishing.
No commercial fishing occurs in the Unnamed stream at MP 90.3, in Minnie Creek at MP 229.1, or in the Nenana River at MP 476.0 and MP 489.2. No commercial fishing occurs in the Yentna or Beluga rivers.	SA2-222	SA2-222	Section 4.7.1.5 of the final EIS has been updated to address this comment.
Drift net fisheries are generally required to remain one mile offshore; if there is an open set net fishery, drift net fisheries may proceed to the shoreline.	SA2-223	SA2-223	Section 4.7.1.5 of the final EIS has been updated to address this comment.

**SA2 – Alaska Department of Natural Resources and Others (cont'd)**

CC-335

Comment			
Rainbow trout are also a popular recreational fishery in the Susitna River drainage.	SA2-224	SA2-224	Section 4.7.1.5 of the final EIS has been updated to address this comment.
There are no herring or herring fisheries within 800 miles of the crossing of the Yukon River by the Mainline Pipeline. The herring fishery, when it occurs (none in over 10 years because of a lack of buyers), occurs in marine waters north and south of the Yukon River Delta. Northern pike and whitefish are important fish species in the Yukon River region.	SA2-225	SA2-225	Section 4.7.1.5 of the final EIS has been updated to address this comment.
Change this to "...for Susitna River salmon stocks"	SA2-226	SA2-226	Section 4.7.1.5 of the final EIS has been updated to address this comment.
The (Johnson and Blossom, 2017 a,b,c) is incorrectly cited here as the AWC does not establish recreational fisheries.	SA2-227	SA2-227	Section 4.7.1.5 of the final EIS has been updated to address this comment.
This condition as written would preclude any instream work during winter. In many locations, particularly north of the Brooks Range, the streams freeze to the bottom during winter. In other locations, some isolated sections of streams may freeze to the bottom, or water quality conditions may preclude successful overwintering. With these conditions, winter construction would be the best option to minimize impacts to fish and water quality. We recommend this measure be deleted or changed to simply state: Instream work in both anadromous and resident fish streams shall be approved and permitted by the ADF&G under AS 16.05.841 and AS 16.05.871.	SA2-228	SA2-228	The in-stream work windows are part of the Project Procedures, which are based on the FERC Procedures. Additional information on timing restrictions is provided in section 4.7.1.7 of the final EIS.
Alignment and energy dissipating devices are not the only considerations associated with minimizing impacts to fish and habitat in association with culvert installation. Suggest rewording this simply to: Bridges and culverts will be designed in accordance with ADF&G permit guidelines under AS 16.05.871 and AS 16.05.841.	SA2-229	SA2-229	Comment noted.
Change to: Native stream bed material would be used for the upper 1 foot of trench backfill in all waterbodies that are subject to ADF&G Title 16 permit requirements.	SA2-230	SA2-230	The backfill requirements are part of the Project Procedures, which are based on the FERC Procedures.
Regardless, AGDC will be required to implement culvert design criteria approved by ADF&G under AS 16.05.871 or AS 16.05.841 for all fish-bearing waterbodies. These design criteria will be similar to those described in the NMFS, 2011a document and will include criteria such as culvert size, gradient, embeddedness, and inlet and outlet stabilization measures.	SA2-231	SA2-231	Comment noted. Additional requirements for culvert design could be included in the permits issued by the ADF&G for these locations.

**SA2 – Alaska Department of Natural Resources and Others (cont'd)**

CC-336

Comment	SA2-232	SA2-232	The information regarding planned water withdrawal locations and timing for the PTTL was provided by AGDC. In its response to question 185 of our EIR dated May 11, 2018 (Accession No. 20180511-5130), AGDC acknowledged that water withdrawals north of the Brooks Range may not be permitted.
<p>The PTTL construction is scheduled to occur in winter. As a result, water for ice roads would be coming from lakes, none of which are listed as anadromous. Water withdrawal from rivers would not be authorized during winter. The only source that potentially could supply water and that is listed as anadromous is the flooded Badami Mine Site that is connected to East Badami Creek. Assuming PTTL hydrotesting occurs in summer as outlined by AGDC, waterbodies containing 2 Pacific salmon species (pink and chum salmon), not all five, could potentially be used.</p>			
<p>ADF&amp;G fish habitat permits for water withdrawal from fish-bearing waterbodies will stipulate screen mesh size as well as water withdrawal velocities across the screen to prevent the impingement of small juvenile fish.</p>	SA2-233	SA2-233	Comment noted. Additional requirements for mesh size and water withdrawal velocities could be included in the permits issued by the ADF&G for these locations.
<p>Change to: The ADF&amp;G fish habitat permits issued for water withdrawal will specify the maximum screen mesh size and maximum water withdrawal velocity across the intake screen based on fish species presence, both resident and anadromous species.</p>	SA2-234	SA2-234	See the response to comment SA2-229.
<p>Change to: The ADF&amp;G fish habitat permits issued for water withdrawal will specify the maximum screen mesh size and maximum water withdrawal velocity across the intake screen based on fish species presence, both resident and anadromous species.</p>	SA2-235	SA2-235	See the response to comment SA2-229.
<p>FERC's recommendations on the previous page are not entirely accurate. Change to: Water intake screening would be used with maximum water withdrawal velocity across the intake screen and maximum screen mesh size as stipulated in the ADF&amp;G fish habitat permits for each specific withdrawal location.</p>	SA2-236	SA2-236	Comment noted.
<p>VSM installation would occur in winter on the PTTL when streams are frozen to the bottom either naturally or by the ice pads required to install the VSMs at the crossing locations. As a result, no fish would be adversely affected at these stream crossings.</p>	SA2-237	SA2-237	Section 4.7.1.6 of the final EIS has been updated to address this comment.
<p>Why wouldn't sediment barriers be installed before initial disturbance?</p>	SA2-238	SA2-238	This measure is part of the Project Procedures.
<p>Overwintering habitat is not well documented across Alaska, so under current knowledge the project may not be aware of the presence of overwintering habitats at some stream crossings. If adequate stream habitat studies had been performed spanning each crossing location, this variable could be more accurately assessed.</p>	SA2-239	SA2-239	EFH consultation for the Project is complete (see the updates to table 1.6-1 and section 4.7.4 of the final EIS). AGDC's commitment to conduct fish surveys would help identify waterbodies with overwintering habitat.



## SA2 – Alaska Department of Natural Resources and Others (cont'd)

Comment				
If large quantities of materials are proposed to be harvested from sites within a stream bed, how have the cumulative effects been evaluated?		SA2-240	SA2-240	Cumulative impacts on fisheries from development of material sites are discussed in section 4.19.4.7 of the final EIS.
This sentence should state in-migration of spawning adult eulachon and adult salmon and the out-migration of salmon smolts.		SA2-241	SA2-241	Section 4.7.1.7 of the final EIS has been updated to address this comment.
Where stocking has occurred, Arctic grayling have largely been stocked in road-system lakes to relieve fishing pressure on native stream populations.		SA2-242	SA2-242	Comment noted.
While there weren't contaminations found, the area has a 50 year history of use when practices weren't always what they are today, so there should be a plan in place in case historical contamination is found during dredging.		SA2-243	SA2-243	Sections 4.2.6 and 4.7.2.3 of the final EIS have been updated to address this comment.
Vessels would be in transit to West Dock in July at the earliest which would be after bearded seal pups have been weaned.		SA2-244	SA2-244	According to AGDC's Incidental Harassment Authorization application for Prudhoe Bay, provided as part of AGDC's comments on the draft EIS, AGDC stated that vessels would begin arriving at West Dock when ice conditions of 3/10 or better occur. While that may not occur until July, there has been no commitment by AGDC to move vessels until July; therefore, if vessels are moving in pack ice earlier in the season, impacts on bearded seal pups could occur.
Flat Island is a Steller sea lion haulout, not a rookery, with counts of 0 during Marine Mammal Lab aerial surveys 2008 and 2010 (Fritz et al. 2013). The closest rookeries in proximity to Cook Inlet are the Barren Islands. Fritz, L., K. Sweeney, D. Johnson, M. Lynn, T. Gelatt, and J. Gilpatrick. 2013. Aerial and ship-based surveys of Steller sea lions ( <i>Eumetopias jubatus</i> ) conducted in Alaska in June-July 2008 through 2012, and an update on the status and trend of the western distinct population segment in Alaska. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-FAFSC-251, 91 p.		SA2-245		
Recent ADF&G data obtained from satellite tags deployed on bowheads indicate bowheads may be present in the western Beaufort Sea as early as July. See: Quakenbush, L.T., J.J. Citta, J.C. George, R.J. Small, and M.P. Heide-Jørgensen. 2010a. Fall and winter movements of bowhead whales in the Chukchi Sea and within a potential petroleum development area. Arctic 63(3):289-307.		SA2-246	SA2-245	This information was provided during traditional knowledge workshop surveys.
Quakenbush, L.T., R.J. Small, and J.J. Citta. 2010b. Satellite tracking of western arctic bowhead whales. Final report OCS Study BOEM 2010-033. 65 pp + appendices.  Citta, J.J., L.T. Quakenbush, S.R. Okkonen, M.L. Druckenmiller, W. Maslowski, J. Clement-Kinney, C.J. Ashjian, J.C. George, H. Brower, R.J. Small, L.A. Harwood, and M.P. Heide-Jørgensen. 2015. Ecological characteristics of core-use areas used by Bering-Chukchi-Beaufort (BCB) bowhead whales, 2006-2012. Progress in Oceanography 136:201-222, <a href="http://dx.doi.org/10.1016/j.pocean.2014.08.012">http://dx.doi.org/10.1016/j.pocean.2014.08.012</a>			SA2-246	Based on consultation with NMFS, bowhead whales are further offshore during their spring migration, and begin to come closer to shore, and thus closer to West Dock, as early as July. Bowhead whales are closest to shore starting in September, during their fall migration. Conducting pile driving during June, July, or August and implementing appropriate monitoring and shutdown zones would minimize or avoid effects on bowhead whales

CC-337

**SA2 – Alaska Department of Natural Resources and Others (cont'd)**

CC-338

Comment					
<p>DPOR believes that a large material site next to one of the most popular recreation areas in the park is not compatible with DPOR's mission or matches with the facility development plan in the 2006 Denali State Park management plan. This sort of development and resource extraction will have a negative impact on visitors to the park unit as well as detract and diminish the local economy of tour operators based out the surrounding communities. The 2006 Denali State Park Management Plan outlines resource extraction as not compatible in the natural, wilderness, cultural, and recreational development zones.</p>		SA2-247		SA2-247	Sections 4.9.4.1 and 4.9.4.2 of the final EIS have been updated to address the State of Alaska's comments, and to include language from the Denali State Park Management Plan clarifying that extractive activities in this area are not compatible.
<p>A timber sale within the Tanana Valley State Forest is scheduled for 2022 and the Alaska LNG project is proposed to be located within the sale area.</p>		SA2-248		SA2-248	Sections 4.9.1.2 and 4.19 of the final EIS have been updated to include the timber sale. Based on available ADNR reports, the Project would be within 1 mile of the 2022 timber sale in question near MP 494, but would not overlap any timber sale areas.
<p>The Division of Forestry supports AGDC's use of BMPs consistent with those of the Alaska Forest Resources and Practices Act.</p>		SA2-249		SA2-249	Comment noted.
<p>Does "Special Use Areas" include Denali State Park? If not it should.</p>		SA2-250		SA2-250	Section 4.9.4 of the final EIS has been updated to address this comment.
<p>The Dalton Highway is not within the boundaries of the Arctic National Wildlife Refuge. The Dalton Highway passes by the western refuge boundary near Atigun Gorge.</p>		SA2-251		SA2-251	Section 4.9.4.1 of the final EIS has been updated to address this comment.
<p>Increased particulate matter appear on IMPROVE air quality monitors during the summer months and has been mostly attributed to wildfires, but also to increased road use during the summer season when the park is open to visitors. Analysis should include a review of potential construction dust combined with road dust during summer months and projected emissions with control measures in place.</p>		SA2-252		SA2-252	Section 4.9.4.1 of the final EIS has been updated to address this comment. A discussion of construction-related impacts on air quality, including from dust, is provided in section 4.15 of the final EIS.

## SA2 – Alaska Department of Natural Resources and Others (cont'd)

Comment	SA2-253	SA2-253	Section 4.9.4 of the final EIS has been updated to address this comment.
<p>This section inaccurately describes the INHT as cooperatively managed by federal land management agencies and DNR Parks and Outdoor Recreation. While the Iditarod National Historic Trail Comprehensive Management Plan speaks to "the spirit of cooperation" as a management philosophy, the plan also recognizes that only those segments of the trail underlying federal land are considered part of the national trail system (Page 61), and those segments are managed exclusively by the underlying landowner (i.e. USFWS, BLM, and USFS). As the Department of Interior agency delegated as trail administrator, BLM only serves in an advisory or coordinating capacity on non-BLM managed lands. Non-federal lands can only be considered part of the national trail system by formal agreement and the State has not formally requested designation of any segments located on state lands as components of the national trail system. The proposed project only crosses primary and connecting segments of the trail located on State and Borough land and therefore, should only be considered State and Borough resources in the EIS, subject to state and local authorities. The Secretary of Interior, federal land management agencies, and the Iditarod Historic Trail Alliance have no role in authorizing crossings on State and Borough lands. Please remove the discussion of the INHT from the federal resources section of the EIS and delete the recommendation for AGDC to submit a site-specific crossing plan to the Secretary of Interior for review and approval in consultation with federal land management agencies and the Alliance.</p>			
<p>Please add discussion to this section that recognizes the 1991 Record of Decision for the Utility Corridor RMP identified the primary management direction and use of BLM administered land in the Utility Corridor is energy transportation (page 1). The Utility Corridor RMP also states the need for transportation of energy resources supersedes all other uses of the Utility Corridor (page 2-1) and the Recreation Management Areas are not intended to conflict with the primary purpose of the corridor (page 2-26).</p>	SA2-254	SA2-254	Section 4.9.4.1 of the final EIS has been updated to address this comment.
<p>The Prudhoe Bay Closed Area is closed to the taking of big game, not all hunting.</p>	SA2-255	SA2-255	Section 4.9.4.2 of the final EIS has been updated to address this comment.
<p>DPOR believes that a large material site next to one of the most popular recreation areas in the park is not compatible with DPOR's mission or matches with the facility development plan in the 2006 Denali State Park management plan. This sort of development and resource extraction will have a negative impact on visitors to the park unit as well as detract and diminish the local economy of tour operators based out the surrounding communities. The 2006 Denali State Park Management Plan outlines resource extraction as not compatible in the natural, wilderness, cultural, and recreational development zones.</p>	SA2-256	SA2-256	See the response to comment SA2-247.
<p>This section indicates pipe will be lain adjacent to the Parks Highway through the Nenana Gorge, requiring closure of Northbound lane. This will be an extremely problematic location; this area is a chronic landslide and rockfall location, with very little room between the highway and a tall, steep, rockfall-prone cliff. Mitigation plans may be inadequate.</p>	SA2-257	SA2-257	Comment noted. Construction through geologically unstable areas is discussed in section 4.1 of the final EIS.
<p>North Slope Area Special Use Lands (11 AAC 96.014(b)(1)), which requires a permit for all motorized vehicle use, unless that use is for subsistence purposes or is on a graveled road.</p>	SA2-258	SA2-258	Section 4.9.4.2 of the final EIS has been updated to address this comment.
<p>The Deshka River and Alexander Creek are addressed in the EIS under both State Resources as State Recreation Rivers and Federal Resources as eligible study rivers under the Wild and Scenic Rivers Act. While they may have been listed on the National River Inventory (NRI) in 1993 and 1995, the submerged lands (shorelands) of these navigable waterbodies are owned by the State while the adjacent uplands are owned by the State, Borough, or are private lands; making designation as a federally managed wild and scenic river impossible. Therefore, they should be addressed only as designated State Recreation Rivers under State Resources in the EIS.</p>	SA2-259	SA2-259	Section 4.9.5.1 of the final EIS has been updated to address this comment.

**SA2 – Alaska Department of Natural Resources and Others (cont’d)**

CC-340

Comment				
Reforestation in one unit of the TVSF will be done in August 2019 (just south of Sale NC-1613-F). DOF requests that impacts to this unit be minimized to protect the newly-planted trees as much as possible.		SA2-260	SA2-260	Section 4.9.4.2 of the final EIS has been updated to address this comment.
Clarification: ADF&G is the only State agency that can issue fishing restrictions. DNR will work with ADF&G during the ROW lease application process to determine appropriate management strategies for impacts to fishing activities from the proposed safety setbacks and exclusion areas.		SA2-261	SA2-261	Section 4.9.4.2 of the final EIS has been updated to address this comment.
Parties who wish to vacate public easements managed by the State of Alaska DNR may request to do so by filing a petition to vacate a public easement with the DNR Division of Mining, Land and Water. Equal or better access must be provided for any vacation approval.		SA2-262	SA2-262	Comment noted.
The Atigun River was determined eligible and suitable in a wild and scenic river study conducted by the USFWS during the revision of the Arctic National Wildlife Refuge Comprehensive Conservation Plan. The Atigun River was not authorized as a study river in Section 604 of ANILCA nor has Congress since authorized the Atigun as a study river under the Wild and Scenic Rivers Act since; therefore, the study conducted by the Service is inconsistent with ANILCA Section 1326(b), which prohibits wild and scenic river studies unless authorized in ANILCA or a subsequent act of Congress. We request the analysis of the Atigun River as an eligible/suitable WSR and any related mitigation be removed from the EIS.		SA2-263	SA2-263	Section 4.9.5 of the final EIS has been updated to address this comment.
RS 2477 are highway right of ways and access must be maintained or re-routed during construction. They should not be analyzed as recreational resources or special areas/designations.		SA2-264	SA2-264	Section 4.9.5.2 of the final EIS has been updated to address this comment. As discussed in that section, “highway” has a broader meaning than its current use. The RS 2477 rights-of-way were broadly intended to provide access to land, rather than just mobility. As such, they are more than just transportation facilities and merit inclusion as “special interest lands.”
The Alaska Contaminated Sites Program (CSP) also oversees contaminated site response work led by federal agencies and tracks the status of such sites in the CSP contaminated sites database. Please add this information to the statement.		SA2-265	SA2-265	Section 4.9.6.1 of the final EIS has been updated to address this comment.

**SA2 – Alaska Department of Natural Resources and Others (cont’d)**

Comment			
Contamination records are only as good as the data that has been reported. Earlier oil & gas and mining practices were laxer than they are currently, and large projects such as AKLNG may encounter contaminated sites that were not previously documented. If an unanticipated contaminated site is found on state land, then ADNRR/DMLW will need to be contacted as part of the reporting process.	SA2-266	SA2-266	As discussed in section 2.3.1 of the Project Unanticipated Contamination Discovery Plan, AGDC would contact the ADNRR/DMLW if an unanticipated contaminated site were found on state land during Project construction.
It is unclear whether the ADEC SPAR Spills Database was reviewed. There may be spill sites that have not yet been cleaned up and closed that are still under the Spill Prevention and Response Program's oversight. Those sites may be located within the proposed project footprint. Please clarify whether this database was reviewed.	SA2-267	SA2-267	Instructions for accessing this plan were provided in table 2.2-1 of the draft EIS and likewise are provided in table 2.2-1 of the final EIS. Section 4.9.6.2 of the final EIS has been updated to address this comment.
It should be made clearer in this statement that if the construction or operational activities cause a release of petroleum or hazardous substances, the AGDC will report and respond to such releases in accordance with 18 AAC 75, Article 3 and other applicable requirements.	SA2-268	SA2-268	Section 4.9.6.3 of the final EIS has been updated to address this comment.
Visual impacts on Class I areas includes dust activities from construction and are not limited to emissions from facilities alone. Since construction activities will occur over many years, impacts from construction particulate matter (PM) should be included in this discussion.	SA2-269	SA2-269	Section 4.10.2 of the final EIS has been updated to address this comment.
Comment - Government Hill location should be clarified (not in Anchorage).	SA2-270	SA2-270	We are unclear what is meant by this comment. Table 4.10.1-3 in the draft EIS (now table 4.10.1-4 in the final EIS) indicated the DNPP as the location for Government Hill as did table 4.10.2-2 in the draft EIS.
"Population figures used are coming from the U.S. Census Bureau American Community Survey (ACS). This is a truly valid source, yet probably not as accurate as the population estimates derived by the State Demographer at the Alaska Department of Labor and Workforce Development (DOLWD). The population figures generated by DOLWD are lower than those projected by ACS. (See Attached.) Using the ACS numbers, the report claims that the total population of all the communities in the area of interest (AOI) is 651,121. This is grossly inflated as it has summed up all the identified locations, which include both boroughs and communities (including cities and CDPs) within boroughs. Borough populations encompass all the communities within their boundaries so the authors of the report have doubled counted in a number of instances. Using ACS figures, the total population in the AOI is about 374,481. This is only 50.7 percent of Alaska's population, not the 88 percent calculated by the authors. The ACS population of 298,225 for Anchorage in 2017 accounts now for almost 80 percent of the AOI. The population of the AOI, minus Anchorage and Fairbanks is 44,403."	SA2-271	SA2-271	The ACS is a standard source for population data and overall is not significantly different from DOLWD data. The population of the socioeconomic AOI has been updated in section 4.11.1 of the final EIS using ACS data to remove double counting of communities. The total AOI population provided in the comment includes only CDPs and cities within larger Boroughs omitting the North Slope Borough; Yukon-Koyukuk Census Area; Fairbanks North Star Borough; Denali Borough; Matanuska-Susitna Borough; Kenai Peninsula Borough; and the Municipality of Anchorage. The final EIS does include all communities in the total AOI population.



**SA2 – Alaska Department of Natural Resources and Others (cont’d)**

CC-342

Comment	SA2-272	SA2-272	As discussed in section 4.11.1.2 of the final EIS, highly specialized skills would be needed to construct the Project, and this was considered in determining the percentage of non-residents that would be used to fill construction jobs. Variations in annual construction employment and the percentage of non-residents to be used are directly tied to the construction activities each year of the Project, as described in section 2.3 of the final EIS. The final EIS has been updated to address this comment.
The methodology of this section is rather lacking. The reported projection ranges of construction jobs to be filled by resident and non-resident have a 46 percent differential. Table 4.11.1-3 reflects these projections as they will fluctuate over the eight-year cycle of the Project, yet it is unclear why some years would necessitate a need for 68 percent of employees to be non-resident vs. 22 percent in other years while as a discussion of the current workforce is lacking in this section. Further, there does not appear to be a standard multiplier that was utilized in determining the potential increase in resident populations during construction.	SA2-273	SA2-273	The final EIS has been updated to address this comment.
All references to the Municipality of Anchorage should be capitalized.	SA2-274	SA2-274	Section 4.11.4.2 of the final EIS acknowledges that additional residents could create an added burden on local governments and that a lag time could exist at the beginning of the construction phase when the amount of government expenditures incurred would increase rapidly before government revenues generated by the Project would expand.
This comment can be contested. During the construction of TAPS, local government revenues did not keep pace with the cost of the impact on local government services. No part of the municipal infrastructure (private or public) expanded fast enough to meet the needs generated by new residents and workers. It was not until after the construction was finished, and many of the workers left Alaska, that the local communities began to keep up with the impacts. Having workers in camps did not mitigate the impacts on the local communities. Additional government revenues generated during the construction period did not offset the increase in expenditures. While we do not have access to the model used, past experience indicates a long-term economic impact is likely.	SA2-275	SA2-275	Section 4.11.2.2 of the final EIS has been updated to address this comment.
This presumes workers will not be spending time in Alaska when they are off shift. Past experience has shown an increased interest in spending more time in state and potential of bringing their friends and families.	SA2-276	SA2-276	As discussed in section 1.1 of the final EIS, one of AGDC’s objectives for the Project is to provide interconnections along the Mainline Pipeline to allow for future in-state deliveries of natural gas, which would benefit Alaska gas users and support long-term economic development. See also the discussion regarding in-state interconnections in section 4.19.2.5 of the final EIS.
The draft EIS does not fully account for the benefits of an additional sources of natural gas supply for consumers in the areas of interest. Presently, consumers in Southcentral Alaska rely exclusively on gas produced in the Cook Inlet meet their natural gas demand. The Cook Inlet basin has been actively producing natural gas to meet Southcentral demand since the 1960s. During the early 2000s, concern began to grow about the basin to continue to meet demand. While these concerns have eased recently, an alternate source of natural gas demand would improve supply certainty and would help improve the efficiency of the natural gas market in Southcentral Alaska.	SA2-277	SA2-277	Section 4.11.2.2 of the final EIS has been updated to address this comment.
The draft EIS also does not capture the economic impact of the project on exploration and development activities on the North Slope. Currently, absent a market, gas discoveries have no viable path to monetization. As such, the discovery of significant accumulations of gas commingled with oil do not materially improve the discovery’s economics. Moreover, in many cases, the existence of gas actually constrains production of fluids. The existence of a market for gas may help mitigate some of these concerns.	SA2-278	SA2-278	Labor skill requirements and an MOU regarding labor sourcing is discussed in section 4.11.1.2 of the final EIS.
This assumption is worrisome, as it assumes the hiring practices and related past actions will dictate what will happen in the future. As the AKLNG project progresses, a system incentivized to promote local hire, especially in areas outside of Anchorage, should be considered and incorporated. It should be assumed workers will be commuting from ALL parts of Alaska.			

**SA2 – Alaska Department of Natural Resources and Others (cont’d)**

Comment			
<p>The draft EIS does not fully capture the potential economic impacts of project operations for the State of Alaska. The Alaska LNG effort is expected to liquify gas produced almost exclusively from State lands during the initial project term. As such, the State will receive significant royalty revenue, production tax revenue, state corporate income tax revenue, and property tax revenue from project operations. While precise calculation of the cumulative value of these revenue streams to the State is not possible at this time, confidential internal estimates indicate that the value is likely to be measured in the billions of dollars.</p>	SA2-279	SA2-279	Royalty and tax revenues are discussed in section 4.11.4.2 of the final EIS.
<p>The draft EIS does not adequately capture the benefits that will accrue to local communities through the sharing of property tax revenue. Per AS 43.56.010, local communities may levy a local property tax on oil and gas infrastructure of up to 20 mils. This local property tax revenue is captured by the locality in lieu of those property tax revenues flowing to the State. Revenue collected in this manner would be retained locally and would serve as an additional mechanism to offset project impacts in the affected area. The total local revenue impact for the affected communities could be significant with total local benefit depending on the behavior of local decision makers.</p>	SA2-280	SA2-280	Section 4.11.6.2 of the final EIS has been updated to address this comment. Also see the response to comment CM4-32.
<p>The draft EIS does not address the impact of project operations on the Alaska Permanent Fund. The Alaska Permanent Fund is the largest sovereign wealth fund in the United States with a balance in excess of \$65 billion dollars. This fund is capitalized, in part, from the proceeds derived from the monetization of hydrocarbons from State land. As noted above, the resource to be utilized by the AGDC-led LNG effort is expected to come almost exclusively from State lands during the initial project term. As such, the proposed project will positively impact the Alaska Permanent Fund and directly benefit all Alaskans.</p>	SA2-281	SA2-281	The economic benefits of the Project, including from taxes, is discussed in section 4.11.2.2 of the final EIS. See also the response to comment CM4-32.
<p>In summary, this appears to be a very optimistic picture of all economic impacts of the construction of the project and does not match with historical fact.</p>	SA2-282	SA2-282	See the response to comment SA2-74.
<p>We don't have information on operating expenditure for 2017 for the local governments organized in any form that could confirm the information summarized in Table 4.11.4-2.</p>	SA2-283	SA2-283	Section 4.11.4 of the final EIS has been updated to address this comment.
<p>The division of value to different communities along TAPS depends on the property located within each jurisdiction. The records are useful to establish a value for the whole system not parts of the system. This has been a constant issue of disagreement between the local governments and Department of Revenue ever since construction. This is one reason for a recommended preconstruction agreement about the value and method of valuation of the whole system and what part of the value is associated with which section of the system. It also makes it difficult to predict how much associated property tax would go to each local community. These communities have just enough public services for their existing population and do not have excess capacity in the short term. After the system is in production there will probably be a positive impact on local tax revenues and the overall economy. However, the history is the crash of the 1980's was in large part due to the shift from construction boom to post construction production phase economy. The impact of construction boom wages on all areas of employment inflated wages and harmed other businesses. Post construction adjustment back to more normal labor markets was hard on every segment of the economy.</p>	SA2-284	SA2-284	Sections 4.11.2.2 and 4.11.4.2 of the final EIS have been updated to address this comment.

CC-343

**SA2 – Alaska Department of Natural Resources and Others (cont’d)**

CC-344

Comment
Table C-8 states that Alaska has abundant sand and gravel. That is an accurate statement from a statewide perspective. However, with a low-unit value commodity like sand and gravel, transportation costs dominate overall costs after a very short haul distance. Alaska does NOT have abundant sand and gravel along the entire proposed LNG route. Many of the material sites located for the LNG project in Table C-8 of Appendix C are established for use by DOT&PF for highway construction and maintenance projects. A gravel extraction plan does not appear to be attached, discussing how existing (and proposed) material sites would be permitted and developed. If critical sites are depleted by the LNG project in areas where highway-specification material is scarce (such as much of the Dalton and Parks Highways), this will create an undue hardship on DOT&PF’s ability to reconstruct and maintain critical infrastructure.
Concerns regarding impacts to subsistence activities would be mitigated and informed by monitoring of subsistence harvests along the pipeline corridor. The proposed subsistence advisory committee program would benefit greatly from updated harvest numbers in order to assess impacts and provide recommendations.
These conclusions are conflicting and may need to be revised. This is also a great opportunity to reference the success of TAPS, as most wildlife adapted to the changes.
Roche Moutonnee Creek Bridge replacement – this bridge was replaced in 2017
Globe Creek Bridge replacement – This bridge is not currently programmed for replacement
Suggest mentioning what “typical” and maximum vehicle weights on public roads are expected.
Seasonal weight restrictions, which are placed on the Parks Hwy (and others) annually is not mentioned in the document. While DOT&PF does not put weight restrictions on the Dalton, no overload permits are approved during breakup.

SA2-285

SA2-285

Section 4.11.6.3 of the final EIS addresses the available supply of granular fill, and section 4.1.2.3 of the final EIS discusses the site-specific mining and reclamation plans that AGDC would develop for the Project. Additionally, AGDC has prepared a Gravel Sourcing Plan and Reclamation Measures, which provides an overview of the material needs, potential sources to meet those material needs, permitting requirements, disposal locations for excess and unsuitable materials, and general extraction/transportation protocols.

SA2-286

SA2-286

Instructions for accessing the Gravel Sourcing Plan and Reclamation Measures were provided in table 2.2-1 of the draft EIS and likewise are provided in table 2.2-1 of the final EIS.

Comment noted.

SA2-287

SA2-287

Comment noted.

SA2-288

SA2-288

Table 4.12.1-1 of the final EIS has been updated to address this comment.

SA2-289

SA2-289

Table 4.12.1-1 of the final EIS has been updated to address this comment.

SA2-290

SA2-290

ADOT&PF size and weight standards vary by road and location. Section 4.12.1.1 of the final EIS has been updated to discuss ADOT&PF seasonal weight restrictions. AGDC has not provided information on typical and maximum vehicle weights, but does not anticipate the need for Project-related road improvements to accommodate vehicles exceeding ADOT&PF size or weight standards.

SA2-291

SA2-291

Section 4.12.1.1 of the final EIS has been updated to address this comment.

**SA2 – Alaska Department of Natural Resources and Others (cont’d)**

Comment	SA2-292	SA2-292	
Tables 4.12.2-2 & 3 (pg 4-672) document truck trips and traffic volumes associated with construction, but there is no breakdown between crew bus and other lighter vehicle versus heavy truck trips.	SA2-293		
The bullet list in the Traffic Mitigation Plan discussion indicates that these will be single-lane closures, but the discussion about impacts due to closures suggests that they might be full road closures. Consider flushing out this language to be clear on single lane closures versus full road closures.	SA2-294	SA2-293	Tables 4.12-2 and 4.12-3 of the final EIS estimate traffic impacts from Project construction based on data provided by AGDC. Our conclusions regarding transportation impacts take into account the types of vehicles that would be used during construction and a minor increase in traffic from use of these vehicles.
In order to complete Section 106 and to account for project phasing, our office strongly recommends executing a programmatic agreement to guide remaining identification, assessment of effects, and resolution of adverse effects in accordance with 36 CFR 800.14(b)(3).	SA2-295	SA2-294	See the discussion in and updates to section 4.12.2.1 of the final EIS.
Consulting parties also need to have an opportunity to comment on items 'a' and 'b'.	SA2-295	SA2-295	See the response to comment FA2-63.
We recommend FERC, in consultation with AK SHPO and other consulting parties, provide guidance to AGDC on where and on what subjects the remaining studies should encompass. This guidance should also address what the appropriate level of effort should be.	SA2-296	SA2-295	Section 4.13.5 of the final EIS has been updated to address this comment.
Unless an agreement document (MOA or PA) explicitly addresses how an adverse effect will be resolved, our office expects that avoidance, monitoring, and treatment plans, that were not part included as final attachments to an agreement document, shall require concurrence from our office and the land owner/manager after receiving comments from consulting parties. This process may involve multiple rounds of comments. If there is not a project-wide programmatic agreement document to implement the various plans under then AK SHPO expects to execute a memorandum of agreement(s) to carry out a treatment plan(s) in accordance with 36 CFR 800.6.	SA2-296	SA2-296	Comment noted.
There is the need for consistency in use of "percent" or "%; also, some harvest estimates are rounded while others are not - again, consistency is needed throughout the document.	SA2-297	SA2-297	Treatment plans describing measures to avoid, minimize, or mitigate adverse effects would be attached to an agreement document to be distributed for review by and concurrence from the Alaska SHPO and appropriate land managing agencies after comments are received from consulting parties.
By limiting the definition to rural Alaskans, the DEIS may overlook subsistence harvests and uses by urban Alaskans who return to subsistence areas for their activities. The Alaska Supreme Court in the McDowell decision severed the rural provisions of the Alaska subsistence law at AS 16.05.258 due to conflict with Alaska's constitution. Inclusion of "rural" also seems to contradict the definition provided in section 1.6.16.2 (page 1.36), where there is no mention of subsistence being restricted to only rural users.	SA2-298	SA2-298	Comment noted.
The harvest surveys cited for the quantitative data also include mapped harvest use areas, though the methods section suggests that these spatial data are not used and instead only the subsistence mapping completed by AGDC are; however, many of the maps in this report are cited to ADFG - this should be clarified in analysis methods	SA2-299	SA2-299	The definition of subsistence used in section 4.14 of the final EIS was developed in coordination with permitting agencies.
The first sentence of this section states that the subsistence mapping completed by AGDC creates baseline when in fact the harvest survey data documented by ADFG is usually completed earlier - should clarify	SA2-300	SA2-300	Section 4.14.1.2 of the final EIS has been updated to address this comment.
This statement lacks a citation and is not consistently proven to be true.	SA2-301	SA2-301	Section 4.14.1.5 of the final EIS has been updated to address this comment.
	SA2-302	SA2-302	Section 4.15.1.5 of the final EIS has been updated to address this comment.

CC-345



**SA2 – Alaska Department of Natural Resources and Others (cont’d)**

CC-346

Comment			
This paragraph mentions contamination as a general concern but then drops it as an issue to be reviewed in this section - is it reviewed elsewhere?	SA2-303	SA2-303	Resource specific comments provided during traditional knowledge workshops are addressed in the appropriate resource sections (e.g., see sections 4.5.8.2 and 4.15.2.3).
Is this an average across all years?	SA2-304	SA2-304	Section 4.14.3.1 of the final EIS has been updated to address this comment.
Polar bears are most commonly harvested in November but that is not the only month; during the study year, bears were taken in October and May as well. There are 9 years of available data.	SA2-305	SA2-305	Section 4.14.3.1 of the final EIS has been updated to address this comment.
check estimates for migratory birds, upland birds, and eggs	SA2-306	SA2-306	Table 4.14.3-3 of the final EIS has been updated to address this comment.
90.6% of sampled Households attempted to harvest, not 62%; also check the % of Households attempting to harvest caribou, Dall sheep, moose, and brown bear - %s listed do not appear to be correct	SA2-307	SA2-307	Section 4.14.3.1 of the final EIS has been updated to address this comment.
Specify region for purposes of LNG only; there are more than 8 communities along the Yukon River and its tributaries. Nonsalmon fishing occurs most of the year, not just during the springtime (paragraph 4).	SA2-308	SA2-308	Section 4.14.3.2 of the final EIS has been updated to address this comment.
The first paragraph combines resource categories that should probably not be combined.	SA2-309	SA2-309	Comment noted.
Contextualize how/why moose, etc is the most important species harvested;	SA2-310	SA2-310	Comment noted.
This is the first time a Linnaean species name (highbush cranberry ( <i>Viburnum edule</i> )) is used in the entire section. Consistency needs to be applied throughout the document.	SA2-311	SA2-311	Section 4.14.3.2 of the final EIS has been updated to address this comment.
Sheefish are not "snagged" under ice - they are typically caught in nets.	SA2-312	SA2-312	Section 4.14.3.3 of the final EIS has been updated to address this comment.
Double check total community harvest (52,437.6)	SA2-313	SA2-313	Section 4.14.3.3 of the final EIS has been updated to address this comment.
Double check lbs per capita (225.5)	SA2-314	SA2-314	Section 4.14.3.3 of the final EIS has been updated to address this comment.
Double check total community harvest (64,964.9); also paragraph combines resource categories that probably shouldn't be combined	SA2-315	SA2-315	Comment noted. Salmon and blueberries are not noted to have harvest quantities < 1.0 pound.
Double check that coho salmon, Chinook salmon, and blueberries are harvested in quantities<1 lb ; all seem to have higher per capita levels	SA2-316	SA2-316	Section 4.14.3.3 of the final EIS has been updated to address this comment.
Double check large land mammal estimate for % of Households using (92.9)	SA2-317	SA2-317	Section 4.15.4 of the final EIS has been updated with revised construction emissions estimates provided by AGDC. While the estimates have been revised, the magnitude of the emissions did not significantly change and our conclusions regarding impacts are the same. Some additional regional haze and acid deposition threshold exceedances were identified. See the responses to comments FA1-62 and FA3-78 regarding these exceedances.
The revised Construction Emission Calculations and the General Conformity Analysis Report were released to the public two weeks before the end of the comment period. This is not enough time to review the documents and ADEC is concerned about substantive changes which might have been made that would result in changes to the DEIS.	SA2-318	SA2-318	Section 4.15.2 of the final EIS has been updated to address this comment.
See footnote 108 which cites to the DEC moderate SIP webpage. Please note that the Fairbanks North Star Borough has been designated by the EPA to be in serious nonattainment for PM2.5. This discussion need to be updated and a citation added referencing the pending Serious SIP rather than the moderate SIP.			



**SA2 – Alaska Department of Natural Resources and Others (cont’d)**

CC-347

Comment	SA2-319	SA2-319	Section 4.15.2.3 of the final EIS presents general information gathered during traditional knowledge workshops completed for the Project; it is not intended to provide a comprehensive listing of all air quality information gathered on the North Slope.
<p>This discussion should also note that air quality monitoring studies were undertaken in Nuiqsut in 2012, in response to concerns that a well mud blowout at Repsol's Q2 Pad was responsible for breathing difficulties in the community. Compounding that problem, there was a release of mercaptan from the injection facility in Nuiqsut on the incoming natural gas-line from the Alpine field. Mercaptan is the odorizer that is used in natural gas so that you can tell that it is there. Natural gas, by itself has no odor. The release left a strong odor in town that many mistakenly believed to be gas from the blowout. A contractor was hired by the spill response unified command to investigate air quality concerns and a report was issued on May 8, 2012 by the department, noting that the air quality was in compliance with air quality standards.</p>			
<p>The stay on the compliance date was lifted on August 31, 2017. Please revise this statement.</p>	SA2-320	SA2-320	Section 4.15.3.1 of the final EIS has been updated to address this comment.
<p>Please revise this discussion based on the new Serious SIP threshold.</p>	SA2-321	SA2-321	Section 4.15.3.1 of the final EIS has been updated to address this comment.
<p>These assumptions on reducing fugitive emissions by 100 percent may not be justified. Watering on gravel roads is often limited to periods when the ground is not frozen to avoid safety concerns. Gravel road dust can still be generated off the frozen road beds, especially when heavy vehicles or frequent vehicle use breaks up the thin ice cap on the surface. Repeated complaints from rural areas, including communities on the North Slope indicate that road dust is a problem from early spring through late fall and into winter, whenever roads are not covered by snow. Data collected by ADEC and Tribes in several communities have documented these impacts from road dust. Exceedances of the PM10 NAAQS/AAQS have even been recorded in Noorvik in October and November. Application of palliatives is complex when temperatures are below freezing and in some communities, this is the most challenging time of year. These assumption and mitigation measures need to account for these shoulder seasons. While reference used for the assumptions was the Greater Mooses Tooth I Supplemental EIS and the Point Thomson EIS, the assumptions for these projects may not be directly applicable for other areas of the state.</p>	SA2-322	SA2-322	See the response to comment FA1-60.
<p>This page notes that environmental inspectors (EIs) would be responsible for inspection and monitoring, but it does not say what agency would be responsible for enforcement if there were air quality violations. While DEC air permits may address fugitive dust for certain activities, we are not entirely certain whether the air permit process would apply for all the activities being addressed. DEC regulations generally speak to applying reasonable controls for prevention of fugitive dust. Our understanding is that the project needs a dust control plan because of the dust reduction efficiency factor used in their air quality modeling. Please explain which agency would be responsible for compliance and enforcement of the fugitive dust control plan.</p>	SA2-323	SA2-323	Information regarding AGDC’s environmental inspection program and our compliance monitoring program are provided in sections 2.4.1 and 2.4.2, respectively, of the final EIS.
<p>The Fugitive Dust Control Plan is not included in the EIS and it is not clear whether the proposed additional measures would be sufficient. FERC listed many additional measures for minimizing dust in the EIS in bullet points. Vehicle speed reduction was identified as one measure to reduce dust, however, this section should be expanded to other driving practices that include avoidance of rapid acceleration. Dust suppressants were mentioned in the short list on page 4-896. Project construction in some areas will continue for many years and other dust palliatives besides magnesium chloride or calcium chloride should be considered especially during the shoulder seasons to address the difficulties noted above.</p>	SA2-324	SA2-324	Instructions for accessing the Project Fugitive Dust Control Plan were provided in table 2.2-1 of the draft EIS and likewise are provided in table 2.2-1 of the final EIS. The plan includes a description of dust suppressants other than magnesium chloride or calcium chloride.

**SA2 – Alaska Department of Natural Resources and Others (cont’d)**

CC-348

Comment	SA2-325	SA2-325	Instructions for accessing the Project Open Burning Plan were provided in table 2.2-1 of the draft EIS and likewise are provided in table 2.2-1 of the final EIS. The plan includes a description of dust suppressants other than magnesium chloride or calcium chloride.
<p>Due to the amount of open burning that is proposed to occur, close coordination with ADEC Division of Air Quality should take place to ensure the design values applicable to attainment areas or impacts to Class I area visibility are minimized. The Open Burn Plan is not included in the EIS, so it is not clear whether emissions will be prevented from creating a health hazard or public nuisance. It should be noted that the open burn activities should require continued interaction with the ADEC meteorologist. In addition, open burn activities that could affect maintenance areas and Class I areas should be carefully planned to take place as far as possible from existing IMPROVE air quality monitors. Please refer to the October 2018 draft guidance titled <i>Prescribed Fire on Wildland: Addendum to the Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May influence Ozone Concentration</i>. While this guidance was written to address ozone impacts, EPA also intended the guidance to apply to particulate matter impacts, the dominant pollutant from prescribed fires on wildlands.</p>			
<p>The emission estimate analysis comparison to the general conformity thresholds in Table 4.15.3-2 needs to be updated due to the EPA designating the Fairbanks North Star Borough as being in serious nonattainment of air quality standards for PM 2.5. It should also be noted that the conformity thresholds have changed. The de minimus threshold for a serious PM2.5 area is now 70 tpy and not 100 tpy. The activities still appears to conform, but the thresholds for PM2.5 and its precursors should be updated in the table. (see Section 4.15.3.1; PDF page 210).</p>	SA2-326	SA2-326	Section 4.15.3.1 of the final EIS has been updated to address this comment.
<p>Construction emissions should not be mixed with operations emissions in the short-term period discussed. It should also be noted that the IMPROVE air monitor that monitors air quality for Tuxedni Class I area was re-located closer to Nikiski. At present there is only one year of data from the new monitoring location and the assumed emissions from construction and operations will have an impact on the IMPROVE monitor and thus, visibility at Tuxedni. Not included in the emission estimates are those emissions from vessels underway, maneuvering and loading at the terminal location. Vessel emissions were mentioned in Section 1.5 Non-Jurisdictional Facilities and the cumulative impacts are addressed in 4-19.2. These vessel emissions should also be referred to in this section.</p>	SA2-327	SA2-327	Section 4.15.4 of the final EIS does not numerically combine construction emissions with operational emissions for the Liquefaction Facility; however, this section acknowledges that both construction and operational emissions would be generated at the Liquefaction Facilities during construction years 7 and 8. LNG carrier emissions during operation of the Liquefaction Facilities are included in table 4.15.5-20 of the final EIS.
<p>The phrase "nationally designated protected areas" may be misleading. Class I areas are nationally designated protected areas by the Clean Air Act (CAA). Special protections for Class II areas only exist due to a 2011 memorandum of understanding signed by the Department of Interior, Environmental Protection Agency, and the Department of Agriculture, U.S. Forest Service regarding air quality analyses and mitigation for federal oil and gas decisions through the National Environmental Policy Act Process. The Federal Land Managers' Air Quality Related Values Work Group (FLAG) guidance document requires that the above agencies consult with federal land managers for NEPA projects that involve lands designated "Sensitive Class II areas" by the federal land management agency. This "Sensitive Class II" designation does not provide any special protections, it only requires that federal agencies involved in the NEPA process consult with the federal land managers if there could be air quality impacts on lands managed by the federal land managers. Please refer to the DEC letter to the Department of Interior and the Department of Interior's letter to FERC regarding "Sensitive Class II Areas".</p>	SA2-328	SA2-328	See the response to comment SA2-7
<p>Studies indicate that Denali National Park experiences impacts from arctic haze. The EIS should address contribution to arctic haze and its impact to Class I areas, especially Denali National Park. See <i>Regional Haze Trans-Boundary Monitoring Study Report June 29, 2012</i>, Alaska Air Quality Division, Air Monitoring &amp; Quality Assurance program. The report can be found on the State Regional Haze web page: <a href="http://dec.alaska.gov/air/anpms/regional-haze">http://dec.alaska.gov/air/anpms/regional-haze</a>.</p>	SA2-329	SA2-329	Section 4.15.5 of the final EIS discloses the potential contribution of Project air quality emissions to regional haze. Mitigation measures to reduce impacts could be identified by ADEC as part of the air permitting process for the Project.

## SA2 – Alaska Department of Natural Resources and Others (cont'd)

Comment			
Denali National Park is approximately three miles from the proposed Healy compressor station and 9 miles from the Honolulu Creek location. The visibility analysis concludes there will be no visibility impacts to the Denali National Park, however, under the revised Regional Haze Rule January 10, 2017, additional analysis may be needed to quantify impacts to Alaska's commitment to 2064 natural conditions. In the DEC permit process, AGDC will need to provide its modeling results for visibility impacts and provide a demonstration on its best available control analysis. Please note that AGDC may also need to address the effect of emissions on atmospheric aerosol growth events. See Effect of Prudhoe Bay emissions on atmospheric aerosol growth events observed in Utqiagvik (Barrow), Alaska, Kathryn R. Kolesar a, Jillian Cellini a, 1, Peter K. Peterson a, Anne Jefferson b, Thomas Tuch c, Wolfram Birmili c, Alfred Wiedensohler c, Kerri A. Pratt a, d., Atmospheric Environment, Volume 152, p. 146-155. Please include this information in the EIS.	SA2-330	SA2-330	Comment noted.
While Class I areas and their air quality related values (AQRVs) receive special protections under the Clean Air Act (CAA), Class II areas do not. As noted elsewhere, the 2011 federal memorandum of agreement requires that federal land managers be consulted regarding impacts to areas that they have identified as "Sensitive Class II areas. These areas are not federally protected areas and should not be treated as such. Please explain why air dispersion modeling would be required for Class II areas.	SA2-331	SA2-331	See the response to comment SA2-7.
The phrase "nationally designated protected areas" may be misleading. Class I areas are nationally designated protected areas by the Clean Air Act (CAA). Special protections for Class II areas only exist due to a 2011 memorandum of understanding signed by the Department of Interior, the Environmental Protection Agency and the Department of Agriculture, US Forest Service. Please use the phrase "Sensitive Class II areas" as found in the 2011 memorandum of understanding.	SA2-332	SA2-332	See the response to comment SA2-7.
The EIS should address what mitigation measures would be implemented to reduce the emission and secondary formation of PM2.5. ADEC cannot permit an exceedance of the NAAQS/AAAQS	SA2-333	SA2-333	AGDC described the proposed mitigation measures associated with operation of the GTP and Liquefaction Facilities in the air permit applications developed for these two facilities, which AGDC submitted to ADEC on December 29, 2017 and May 1, 2018, respectively. The EIS is not intended to replace ADEC's permitting process, which may require additional mitigation measures to ensure protection of air quality resources.
The EIS should address what mitigation measures would be implemented to reduce the emission of ozone (O3). ADEC cannot permit an exceedance of the NAAQS/AAAQS. Please note that the department's experience with oil and gas projects on the North Slope is that ozone has not been an issues of concern.	SA2-334	SA2-334	Section 4.15.5.1 of the final EIS has been updated to address this comment.
The Air Quality Division is concerned that ammonia emission levels are not addressed. ADEC cannot permit an exceedance of the AAAQS and ammonia is an air quality standard for the State of Alaska.	SA2-335	SA2-335	Because the Project would result in minor amounts of ammonia emissions, information regarding potential Project effects on compliance with the ammonia AAAQS was not included in the EIS.

CC-349

**SA2 – Alaska Department of Natural Resources and Others (cont’d)**

CC-350

Comment	SA2-336	SA2-336	See the response to comment SA2-7.
<p>The phrase "nationally designated protected areas" may be misleading. Class I areas are nationally designated protected areas by the Clean Air Act (CAA). Special protections for Class II areas only exist due to a 2011 memorandum of understanding signed by the Department of Interior, Environmental Protection Agency, and the Department of Agriculture, U.S. Forest Service regarding air quality analyses and mitigation for federal oil and gas decisions through the National Environmental Policy Act Process. The Federal Land Managers' Air Quality Related Values Work Group (FLAG) guidance document requires that the above agencies consult with federal land managers for NEPA projects that involve lands designated "Sensitive Class II areas" by the federal land management agency. This "Sensitive Class II" designation does not provide any special protections, it only requires that federal agencies involved in the NEPA process consult with the federal land managers if there could be air quality impacts on lands managed by the federal land managers. Please remove this phrase from the text and replace with "Sensitive Class II areas" as found in the 2011 memorandum of agreement.</p>			
<p>The "Total" concentration should be a sum of the "Modeled" and the "Background". Since the background values are different for PM10 than for PM2.5 the sum should be different. For example the first set of data in the table shows PM10 modeled at 12.4, the background is 35.6, that should make 48, not 19.5. Please note that the calculations are correct for PM2.5. Please correct the error in this table for PM10 concentration for all compressor and heater stations.</p>	SA2-337	SA2-337	Table 4.15.5-16 of the final EIS has been updated to address this comment.
<p>The citation to Section 4.15.5.3 appears to be in error as that section addresses the Liquefaction Facilities, rather than the mainline facilities. For either facility, ADEC agrees that the EIS at a minimum should be describing how to mitigate impacts to visibility and deposition.</p>	SA2-338	SA2-338	Comment noted. See the responses to comments FA1-62 and FA3-78.
<p>DEC agrees with the FERC recommendation that AGDC mitigate emissions associated with the GTP to reduce predicted visibility impacts and deposition impacts to below their associated thresholds. Potential mitigation measures should be discussed in this section.</p>	SA2-339	SA2-339	See the response to comment FA1-11.
<p>The annual concentrations are calculated using a 5 year average, not a 3 year average as are the NAAQS. Could a different averaging period result in higher values for the most recent years? These numbers combined with the statement that during simultaneous construction, start-up, and operational activities, the emission levels could result in exceedance, could cause ADEC to consider a request for monitoring as part of the construction permit and during early years of operation to ensure the NAAQS/AAAQS are not violated. Please consider PM2.5 monitoring as a potential mitigation measure.</p>	SA2-340	SA2-340	See the response to comment SA2-333.
<p>Please explain why the designation does not match with Alaska regulations or change the designation to match Alaska regulations. It is also not clear why some national parks and national wildlife refuges are designated as Class I and some are designated as Class II nationally designated protected areas. Please explain.</p>	SA2-341	SA2-341	See the response to comment SA2-7.



**SA2 – Alaska Department of Natural Resources and Others (cont’d)**

CC-351

Comment	SA2-342	SA2-342	
<p>The Air Quality Modeling analysis does not include transiting vessel emissions. The emissions from vessels in transport have the potential to impact visibility at the Tuxedni Class I area and this should be addressed in the cumulative impacts section. The proposed conclusion of the modeling analysis is that the liquefaction facilities will not impact Class I areas, however we know that other facilities in the proximity of the project have less emissions, but have been identified to exceed the 0.5 deciview impairment standard, therefore ADEC cannot concur with this statement at this time.</p> <p>The final visibility analysis will be conducted through the New Source Review 40 CFR 51.307 requirements of the Regional Haze rule. In conducting the new source review, the State "must ensure that the source's emissions will be consistent with making reasonable progress toward the national visibility goal referred to in 40 CFR 51.300(a)."</p>	SA2-342	SA2-342	<p>The ambient air quality analysis for the Liquefaction Facilities includes emissions from LNG carriers in the moored safety zone, where they would have the greatest potential to combine with operational emissions from the Liquefaction Facilities and contribute to air quality impacts. We acknowledge that additional LNG carrier emissions would be generated during vessel transit, but as noted in section 4.15.5.3 of the final EIS, the maximum number of LNG carriers would be 360 per year, which would be approximately one carrier per day. The EIS is not intended to replace ADEC's permitting process, which may require additional mitigation measures to ensure protection of air quality resources.</p>
<p>Please note visibility impacts are only one part of the Air Quality Related Values (AQRVs) contained in the Prevention of Significant Deterioration regulations. The three-year deposition analysis concludes a potential exceedance of thresholds at Tuxedni for sulfur and nitrogen and an exceedance in nitrogen at Denali National Park. The EIS confirms regional haze impacts on Class I and II areas in Section 4.15.6 on EIS page 938 ADEC is preparing its new Regional Haze State Implementation Plan to address the EPA revised rules (January 10, 2017) and must address its long term strategy for addressing air quality and impacts to AQRVs. The submittal deadline for the plan is in 2021 and ADEC will need to provide a description of how the Alaska LNG project will impact its long term strategy and whether control measures are needed. On page 4-937 the National Park Service recommended that AGDC prepare a Class I and Sensitive Class II Mitigation Plan in consultation with the Federal Land Managers and ADEC to reduce operational emissions of NOx and SOx associated with the GTP, Mainline and Liquefaction Facilities to ensure that the predicted visibility impacts and deposition impacts are below the associated NPS thresholds. ADEC concurs with this recommendation. It would also be useful for the public and decision makers to have access to this information on your modeling and mitigation strategies. This will be important in order for stakeholders to understand the impact to these Class I areas. Please provide information on the proposed modeling and mitigation strategies so that the impacts can be understood and mitigation measures included in the EIS.</p>	SA2-343	SA2-343	<p>See the response to comment FA1-11.</p>
<p>DEC does not believe that short term ozone formation will be an issue because low temperatures and low solar angles reduce the possibility of ozone formation.</p>	SA2-344	SA2-344	<p>Section 4.15.5.1 of the final EIS has been updated to address this comment.</p>
<p>DEC agrees with the FERC recommendation. Mitigation is an important issue, but if the plan is in place prior to project construction, the timing would work for environmental protection purposes.</p>	SA2-345	SA2-345	<p>See the response to comment FA1-11.</p>
<p>It is unclear why these six health indicators were chosen and focused on for this section when there are other indicators more relevant to this proposed project and potential impacts. Suggest a more relevant summary or removing these paragraphs, since these data are also in the individual HEC sections.</p>	SA2-346	SA2-346	<p>Section 4.17.2 of the final EIS has been updated to address this comment.</p>
<p>Baseline data in this section are repeatedly discussed without providing the years of data, clear description of population of interest (i.e., is the rate for the entire state or a certain region), or citations for where the data originated. Additional data would improve clarity for health data being presented.</p>	SA2-347	SA2-347	<p>See the response to comment SA2-346.</p>



**SA2 – Alaska Department of Natural Resources and Others (cont'd)**

CC-352

Comment	SA2-348	SA2-348	Section 4.17.2 of the final EIS has been updated to address this comment.
Suggest revising to state that "health information is typically only available as aggregated census group data" as data at regional or PAC-level are sometimes available. Suggest also adding why data are typically only available in aggregate.			
Suggested revision: In 2012, the Valdez-Cordova Census Area, North Slope, Matanuska-Susitna, and Kenai Peninsula Boroughs had a higher percentage of low birth weight births (7.3%, 7.0%, 10.1%, 8.8%, respectively) than the state overall (5.6%; AVBS, 2016).	SA2-349	SA2-349	See the response to comment SA2-346.
Data presented needs to include years of data, actual rates/percentages/etc. for comparison, citations for where the data originated, and clear descriptions of population of interest (i.e., is the rate for the entire state or a certain region).	SA2-350	SA2-350	See the response to comment SA2-346.
Revise to clarify if the sentence is stating that "the highest percentage of residents who live with food insecurity..." is comparing the Yukon-Koyukuk Census Area to the state or to a certain region.	SA2-351	SA2-351	See the response to comment SA2-346.
Include citation for figure.	SA2-352	SA2-352	Figure 4.17.2-1 of the final EIS has been updated to address this comment.
Add the air quality sections to the "Analysis Relevant to the HIA in Other EIS Sections" column.	SA2-353	SA2-353	Table 4.17-1 of the final EIS has been updated to address this comment.
Each HEC sub-section would benefit from including information on why the included health outcomes/indicators are important to consider in this proposed project, as was done in the HIA in Appendix V.	SA2-354	SA2-354	Linkages between HECs and the Project are discussed in Section 4.17.3 of the final EIS.
Spelling error. Revise morality to mortality.	SA2-355	SA2-355	Section 4.17.2.1 of the final EIS has been updated to address this comment.
While the 2014 ADG&G study (which needs to be cited) indicates that several PACs have high food security, the conclusion that Yukon-Koyukuk communities are unlikely to have a higher rate of food insecurity is not definitive and potential food security issues should not be dismissed. For example, the study found that though Tanana had a percentage of food secure households comparable to the state (for that year), some households had issues in obtaining subsistence foods. Additionally, the survey represents one year of data, not an overall trend in food security (food could have been more or less available in 2013 than in other years). Consider other sources and years of data.	SA2-356	SA2-356	Section 4.17.2.4 of the final EIS has been updated to address this comment.
Include a discussion of other PACs beyond the Yukon-Koyukuk census area. For example, Anaktuvuk Pass has had a low percentage of food secure households when compared to the state (in several different years and studies) and residents have voiced concerns that the proposed project could make it harder to harvest subsistence resources.	SA2-357	SA2-357	Section 4.17.2.4 of the final EIS has been updated to address this comment.
Include citations for food security data and food security definition (many people define it differently and sometimes only include store-bought foods, rather than also including subsistence foods).	SA2-358	SA2-358	Section 4.17.2.4 of the final EIS has been updated to address this comment.
The ratings for several potential impacts are inconsistent in the HIA and this section. For example, the rating for accidents and injuries is low in the HIA impacts summary table and this section, but medium in the narrative in the HIA. Correct all inconsistencies.	SA2-359	SA2-359	Section 4.17.3 and appendix V of the final EIS have been updated to address this comment.
Suggested revision: "The HIA concluded one potential positive impact during construction: a high potential positive impact due to increases in employment and household income. During operation, three medium potential positive impacts were identified, including increases in employment, air quality improvements in the Fairbanks area, and decreases in harmful emissions from sources other than natural gas with an increase in natural gas use in the Fairbanks area."	SA2-360	SA2-360	Section 4.17.3 of the final EIS has been updated to address this comment.

**SA2 – Alaska Department of Natural Resources and Others (cont’d)**

CC-353

Comment			
If proposed mitigation measures exist as ROPs, best management practices, or are described in other parts of the EIS (including appendices), it would be useful to cite their location in this column.	SA2-361	SA2-361	Table 4.17.3-1 of the final EIS has been updated to address this comment.
Adding up the criteria impact ratings and likelihood (presented in Appendix V) brings the total to 6, which corresponds to an impact rating of medium and is more appropriate for this potential impact. Correct math error and revise sections where this rating is referenced.	SA2-362	SA2-362	The positive impact, as described in the HIA (appendix V), is listed as high, which corresponds to the rating in table 4.17.3-1 of the final EIS.
If you add up the criteria impact ratings and likelihood described in the bulleted list, the impact is actually rated as low (and is described as low in Table 42). However, we would agree with the narrative that the potential impact should be rated as medium. Accidents and injuries related to construction have occurred in similar projects and are about as likely as not to occur during the construction phase in this project (especially considering highway corridor traffic and potential decrease in safety for subsistence activities). Additionally, the potential magnitude of the impact should be rated at least high (2) due to the potential serious consequences of an accident/injury and to be consistent with how magnitude was rated for other potential impacts.	SA2-363	SA2-363	Table 4.17.3-1 and appendix V of the final EIS have been updated to address this comment. Mitigation measures have not changed.
If you add up the criteria impact ratings and likelihood (presented in Appendix V), the impact is actually rated as medium, which is more appropriate for this potential impact. Correct math error and revise sections where this rating is referenced.	SA2-364	SA2-364	Table 4.17.3-1 and appendix V of the final EIS have been updated to address this comment. Mitigation measures have not changed.
If you add up the criteria impact ratings and likelihood (presented in Appendix V), the impact is actually rated as high, which is more appropriate for this potential impact. Correct math error and revise sections where this rating is referenced.	SA2-365	SA2-365	The ratings are calculated correctly in the HIA (rating of High) and in section 4.17.3 of the final EIS.
If proposed mitigation measures exist as ROPs, best management practices, or are described in other parts of the EIS (including appendices), it would be useful to cite their location in this column.	SA2-366	SA2-366	Table 4.17.3-2 of the final EIS has been updated to address this comment.
This appears to be a description of a 1944 LNG spill, but it is not clear that it was liquid. It is difficult to imagine it was, since LNG at atmospheric pressures is in a gaseous state, not a liquid state. Please clarify. It should be noted that State of Alaska regulations require spill response for all spills of hazardous substances, including refrigerants. However, the department does not have specific regulatory tools or response planning standards for hazardous substances other than oil. Alaska has statewide hazmat response teams (fire departments) that can be deployed for emergency response and responsible parties can hire private contractors for cleanup. Even for ADEC regulated facilities, we do not have regulatory tools for hazardous substance response scenarios other than petroleum. We do not have leak detection standards for refrigerant.	SA2-367 SA2-368	SA2-367 SA2-368	A significant release of LNG can form a liquid pool at atmospheric conditions until vaporization occurring from the outer surfaces of the liquid reaches the last remaining liquid volume. This result is similar to the steam being generated from boiling water, rather than an instant vaporization of all of the water. The spill containment discussion in section 4.18.5.5 of the final EIS indicates how the impoundment system would be designed to mitigate the potential for LNG from the storage tank area to reach offsite areas. See the response to comment SA2-61.
Please clarify if the tundra mat would be removed or significantly disturbed during construction of the GTP roads.	SA2-369	SA2-369	AGDC has indicated it would implement construction restrictions to minimize impacts on tundra to the extent practicable. Access roads would consist of granular fill placed to a specified thickness to create a trafficable surface. AGDC would complete all work according to any permits and requirements to minimize additional impacts.

**SA2 – Alaska Department of Natural Resources and Others (cont’d)**

CC-354

Comment	SA2-370	SA2-370	See the response to comment SA2-138.
<p>There is little information about the environmental impacts of a subsea natural gas leak. However, recent incidents have shown that a subsea release in winter may not be immediately controlled and could continue for months due to available technology to readily and safely control a release. Release of natural gas can change the temperature of the water column in the immediate area of release, and could pose a threat to fish and marine mammals near the release site. Because of the lack of information on how subsea natural gas releases impact the environment (vulnerability) and the lack of thorough review of pipeline construction and mitigation measures (probability), by the appropriate agencies, this statement cannot be evaluated. Regarding petroleum releases the EIS cites Assessment of Marine Oil Spill Risk and Environmental Vulnerability for the State of Alaska (NOAA 2014) to demonstrate low probability for spills larger than 50 barrels and concludes therefore that significant adverse impacts on Cook Inlet are unlikely. PPR recommends that the EIS specifically use Cook Inlet data found in the work cited (rather than data for the whole state), define what is construction or operational equipment failure (these were not terms used in the cited document), and include a discussion about Cook Inlet vulnerability. Spills less than 50 barrels can have large localized impacts and impacts on fisheries and aquaculture.</p>			
<p>I suspect a wrong reference. Is this supposed to be Table 4.18.10-6?</p>	SA2-371	SA2-371	Table 4.18.10-7 of the final EIS has been updated to address this comment.
<p>The SPCS strongly agrees that a more thorough analysis for seismic is necessary before construction.</p>	SA2-372	SA2-372	Comment noted.
<p>The SPCS did not find enough information in the DEIS to support this statement. Was this a PHMSA determination?</p>	SA2-373	SA2-373	The final EIS includes a summary of the TAPS Impact Study Basis report described in section 11.7.2.7.4 of AGDC’s Resource Report 11, filed on April 17 and 18, 2017 (Accession Nos. 201704175342 and 201704185072).
<p>t</p>			
<p>The DEIS does not address byproduct disposal, including CO<sub>2</sub> and H<sub>2</sub>S. AGDC does not have the right to inject byproducts from the GTP, nor does the DEIS address the potential impacts of doing so.</p>	SA2-374	SA2-374	See response to comment SA2-25.
<p>PTU expansion discharges would be subject to APDES not NPDES.</p>	SA2-375	SA2-375	Section 4.19.2.1 of the final EIS has been updated to address this comment.
<p>The AOGCC would also need to authorize production of gas from the Point Thomson Unit (PTU). The AOGCC oversees oil and gas drilling, development and production, reservoir depletion and metering operations on all lands subject to the state's police powers. The AOGCC acts to prevent waste and improve ultimate recovery. It administers the Underground Injection Control (UIC) program for enhanced oil recovery. Currently PTU gas is reinjected to enhance recovery of condensate.</p>	SA2-376	SA2-376	Section 4.19.2.1 of the final EIS has been updated to address this comment.
<p>The AOGCC would also need to authorize production of gas from the Prudhoe Bay Unit (PBU). The AOGCC acts to prevent waste and improve ultimate recovery of oil and gas. It administers the Underground Injection Control (UIC) program for enhanced oil recovery. Currently PBU gas is reinjected to enhance recovery of oil.</p>	SA2-377	SA2-377	Section 4.19.2.2 of the final EIS has been updated to address this comment.